PARTICIPATION FROM 23 DIFFERENT COUNTRIES

8TH INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS FULL-TEXT BOOK

ISBN:978-605-71167-8-9

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CONGRESS ID

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DATE AND VENUE

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ONLINE PARTICIPATION (FROM 23 DIFFERENT COUNTRIES)

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100 Turkish Participants
127 Foreign Participants
%56 Foreign Participant Rate

REFUSED PAPERS

2 Turkish Participants
1 Foreign Participants

EVALUATION PROCESS

All Submissions Have Passed a Double-Blind Referee Evaluation Process
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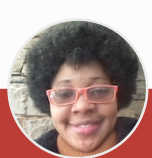

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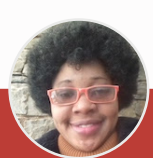

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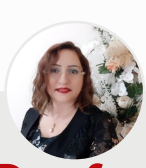

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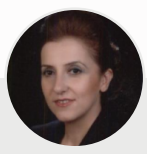

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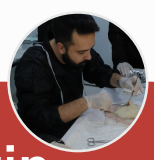

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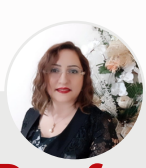

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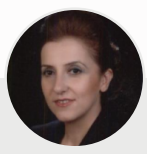

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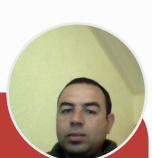

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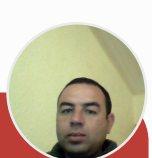

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MEETING ID: 817 2147 8259
PASSWORD: 611801

MARCH 12-13, 2022

8TH INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS

DAY I - 9:00-19:30
TURKEY LOCAL TIME

Program Flow

DAY 1
MARCH 12, 2022

OPENING SPEECH

09:00-9:15

Prof. Dr. Muhlise COŞGUN ÖGEYİK
Trakya University, Turkey

KEYNOTE SPEAKER - 1

09:15-09:30

Dr. Joy Ifeanyi JOSEPH
Independent Researcher, South Africa

KEYNOTE SPEAKER - 2

09:30-9:45

Assist. Prof. Dr. Övgü Kalkan KÜÇÜKSOLAK
Yalova University, Turkey

ENTRANCE TO SESSIONS

9:45-10:00

8. INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS

DAY 1 – MARCH 12, 2022

March 12-13, 2022
Istanbul, TURKEY

CONGRESS PROGRAM

Online (with Video Conference) Presentation

Participant Countries:

Turkey, Azerbaijan, United States, China, India, Poland, Spain, Lithuania, Romania, Austria, Kosovo, Algeria, Laos, Nigeria, Ethiopia, South Africa, Pakistan, Sudan, Indonesia, North Macedonia, Kingdom of Saudi Arabia, Libya, Cyprus.

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- The participant must be connected to the session 5 minutes before the presentation time.
- All congress participants can connect live and listen to all sessions.
- Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

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- You should be able to use screen sharing feature in Zoom.
- Attendance certificates will be sent to you as pdf at the end of the congress.
- Requests such as change of place and time will not be taken into consideration in the congress program.

*(All speakers required to be connected to the session **15 min before** the session starts)*
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

*Each presentation will take **10-15 minutes.** There will be a question and answer session for 5 minutes after the presentation.*

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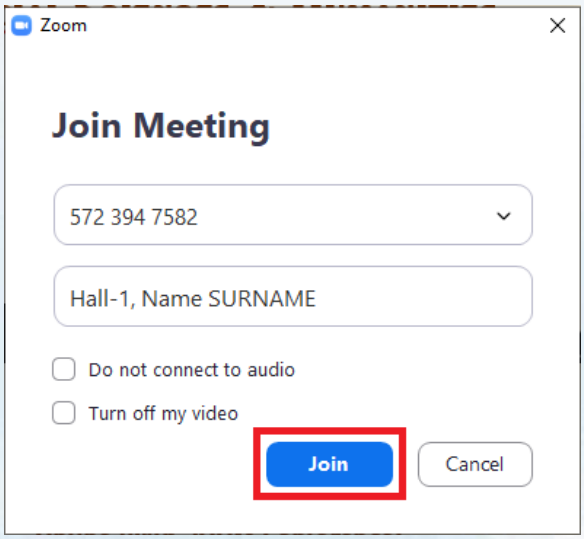

SESSION (1)- HALL (1)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 10^{00}-12^{30} (Turkey Local time GMT+3)	MODERATOR: *Attilla Beştemir* *Irmak Dik*
	Authors	**Affiliation**	**Topic title**
10^{00}-10^{15}	Ömer Taşbulak	*SBU Halkalı Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital*	IMPACT OF CHRONIC TOTAL OCCLUSION ON PROCEDURAL SUCCESS AND CARDIOVASCULAR OUTCOMES IN PATIENTS UNDERGOING ENDOVASCULAR INTERVENTION
10^{15}-10^{30}	Attilla Beştemir	*Bakırköy Dr. Sadi Konuk Hospital*	DETERMINATION OF ENDOTRACHEAL INTUBATION LEVELS IN PATIENTS REGISTERED TO THE EMERGENCY DEPARTMENT AND IN THE HOSPITALIZED PATIENTS
10^{30}-10^{45}	Süleyman Baş Mustafa Can Şenoymak Murat Yeniçeri Elif Özçelik	*University of Health Sciences*	INVESTIGATION OF THE FREUQENCY OF PNEUMOCOCCAL VACCINATION AMONG THE GERIATRIC PATIENTS ADMITTED TO THE INTERNAL MEDICINE OUTPATIENT CLINIC
10^{45}-11^{00}	Bilger Çavuş	*Istanbul University*	EVALUATION OF CMV POSITIVENESS DETECTED IN TISSUE IN INFLAMMATORY BOTTOM DISEASE
11^{00}-11^{15}	Nurhan Aliye Sayaca Kübra Aşık Cansız	*Manisa Celal Bayar University*	RATES OF COVID-19 INFECTION AND VACCINATION IN PATIENTS APPLYING TO ALLERGY AND IMMUNOLOGY OUTPATIENT CLINIC
11^{15}-11^{30}	Irmak Dik Sibel Yavru H. Sercan Palancı Rüveyde Gülbahçe H. Furkan Orbay Varol Çivril Kurtuluş Parlak	*Selcuk University*	DETERMINATION OF THE PRESENCE AND TYPES OF BOVINE VIRAL DIARRHEA VIRUS (BVDV) IN CALVES WITH SYMPTOMS OF ANOMALY, GROWTH RETARDATION AND DIARRHEA
11^{30}-11^{45}	Özay Güleş Mustafa Yıldız	*Afyon Kocatepe University Çanakkale Onsekiz Mart University*	THE EFFECT OF PANAX GINSENG ON COPPER SULFATE INDUCED-RENAL TOXICITY IN RATS
11^{45}-12^{00}	Hatice Pelin Aslım Irmak Dik	*Selcuk University*	FELINE LEUKEMIA VIRUS INFECTION
12^{00}-12^{15}	Hatice Pelin Aslım Irmak Dik	*Selcuk University*	SOME VIRAL INFECTIOUS OF WILD CARNIVORES
12^{15}-12^{30}	Nurdan Erol Merve Özen Abdullah Alpınar	*Health Sciences University*	EVALUATION OF CASES WITH ATRIOVENTRICULAR SEPTAL DEFECTS APPLICATION TO CHILDREN'S CLINICS: A SINGLE CENTER EXPERIENCE

SESSION (1)- HALL (2)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 10^{00}-12^{45} (Turkey Local time GMT+3)	MODERATOR: *Muhlise Coşgun Ögeyik*
	Authors	**Affiliation**	**Topic title**
10^{00}-10^{15}	Muhlise Coşgun Ögeyik	*Trakya University*	COGNITIVE, NEUROLOGICAL, AND AFFECTIVE CONSIDERATIONS IN LANGUAGE ACQUISITION
10^{15}-10^{30}	Esin Akyay Engin Muhlise Coşgun Ögeyik	*Trakya University*	TRANSLATION AND LANGUAGE TEACHING
10^{30}-10^{45}	Esin Akyay Engin Muhlise Coşgun Ögeyik	*Trakya University*	TEXT TYPES, TEXT AWARENESS AND TRANSLATION
10^{45}-11^{00}	Işıl Gamze Yıldız	*Trakya University*	VIEWS OF PROSPECTIVE TEACHERS ON THEIR PREFERENCES OF TEACHING GRADES
11^{00}-11^{15}	Nur Cebeci Aylin Akbacak	*Trakya University*	INVESTIGATION OF THE POST GRADUATE THESES ON THE FIELD OF GIFTEDNESS IN TERMS OF THE KEY WORDS USED IN THE ABSTRACTS (2018-2021)
11^{15}-11^{30}	Ahmet Üstün Adem Yiğit	*Amasya University*	THE REFLECTION OF THE COMPETENCIES OF EDUCATION ADMINISTRATORS ON HUMAN RELATIONS AND COMMUNICATION SKILLS ON EDUCATION
11^{30}-11^{45}	Ahmet Üstün Mustafa Gürlek	*Amasya University*	REFLECTION OF THE PROBLEMS FACED BY DISADVANTAGED STUDENTS IN EDUCATION FROM THE PERSPECTIVE OF MANAGERS AND SUGGESTIONS FOR SOLUTIONS
11^{45}-12^{00}	Ahmet Üstün Murat Aydın	*Amasya University*	EXECUTIVE OPINIONS ON INCREASING THE IN-SERVICE TRAINING OF SCHOOL DIRECTORS BEGINNING TO THE WORK ON THE REGULATIONS FIELD KNOWLEDGE AND COMMUNICATION
12^{00}-12^{15}	Zuhal Yenici	*Çamlıca Foundation Special Education Practice School*	THE EDUCATIONAL REQUIREMENT OF ESTABLISHING A SCHOOL SEED BANK IN THE CONTEXT OF THE IMPORTANCE OF SEEDS IN A SUSTAINABLE ECOLOGICAL CYCLE
12^{15}-12^{30}	Yusuf Doğan	*Istanbul/Güngören Haznedar Abdi İpekçi Primary School*	EVALUATION OF THE EFFECT OF DIGITAL DEVELOPMENT ON STUDENTS IN A DISTANCE EDUCATION DURING AND AFTER THE PANDEMIC PROCESS
12^{30}-12^{45}	Dilara Akkaya	*Gazi University*	DISCUSSION OF CLIMATE CHANGE TOPIC IN SECONDARY EDUCATION GEOGRAPHIC CURRICULUM IN CANADA, USA, AND TURKEY

SESSION (1)- HALL (3)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 10^{00}-12^{30} (Turkey Local time GMT+3)	MODERATOR: *Celal Onur Gökçe* *Zeynep Aytaç*
	Authors	**Affiliation**	**Topic title**
10^{00}-10^{15}	İbrahim Deneme Hakan Usta	*Abdullah Gül University*	BTBT-ORGANIC-SERS PLATFORMS
10^{15}-10^{30}	Yasin Akbas Yasin Sarıkavak	*Ankara Yıldırım Beyazıt University*	REDESIGN OF WING FUSELAGE BRACKET BY USING TOPOLOGY OPTIMIZATION
10^{30}-10^{45}	Zeynep Aytaç	*Gazi University*	DETERMINATION OF THE OPTIMUM FLUID CHARGE RATE ACCORDING TO THE USE OF DIFFERENT WORKING FLUIDS IN MAXIMUM EFFICIENCY CONDITIONS FOR THERMOSYPHON HEAT PIPES
10^{45}-11^{00}	Muhammed Umar Bayer Mostafa Ranjbar	*Ankara Yıldırım Beyazıt University*	DESIGN OF AN UNDERWATER METAMATERIAL FOR ACOUSTIC ABSORPTION
11^{00}-11^{15}	İrfan Çavuş Mostafa Ranjbar	*Ankara Yıldırım Beyazıt University*	VIBRATION ANALYSIS OF UNDERWATER PROPELLER BLADE
11^{15}-11^{30}	Gökhan Arık Şengül Danışman	*Kayseri Transportation Inc.* *&* *Erciyes Universıty*	RAIL-WHEEL RELATIONSHIP AND INVESTIGATION OF WEAR OCCURING ON WHEEL IN RAIL SYSTEM VEHICLES
11^{30}-11^{45}	Hikmet Ortayatırtmacı Mehmet Bağcı	*Derya Silah Industry and Trade Limited Company* *&* *Konya Technical University*	RESEARCH OF THE EFFECTS OF HEAT TREATMENT APPLIED TO THE BARREL OF 22LR RIFLE ON SOLID PARTICLE EROSION WEAR
11^{45}-12^{00}	Elif Akarsu	*Atatürk University*	CALCULATION OF THE ACCURACY OF CARRYING CORONAVIRUS WITH THE HELP OF MACHINE LEARNING DEPENDING ON AGE AND MEDICAL EXAMINATION RESULTS
12^{00}-12^{15}	Celal Onur Gökçe Volkan Durusu Rıdvan Ünal	*Afyon Kocatepe University*	PERFORMANCE ANALYSIS OF PSO BASED PI CONTROLLER OF DC MOTOR
12^{15}-12^{30}	Kholoud Elmabruk	*Sivas University of Science and Technology*	FAR-FIELD PROPAGATION OF INCE GAUSSIAN BEAM IN ATMOSPHERE

SESSION (2)- HALL (1)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 13^{00}-15^{45} (Turkey Local time GMT+3)	MODERATOR: *Emre Kıyak* *Burak Pınar*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Nuray Akar	*Akdeniz University*	EMPLOYEE EXPERIENCE DESIGN FROM THE PERSPECTIVE OF WOMEN EMPLOYEES IN THE INFORMATION AND COMMUNICATION TECHNOLOGIES INDUSTRY
13^{15}-13^{30}	Pınar Türkmen Birlik	*İzmir Demokrasi University*	FUNCTION OF PHILISOPHY IN AYER: ELIMINATION OF METAPHYSICS THROUGH LINGUISTIC ANALYSIS
13^{30}-13^{45}	İsmail Demir	*Çanakkale Onsekiz Mart University*	CONCEPTS OF AFFECTION AND LOVE IN TERMS OF RELIGIOUS EDUCATION
13^{45}-14^{00}	Murat Öğdür	*Kızıltepe District*	INTERPRETATION OF EVIDENCE AND EXPERT FAULTS FOR LAWYERS
14^{00}-14^{15}	Emre Kıyak	*Recep Tayyip Erdoğan University*	THE EFFECTS OF DOCUMENT WHICH PREPARED ACCORDING TO LAW ON MEDIATION IN CIVIL DISPUTES NO. 6325 (HUAK) ART. 16/1 ON THE VALIDITY OF THE AGREEMENT REACHED AT THE END OF THE MEDIATION PROCESS AND ITS CHARACTER OF LITIGATION PROHIBITION
14^{15}-14^{30}	Burak Pınar	*Dokuz Eylül University*	REGULATION OF PUBLIC FINANCIAL MANAGEMENT THROUGH INTERNATIONAL TREATIES
14^{30}-14^{45}	Murat Gök	*Karamanoğlu Mehmetbey University*	THE CHIEF OF THE BERGAVÂTA TRIBE, SALIH B. TARÎF: HIS POLITICAL ACTIVITIES AND THE PRINCIPLES OF FAITH
14^{45}-15^{00}	Muharrem Aras	*Independent Researcher*	AZERBAIJAN IMMIGRANT LITERATURE IN TURKEY
15^{00}-15^{15}	Süleyman Yurttaş	*Bayburt University*	PRACTICES OF BRICOLEUR IDENTITIES
15^{15}-15^{30}	İlhan Karaca	*Bayburt University*	CODE SWITCHING IN THE CONTEXT OF MULTILINGUALITY: LANGUAGE DEFICIENCY OR AN INDICATOR OF HYBRID IDENTITY?
15^{30}-15^{45}	Emine Çakır	*Kırıkkale University*	THE EVALUATION OF FOOD CONTAINING NAJIS OR HARAM MATERIALS ACCORDING TO ISLAMIC FIKH IN TERMS OF ISTIHALAH

SESSION (2)- HALL (2)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 13^{00}-15^{45} (Turkey Local time GMT+3)	MODERATOR: *Nuran Kılavuz* *İzzettin Beştaş*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Seçkin Gönen	*Dokuz Eylül University*	METHODOLOGICAL ANALYSIS OF ARTICLES ABOUT INTERNAL CONTROL WHICH ARE PUBLISHED IN OPEN ACCESS JOURNALS IN 2021
13^{15}-13^{30}	Seçkin Gönen Yusuf Galip	*Dokuz Eylül University*	CONCEPTUAL FRAMEWORK TO RISK BASED AUDIT PROCESS
13^{30}-13^{45}	Övgü Kalkan Küçüksolak	*Yalova University*	REVISITING SPYKMAN IN UNDERSTANDING THE DYNAMICS OF THE ASIAN RIMLAND IN THE 21ST CENTURY
13^{45}-14^{00}	İzzettin Beştaş	*Pamukkale University*	II. DENIZLI MEPs IN THE PARLIAMENT AND THEIR ACTIVITIES
14^{00}-14^{15}	H.Fatih Yakut	*Kocaeli University*	A RESEARCH ON THE RELATIONSHIP OF DISTRIBUTED JUSTICE AND PERCEIVED BEHAVIOR
14^{15}-14^{30}	Saadet Sağtaş	*Çağ University*	A RESEARCH ON NEUROMARKETING AND ITS APPLICATIONS
14^{30}-14^{45}	Samiye Ekim Dertli	*İskenderun Technical University*	CHANGES IN CONSUMER CONFIDENCE UNDER THE EFFECT OF STRUCTURAL BREAK
14^{45}-15^{00}	Hande Barlın	*Gebze Technical University*	SOCIAL CAPITAL AND SUBJECTIVE WELLBEING: AN EMPIRICAL INQUIRY INTO THE LIVES OF OLD WIDOWED WOMEN EXPERIENCING ECONOMIC EXCLUSION
15^{00}-15^{15}	Seda Gözde Tokatlı	*Ege University*	THE IMPACT OF CHINA'S PEACEFUL DEVELOPMENT STRATEGY ON THE INTERNATIONAL SYSTEM
15^{15}-15^{30}	Nuran Kılavuz	*Erzincan Binali Yıldırım University*	REFLECTION OF THE NATIONAL STRUGGLE PERIOD MIGRATION AND MIGRANT MOVEMENTS TO THE I. GRAND NATIONAL ASSEMBLY OF TURKEY
15^{30}-15^{45}	Mustafa Kökmen Şeyma Sıdıka Keşkekçioğlu	*Dumlupınar University*	THE CONTINENTAL SHELF PROBLEM IN THE LAW OF THE MARITIME: THE CASE OF GREECE- TURKEY

SESSION (2)- HALL (3)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 13^{00}-15^{30} (Turkey Local time GMT+3)	MODERATOR: *Gülçin Yahya Kaçar*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Gülçin Yahya Kaçar	*Ankara Hacı Bayram Veli University*	THE WOMAN COMPOSER OF TURKISH MUSIC DİLHAYAT KALFA AND THE SHAPE MENTALITY IN HER "PEŞREVS"
13^{15}-13^{30}	Gülçin Yahya Kaçar	*Ankara Hacı Bayram Veli University*	A WOMAN SOLOIST IN TURKISH MUSIC VOICE PERFORMANCE: SABİTE TUR GÜLERMAN
13^{30}-13^{45}	Ramazan Yılmaz Osman İmamoğlu	*Ondokuz Mayıs University*	INVESTIGATION OF PERCEPTION OF DEATH IN SPORTS SCIENCES FACULTY STUDENTS IN THE CORONA VIRUS PROCESS
13^{45}-14^{00}	Ramazan Yılmaz Osman İmamoğlu	*Ondokuz Mayıs University*	INVESTIGATION OF DEATH ANXIETY IN SPORTS SCIENCES FACULTY STUDENTS IN THE CORONA VIRUS PROCESS
14^{00}-14^{15}	Ali Erdoğan	*Karamanoğlu Mehmetbey University*	DETERMINING THE DIGITAL ADDICTION LEVELS OF SPORTS SCIENCES FACULTY STUDENTS
14^{15}-14^{30}	Şevval Arı Özdemir Atar	*Çanakkale Onsekiz Mart University*	COMPARISON OF SOME BIOMOTORICAL CHARACTERISTICS OF TENNIS AND BADMINTON ATHLETES IN ADOLESCENT
14^{30}-14^{45}	Özdemir Atar Mustafa Deniz Dindar	*Çanakkale Onsekiz Mart University*	COMPARISON OF RELATIVE AGE AVERAGES WITH SOME BODY COMPOSITION VALUES IN ADOLESCENT CHILDREN
14^{45}-15^{00}	Aylın Dikmen Özarslan	*Mimar Sinan Fine Arts University*	MEDICALIZATION OF DEATH, INTENSIVE CARE MEDICINE AND END OF LIFE, AN OUTSIDE LOOK
15^{00}-15^{15}	Assiye Aka	*Çanakkale Onsekiz Mart University*	READING THE PANOPTIC EFFECTS OF FEMICIDE ON TWITTER: THE CASE OF TURKEY
15^{15}-15^{30}	Assiye Aka	*Çanakkale Onsekiz Mart University*	PANOPTIC DIGITAL PUBLIC SPACE (TWITTER) AND DIGITAL WOMEN'S ACTIVISM

SESSION (3)- HALL (1)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 16^{30}-19^{15} (Turkey Local time GMT+3)	MODERATOR: *Arif Hikmet Çakoğlu* *Aydan Tatman*
	Authors	**Affiliation**	**Topic title**
16^{30}-16^{45}	İrfan Ar Özkan Ceyhan	*Gazi University*	BIOGAS AND RECENT DEVELOPMENTS IN BIOGAS
16^{45}-17^{00}	Aydan Tatman Adife Şeyda Yargıç Nurgül Özbay Fatma Eroğlu	*Bilecik Şeyh Edebali University* & *Ankara University*	SYNTHESIS OF Fe/Al2O3 CATALYST USING CO-PRECIPITATION METHOD AND ITS USE IN Py-GC/MS SYSTEM
17^{00}-17^{15}	İsa Değirmenci	*Ondokuz Mayıs University*	ROLE OF SILANES IN RADICAL POLYMERIZATION
17^{15}-17^{30}	Ahmet Dada Prof. Dr. Salih Yazıcıoğlu	*Republic of Turkey Ministry of Environment, Urbanization and Climate Change* & *Gazi University*	INVESTIGATION OF SOME ENGINEERING PROPERTIES OF SELF-COMPACTING MORTARS MANUFACTURED USING RECYCLING AGGREGATE
17^{30}-17^{45}	Kaan Çağhan Özaydın Recep Eryiğit	*Ankara University*	CONVOLUTIONAL NEURAL NETWORK MODELS FOR PLANT SEEDLING CLASSIFICATION
17^{45}-18^{00}	Sinem Başkut Servet Turan	*Eskisehir Technical University*	THE EFFECTS OF APPLYING MICROFLUIDIZATION AT DIFFERENT CYCLES ON THE PROPERTIES OF GRAPHENE PLATELETS
18^{00}-18^{15}	Savas Evran Eda Gökbel Eyüp Acar Merve Nilayda Ünlü Salih Zeki Yıldır Serap Sude Aslan	*Çanakkale 18 Mart University*	DAILY AVERAGE GLOBAL SOLAR IRRADIANCE ANALYSIS OF DIFFERENT LOCATIONS BASED ON MONTHS AND HOURS
18^{15}-18^{30}	Arif Hikmet Çakoğlu	*Sinop University*	ANALYSIS OF DECENCY DIFFERENCES BETWEEN TECHNICAL PERSONNEL IN CONSTRUCTION WORK TENDERS
18^{30}-18^{45}	Hüseyin Cılsalar	*Yozgat Bozok University*	BEHAVIOR OF 5-STORY STEEL MOMENTS RESISTING FRAME UNDER POST-EARTHQUAKE FIRE LOADS
18^{45}-19^{00}	Mustafa Şener Adife Şeyda Yargıç	*Bilecik Şeyh Edebali University*	CHARACTERISTICS OF PEI-LOADED UNCALCINED MCM-48 AS POTENTIAL ADSORBENT FOR CO2 CAPTURE
19^{00}-19^{15}	Uğur Ülker Özgür Zeydan	*Zonguldak Bülent Ecevit University*	EVALUATION OF AIR QUALITY IN TURKEY ACCORDING TO THE NEW LIMIT VALUES OF THE WORLD HEALTH ORGANIZATION

SESSION (3)- HALL (2)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 16^{30}-19^{30} (Turkey Local time GMT+3)	MODERATOR: *Ayşe Buket Doğan* *Emine Yıldırım*
	Authors	**Affiliation**	**Topic title**
16^{30}-16^{45}	Semanur Yeşilbağ Sevgi Kansız Necmi Dege Erbil Ağar	*Ondokuz Mayıs University* & *Samsun University*	A NOVEL TRIDENTATE SCHIFF BASE (ONO): SYNTHESIS, CRYSTAL STRUCTURE, SPECTROSCOPIC PROPERTIES
16^{45}-17^{00}	Emine Yıldırım	*Osmaniye Korkut Ata University*	BACKGROUND OF VIOLATIONS IN RESEARCH AND PUBLICATION
17^{00}-17^{15}	Emine Yıldırım	*Osmaniye Korkut Ata University*	TYPES OF ETHICAL ERRORS IN SCIENTIFIC RESEARCH
17^{15}-17^{30}	Gökçe Alçı Şengül Dilem Doğan	*Erciyes University*	DESIGN AND SYNTHESIS OF MOLECULES CONTAINING 1,3,4-OXADIAZOL AND SULFONAMIDE STRUCTURE
17^{30}-17^{45}	Tuğba Tokbay Halis Karataş Şengül Dilem Doğan Zülbiye Kökbudak	*Erciyes University*	SYNTHESIS OF THIAZOLE RING CONTAINING THIOUREA DERIVATIVES
17^{45}-18^{00}	Ayşe Buket Doğan Yağmur Sürmeli Behire Sançar	*Toros University*	DETERMINATION OF PERSONAL PROTECTIVE EQUIPMENT USAGE AND KNOWLEDGE LEVELS OF STUDENT NURSES GOING TO THE CLINIC IN THE COVID-19 PANDEMIC
18^{00}-18^{15}	Tülay Ezer Mevlüt Alataş Nevzat Batan Hüseyin Erata	*Niğde Ömer Halisdemir University* *Munzur University* *Karadeniz Technical University* *Gümüşhane University*	EPIPHYTIC BRYOPHYTE COMMUNITIES OF BUXUS SEMPERVIRENS TREES IN FIRTINA VALLEY (RIZE-TURKEY)
18^{15}-18^{30}	Asuman Küçüköner Ömer Küçüköner	*Ondokuz Mayıs University*	COCHLEAR IMPLANT PROCESS AND FACTORS AFFECTING ADAPTATION
18^{30}-18^{45}	Mevlüt Alataş Tülay Ezer Hüseyin Erata Nevzat Batan	*Munzur University* *Niğde Ömer Halisdemir University* *Gümüşhane University* *Karadeniz Technical University*	THE EPIPHYTIC BRYOPHYTE SYNTAXA OF BUXUS SEMPERVIRENS FORESTS IN FIRTINA VALLEY (RIZE/TURKEY)
18^{45}-19^{00}	Mevlüt Alataş Nevzat Batan Tülay Ezer Hüseyin Erata	*Munzur University* *Karadeniz Technical University* *Niğde Ömer Halisdemir University* *Gümüşhane University*	THE EPIPHYTIC BRYO-SOCIOLOGY OF KUMBET PLATEAU (GIRESUN/TURKEY)
19^{00}-19^{15}	Şeyma Şişik Oğraş	*Atatürk University*	THE EFFECT OF REPEATED FRYING UNDER ATMOSPHERIC AND PRESSURIZED CONDITIONS ON THE QUALITY CHARACTERISTICS OF CHICKEN NUGGETS
19^{15}-19^{30}	Emre Yılmaz	*İstanbul Aydın University*	INVESTIGATION OF THE EFFECTS OF DIFFERENT LAYERS ON DEFORMATION CHANGE OF GRAPHITE FIBER REINFORCED EPOXY MATRIX COMPOSITE PLATES UNDER THE EFFECT OF AXIAL FORCE

SESSION (3)- HALL (3)

Meeting ID: 817 2147 8259
Passcode: 611801

	12.03.2022	Time: 16^{30}-19^{15} (Turkey Local time GMT+3)	MODERATOR: *Emine Berrin Çınar* *Meltem Adıyaman*
	Authors	**Affiliation**	**Topic title**
16^{30}-16^{45}	Meltem Adıyaman	*Dokuz Eylül University*	APPLICATION OF RESIDUAL METHOD TO ORDINARY DIFFERENTIAL EQUATIONS
16^{45}-17^{00}	Müslüm Aykut Akgün	*Adıyaman University*	ON CONTACT PSEUDO-METRIC MANIFOLDS
17^{00}-17^{15}	Nazlı Tekin Sevgi Yurt Öncel	*Kırıkkale University*	EVALUATION BY STATISTICAL METHODS OF BUSINESS SATISFACTIONS OF PROBATION DIRECTORATE EMPLOYEES
17^{15}-17^{30}	Emine Berrin Çınar Necmi Dege	*Ondokuz Mayıs University*	CRYSTAL STRUCTURE AND HIRSHFELD SURFACE ANALYSIS OF TIYOFEN-2-KARBOXAMID
17^{30}-17^{45}	Necmi Dege Emine Berrin Çınar	*Ondokuz Mayıs University*	CRYSTAL STRUCTURE AND HIRSHFELD SURFACE ANALYSIS OF 5-PHENYL-1,3,4-THIODIAZOL-2-AMIN
17^{45}-18^{00}	Ozge Erken Mustafa Gunes Cebrail Gumus	*Adıyaman University* & *Adana Alparslan Turkes Science and Technology University* & *Cukurova University*	EFFECT OF Mn CONTENT AND DEPOSITION TIME ON SOME OPTICAL PARAMETERS IN ZnS THIN FILMS PREPARED BY CHEMICAL BATH DEPOSITION
18^{00}-18^{15}	Esma Özcan Şengül Dilem Doğan Zülbiye Kökbudak	*Erciyes University*	DESIGN AND SYNTHESIS OF HYBRID COMPOUNDS CONTAINING BENZIMIDAZOLE, TRIAZOLE AND SULFONYL HYDRAZONE STRUCTURES
18^{15}-18^{30}	Hasan Keleş	*Karadeniz Technical University*	ON RESULTS DIVISIBILITY AND MULTIPLIERS OF REGULAR MATRICES OF ORDER nth
18^{30}-18^{45}	Hasan Keleş	*Karadeniz Technical University*	ON THE RELATIONSHIP BETWEEN TRANSPOSE AND DIVISION
18^{45}-19^{00}	Ferhat Gezer	*Independent Researcher*	DETERMINATION OF NATURAL RADIOCTIVITY AT PHOSPHOGYPSUM
19^{00}-19^{15}	Yusuf Özçelik Osman Şimşek	*Gazi University*	INVESTIGATION OF THE USAGE OF CONSTRUCTION DEMOLITION WASTE IN PRODUCTION OF FOAM CONCRETE
19^{15}-19^{30}	Mine Kırkyol Ahmet Akköse	*Atatürk University*	THERMAL PROPERTIES OF OLEOGELS MADE WITH HAZELNUT OIL AND CARNAUBA WAX

8. INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS

DAY 2 – MARCH 13, 2022

March 12-13, 2022
Istanbul, TURKEY

CONGRESS PROGRAM

Online (with Video Conference) Presentation

Participant Countries:

Turkey, Azerbaijan, United States, China, India, Poland, Spain, Lithuania, Romania, Austria, Kosovo, Algeria, Laos, Nigeria, Ethiopia, South Africa, Pakistan, Sudan, Indonesia, North Macedonia, Kingdom of Saudi Arabia, Libya, Cyprus.

Meeting ID: 865 8387 8033
Passcode: 138383

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- The Zoom application is free and no need to create an account.
- The Zoom application can be used without registration.
- The application works on tablets, phones and PCs.
- The participant must be connected to the session 5 minutes before the presentation time.
- All congress participants can connect live and listen to all sessions.
- Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

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*Each presentation will take **10-15 minutes.** There will be a question and answer session for 5 minutes after the presentation.*

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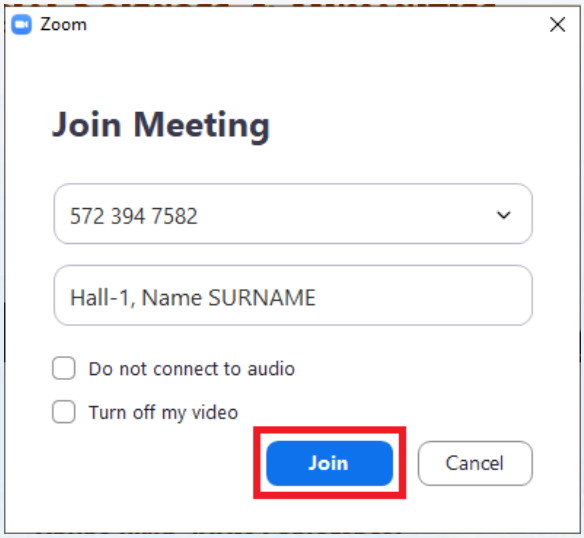

SESSION (1)- HALL (1)

Meeting ID: 865 8387 8033
Passcode: 138383

TURKEY LOCAL TIME	13. 03. 2022	Time: 9^{00}-12^{30} (Turkey Local time GMT+3)	MODERATOR: *Muhammad Safdar BHATTI*
	Authors	**Affiliation**	**Topic title**
9^{00}-9^{15}	Muhammad Safdar BHATTI Zahida Shahbaz RAFIQUE SSE Faiqa TABASSUM	*-The Islamia University of Bahawalpur, Pakistan* *-Govt. Girls High School, Pakistan* *-Sibling Academy of Quality Education, Pakistan*	ONE SEEING IS WORTH A HUNDRED WORDS: EFFECTS OF AV AIDS ON ESL LEARNERS' VOCABULARY SKILLS
9^{15}-9^{30}	Handoko, S.S, M.HUM Muhammad Safdar BHATTI	*-Universitas Andalas, Indonesia* *-The Islamia University of Bahawalpur, Pakistan*	ASSESSING SPEAKING SKILLS USING ONLINE PLATFORM: AN ANALYSIS
9^{30}-9^{45}	Latiba KHANAM Muhammad Safdar BHATTI Huma AKRAM	*-The Islamia University of Bahawalpur, Pakistan* *-Northeast Normal University, China*	FACTORS AFFECTING THE QUALITY OF TEACHING ENGLISH LANGUAGE AT PRIMARY LEVEL: A SURVEY
9^{45}-10^{00}	Muhammad Khalid SHEIKH Aftab Hussain GILLANI	*The Islamia University of Bahawalpur, Pakistan*	FUNCTIONALITY OF SEMESTER SYSTEM IN PAKISTAN AND DETERMINATION OF STRATEGIES TO IMPROVE ITS PERFORMANCE: A SURVEY
10^{00}-10^{15}	Arshad Munir LEGHARI Yasir Munir LEGHARI	*-Ghazi University, Pakistan* *-Khawaja Fareed University of Engineering and Information Technology, Pakistan*	IMPACT OF COVID-19 ON LEGAL AND JUDICIAL SYSTEM OF PAKISTAN
10^{15}-10^{30}	Disha MITTAL Meera NEELAKANTAN	*Bangalore Central Campus, India*	RELATIONSHIP OF PARENTING STYLE WITH ACADEMIC ACHIEVEMENT AND MOTIVATION OF STUDENTS IN INDIA
10^{30}-10^{45}	Ashraya KANT	*Jamia Millia Islamia University, India*	EPISTEMIC VIGILANCE AS THE VANGUARD OF JUSTICE: EXAMINING THE RELATIONSHIP BETWEEN 'THING IN ITSELF' AND 'SOCIAL AS A CATEGORY'
10^{45}-11^{00}	Chems Eddine BOUKHEDIMI	*University of Tizi Ouzou, Algeria*	THE EXAMINATION OF STUDENT'S GENDER TOWARD THE INSISTING ON BUYING ORGANIC FOOD IN ALGERIA
11^{00}-11^{15}	Fizza SAEED You JUN Nuzhat KOONJ Usman GUL	*Chongqing University of Post & Telecommunications, China*	A REVIEW ON THE STUDY OF INTERNET OF THINGS (IoT)
11^{15}-11^{30}	Awol ALI	*Hawassa University, Ethiopia*	THE FUTURE OF SMALL ARMS IN PASTORAL LOWLANDS OF THE HORN OF AFRICA: A CASE OF THE NYÀNGATOM PEOPLE IN SOUTHWEST ETHIOPIA
11^{30}-11^{45}	Awol ALI	*Hawassa University, Ethiopia*	THE DYNAMICS OF SECURITY THREATS TO THE HORN STATES: IMPLICATIONS FOR "PRISONERS OF GEOGRAPHY
11^{45}-12^{00}	İmamalı ŞARQIYYA	*Azerbaijan National Academy of Sciences, Azerbaijan*	İKİNCİ KARABAĞ SAVAŞI SONRASI ERMENİSTAN'DA SOSYO-EKONOMİK DURUM
12^{00}-12^{15}	Imrana TOUQIR	*Planning and Development Department Punjab, Pakistan*	BREXIT: ISSUES AND CHALLENGES IN PAKISTAN: A CASE IN FOCUS
12^{15}-12^{30}	Samir HUMBƏTOV	*Center for International Relations and Diplomatic Studies, Azerbaijan*	INTERNAL AND EXTERNAL REASONS VISIBLE AND UNSEEN IN THE DISCONTINUATION OF THE USSR

SESSION (1)- HALL (2)

Meeting ID: 865 8387 8033
Passcode: 138383

TURKEY LOCAL TIME	13. 03. 2022	Time: 9^{00}-12^{15} (Turkey Local time GMT+3)	MODERATOR: *Jordi REDONDO*
	Authors	**Affiliation**	**Topic title**
9^{00}-9^{15}	Sajad Ahmad TELI Shahbaz Ahmad KHAN Mudasir Mushtaq PIR	*University of Kashmir, India*	EFFECT OF COVID-19 LOCKDOWN ON THE LEARNING AND TEACHING OF LANGUAGES: AN ANALYSIS
9^{15}-9^{30}	Jordi REDONDO	*University of Valencia, Spain*	LANGUAGE CONTACT IN THE GREEK VERSION OF THE CHRONICLE OF THE TURKISH SULTANS
9^{30}-9^{45}	Thiphachanh NOUTHAPHONE Soulichanh LUANGSOMBATH Bounmy PHALYCHAN Somphien MAHAPHOM Chansy PHOMPHITHAK	*-Champasack University, Laos* *-Naxaythong Upper Secondary School, Laos* *-Champasak College of Health Sciences, Laos*	THE EFFECTIVENESS OF GOOGLE CLASSROOM PERFORMANCE AND ITS CHALLENGES INTEGRATED IN LEARNING PROCESS
9^{45}-10^{00}	Chansy PHOMPHITHAK Soulichanh LUANGSOMBATH Phouthong VANHNIVONGKHAM Phonesouda VONGTHONG Dalasouk KHAMLUNVILAIVONG	*-Champasak College of Health Sciences, Laos* *-Naxaythong Upper Secondary School, Laos* *-Champasak College of Health Sciences, Laos* *-University of Health Sciences, Laos*	KNOWLEDGE, MISINFORMATION REGARDING COVID-19 PANDEMIC AND SATISFACTION ON HOSPITAL TREATMENT SERVICES
10^{00}-10^{15}	Alice FATONE	*Universitat de València, Spain*	INTERCULTURAL COMPETENCE IN LANGUAGE COURSES ONLINE
10^{15}-10^{30}	Syed Ali Hassan SHAH Shahid MINHAS Hamza Rehman BUTT	*GIFT University, Pakistan*	ROLE OF ADVERTISEMENT IN CREATING EXAGGERATING IN YOUTH
10^{30}-10^{45}	Rituraj BASUMATARY	*Tata Institute of Social Sciences, India*	THE REVOLUTION FOR GENDER EQUALITY
10^{45}-11^{00}	Drita M. FAZLIA	*University of Tetovo, North Macedonia*	IMPLEMENTATION OF THE DECISION OF THE EUROPEAN COURT ON HUMAN RIGHTS IN REPUBLIC OF NORTH MACEDONIA
11^{00}-11^{15}	Carlos ARENAS	*University of Valencia, Spain*	WOMEN AND WITCHES: A STUDY ON PHOTOGRAPHY IN CONTEMPORARY ART REGARDING THE IMAGE OF WITCHES
11^{15}-11^{30}	María Roca Cabrera	*University of Valencia, Spain*	TEXTILE COLLECTING, AUCTIONS AND ART MARKET. THE GOLDEN AGE
11^{30}-11^{45}	Andrea Sánchez i Bernet	*University of Valencia, Spain*	CREATING A BASIC AND ACCESSIBLE VOCABULARY FOR FIRST YEAR UNDERGRADUATE STUDENTS THROUGH CORPUS LINGUISTICS, A CASE STUDY
11^{45}-12^{00}	Joy I. JOSEPH	*Independent Researcher, South Africa*	A PROVERBIAL PERCEPTION OF THE AFRICAN WOMAN IN YORUBA CULTURE: A STIWANIST PERSPECTIVE
12^{00}-12^{15}	Pratik KUTE	*Jawaharlal Nehru University, India*	QATAR: A MAJOR COMPONENT OF INDIA'S FOREIGN POLICY IN THE GULF

SESSION (1)- HALL (3)

Meeting ID: 865 8387 8033
Passcode: 138383

TURKEY LOCAL TIME	13. 03. 2022	Time: 9^{00}-12^{45} (Turkey Local time GMT+3)	MODERATOR: *Babayeva-Şükürova Fərahilə Fazil qızı*
	Authors	**Affiliation**	**Topic title**
9^{00}-9^{15}	Babayeva-Şükürova Fərahilə Fazil qızı	*Azerbaijan National Academy of Sciences, Azerbaijan*	TERRITORIAL CLAIMS AGAINST AZERBAIJAN-GEORGIA-UKRAINE: ISRAEL-TURKEY POSITIONS
9^{15}-9^{30}	Shahnaz Tagiyeva	*Azerbaijan National Academy of Sciences, Azerbaijan*	ECONOMIC CONDITION IN THE REPUBLIC OF NORTH OSSETIA-ALANIA
9^{30}-9^{45}	Elnur Kelbizadeh	*Azerbaijan National Academy of Sciences, Azerbaijan*	PRAGMATISM IN THE CAUCASUS POLICY OF IRAN
9^{45}-10^{00}	Lilia Mirzazade	*Azerbaijan National Academy of Sciences, Azerbaijan*	THE THREAT OF THE PRESENCE OF THE ARMENIAN FACTOR IN THE REPUBLIC OF NORTH OSSETIA - ALANIA
10^{00}-10^{15}	Gunay FEYZIYEVA	*Azerbaijan National Academy of Sciences, Azerbaijan*	ADMINISTRATIVE BORDERS IN THE NORTH CAUCASUS
10^{15}-10^{30}	Elnara SHAFIYEVA Sevinj ALLAHYAROVA Aidan SAMANDAROVA	*Baku State University, Azerbaijan*	THE IMPACT OF FAMILY RELATIONSHIPS ON THE FORMATION OF BULLYING IN CHILDREN
10^{30}-10^{45}	Ülker IMAMALIYEVA	*Baku State University, Azerbaijan*	SOLUTIONS OF INTERNATIONAL CONFLICT: SYSTEM AND SCIENTIFIC APPROACHES TO CONFLICT
10^{45}-11^{00}	Farhad Gamboy oglu MIKAYILOV Nurana BABAYEVA	*-Scientific-Research Institute of Economic Studies, Azerbaijan* *-Economic Reforms Scientific Research Institute, Azerbaijan*	CORPORATE SOCIAL RESPONSIBILITY IN RESOURCE-RICH COUNTRIES EFFECTS ON ECONOMIC GROWTH
11^{00}-11^{15}	Nigar MUSTAFAYEVA	*AMEA-nın Qafqazşünaslıq İnstitutu, Azerbaijan*	GÜRCÜSTAN VƏ ERMƏNİSTAN ARASINDA NATO VƏ İKİTƏRƏFLİ ƏMƏKDAŞLIQ ÇƏRÇİVƏSİNDƏ HƏRBİ VƏ TƏHLÜKƏSİZLİK SAHƏSİNDƏ ƏLAQƏLƏR
11^{15}-11^{30}	Ramila DADAŞOVA	*Azerbaijan National Academy of Sciences, Azerbaijan*	AZERBAYCAN'DA MÜLTECİ SORUNLARININ TARİHİ KÖKLERİ VE GÜNÜMÜZDEKİ YANKILARI
11^{30}-11^{45}	Qurbanova GÜNEL	*Azerbaijan National Academy of Sciences, Azerbaijan*	ÇAĞDAŞ ERMENİSTAN'DA SİYASİ PARTİLERİN KONUMU
11^{45}-12^{00}	Qasım HACIYEV	*Azerbaijan National Academy of Sciences, Azerbaijan*	BATI AZERBAYCAN'DAKİ TÜRK KÜLTÜR MİRASININ MEVCUT DURUMU
12^{00}-12^{15}	Vahid OMAROV ALLAHVERDİ OĞLU	*Azerbaijan National Academy of Sciences, Azerbaijan*	AZERBAYCAN'IN KARABAĞ SAVAŞINDA ZAFERİ: GÜRCİSTAN'DAN BAKIŞ
12^{15}-12^{30}	Agazade BADAM	*Azerbaijan National Academy of Sciences, Azerbaijan*	KRASNODAR VE STAVROPOL BÖLGELERINDEKI ERMENI TOPLULUKLARI, OKULLARI, KILISELERI, KITLE ILETIŞIM ARAÇLARI VE FAALIYETLERI
12^{30}-12^{45}	Natavan BAGHIROVA	*Baku State University, Azerbaijan*	ANAS NATIONAL MUSEUM OF AZERBAIJAN LITERATURE NAMED AFTER NIZAMI GANJEVI
12^{45}-13^{00}	Sudaba Hüseynova	*Azerbaijan National Academy of Sciences, Azerbaijan*	ERMENİ TERÖRİSTİN PSİKOLOJİK PORTRESİ

SESSION (1)- HALL (4)

Meeting ID: 865 8387 8033
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TURKEY LOCAL TIME	13. 03. 2022	Time: 9^{00}-11^{45} (Turkey Local time GMT+3)	MODERATOR: *Khan NAVEED*
	Authors	**Affiliation**	**Topic title**
9^{00}-9^{15}	Khan NAVEED	*Vistula University, Poland*	NATION-BUILDING PROCESS IN KYRGYZTAN AFTER INDEPENDENCE
9^{15}-9^{30}	Khan NAVEED	*Vistula University, Poland*	TSARIST RUSSIA AND CENTRAL ASIAN POLICIES
9^{30}-9^{45}	Magda PIOTROW	*Piotrowska Economic Science University, Poland*	HOW DO CULTURAL NATIONALISM AND POLITICAL NATIONALISM DIFFER?
9^{45}-10^{00}	Magda PIOTROW	*Piotrowska Economic Science University, Poland*	NATIONALISM AND INTERNATIONALISM COMPATIBLE
10^{00}-10^{15}	Mizango VIOLA	*Warsaw University, Poland*	NATION-BUILDING PROCESS IN TURKMENISTAN AFTER INDEPENDENCE
10^{15}-10^{30}	Mizango VIOLA	*Warsaw University, Poland*	NATION BULDING PROCCES AFTER INDEPENDENCE OF AZERBAIJAN
10^{30}-10^{45}	Nahimuli OLIVIA	*SGH University, Poland*	THE STALIN ERA USSR CENTRAL ASIA POLICIES
10^{45}-11^{00}	Nahimuli OLIVIA	*SGH University, Poland*	BOLSHEVIK REVOLUTION
11^{00}-11^{15}	Jamshed ABDULLAEV	*University of Vistula, Poland*	THE EFFECTS OF RUSSIA'S ANNEXATION OF CRIMEA ON BLACK SEA GEOPOLITICS
11^{15}-11^{30}	Jamshed ABDULLAEV	*University of Vistula, Poland*	FASCISM IN EUROPE DURING SECOND WORLD WAR: ITALIAN VERSUS GERMAN PRACTICES
11^{30}-11^{45}	Rabia BAYAMAN Enes DERTLI	*Yıldız Technical University, Turkey*	PRODUCTION OF FUNCTIONALLY EFFECTIVE SILVER AND SELENIUM NANOPARTICLES

SESSION (2)- HALL (1)

Meeting ID: 865 8387 8033
Passcode: 138383

TURKEY LOCAL TIME	13. 03.2022	Time: 13^{00}-15^{45} (Turkey Local time GMT+3)	MODERATOR: *Emre KARSIGIL* *Fares BELGUELIEL*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Emre KARSIGIL Savas Selahattin ATES	*-Necmettin Erbakan University, Turkey* *-Eskisehir Technical University, Turkey*	IRREGULAR OPERATIONS BY AN AIRLINE: ANALYSIS OF METAHEURISTIC APPROACHES IN LITERATURE WITH TEXT-MINING METHOD
13^{15}-13^{30}	Bhavtosh AWASTHI Seema SHARMA	*JECRC University, India*	ANALYSIS OF E-COMMERCE BUSINESS USING MARKOVIAN QUEING MODEL WITH RETENTION OF RENEGED CUSTOMERS
13^{30}-13^{45}	Imane AKARI Zahra GRABA Mohamed Mehdi KACI	*University of Bejaia, Algeria*	VALORIZATION OF A LOCAL MATERIAL WITH A LOW CONCENTRATION OF DJEBEL-ONK PHOSPHATES BY USING IT AS AN ADSORBENT IN THE ELIMINATION OF A TEXTILE DYE
13^{45}-14^{00}	Jyoti Gupta Rupesh Chaturvedi	*Jawaharlal Nehru University, India*	THE SARS COV-2 SPIKE PROTEIN EXPLOITS DENDRITIC CELL-SPECIFIC INTEGRIN GRABBING NONINTEGRIN (DC-SIGN) AND ITS HOMOLOGOUS DC-SIGNR FOR EVOLUTION
14^{00}-14^{15}	Baghdadi Mohamed YACINE Zahia CHAFI Abdelhafid SOUICI	*University of Béjaia, Algeria*	DETERMINATION OF SAMPLING ERROR IN GOLD EXTRACTION
14^{15}-14^{30}	Fares BELGUELIEL Mohamed FREDJ Abderrazak SAADOUN	*University of Annaba, Algeria* *&* *University of A. Mira, Algeria*	INFLUENCE OF THE OPTIMIZATION OF THE DRILLING AND BLASTING PLAN DESIGN ON THE SLOPE STABILITY
14^{30}-14^{45}	Kayode Michael OLUWADARE Gideon Oluwaseun OLAYIOYE Sunday Blessing OLADIPUPO Oludare O. OSIBOYE Aderemi Timothy ADELEYE	*-University of Lagos, Nigeria* *-Nigeria Immigration Services (NIS), Nigeria* *-University of Ilorin, Nigeria* *-Tai Solarin College of Education, Nigeria* *-Chinese Academy of Sciences, Nigeria*	DIRECT AND INDIRECT ECONOMIC BENEFITS OF ENERGY EFFICIENCY AND RENEWABLE ENERGY INITIATIVES- A MINI REVIEW
14^{45}-15^{00}	Kayode Michael OLUWADARE Gideon Oluwaseun OLAYIOYE Sunday Blessing OLADIPUPO Promise Goodness ADELEYE Aderemi Timothy ADELEYE	*-University of Lagos, Nigeria* *-Nigeria Immigration Services (NIS), Nigeria* *-University of Ilorin, China* *-Chinese Academy of Sciences, China*	E-WASTE: A BOTTLENECK FOR THE GLOBAL GOALS AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT
15^{15}-15^{30}	Hilda A. Emmanuel AKERELE	*Anchor University, Nigeria*	MICROBIAL AND PHYSICO-CHEMICAL ASSESSMENT OF SOIL AND WATER AROUND WASTE DUMP SITES IN LAGOS
15^{30}-15^{45}	Major Giurgiu GHEORGHE Cojocaru MANOLE	*-Deniplant-Aide Sante Medical Center, Romania* *-Titu Maiorescu University, Romania*	IMUNIPLANT AND NEUROPOLEN IMPACT ON MICROBIOTE AND METABOLITES IN PARKINSON'S DISEASE

SESSION (2)- HALL (2)

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TURKEY LOCAL TIME	13. 03.2022	Time: 13^{00}-15^{30} (Turkey Local time GMT+3)	MODERATOR: *Raja Mohammad LATIF*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Gizachew Diga MILKI	*Gizachew Diga MILKI, Ethiopia*	PHOTONIC ACTIVATED TUNNELING IN ABo3 MULTIFERROICS
13^{15}-13^{30}	Raja Mohammad LATIF	*Prince Mohammad Bin Fahd University, Kingdom of Saudi Arabia*	GP*-COMPACTNESS IN TOPOLOGICAL SPACES
13^{30}-13^{45}	Raja Mohammad LATIF	*Prince Mohammad Bin Fahd University, Kingdom of Saudi Arabia*	ALMOST SEMI*ALPHA--TOPOLOGICAL VECTOR SPACES
13^{45}-14^{00}	Raja Mohammad LATIF	*Prince Mohammad Bin Fahd University, Kingdom of Saudi Arabia*	SEMI-REGULAR*-MAPPINGS IN TOPOLOGICAL SPACES
14^{00}-14^{15}	Raja Mohammad LATIF	*Prince Mohammad Bin Fahd University, Kingdom of Saudi Arabia*	PRE--ALPHA--IRRESOLUTE TOPOLOGICAL VECTOR SPACES
14^{15}-14^{30}	Aneeqa Saeed	*COMSATS University Islamabad WAH Campus, Pakistan*	NETWORK SECURITY AND CRYPTOGRAPHY: A REVIEW PAPER
14^{30}-14^{45}	J. Jayachitra P.Sivasakthivelan E. Babu	*-Annamalai University Tamil Nadu, India Government -Polytechnic College Madurai, India*	BIODEGRADATION OF CRYSTAL VIOLET DYE BY BACTERIA ISOLATED FROM TEXTILE INDUSTRY EFFLUENTS
14^{45}-15^{00}	Kasım MERMERDAŞ Safin OMER Yaseen OMER	*-Harran University, Turkey -Near East University, Cyprus*	APPLICATION OF RANDOM FOREST AND LASSO METHODS FOR PREDICTION OF COMPRESSIVE STRENGTH OF FIBROUS CONCRETES
15^{00}-15^{15}	Salaheldin EDAM Doaa ABUBAKR Roaa RAHMA Roaa YAGOUB	*Sudan University of Science and Technology, Sudan*	PERFORMANCE ASSESSMENT OF LOCALIZATION RANGE-FREE BASED ALGORITHMS IN WIRELESS SENSOR NETWORKS
15^{15}-15^{30}	Temple Probyne ABALI Leonard Michael Onyinyechi AMINIGBO Ibiso Michael INKO-TARIAH	*Rivers State University, Nigeria*	HYDRAULIC GEOMETRY AS A DETERMINANT OF LAND RECLAMATION IN PORT HARCOURT, SOUTHERN NIGERIA

SESSION (2)- HALL (3)

Meeting ID: 865 8387 8033
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TURKEY LOCAL TIME	13. 03.2022	Time: 13^{00}-15^{30} (Turkey Local time GMT+3)	MODERATOR: *Md Ali Imam* *M. Raj Kumar*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Eman A. ELMAHJOUBI Ehdaa A. HAMAM Sanabel E. ATWIEB Mufida A.YAMANE	*University of Tripoli, Libya*	INSULIN PUMP THERAPY IN LIBYA: ASSESSMENT OF MEDICAL STAFF KNOWLEDGE
13^{15}-13^{30}	Marta SELVA-GIMÉNEZ Javier POYATOS-GARCIA Águeda BLÁZQUEZ-BERNAL Ariadna BARGIELA Rafael P. VÁZQUEZ-MANRIQUE Anne BIGOT Ruben ARTERO Juan Jesús VILCHEZ	*-Centro de Investigación Biomédica en Red, Spain* *-Instituto de Investigación Sanitaria la Fe, Spain* *-University of Valencia, Spain* *-Joint Unit for Rare Diseases IIS La Fe-CIPF, Spain* *-Sorbonne Université, Inserm, Institut de Myologie, Spain*	CRISPR-CAS9 EDITING OF THE TNPO3 MUTATION CAUSING LIMB-GIRDLE MUSCULAR DYSTROPHY TYPE D2 IN A MUSCLE CELL MODEL
13^{30}-13^{45}	Ariadna BARGIELA Amadeo TEN Luis Marti BONMATI Teresa SEVILLA Ruben ARTERO	*-Hospital Universitari i Politécnic La Fe, Spain* *-University of Valencia, Spain*	IN VIVO STUDY OF MUSCLE DYSFUNCTION IN MYOTONIC DYSTROPHY MICE BY QUANTITATIVE NUCLEAR MAGNETIC RESONANCE IMAGING
13^{45}-14^{00}	Juan Peris VICENTE Priyanka PAHADE Abhilasha DURGBANSHI María Ángeles GOBERNA-BRAVO Samuel CARDA-BROCH Devasish BOSE	*-Universitat de València, Spain* *-A Central University, India*	A GREEN AND EASY ASSAY TO DETERMINE ISONIAZID IN URINE SAMPLES FROM TUBERCULOSIS PATIENTS BY MICELLAR LIQUID CHROMATOGRAPHY
14^{00}-14^{15}	Juan Peris VICENTE Jaume Albiol CHIVA Samuel CARDA-BROCH Daniel GARCÍA-FERRER María-José RUIZ-ÁNGEL Abhilasha DURGBANSHI Samuel CARDA-BROCH	*-Universitat de València, Spain* *-University Jaume I, Spain* *-A Central University, India*	DETERMINATION OF SELECTED QUINOLONES IN FRESH EGGS BY A GREEN ANALYTCAL METHOD
14^{15}-14^{30}	Juan Peris VICENTE Priyanka PAHADE Samuel CARDA-BROCH Abhilasha DURGBANSHI Daniel GARCÍA-FERRER Devasish BOSE	*-Universitat de València, Spain* *-A Central University, India*	ANALYSIS OF DIARY PRODUCTS CONSUMED IN INDIA TO DETECT ALBENDAZOLE AND IVERMECTIN RESIDUES BY MICELLAR LIQUID CHROMATOGRAPHY
14^{30}-14^{45}	Juan Peris VICENTE Jaume Albiol CHIVA Devasish BOSE Abhilasha DURGBANSHI María-José RUIZ-ÁNGEL Samuel CARDA-BROCH	*-Universitat de València, Spain* *-University Jaume I, Spain* *-A Central University, India*	DETERMINATION OF HERBICIDES IN WATER AND SOIL BY A GREEN APPROACH BASED ON MICELLAR LIQUID CHROMATOGRAPHY
14^{45}-15^{00}	Md Ali Imam Deepanshi Vijh Asimul Islam Md. Zubbair Malik	*-Jamia Millia Islamia University, India* *-Himachal Pradesh University, India* *-Jawaharlal Nehru University, India*	NETWORK PHARMACOLOGY APPROACH REVEALS THE THERAPEUTIC MECHANISM OF ACTION OF CURCUMIN IN ALZHEIMER
15^{00}-15^{15}	M. Raj Kumar U. Rajapandiyana K.R. Jeyashri E. Enbaraj G. Logeshwari H. Manikandan	*Annamalai University, India*	DESIGN, SYNTHESIS, CHARACTERIZATION AND COMPUTATIONAL STUDIES OF (3-(3, 4-DIMETHOXYSTYRYL)-5, 5-DIMETHYLCYCLOHEX-2-ENONE
15^{15}-15^{30}	U. Rajapandiyana M. Raj Kumar E. Enbaraja K.R. Jeyashria G. Logeshwaria H. Manikandana	*Annamalai University, India*	SYNTHESIS, SPECTRAL AND THEORETICAL STUDIES OF (3-(4-(DIMETHYLAMINO)PHENYL)BUTA-1,3-DIENYL)-5,5-DIMETHYLCYCLOHEX-2-ENONE

SESSION (2)- HALL (4)

Meeting ID: 865 8387 8033
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TURKEY LOCAL TIME	13. 03.2022	Time: 12^{30}-16^{00} (Turkey Local time GMT+3)	MODERATOR: *Rina DEMJAHA*
	Authors	**Affiliation**	**Topic title**
13^{00}-13^{15}	Nakimuli Vivierna	*Vistula University, Poland*	POLITICAL LEGITIMACY
13^{15}-13^{30}	Nakimuli Vivierna	*Vistula University, Poland*	DEMOCRACY IN MODERN SOCIETY
13^{30}-13^{45}	Shahboz Shoev	*Vistula University, Poland*	POLAND-IRAN RELATIONS AFTER IRANIAN ISLAMIC REVOLUTION IN 1979
13^{45}-14^{00}	Shahboz Shoev	*Vistula University, Poland*	UN POLICY-MAKING MECHANISM: THE CASE OF THE SYRIA
14^{00}-14^{15}	Rina Demjaha	*Med School of Graz, Austria*	KOSOVO HEALTH POLICIES DURING COVID-19 PROCESS
14^{15}-14^{30}	Vugar Gahramanov	*Rovira i Virgili University, Spain*	THE EFFECTS OF COVID-19 PANDEMIC IN TOURISM INDUSTRY
14^{30}-14^{45}	Rina Demjaha	*Med School of Graz, Austria*	RARE DISEASES: A GLOBAL PERSPECTIVE
14^{45}-15^{00}	Shahboz Shoev	*Vistula University, Poland*	THE COMMON FOREIGN AND SECURITY POLICY OF EUROPEAN UNION : A HISTORICAL APPROACH
15^{00}-15^{15}	Yabana Nikolaevna	*SGH University, Poland*	US-SOVIET UNION RELATIONS DURING COLD WAR ERA
15^{15}-15^{30}	Yabana Nikolaevna	*SGH University, Poland*	THE AFGHANISTAN CRISIS AND PAKISTAN'S SECURITY DILEMMA: DURAND LINE DISPUTE
15^{30}-15^{45}	Nora Bombardej	*Warsaw Japan Tech University, Poland*	FEATURES OF INTERNATIONAL AND REGIONAL INTERACTION OF MONGOLIA
15^{45}-16^{00}	Nora Bombardej	*Warsaw Japan Tech University, Poland*	INTERNATIONAL PROVISION OF MONGOLIA

SESSION (3)- HALL (1)

Meeting ID: 865 8387 8033
Passcode: 138383

	13.03.2022	Time: 16^{00}-18^{45} (Turkey Local time GMT+3)	MODERATOR: *S. Devarajan* *V. Rajesh Kannan*
	Authors	**Affiliation**	**Topic title**
16^{00}-16^{15}	Gunel Aliyeva Gultakin Mehraliyeva	*-Baku State University, Azerbaijan* *-Azerbaijan State Oil and İndustry University, Azerbaijan*	FUNCTIONALIZATION OF NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS BASED ON C-H ACTIVATION
16^{15}-16^{30}	Elvin Ibrahimli Gunel Aliyeva Ulviyya Hasanova	*-Baku State University, Azerbaijan* *-Azerbaijan State Oil and İndustry University, Azerbaijan*	THE STUDY OF SUPRAMOLECULAR ENSEMBLES BASED ON Ni NANOPARTICLES AND NOVEL AZOMETHINES
16^{30}-16^{45}	S. Devarajan G Rajarajan V.Thanikachalam	*-Annamalai University, India*	SPECTROPHOTOMETRIC DETERMINATION OF (E)-1-PHENYL-2-((E)-3-PHENYL-ALLIYLIDENE)HYDRAZINE, SALICYLIC ACID AND NICOTINIC ACID IN AQUEOUS 1,4-DIOXAN MEDIUM
16^{45}-17^{00}	S.Ramkumar R.Rajalakshmi	*-Annamalai University, India*	SYNTHESIS AND CHARACTERIZATION OF SYMMETRICAL AZINES AND DFT STUDIES
17^{00}-17^{15}	Viraj Patil	*EY-GDS, India*	SMART SYSTEM AUTHENTICATION USING QR CODE
17^{15}-17^{30}	V. Rajesh Kannan A. Charles	*-Annamalai University, India*	A STUDY OF MOBILE AD HOC NETWORK
17^{30}-17^{45}	Sara Oumenoune Tebbi Nadjet Debbache-Benaida	*-Applied Biochemistry Laboratory, Algeria* *-Université Abderrahmane Mira de Bejaia, Algeria*	ETHNOPHARMACOLOGY POTENTIAL OF SOME PLANT'S EXTRACTS USED IN NORTH AFRICA
18^{00}-18^{15}	Doukari Amine Baouz Touffik Djerrad Nour El Houda	*University of Bejaia, Algeria*	THERMAL AND MECHANICAL PROPERTIES OF POLYAMIDE66 (PA¬¬66) MODIFIED WITH HIGH IMPACT POLYSTYRENE (HIPS) RECYCLED FROM WASTE ELECTRIC AND ELECTRONIC EQUIPMENT
18^{15}-18^{30}	Nour El Houda Djerrad Touffik Baouz Amine Doukari	*University of Bejaia, Algeria*	THERMOMECHANICAL AND MORPHOLOGICAL INVESTIGATION OF POLYOXYMETHYLENE/HIGH IMPACT POLYSTYRENE (POM/HIPS) PREPARED USING HIPS RECYCLED FROM WASTE ELECTRIC AND ELECTRONIC EQUIPMENT
18^{30}-18^{45}	Kamal Salayev	*Azerbaijan National Academy of Sciences, Azerbaijan*	TARİHSEL GERÇEK: ERMENİSTAN'IN AZERBAYCAN HALKINA KARŞI GERÇEKLEŞTİRDİĞİ 1918'İN MART SOYKIRIMI

SESSION (3)- HALL (2)

Meeting ID: 865 8387 8033
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	13.03.2022	Time: 15^{30}-18^{15} (Turkey Local time GMT+3)	MODERATOR: *John DAVID*
	Authors	**Affiliation**	**Topic title**
15^{30}-15^{45}	John DAVID	*University of Vistula, Poland*	EXAMINING OF CHINA AS A GLOBAL ACTOR IN THE PERSPECTIVE OF GLOBALIZATION THEORY OF "FLAT WORLD" OF THOMAS FRIEDMAN
15^{45}-16^{00}	John DAVID	*University of Vistula, Poland*	HUNGARY'S PLACE IN THE COLD WAR AND THE HUNGARIAN REVOLUTION
16^{00}-16^{15}	Laura WILLANISKA	*Warsaw University, Poland*	USA IMMIGRATION LAW POLICIES: EXAMPLE OF MEXICO
16^{15}-16^{30}	Ebru JILTA	*Financial Institutions Development, Kosovo*	OTTOMAN / TURKISH IMAGE IN KOSOVO: THE EXAMPLE OF HISTORY TEXTBOOKS
16^{30}-16^{45}	Taleh ABBASLI	*Vilnius University, Lithuania*	FAKE FUTURE: INTERNATIONAL EXPERIENCE OF (NON) REGULATION OF DEEPFAKES
16^{45}-17^{00}	Laura WILLANISKA	*Warsaw University, Poland*	EXAMINING THE IMPACT OF THE ROLE OF THE NETHERLANDS WITHIN THE EU AND THE UN ON ITS ATTITUDE AS A REGIONAL POWER DURING THE DARFUR CRISIS
17^{00}-17^{15}	Abdullah Faeq ABDULLAH	*University of Vistula, Poland*	CLIMATE CHANGE IN ANTARCTICA
17^{15}-17^{30}	Abdullah Faeq ABDULLAH	*University of Vistula, Poland*	HUMAN RIGHTS VIOLATIONS COMMITTED BY CHINA AGAINST EAST TURKESTAN
17^{30}-17^{45}	Abdullah Faeq ABDULLAH	*University of Vistula, Poland*	ARAB SPRING EFFECTS ON CENTRAL EUROPEAN COUNTRIES
17^{45}-18^{00}	Shahboz SHOEV	*University of Vistula, Poland*	GENDER INEQUALITY IN GLOBAL POLITICS
18^{00}-18^{15}	Shahboz SHOEV	*University of Vistula, Poland*	WOMEN POLITICAL PARTICIPATION IN SOCIETY: EXAMPLE OF RUSSIA

SESSION (3)- HALL (3)

Meeting ID: 865 8387 8033
Passcode: 138383

	13.03.2022	Time: 15^{30}-18^{30} (Turkey Local time GMT+3)	MODERATOR: *Gabriela KIMULIKI*
	Authors	**Affiliation**	**Topic title**
15^{30}-15^{45}	Emmilly POOLE	*Warsaw State University, Poland*	CHINA'S SILK ROAD POLICY IN THE FIRST 10 YEARS AFTER THE COLD WAR
15^{45}-16^{00}	Gabriela KIMULIKI	*Vistula University, Poland*	THE TRANSFORMATION OF NATO
16^{00}-16^{15}	Emmilly POOLE	*Warsaw State University, Poland*	THE EFFECT OF THE TAJIKISTAN CIVIL WAR ON THE TAGILI OZBEK RELATIONS ON THE GREAT CENTRAL ASIAN AXIS
16^{15}-16^{30}	Nora Bombarjed	*Warsaw Japan Tech University, Poland*	WOMEN'S STRUGGLE FOR POLITICAL RIGHTS IN THE WORLD AND IN 19 TH CENTURY
16^{30}-16^{45}	Emmilly POOLE	*Warsaw State University, Poland*	US EDUCATION POLICY IN CENTRAL ASIA
16^{45}-17^{00}	Nora Bombarjed	*Warsaw Japan Tech University, Poland*	HUMAN RIGHTS ON THE 20 TH CENTURY
17^{00}-17^{15}	Gabriela KIMULIKI	*Vistula University, Poland*	THE REFLECTIONS OF TERRORISM TO THE WORLD AND THE PLACE OF ASALA IN THIS EQUATION
17^{15}-17^{30}	Nora Bombarjed	*Warsaw Japan Tech University, Poland*	GENDER INEQUALITY IN HISTORICAL PERSPECTIVE
17^{30}-17^{45}	Nora Bombarjed	*Warsaw Japan Tech University, Poland*	GENDER AND POLITICAL PARTICIPATION IN 19 TH CENTURY
17^{45}-18^{00}	Nora Bombarjed	*Warsaw Japan Tech University, Poland*	FEMINIST PERSPECTIVE ON POLITICAL HISTORY
18^{00}-18^{15}	Daniel KRZYSZTOF	*SGH University, Poland*	THE EVOLUTION OF THE CENTRAL ASIAN SECURITY COMPLEX
18^{15}-18^{30}	Daniel KRZYSZTOF	*SGH University, Poland*	HISTORICAL EVOLUTION OF ASIA'S SECURITY COMPLEX

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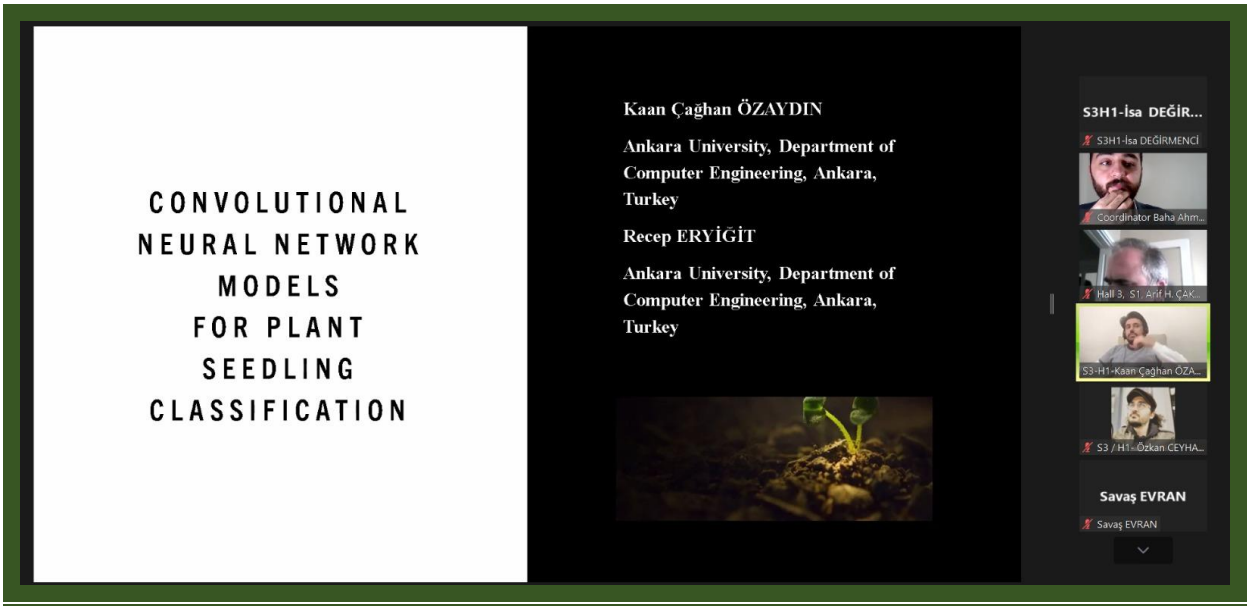

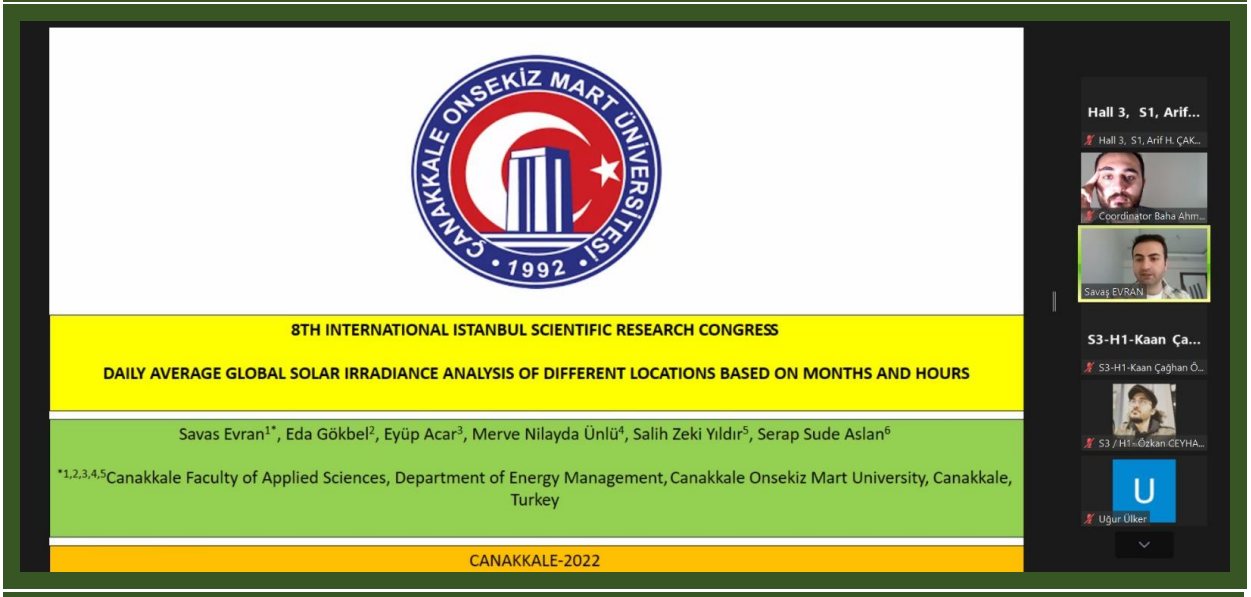

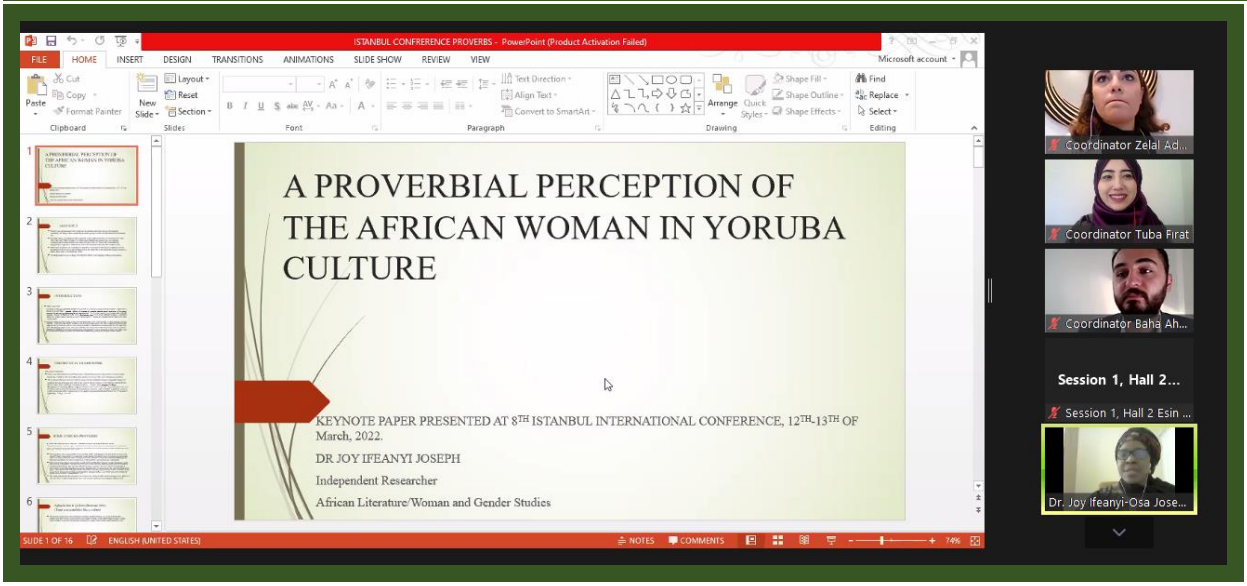

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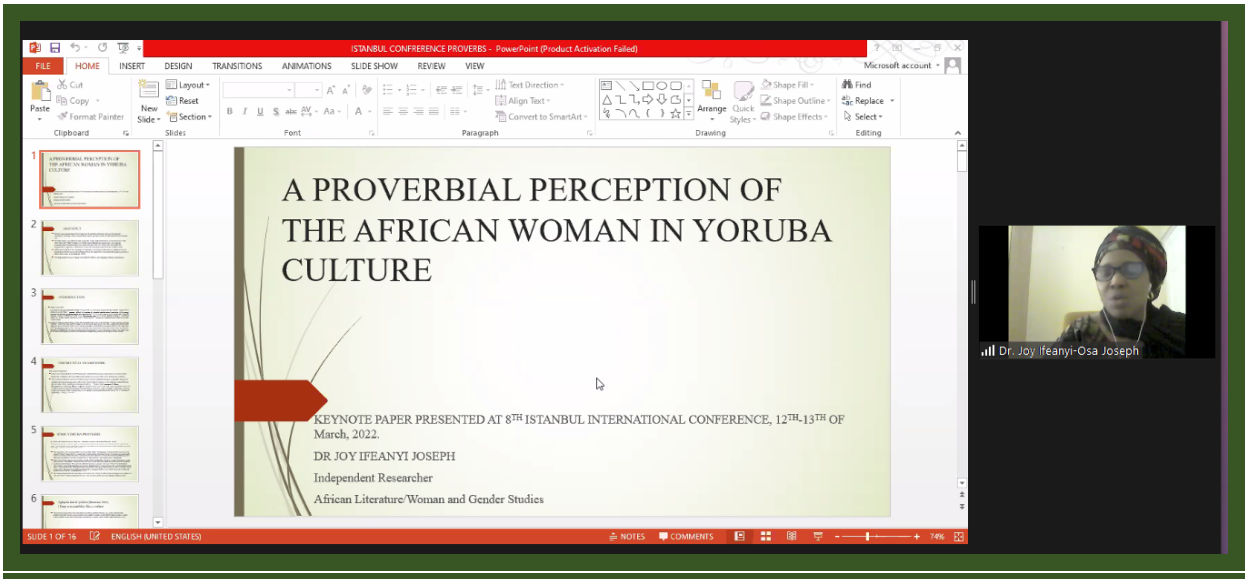

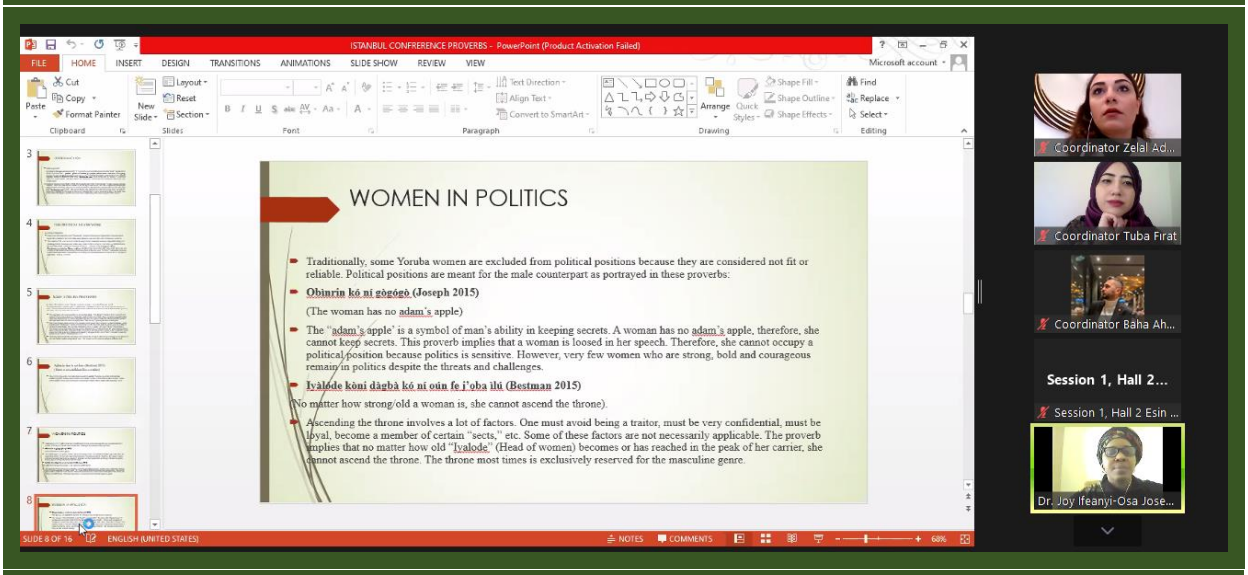

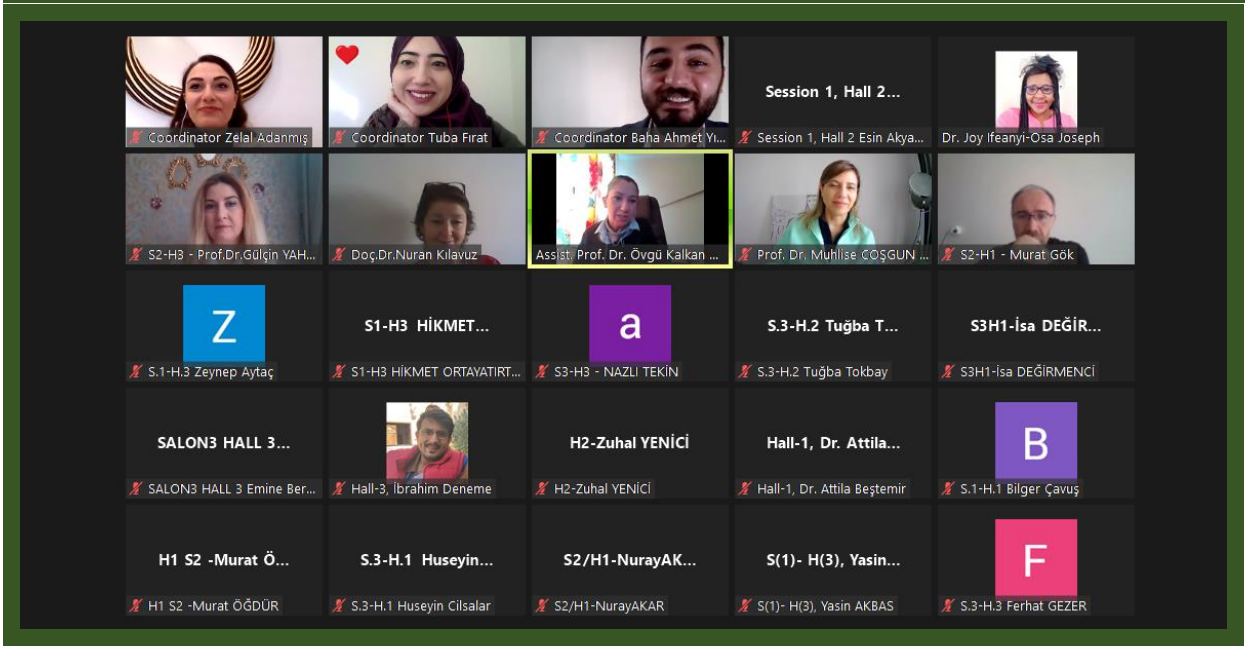

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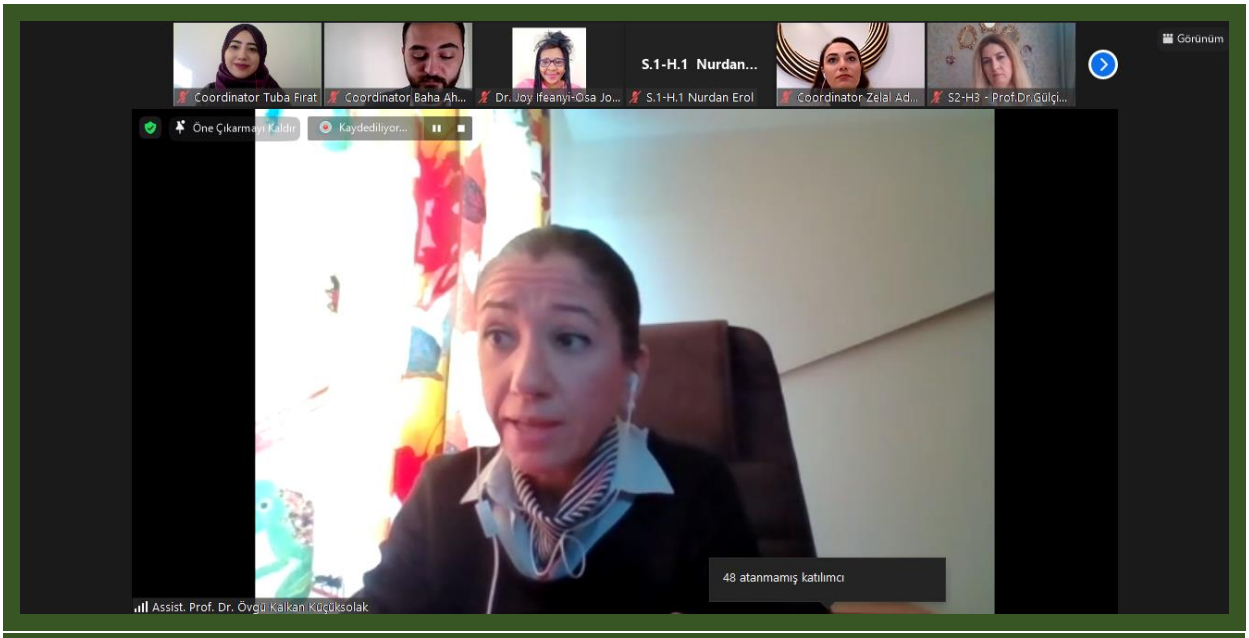

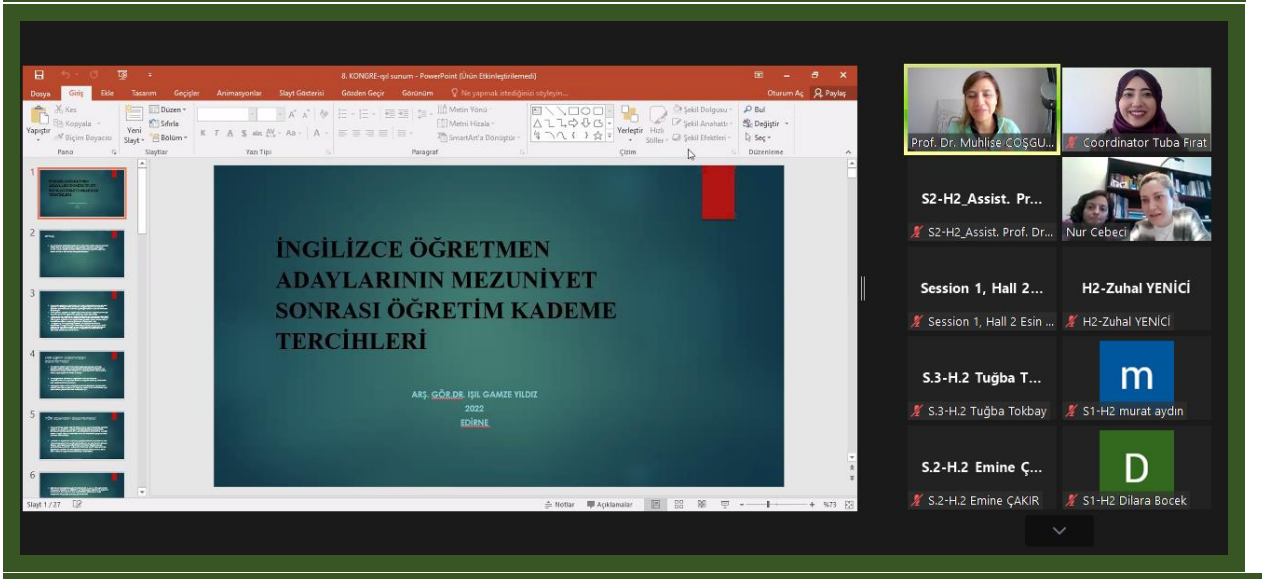

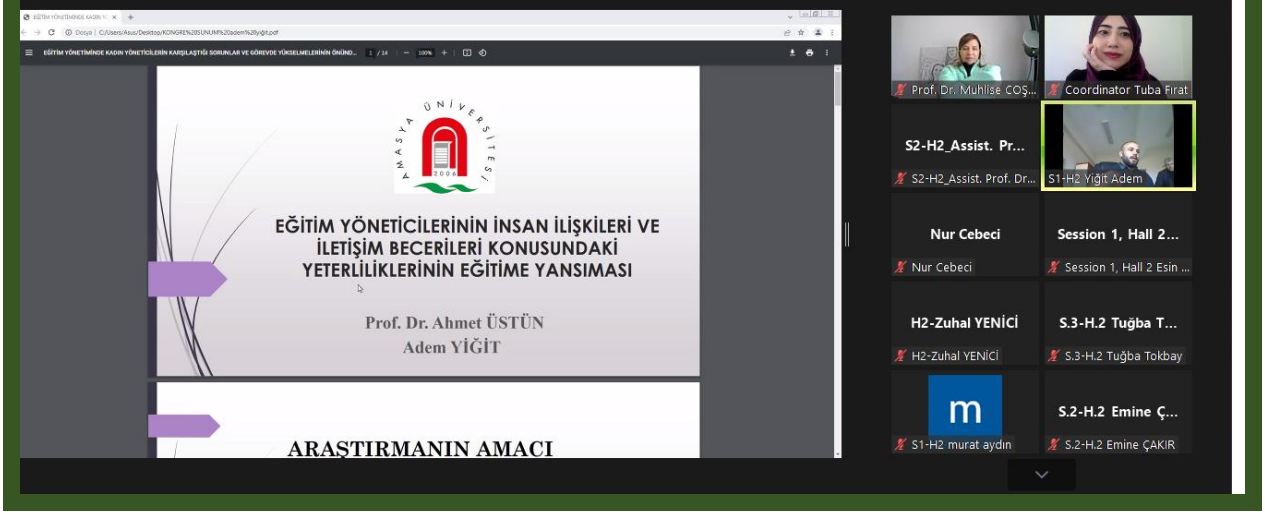

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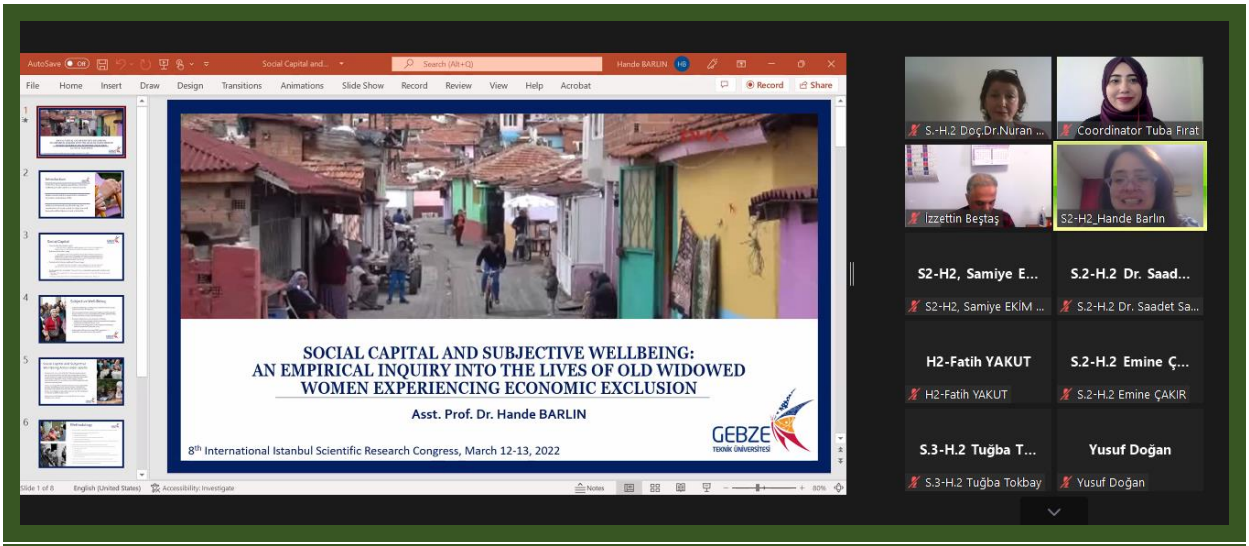

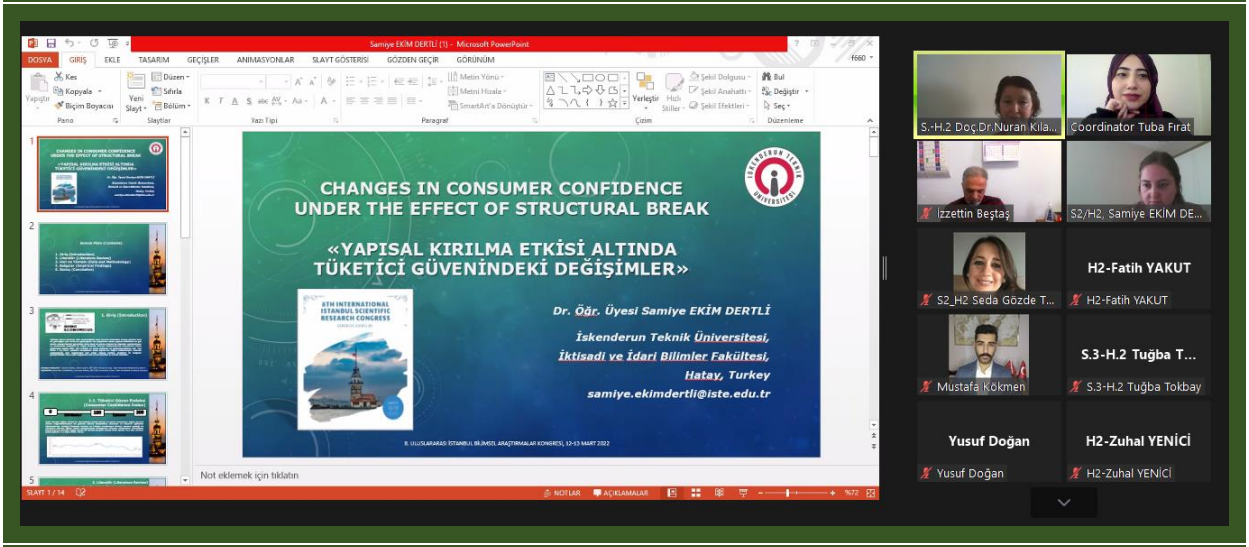

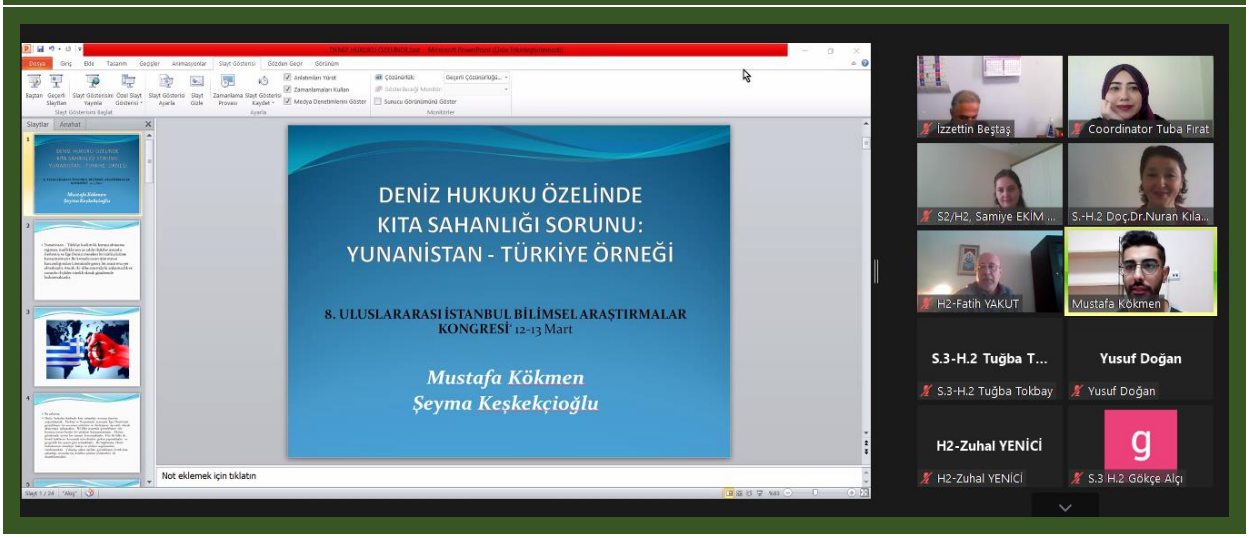

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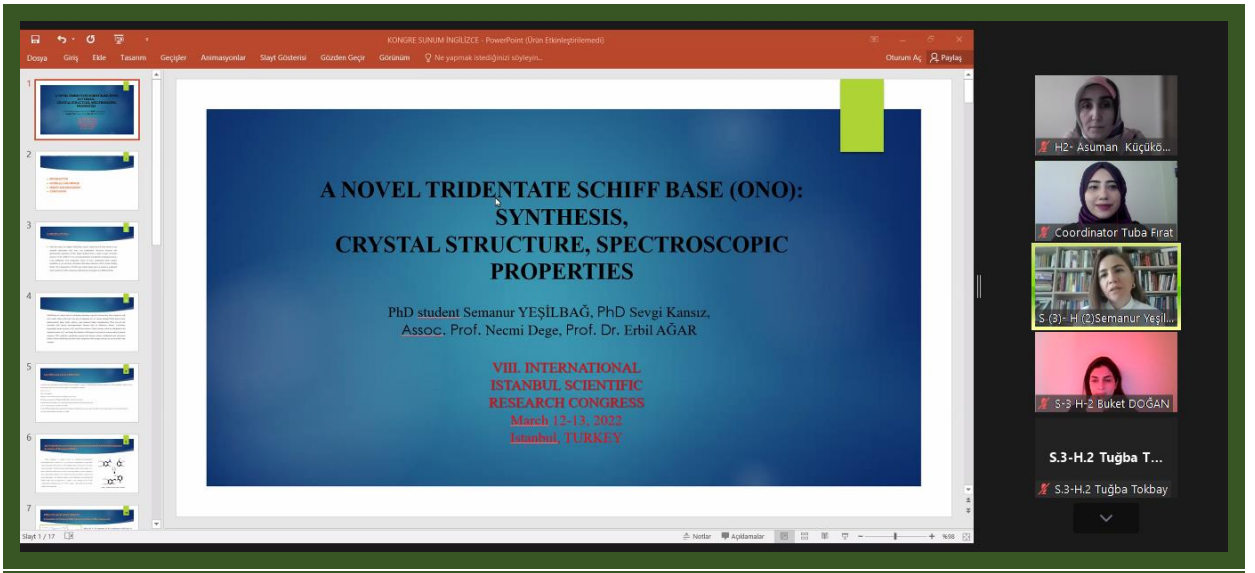

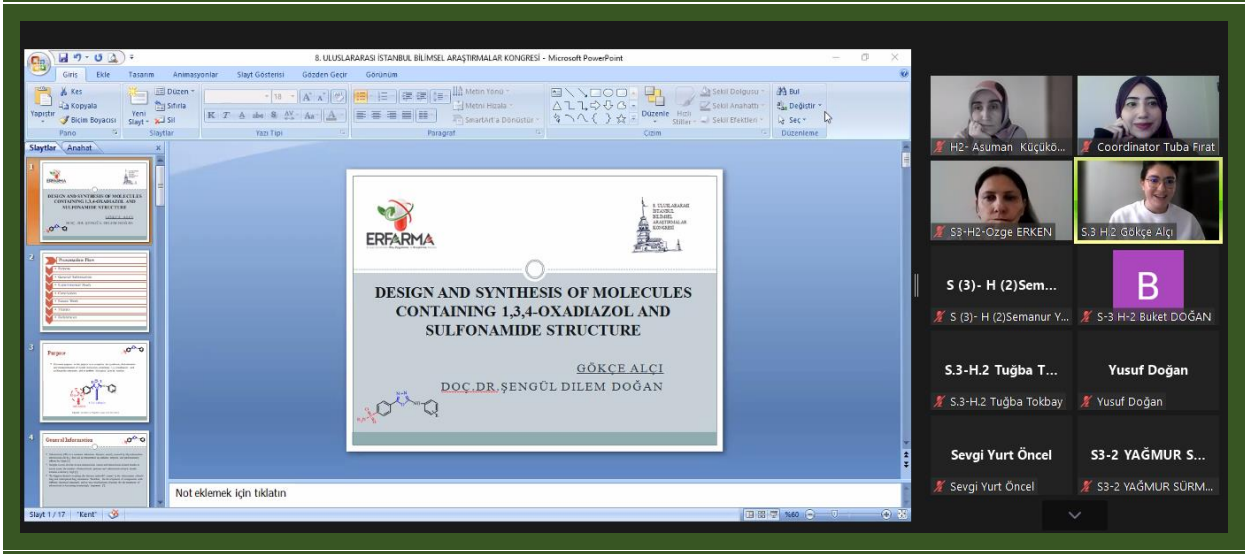

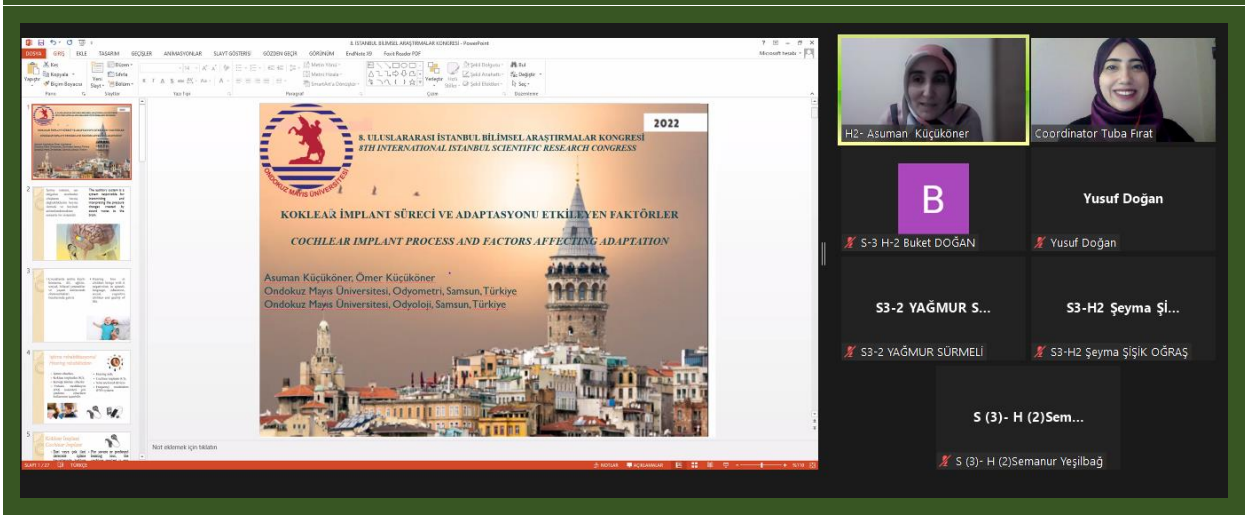

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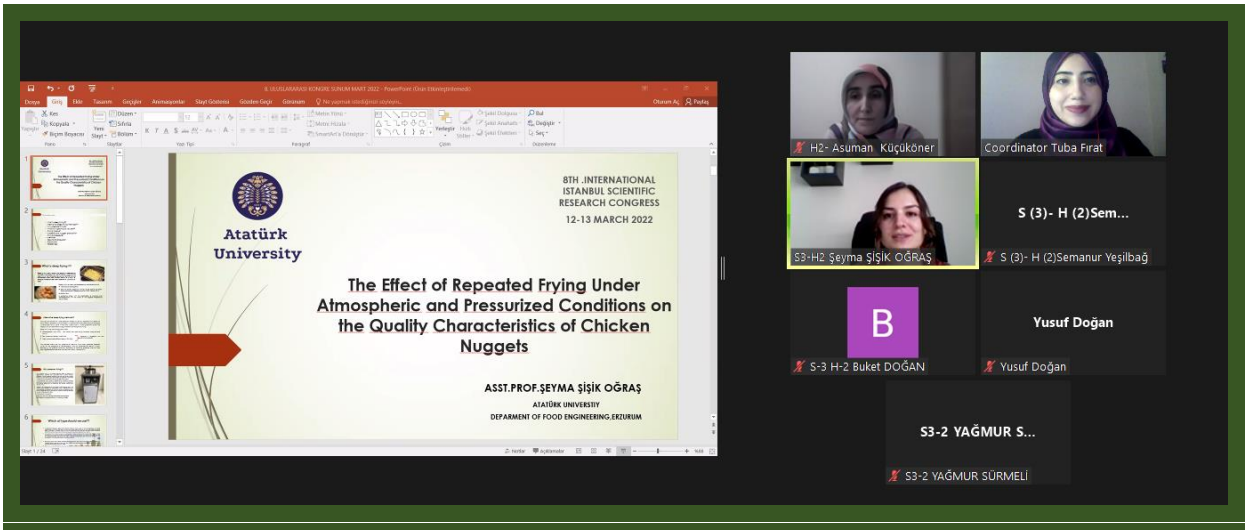

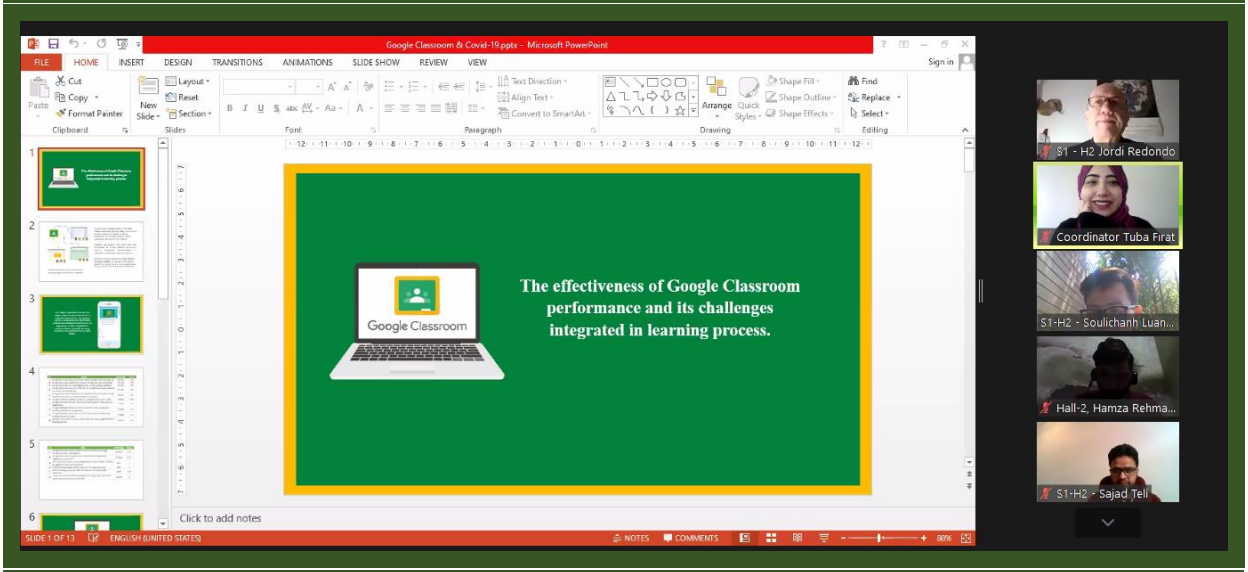

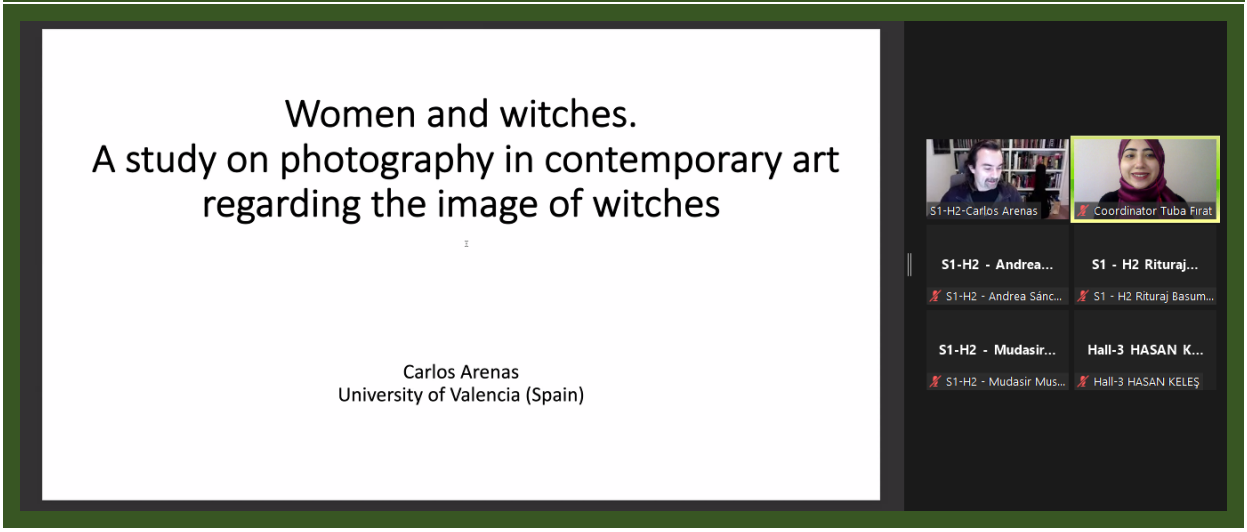

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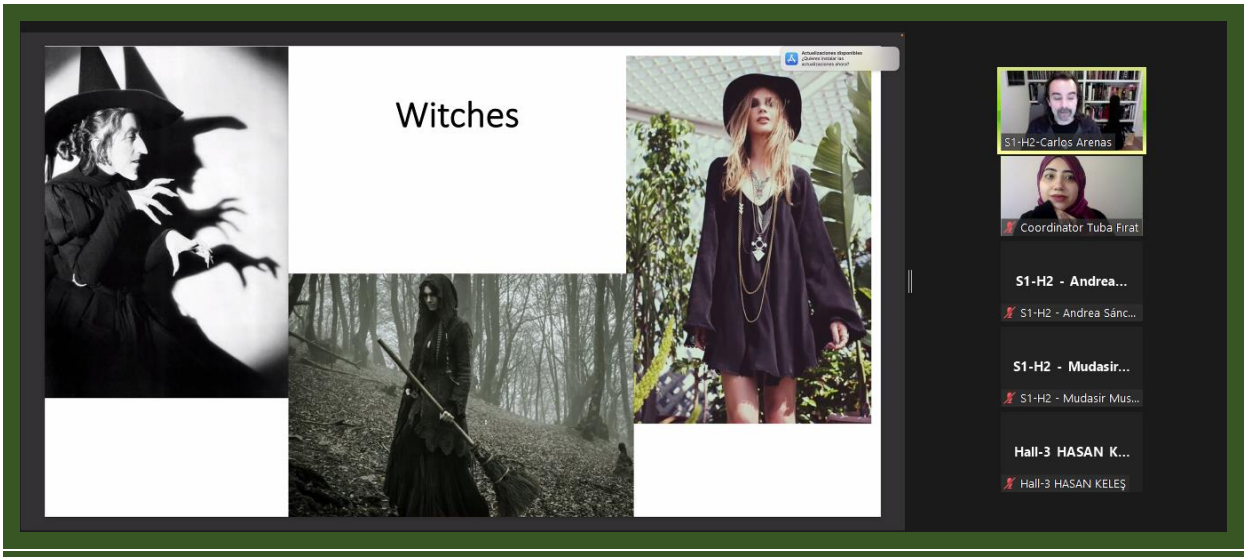

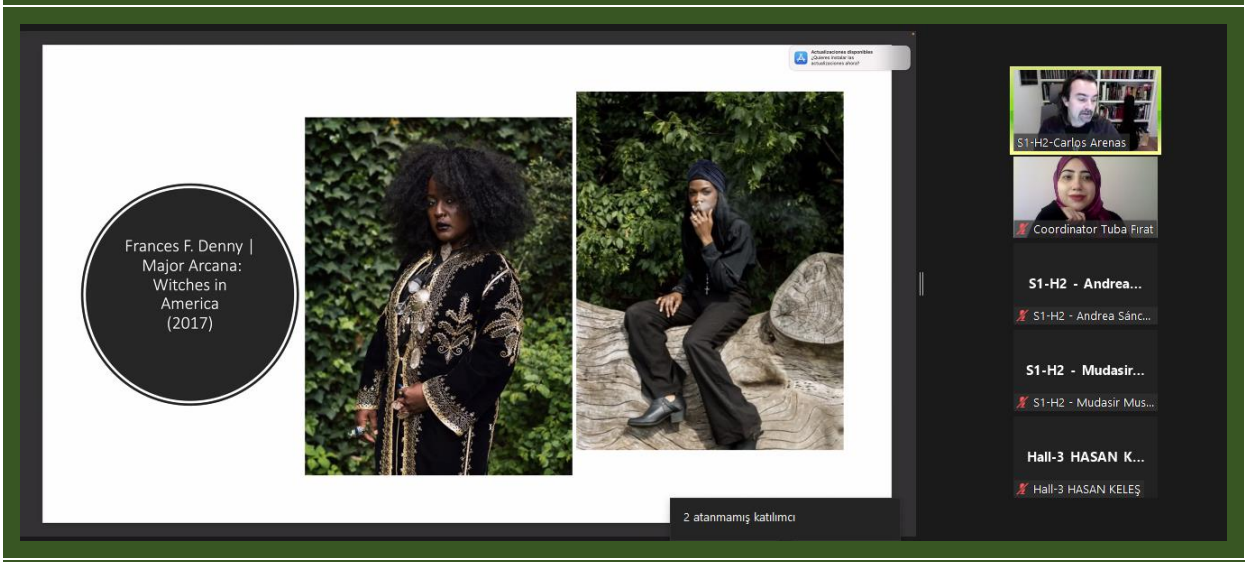

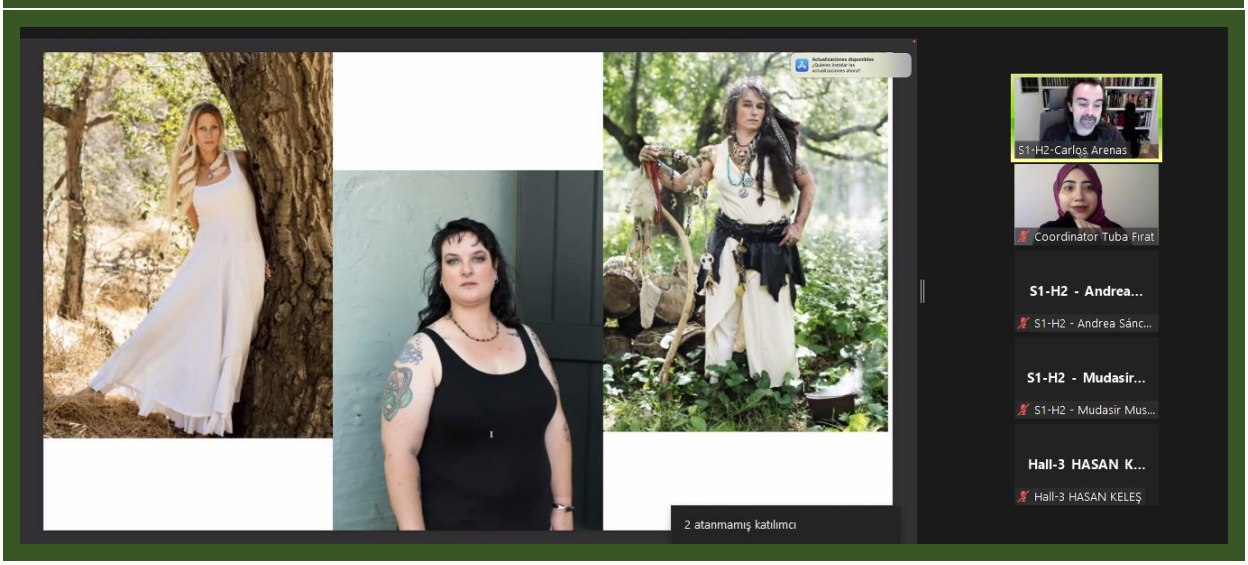

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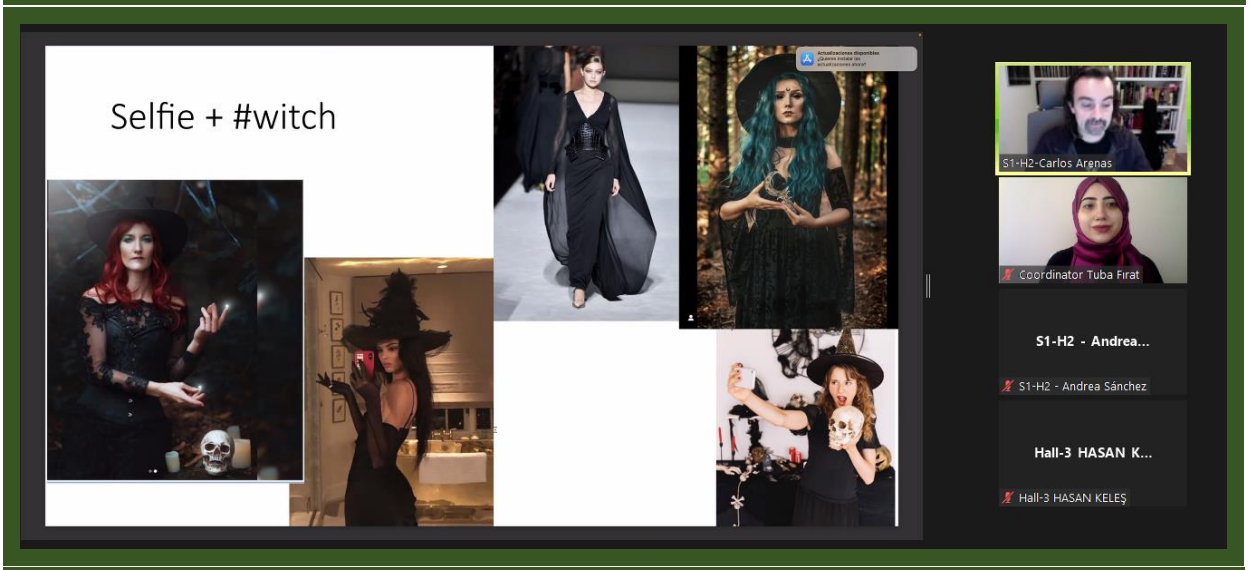

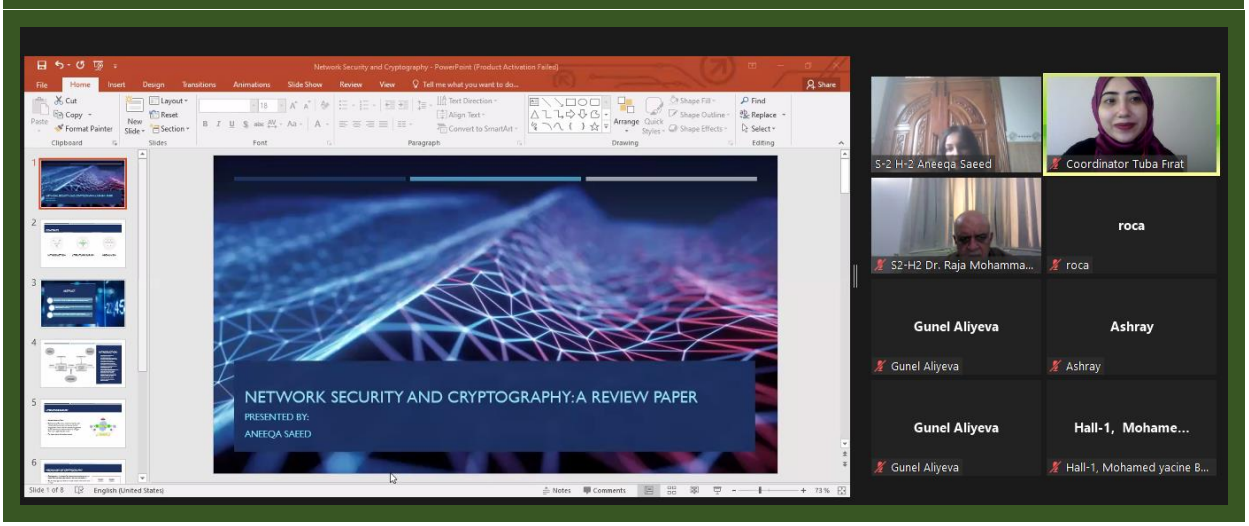

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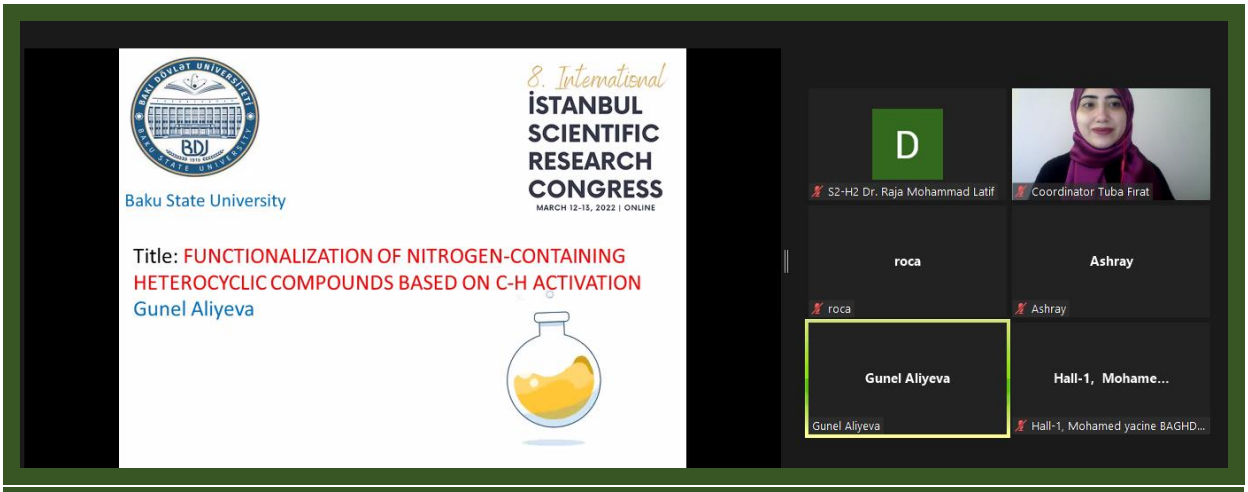

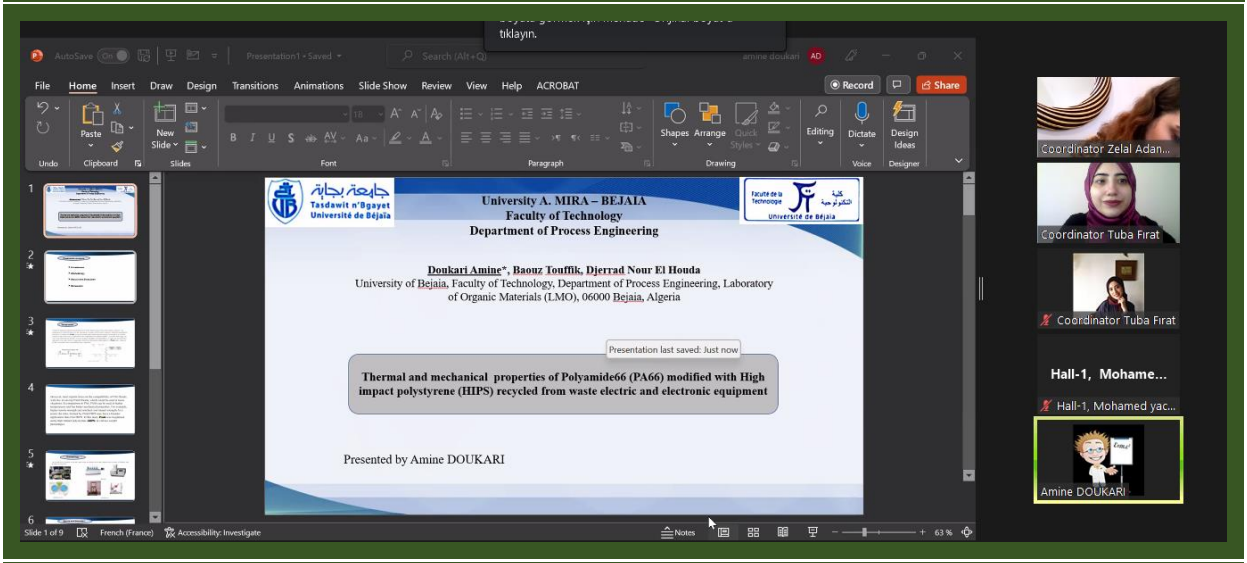

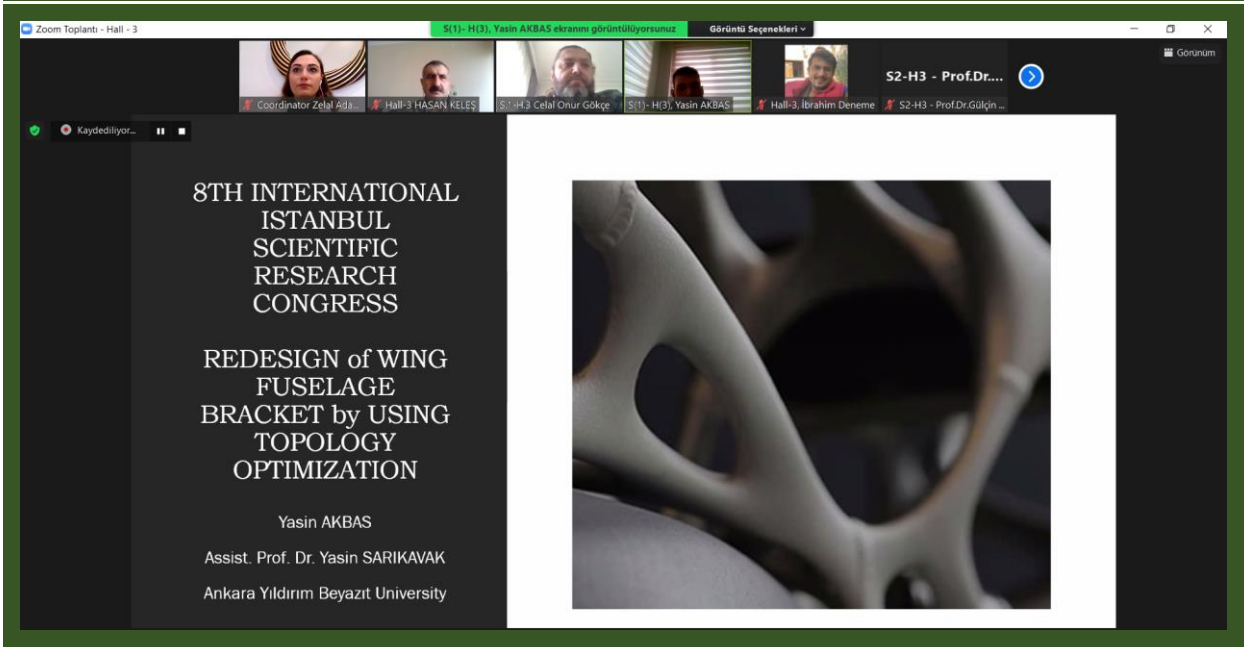

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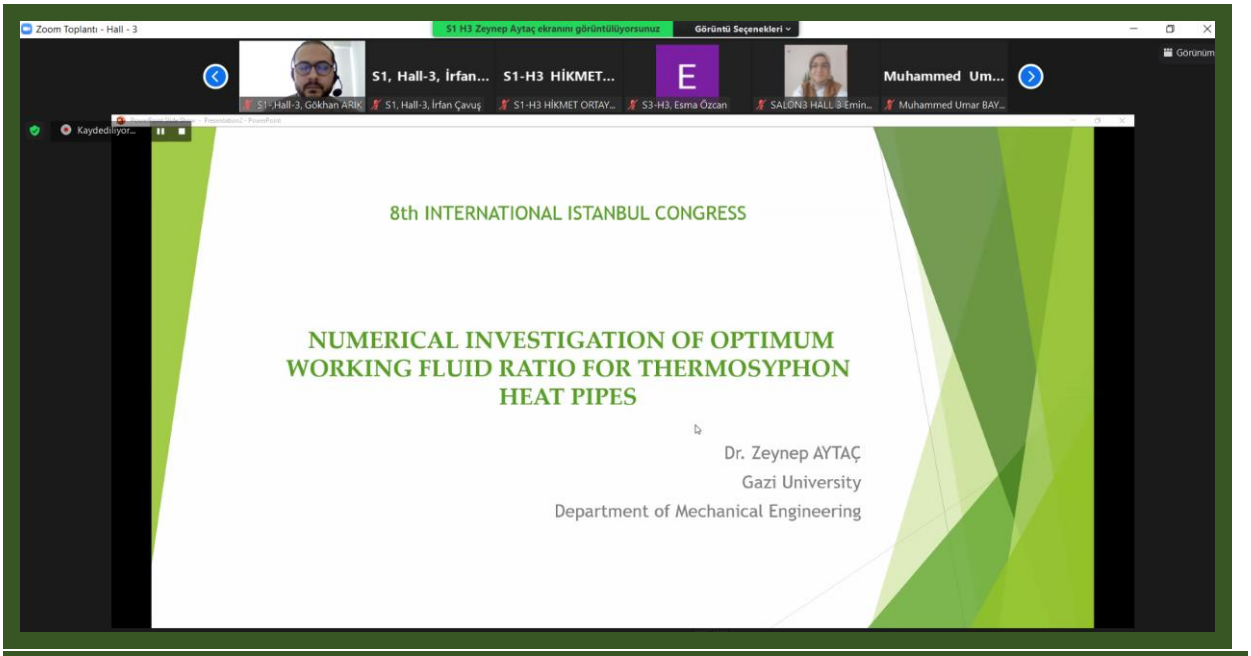

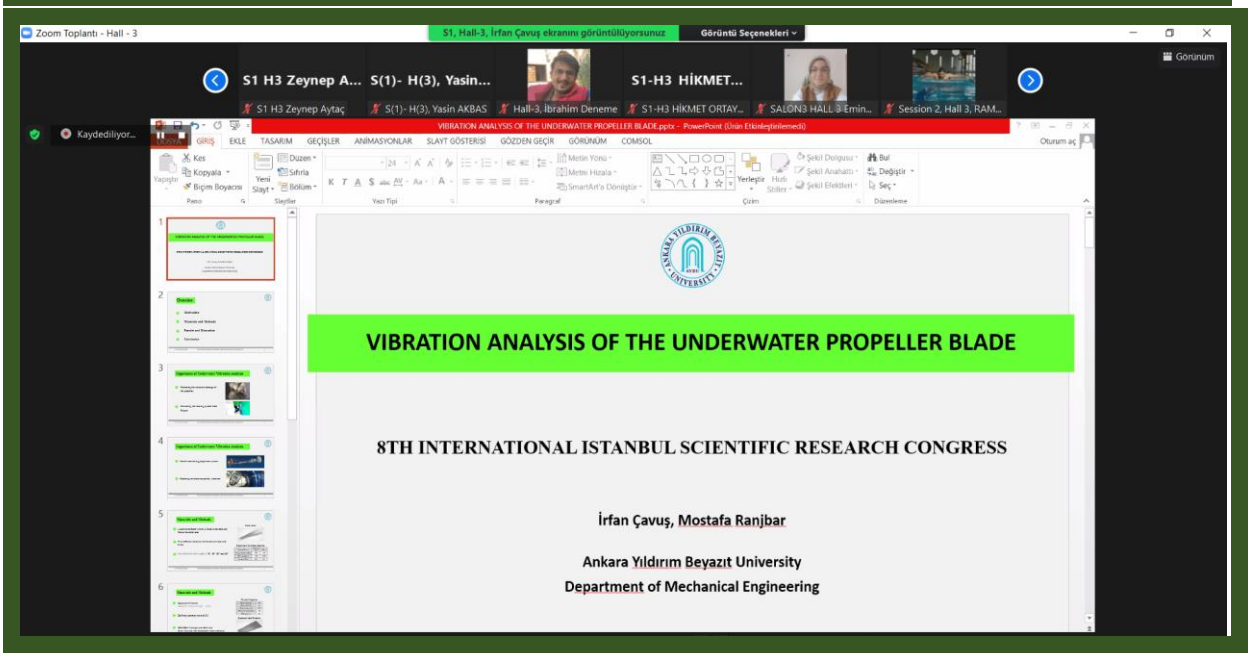

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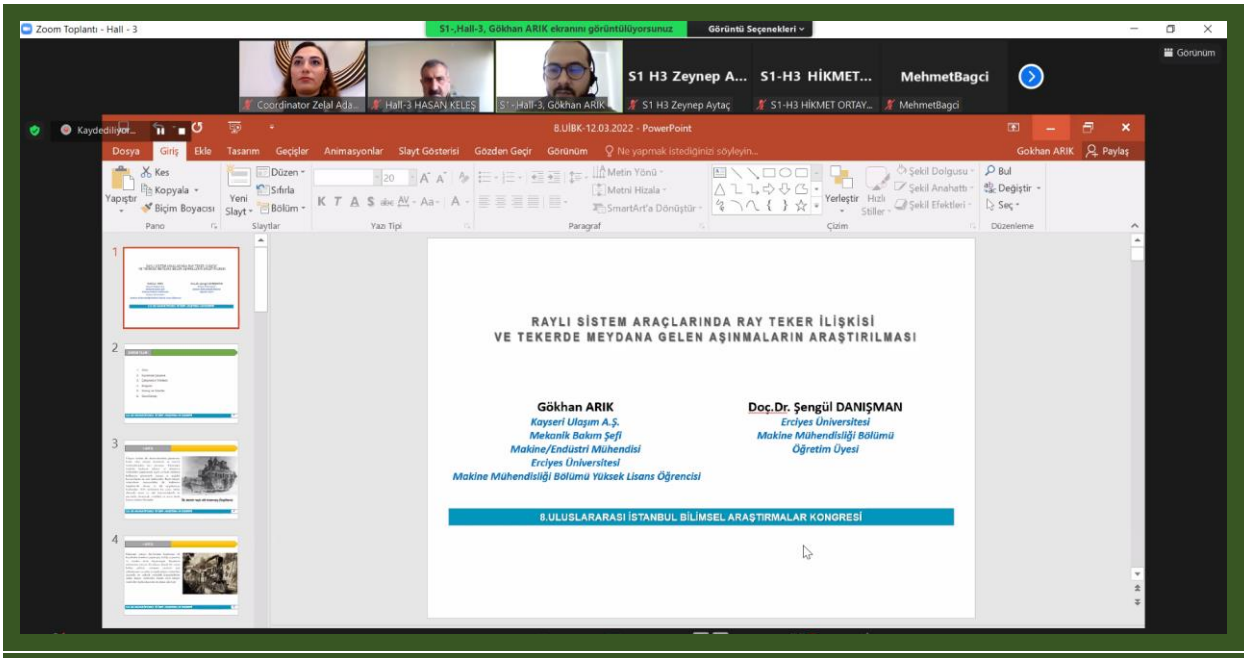

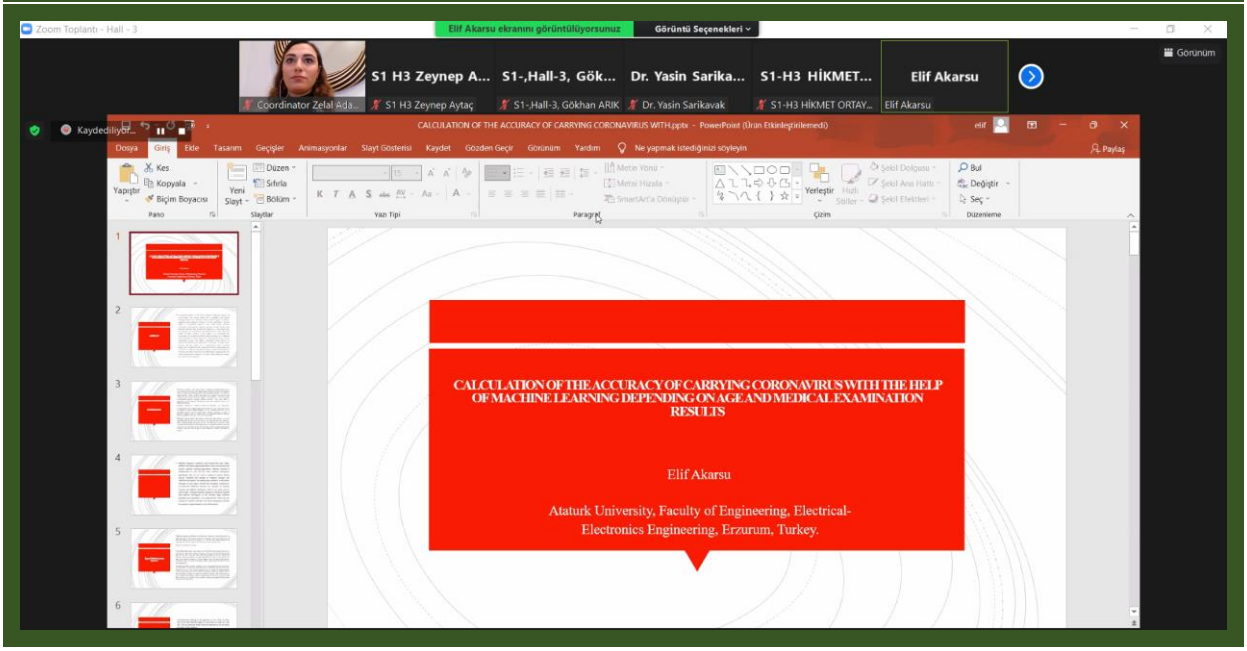

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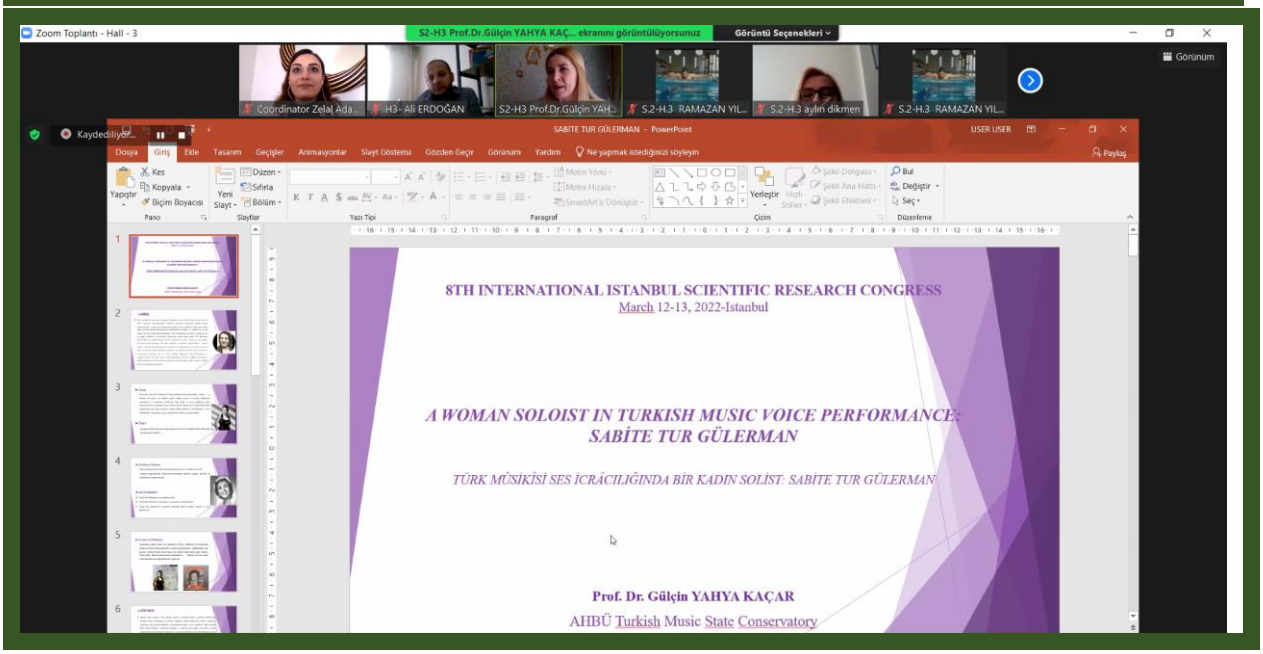

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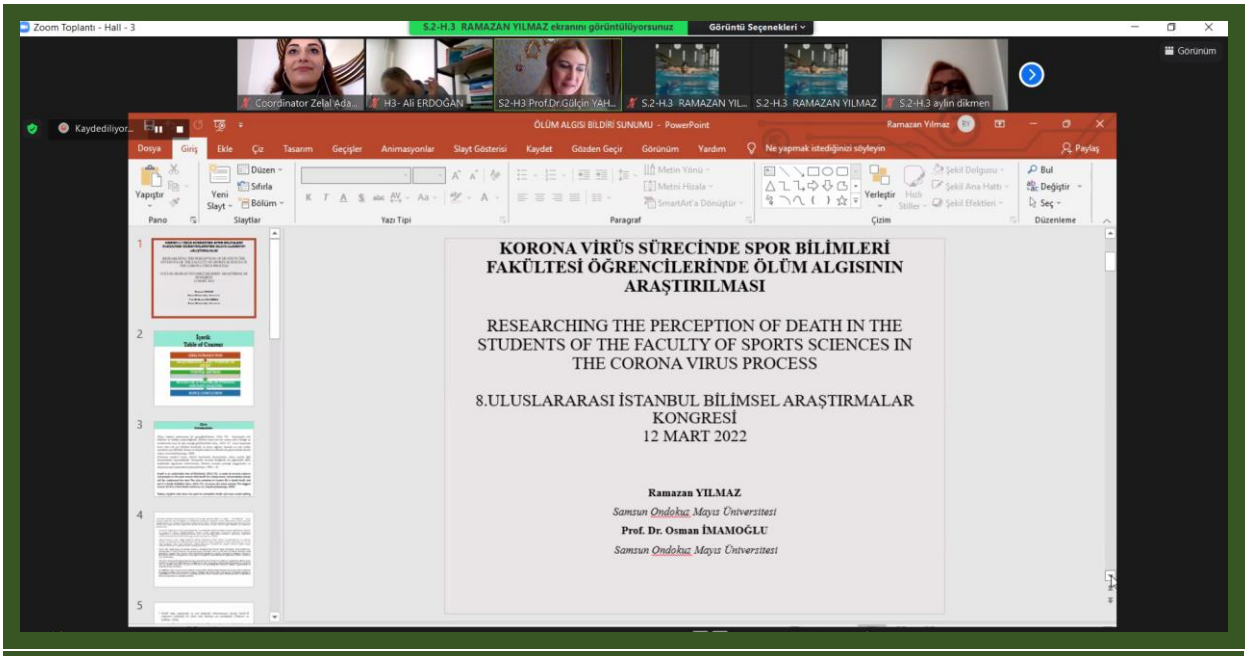

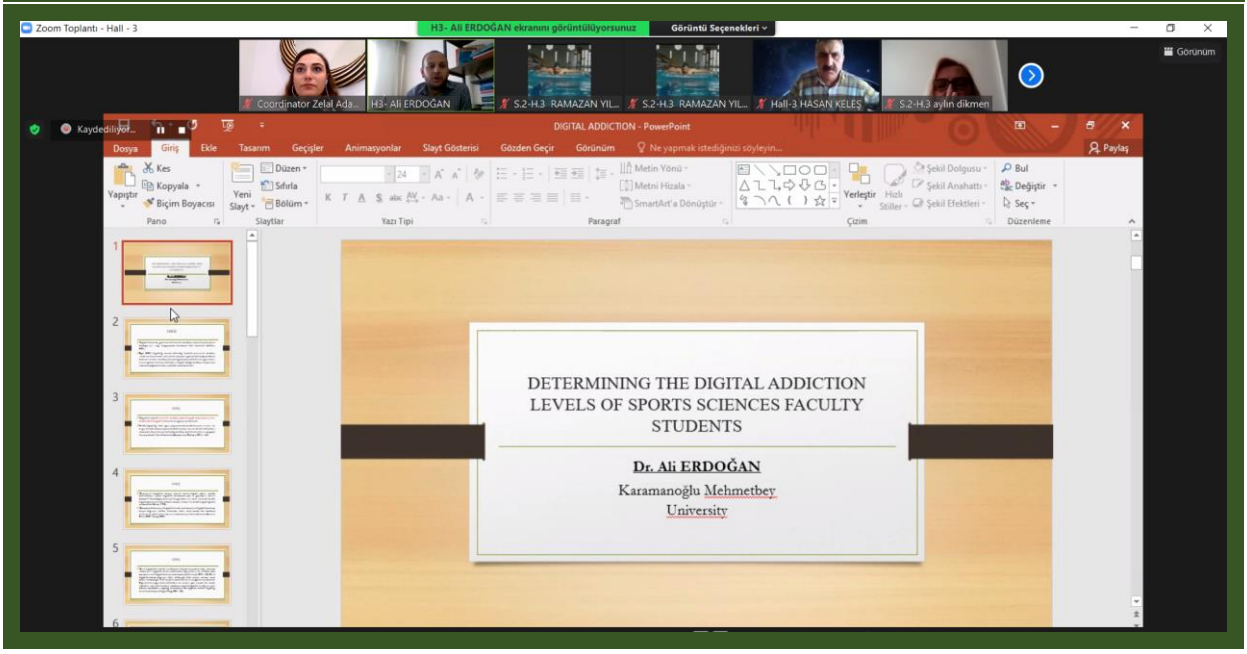

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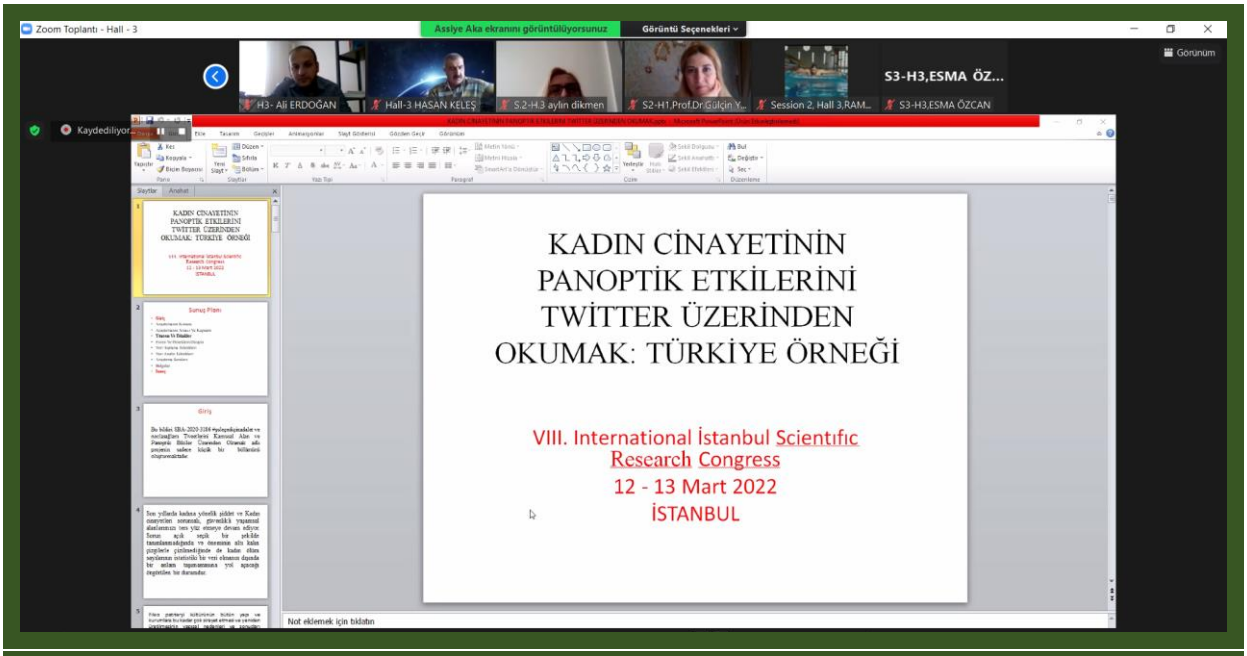

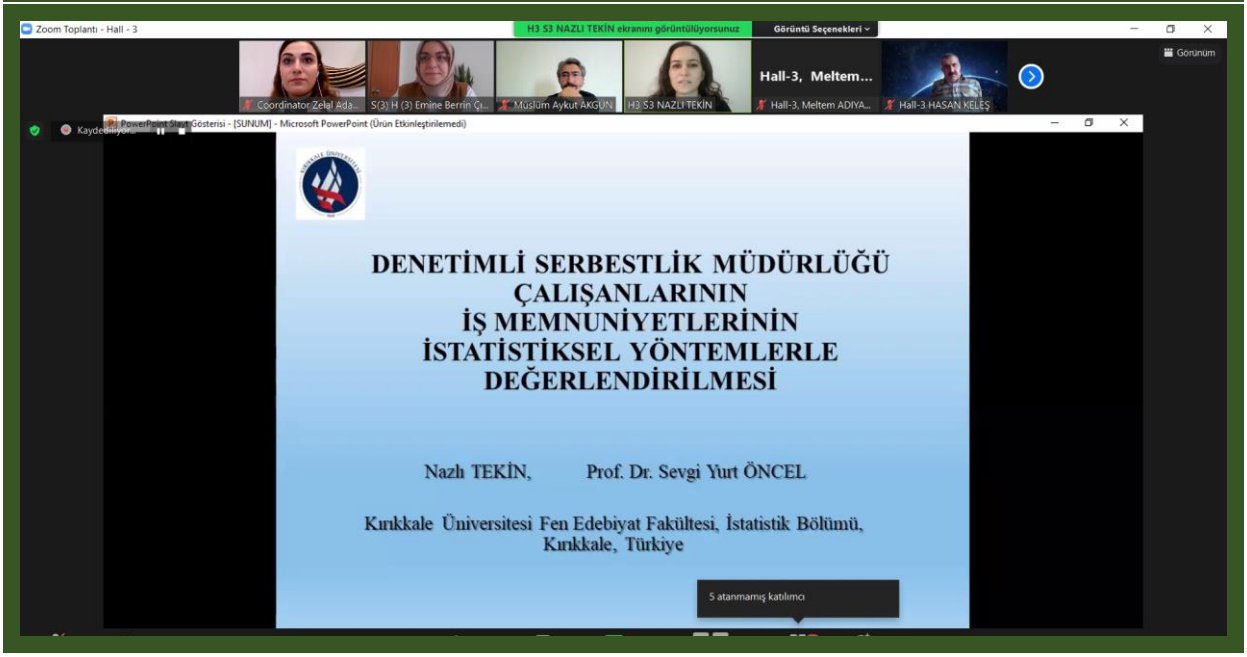

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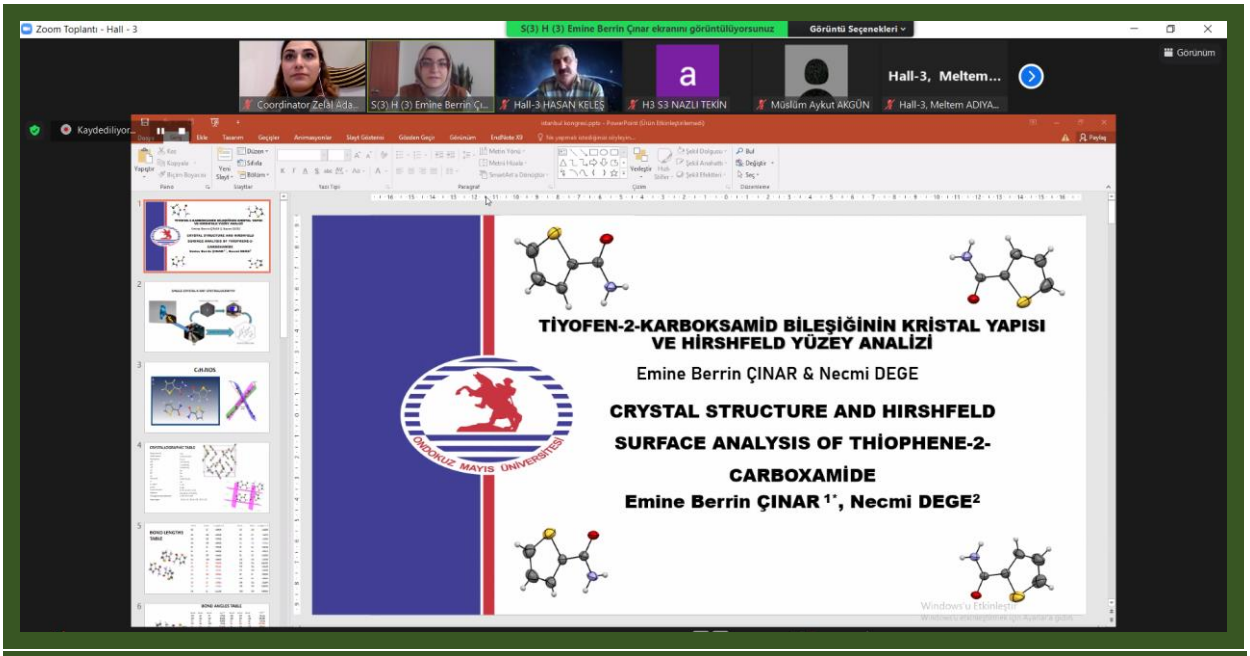

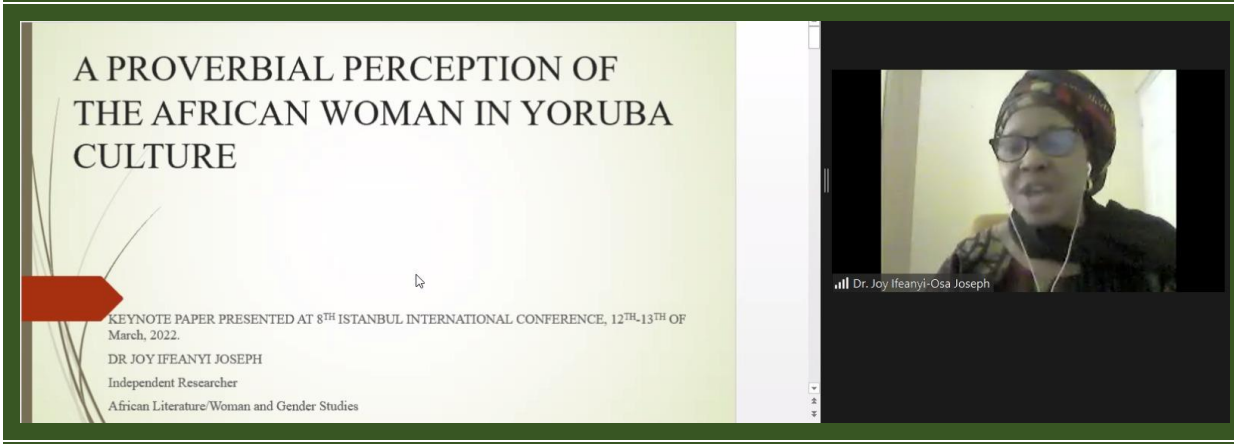

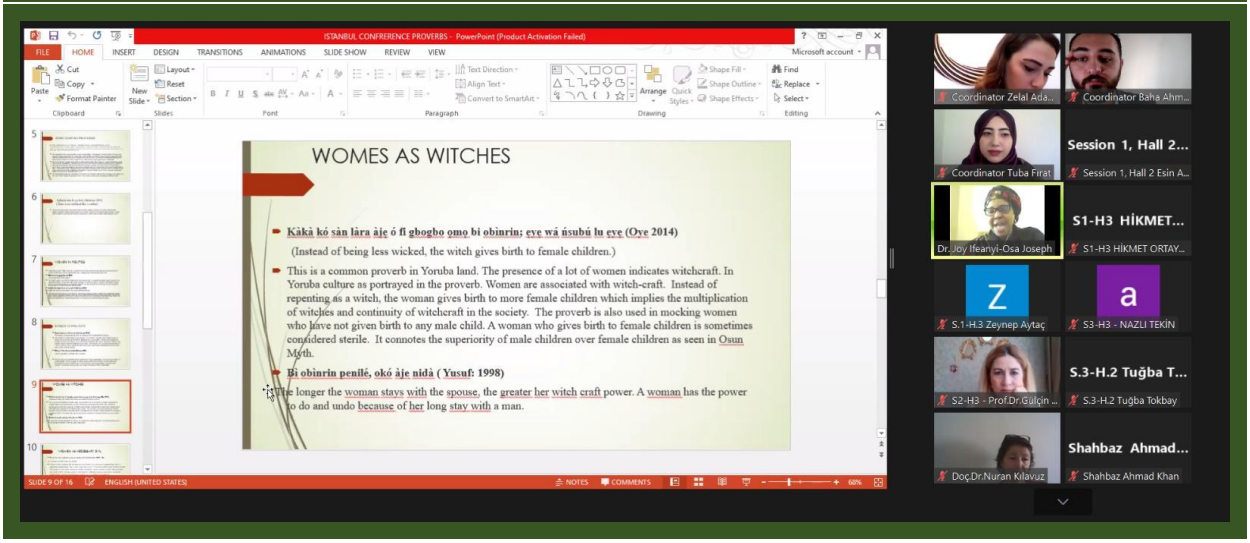

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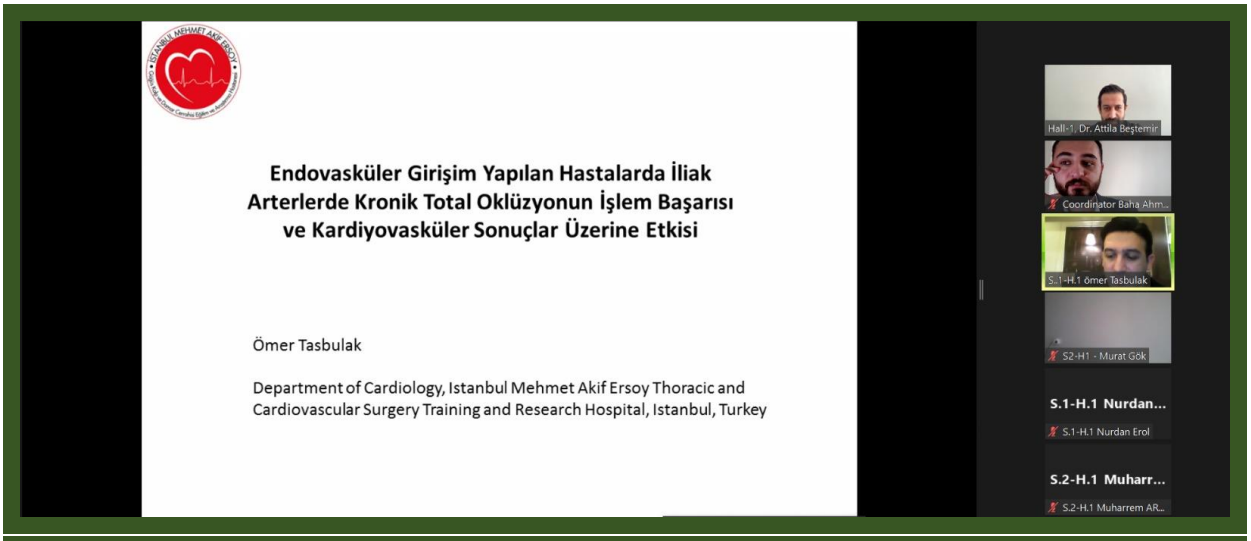



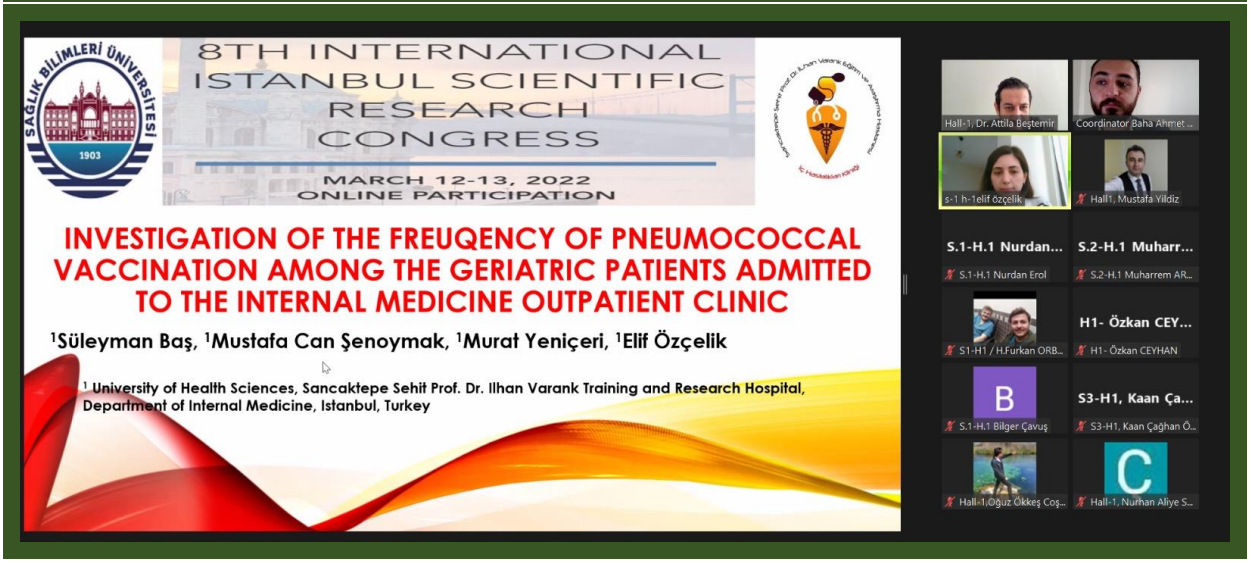

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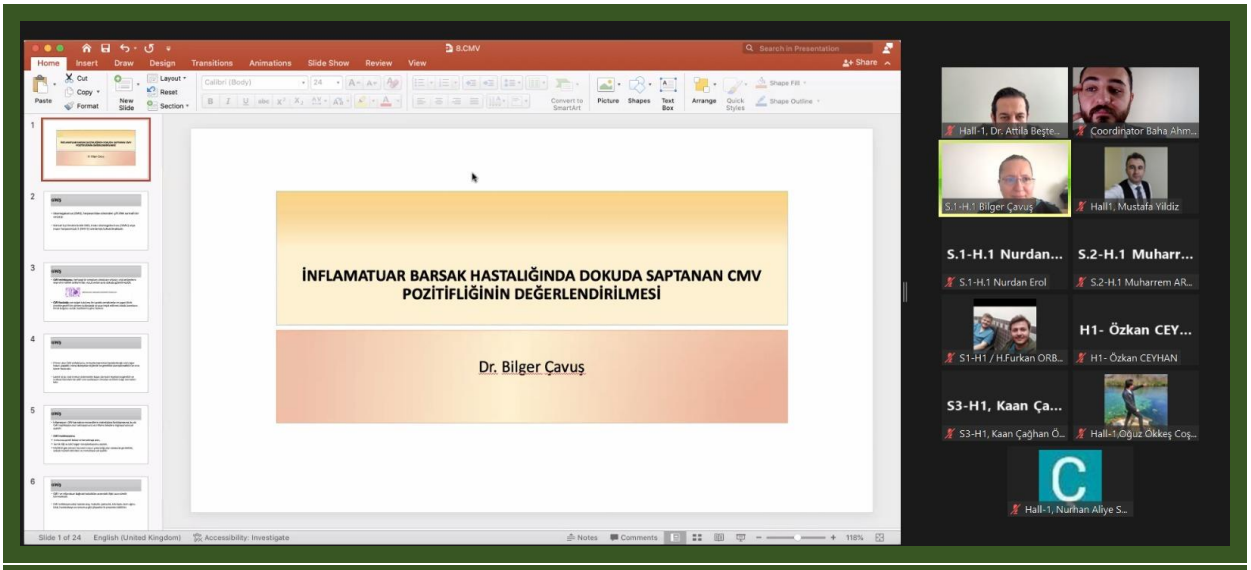

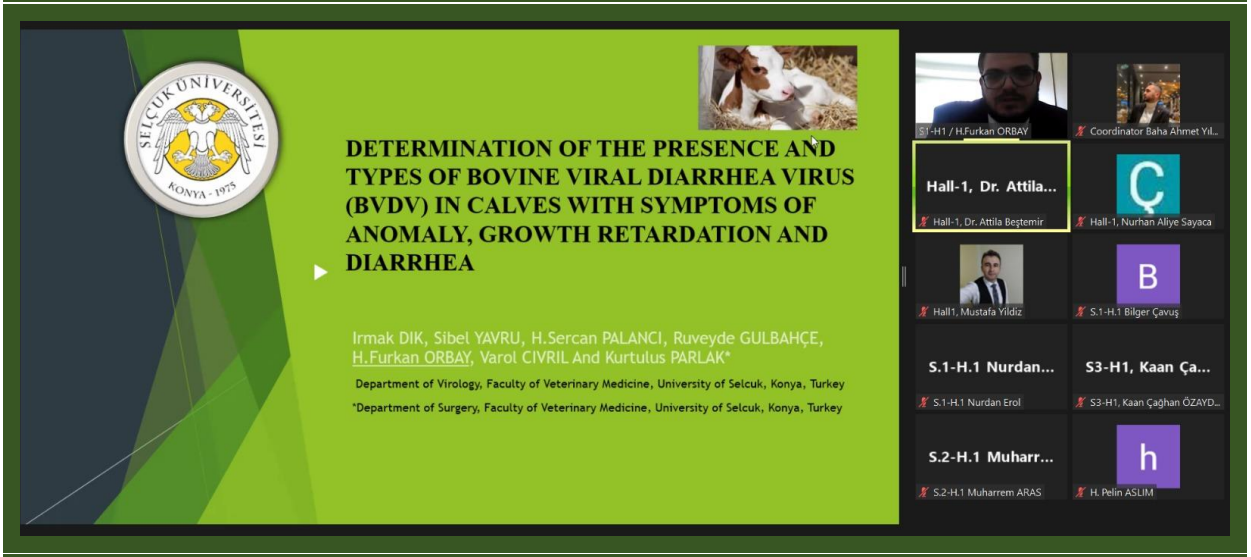

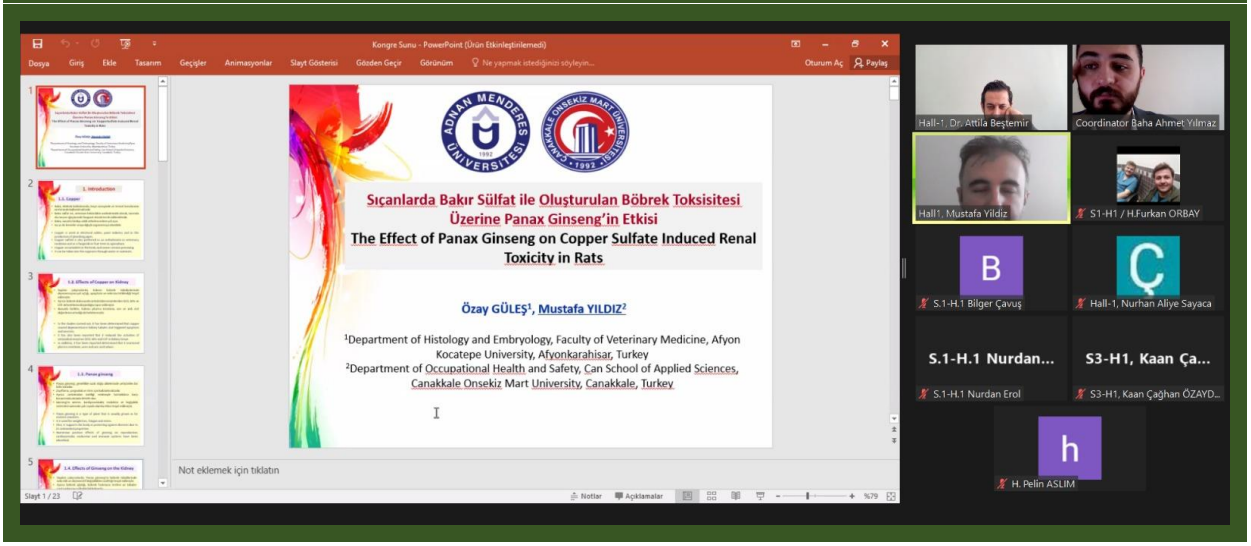

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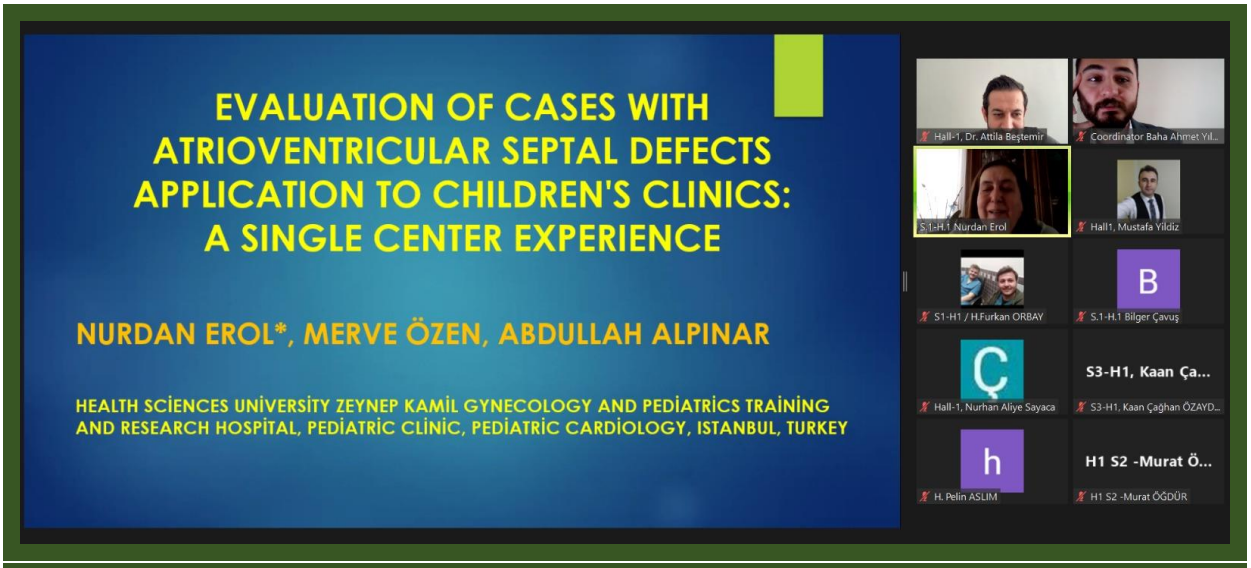

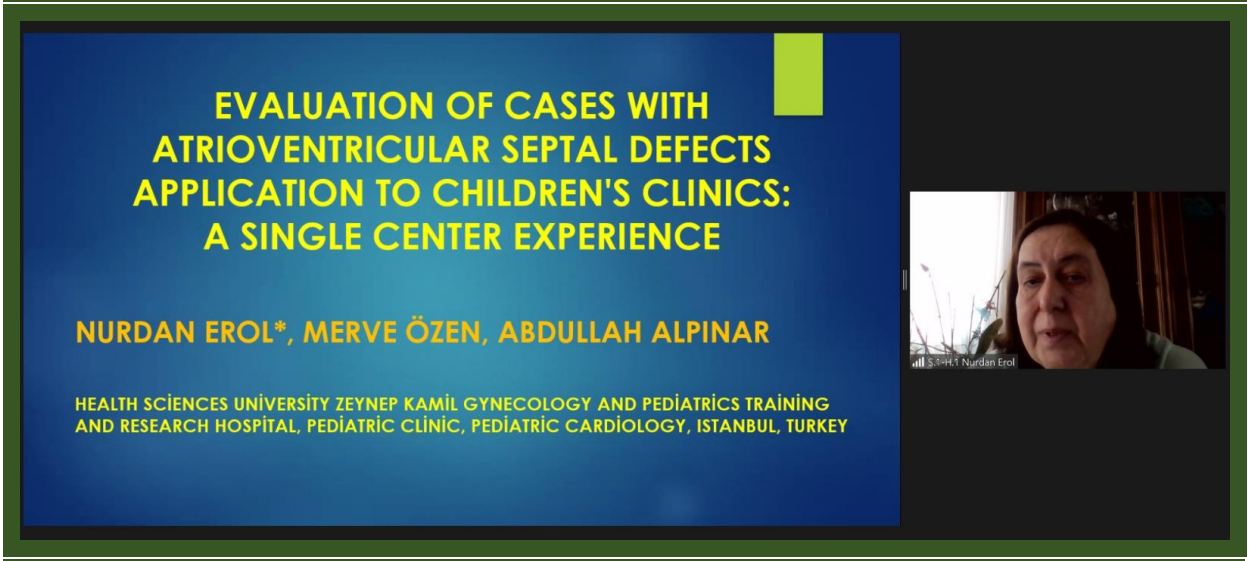



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EVALUATION OF CASES WITH ATRIOVENTRICULAR SEPTAL DEFECTS APPLICATION TO CHILDREN'S CLINICS: A SINGLE CENTER EXPERIENCE

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ABSTRACT

Introduction and purpose
Cardiological follow-ups of cases with congenital heart anomalies are performed in pediatric cardiology and cardiovascular surgery centers. However, these cases also apply to children's hospitals for different reasons in the preoperative or postoperative period. This study was conducted to evaluate cases with atrioventricular septal defect (AVSD), which is one of the congenital heart diseases, who applied to Pediatrics clinics.

Method
The findings of the patients who applied to the pediatric clinic and pediatric cardiology outpatient clinic of our hospital between April 2018 and January 2022 were evaluated retrospectively from the hospital records.

Results
This work; It consisted of 105 cases, 57 (54.3%) female and 48 (45.7%) male. Of the cases, 77 (73.3%) were with Down syndrome, 5 (4.7%) from other syndromes, and 23 (21.9%) were without genetic syndrome. 92 (87.62%) of the cases were balanced AVSD cases. There were complete AVSD in 66 cases (71.74%), intermediate in 14 cases (15.22%), and partial AVSD in 12 cases (13.04%). AVSD was associated with tetralogy of fallot in 3 cases. There was right atrial isomerism in 6 cases, left isomerism in 1 case, and dextrocardia in 4 cases. 58 (55.24%) cases had undergone previous operation, and the remaining cases were not due for operation or were out of follow-up. The operations performed were operations such as fontan, glenn, pulmonary banding, shunt operation, PDA closure, and aortic reconstruction in 10 cases (17,24%). Total repair was done in 82.76% of them. Valve deficiencies were investigated. Two patients had pacemakers. While 26 cases were using drugs, 47 cases were not.

Conclusion
These cases frequently apply to centers other than pediatric cardiology and cardiovascular surgery centers. This situation highlights the importance of education and interdisciplinary cooperation for the correct management of these cases outside the cardiac centers in the preoperative and postoperative period.

Keywords: Atrioventricular septal defect, Down syndrome, cardiac surgery.

ÇOCUK KLİNİKLERİNE BAŞVURAN ATRİOVENTRİKÜLER SEPTAL DEFEKTLİ OLGULARIN DEĞERLENDİRİLMESİ: TEK MERKEZ DENEYİMİ

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ABSTRACT

Giriş ve Amaç
Konjenital kalp anomalilerine sahip olguların kardiyolojik takipleri pediatrik kardiyoloji ve kardiyovasküler cerrahi merkezlerinde yapılmaktadır. Ancak bu olgular preoperatif veya postoperatif dönemde değişik sebeplerle çocuk hastanelerine de başvurmaktadır. Çocuk Hastalıkları kliniklerine

başvuran konjenital kalp hastalıklarından olan atrioventriküler septal defektli (AVSD) olguların değerlendirilmesi amacıyla bu çalışma yapıldı.

Yöntem

Nisan 2018- Ocak 2022 tarihleri arasında hastanemiz çocuk kliniği ve çocuk kardiyoloji polikliniğine başvuran olgulara ait bulgular hastane kayıtlarından retrospektif olarak değerlendirildi.

Bulgular

Bu çalışma; 57'si (%54,3) kız, 48'i (%45,7) erkek olmak üzere 105 olgudan oluşmaktaydı. Olguların 77'si (%73,3) Down sendromlu, 5'i (%4,7) diğer sendromlardan, 23'ü (%21,9) genetik sendromu olmayan olgulardı. Olguların 92'si (%87,62) dengeli AVSD olgularıydı. 66 olguda komplet (%71,74), 14 olguda (%15,22) intermediate, 12 olguda (%13,04) parsiyel AVSD vardı. 3 olguda AVSD, fallot tetralojisi ile birlikteydi. 6 olguda sağ atrial izomerizm, 1 olguda sol izomerizm, 4 olguda dekstrokardi vardı. 58 (%55,24) olgu daha önce operasyon geçirmişti, geri kalanlar ise operasyon zamanları gelmemiş veya takipten çıkmış olgulardı. Yapılan operasyonlar 10 olguda (%17,24) fontan, glenn, pulmoner banding, şant operasyonu, PDA kapatılması, aort rekonstrüksiyonu gibi operasyonlardı. %82,76'sında total tamir yapılmıştı. Kapak yetersizlikleri araştırıldı. İki olguda pacemaker vardı. 26 olgu ilaç kullanırken 47 olgu kullanmıyordu.

Sonuç

Bu olgular pediyatrik kardiyoloji ve kardiyovasküler cerrahi merkezleri dışındaki merkezlere de sıkça başvurmaktadır. Bu durum, bu olguların preoperatif ve postoperatif dönemde kardiyak merkezlerin dışında da doğru yönetilebilmesi için eğitim ve interdisipliner iş birliğinin önemini vurgulamaktadır.

Anahtar Kelimeler: Atrioventriküler septal defekt, Down sendromu, kardiyak cerrahi.

INTRODUCTION

Atrioventricular septal defect(AVSD) are a group of anomalies that share a defect of atrioventricular septum and abnormalities of atrioventricular valves. There are different types of AVSD (Complete, intermediate, Partial eg). Aproximetely 50% cases of AVSD have Down Syndrome and more than 75% of them complete AVSD.(Allen HD, et al, 2008)

Cardiological follow-ups of AVSD cases and other congenital heart anomalies are mostly performed in pediatric cardiology and cardiovascular surgery centers. However, these cases also apply to children's hospitals for different reasons in the preoperative or postoperative period. This study was conducted to evaluate cases with atrioventricular septal defect, which is one of the congenital heart diseases, who applied to Pediatrics clinics.

MATERIALS AND METHODS

The findings of the AVSD patients who applied to the pediatric clinic and pediatric cardiology outpatient clinic of our hospital between April 2018 and January 2022 were evaluated retrospectively from the hospital records.

RESULTS

This work; It consisted of 105 cases, Sex distrubiton was approximately equal. Cases were mostly Down Syndrome. The Distrubition of cases were showed in **Table1.** Majority of the cases were complete AVSD cases. The distribution of the types of cases is given in **Table 2.** 58 (55.24%) cases had undergone previous operation, and the remaining cases were not due for operation or were out of follow-up. Majority of the surgeries performed were total repair. In 10 cases, other surgical treatments such as fontan, glenn, pulmonary banding, shunt operation, PDA closure, and aortic reconstruction were applied and given **Table3.**

Table 1. Distrubition cases of Atrioventricular defect

	Number	Percentage %
Sex (Male/Female)	48/57	47,5/54,3
Down Syndome	77	73,3
Other Syndrome	5	4,7
No Syndrome	23	21,9

Table 2. Distrubition of types artioventricular cases

Type	Number	Persantage %
Complete	66	71,74
Intermediate	14	15,22
Partial	12	13,04
AVSD with Fallot	3	2,85
Isomerism(6 right/1left)	7	6,66
Dextrocardia	4	3,81
Balanced	92	87,62
Unbalanced	13	12,38

Table3. Surgery of AVSD cases

	Number	Persantage %
Total Repair	48	82,76
Other	10	17,24

Eight of the operated patients were unbalanced and the rest were balabced AVSD. In terms of type, 2 of them were partial, 2 of them were intermediate and the rest were complete AVSD. In terms of valve regurgitation, 5 had significant, 12 had moderate and the remaining mild regurgitation. Other pathologies were 7 small residual ventricular septal defect, 1 small atrial septal defekt. 12 patients were using at least one drug in the post-operative period.2 patient have. Two cases had pacemaker.

DISCUSSION

Based on the data from the EUROCAT study, the overall prevalence of AVSD was 5.3 per 10,000 births and 3.1 per 10,000 in cases with chromosomal aberrations. (Christensen and et al, 2013) Similarly, cases with Down syndrome and complete AVSD constituted the majority in our study. The findings in our study are generally similar to the literature.

The first operation in AVSD cases was performed in 1955. With the increase in treatment opportunities and intensive care facilities, success has been recorded in AVSD operations. Mortality rates decreased to 2.9% between the years 1991-2000. (Chauhan, 2018)

Early operation is recommended in patients with Down syndrome because of the development of pulmonary hypertension at an early age. (Lange and et al, 2007) Despite this, the cut-off value of the operation is considered to be <3.5 kg and <2.5 months, in order to reduce mortality, ICU stay and complications. (Chauhan, 2018). Although the duration of intensive care is longer in patients with Down syndrome, long-term results are similar.

Despite the improvement in the results of the operation, the probability of reoperation varies between 6-15%. (Schleigera and et al, 2019). The need for reoperation is mostly due to atrioventricular valve

deficiencies. In fact, this probability is higher in non-chromosomal cases than in cases with Down syndrome. In addition, (Schleigera and et al, 2019) stated that performing reoperation in small months increases the possibility of pacemaker and that patients with Down syndrome are at higher risk for late AV block. There was no reoperation in our study group, but the use of drugs and the presence of moderate and significant valve insufficiency indicate that these cases have reoperation possibilities. Pacemaker application was in our group.

The need for reoperation is similar in the partial AVSD cases and it was reported as 11%. (El Nadjawi and et al, 2000)

They also reported that the causes and complications of reoperation were similar in other forms of AVSD as well.

Unbalanced complete atrioventricular septal defects (CASVSDs)represent 10% of all atrioventricular septal defects (Arrigoni and et al, 2022) Their mortality is higher than other types and it is recommended to be performed especially in valve repairs during the operation. Buratto and et al, (2017) reported that the results of unbalanced AVSD cases were not as good as those with balanced AVSD, but the results improved over the years. There were unbalanced AVSD cases in our group who had not yet completed their treatment.

CONCLUSION

These cases frequently apply to centers other than pediatric cardiology and cardiovascular surgery centers. This study includes the retrospective results of heterogeneous cases who applied to pediatric clinics for different reasons, not surgical clinical results.In order to understand the problems that these cases will face, interdisciplinary training and cooperation are required.

References

Allen HD, Driscoll Dj, Shaddy RE, et al. (2008) Moss and adams' Heart Disease in infants, children,and adolescents including the fetus and young adult. 8. Edition. Volume I. Chapter 29.

Arrigoni SC, IJsselhof R, Postmus D, Vonk JM, Francois K, Bov e T, Hazekamp GM, Rijnberg FM, Meyns B, van Puyvelde J, Poncelet AJ, de Beco G, van de Woestijne PC, Bogers JJC, Schoof PH, Ebels T. (2022). MD, PhD. Long-term outcomes of atrioventricular septal defect and single ventricle: A multicenter study. J Thorac Cardiovasc Surg .163:1166-75.

Buratto E, Ye XT, King G, Shi WY, Weintraub RG, d'Udekem Y, Brizard CP, Konstantinov IE.(2017) Long-term outcomes of single-ventricle palliation for unbalanced atrioventricular septal defects: Fontan survivors do better than previously thought. J ThoracCardiovasc Surg,153:430-8.

Chauhan S. (2018). Atrioventricular Septal Defects. Editoryal.Annals of Cardiac Anaesthesia |Volume 21| Issue 1

Christensen N, Andersen H, Garne E, Wellesley D, Addor MD, Haeusler M , Khoshnood B,Mullaney C, Rankin J, Tucker D. (2013) Atrioventricular septal defects among infants in Europe: a population-based study of prevalence, associated anomalies, and survival. Cardiol Young . 23(4):560-7.

El-Najdawi EK, Driscoll DJ, Puga FJ, Dearani JA, Spotts BE, Mahoney DW,Danielson GK. (2000). Operatıon For Partıal Atrıoventrıcular Septal Defect: A Forty-Year Revıew.J Thorac Cardiovasc Surg,119:880-90.

Lange R, Guenther T, Busch R, Hess J, Schreiber C. (2007). The presence of Down syndrome is not a risk factor in complete atrioventricular septal defect repair. J Thorac Cardiovasc Surg,134:304-10.

Schleigera, A, Mieraa O, Petersa B, Schmitta KRL, Kramera P, Buracionoka J, Murinb P, Chob MY, Photiadisb J, Bergera F, Ovroutskia S. (2019) Long-term results after surgical repair of atrioventricular septal defect . Interactive CardioVascular and Thoracic Surgery, 28:789–96.

THE REVOLUTION FOR GENDER EQUALITY

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ABSTRACT

Gender has increasingly been acknowledged as an important variable in analyses and development planning. In recent years, the goals of equality, justice and peace in human development have been adopted by the WID (Women and Development) approach and Sustainable Development Goals which aim to eliminate all forms of discrimination and violence against women in public and private spheres. Gender equality today is not only a fundamental human right but a necessary foundation for a peaceful and sustainable world. Equal access to education, health, decent work, representation in political and economic decision making process are not only rights that women should have ,they also benefit the humanity at large. However, studies reveal that the subject of gender inequality is deep rooted in almost all societies .Women constitute a half of the human race and are subject to discrimination and subordination in the sphere of education, employment, land rights ,food and nutrition.

Much academic research on North East India has tended to look at the region as homogenous from the perspective of gender and gender relations, thereby ignoring the diversity in gender related issues. But studies have revealed that women in the North East have been marginalized on various issues of which relations of rights and power have been matters of concern to social scientists. Feminist research have often focused on the need to raise the issue of women's exclusion from the power structure but the fact remains that power is still very much male centric. Even in matrilineal societies like that of the Khasi , Jaintia and Garo, women are excluded from the decision- making process. Besides power relations, other spheres of subordination of women in the North East have been in the area of resource distribution and security over resources like land ,economy, livelihood etc. Literacy and education ,which are the most important indicators of social development also reveal disparity between the sexes.Still another matter of serious concern is the discrimination of women in the economic sector and commodification in the new era of globalization.

Declaration of the Rights of Man and of the Citizen

The Declaration of the Rights of Man and of the Citizen, which was set by France's National Constituent Assembly in 1789, is a human civil rights document from the French Revolution. Inspired by Enlightenment philosophers, the Declaration was a core statement of the values of the French Revolution and had a major impact on the development of popular conceptions of individual liberty and democracy in Europe and worldwide. The Declaration was originally drafted by the Marquis de Lafayette, in consultation with Thomas Jefferson. Influenced by the doctrine of "natural right", the rights of man are held to be universal: valid at all times and in every place. It became the basis for a nation of free individuals protected equally by the law. It is included in the beginning of the constitutions of both the Fourth French Republic (1946) and Fifth Republic (1958) and is still current.

The content of the document emerged largely from the ideals of the Enlightenment. The principal drafts were prepared by Lafayette, working at times with his close friend Thomas Jefferson. In August 1789, the Abbe Emmanuel Joseph Sieyes and Honore Mirabeau played a central role in conceptualizing and drafting the final Declaration of the Rights of Man and of the Citizen.

The last article of the Declaration of the Rights of Man and the Citizen was adopted on the 26 of August 1789 by the National Constituent Assembly, during the period of the French Revolution, as the first step toward writing a constitution for France. Inspired by the Enlightenment, the original version of the

Declaration was discussed by the representatives on the basis of a 24 article draft proposed by the sixth bureau led by Jerome Champion de Cice. The draft was later modified during the debates. A second and lengthier declaration, known as the Declaration of the Rights of Man and Citizen of 1793, was written in 1793 but never formally adopted.

The concepts in the Declaration come from the philosophical and political duties of the Enlightenment, such as individualism, the social contract as theorized by the Genevan philosopher Rousseau, and the separation of powers espoused by the Baron de Montesquieu. As can be seen in the texts, the French declaration was heavily influenced by the political philosophy of the Enlightenment and principles of human rights as was the U.S. Declaration of Independence which preceded it (4 July 1776).
According to a legal textbook published in 2007, the declaration is in the spirit of "secular natural law", which does not base itself on religious doctrine or authority, in contrast with traditional natural law theory, which does.

The declaration defines a single set of individual and collective rights for all men. Influenced by the doctrine of natural rights, these rights are held to be universal and valid in all times and places. For example, "Men are born and remain free and equal in rights. Social distinctions may be founded only upon the general good." They have certain natural rights to property, to liberty, and to life. According to this theory, the role of government is to recognize and secure these rights. Furthermore, the government should be carried on by elected representatives.

At the time it was written, the rights contained in the declaration were only awarded to men. Furthermore, the declaration was a statement of vision rather than reality. The declaration was not deeply rooted in either the practice of the West or even France at the time. The declaration emerged in the late 18th century out of war and revolution. It encountered opposition, as democracy and individual rights were frequently regarded as synonymous with anarchy and subversion. This declaration embodies ideals and aspirations towards which France pledged to struggle in the future.

The Declaration is introduced by a preamble describing the fundamental characteristics of the rights which are qualified as being "natural, unalienable and sacred" and consisting of "simple and incontestable principles" on which citizens could base their demands. In the second article, "the natural and imprescriptible rights of man" are defined as "liberty, property, security and resistance to oppression". It called for the destruction of aristocratic privileges by proclaiming an end to feudalism and to exemptions from taxation, freedom and equal rights for all "Men", and access to public office based on talent. The monarchy was restricted, and all citizens were to have the right to take part in the legislative process. Freedom of speech and press were declared, and arbitrary arrests outlawed.

The Declaration also asserted the principles of popular sovereignty, in contrast to the divine right of kings that characterized the French monarchy, and social equality among citizens, "All the citizens, being equal in the eyes of the law, are equally admissible to all public dignities, places, and employments, according to their capacity and without distinction other than that of their virtues and of their talents," eliminating the special rights of the nobility and clergy.

While the French Revolution provided rights to a larger portion of the population, there remained a distinction between those who obtained the political rights in the Declaration of the Rights of Man and of the Citizen and those who did not. Those who were deemed to hold these political rights were called

active citizens. Active citizenship was granted to men who were French, at least 25 years old, paid taxes equal to three days work, and could not be defined as servants. This meant that at the time of the Declaration only male property owners held these rights. The deputies in the National Assembly believed that only those who held tangible interests in the nation could make informed political decisions. This distinction directly affects articles 6, 12, 14, and 15 of the Declaration of the Rights of Man and of the Citizen as each of these rights is related to the right to vote and to participate actively in the government. With the decree of 29 October 1789, the term active citizen became embedded in French politics.

The concept of passive citizens was created to encompass those populations that had been excluded from political rights in the Declaration of the Rights of Man and of the Citizen. Because of the requirements set down for active citizens, the vote was granted to approximately 4.3 million Frenchmen out of a population of around 29 million. These omitted groups included women, slaves, children, and foreigners.

First World War and Violation of Women's Rights

World War 1 was started in July 1914 and officially ended on November 11, 1918. Conflicts emerged among the most powerful forces in the modern world with the Austro-Hungarian Empire, Germany and the Ottoman Empire (and briefly Italy) on one side, and Britain, France, Russia, and later the United States on the other side during the war.

The war took the lives of some 20 million people and the world's great empires fell. Czarist Russia turned into reinstated as the communist Soviet Union. Imperial Germany turned into reinstated as the Weimar Republic and lost some parts of its territory in the East and West.
World War 1 started with a European conflict and gradually it developed into a World War. Militarism, nationalism, imperialism, and alliances increased the tensions among the European countries. The first reason, militarism, is known as the trend toward developing military resources, both for national defense and the protection of colonial interests.

Militarism indicated a rise in military disbursement and it extended to military and naval forces. It put more impact on the military men upon the policies of the civilian government. As a solution to problems militarism had a preference for force. This was one of the main reasons for the First World War. The second reason is there were too many alliances that frequently clashed with each other. Every country was pawning to safeguard others, creating intertwining mutual protection schemes.

They made alliances in secret, and they created a lot of mistrust and intuition among the European powers. Their general intuition stopped their diplomats to find a proper solution to many of the crises leading to war. Imperialism was the third reason for the First World War. As some areas of the world were left to colonize, nations were competing for subsisting colonies, and they were looking for enlarging their borders with adjacent countries. The fourth cause was nationalism. Nationalism is frequently insinuated to as identification with one's own country and support for the country. Nationalism contains a strong recognition of a group of personnel with a political entity.

The support of individuals for their own country can become of one's nation can become hatred of other nations. These were just some of the basic reasons for the war. Many people think that the instant reason for the war was because of the assassination of Archduke Francis Ferdinand, the successor to Austria-Hungary's throne. Archduke Ferdinand was fired and murdered due to what was thought to be a political

conspiracy. The Austro-Hungarian Empire suddenly doubted Serbian conspiracy in the assassination and looked to frame a response that would both punish Serbia, and make the world respect Austria-Hungary's prestige and determination.

The Great War lasted four years. The war was finally over after four years and it took the lives of many people. On the eleventh hour of the eleventh day of the eleventh month of 1918, a cease-fire went into effect for all fighters. Though the war has been finished, the effects, are still seen perceptible in the world today.

In the aftermath of World War 1, the political, cultural, and social order of the world was drastically changed in many places, even outside the areas directly involved in the war. Old nations were removed, new nations were formed, international organizations set up, and many new and old ideas took a stronghold in people's minds.

As Europe fell in debt from war investment, inflation beset the continent. In addition to this, the buoyancy of previous decades was relinquished and a discouraging, gloomy outlook on life was adopted after people had experienced the ferocity of warfare and the effects of the war were brutal.
The War took the lives of approximately 20 million people and put a break in the economic development of several nations. The war happened between two parties consisting of more than one hundred nations. Though all of them did not send armed forces to the battlefield, they were a hoard of commodities and human resources and provided moral support to their companions. It continued for 4 long years from 1914 to 1918. Indian soldiers also took part in World War 1 as a colony of Britain from Africa and West Asia.

India had an aspiration that they might win independence. World War 1 war laid down the economy of the world. It led to food shortage, an outbreak of a pandemic, scarcity of vital items, etc. At the end of 1918, the war came to an end. The Allied Powers won the war. Both parties signed the Peace Treaty called an armistice.

Between 1914 and 1918, the lives of millions of women in Britain were overturned by the first world war. Its impact reached into every aspect of existence, from the dramatic to the humdrum.
Former domestic servants became window cleaners, gas fitters and crane drivers. They moved into the munitions factories, where their faces turned yellow and their hair green from the chemicals. They braved explosions and poisonous substances to serve their country – and to earn higher pay.
Well over 100,000 volunteered for the Women's Land Army, ruffling the gender norms of rural Britain. Others enlisted in the Women's Royal Naval Service, the Women's Army Auxiliary Corps or the Women's Royal Air Force as mechanics and drivers, cleaning, working in canteens or doing clerical work.

As wartime food shortages, rising prices and rents brought distress to poor families, the government marched into the kitchen with advice on bean fritters and barley rissoles. Manufacturers came up with a technological fix for middle-class housewives, tussling with "the servant problem". In an advertisement in the *Times* in 1917, the Suction Cleaner Company said: "Electric Housemaid: Simply connect to Electric Lamp Socket".

In 1915 the newly formed Women's Institutes were introduced to Britain from Canada. They urged women to study home economics and aimed to strengthen class harmony. A more radical approach to

domestic dislocation was tried in east London. The socialist feminist, Sylvia Pankhurst, who denounced the first world war, set up a cost-price restaurant and a mother-and-baby clinic in a former pub, which she renamed The Mother's Arms. The dangers of being a baby were stressed on all political fronts, an awareness that would lead to the formation of local authority maternity and child welfare committees.
The wartime state was prepared to concede under duress. In 1915 the Glasgow Women's Housing Association took direct action to prevent the eviction of a soldier's family unable to pay the rent. Armed with peasemeal flour, women mounted angry pickets, with street after street joining the rent strike. As discontent spread beyond Glasgow, the government introduced the Rent Restriction Act.

When women appeared doing "men's jobs", skilled men were inclined to view them as interlopers, likely to enable employers to break down craft differentials. And this was indeed what happened in some factories. But the new recruits would also assert themselves in the workplace. In July 1918, male and female munitions workers in Coventry took strike action together.
In that last year of the war, when women bus and train workers went on strike, the slogan, "Same work, same money" appeared.

Although rape was not usually systematic, it occurred frequently on all fronts during the First World War, during both invasion and occupation periods. It was often used in propaganda to discredit the other side for its barbarity and lawlessness, and this violence against women left a strong mark in people's minds at the time.

At the end of the 19th century, rape, commonly seen as an unfortunate but inevitable consequence of armed conflict, was not counted as one of the acts prohibited by the laws of war. Rape was only indirectly mentioned by the Hague Conventions of 1899 and 1907 that required occupying armies to respect "family honor and rights, the lives of persons, and private property" (Article 46). Still, the various commissions the belligerent parties set up during the First World War to investigate their enemies' crimes, all made a point of stressing the number of rapes committed in the territories invaded. These inquiry reports, often published immediately in order to discredit the other side, are the main source for historical research on this subject. Since this documentation asserted, as in the case of the French commission set up in September 1914, that: "attacks on women and girls were of unprecedented violence",[1] and recorded acts that were mostly carried out during the early months of the war, it gave credence to the idea that a threshold of sexual violence was crossed during the First World War, particularly during periods of invasion. However, while the rape of the other side's women appears to have been neither an isolated nor an exceptional phenomenon, there is no evidence that it occurred on a massive or systematic scale. The frequent tendency in the literature to treat rape as a type of violence mainly connected with the specific period of invasion is due to an availability bias that is corrected to some extent by research into documents other than those produced by the commissions of inquiry. This additional documentation reveals information about rapes committed during occupation and military withdrawal.

When, in August 1914, the German army entered Belgium and France, its soldiers committed a large number of rapes along with other assaults on civilians. The actual number, impossible to estimate in the current state of research, was without a doubt considerably higher than the small number that was officially recorded. This is because many victims were too ashamed to report that they had been raped, and because press coverage and official discourse implied a lower number of rapes than were actually occurring. Inquiry reports into German atrocities, newspaper articles, drawings, engravings and novels gave unprecedented visibility to this wartime violence against women. The topic of German rape became

a focus of representations of warfare and the enemy until the end of the war. This became a key lever in anti-German propaganda, extensively used in, for example, the Bryce Report, published in the British press in spring 1915. This report was translated into several languages and widely circulated.

In newspapers and government propaganda, the rape of women was presented as a symbol of the cowardly, criminal aggression the motherland had suffered, and it was used as a powerful tool for mobilising men to fight a just war of civilisation against barbarity. Public opinion was particularly shocked by collective rapes committed in public along with other physical violence including murder. The perpetrators appeared to be driven by a desire to humiliate female victims first, over whose bodies they asserted their domination, representing an extension of their control of territory. The humiliation of men was secondary and represented their inability to defend the women who were being put on public display. However, most of the aggressive acts appear to have been committed by single soldiers or groups of two or three, using the threat of a weapon and preferring to act with no witnesses present.

The most well researched and documented incidents of rape occurred in France and Belgium in 1914-1915, but invaders committed rape in other places and times during the war. On the Eastern Front, Russia and the Central Powers accused each other of offences against the civilian population. Cases of rape were reported by German refugees from East Prussia after the Russian invasion in 1914. In Galicia and Bukovina, the Jewish population was particularly targeted by the brutality of the Cossacks, whose pillage, destruction, murder and rape were condemned in Austro-Hungarian reports. German violence was also reported in Poland, when the Tsar had to relinquish after the Central Powers' offensive in summer 1915. However, civilians were treated much worse by the scorched-earth policy of the retreating Russian troops than by the German invaders. The documentary evidence is greater and better researched for rapes by German and Austro-Hungarian troops in Friuli and Veneto in 1917-1918 after the Italian defeat at Caporetto. These rapes were committed in a similar fashion to those in France and Belgium at the start of the war.

Most historians agree that the rapes committed by soldiers in the First World War were neither planned nor encouraged by commanding officers but merely tolerated as the undesirable but inevitable effect of a temporary slackening of military discipline. The Serbian case, however, appears to be an exception to this general pattern. Recent studies have shown that the Bulgarian occupation of southern Serbia from 1915 to 1918 gave rise to ethnic violence, including mass rapes encouraged by officers, with the aim of eliminating the Serbian and Greek populations of Macedonia. Unlike the German atrocities, these systematic aggressions committed in Serbia aroused very little reaction abroad and were not referred to in Allied propaganda.

In France, and to a lesser extent Italy, the revelation of German rapes gave rise to a controversy around the children to be born as a result. In early 1915, some sections of public opinion, believing that the "enemy's children", by their Germanic extraction, might represent a mortal danger of degeneracy for the "French race", pressed for their abortion, and even excused infanticide. The publicity these ideas received in a press vying to compete for patriotism and feed its readers' fantasies, should not be taken at face value: the supporters of eradicating German genes were only a tiny minority among politicians and senior medical figures, and the government quickly put an end to the matter by reasserting the illegality of abortion and organising the care of these children by the Assistance Publique (AP) in Paris.

From 1915 to 1921, 361 children born of German rape were taken in by the assisted children service of the Seine département and registered under the ad hoc category of "Special decisions". From this figure

it has been estimated that a total number of between 1,000 and 5,000 children were born to French women raped by German soldiers during the First World War. The personal files of these children taken in by the AP in Paris, 80 percent of whom were born following aggressions committed after the first quarter of 1915, show that historiographers have too often seen rape as a violence connected with the German invasion, and have underestimated the extent of sexual aggression committed after the frontline had stabilised.

The occupation period saw rape where the perpetrator, usually acting alone, knew his victim, at least by sight, and did not always abscond after his crime. The requisition of military billets and female labour in fields and factories created situations particularly likely to lead to aggression, which often occurred after a period of days or months of non-violent acquaintance. To subdue their victims, the soldier rapists used blows and the threat of a weapon, but the violence could also be more emotional than physical, and would increase over time in some instances. Some women described the hunger that they and their children were forced to endure by soldiers who, before the women gave in, would offer them food for sex; in other cases, the climate of fear and a sense of powerlessness among the residents of the occupied territories was enough for a soldier to obtain a victim's submission.

Although these occupation-period rapes are beginning to be better understood, other aspects of the subject remain understudied. Research into the Eastern Front is largely lacking. Similarly, little work has been done on the aggressions committed by the winning side, for example, after the autumn of 1918, the rape of German women was increasingly alluded to in the correspondence of French soldiers who were about to occupy the Rhineland. Despite a few cases recorded by historians, particularly of sexual aggression by British soldiers in France, rape within populations not at war is also a subject that is poorly researched.

Whereas rape by the enemy loomed large in the minds of the peoples involved in the war and was a recurring theme in some national propaganda, no mention was made of it in post-war commemorations and discussions. Although explicitly added to the number of war crimes at the Peace Conference that opened in Paris in January 1919, rape quickly disappeared from the talks. It was not until 1949, following the Second World War, when sexual violence had occurred on a far greater scale than in the First World War, that rape was specifically prohibited by the laws of war.

Second World War and Violation of Women's Rights

World War 2 or the Second World War is the most extensive known global human warfare to date that lasted from the year 1939 to 1945. The war was waged between two opposing military alliances: Allies and Axis, involving the majority of the Global powers and many participating countries from across Europe and the world.

It was the first state of total war where every economic, scientific, and industrial resource and labour of the participating countries were dedicated to waging full-scale warfare, eliminating military and civilian resources. The war involved over 100 million military personnel from more than 30 countries resulting in 70 to 85 million fatal casualties.

The history of this world is incomplete without the inclusion of the Second World War or World War 2, the most vicious and gruelling warfare waged by humans against each other. It involved the vast majority of the countries and Global powers during the period 1939 to 1945.

The war was primarily waged between two opposing military alliances: The Allies mainly comprising the United Kingdom & British Empire, the Third Republic of France, Soviet Union, United States of

America and their allies, and the Axis Powers involving Nazi Germany, Fascist Italy, Empire of Japan and their allies.

It started on 1st September 1939, when Nazi Germany invaded Poland and placid support from the Soviet Union and the subsequent declaration of war on Germany by Poland's allies, France and the United Kingdom. Germany's Axis Powers had significant gains in the earlier years of the Second World war, mainly between 1939 to 1941 when it conquered and dominated much of continental Europe and parts of Africa.

The largest gain on the Axis side came with the rapid defeat of France at the hands of Germany due to Germany's advanced warfare technique of Blitzkrieg that involved multi-frontier attack using infantry and armoured divisions. Adolf Hitler, the Dictator/ Fuhrer of Germany during the war, is mainly attributed as the perpetrator of the war due to his Nationalist Fascist and Racial supremacy-based political ideology leading to Germany's aggressive stance in much of continental Europe.

With France's fall in 1940, the war was primarily waged between the Axis Powers and the British Empire, with minor gains and losses on both sides. It was a multi-frontier conflict with battles occurring in various regions, including mainland Europe, Eurasia, the Balkans, the Atlantic, and the Pacific Ocean, East Asia, and Northern and Central Africa, and Ariel attacks on the British Isles.

The war took a significant turn in 1941 with two significant events:

1. The Invasion of Soviet Russia and its Union in June 1941
2. Leading to the largest land warfare in human history
3. The Pearl Harbour bombing by Japanese Kamikaze in December 1941

It forced the United States of America to enter the war on the Allies side. Following the US declaration of war on the Imperial Japanese Empire, Germany and Italy's European Axis powers declared war against the US in solidarity with their Asian Ally.

The Axis Powers had significant strategic gains throughout 1941, including Imperial Japan. It captured and dominated much of the Western Pacific, Eastern China and Manchuria, and Southern Asia. However, its advances were obstructed after a significant naval defeat at the US navy's hands at the Battle of Midway on the Pacific Ocean. Fascist Italy subsequently suffered significant defeats in North Africa and the Balkans and eventually surrendered to the Allies with their Fascist Dictator, Benito Mussolini, being publicly executed.

The collective Allied invasions of Sicily and the Italian Mainland in 1943, along with German defeat at the Eastern front, forced the Axis powers to retreat on all fronts strategically. The war was concluded in 1945 with the Allied invasion of German-controlled territories, the fall of Berlin at the Soviet Union's hands, and the Nuclear Bombing of Hiroshima and Nagasaki in Japan by the United States of America. World War 2 was the largest war ever waged in human history lasting from 1939 to 1945 between two primary military alliances, the Allies and the Axis. It started with Poland's invasion by Nazi Germany and Communist Soviet Union after the secret Molotov-Ribbentrop pact between the two powers that led France and the United Kingdom to declare war on Germany.

The war occurred on multiple battlefronts and involved more than 100 million soldiers from over 30 countries from across the globe. It resulted in a collective casualty of over 80 million military as well as civilian deaths.

It ended with the Axis defeat after the fall of Berlin and the Nuclear Bombing of the Japanese cities of Hiroshima and Nagasaki by the United States. It had a profound effect on the subsequent world politics and histories like the eventual fall of the British and French Empires and their colonies' independence, significant shifts in global politics, and the United Nations' formation.

The historical record of sexual violence at the wartime, especially World War II is silent to preserve masculine honour and female purity as scholars argued. The voices of victims and atrocities of sexual violence did not get a considerable amount of care. Moreover, the historical attempts have highly focussed on the condemnation of masculine, feminine and community honour caused by sexual violence. The mentioned referring to shaming and embarrassing the male counterparts for their incapability to protect the 'honour' of 'their' women. The other factors for the secrecy of sexual violence are social and cultural discomfort with sex and sexual violence wherein victims feel ashamed and stigmatised to recount their sexual victimization. Besides, scholars have witnessed that somewhat misogyny of historians and policymakers who didn't feel essential to take into account of the women experiences of violence.

The **'comfort women' of the Imperial Japanese Army** in WW II is the most extreme institutionalised sexual violence against women. The scholars have argued that euphemism 'comfort women' that masked the gravity of government-sponsored human trafficking. The motivation for creating 'comfort women and station' was not to repeat the history of mass rape that Japanese soldier did in Nanking, China that could have demolished the public image of Japan. With the fear of the country's reputation in the eye of the world, the Japanese emperor initiated the system of 'comfort women' also a reward to soldiers fighting for the Japanese Empire. The other justifications provided by Japanese Army for implementation and maintaining of Comfort women station to prevent rape by the former that could raise the hostility of inhabitants of the occupied area; to boost the army morale; to discipline the behaviour of soldiers. Despite, of Rules of Use for Military Comfort station, created by the Japanese military to avoid abuse on comfort women, none of the soldiers abided it and thousands of women got victimized. Comfort women involved unmarried young women as young as twelve years old primarily from Korea and China and other Southeast Asian countries who Japanese deemed as culturally inferior people. These comfort women got either enticed with the false promise of receiving jobs such as housework or they got kidnapped/ coercively recruited. Eventually, they ended up in the brothels/camp stations nearby the war zones wherein they got forced to serve 30-40 soldiers per day without any rest and pay. According to the testimony of Yong Soo Lee, the comfort women survivor, she commented that *"it was not a comfort station, it was slaughterhouse"* wherein the women were beaten, tortured or killed if they refuse to provide *'comfort'* to the Japanese soldier. If these *'comfort women'* got sick they got killed, there was no medical assistance provided to them. Besides, the comfort camps were mostly situated in foreign lands, hence their mobility got constrained because even if they tried to escape they had no place to go because of the language barrier or if they got caught for getting escaped they were publicly tortured and killed. The comfort women weren't even buried after their death, they were just left stranded. Reiterating, this all occurred under the supervision of Japan government official who even established rules and regulations for this system but it turned blind eye inside the system. After the war ended, many of the comfort women got killed in military actions or they were left abandoned. Some who found their way home got shunned by their community, labelled as 'dirty' and socially and culturally stigmatised thereby not allowed to speak about their experiences.

Proceeding to **Nazi camp brothel**, the image one can have is Jewish women exploited for the sexual gratification of Nazis soldiers. However, the reality is contrary to the mentioned. In the final year of the

Nazi concentration camp, brothels were installed for the prisoners. It was the brainchild of Heinrich Himmler, chief of the economic and administrative main office of the SS, who wanted to extract the productivity of camp prisoners for Furher's megalomaniacal construction projects and these projects needed building materials to fulfil Hitler's plan of redesigning the major German cities such as Berlin, Weimar, Munich, Linz and Hamburg. Himmler ideated that establishment of brothels as the sexual incentive for the hard-working prisoners to increase their efficiency of production but at the expense of forced sex slavery of women. The Russians and Jews prisoners were exempted from approaching the sex workers. These brothel camps got built in a quiet bureaucratic manner wherein strict Nazis race rules were followed. In other words, the German prisoner can only go to German women. Furthermore, the purpose Himmler had for these brothels and forced sexual slavery was also to keep homosexuality at bay since there was a fear of breaking out among the prisoners. About 300-400 women, especially from the camp of Ravensbruk and Auschwitz, were forced into prostitution in ten concentration camps and the territories occupied by the Nazi. The women selected for forced prostitution were young women who had either displayed anti-social behaviour or suspected of having political ties or relationships with Jews. These women were in Auschwitz and Ravensburk camp who were construction worker. A false promise was made to them of release from the camps after six months of work in the brothel. These women had no option between life and death. For instance, according to polish prisoner women working as construction worker she *'volunteered'* for the brothel because she could not survive winter in Auschwitz as a field worker and preferred forced sex labourer. For some women, it was desperation to get one more slice of bread and soup. According to the testimony of one of the prisoners from Ravensburk who got *'voluntarily'* tempted into forced prostitution, maintains that "*They told us we were in the camp brothel, that we were the lucky ones. We would eat well and have enough to drink. If we behaved and fulfilled our duties nothing would happen to us". T*hese women had to have sex with average 8-10men every night between 8 pm-10 pm not allowed giving more than 15 mins to each prisoner. It was made sure by SS prisoner who used to guard it through the elaborate system of '*spy holes'*. The women were humiliated by frequent medical checkups and disinfected creams coated over their genitals before and after the act more like treated them as machines of sexual gratification. After the liberation from the camp, these women got shunned to share their experience out of shame or trauma while foreign victims feared that might be perceived as collaborators with Nazis campaign. Until 2002, they didn't get the recognition of from the German government as a victim of sex slavery or any compensation for their ordeal.

Lastly, as WW II was fading away, the victorious Soviet Soldiers or the Red Army racing towards Berlin in 1945 raped one and half a million German women. Through the **rape of 'German Women'**, they wanted to show the defeat of Nazi Germany. There were notorious mass rapes and multiple rapes on a single woman from April 24 to May 5, 1945, when Soviets secured Berlin. They were raping every German woman ageing from eight to eighty. A diary of a woman journalist was retrieved – *"A woman in Berlin: Eight weeks in the conquered city"* – who provided the detailed account on the ways German women got raped and the choices the latter had to make for survival. Besides, the Soviet army raped the Jewish women who already went into the torment in the Nazi concentration camp. The journalist provided the detailed account on how one of the Jewish couples who were hiding from Nazi for months in a basement came out when they saw Red Army as their liberators but the husband was fatally shot while his wife was *"[taken] into the hallway, three men on top of her, as she kept howling and screaming, "But I'm Jewish, I'm Jewish".* The journalist describes that for survival the German women entered into an informal agreement with Soviet Soldiers and officers called as 'Ivans' from the protection from the other Red Armies. While some women opted for prostitution to stay alive and to avoid multiple rapes by being consort to a soviet soldier. The line between prostitution and rape got

blurred by the end of WW II. According to scholars narrative, the German women were getting punished for the crimes done by German men in USSR as a form of justice. The rapes were done with the motive of devaluation and humiliation of German woman also to challenge the masculinity of German men and direct attack to the German corporate body. Red Army did not distinguish between ethnicity and class when it came to rape. But more astounding was German man reactions to the raped women. Eventually, victims of rape were blamed for their irrepressibility for the Soviet soldiers. Through the above case studies deliberation, an observation is made that sexual violence becomes a weapon of war at the wartime period when it involves strategic campaigns. In other words, there are pre-determined political or military or economic objectives to be achieved. The weapon of war is defined as *'instrument of terror'* to control, coerce or erasure of targetted populations. Conventionally, the understanding of sexual violence during the period of war is limited to rape (kate). Notwithstanding, the case studies here addressed that there are other forms of sexual violence used in war-conflict situations that vary in intensity and ultimately take its distinct appearance. These are sexual slavery, trafficking, undressing, sexual mutilation, forced marriage, branding are commonly used violence during the wartime period. The sexual atrocities inflicted upon the women at the time of World War II vary in the conduct depended upon countries disposition in war during world war II complementing with their strategic campaigns wherein the sexual gratification of the perpetrators was in common. These case studies reflected thatimperialist and axis countries along with the allies, called good guys fighting for the good wars and cause, had equally participated in the barbarous act of sexual violence.

Universal Declaration of Human Rights

The United Nations was founded by 51 countries in October 1945, two months after World War II ended. Two world wars, the nuclear bombings of Hiroshima and Nagasaki and a global refugee crisis had led to fears of a destructive World War II.

The UN was founded to avoid such a disaster, as well as to address human rights. Out of all the people who wanted such notions to become a reality, it was Eleanor Roosevelt – the wife of the late United States President Franklin Delano Roosevelt – who would play a crucial role in the formulation of the Universal Human Rights Declaration

President Harry Truman appointed Eleanor Roosevelt to the US delegation to the United Nations in 1945. She was well known throughout the world as a champion of poverty allegations and universal civil rights. It was in April 1946, after becoming chair of the UN Commission on Human Rights, that she took on the task of drafting a human rights declaration for the world.

Eleanor's ideals about human rights and desire for global peace were influenced by her experiences of both the world wars where she had worked with shell-shocked soldiers undergoing psychological treatments during World War I while she had visited the devastated cities of Europe during the second world war.

Drafting the Universal Declaration of Human Rights was not at all an easy task. For starters:

1. Both the United States and the Soviet Union had their own definition of human or to put it simply could not agree on what human rights were.
2. Many conservative US politicians were not fond of supporting the economic and social rights of the UDHR because in their eyes such rights were 'communist' in their nature and scope.

However, Elanor with her charm and diplomacy managed to gather enough support for the UDHR to be passed in a resolution.

Hansa Mehta, a UN delegate from the newly independent country of India and the only other woman on the Commission on Human Rights was crucial in shaping the declaration. It was she who changed the

original declaration's first article from "All men are born free and equal" to "All human beings are born free and equal".
Even though the declaration isn't binding or enforceable. It would serve as a model for legislation in many countries.
After the draft was presented to the United Nations General Assembly, it was adopted on December 10, 1946.
December 10, the anniversary of the adoption of the Universal Declaration, is celebrated annually as World Human Rights Day or International Human Rights Day.
The Universal Declaration of Human Rights (UDHR) is an international document adopted by the United Nations General Assembly (UNGA). It establishes the rights and freedoms of all members of the human race.
It was accepted by the UNGA as per Resolution 217 during the session on December 10, 1948. Among the United Nations members at the time, 48 voted in favour, none against, 8 abstained and 2 did not vote.
The UDHR has played a significant role in the history of human rights.
The Universal Declaration of Human Rights (UDHR) is an international document adopted by the United Nations General Assembly that enshrines the rights and freedoms of all human beings. Drafted by a UN committee chaired by Eleanor Roosevelt, it was accepted by the General Assembly as Resolution 217 during its third session on 10 December 1948 at the Palais de Chaillot in Paris, France. Of the 58 members of the United Nations at the time, 48 voted in favour, none against, eight abstained, and two did not vote.

A foundational text in the history of human and civil rights, the Declaration consists of 30 articles detailing an individual's "basic rights and fundamental freedoms" and affirming their universal character as inherent, inalienable, and applicable to all human beings. Adopted as a "common standard of achievement for all peoples and all nations", the UDHR commits nations to recognize all humans as being "born free and equal in dignity and rights" regardless of "nationality, place of residence, gender, national or ethnic origin, colour, religion, language, or any other status". The Declaration is considered a "milestone document" for its "universalist language", which makes no reference to a particular culture, political system, or religion. It directly inspired the development of international human rights law, and was the first step in the formulation of the International Bill of Human Rights, which was completed in 1966 and came into force in 1976.

Although not legally binding, the contents of the UDHR have been elaborated and incorporated into subsequent international treaties, regional human rights instruments, and national constitutions and legal codes.

All 193 member states of the United Nations have ratified at least one of the nine binding treaties influenced by the Declaration, with the vast majority ratifying four or more. While there is a wide consensus that the declaration itself is non-binding and not part of customary international law, there is also a consensus that many of its provisions are binding and have passed into customary international law, although courts in some nations have been more restrictive on its legal effect. Nevertheless, the UDHR has influenced legal, political, and social developments on both the global and national levels, with its significance partly evidenced by its 530 translations, the most of any document in history.

During World War II, the Allies—known formally as the United Nations—adopted as their basic war aims the Four Freedoms: freedom of speech, freedom of religion, freedom from fear, and freedom from

want. Towards the end of the war, the United Nations Charter was debated, drafted, and ratified to reaffirm "faith in fundamental human rights, and dignity and worth of the human person" and commit all member states to promote "universal respect for, and observance of, human rights and fundamental freedoms for all without distinction as to race, sex, language, or religion". When the atrocities committed by Nazi Germany became fully apparent after the war, the consensus within the world community was that the UN Charter did not sufficiently define the rights to which it referred. It was deemed necessary to create a universal declaration that specified the rights of individuals so as to give effect to the Charter's provisions on human rights.

In June 1946, the Economic and Social Council (ECOSOC)—a principal organ of the newly founded United Nations responsible for promoting human rights—created the Commission on Human Rights (CHR), a standing body within the UN tasked with preparing what was initially conceived as an International Bill of Rights. It had 18 members from various national, religious, and political backgrounds, so as to be representative of humanity. In February 1947, the Commission established a special Universal Declaration of Human Rights Drafting Committee, chaired by Eleanor Roosevelt of the United States, to write the articles of the Declaration. The Committee met in two sessions over the course of two years.

Canadian John Peters Humphrey, the newly appointed Director of the Division of Human Rights within the United Nations Secretariat, was called upon by the UN Secretary-General to work on the project, becoming the Declaration's principal drafter. Other prominent members of the Drafting Committee included René Cassin of France; Committee Rapporteur Charles Malik of Lebanon, and Vice-Chairman P.C. Chang of the Republic of China. A month after its creation, the Drafting Committee was expanded to include representatives of Australia, Chile, France, the Soviet Union, and the United Kingdom, in addition to the inaugural members from China, France, Lebanon, and the United States.

Humphrey is credited with devising the "blueprint" for the Declaration, while Cassin composed the first draft. Both received considerable input from other members, each of whom reflected different professional and ideological backgrounds. The Declaration's pro-family phrases allegedly derived from Cassin and Malik, who were influenced by the Christian Democracy movement; Malik, a Christian theologian, was known for appealing across religious lines, as well as to different Christian sects. Chang urged removing all references to religion to make the document more universal, and used aspects of Confucianism to settle stalemates in negotiations. Hernán Santa Cruz of Chile, an educator and judge, strongly supported the inclusion of socioeconomic rights, which had been opposed by some Western nations.

In her memoirs, Roosevelt commented on the debates and discussions that informed the UDHR, describing one such exchange during the Drafting Committee's first session in June 1947.

In May 1948, roughly a year after its creation, the Drafting Committee held its second and final session, where it considered the comments and suggestions of member states and international bodies, principally the UN Conference on Freedom of Information, which took place the prior March and April; the Commission on the Status of Women, a body within ECOSOC that reported on the state of women's rights worldwide; and the Ninth International Conference of American States, held in Bogota, Colombia in spring of 1948, which adopted the American Declaration of the Rights and Duties of Man, the world's first general international human rights instrument. Delegates and consultants from several UN bodies, international organisations, and nongovernmental organisations also attended and submitted

suggestions. It was also hoped that an International Bill of Human Rights with legal force could be drafted and submitted for adoption alongside the Declaration.

Upon the session's conclusion on 21 May 1948, the Committee submitted to the Commission on Human Rights a redrafted text of the "International Declaration of Human Rights" and the "International Covenant of Human Rights", which together would form an International Bill of Rights. The redrafted Declaration was further examined and discussed by the Commission on Human Rights in its third session in Geneva 21 May through 18 June 1948. The so-called "Geneva text" was circulated among member states and subject to several proposed amendments; for example, Hansa Mehta of India notably suggested that the Declaration assert that "all human beings are created equal", instead of "all men are created equal", to better reflect gender quality. Charles Theodore Te Water of South Africa fought very hard to have the word dignity removed from the declaration, saying that "dignity had no universal standard and that it was not a 'right'". Te Water believed correctly as it turned out that listing human dignity as a universal human right would lead to criticism of the apartheid system that had just been introduced by the new National Party government of South Africa. Malik in response stated it was Prime Minister Jan Smuts of South Africa who had played an important role in drafting the UN Charter in 1945 and it was Smuts who inserted the word dignity as a universal human right into the charter. Despite te Water's efforts, the word dignity was included in the declaration as a universal human right.

With a vote of 12 in favour, none opposed, and four abstaining, the CHR approved the proposed Declaration, though was unable to examine the contents and implementation of the proposed Covenant. The Commission forwarded the approved text of the Declaration, as well as the Covenant, to the Economic and Social Council for its review and approval during its seventh session in July and August 1948. The Council adopted Resolution 151(VII) of 26 August 1948, transmitting the draft International Declaration of Human Rights to the UN General Assembly.

The Third Committee of the General Assembly, which convened from 30 September to 7 December 1948, held 81 meetings concerning the draft Declaration, including debating and resolving 168 proposals for amendments by UN member states. On its 178th meeting on 6 December, the Third Committee adopted the Declaration with 29 votes in favour, none opposed and seven abstentions. The document was subsequently submitted to the wider General Assembly for its consideration on 9 and 10 December 1948.

The Universal Declaration was adopted by the General Assembly as UN Resolution A/RES/217(III)[A] on 10 December 1948 in Palais de Chaillot, Paris. Of the 58 UN members at the time, 48 voted in favour, none against, eight abstained, and Honduras and Yemen failed to vote or abstain.

Eleanor Roosevelt is credited with having been instrumental in mustering support for the Declaration's adoption, both in her native U.S. and across the world, owing to her ability to appeal to different and often opposing political blocs.

The meeting record provides firsthand insight into the debate on the Declaration's adoption. South Africa's position can be seen as an attempt to protect its system of apartheid, which clearly violated several articles in the Declaration. Saudi Arabia's abstention was prompted primarily by two of the Declaration's articles: Article 18, which states that everyone has the right "to change his religion or belief", and Article 16, on equal marriage rights. The abstentions by the six communist nations centred

on the view that the Declaration did not go far enough in condemning fascism and Nazism; Eleanor Roosevelt attributed the actual point of contention as being Article 13, which provided the right of citizens to leave their countries. Other observers point to the Soviet bloc's opposition to the Declaration's "negative rights", such as provisions calling on governments not to violate certain civil and political rights.

The British delegation, while voting in favor of the Declaration, expressed frustration that the proposed document had moral obligations but lacked legal force; it would not be until 1976 that the International Covenant on Civil and Political Rights came into force, giving a legal status to most of the Declaration. 10 December, the anniversary of the adoption of the Universal Declaration, is celebrated annually as World Human Rights Day or International Human Rights Day. The commemoration is observed by individuals, community and religious groups, human rights organizations, parliaments, governments, and the United Nations. Decadal commemorations are often accompanied by campaigns to promote awareness of the Declaration and of human rights general. 2008 marked the 60th anniversary of the Declaration, and was accompanied by year-long activities around the theme "Dignity and justice for all of us". Likewise, the 70th anniversary in 2018 was marked by the global “Stand Up For Human Rights” campaign, which targeted youth.

Feminism

Feminism is a social and political movement that advocates for the rights of women on the grounds of equality of sexes. It does not deny the biological differences between the sexes but demands equality in opportunities. It covers everything from social and political to economic arenas. In fact, feminist campaigns have been a crucial part of history in women empowerment. The feminist campaigns of the twentieth century made the right to vote, public property, work and education possible. Thus, an essay on feminism will discuss its importance and impact.

Feminism is not just important for women but for every sex, gender, caste, creed and more. It empowers the people and society as a whole. A very common misconception is that only women can be feminists. It is absolutely wrong but feminism does not just benefit women. It strives for equality of the sexes, not the superiority of women. Feminism takes the gender roles which have been around for many years and tries to deconstruct them.

This allows people to live freely and empower lives without getting tied down by traditional restrictions. In other words, it benefits women as well as men. For instance, while it advocates that women must be free to earn it also advocates that why should men be the sole breadwinner of the family? It tries to give freedom to all.

Most importantly, it is essential for young people to get involved in the feminist movement. This way, we can achieve faster results. It is no less than a dream to live in a world full of equality.

Thus, we must all look at our own cultures and communities for making this dream a reality. We have not yet reached the result but we are on the journey, so we must continue on this mission to achieve successful results.

Feminism has had a life-changing impact on everyone, especially women. If we look at history, we see that it is what gave women the right to vote. It was no small feat but was achieved successfully by women.

Further, if we look at modern feminism, we see how feminism involves in life-altering campaigns. For instance, campaigns that support the abortion of unwanted pregnancy and reproductive rights allow women to have freedom of choice.

Moreover, feminism constantly questions patriarchy and strives to renounce gender roles. It allows men to be whoever they wish to be without getting judged. It is not taboo for men to cry anymore because they must be allowed to express themselves freely.

Similarly, it also helps the LGBTQ community greatly as it advocates for their right too. Feminism gives a place for everyone and it is best to practice intersectional feminism to understand everyone's struggle. The key message of feminism must be to highlight the choice in bringing personal meaning to feminism. It is to recognize other's right for doing the same thing. The sad part is that despite feminism being a strong movement, there are still parts of the world where inequality and exploitation of women take places. Thus, we must all try to practice intersectional feminism.

LGBT Rights

People around the world face violence and inequality—and sometimes torture, even execution—because of who they love, how they look, or who they are. Sexual orientation and gender identity are integral aspects of our selves and should never lead to discrimination or abuse. Human Rights Watch works for lesbian, gay, bisexual, and transgender peoples' rights, and with activists representing a multiplicity of identities and issues. We document and expose abuses based on sexual orientation and gender identity worldwide, including torture, killing and executions, arrests under unjust laws, unequal treatment, censorship, medical abuses, discrimination in health and jobs and housing, domestic violence, abuses against children, and denial of family rights and recognition. We advocate for laws and policies that will protect everyone's dignity. We work for a world where all people can enjoy their rights fully.

Conclusion

Gender refers to the socially constructed roles of and relations between men and women. It implies the social qualities and opportunities involved with being male and female. It also refers to the relationship between women and men and girls and boys, as well as the relations between women and those between men. Gender is a cultural term. It refers to the different roles which the society, assigns to men and women. It distinguishes between 'masculine' and 'feminine' stereotypes. The concept of gender was become popular in the early lifes in the field of feminism, sociology and psychology.

On the other hand, Sex refers to the biological and physiological differences between men and women. The term sex is a physical differentiation between the biological male and the female. The infant is identified as a boy or a girl depending on his or her sex. It refers to biological factors which distinguish man from woman. Judith Butler says "Sex is not just an analytical category. It is a normative category as well. It stipulated what men and women are. It also stipulates what men and women ought to be. It formulates rules to regulate the behaviour of men and women.

Distinguishing between sex and gender is nothing but a debate of nurture our nature. Sex refers to the biological differences between men and women and gender indicates the vast range of cultural meanings attached to that basic difference. The distinction between sex and gender was first emerged in the 1950s and 1960s in the writings of British and American psychiatrists and medical personnel engaged to cure intersex and trans-sexual patients. To distinguish between the two Simon de Beauvoir rightly says "women are made, they are not born". It indicates the cultural aspects of sex.

BIBLIOGRAPHY:-

Barpujari, HK: "Political History of Assam" Government of Assam, Calcutta (1977).

Barpujari, HK: "North East India: Politics and Prospects since independence". Spectrum Publications, Guwahati-781001, 1998.

Basumatary, Ionee: "Politics in North East India" Bishal Prakashan, Guwahati-781003 (2014).

Baruah, Sanjib: "India Against Itself, Assam and the politics of Nationality". Oxford University Press, New Delhi-110001, 1999.

Chaudhuri, Kalyan: "New History of Assam and India" Oriental Book Company Private LTD, Guwahati (2004).

Datta, PS: "Autonomy Movement in Assam (Documents)" Omsous Publications, New Delhi-110028, 1993.

Gait, Sir Edward: "A History of Assam" EBH Publishers, Guwahati (2008).

Ghai, KK: "Politics in India" Kalyani Publishers; 1/1, Rajinder Nagar, Ludhiana-141008 (2012).

A PROVERBIAL PERCEPTION OF THE AFRICAN WOMAN IN YORUBA CULTURE: A STIWANIST PERSPECTIVE

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ABSTRACT

Proverb is an important aspect of everyday speech and often reflects the ideology of a linguistic community. The study seeks to examine the proverbial perception of the African woman via the Stiwanist lens.

In Yoruba culture, most of the proverb relegate the woman and consider her as a "Necessary Evil." (Bâ 1981). She is the "Other" (Joseph 2022) which implies that she has minimal space in a linguistic community and excluded from political matters because of her sex. The proverbs demonstrate the marginalisation, oppression, subordination of the African woman in the patriarchal Yoruba society.

With respect to Molara Leslie Ogundipe's (1994) theory on Stiwanism which places emphases on social transformation of African society including women, the study seeks to deconstruct the negative proverbs in other to have a sane, secured and safe society.

The study pleads for a social change with respect to Molara Leslie-Ogundipe's theory on Stiwanism.

Keywords: Proverb, Linguistic community, African Woman, Yoruba Culture.

INTRODUCTION

The Yoruba traditional African society considers the woman as inferior to the man, it is a patriarchal society where men dominate. Most Yoruba proverbs evidently make most women in Yoruba society invisible and reveal the patriarchal nature of the woman. The aim of this article is not to translate Yoruba proverbs to English but to analyse the content of the proverb, its negative effects on not just the woman, the man and the society in general.

The article intends to emphasize the positive aspect of Yoruba proverbs and deconstruct the negative aspect of proverbs based on religion, customs and traditions which relegates the African woman. As long as women remain relegated in the African Society through these proverbs, there will be insurmountable conflicts because proverbs speak louder than the voice.

According to Jegede (Jegede 2011), Proverbs form a pool of linguistic and thematic resources from which speakers and writers in rhetoric, politics, economics, jurisprudence, philosophy, history, technology, and rhetoric have also drawn.

The source of a sentence is found in proverbs. Most times, it is noted that proverbs reflect the political history of a linguistic society. I chose the Yoruba linguistic community in other to educate, clarify and reconstruct negative notions about women that inhibits the growth of women, men and the society in general.

THEORETICAL FRAMEWORK

The study is based on Molara Leslie Ogundipe's theory on Stiwanism. Ogundipe adopted the acronym "STIWA" which is "Social Transformation Including Women in Africa as a response to Western Feminism based on race, class and gender. Ogundipe proposes the Stiwanist theory as a theory of emancipation of the African Woman and the social transformation of African countries. As a result of several debates on Feminism, Ogundipe decided to adopt "STIWANISM" which is "Feminism" in the African context. According to Ogundipe:

> I have since advocated the word "Stiwanism" instead of feminism to bypass these concerns and to bypass the combative discourses that ensue whenever one raises the issue of feminism in Africa. The creation of the new word is to deflect energies from constantly having to respond to charges of imitating Western feminism and, in this way, conserve those energies, to avoid being distracted from the real issue of the conditions of women in Africa… "Stiwa" is my *acronym* for *Social Transformation Including Women in Africa*. My thesis has always been that indigenous feminisms also existed in Africa and we are busing researching them to the fore now. "STIWA" is about the inclusion of African women in the contemporary social and political transformation of Africa. Be a " Stiwanist". (Ogundipe, 1994, p. 229-230).

Stiwanism describes the conditions of the African woman such as Female Genital Mutilation (FGM), Unwanted Pregnancy, Single-Motherhood, Domestic Violence, Rape, Polygamy, Sterility, etc. These conditions affect the woman, the man and the society at large reasons why she pleads for social change. Ogundipe explains the fact that Stiwanism is not interested in changing roles, women are ready to collaborate, conciliate and cooperate with their male partners for the wellbeing of everyone. I have chosen this theory because the linguistic community in question is situated in Africa.

THE WOMAN AND THE TRADITONAL AFRICAN SOCIETY:

According to Buchi Emecheta (1974) the woman is considered as "Second Class Citizen." She is the "Other" (Joseph 2022), born to accomplish the destiny of the man. Her life belongs to the man, she is not in control of matters that affect her. Her opinions are not considered in matters that affect her, reasons why the greatest task of female writers is to use their "pen" in correcting societal ills. According to Chinyere Grace Okafor, (1994), the woman belongs to the "Uwa Umuanyi" in Igbo language meaning Womens" World, the man and the woman do not belong to same world. This idea is applied in justifying the marginalization of women in the society. Simone de Beauvoir identified the woman as inferior to the man in her book "*Le deuxième sexe*" (1976). This implies that the man is the first sex while the woman is the "second sex". Oppression, subjugation of women cuts across all continents but it is more prevalent in Africa. The study seeks to deconstruct the negative proverbs on women while emphasizing on the positive aspects of the woman.

DEFINITION OF A PROVERB?

It is important to note that proverb is an aspect of "Oral Literature" Most proverbs are found in Oral Literature. Accor ding to Moye (2012), Le proverbe est en énoncé qui cherche à éclairer ou à corriger une situation (Proverb is a statement that seeks to clarify or correct a situation). According to Jegede (2011): *a proverb reflects the wisdom of a people, provides moral instruction to the young, cautions the old and influences peoples will and activities*.

Stephanie Newell (2000) describes proverbs as quotations which are used as other quotation from foreign sources in West Africa. Oye (2014) describe proverbs as a short sentence with a universal and moral truth. Proverbs hide ideas via the usage of metaphors to avoid insults or misunderstanding on the part of the individuals.

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Proverbs are found more in spoken language than in written form. Simone de Beauvoir, in her book, *Le deuxième Sexe* (1976) reveals the notion that woman is considered inferior to the man, reasons why she is called "The second sex". This reveals the fact that in other parts of the world and in some continents, women are women, placed at the second role. This is in relation with the Yoruba culture where most women are generally devalued and stigmatized.

However, mothers have more value than wives being that men and women are born of woman. Some Yoruba proverbs esteem women but they are quite minimal.

The sample of proverbs were collected from scientific documents and previous collaborative research with scholars in the discipline.

Mothers as Precious gifts:

- **Ìyá ni wúrà baba ni dingi (Mother is Golden, Father is the mirror) (Joseph: 2015)**

The proverb compares a mother to gold, a precious ornament. It accords the mother two essential qualities: stability and value. The value comes from the fact that women are deprived of several opportunities as wives; as soon as they get to the adult stage, children try to recompense their mothers. Hence, they become "gold" something of inestimable value. The proverb also demonstrates the importance of a mother to any individual, to herself, the man and the society. If there is no mother, there will be a lot of challenges that will disrupt the order of nature. Since the Yoruba society is a patriarchal society, the man is considered the model in the society.

The importance of a woman/mother is seen in Osun Myth. "Olodumare" (Creator of the Universe) sent sixteen "Orisas" (male deity) to planet earth. Osun was the only female deity. Upon arriving planet earth, Osun was abandoned by her male counterparts because she was a woman who had unwanted pregnancy. She empowered herself via her occupation as a "Hair dresser" ignoring her male counterparts.

There was dryness, famine and poverty on earth, which led the other Orisas to consult Olodumare, on the way forward. "Olodumare" insisted on reconciliation with Osun who had not just the power to withhold rain but also had beauty. She also had influential powers on nature. The male "Orisas" did not have a choice but to plead with Osun who was initially abandoned to give them rain for the land to become fertile again. Osun insisted that if she gave birth to a girl child, she was going to remain in her closet but if it was a male child, she would give them rain. Fortunately, she gave birth to a son "Esu" a son who became the symbol reconciliation. (Osarumwense 2011).

The Osun myth narrates the importance of women in the society to effect positive changes in all spheres of life. Her "fertile" nature brings about "rain". The woman is a life-giver as portrayed in the proverb.

- Agbọràn dùn bi iyá kòsì.
  (There is no confidant like a mother).
  This proverb explains the relationship between mothers and their children. As a result of the fact that mothers carry their children in the womb for nine months, a bond is created which makes children confide in their mothers. Some male children have a tendency to confide in their mothers rather than their wives.

Women in politics

Traditionally, some Yoruba women are excluded from political positions because they are considered not fit or reliable. Political positions are meant for the male counterpart as portrayed in these proverbs:

- Obìnrin kó ní gògógò
(The woman has no adam's apple)

The "adam's apple' is a symbol of man's ability in keeping secrets. A woman has no adam's apple, therefore, she cannot keep secrets. This proverb implies that a woman is loosed in her speech. Therefore, she cannot occupy a political position because politics is sensitive. However, very few women who are strong, bold and courageous remain in politics despite the threats and challenges.

- Iyàlóde kòni dàgbà kó ní oún fẹ j'ọba ìlú.
(No matter how strong/old a woman is, she cannot ascend the throne).

Ascending the throne involves a lot of factors. One must avoid being a traitor, must be very confidential, must be loyal, become a member of certain "sects," etc. Some of these factors are not necessarily applicable. The proverb implies that no matter how old "Iyalode" (Head of women) becomes or has reached in the peak of her carrier, she cannot ascend the throne. The throne most times is exclusively reserved for the masculine genre.

- Ọwọn èniyàn ni m'obinrin jẹ baálẹ (Joseph 2015)
(The absence of a human being made the woman to become the head of a family).

The woman is considered here as an "object" a "commodity", the man is the "human being." A woman can only be the Head when the human being is not available. The proverb relegates the woman to a lower class,that is she is continuously under the man. She is likened to a "sheep" who must be ready to obey the "Shepherd" at all times. The woman is not considered valuable when it comes to political, social, intellectual and several other aspects hence, she should never become a ruler, nor the head of a family.

- Obìnrin l'èké obinrin l'ọdàlẹ.
(No one depends on a woman, she is a traitor)

Political positions come with many commitments. These commitments involve being a member of certain "group", activities going on in these groups must not be revealed. Women cannot and should not be in politics because they cannot meet up to the demands that is expected in the "groups". Women are likely going to spell things out because of their weak nature.

Women Stigmatised as Witches

In Yoruba culture, most women are considered as witches.

- Kàkà kó sàn làra àjẹ ó fi gbogbo ọmọ bi obìnrin; ẹyẹ wá ńsubú lu ẹyẹ (Joseph, 2015)
(Instead of being less wicked, the witch gives birth to female children.)

This is a common proverb in Yoruba land. The presence of a lot of women indicates witchcraft. In Yoruba culture as portrayed in the proverb. Women are associated with witch-craft. Instead of repenting as a witch, the woman gives birth to more female children which implies the multiplication of witches and continuity of witchcraft in the society. The proverb is also used in mocking women who have not

given birth to any male child. A woman who gives birth to female children is sometimes considered sterile. It connotes the superiority of male children over female children as seen in Osun Myth.

However, some women have natural powers given by God to help them overcome challenges of life. This power comes from the ability to be "pure" (sexual abstinence) before marriage and to remain pure within and after being married. As a result of this "purity", some women have the power to see into the future and influence a negative situation. The power is evident in the life of Camara Laye's mother in the novel "*L'Enfant noir*" (I953).

She was solicited when a horse refused to stand up. She came close to the horse and spoke boldly that if it was true she didn't know a man before and after her marriage, the horse should stand up and the horse stood up (Laye, 1953, p. 69). This aspect in Francophone African Literature describes the power of women to be agents of social change.

Women as traitors, frivolous creatures.

- Ọkùnrin tí kò tíí kú aya rẹ ni o tíí paa (2015)

(A man is alive because the wife has not killed him).

The woman is seen as a traitor. The wife knows everything about the man. Therefore, she is capable of anything, even killing the man. This explains the reasons why women are greatly oppressed as widows. It is assumed that she could be responsible for the husband's death no matter the relationship they shared based on the polygamous nature of the African society where women fight to keep the man. In Senegalese culture, (Bâ, 1980), at the death of a spouse, the woman's hair is shaven by her in-laws, her belongings are taken away, her movement is restricted during mourning process to avoid causing more ills. She is assumed to be responsible for her husband's death even when the man died of a health condition.

- Ẹni tí obà gun ẹsin obìnrin yio subú

(Anyone who climbs the horse of a woman will fall).

A man who depends on a woman will get into trouble. Here the woman is seen as unreliable and not trustworthy. She is not capable of standing in for anyone. She is someone who cannot be depended on.

- Ẹní tí ó da aṣọ obìnrin bòra, wèrèpè lòdà bòra (Joseph 2015)

(Anyone who covers himself with a woman's cloth covers himself with "werepe" leaves)

Werepe is a plant that itches when in contact with the skin. Anyone in contact with "werepe" has to undress. This implies that the woman is careless with her speech, whatever is said to a woman is said to the general public. She is a traitor.

- Obìrin bímọ fùn ni ò ní kó má pá ni (Bestman 2015)

(That a woman has a child for a man does not stop her from killing the man)

A woman is again presented as frivolous, a traitor and a murderer. She is capable of demonic and diabolic activities which involves killing the husband.

Women as sexual instruments.

Most of the proverbs in the category present the woman as unfaithful creatures. Infidelity is seen as an innate part of the woman.

- Okó àlè dùn ju t'ọkọ lọ (Bestman 2015)

(The male organ of a concubine is better that of a husband)

This proverb demonstrate infidelity on the part of the woman. She is seen as unfaithful. Most times, she is suspected to be promiscuous in marital relationships.

- Okó ilé kií jo obìnrin lojù àfi tì ó bá dó ti ìta.

(The woman does not appreciate the male organ at home except she has the taste of the male organ outside her home).

This proverb also implies that the woman prefers the male organ outside her matrimonial home. She is likely going to be more appreciative of the concubine's organ that her husband's organ.

- Gbogbo obìnrin lo ngbeṣe, èyí tí ó bá ṣe tire l'aṣéjù laráyé ń pè l'aṣewó.

(Every woman is unfaithful but the one who exaggerates is called a "prostitute.")

The Yoruba community is a polygamous community. Women are most times accused of promiscuity. The proverb prepares the heart of the man for the promiscuous identity of the woman.

These proverbs informs the reasons for Female Genital Mutilation, which involves the cutting of the woman's clitoris because in these traditional spaces, she has no right to sexual pleasures. Cutting of the woman's clitoris will stop her from promiscuous.

Meanwhile, some scholars like Ramonu Sanusi (2015) affirm that promiscuity is a thing of the mind. Even when she goes through Female Genital Mutilation, she can still be promiscuous if she wants to.

Women as slaves/ less important creatures in marriage.

- Foro foro ímu íyàwo ọ san jú iyàrà ọ fifó
  (A woman is better than an empty).

The proverb considers the woman as a necessary evil, a terrible human being who is important in the house. She is also seen like a piece of furniture that can be tossed around. The power of a woman cannot be under-estimated. In the Yoruba context, this proverb also makes it a clear that a man is incomplete without a woman especially in marital relationships. Instead of remaining a bachelor, it is better to be married.

Obìnrin so ìwà nu, ó ni oùn ò lórí ọkọ

(A woman with a bad character cannot build a home).

The West African community esteem marital relationships even when it is sometimes sour. Married woman are seen to be responsible. Every woman tries to get married to acquire certain societal status. When a woman is single, it is assumed that she does not have a good character. Meanwhile, every woman has the right to decide if she wants to get married or not. This proverb justifies reasons why the woman is oppressed, maltreated and disregarded.

- Pàṣan táa fi na iyáálé nbẹ laja fun iyàwọ.

(The rod of correction for the first wife is waiting for the second wife)

The rate of domestic violence in the West African community is very high. A woman is like a child that should be corrected via a rod. The position of a wife does not stop her from been corrected. If the first wife does not escape correction, the last wife who is expected to be a pet will also be a partaker of the "rod". The proverb explains the idea of an abandoned puppet.

This indicates that a woman is to going to be used and dumped, regardless of her position or beauty.

- A sukún rọjọ ilé níí tú (Bestman 2015)

(A crying woman during family dispute destroys her home)

The proverb explains the idea that of "Silence" for women in their matrimonial relationships no matter the level of oppression, marginalization or subjugation. Her emotions must not be displayed. Her hurts and feelings must be internalized. The proverb encourages all forms of abuse amongst women. Marriage is not expected to be a happy place for the woman. The stiwanist theory encourages a deconstruction of these proverbs with the help of the male counterpart.

Women as "voiceless humans"

- Ile ti'óbìnrin ti nṣe atótó arere, igi arère hu níí níbè (Kolawole, 2004)

"Arere" is a tree that grows in the forest and produces an offensive smell. It is a strong tree used in carpentry activities to produce good furniture. Women are not expected to speak in any gathering. "Atoto arere" implies that the woman wants her voice to be heard. If a woman speaks, her words may not be endearing or soothing, it is better for her to remain silent. Therefore, with respect to this proverb, a vocal woman stinks when she raises her voice. She has to be trained to remain silent.

CONCLUSION

From our analyses, most of the proverbs on women are very terrible, giving a false image of the woman's strengths and abilities. These proverbs are passed on from one generation to the other, influencing the attitude of men towards women either consciously or unconsciously.

This implies that the woman is dehumanized, demystified and marginalized. The negative proverbs sometimes stop the woman from blossoming and fulfilling her destiny. The Yoruba proverb not only portray the fact that women are seen as less important, but reveals to a large extent the image and perception of women in most patriarchal societies.

Being that proverbs reveal the identity of a linguistic community, the article pleads for a deconstruction of these negative proverbs.

The analyses reveal that sexism, sexual discrimination and political inequity have their roots in the negative proverbs.

The society is made up both male and female. Stiwanism encourages collaborative efforts between men and women in enhancing peace and harmony. It is a wakeup call for both the masculine and feminine gender especially the masculine gender to help in the fight against discriminatory, derogatory and negative proverbs that can affect the woman, the man and the society in general. Both male and female are encouraged to become Stiwanists.

There are positive proverbs on women in the traditional Yoruba society but the ratio of the positive proverb is quite minimal compared to the negative proverbs.

Women should empower themselves as seen in Osun Myth and avoid "acting" the proverbs. They should be confident and proud of their sex, arise from any form of challenge and fulfil their destinies.

The place of education cannot be overemphasized, education gives a woman a "voice" in her community. Women in patriarchal structures should find a way of educating themselves, the family and the nation as a whole. The negative proverbs should be transformed into positive proverbs either through deliberate positive actions or through all available possible resources, capable of transforming the woman.

Based on Molara Leslie-Ogundipe's theory on Stiwanism, the patriarchal societies have to change their vision and perception of African woman in social and political transformation. For any given society to be transformed socially and politically, the role and place of women cannot be downplayed. The "Ubuntu" philosophy has to play out which is I am because You are.

BIBLIOGRAPHY

Adeniran, D. (2007). *Imagine This*. London: South West Books

Akinlade, K. (1987*). Owe Pelu Itumo* (A-GB), Ibadan: Longman.

Bâ, M. (1980). *Une Si longue lettre*. Sénégal : Nouvelles Editions Africaine

Beauvoir de S. (1979). *The Second Sex*. Translated and Edited by Parshely. Harmonds: Penguin.

Bestman, A.M. (2014). Une Étude Womaniste des Proverbs Yoruba. Seminar presented at the Department of Foreign Languages, Faculty of Arts, Obafemi Awolowo University. Ile-Ife, Nigeria.

Emecheta, B. (1974). *Second class citizen.* New York: George Braziller.

Jegede, O. (2011). "Proverbs Speak Louder than Words: A Study of Contents and Structure. In Niyi Osundare's *Village Voices". Isala*. No 6, 35-46.

Joseph, J.1. (2022). The "Other" and Widowhood Practices In Mariama Bâ's "*Une Si longue*". In *IV International New York Academic Research Congress Book*. (pp 342-351), Turkey, USA: BZT Academy Publishing House.

Joseph, J.I. (2015). La Perception de la Femme à travers les Proverbes Yorouba. Paper presented at the 15th UFTAN conference at University of Ibadan. Ibadan: Nigeria

Ijeoma, Pat Ngozi (2013). " Les défis de la traduction des proverbes Igbo en francais'', In *Raneuf*. No 10, 85-101.

Kolawole, M. (2004). « Reconceptualizing African Gender Theory: Rethinking Sexualities In Africa ». In Signe Arnfred (ed.).*Feminist Thought*. (pp 251-265) Uppsala:Nordic African Institute.

Laye, C. (1953). *L'enfant noir*. Guinée: Fontana Books.

Malunga, C. & James, R. (2004). " Using African Proverbs in Organisational Capacity Buildings", In *INTRAC*. 6, 1-10.

Moye, A.S. (2012) "Le fondemenet de la pensée traditionnelle Igbo : Étude des proverbes dans *Difficile à suivre* de Tony Ezike. In *Raneuf,* Vol 1 (9). 74-84

Newell, S. (2002). " The Proverbial Space in Ghanaian Popular Fiction" *Ghanaian Popular Fiction*. (pp. 9-26). Ohio: Ohio University.

Odelade, W. (2012). *Proverbs on Horse Back of Words*. Ibadan: LOVEFUNK Press.

Ogundipe, L. M. (1994). *Recreating ourselves: Africa women and critical transformation.*

New Jersey: African World Press

Ogunyemi, C.O. (1985). "Womanism: The Dynamics of the Contemporary Black Female Novel In English". In *Signs*, Vol 1, 63-80.

Ogunyemi, C.O. (1996). *Africa Wo/man Palava. The Nigerian Novel by Women*. Chicago: The University of Chicago Press.

Okafor, G.C. 1999. " Modern African Literature and Beauvoirism" *Beyond the Marginal Land*. (pp. 57-79). Port Harcourt. Belpot (Nig) Co.

Osarumwense, J.I. (2011). La femme africaine et le défi de grossesse non-désirée et de stérilité dans l'œuvre de trois romancières francophones. Unpublished Masters Thesis, Obafemi Awolowo University. Ile-Ife.

Oye, A. (2014). "Réflexion socioculturelle à travers les équivalents français des proverbes yoruba : Cas des proverbes dans Le Preux chasseur dans la forêt infestée de démons de Fagunwa" *Raneuf*, No 12, 159-182

Sanusi, R. (2015). *Portrayals and Gender Palaver in Francophone African Writing*. Ibadan: Graduke Publishers.

Sanusi, R. (2010). *Le bistouri des larmes*. Ibadan: Graduke Publishers

Schipper, Mineke (1991). *Source of All Evil: African Proverbs and Sayings on Women*. Chicago: Ivan R. Dee Inc.

Walker, A. (1984). *In Search of our Mother's Gardens*. London: The Woman's Press.

Sheba, Laide (2006). Yoruba Proverbs with Feminine Lexis. Ibadan: Spectrum Book Limited.

Yusuf, Y. K. (2009). "Gender Bias and Images of Women in English and Yoruba Proverb: A Cross-Cultural Approach. In Kolawole (ed) Gender Perceptions and Development in Africa. (pp. 63-81). Lagos: Arrabon Academic Publishers.

THE IMPACT OF FAMILY RELATIONSHIPS ON THE FORMATION OF BULLYING IN CHILDREN

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ABSTRACT

The article examines the influence of family relations on the occurrence of school bullying. The behavior of parents often affects the involvement of children in school bullying. The psychological situation in the family largely determines the involvement of the child in school bullying. Children from families with emotional imbalances, as well as mismatched parenting styles (these factors are interrelated), often become victims of bullying. The article analyzes such factors as family structure, parenting style, parental behavior model, communication style in the family, as well as the socio-economic situation of the family that affect the risk of bullying in children.

Keywords: bullying, aggression, victim, buller, family, parenting style, parental control, psychological protection

ВЛИЯНИЕ СЕМЕЙНЫХ ВЗАИМООТНОШЕНИЙ НА ФОРМИРОВАНИЕ БУЛЛИНГА У ДЕТЕЙ

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РЕЗЮМЕ

В статье исследуется влияние семейных отношений на возникновение школьного буллинга. Поведение родителей нередко влияет на вовлеченность детей в школьный буллинг. Психологическая обстановка в семье во многом предопределяет вовлеченность ребенка в школьную травлю. Жертвами травли нередко становятся дети из семей с эмоциональным дисбалансом, а также рассогласованным стилем воспитания (эти факторы взаимосвязаны). В статье анализируются такие факторы как структура семьи, стиль воспитания родителей, модель поведения родителей, стиль общения в семье, а также социально-экономическое положение семьи, влияющие на риск издевательств у детей.

Ключевые слова: буллинг, агрессия, жертва, буллер, семья, стиль воспитания, родительский контроль, психологическая защита

Вопрос о влиянии семейных факторов на вовлечение детей в буллинг в школьной среде является одним из актуальных вопросов, который в последнее время привлекает внимание многих исследователей. Многие исследователи пытались изучить как самих буллеров, так и их семьи, в которых они выросли. Основными объектами этих исследований являются как внешние (экономический и образовательный статус семьи, семьи мигрантов, городские и сельские семьи и др.), так и внутренние характеристики (родительско-детские отношения, сиблинговые отношения, уровень семейных конфликтов, семейные взаимодействия).

А. Реан и М. Новикова выделяют следующие семейные факторы, влияющие на проявления буллинга [4]:

- структура семейной системы (характер более демократичных отношений старших и младших членов семьи, отношения между братьями и сестрами)
- стиль воспитания;
- поведение отца и матери и их участие в воспитании ребенка;
- стиль общения в семье (открытое обсуждение проблемы или закрытость);
- социально-экономическое положение родителей, образование, доход и т.д.

Однако результаты исследований в этой области весьма противоречивы. С одной стороны, в некоторых из этих исследований, возможно, что дети из семей, которые не могут позволить себе дорогую одежду и современные гаджеты из-за тяжелого материального положения, не принимаются группой сверстников в школе, становятся аутсайдерами и чаще становятся жертвами травлений в школе. Другие исследования показывают обратное, отмечая, что низкий финансовый статус семьи не влияет на подверженность ребенка школьным издевательствам.

По мнению одного из исследователей Д. Уокена, наиболее влиятельным фактором с точки зрения изучаемой проблемы являются отношения в семье, где выросли участники школьного буллинга. Количество внутрисемейных конфликтов, а также физическое и психологическое насилие между детьми в семье увеличивает вероятность того, что дети, растущие в таких семьях, будут вовлечены в ситуацию буллинга в школе. Слабая позиция родителя, постоянные притеснения в семье со стороны старшего брата повышают риск того, что ребенок станет жертвой школьной травли. Семьи жертв буллинга имеют слабую внутреннюю структуру. В этих семьях нарушено общение и отсутствуют общие ценности и этические нормы. Все это затрудняет передачу этих ценностей от родителей к детям.

Исследования Шварца, Бауэрса и Кристи-Мишелли показывают, что жертвами школьного буллинга являются дети, которые непосредственно подвергались домашнему насилию или стали свидетелями агрессивного поведения в семье

Исследования Фаррингтона и Эспелага показывают, что домашняя агрессия и суровые наказания приводят к тому, что дети, растущие в такой семье, проявляют такую же агрессию по отношению к своим сверстникам. В то же время исследования показывают, что жестокое, насильственное поведение, бесконтрольность наблюдается не только в семьях жертв буллинга, но и в семьях биллеров [6].

Исследование Бауэрса показало, что семьи жертв издевательств были изолированы от общества по разным причинам. Такой закрытый образ жизни не позволяет детям, подрастающим в этих семьях, общаться со сверстниками, развивать свои социальные навыки, выстраивать модель эффективного взаимодействия с окружающими [7]. По мнению исследователей Олвеуса, Ювонена, Грэма и Ригбина, гипербезопасность в семье также может выступать в роли виктимного фактора у детей, что особенно сказывается на мальчиках, а также детско-родительских конфликтах [4].

В связи с этим во многих исследованиях делается акцент и на методах семейного воспитания. Таким образом, в некоторых семьях ребенку предоставляется слишком много свободы. В результате у ребенка нет возможности узнать, какое поведение приемлемо, а какое нет. Такие условия приводят к снятию всех границ и правил. Такие дети с трудом адаптируются в коллективе с определенными нормами и правилами, их поведение отличается от других. Это, в свою очередь, может спровоцировать его сверстников на агрессивные действия против него.

Господствующий в семье авторитарный стиль воспитания создает условия для формирования у ребенка агрессивного поведения. Георгиу и Ставринидес показали в своем исследовании, что дети, запугивающие других, как правило, выходцы из семей с конфликтом и слабым семейным контролем [9].

Исследователи Инголдсби обнаружили, что конфликты между родителями и детьми связаны с началом раннего антисоциального поведения у мальчиков.

Фанти и Петерман считают, что конфликты между родителями и детьми связаны как с агрессивным поведением детей, так и с их виктимизацией.

Риск ребенка стать жертвой может быть ослаблен безразличным отношением и интересом родителей к ребенку. В связи с этим некоторые исследователи ввели понятие «родительский контроль». Это понятие - непосредственная вовлеченность родителя в жизнь ребенка, контроль над его жизнью. Это можно интерпретировать как пристальное наблюдение за событиями,

которые произошли с ним. Многие авторы считают, что родительский контроль может предотвратить школьную травлю и вовремя положить ей конец. Однако многие считают, что важнее в этом плане искренность и открытость ребенка перед родителями. Таким образом, если ребенок рассказывает родителям о своей жизни, о том, что происходило в школе, и делится своими переживаниями, это еще более важно для профилактики школьной травли.

Некоторые исследователи подчеркивают связь между матерью и ребенком. Один из авторов, Боусетал, считает, что если мать постоянно страдает от депрессии, не участвует в жизни своего ребенка и между ними нет теплых отношений, то дети таких матерей вовлекаются в школьную травлю, либо в качестве жертв или же как агрессоры. Другие исследования подчеркивают особую роль отца в формировании буллингового или антибуллингового поведения. Например, Кристи-Мишель, Кейл, Ласке и Стюарт обнаружили, что дети отцов, которые проводят больше времени со своими детьми и семьями, с меньшей вероятностью будут вовлечены в травлю. Время, проведенное с отцом, влияет на положение ребенка в школе больше, чем на экономическое положение семьи [1]. В некоторых исследованиях изучались личные качества родителей детей, вовлеченных в издевательства, а также опыт их роста. Выяснилось, что родители 55% детей, подвергшихся травле в школе, также были жертвами травли в школе и имели другие проблемы. По словам одного из авторов, Эллисон, родители, над которыми издевались, не в состоянии защитить своих детей. Потому что в этом случае чувство беспомощности становится актуальным. Они не дают своим детям полезных советов, как вести себя в ситуации буллинга, и не помогают сформировать у них эффективную модель поведения перед лицом такой ситуации [5].

Эти родители также не обращаются в школу за помощью,потому что школа создает у этих родителей ассоциацию неприятных воспоминаний.

В целом Д. Ольвеус связывал склонность детей, выступавших агрессорами в школьной травле, к насилию с 4 основными факторами: [8]

1. В раннем детстве общение ребенка с первым воспитателем может впоследствии привести к склонности ребенка к насилию. Итак, это отражается на первоначальных отношениях ребенка с родителями.
2. В то же время высокотолерантная позиция по отношению к ребенку первого воспитателя. Это можно объяснить тем, что иногда родители очень трепетно относятся к своим детям, закрывают глаза на их негативное поведение по отношению к другим детям, прощают им их ошибки и не наказывают за негативные поступки. Это приводит к росту насилия в будущем.
3. Родители очень строго воспитывают своих детей. Здесь мы можем привести пример телесных наказаний.
4. Четвертым по важности фактором являются особенности темперамента ребенка. Например, если ребенок раздражителен и активен, это увеличивает риск того, что он применит насилие к спокойному и нормальному ребенку.

В своем исследовании К. Ригби показал, что буллеры обоих полов имеют серьезные проблемы со своими отцами. В то же время исследования испанских ученых показали, что хулиганы — это дети, выросшие в семьях, более эмоционально успешных, чем жертвы. Хотя их потребности в этих семьях игнорируются, в целом дети положительно относятся к семейному климату [2].

Авторы С.В.Волкова и Е.А.Калинкина отмечают, что жертвы буллинга постоянно подвергаются в семье критике со стороны обоих родителей и подлежат формальному контролю. Сами дети, занимая пассивную позицию в ситуации буллинга, считают, что любая их попытка еще больше усугубит ситуацию[7].

В большинстве случаев дети впервые сталкиваются с травлей в семье. К сожалению, взрослые зачастую используют методы воспитательного воздействия не задумываясь. Они считают, что для того чтобы воспитать «послушного ребенка», достаточно высмеять его, обесценить его как личность, пробудить в нем чувство вины и стыда, несостоятельности, неуверенности в себе, показать, что он ничто по сравнению с другими.

Опасность здесь в том, что ребенок постепенно привыкает к такому отношению. Сначала он чувствует тревогу, слабость и не в силах остановить такое отношение. Затем у него вырабатываются защитные механизмы того, как он может внутренне переживать такое отношение: угнетение «ничего не помню», отрицание: «я такого никогда не испытывал, поэтому

не обижаюсь». Дети не развивают адекватных поведенческих реакций, чтобы противостоять ситуации травли и защищать себя.

Личные установки, поведение, ценности, моральные принципы и табу являются результатом семейных отношений. Формирует семью агрессоров, жертв или управляемую массу, и дети, выросшие в такой семейной среде, выберут одну из этих трех поведенческих ролей, характерных для буллинга.

Все жертвы, агрессоры - результат влияния общества. А поскольку такие важные моменты закладываются в достаточно раннем возрасте (до 6 лет) - именно семья, в которой мы выросли, объявляет нас победителями или жертвами по жизни.

Поведение родителей в этом случае играет очень важную роль. Ситуация, в которой мать унижает отца или же оскорбление отцом матери, самоутверждение взрослых за счет детей, агрессивное поведение в семье, выступают факторами, запускающими механизм девиантного поведения.

Одним из важных параметров семейных отношений являются нормы общения в семье. Поскольку жертва издевательств часто рассматривается другими как виновник насилия (из-за отсутствия популярности среди одноклассников или отсутствия навыков общения), он или она часто предпочитает не делиться своим опытом. В семьях, где выросли эти дети, для них характерны замкнутость, низкая эмоциональность, слабая поддержка со стороны членов семьи. Коммуникация о ситуации буллинга происходит не в триаде родитель-ребенок, а между детьми и каждым из родителей, внутри диады.

Чтобы выявить и предотвратить издевательства, важно знать типы хулиганов, применяющих насилие. Буллеры могут быть физически большими или маленькими. Девочки более склонны к агрессии, чем мальчики.

По данным исследований, у буллеров обычно проявляются расстройства личности, частые школьные нарушения, невнимательность, заниженная самооценка, отсутствие эмпатии к другим ученикам, ревность чужим успехам, неприятие поражения, агрессия и неудачи в отношениях [12].

В то же время к насилию могут прибегнуть и учащиеся, подвергшиеся домашнему насилию, неуспевающие в учебе, чувствующие себя никчемными и неуверенными в себе.

Что касается жертв буллинга, Эллиот отмечает, что жертвы более спокойные, умные, худощавые и хорошо воспитанные своими семьями. Большинство этих детей происходят из семей, где вообще нет никаких проблем. Поэтому, когда виновники травли обращаются с ними агрессивно, они часто не знают, что делать. Тот факт, что другая сторона неуверенна, застенчива, застенчива, тревожна и замкнута, делает их идеальной мишенью.

Семья несет ответственность за то, чтобы их дети не подвергались издевательствам в школе. Для семьи важно иметь регулярный контакт со своими детьми и видеть различия в поведении своих детей. Родитель должен психологически и эмоционально поддерживать ребенка, показывать, что он на его стороне, и стараться максимально сгладить ситуацию с буллингом. Родителю важно показать ребенку, что он его слушает. Родитель должен показать ему, что он больше не одинок со своей проблемой.

В первую очередь родитель должен успокоиться и успокоить ребенка. Он должен создавать у ребенка ощущение эмоционального комфорта. Потому что родительская тревога может усугубить травму ребенка, а эмоции могут помешать родителю установить доверительные отношения.

Родитель должен внимательно выслушать ребенка, выяснить причину происшествия и узнать, что ребенок думает по этому поводу. Также очень важно повысить самооценку ребенка, ставшего жертвой буллинга.

Ребенок должен самостоятельно проанализировать свои действия и попытаться понять, что вызывает травлю. Это также может помочь ему понять, что он не сможет справиться с такими ситуациями самостоятельно.

Ни при каких обстоятельствах родитель не должен критиковать или выговаривать ребенка за какую-либо ситуацию. Ему следует объяснить, что любой может стать жертвой буллинга.

Родитель должен объяснить ребенку, что проблема не в жертве, а в агрессивном хулигане.

Учитывая, что для буллинга характерен дисбаланс сил, важно объяснить ребенку, что чем сильнее обижена жертва, тем сильнее себя чувствует агрессор. Буллинг — это игра «силы». Побеждает сильный. Неагрессивная самооборона, юмор, словесный ответ могут остановить следующую атаку. В этом случае агрессор уже не сможет получить желаемое от этой игры и поставит точку в своих действиях. В этом случае родитель выступает в роли «тренера» для своего ребенка, прививая ему умение преодолевать трудности.

Список использованной литературы:

1. Бердышев, И. С. Медико-психологические последствия жестокого обращения в детской среде. Вопросы диагностики и профилактики: практическое пособие для врачей и социальных работников / И. С. Бердышев, М. Г. Нечаева. - Санкт-Петербургское государственное учреждение социальной помощи семьям и детям «Региональный центр «Семья», 2005. - 76 с.
2. Глазман, О. Л. Психологические особенности участников буллинга / О. Л. Глазман // Известия Российского государственного педагогического университета им. А.И. Герцена. - 2009. - № 105. - С. 159-165.
3. Гребенникова, О. А. Буллинг в образовательной среде как угроза здоровью школьников / О. А. Гребенникова, М. И. Добр Концепт. - 2017. - №9. - С. 13-18.
4. Дахин, А. Н. Буллинг в школе и не только / А. Н. Дахин // Сибирский педагогический журнал. - 2015. - №6. - С. 208-214.
5 Дубровина, И. В. Практическая психология образования / И. В. Дубровина. - Москва : «Академия», 2000. - 528 с.
6. Кон, И. С. Мальчик - отец мужчины / И. С. Кон - Москва: Время, 2010. - 704 с.
7.Кон, И. С. Что такое буллинг и как с ним бороться / И. С. Кон // Семья и школа. - 2006. - №11. - С. 15-18.
8. Кривцова, С. В. Травля (буллинг) в ученической среде: как понимать, противостоять и не бояться? / С. В. Кривцова // Известия АСОУ. Научный ежегодник. - 2015. - Т. 2. - № 3. - С. 52-59.
9.Кутузова, Д. А. Травля в школе: что это такое и что можно с этим делать / Д. А. Кутузова // Журнал практического психолога. - 2007. - № 1. - С. 72-90.
10. Маланцева, О. Д. «Буллинг» в школе. Что мы можем сделать? / О. Д. Маланцева // Социальная педагогика. - 2007. - № 4. - С. 90-92.
11. Моисеева, Н. М. Проблема профилактики буллинга в школьной среде / Н. М. Моисеева, М. В. Сафронова // Ученые записки Санкт-Петербургского государственного института психологии и социальной работы. - 2015. - Т. 24. - № 2. - С. 114-121.
12 Ольвеус, Д. Буллинг в школе: Что мы знаем и что мы можем сделать? / Д. Ольвеус - Оксфорд, 1993. - 135 с.

ULUSLARARASI ÇATIŞMALARIN ÇÖZÜMLERİ: ÇATIŞMAYA SİSTEMSEL VE BİLİMSEL YAKLAŞIMLAR

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ÖZET

Uluslararası bir çatışma, iki veya daha fazla tarafın (devletler, devlet grupları, halklar, siyasi hareketler) aralarındaki nesnel veya öznel nitelikteki çelişkilere dayanan doğrudan veya dolaylı bir çıkar çatışmasıdır. Kökenlerine göre, bu çelişkiler ve bunların devletler arasındaki ilişkilerde yarattığı sorunlar, bölgesel, ulusal, dini, ekonomik, askeri-stratejik, bilimsel-teknik vb. Ancak genel olarak, çatışma her zaman siyasi bir biçim alır, çünkü bu çelişkiler devletler tarafından içsel, dış ve askeri politikaları ile bu politikanın oluşturulması ve uygulanması mekanizması aracılığıyla tanınır ve çözülür. Uluslararası bir çatışmanın ortaya çıkması ve gelişmesi, yalnızca devletler arasındaki ilişkilerde ortaya çıkan nesnel çelişkilerle değil, aynı zamanda devletlerin dış politikası gibi öznel faktörlerle de ilişkilidir. Çatışmaya neden olur, "hazırlanır", kesin olarak devletlerin bilinçli, amaçlı dış politikası tarafından çözülür, ancak karar verme sürecine dahil olan siyasi figürlerin kişisel özellikleri ve nitelikleri gibi öznel bir faktör göz ardı edilemez. Bazen liderler arasındaki kişisel ilişkiler, çatışma durumlarının gelişimi de dahil olmak üzere devletlerarası ilişkiler üzerinde önemli bir etkiye sahip olabilir.

Uluslararası bir çatışma, uluslararası ilişkiler sisteminde nispeten bağımsız bir fenomen olarak görülebilir. Uluslararası bir çatışmanın özneleri devletler, devletlerarası dernekler, BM dahil uluslararası kuruluşlar, bir devlet içindeki veya uluslararası arenadaki kurumsallaşmış sosyo-politik güçler olabilir. Bir çatışma sırasında, çatışmanın taraflarının çıkarlarının derecesi ve hatta doğası değişebilir, çatışmanın her bir katılımcının hedefleri hiyerarşisindeki yeri değişebilir, katılımcı sayısı genişleyebilir veya azalır, bazı doğrudan veya dolaylı taraflar başkaları tarafından değiştirilebilir.

Uluslararası çatışmaların nedenleri çok farklı olabilir, ancak çoğu zaman devletlerin konumlarından, savaşlarından, terör eylemlerinden memnuniyetsizliğidir. Çatışmanın temel, evrensel nedeni, sınırlı tatmin imkanlarına sahip tarafların taleplerinin uyuşmazlığıdır.

Çoğu zaman, uluslararası çatışmalar, aralarında siyasi çatışmaların ayırt edildiği iç (bölgesel) çatışmalardan doğar. Siyasi çatışmaların nedenleri:

-güç soruları. İnsanlar hiyerarşiler sisteminde eşit olmayan bir konuma sahiptir: bazıları yönetir, emreder, diğerleri itaat eder. Sadece astların memnun olmadığı (yönetim ile anlaşmazlık) değil, aynı zamanda yöneticilerin (yetersiz performans) olduğu bir durum ortaya çıkabilir.

-geçim eksikliği. Yetersiz şekilde eksiksiz veya sınırlı fon alımı, hoşnutsuzluk, protesto, grev, miting vb. neden olur ve bu da toplumdaki gerilimi nesnel olarak tırmandırır.yanlış düşünülmüş bir politikanın sonucudur. Yetkililer tarafından aceleci, modellenmemiş bir kararın alınması, halkın çoğunluğu arasında hoşnutsuzluğa neden olabilir ve çatışmanın ortaya çıkmasına katkıda bulunabilir.

-bireysel ve kamusal çıkarlar arasındaki tutarsızlık;

-bireylerin, sosyal grupların, tarafların niyet ve eylemlerindeki farklılık;

-ırksal, ulusal ve dini düşmanlık vb.

Anahtar Kelimeler: uluslararası çatışmalar, siyasi çatışmalar, ihtilafın tarafları, çözümler

ABSTRACT

An international conflict is a direct or indirect conflict of interest based on contradictions of an objective or subjective nature between two or more parties (states, groups of states, peoples, political movements). According to their origins, these contradictions and the problems they create in relations between states can be regional, national, religious, economic, military-strategic, scientific-technical, etc. But in general, conflict always takes a political form, as these contradictions are recognized and resolved by states through their internal, external and military policies and the mechanism of this policy formulation and implementation.

The emergence and development of an international conflict is associated not only with objective contradictions that arise in relations between states, but also with such subjective factors as the foreign

policy of states. It causes conflict, it is "prepared", it is resolved precisely by the deliberate, purposeful foreign policy of states, but such a subjective factor as the personal characteristics and qualities of political figures involved in the decision-making process cannot be ignored. Sometimes personal relationships between leaders can have a significant impact on interstate relations, including the development of conflict situations.

An international conflict can be viewed as a relatively independent phenomenon in the system of international relations. Subjects of an international conflict can be states, interstate associations, international organizations including the UN, institutionalized socio-political forces within a state or in the international arena. During a conflict, the degree and even the nature of the interests of the parties to the conflict may change, the place of the conflict in the hierarchy of goals of each participant may change, the number of participants may expand or decrease, some direct or indirect parties may be replaced by others.

The causes of international conflicts can be very different, but most often it is the dissatisfaction of states with their positions, wars, acts of terrorism. The main, universal cause of conflict is the inconsistency of the demands of the parties with limited opportunities for satisfaction.

Most often, international conflicts arise from internal (regional) conflicts, among which political conflicts are distinguished. Causes of political conflicts:

-power questions. People occupy an unequal position in the system of hierarchies: some rule, command, others obey. A situation may arise where not only subordinates are dissatisfied (dispute with management), but also managers (poor performance).

-lack of livelihood. Insufficient full or limited funding, discontent, protest, strike, rally, etc. causes, and this objectively escalates tensions in society. It is the result of a wrongly thought policy. A hasty, unmodeled decision by the authorities can cause discontent among the majority of the public and contribute to the emergence of conflict.

- inconsistency between individual and public interests;

-difference in the intentions and actions of individuals, social groups, parties;

-racial, national and religious enmity, etc.

Keywords: international conflicts, political conflicts, parties to the conflict, solutions

TAM METİN

Çatışmanın en yaygın olarak kullanılan ve çoğu kişi tarafından kabul edilen tanımlarından biri L. Kozer'in tanımıdır. Şöyle yazıyor: “Çatışma, değerler, belirli sosyal statü, güç ve sınırlı maddi ve manevi faydalar için verilen bir mücadeledir; Bu mücadelede çatışmanın taraflarının amacı rakibi etkisiz hale getirmek, zarar vermek ve yok etmektir. Yukarıdan, belirli bir çatışmanın varlığı için üç ana koşulun olması gerektiği sonucuna varılabilir:

1. bir ilişkide en az iki tarafın bulunması;
2. bu tarafların çıkarları, görüşleri, konumları, ihtiyaçları, hedefleri arasındaki tutarsızlık;
3. Taraflar bu uyuşmazlığın farkındadır, yani çatışmanın tarafları bilinçli hareket etmelidir.

Uluslararası çatışmaların ana öznesi devlettir. Devletlerarası çatışmaları araştırırken çelişkilerin doğasını dikkate almak önemlidir. Çatışmalar, taraflardan birinin lideri veya siyasi liderliğindeki bir değişiklikle nesnel ve öznel olarak çözülebilir. Ayrıca, çelişkilerin uzlaşmaz veya düşmanca olmayan doğası, kendisini uluslararası çatışmanın biçiminde, ölçeğinde ve araçlarında gösterir. Uluslararası çatışmalar zaman ve mekân bakımından da farklılık gösterir: bölgesel, yerel vb. Çatışmalar uzun vadeli, orta vadeli ve kısa vadelidir. Aynı zamanda, bu tür çatışmaların öznelerinin devletler olduğu dikkate alındığında, aşağıdakiler ayırt edilebilir:

- devletlerarası çatışmalar (her iki karşıt devlet veya
koalisyonları tarafından temsil edilir);
- ulusal kurtuluş savaşları (taraflardan biri devlet tarafından temsil edilir): sömürgeciliğe, ırkçılığa ve demokrasi ilkelerine aykırı hareket eden hükümetlere karşı;
- uluslararasılaşmış iç çatışmalar (devlet, başka bir devletin topraklarındaki iç çatışmada taraflardan birine yardım eder.

Kullanılan araçlara bağlı olarak, silahlı uluslararası çatışmalar ile yalnızca barışçıl yolları içeren çatışmalar arasında ayrım yapmak mümkündür. Bu durumda, silahlı çatışmalarda askeri potansiyelin -

silahlı veya askeri güç - sınırlı kullanımı. Bu, çatışmanın tarafları arasındaki ilginç çelişkilerin düzeyi ile belirlenir. Uluslararası çatışmalarda barışçıl araçlar genellikle ya karmaşık ya da seçici bir şekilde kullanılır (ambargo, ticari kısıtlamalar, siyasi temsilin azaltılması vb.), ancak bu çatışmalara hangi faktörler neden olur? Bunlardan bazılarını listelemeye çalışalım. Genel olarak, uluslararası çatışmalar aşağıdaki nedenlerle ortaya çıkar. Ekonomik bir çatışma, uluslararası arenada bir ekonomik krizdir, yani arz ve talep, üretim ve tüketim, satın alma piyasası talebi ve mevcut üretim ölçeği arasındaki uyumsuzluğun artmasıdır. Bazen ülke içindeki gücün dağılımı, hakimiyet, toplumdaki etkili konum ve etki gibi faaliyetler, nihayetinde hükümetin dikkatleri ülke içindeki durumdan uzaklaştırmak için daha geniş bir çatışma yaratma girişimi ile sonuçlanmıştır. Ayrıca, uluslararası devletler arası çatışma, devletler arasındaki siyasi çatışmaların başarılması, herhangi bir ulusun uluslar arasında haklarının ihlal edilmesi vb.

Bazen çatışma ahlaki faktörlere dayanır. Bu ahlaki bir çatışmaya yol açar. Ahlaki çatışma, fikirler, inançlar, dünya görüşleri, dinler (farklı dinler ve onların akımları arasında), yaratıcı entelektüeller tarafından ortaya atılan teoriler, bilimsel buluşlar ve sanat eserlerindeki görüşler arasındaki bir mücadeledir. Tüm bu ayrımların şartlı olduğuna dikkat edilmelidir. Çünkü tek tipe atfedilebilecek bir çatışma yoktur ve siyasi çatışmanın altında ekonomik ya da ideolojik faktörlerin yattığı ya da tam tersi olduğu göz ardı edilmez. Bu arada, devletlerarası çatışmanın nedenleri ve kaynaklarının çok daha karmaşık olduğuna dikkat edilmelidir. Bu, çok uzun bir süre için çözülmesine veya hiç uzlaşmaz bir çatışmaya yol açmaz. Bu nedenle, çatışmaların nedenlerine özel dikkat gösterilmelidir. Bunu yapmanın en etkili yolu, çatışmalara sistematik bir yaklaşımdır. Herhangi bir çatışan tarafın bireysel üyelerinin çatışmayla ilgili konumu benzersizdir, farklıdır ve grubun bileşimi farklıdır. Çatışmanın çatışan tarafları ayrı bir yapı düzeyinde incelenemez veya çözülemez, buna bir sistem olarak yaklaşılmalıdır. Başka bir deyişle, çatışmanın nesnesine ve konusuna dahil olan tüm unsurlar (değerler, çıkarlar, hedefler, çıkarlar, bölge, güç, sosyal durum vb.), Çatışmanın konusunu karakterize eden tüm nitelikler - psikolojik, ahlaki , kültürel, dini, eğitimsel vb. Doğası gereği, devletlerarası çatışmaların konuları arasındaki ilişkiler ittifaklara, işbirliğine, yüzleşmeye ve düşmanlığa bölünmüştür. ve bu silahlı çatışma, sadece çatışmanın kendisinin bir tezahürüdür. Çatışma bazen, çatışma biçimine ulaşmayan ve barışçıl olan - müzakereler, istişareler vb. çözülebilir. Bu durumda, çatışma yalnızca çatışmaya yol açabilecek bir çatışma durumu yaratabilir. Ancak, bu sürecin gerçekleşmesi gerekmez. Söylenenlerden, çelişkinin kaçınılmaz olduğu açıktır. Dünyadaki değişim ve gelişimin temelidir. Bir çelişki zamanla diğerinin yerini alır. Ayrıca, müzakereler konusunda Amerikalı uzman R. Fresh'e göre, dünya ne kadar renkliyse, o kadar çok çelişkiyle yüzleşir. Bu durumda politikacıların görevi çatışmalardan kaçınmak değil, onları üretken ve barışçıl kılmaktır. Bir çatışma zaten olmuşsa (çatışma kendini bir çatışma şeklinde gösteriyorsa), çatışmanın ilk anlarında barışçıl yollarla yıkıcı işlevi en aza indirilmelidir. Modern zamanlarda, elbette, çatışmanın gerçek nedenlerinin araştırılması, başarılı bir çözüm için özel bir görevdir. Çatışmanın doğası, türleri ve nedenleri hakkında farklı görüşler olsa da. Çatışmanın farklı türleri olduğu bilinmektedir. Şimdi özel bir duruma bakalım. Çatışmalar arasında ABD ve Rusya gibi üçüncü ülkeler tarafından yaratılan yapay çatışmalar özel bir yere sahiptir. Bu çatışmada amaç çok basittir - kişisel devlet çıkarlarını güvence altına almak, dünyayı ekonomik, politik ve askeri alanlarda yönetmek. Her şeyden önce etnik grupların çatışmanın özneleri arasında "virüsler" aracılığıyla kendi kaderini tayin hakkı, tarihsel intikam duygusu, ayrılıkçılık vb. Çatışma yaklaşımı olarak bir kriz durumu yaratılır. Bu, çatışmanın gizli unsurlarını uyandırır ve bu da çatışmayı uzun vadeli veya genellikle uzlaşmaz bir çatışmaya dönüştürür.

Müzakereler, bir çatışma çözme yöntemi olarak, çatışmanın tarafları için kendi içlerinde karşılıklı olarak kabul edilebilir çözümler bulmayı amaçlayan bir dizi taktik yöntemden oluşur. Müzakerelerin mümkün olması için belirli koşulların yerine getirilmesi gerekir:

• Çatışma taraflarının karşılıklı bağımlılığının varlığı;
• çatışmanın taraflarının yeteneklerinde (yetkilerinde) önemli bir fark olmaması;
• çatışmanın gelişme aşaması tartışılabilir;
• Müzakere eden tarafların müzakerelere katılımı.

Agresif tepki, çatışma durumlarını çözmenin en istenmeyen yöntemlerinden biridir. Bu yöntemlerin kullanılması, çatışma durumunun kaba kuvvet, şiddet dahil olmak üzere güç açısından çözülmesine yol açar. Ancak, çatışmanın yalnızca bu yöntemlerle çözülebileceği durumlar vardır.

Deneyimler, çatışmaları çözmek için üç yön (yöntem) olduğunu göstermektedir:

• çatışmayı önlemek;
• çatışma çözümü;
• Çatışma yönetimi.

Çatışmayı önlemenin farklı yollarından biri de eylemsizliktir. Bu yöntemde durumların gelişimi zamana bırakılır ve doğal olarak akar. Eylemsizlik, olayların gidişatı tahmin edilemez olduğunda ve sonuçları önceden bilinmediğinde, tamamen belirsiz bir durumda kendini haklı çıkarır.

Bu yöntemin bir başka türü de uzlaşma ve uyumdur. Bu durumda taraflardan biri iddialarını azaltarak taviz verir. Bir taraf bu yöntemden kendi adaletsizliğini keşfettiğinde; çarpışmanın konusu karşı taraf için daha önemliyse; Kayıpları en aza indirmek için ve diğer durumlarda avantajın tamamen karşı tarafta olduğu durumlarda kullanılır.

Modern zamanlarda uluslararası çatışmalardaki değişiklikler şu anlama gelir:

1. Uluslararası çatışmaların nedenlerini değiştirmek. Soğuk Savaş sırasında, uluslararası çatışmalar esas olarak ideolojik gerekçelerle ortaya çıkarken, modern zamanlarda esas olarak kültürel veya daha doğrusu dini ve etnik gerekçelerle ortaya çıktılar. Piyasalar ve doğal kaynaklar için mücadele yoğunlaşıyor. Bu, başta petrol ve sıvılaştırılmış doğal gaz olmak üzere doğal kaynakların eksikliğinden kaynaklanmaktadır. Ayrıca, bazı ülkelerin ekonomik geri kalmışlığı ve yüksek işsizlik düzeyi, çatışma için elverişli koşullar yaratmaktadır;
2. Uluslararası çatışmalarda katılımcıları değiştirmek. Askeri çatışmalar da dahil olmak üzere devletler arasındaki çatışmalar modern zamanlarda ortadan kalkmamış olsa da, büyük ölçekli devletler arası savaşların olasılığı azalmıştır. Ayrıca modern zamanlarda uluslararası çatışmalara katılanlar da değişmiştir. Dolayısıyla bu çatışmalarda bir taraf devlet, diğeri ise yasadışı faaliyetlerde bulunan ulusötesi bir örgüt, uluslararası bir terör örgütü veya uluslararası ölçekte faaliyet gösteren dini, etnik hareketler;
3. Uluslararası çatışmaların içeriğini ve niteliğini değiştirmek. Modern zamanlarda, uluslararası çatışmaların belirsizliği artıyor. Bu, uluslararası çatışmaların seyrinde ve sonuçlarında kendini gösterir. Süre açısından, uluslararası çatışmaların belirsizliği, başlangıç ve bitiş tarihlerinin belirsizliğinde ve sonuçları açısından kazanan ve kaybedenin belirsizliğinde yatmaktadır.

Bu nedenle, uluslararası çatışmalar sorunu BM'nin acil sorunlarından biridir. Uluslararası çatışmalar doğası gereği olumsuzdur. Bunlar yıkıcı çatışmalardır. Bu nedenle, uluslararası ihtilafların çözümü önemli bir konudur.

Şimdi uluslararası çatışmaların çözümüne bakalım.

13.3. Uluslararası çatışmaların çözümü

Uluslararası çatışmalar sorununun BMMYK'nın acil sorunlarından biri olmasının temel nedeni, çözümünün önemli olmasıdır. Uluslararası bir çatışma da dahil olmak üzere herhangi bir sosyal olayın çözümü, doğasının anlaşılmasına dayanmalıdır. Bu nedenle, uluslararası çatışmaların incelenmesine özel önem verilmektedir. Uluslararası çatışmaların incelenmesinde üç ana yaklaşım vardır:

1. Uluslararası çatışmaların stratejik araştırma açısından analizi, pratik sorunları çözmeyi amaçlar. Stratejik araştırmanın metodolojik temeli politik gerçekçiliktir. Bu nedenle, bu çalışmalar uluslararası çatışmaların çözümünde güç faktörüne özel önem vermektedir. Stratejik araştırma, devletin ulusal çıkarlarını ve güvenliğini sağlamanın yollarını inceler. Ayrıca, stratejik araştırmalar savaşın analizine odaklanır;
2. Çatışma analizine yönelik yaklaşım, uluslararası çatışmaların bir dizi önemli teorik sorununu (nedenleri, türleri, ortaya çıkma ve gelişme konuları) analiz etmeyi amaçlamaktadır. Bu konular stratejik araştırmalarda analiz edilmez;
3. Barış çalışmasına yönelik yaklaşım, temel olarak uluslararası çatışmaları çözmenin yollarını belirlemeyi amaçlar. Bu yaklaşımın savunucuları (K. Boulding), uluslararası sistemdeki mevcut çatışma durumunun, yavaş yavaş büyük ölçekli savaşlara yol açabileceğine inanmaktadır. Bu tehlikeli gidişatın önüne geçebilmek için tarafların davranışlarını, birbirleriyle olan ilişkilerini değiştirmeleri ve tüm uyuşmazlıkların müzakere yoluyla çözülmesi gerekmektedir.

Dolayısıyla, uluslararası çatışmalar sorununun incelenmesine yönelik bu yaklaşımların her biri, bu sorunu farklı açılardan inceler. Elde edilen sonuçların her biri uluslararası ihtilafların çözümü için büyük önem taşımaktadır.

Genel olarak, ulusal ihtilafların aksine, bu ihtilafların özellikleri genellikle uluslararası hukukta öngörülmediğinden, uluslararası ihtilafların nesnel nedenlerle hukukla çözülmesi zordur.

Hukuki unsurun uluslararası çatışmaların çözümündeki rolü, her şeyden önce, BM ve AGİT gibi kuruluşlar aracılığıyla uluslararası hukuk normlarını uygulayarak devletleri saldırgan politikalardan uzaklaştırmaktır.
Son olarak, askeri unsurun uluslararası çatışmaları çözme mekanizmaları arasında özel bir yeri vardır. Bu sayede uluslararası çatışmalar önlenir, çatışmalar çözülür ve hükümetler arası kuruluşlar tarafından kontrol edilir.

KAYNAKÇA:

1.Nikitin A. International conflicts and their regulation. // МЭиМО. 2006, №2.
2. Lebedeva M. Political regulation of conflicts: Approaches, solutions, technologies: 2 editions. Moscow, 2000.
3. International conflicts of modernity / VL Avakov, NK Arbatova, V.Ya. Gantman and others. - M. , 2003. - P.250

THE FUTURE OF SMALL ARMS IN PASTORAL LOWLANDS OF THE HORN OF AFRICA: A CASE OF THE NYÀNGATOM PEOPLE IN SOUTHWEST ETHIOPIA

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ABSTRACT

A cattle herder using a gun as a staff is the popular picture of the East African pastoralist. Attention given to armed groups has always depended on their ability to challenge the legitimacy of the central government or their association to terrorist organizations. Most pastoralists in Ethiopia fell under neither group for a long time. The state and the pastoralist struck a balance where the state ignored their arms and they not only provided security to themselves but also guarded the border in an ad hoc arrangement. Currently, this balance is challenged by two important developments, namely, the growing international and regional policy documents and the newly found interest and consequent presence of state in the lowlands. The interest of the state first manifested through the planning of development schemes like the sugar plantations and industry. Though these plans have not proved successful, their ability to shake the balance remains significant since the schemes are accompanied by infrastructure development, settlement (villagization) schemes and an influx of workers for the projects. The state has assumed the responsibility of securing these large-scale agricultural investments from threats, one of which would be unnecessary intrusion by local communities, complicating further the security structure. In a related process, the government conducted arms registration process followed by a disarmament campaign, although not explicitly stated. This paper explores ways in which current government development schemes might alter the security relations of pastoralist communities of Eastern Africa. It identifies emerging security needs in pastoral lowlands and attempts to guide policy attention to these emerging issues. To meet the research objectives, primary data collected from the field through FGDs and in depth interviews has been analyzed in light of existing literature on the subject.

Keywords: Small Arms, Pastoral-Lowlands, Horn of Africa, Nyàngatom, Southwest-Ethiopia

Introduction

A while after the end of the Cold War the UN Secretary-General's report 'An Agenda for Peace'(1995) recognized the huge amount of small arms, "billions of dollars being spent yearly on light weapons, representing nearly one third of the world's total arms trade" and the number of people killed by Small Arms and Light Weapons (SALW). A Cold War of Weapons of Mass Destruction (WMD) in the hands of states made the AKs in the hands of pastoralists 'small' arms, and the attempt to monopolized small arms a 'micro disarmament' as opposed to a global nuclear disarmament.

Some argue that both the theory and the practice of arms control developed during the Cold War. However the talks and to some extent the theories were born even earlier. For example, The Hague Peace conference in 1899 and 1907 tried to address technological developments such as use of expanding bullets and certain kinds of gases (Declaration -IV, 2/3), 1899). For pastoralists of the Horn of Africa the small arms war was never 'cold', and small arms disarmament has been on the negotiation agenda since 1902 (Chew, 2012).

Pastoralists in southwest Ethiopia have maintained a certain degree of autonomy for a long time. These pastoralists have been their own 'police', devising mechanisms of internal stability through a set of traditional beliefs and institutions (Mulugeta, 2016). They also are their own 'defence army', fulfilling their need to protect themselves from other pastoralists, both in and outside their country. Although the state aspires to monopolize the instruments of violence widely distributed among the pastoralists, it has not succeeded due to its inability to control its territory fully.

Besides potential threats to central governments, growing attention to terrorist acts and counter-terrorism at the global, national and regional level, has dictated the response given to an armed group. The attention given to an armed group depends on ability to challenge the legitimacy of the government and its relation to international terrorist organizations. An officer in the Special Forces of Ethiopia speculated that the security condition of the Nyàngatom Woreda does not get enough attention because there are no armed 'secessionist' groups and threats of terrorist organizations in the area, as opposed to other regions of the country. Currently, two important developments are changing the context in which the Nyàngatom live.

First, there is a surge in large-scale government led agricultural and industrial investment in pastoral lowlands of the country. The development projects are accompanied by settlement (villagization) schemes that include the shift in lifestyle and livelihood. Second are the growing international and regional policy instruments.

However, findings by Saferworld (2011) indicate that the process of formulating and implementing these policy instruments had a "superficial ownership by national governments" while the process is really being driven by 'international initiatives'. Small arms control institutions and policies, found at local, national, regional and international levels are often linked with each other forming a horizontal and vertical chain of institutions and policies, forming what Laurance and Stohl (2002) call a 'global public policy' of SALW control and management.

Inclusion of disarmament in major peace agreements in the Horn of Africa are linked to the implementation of the Nairobi Protocol or the UN resolutions that were rooted in the UN Programme of Action (PoA) (UN Document A/Conf.192/15, 2001). In Kenya, projects with UNDP financial and technical assistance have their roots in such policy documents (Parker, 2010: 48). These documents do not imply uniformity among the laws of the various countries, in fact there are major inconsistencies like the variation in the minimum age for the possession of arms (in Uganda 25 while in Kenya it is 16) and the difference in defining mental and physical capability (Small Arms Survey, 2011: 2001).

Literature on these small arms control frameworks focus on the lack of implementation, assuming that implementation is the 'bliss' everyone anticipates. Saferworld (May 2011) observed, "Unfortunately practical action at the regional and national level has not always followed". Chew (2012) writes that upon "the completion of the Jibuti-Harrar railway at the end of 1902, when it was again apparent that arms were penetrating the British and Italian spheres via Harrar and infiltrating into the interior, the colonial authorities braced themselves for the implementation of a more draconian policy of native disarmament" (Chew, 2012: 118).

This case study on the Nyàngatom pastoralists in southwest Ethiopia documents major changes taking place in pastoral areas and analyses them in terms of their implication to the security dynamic of the region. It focuses on implication on areas that need policy attention concerning small arms, placing the provision of security at the centre of analysis. The Nyàngatom, are among the large collection of pastoralists in peripheries of Ethiopia, South Sudan, Kenya and Uganda known as the Karamoja cluster or the Ateker. An extensive literature review has shown that the Nyàngatom are the least researched of the groups in the Karamoja cluster on the issue of small arms: for instance, publications by the Small Arms Survey and Institute for Security Studies focused on Sudan/South Sudan, Uganda and Kenya; the Ethiopian side has clearly been neglected.

Nyàngatom and Toposa are usually considered to be aligns who speak the same language, which is also shared by the Turukana of Kenya, whom both seclude as a traditional enemy.

They also consider the Súri, Hamer, Kara, Dassanech, Murle and others as foes. Geographically the Toposa live in the State of Eastern Equtoria located in the southeastern part of South Sudan. The Ilemi Triangle, the disputed land bordering Ethiopia, Kenya and South Sudan is also located in the vicinity.

These border areas of Ethiopia, Kenya, South Sudan and Uganda have generally been marginalized by the successive governments of the past and have very low access to basic social services. They are prone to drought and there is a widespread cattle rustling.

The Conceptual Trillema of Development, Peace and Security

Security and development are brought together as inter-related agendas since the focus of security studies shifted to Human Security. The "Human Security" agenda served as a platform to discuss Security Sector Reform (SSR) and development together, abandoning the traditional form of security. SSR found itself on a discourse on security-development nexus. The OECD DAC handbook (2007) builds upon the 2005 DAC Reference Document on Security System Reform and Governance by acknowledging that donors are now convinced of the security- development nexus. The discourse affirms that poor people are vulnerable and hindered from progress "because bad policing, weak justice and penal systems and corrupt militaries mean that they suffer disproportionately from crime, insecurity and fear" (OECD, 2007: 13). In other words, according to donors, like the Canadian International Development Agency, small arms represent "lost development opportunities".

The recognition of the state's inability to provide security and, sometimes, its potential to pose threats to its people has pushed SSR in to the International Development Agenda. Here, development and security concluded their merger since "international security actors have realized that their short term operations will not bring sustainable benefit without coordinating their activities with longer-term development work. Similarly, development practitioners have realized that is impractical to consider development without talking security issues into account" (GFN-SSR, 2007: 3). Although these arguments are used by international development agencies driven by donors, the facts are shared by government-led development projects since security remains important for sustainable development even when governments own the development projects.

Another similar angle where peace and development overlap is the concept of negative and positive peace, where development is a subset of positive peace. The goal of disarmament, a component of SSR, is to "avoid armed conflict" (direct violence) which in other words is known as negative peace. On the other hand, this negative peace is a pre-condition for development. Further, the development is meant to achieve peace between communities, who will, hopefully, stop warring because of the disarmament.

On the other hand, the development activities by the government surely need an environment 'conducive to development'; an outcome believed that could result from SSR. Such reform process brings the agency of the state in the forefront. "This relies on the ability of the state to mitigate its people's vulnerability through development and to use a range of policy instruments to prevent or address security threats that affect society's wellbeing" (GFN-SSR, 2007: 1).

The understanding of how pastoralists live in a community with power balance (since all are armed) and how they could take advantage of the other's lack of arms or information suggests how instrumental guns can be in pastoral conflicts. Thus, one cannot totally rule out the possible contributions of disarmament to peace. This presents us with a catch 22 situation where peace is a precondition to development and development to security and security to peace et cetera.

Disarmament in policy documents

Civilian (in this case, pastoralist) disarmament is most difficult, for reasons that are not limited to lack of established norms or standards. For many the difficulty of civilian disarmament elucidates the dangers of SALW. Operational Guide to the Integrated Disarmament, Demobilization and Reintegration Standards by IDDRS (2014) states that "if the possession of weapons is of cultural significance to the populations and has been considered a habit that existed before violent conflict broke out, weapons collection programs are likely to fail." Even though policies on small arms control warns against

disarmament in areas where small arms have cultural significance, it does so without clearly establishing what cultural significance entails or giving an example of such community.

The approach by RECSA and the Nairobi declaration does not adhere to the above principle. Narrowing the discussion to east African pastoralists, such articles are not incorporated in regional documents yet institutions such as RECSA and Conflict Early Warning and Response Mechanism (CEWARN) (Hailu, 2010) indicate that small arms have cultural value to pastoralists of the Horn of Africa; as opposed to the academic literature (Knighton, 2003, Eaton, 2008; Sagawa, 2010). Despite their stance on the cultural value of small arms, RECSA promotes the complete disarmament of civilians in the region. The Nairobi Protocol (2004) entered by the Ministers of Foreign Affairs and other plenipotentiaries of eleven countries. They reached an agreement on the meaning and use of important words in the transaction and control of small arms, laying ground for a regionally harmonized policy. The provisions on the declaration affect the whole of Karamoja pastoralists that are most commonly armed with rifles and assault rifles. Among those provisions are "the total prohibition of the civilian possession and use of all light weapons and automatic and semi-automatic rifles and machine guns" and "the regulation and centralised registration of all civilian-owned small arms in their territories" (Nairobi Protocol, 2004).
Under this provision the countries party to the declaration should start registering and take steps towards disarmament. The Nyàngatom, located in the border area of Ethiopia, South Sudan and Kenya, have had access to arms mostly from their South Sudanese neighbours, the Toposa. This being a place of minimum state presence, the place has been deprived of sufficient border control or any other law enforcement mechanism.
The Nairobi Protocol insists that states should "adopt within their domestic legal systems, such measures as may be necessary to enable confiscation of small arms and light weapons that have been illicitly manufactured or trafficked" (Nairobi Protocol Article 9a 2004). In Ethiopia, the House of Peoples Representatives under proclamation 429/2004 has ratified the Nairobi Protocol. The Federal Police Commission has the mandate to develop the implementation procedure but needs laws on SALW to be adopted to start acting. The laws had to be in harmony with neighbouring countries, an activity that should have been completed by 28 April 2006 according to the ministerial declaration on practical implementation of Small Arms· Implementing the declaration requires resources and strong governmental security apparatus, elements that are usually missing from developing countries and their peripheral territories. Other provisions (Article 9) that require capital and human resource are:

> *(b) Maintain and further develop joint and combined operations across the borders of States Parties to locate, seize and destroy caches of small arms and light weapons left over after conflicts and civil wars; (c) Encourage law enforcement agencies to work with communities to identify small arms and light weapons caches and remove them from society; (d) Establish an effective mechanism for storing impounded, recovered or unlicensed illicit small arms and light weapons pending the investigations that will release them for destruction.*

Furthermore, Article 12 (sub-articles a and b) of the declaration focuses on the types of programs governments will introduce to encourage voluntary surrender. Civilians that have acquired such arms illegally are to surrender it voluntarily, and there are no mention of incentives; however, those who have acquired them illegally, are to submit them and their incentive would be that "the State may consider granting immunity from prosecution" (Nairobi Protocol 2004 Article 12). Given the history of the Karamoja cluster and the reality on the ground, the meaningless line of legality and illegality will make the implementation of the above article quite difficult.
Government development interventions and emerging security issues Ethiopia, in its plan to increase sugar production from 314,000tn in 2009 to 2.3 million tons by the end of 2015 has decided to plant sugar factories. The large amount of land (175,000 ha of sugarcane plantation field) allocated to this project is

partly found in the study area of this research, South Omo (Sugar Corporation 2015). Pastoralists, according to the government, do not use the land optimally occupy the arid and semi-arid pastoral low lands. This development activity will turn the "unused" land in these pastoral lowlands to productive sugarcane plantations and industrial sites that will produce 2.25 million tons of sugar (worth 661.7 million USD) and produce alternative energy sources (304,000m3 of ethanol per year and 607 MW electricity) (Tewolde and Fana, 2014: 118).

According to the Nyàngatom woreda administrator, the benefit of the sugar plantation surpasses what is listed above. He expects that the woreda, which is now with no infrastructure of any kind, will finally get clean water, electricity and roads. He further anticipates that there is high probability to achieving sustainable peace with neighboring tribes such as Dassanech and Súri due to the anticipated increased economic interaction between communities of the people. The reason would be increased Ethiopian nationalism because of inclusion in a national project. Reduction of proliferation of small arms is also a foreseen by-product of these development activities. Increased government involvement in the security sector will have a direct effect on the trust and an inverse effect on arms demand, according to the National Focal Person for SALW. Although this is a long-term plan (ambition), the local police and the population in the woreda anticipate immediate actions of disarmament because of the arms registration that is coincidentally (or not) taking place at the same time as the developmental projects.

A police in the woreda described the arms registration process in southwest Ethiopia saying "the arm will have a registration number, you will receive an ownership card with your photograph on it and it will be handed to you. Planning to attain peace in the near future, the police received orientation on the arms registration process. The words of the police commissioner who conducted the orientation were, "we will disarm the people [the pastoralists]. We will collect all of their arms and all will start carrying farming equipment around. Small arms will not be significant to the people anymore". Although this is a simple speech act and not a statement from a policy document one can still understand the vision the government is selling through this and other similar statements. The firearm here is not just depicted as an instrument of violence whose removal will result in peace. Small arms are a symbol of the pastoral way of life. For the proponents of this view, disarmament either gradually or immediate, will result in a shift of conflict patterns as well as livelihood, changing the people from cattle herders to farmers. Because of water available from the irrigation the pastoralists will be able to farm and lead a sedentary life on the farmlands they will each be allocated. A vision among others pronounced by the late Prime Minister Meles Zenawi at the 13th Annual Pastoralists' Day celebrations in 2011:

> *"The pastoralists who live around this area will be given some fertile land from this irrigation system, which can be used for their own cultivation. There will be support for the pastoralists to combine agriculture with modern cattle herding" (Meles, Speech, 25 January 2011).*

In imperial Ethiopia, pastoralists, or known by the derogatory word *Zelan* (can be understood as both mobile and rude, uncultured), were a class of people, who along with any producing class, considered inferior by the clergy and aristocracy (Tibebu, 1995). Among other factors "a superiority complex of an agricultural mode of production over a nomadic-pastoralist mode of production" made the *Zelan* stand at the bottom of the hierarchical society (Tibebu, 1995: 6). Even after the removal of the imperial regime, consequent governments have not really shown appreciation to the pastoral way of life either in policy or practice. Instead, this development activity in the "unused" pastoral lands (Tewolde and Fana, 2014: 118) can now be seen as a way of 'demobilizing' pastoralists from their way of life.

This process of lifestyle change is not going to be without challenge to the government; and small arms might be instrumental in the response of the pastoral population to the government projects. Other emerging security challenges can be seen in other areas where the development projects have started. The government is facing some challenges from local communities, who violently responded to

unfulfilled promises and killing people in response to mishaps like traffic accidents, which are unavoidable once roads are built and traffic flow increases. An example from a neighbouring woreda is:

> *The Bodi perceived repeated car accidents as intentional attempts to kill their kinsfolk, and, infused with the culture of vengeance killings, intended to kill the "kin" of the kill- ers, i.e. the drivers. As they consider all non-indigenous people as Amhara, they simply targeted everyone else (Tewolde and Fana, 2014: 139).*

According to the Nyàngatom Woreda police guns are only used in interethnic conflicts, reports of gun violence in intra-ethnic clashes are virtually non-existent. Since arms are only a factor in the inter-ethnic relations of these pastoral communities, development projects are likely to further intensify their interaction by encouraging movement among the communities. Although inter-ethnic interaction due to the development project can be seen as an opportunity for inter- ethnic cooperation, the police are concerned that, pastoralists across the border might attack the plantation and factory.

The prospects of the security situation in the Nyàngatom woreda described by the woreda police are different from the one by the development project officers. To the later, the sugar plantation will be a job opportunity to the neighbouring communities and result in greater integration resulting from cross-border employment opportunities. Given this grave security situation, keeping the Nyàngatom armed is the way forward for the police.

Obviously, the development project has created a need to intensify such arms control activities; something that has not been convenient to the government, until now. The Nyàngatom should leave their land for large-scale agricultural investments; and make livelihood changes to make the development projects successful. Unlike the opinion of the local police, the strongest resistance to the development projects will not come from the Turkana but is likely to be from the residents of the land whose life as mobile pastoralists will be interrupted. The Pastoralist and his way of life (pastoralism) pose the threat.

The costs of disarmament among the major objectives of disarmament are to create "an environment in which people feels safe" (GTZ, 2004: 39). In pastoral communities' such development activities and subsequent change in livelihood represent means a shift in the role of some armed youth. Some might get employment in the government security sector while the rest will have to be 'demobilized' from their traditional security provider's position. Now the Nyàngatom woreda is a place where people feel safe only when they carry guns, this is going to change into a place where people should learn to feel safe because the government security forces have monopoly over the means of violence. Whether gradually or not there are pre-conditions to be fulfilled for the Nyàngatom to willingly give up their arms. The first and the most important is provision of security and the second is compensation for the arms.

Compensation

An individual under desperate conditions pays 15 or 20 cows to buy a gun to protect his property and family from the enemy. When the person is not economically stable he sells back the gun in exchange for cattle to feed his family, serving as some kind of emergency saving, cashed in difficulty. Their question for compensation shows the economic value guns have as opposed to cultural values. Most of what the Nyàngatom do ceremonially and economically with gun show that the Nyàngatom's true treasure is their cattle, not gun. Another manifestation of the economic value of arms is that guns are not given as dowry but might be exchanged for cattle with the purpose of increasing the number of cattle available for dowry.

However, even if cattle are of most value, the Nyàngatom are willing to pay it for a gun. This shows the severity of the insecurity. Guns are what they need to protect their life and property (cattle). The only service the government would like to provide in exchange for voluntary arms surrender is security; also keeping in mind there is to be a financial incentive for disarmament, speaking from previous experience, there is the (likely) outcome that financial incentive will achieve is, create many outlaws as people buy

more guns from across the border to benefit illegitimately from the system. The lack of best practices of civilian disarmament hinders one from offering alternatives, however, factors like porous borders (Isima, 2004) are a challenge to DDR in military disarmament, and the same factor is likely to play a critical role in civilian disarmament.

Security

The guarantee of security that pastoral communities demand is twofold, one is the disarmament of their enemies and the other is the provision of security by the government. Currently the arms carried by the Nyàngatom in no way pose threats to a fellow Nyàngatom. In a place where traditional institutions and leadership are intact, people live in communal values that prevent gun violence in intra-ethnic conflicts. However, these guns are used against enemies (a direct translation of emoit, a word used to address their neighbours except for the Toposa of South Sudan). The Nyàngatom want their neighbours to be disarmed if they are to give up their arms.

This precondition is likely to be raised by any armed community for any type of arm. As Carr (2000: 2) puts it "To disarm without substituting the reality of protective security is to play God with the lives of those that have been disarmed". Such protection can be provided in several forms, the most common in the Westphalian State is where the state 'monopolizes the means of violence' and provides security by government security forces, typically, the police and the army. This demands an understanding of 'collective security' at the national level.

One of the preconditions for nuclear disarmament was the creation of a situation where nations trusted the League of Nations (later the United Nations); they were expected to trust that these organizations would be able to enforce the laws they pass. Similarly, countries are composed of various identity groups that have signed the social contract of being governed by a central government. If it appears too weak to enforce its laws and protect these groups, then these groups should and will remain armed.

In fact, Major David Davis 1919 employed this same analogy referring to his country Great Britain; in his words, "Every citizen once armed himself against attack. Arms were necessary, because the forces of internal order had not been properly established". Through this statement, Major Davis tried to explain that the provision of security is a necessity for national disarmament. He argued, "All are prepared to trust the efficiency of the police, whose wages they pay as an insurance against crime". So here, disarmament should be seen under the bigger umbrella of SSR, where it "focuses upon the state's delivery of security and justice as public goods." (Knight, 2009: 15)

This direction of argument also compels one to think towards the nature and legitimacy of government who monopolizes the instrument of violence. This is why many, like Kopel et al. argue that:

> *Although arms possession as "a last resort" protection for human rights is implied by the universal declaration of Human Rights, the United Nations has, oddly, began promoting disarmament, even in countries where arms possession is the last resort available to protect human rights* (2005: 4).

Only a legitimate body should therefore promote disarmament. The United Nation's Secretary- General, Boutros Boutros-Ghali, on 'Supplement to An Agenda for Peace' agrees with this logic. He asserted that small arms control measures "can be, and most of them have been, employed by regional organizations, by ad hoc groups of States or by individual State" because the "United Nations does not have or claim a monopoly of any of these instruments". In other words, entities that can claim the monopoly of violence as a result of the 'social contract' are more suited to launch direct actions towards small arms disarmament than large organizations that do not have direct contracts with citizens such as the United Nations.

The Nyàngatom trust the intentions of the government but do not trust its ability to protect the people and their property, sharing the same stand as the Woreda police. The Woreda has a security apparatus of police, militia and Special Forces in the border areas between Kenya and Ethiopia. Interviews with all three-security providers reveal that they believe the Nyàngatom people should remain armed because they will not be able to protect them during cattle raids and conflicts with neighbouring communities. The ratio of police to the population is 1: 632. The capacity of the security providers is very weak. The following is a table that shows the number and status of security providers in different Kebeles of the Woreda.

However, the people do not see this as a hopeless situation but one that can be corrected so they propose to agree for disarmament if the government provides enough protection by increasing the militia and police. As for policymakers, the (mostly illegal) armaments of pastoral communities can be used to protect the people legally. Ethiopia has a history of incorporating armed member of the community into the militia, a way of integrating them into the legal security regime.

However, given the number of armed and trained security personnel the government faces challenges to provide security using conventional Westphalian methods. In some places, the development projects are paying local armed youth to security to them, and the same might be applicable to the provision of security to local communities. These youth have been providing security to their communities and have knowledge of the area, so bringing them into the security apparatus of the government will be a way of legitimizing their activities without the hustles of disarmament.

The state has assumed the responsibility of securing these large-scale agricultural investments from threats, one of which would be unnecessary intrusion by local communities, complicating further the security situation. In an interview with the national Focal Person on Small Arms Control, he categorized the threat by the arms of the pastoralists as a 'conflict' threat and not a 'developmental threat'. Meaning, the pastoralists might clash with each other using their arms but they will not attack the development projects. This is to underestimate the challenge, because the Nyàngatom clash with enemies and according to their definition, anyone that is not a Nyàngatom or a Toposa can qualifies as an enemy, including migrant labor force from other parts of the country.

Conclusion

Ideally, disarmament is the foundation to both positive peace and negative peace and for it to take place there needs to be a degree of compliance to the precondition set by the people. According to the government, some of the preconditions like compensation will not be met, and people have to come on board during the consultation process. According to the Nyàngatom Woreda administrator even if the disarmament does not take place, the development projects will change the life of the people to the point where they will not need arms. A part of this argument strangely agrees to the cold war situation where disarmament was discussed yet never pursued as a viable option, a situation where political scientists like Jan Oberg (1983) observed that "Peace may lead to disarmament" but not the other way round. In agreement, Hobson (1908) reasoned, "that the causes of war lie deeper than armaments and those armaments have other functions besides that of war." Similarly, the Nyàngatom argue If we were disarmed, the Kara would still come and steel; and I will ask back for what is mine (retaliate). Even if we do not have guns, we will fight with stick. We would be hitting each other using axes or knifes.

The world is not ready to forget that machetes were used in Africa's deadliest genocide. Obviously, the absence of arms will not automatically lead to the absence of conflict but the presence of positive peace (development) will eventually lead to the decrease in gun violence.

The same applies to the Turkana, the Nyàngatom argue that even if they and the Turkana do not have arms our shepherds will meet each other on the road. They might use sticks and spears to fight each other, going back to the pre-modern way of doing things. The problems with steeling/ raiding cattle will persist and the culture of revenge, central in triggering pastoral conflicts, will not change just because

they no longer have arms. The Nyàngatom feel deep hostility towards the Turkana, an elder explains the Nyàngatom are also grieved over past injustices and territory losses. Our fathers and grandfathers died in a land now found in Kenya, because they were forced away. Our people do not leave a land where their grandfather dies. We might pay a lot of sacrifice but we will return there.
The hostility will not be contained by simply taking away the instruments of violence. A transformation of the relations should take place along with the disarmament. Even after disarmament, the Nyàngatom still have other enemies from which they would like to protect themselves - the other neighbouring communities such as the Hamer, Kara, Dassanech, Murle, Suri etc. and wild animals.
The development projects in pastoral communities have several components that will transform the life of pastoral communities. Disarmament, although one small segment of the change to come, represents the beginning of transformation. The Nyàngatom, formerly a pastoralist woreda will 'become' a 'modern' Habesha city with no arms. Having heard of the 'development to come' the Nyàngatom now sees education as an escape to modernity, a way of turning their woreda in to a Habesha city. The way they explain the unarmed population of the Habesha city is their education. They do not need arms to protect their property (education) however all pastoralists need arms to protect their cattle because other pastoralists want to steel it from them.

Like any DDR process, disarming the Nyàngatom will play a role in redefining economic, social and gender roles. With no need for a man to carry a gun to help women water their goats the process and need of things will change in ways that will disrupt the daily social activities. Even if this is a civilian disarmament, a process that does not require demobilization and rehabilitation the principles in all DDR process applies. A certain "confidence-building measure that supports the peace process (development process)" (GTZ, 2004: 21) should be put in place.

In such societies, the security apparatus should not just include certain selected actors identified as major actors in the service of security. However, the interdependence of the social norms and the way the society functions clearly encourages all sections of society to be involved in the process. Unless, the people do not provide complete consent, it is a process that should probably be avoided.
We have entered an era where an action taken at the very local might be an extension of a decision taken at the global level. The chain created between United Nations Agenda for Peace (1995), the Bamako declaration (2000), regional frameworks like the Nairobi protocol (2004) and regional organizations such as Regional Centre for Small Arms (RECSA) indicate how information feeding to policy-making is aggregated from a diversified group of actors ranging from donors to international inter-governmental organizations. In the midst of the 'global public policy', the situation in southwest Ethiopia calls for a context specific solution that demands individual prognosis before formulation or implementation of policies. Given the fact that these communities are a cross border community, all neighboring states should be aware of the 'unique' approach in place. The process should be thoroughly studied before a 'one size fits all' program of small arm control is launched in the area. The Nyàngatom Woreda is a clear example of a situation where the security of a border community is infused to state's security, and a traditional Westphalia mode of security governance is not applicable. Following the era of forced, therefore, failed disarmaments; we find most states in eastern Africa being drawn into international and regional small arms control frameworks. Nevertheless, the developments at each local area should be put into consideration before any practical action and even before policy formulation. The multidimensional work on small arms requires multiple institutions to work together to address the multiple façades of the 'problem'.

References

Boulden, J. (2001). Arms Control Continuums Connecting the Small Arms Debate to Nuclear Arms Control, *African Security Review, Vol 10 No 1*

Carr, C. (2000). The security implications of micro disarmament, in *the counter proliferation paper future warfare series* No. 5, http://www.dtic.mil/get-tr-doc/pdf?AD=ADA474837 (Accessed: 27 Februry 2022)

Chew, E. (2012). *Arming the Periphery: The Arms Trade in the Indian Ocean during the Age of Global Empire*. Palgrave Macmillan.

Declaration (IV,2) Concerning Asphyxiating Gases. (29 July 1899). The Hague. Retrieved from http://www. icrc.org/ihl.nsf/FULL/165?OpenDocument [accessed 11 February 2022]

Declaration (IV,3) Concerning Expanding Bullets. (29 July 1899). The Hague. Retrieved from http://www. icrc.org/ihl.nsf/FULL/170?OpenDocument [accessed 11 February 2022]

Eaton, D. (2008). The business of peace: Raiding and peace work along the Kenta-Uganda border (Past 1), In *African Affairs*, Vol. 107, No. 426

GFN-SSR (2007). *A Beginner's Guide to Security Sector Reform (SSR)*https://statebuildingmonitor.files. wordpress.com/2012/01/a-beginners-guide-to-security-sector-reform-ssr1.pdf (Accessed: 05.02.2022)

Gleichmann, C.; Odenwald, M.; Steenken, K. and Wilkinson, A. (2004). *Disarmament, Demobilisation and Reintegration A Practical Field and Classroom Guide*, Germany: GIZ

Hailu, T. (2010). *The status of the Implementation of the Nairobi declaration and the Nairobi Protocol in Ethiopia: Challenges and opportunities*. Nairobi: RECSA.

Hobson, R. P. (1908). Disarmament. *The American Journal of International Law*, 2(4),

Human Rights Watch (1998). *Global Trade Local Impact: Arms Transfers to all Sides in the Civil War in Sudan*, http://www.unhcr.org/refworld/docid/3ae6a8500.html (accessed 24.02.2022)

IDDRS (2010). *Operational Guide to the Integrated Disarmament, Demobilization and*

Isima, J. (2004). Cash Payments in Disarmament, demobilization and reintegration Programs in Africa, In *Journal of Security Sector management*, Vol.2 No. 3 pp 1-10

Knight, M. (2009). Security Sector Reform, Democracy, and the Social Contract: From Implicit to Explicit, In *Journal of Security Sector management*, Vol.7 No. 1 pp 1-20

Knighton, B. (2003). The State as Raider among the Karamojong: 'Where There Are No Guns, They Use the Threat of Guns'. In Africa: *Journal of the International African Institute* 73 (3), pp. 427–455. Available online at http://www.jstor.org/stable/3556911, checked on 23/02/2022.

Kopel, D. B. and Gallant, P. and Eisen, J. D. (2005). Microdisarmament: The Consequences for Public Safety and Human Rights, In *UMKC Law Review*, Vol. 73, No. 4, pp. 1-45, http://ssrn.com/abstract=742626 (Accessed 25.02.2022)

Land use, minority rights and social stability in the Horn of Africa, Addis Ababa: Institute for Peace and Security Studies, pp117-143.

Laurance, E. and Stohl, R. (2002). *Making Global Public Policy: The Case of Small Arms and Light Weapons*, Occasional paper No. 7, Small Arms Survey.Muhereza, F. E. (2011). *An Analysis of Disarmament Experiences in Uganda*, (Nairobi: Regional Centre on Small Arms (RECSA).

Mulugeta, M. F. (2016). Small Arms and Security governance: The Case of the Nyangatom people of southwest Ethiopia. (Unpublished doctoral dissertation). Addis Ababa University & Leipzig University, Addis Ababa/ Leipzig.

Oberg, J. (1983). Why Disarmament and Arms Control Negotiations Will Fail -- and What Can Be Done? *Security Dialogue*, 14(3), Pp 277 - 282.

Parker, S. (2010). *National Implementation of the United Nations Small Arms Programme of Action and the International Tracing Instrument: An Analysis of Reporting in 2009–10 Interim Versions.* Geneva: Small Arms Survey, Graduate Institute of International and Development Studies.

Reintegration Standards. http://www.iddrtg.org/wp-content/uploads/2013/05/Operational- Guide-REV- 2010-WEB.pdf (Accessed: 28.02.2022)

Saferworld (2011). *Harmonizing small arms control legislation: Selected case studies from the Great Lakes region and Horn of Africa.* http://www.saferworld.org.uk/downloads/pubdocs/Harmonising%20small%20arms%20c ontrol%20legislation.pdf (Accessed: 09.02.2022).

Sagawa, T. (2010). Automatic rifles and social order amongst the Dassanech of Conflict ridden East Africa, *In Nomadic Peoples*, Vol. 14, no.1.

Small Arms Survey (2001). *States of Security.* Switzerland: Cambridge University Press.

Speech by Meles Zenawi during the 13th Annual Pastoralists' Day celebrations, Jinka, South Omo, (25 January 2011)http://www.mursi.org/pdf/Meles%20Jinka%20speech.pdf (Accessed: 26.06.2015)

Sugar Corporation. http://www.etsugar.gov.et/ (accessed: 24/02/2022)

Supplement to An Agenda for Peace: Position Paper of the Secretary-General on the Occasion of the Fiftieth Anniversary of the United Nations (3 January 1995), http://www.un.org/documents/ga/docs/50/plenary/a50-60.htm (Accessed: 02.03.2022)

Tewolde Woldemariam and Fana Gebresenbet (2014): Socio-political and conflict implications of Sugar development in Slamago woreda, Ethiopia, In Mulugeta Gebrehiwot Berhe (ed.), A delicate balance:

The Nairobi Protocol for the Prevention, Control and Reduction of Small Arms and Light Weapons in the Great Lakes Region and the Horn of Africa (21 February 2022), http://www.recsasec.org/publications/Nairobi_Protocal.pdf (accessed: 02. 25.2022)

The United Nations (1948): *Universal Declaration of Human Rights* http://www.un.org/en/documents/ udhr/ (Accessed 01.03.2022)

Tornay, S. (1979). Armed Conflicts in the Lower omo Valley, 1970-1976: An Analysis from within Nyàngatom Society, Fukui Katsuyoshi and. David Turton (eds) *In Warfare among East African Herder*, pp.97–117

UN. (2014). *Operational Guide to the Integrated Disarmament, Demobilization and Reintegration Standards* http:// www.unddr.org/uploads/documents/Operational%20Guide.pdf (Accessed: 01.03.2022)

UN.(2001). *UN Programme Of Action To Prevent, Combat And Eradicate The Illicit Trade In Small Arms And Light Weapons In All Its Aspects* (UN Document A/Conf.192/15). Centre for Non-proliferation Studies, http://cns. miis.edu/inventory/pdfs/aptsarms.pdf (Accessed: 18 February 2022).

Wepundi, M. (2011). *An Analysis of Disarmament Experiences in Kenya*, Nairobi: RECSA

THE DYNAMICS OF SECURITY THREATS TO THE HORN STATES: IMPLICATIONS FOR "PRISONERS OF GEOGRAPHY

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ABSTRACT

The Horn of Africa is considered as one of perhaps the most insecure regions in the world as a result of intra-and-inter states conflicts that have been fought for decades in almost all the region's states and consumed millions of lives and material resources. Causes of conflict and insecurities to the Horn of Africa states and/or regimes cut across the three major sources of conflict formations, i.e. national, regional, and international. The predominantly internal sources of conflicts in the region traverse through what have been left as colonial legacies (such as arbitrarily drawn colonial boundaries and inherited embryonic state institutions and structures) and the post-independence years' political and economic malaises (such as leaders' autocratic nature, inappropriate economic policies, and unfair distribution of economic wealth of the state; 'politics of domination and exclusion'; weak center-periphery relations; and frequent droughts and famines). These sources of intra-states conflicts and insecurities in the Horn easily acquire regional current due to historical and ethno-cultural factors and the culture of mutual interference of states to each other'saffairs in the region, which is dictated either by each government's desire of dealing with its own internal conflicts or by the needs to promote the vested interests of external powers. The interplay between national and regional sources of conflicts and insecurities has therefore created fissures for the interventionism of external forces, which ultimately makes the Horn of Africa region an epicenter where the national and global security threats are met. Such dynamics web of security threats to the Horn of Africa states and its implications for the Horn 'prisoners of geography'- landlocked states- is missed in the existing literature due to that research works on the subject fall either into the internal or external verities of security threats and hence are short of looking at their interplay and its effects on the Horn of Africa landlocked states-Ethiopia, South Sudan and Uganda. The Copenhagen School's basic theoretical postulates are used to examine how the predominant internal nature of security threats to the Horn states mutate into and assumes regional dimension to become a constraint for various dimensions of landlocked states' security.

Keywords: Dynamics, Security, Threat, Horn States, "Prisoners of Geography"

Introduction

The Horn of Africa sub-region is the most conflict-ridden region in the world as a result of intra- and-inter states conflicts that have been waged for decades. The prolonged civil wars that lasted for decades consuming human lives and resources were fought in Ethiopia, Sudan and Uganda. Since 1991, Somalia has ceased to exist as a state with central government to ensure law and order and has become a living example of Hobbesian condition of war of each against all, where competing warlords/clan factions started to fight each other to control lucrative business areas. Djibouti once considered as 'an island of stability in a sea of regional conflicts' has been threatened by armed struggle in the early 1990s. Kenya that has relatively been considered as peaceful and stable has been ravaged by electoral violence in 2007, as the contested result of the 2005 Ethiopian election produced similar result. The Horn has also been threatened by inter-states wars and disputes of varying intensity. The two high intensity wars were fought between Ethiopia and Somalia in 1977-8 and Ethiopia and Eritrea in 1998-2000. Inter-state disputes between Kenya and Somalia in 1964-7, Ethiopia and Somalia in the 1960s, Djibouti and Eritrea in 2008, and recently South Sudan and Sudan also led to confrontations.

The sources of almost all threats to states and/or regimes in the Horn are mainly internal. These include, among others: arbitrarily drawn colonial boundaries that creates and galvanizes communal and

ethnic fissures and ultimately makes socio-political cohesion difficult; colonially inherited state institutions and structures that did not mirror the interests, customs and values or the diversity of the society denied states and regimes in powers legitimacy; lack of public support of regimes as a result of 'politics of domination and exclusion' and unfair distribution of economic wealth; the autocratic nature of leaders and their inappropriate economic policies that have often been proven failed to meet the needs of the public; weak center-periphery relations due to resistance to incorporate and inability of the state extending its institutions and agents that resulted in marginalization of the latter; and droughts and famines that have frequently affected large population in the region and challenged states' capacity to give remedy timely. A mixture of these factors lies at the heart of intra-states conflicts and insecurity of states and/or regimes in the Horn region. Owing to colonial boundaries that negate ethno-linguistic criteria that is reinforced by the culture of mutual interference of states in each other internal affairs in the region, intra- states conflicts in the region spill over into neighboring states and assume regional dynamics.

The mutual intervention of states in the internal affairs of each other by providing arms and other forms of assistance to insurgents across their borders is dictated either by each government's desire of dealing with its own internal conflicts by supporting insurgents in neighboring states or needs to promote the vested interests or goals of external powers, regional and global. External power's involvement therefore augmented the internal threats and fissures that exist within the boundaries of states in the region. This paper argues that internal threats that emanated from within the states in the Horn and transcended to the neighboring states and further fueled by external interventions implied negative ramifications on landlocked states' search for reliable access to the sea and international markets. In other words, the interplay between internal and external threats to states and regimes in the Horn would mean negative repercussions on landlocked states' dependable access to the sea. Consequently, three basic questions are set to be responded to in this paper: (1) How did the dynamics of security threats at play in the region constrain landlocked states' dependable access to the sea? (2) What aspect of these states' security is challenged by geographic isolation from the waters of the seas and oceans? (3) How strong are individual states' strategic developmental initiatives (i.e. dam construction, oil to electricity exchange) and regional actors' collective security actions under IGAD in overcoming the challenges posed?

The Horn of Africa is an elusive term because of different explanations of scholars of what it constitutes. For instance, Woodward (2003) defines the Horn as it emerges out from the concern of relations of states that embraces Ethiopia and Somalia and later on Sudan. Francis (1977) considers states of the Horn that share borders with the Red Sea and its outlet to the Gulf of Aden including Ethiopia (plus now Eritrea), Djibouti, Somalia, and Sudan. Mesfin (1999) takes physical contact on the basis of boundaries and cross-border settlement of population with similar identity markers and categorizes states in the Horn into principal (such as Ethiopia, Eritrea, Djibouti, and Somalia) and adjacent or peripheral (such as Sudan, Uganda and Kenya). He also considers Ethiopia as the 'Core' state in the region owing to the fact that it touches almost all states and provides its waters with varying degree for its neighbors and as a result of which it is considered as the veritable water tower of the region. For the purpose of this paper, the Horn of Africa comprises Djibouti, Ethiopia, Eritrea, Kenya, Somalia, Sudan and Uganda that are members of the Intergovernmental Authority on Development (IGAD). This is due to that these states share certain characteristics and face similar problems and each of these state's security cannot be conceived separately as it is elucidated in the discussion made under section three.

Hausmann's (2001) supporting argument to this paper is that being landlocked as a geographic attribute of location vis-à-vis the sea makes landlocked state 'prisoners of geography'. This is despite that he further claims other geographic factors such as latitude and attitude, and patterns of population settlement have similar effects for states. This paper attempts to show the magnitude of constraint the

security dynamics at play in the Horn of Africa posed on the region's landlocked states or in Hausmann terms 'prisoners of geography' search for secured access to and from the sea with its various security implications.

A Brief Theoretical Discussion

Security is an 'essentially contested concept' (Gallie, 1956: 184). This is not to mean that the concept lacks consensus over its meaning that generally means 'freedom from threats to core [or cherished] values for both individuals and groups.' But the contestation is rather on what threats to whose values (i.e. individual, national or international) should accord primacy and protected (Baylis, 2001: 254). For (neo)-realists, security has long been conceived in the narrow remit of state (or national) security that considered the state as the main referent object of security assuming that if it is secure and its citizens will be secured ultimately. And the principal threat to state security is basically considered to be military in nature and from other states providing that the anarchic international system lacks supra-state authority for reconciles and mediates conflicting interests of states (Caldwell and Williams, 2012).

This state-centric and military-focused notion of security that dominated the discourse of security studies during the Cold War and revived after the 9/11 incident as part of 'War on Terror's has been challenged in the 1990s. This was due to its weakness both to embrace emerging security threats beyond the military to the economic, societal and environmental sectors and to open space such as for societies and individuals as alternate security referent objects to the state (Hough, 2013). And the recognition that states as the primary purveyors of security for their citizens, are also potential sources of threat for their own citizen particularly of those developing states (Acharya, 1997; Ayoob, 1995).

In response to the newly emerging security concerns, attempts to conceptualize security in the post-Cold War years have produced a galore of literature that amounts to what Baldwin (1997: 1) calls "something of a cottage industry" and have stretched the notion of security in two opposite directions – on account to issues to be included on the security agenda, 'broadening' and with respect to subject or referent object of security, 'extending' (Wyn Jones, 1999). The first direction that is taken by the so-called the Copenhagen School and centered on the scholarly works of Buzan (1991) and Buzan et al., (1998), broadened the ambit of security to include threats emanating from the economic, societal and environmental sectors, but typically framed in relation to human collectivities organized within the state. The move therefore takes the state as the main referent object of security despite that a wide range of possibilities for inclusion of nonmilitary threats across sectors. The second direction represented by the so called Critical School probes the shift of referent object of security particularly from the state to individuals – human security (Krause and Williams, 1997). This is despite the fact that human security is 'unavoidably and inextricably about the state' (Krause, 2007: 6).

State security can be dissected into sectors. Buzan (1991: 38) argues that the security of human collectivities organized within the state can be seen along with five major sectors – each of which has its own focal point and way of ordering priorities, but are chained strongly in a web. Generally speaking, military security concerns the two-level interplay of the armed offensive and defensive capabilities of states, and states' perceptions of each other'sintentions. Political security concerns the organizational stability of states, systems of government and the ideologies that give them their legitimacy. Economic security concerns access to the resources, finance and markets necessary to sustain acceptable levels of welfare and state power. Societal security concerns the sustainability, within accept- able conditions for evolution, of traditional patterns of language, culture and religious and national identity and custom...

This paper takes the state as the main referent and locus of security. State or national security is also understood as 'the ability of states to maintain their independent identity and their functional integrity" (Buzan, 1991: 107) or 'absence of threats to their major values' (Nye, 2005: 223) including their

territorial integrity and sovereignty (politico-military security), population and culture (societal security) and economic prosperity (economic security) (Grizold, 1994; Wyllie, 2008).

Furthermore, regional security relations 'where states or other units link together sufficiently closely that their securities cannot be considered separate from each other' (Buzan and Weaver, 2003: 43), is important in this paper. Regional security tightly links with the notion that security is relational and that regional security complex is to mean a set of states whose main security concerns mainly of political, military, environmental and societal are closely related and therefore cannot be realistically understood alone (Buzan and Wæver, 2003). A regional security complex is predicated essentially on the 'distribution of power and the 'durable patterns of amity and enmity relations' among the principle units' (Buzan et al., 1998: 13) – that is primarily shaped by territorial disputes, cross-border ethnic distribution, ideological orientations, suspicion and fear, and sustained historical links of genuine friendship of support or protection (Buzan and Wæver, 2003). Despite all these are shaped in the region through "a mixture of history, politics and material conditions" they provided fertile ground for the global powers' "options for, and consequences of, projecting their influences and rivalries into the rest of the system" (Buzan and Wæver, 2003: 47).

The Horn of Africa is a regional security complex (Berouk, 2011; Redie, 2013). It has been ravaged by intractable intra-and-inter states conflicts whose security implication is that they have staged the region the most insecure place in the world (Redie, 2013). Regional security relations in the Horn has typically been characterised by states and regimes that have long begged each other's security – a condition that has for long been mediated by a nexus of historical and ethno-cultural factors and the interventionism of external regional and international forces (Berouk Cliffe, 1999;2011; Redie, 2013). Indeed, the quest for dependable access to and from the sea of the Horn landlocked states depends mainly on the regional security complex that has characterized these states' security relations in the region.

The Copenhagen School's national (or state) security along with sector and regional security complex are relevant theoretical postulates for this work. This is mainly because: first, the former helps to analyze various sources of conflict and insecurity across sectors; and secondly, the later helps to examine how the internally driven conflicts within individual states in the Horn region easily acquired regional web and become regionalized. These two approaches are thus essential to seize various sources of conflict formation, the entangled nature of intra-and-inter states conflicts and insecurities in the Horn states, and based on which to assess its various security implications for the Horn of Africa 'prisoners of geography'.

The Dynamics of Security Threats to the Horn of Africa states

The major issue which is to be discussed in this topic is in line with the argument that the major security threats in the Horn are predominantly internal threats, however, these threats acquire regional current due to a nexus of historical and ethno-cultural factors and the interventionism of external forces, which certainly militate against the various security dimensions of the Horn landlocked states in their search for secured access to and from the sea. One of the residues of colonialism that is important to comprehend where threats to states in the Horn lie is the arbitrarily drawn colonial boundaries. The authors of Africa's boundaries drew them in accordance with their interests short of human factors and thus effected the curving up of groups having similar identity markers into different parts. And laid the basis at which interstates conflicts emerged in the postcolonial Africa states (Boyd, 1979; Ikome, 2012). The artificial borders that bisected identity groups apart posed threats to states as they gave rise to groups claiming national self-determination, separatist tendencies and of states irredentist policy (Boyd, 1979).

In the Horn, for instance, colonial boundaries have divided Somali people into five: British, Italian and French Somaliland, and Ethiopia and Kenya (Bereket, 2003; Bahru, 2006). It was on this ethnic rationale that Somali's irredentist claims over Somali settled areas in Ethiopia and Kenya has flourished and frequently led to conflicts after independence between Ethiopia and Somalia, and Kenya and Somalia (Boyd, 1979; Kidane, 2011). Bereket (2003) also argues that Eritrean quest for self-determination/secession and the prolonged war fought to that effect was on colonial borders, as border issues caused full scale war between Ethiopia and Eritrea in 1998 after Eritrea secession (Kidane, 2011). Despite borders issues in both cases served as proximate causes, the root causes of which appeared to be in the failure of Ethiopia's imperial and Derg regimes addressing Eritrean grievances (Keller, 2004) and the political economy and psychology of the leadership in the latter case (Bereket, 2003; Healy, 2008).

Besides, poorly demarcated borders along Uganda and Kenya, Ethiopia and Sudan, Kenya and Sudan over Elemi triangle and South Sudan and Sudan though currently at dormant stage remain potent sources of conflicts given the highly prized resources found across borders (such as iron ore, copper, uranium and platinum (Okumu, 2010) and their conduit nature of internal conflicts spill over to neighboring states (Ikome, 2012; Kidane, 2011). The borders are also being used for "illegal cross-border activities that threaten national sovereignty and destabilize regional politics" (Okumu, 2010:270). Besides, IKome (2012) argues that increasing the size of population escorted by shrinking resources and intense migration would cast prospect of borders conflicts.

The inherited colonial state structures that disrupted the organic nation building process in Africa and the different colonial rules imposed on African are also variables explaining where threats to states in Africa are located. The replacement of indigenous institutions and local values with modern ones and the undermining of African traditional authority patterns through the use of chiefs for colonial duties impeded the natural process of state formation in Africa (Hrituleac, 2011). Unlike European nation states that were established after a long process through "attempts by peoples or their leaders to give a nationality or group a territory that it could control for itself" (Vasquez cited in Alexander, 2003: 628), African states were cobbled together by colonial powers via "disrupting the existing economic and social relationships and creating new political units that cut across ethnic/ religious boundaries" (Degu, 2002: 97). This hindered development and left legacies of corruption & political instability in Africa (Hrituleac, 2011).

Moreover, colonial powers did not impose their rules evenly on African communities. Different administrative rules had been imposed on African in such a way that favor some but marginalize others. This later sow its seeds for ethnic cleavages between groups to flourish and ultimately sets in motion and consolidated north-south dichotomy such as in Sudan and Somalia (Alexander, 2003). Medhane (1999) also argues that it was Italians distortion of Eritrean identity and replacing it by new/false identity that later contributed to the subsequent conflicts in Ethiopia, and between Ethiopia and Eritrea after the latter seceded from the former. The French also played off Issa ethnic group over Afar in Djibouti (Woodward, 2003). Zolberg cited in Degu (2002:97) sums up this as follows:

> *The dualism of Sudan (between the Arab north and the rest of Sudan) was crystallized by the British colonial policies... In Uganda, the Buganda enjoyed an extraordinary au- tonomous status and built up an enormous lead in entry into privileged social status, through education and economic change. In Ethiopia, the Italian occupation exacer- bated center-periphery tension after the war. Italians exploited ethnic antagonisms to weaken the Ethiopians' resistance and generally favored the Muslim over the Coptic Christian. First the Italian and then the British colonial powers were responsible for the creation of Eritrea as a separate political entity (on the creation of ethnic/regional hierarchies in these countries).*

African leaders failed to create socioeconomically cohesive and politically viable states using the opportunity created after independence, which has contributed to the inherited colonial problems to sustain and new to generate (Crummey, 2003). Despite diverse in their history and levels of economic and political development, the Horn states have faced challenges after independence. The first is inappropriate developmental policies most of the Horn states pursued failed to meet the needs and expectations of their citizens (Degu, 2002; Medhane, 2004). Berouk (2011:13) explains why developmental policies failed to meet the demands and interests of the people as follows:

> *Economic activities are strongly skewed towards primary commodities for export, which are subject to the whims of the fluctuating prices of the international commodity markets. Economic activities are also hampered by external dependence, inadequate infrastructure, shortage of capital, shortage of skilled labor and misguided develop- ment policies. Compounding this, the state is unable to provide adequate health and education services or to remedy mass unemployment, which partly results from unsus- tainably high population growth.*

Political elites across the Horn were also unable to connect the center with the periphery by stretching agents and institutions of the state. This has resulted in socioeconomic and political marginalization of the latter and the ensuing erosion of the legitimacy of the center (Crummay, 2003; Dias, 2013). Lack of inclusiveness of the governance or what Bereket (2003) has rightly called 'the politics of domination and exclusion' is also threat to states in the Horn. According to Mkutu (ND), 'governance in the Horn is dominated by manipulation of ethnicity, patronage and a political culture of exclusion.' The power of the state therefore is the center of conflict since whoever control it assumed all resources and prerogatives of the state and in most cases, regimes are autocracies relying on ethnic loyalties and military and security services, to which national scarce resources have been devoted at the expense of developmental endeavors (Berouk, 2011).

Rhetoric aside, paucity of democracy is also challenge for peace in the Horn characterized by:

- Lack of governmental system based on the consent of and accountable to the people (Bereket, 2003);
- Lack of democratic accountability, representation in government structures and equitable distribution of resources (Healy, 2008);
- Fault lines created in diversity management, uneven development and marginalization of ethnic groups, and ethnocratic nature of the state (Kidane, 2011);
- Governments' failures to accommodate demands for reform measures and address the fragile livelihoods in the periphery (Dias, 2013); and
- Problems in most of the region's leaders given their inordinate ambition and violation of human rights (Bereket, 2003).

Moreover, famines and droughts reinforced by scarcity of resources, rapid population growth, and wars have often affected the Horn states (Kedane, 2011; Medhane, 2004). This coupled with the inability of states' to reach out to the periphery provide grounds for rebel movements and weaponry to proliferate in the Horn and add insecurity (Dias, 2013). The constant movements of pastoralists across borders in search of water and grazing land often led to conflicts among pastoralists and with agrarian. The effects of famines and wars have triggered major dislocation across borders and generating huge number of refugees in the Horn (1,266,375 in 2012) mainly across Sudan-Ethiopia, Uganda-Sudan and Ethiopia- Somalia borders (Breouk, 2011; Dias, 2013). Woodward (2003: 3) claims that famine was a contributor to political instability and a reflection of it as "it helped bring down Haile Selassie in Ethiopia in 1974; it contributed similarly to the overthrow of Ga'afar el Nimeiri in Sudan in 1985; and it was intensified by struggle to overthrow Siad Barre in Somalia in 1991."

The above internal sources of threats that emerged within the Horn states transcend their borders and assume regional dimension (Berouk, 2011; Cliffe, 1999; Healy, 2008). This is due to the intention of each regime dealing with its own internal conflicts by some degree of support for rebels across borders (Cliffe, 1999), or to promote the vested interests of external powers (Daniel, 1994). Or it is due to the fear that the presence of opposite system in the vicinity could endanger their security (Novati, 2009). This has prompted a pattern of 'mutual intervention' (Cliffe, 1999) and enhanced states' rivalries and mutual suspicions (Berouk, 2011). This is the reason why "pursuing foreign (regional) policy through proxy forces in neighboring countries has been the 'normal' pattern of relations for decades" in the Horn (Healy, 2008: 39).

The Horn of Africa states often try to manipulate the weak links of each other to destabilize, which is mediated either by each government's desire of dealing with its own internal conflicts by supporting insurgents in neighboring states or by the needs to promote the vested interests of external regional and international powers (Cliffe, 1999; Berouk, 2011). As a result, except Djibouti, all states have provided military assistance to insurgents in neighboring states. For instance, since 1998, Eritrea and Ethiopia have accessed support for rebel movements to destabilize each other (Medhane, 2004).

Ethiopia had provided steady support to the SPLA as a counterpoint to Sudanese support for the EPLF dissident in Eritrea (Healy, 2008; Woodward, 2003). In the 1990s, Ethiopia and Eritrea provided military aids to the SPLA and the National Democratic Alliance (NDA) in reply to Sudan's support for their rebels. In addition, Ethiopia's rebels were supported by the Somali state before 1991 (Cliffe, 1999; Medhane, 2004; Kidane, 2011). The Shifta wars (1963-67) in Kenya's Somali- inhabited areas were also supported by the Somali state meant to realize its irredentist policy. Ethiopian regimes reacted to the irredentist policy through aiding Somali's rebel movements against the Somali state and presently through supporting the TFG against al Shebab-Hizbul Islamiya insurrection (Kidane, 2011). Moreover, Uganda's support for the SPLA reciprocated by Sudan's support for the Lord's Resistance Army (Berouk, 2011; Healy, 2008). Kenya dissident groups were also accessed support from Uganda and the Sudan (Amare, 1996). Kenya also accused of sheltering Uganda's rebels (Khadiagala, 1993).

The regional conflicts rooted in local politics with the Horn geo-strategic significance that relates to its proximity to the Red Sea and its outlet to the Gulf of Aden in addition to the Nile valley has provided reasons for external powers to be deeply involved and add insecurity for the Horn states (Mesfin, 1999; Woodward, 2003). The involvement of the US and the Soviet Union during the Cold War (1945-1991) and the US after 9/11 under War on Terror greatly contributed to the incident of conflicts in the Horn. The US and the Soviet Union competition through proxies in the Horn making available military hardware for the Horn states' for that purpose helped to sustain civil wars in Ethiopia, Somalia and Uganda (Keller, 1997; Makinda, 1982).

It also caused interstate wars such as between Ethiopia and Somalia in 1977-8 (Mesfin, 1999; Woodward, 2003) and helped Amin's dealing with the overly hostile Nyerere (Khadiagala, 1993). Besides, the emergence of Islam as a political ideology after the Cold War reignited the US to be deeply involved in the region. The seizure of power by the National Islamic Front in Sudan in 1989 and the aggressive policy it pursued meant to spread Islam via providing aids to Islamist movements in its neighboring states resulted in its isolation (Alexander, 2003; Medhane, 2004).

In response, Ethiopia, Eritrea and Uganda had pursued a common policy with the US support meant to contain the threat posed (Healy, 2008). This coupled with the bombing of the US Embassy in Kenya and Tanzania in 1999, assassination attempt on Mubarek of Egypt in Addis Ababa supposedly supported by Sudan in 1995, and the 9/11 terrorist attacks in the US galvanized these states'aid to the SPLA and thus intensified the Sudanese civil war. Eritrea's strong tie with and the assistance it provided to the Islamist forces with the US interest probed Ethiopia's 2006 intervention in Somalia

(Medhane, 2004; Healy, 2008). The alliance of the Horn states with global agenda therefore translated regional conflicts rooted in local politics to global one.

The regional powers such as Egypt, Saudi Arabia and the Gulf States have also involved in the Horn (Lefebvre, 1996). Iran has become a close ally of Sudan due to Bashir's support of Iraq invasion of Kuwait in 1990 (Amare, 1996). Such relations helped Sudan to access Iranian support for the aggressive Islamist policy it pursued in the Horn (Medhane, 2004). This has provoked the alliance of Egypt, Eritrea, Ethiopia, Israel and Uganda against Iran and Sudan (Amare, 1996). Egypt's key concerns have been the use of Nile waters whose 86% volume originates in Ethiopia (Yacob, 2007). The unfettered access of the Nile waters at any cost has long been the policy of Egypt. This is the reason why "Eritrea secessionism was born, nurtured and brought to full maturity in Egypt" (Mesfin, 1999: 84) and Egypt has always backed anti-Ethiopian Somali's factions (Kinfe, 2002; Medhane, 2002). Saudi Arabia, Egypt, Iraq and Syria had also provided support either militarily or financially to the secessionists in Eritrea and to the cause of Somalia's irredentist policy (Woodward, 2003). The concern of Israel vis-à-vis the Horn has always been preventing the Red Sea from falling an 'Arab Lake' thus safeguarding its access to the Indian Ocean (Lefebvre, 1996). Thus, Israel has created strong tie with Ethiopia, Kenya and Uganda and it assisted the SPLA (Woodward, 2003). Regional powers intervention in the Horn thus augmented conflicts that have already been set in motion.

The interplay between internal and external source of threats discussed above has ultimately generated intra-and-inter-states conflicts and:

- Brought Eritrea (24 May 1993) and South Sudan (9 July 2011) to the catalog of African states (as war-making leads to state-making) with ensuing result of the birth of Ethiopia and South Sudan as landlocked states (Dias, 2013);
- Contributed to state collapse as the Somali state ceased to exist with central government since 1991 (Bereket, 2003);
- Weaken states as the relapse into conflicts between Eritrea and Ethiopia compromised the state-building projects of the regime in the latter and between Sudan and South Sudan in contested areas across borders (Dias, 2013);
- Forced state reconfiguration as the EPRDF regime in Ethiopia adopted a federal system organized along ethnic lines in clear rupture with the past state building projects (ibid);
- Helped power sharing device to be used as a means to respond to ethnic grievances over power-sharing in Djibouti and Kenya (Bereket, 2013; Kidene, 2011).

Implications for "Prisoners of Geography"

The dynamics of security threats (the tangled nature of internal and external security threats) certainly implied negative security implications in economic and politico-military terms for the Horn landlocked states in their search for dependable access to and from the sea. Ethiopia and Uganda in particular rely heavily on seaborne trade for their economic development (UNCTAD, 2013) and thus they should remain in good term with their main transit states: Djibouti and Kenya respectively. Heavy reliance on a single transit state has often exposed them for various economic barriers with substantive effects on their trade performance, economic growth and development.

The first is that due to political and economic reasons transit states in the Horn often created trade barrier through increasing port service fees, sometimes unilaterally. For instance, Djibouti constantly increases port service fees on Ethiopia, which reportedly reached about US$ 3 million per day excluding other costs incurred such as for demurrage and storage (Yacob, 2013). The constant increase in port service fees and dues is partly due to Ethiopia's almost total dependency on Djibouti port and the ensuing monopoly of services, partly due to the quality services rendered at the port of Djibouti, and partly due to instant increase in Ethiopia's merchandises (Yohannes, 2011).

The second economic burden relates to unnecessary transit traffic costs. Delays due to poor road and rail conditions and burdensome custom and clearance procedures are lengthy in the Horn. Because of such delay factors, container dwell times in East Africa (i.e. 12-15 days) are twice of the global practice (i.e. 7 days) with an extra day in ports costs more than US$35,000 for a 2,200- TEU (20-foot equivalent unit) vessel in 2006 (Foster and Briceño- Garmendi, 2010). Djankov et al (2006: 1) estimate time delay and trade inverse relations and they conclude that an extra "day that a product is delayed prior to being shipped reduces trade by at least 1%" on average or "each day is equivalent to a country distancing itself from its trade partners by 70 km on average." The trade effect is even higher for time sensitive perishable agricultural goods whose additional day's delay reduces a country's relative exports of time-sensitive to time-insensitive agricultural goods by 6% (Djankov et al., 2006). Delays as a result of both 'hard' (road and rail) and 'soft' (administrative) infrastructure deficits are certainly jeopardize the Horn landlocked states' trade by making their export goods uncompetitive and their imports expensive as far as the data presented in the table below are concerned.

Table: 1 Competitiveness of landlocked states in the horn of Africa

No	The Horn Landlocked Countries	Main Transit Ports	Time to Trade (in days)		Documents to Trade (in number)		Dwell- time (in days) Ports
			Export	Import	Export	Import	
1	Ethiopia	Djibouti	44	44	8	11	10
2	South Sudan	Mombasa	55	130	10	12	12
3	Uganda	Mombasa	28	31	7	10	12

Source: World Bank, 2014; Economic Commission for Africa (ECA), 2009.

Besides, the Horn transit states intentionally creates delays for the region's landlocked states export commodities at ports to take priority for their similar goods to enter the global marketplaces that require "just-in-time" delivery. For instance, transit Kenya often exploits Uganda's dependency on Mombasa port to take the benefits of global markets (that the first come takes best price) to its export goods creating barriers intended to delay Uganda's similar export products (Rudaheranwa, 2009). Moreover, whether the Horn landlocked countries should invest their scarce resource for transport infrastructure (i.e. road and railway) link to the outside world obviously leads them to Investment Dilemma of the necessity of it and the unreliability of their transits states due to the regional security dynamics.

Another effect of the regional security dynamics relates to the militarily weakness of the Horn landlocked states (Glassner, 1993). This claim seems to be unreasonable for one who looks at the military strength of these states in Africa. According to Global Firepower (2014), Ethiopia ranked 3rd next to Egypt and Algeria, and Uganda and South Sudan ranked 13th and 14th in Africa in their military strength, respectively. This being the case, however, they are militarily weak due to the fact that they do not produce strategic military armaments for their own as a result relying on sources abroad and a successful blockade of supplies of arms or prior notification of their origin and type put their

security at stake. For instance, the denial of the French Ethiopia's use of the Ethio-Djibouti railway (its only access to the sea at a time) for its inward shipment of arms in the Italian invasion (1935-1941) facilitated its defeat (Spencer, 2006). In this line Pankhurst and Pankhurst (1953) wrote that Djibouti's blockage of Ethiopia's accessto its sixteen airplanes and other armaments at the port of Djibouti handicapped the state's defensive ability and facilitated in its defeat during Ethio-Italian invasion. Djibouti also betrayed Ethiopia denying it its port access to transit military weapons during Ethio-Eritrean war of 1998-2000 (Abebe, 2007).

Moreover, Uganda was also deprived of military supplies and petroleum products imported by rail through Mombasa by the Kenya government in 1979 and 1987 that resulted in internal chaos and partly the toppling of Amin's government in 1979 (Griffiths, 1995; Khadiagala, 1993). The volatile Horn region where states often search out the weak links of each other to manipulate their security also considerably reduces the political leverages of landlocked states vis-à-vis their neighboring states and the rest of the world. For instance, though Ethiopia is strategically significant in the Horn due to its population and location, its absence of outlet to the sea along the Red Sea coast certainly reduced the political leverages it enjoyed vis-à-vis the west (especially the USA) and the Middle East (especially Israel and Egypt) before 1993 (Mesfin, 1999). Djibouti, Somalia and Sudan as members of the Arab League could also easily be used as pawns of the Arab interests in the Horn (especially, Egypt and Saudi Arabia) and might deny their port services to Ethiopia at any time. Besides, Uganda has always been Kenya's political hostage as far as Mombasa port, its main outlet to and from the sea that has often been used by Kenya to shape the behavior of Uganda. In this line, Wilson (2008) wrote that:

> *Being landlocked certainly carries huge costs. This is dramatically underlined by the threat any political turmoil in Kenya poses to Uganda, Rwanda and Burundi's economies. Cargo passing through the Kenyan port of Mombasa accounts for 90 per cent of Uganda's exports and 78 per cent of its imports. The rail link to Uganda was cut apparently in protest against Ugandan President Museveni's recognition of Kenyan President Kibaki's re-election following the disputed poll in December 2007.*

Plausible remedies and their empirical strength

There are at least two approaches in hauling the geographic handicaps of landlockedness:

> *International law and regional integration and cooperation. The former legal means is by far secondary due to that it is twisted by two contradictory principles: the principle of free access (i.e. driven by juridical equality of States and freedom of the high seas) and the principle of sovereignty (Uprety, 2006).*

As a result, landlocked states' desire for guaranteed right of transit across sovereign borders is left to bilateral agreements (Glassner, 1993) and therefore depends mainly on politics than issues of legality. The latter option seems to be a viable means in providing remedy for the security problematic of geographic isolation from the sea particularly in the volatile Horn region.

The dynamic interplay between the internal and external security threats that militate against the various security dimensions of the Horn landlocked states necessitate collective action such as through IGAD. From 1996 onwards, IGAD efforts of realizing peace and stability and thus open space for sustainable development to take root in the Horn have often been hampered, according to de Waal (2007:12), such as by: the lack of internal peace in most countries; the fact that internal conflicts are rarely contained within the borders of one country; the absence of a stable and consensual regional power order; the disputed legitimacy of states and regimes and the inability of democratic processes to provide that legitimacy; dependency on foreign financiers mainly, the U.S.; and the lack of autonomy of the key multilateral institutions.

Despite IGAD has undertaken to launch a 5 year Peace and Security Strategy (2010-2014) (Alemayehu, 2011) it is "too institutionally weak to drive a strong security programme against the warring instincts of its member states" (Healy, 2008: 41). The weakness is related to lack of human and financial resources (Apuuli, 2011). The ability to appear as an honest and impartial broker in conflicts in which many of the countries of the Horn are entangled has been another problem for IGAD (Borchgrevink and Lie, 2009).

Despite the challenges, IGAD has succeeded in hosting peace negotiations leading to the CPA signed between the Government of Sudan and SPLM in 2005 in Kenya (Apuuli, 2011). Besides, IGAD has also participated in the series of Somali peace processes since 1997 despite limited achievements in the processes due to its restricted role (Kidist, 2009).The establishment of Conflict Early Warning and Response Mechanism, which is a bottom-up system for assessing and responding to conflicts relating to the nomadic people inhabiting across borders in the region is also the success of IGAD. However, this success is limited to only covering one type of conflicts and pockets of the region's vast borderlands (Alemayehu, 2011).

IGAD can be successful in one-off cases where conditions are favorable as it did with the CPA negotiations and establishing effective mechanisms at a limited scale such as CEWARN (Alemayehu, 2011). This being the case, however, IGAD lacks the potential to significantly alter the main sources of conflicts in and insecurity to the Horn states and/or regimes that are illustrated above or lead to general stabilization of the region (Borchgrevink and Lie, 2009). Overall, IGAD remains viable forum for its member states to tackle the collective security challenges they faced. What is then needed is the political commitment of its member states to strengthen it with human and material resources.

Potential areas for economic cooperation in the Horn such as intra-regional formal and informal trade, the use of ports and energy (oil and hydropower) are also identified by scholars as counter to the conflict-ridden nature of the Horn. Healy (2011) argues that the structural barriers (such as uneven capacities, the nature and types of state, weak institutions & regional conflict) and economic obstacles (such as small economies, high dependency on primary commodities export and often competition with each other and overlaps on key export products) often militate against meaningful regional economic cooperation through formal intra-regional trade. Medhane (2004) also argues that "neither the political arrangements nor the economic modalities of each country in the region look to be up to the task of regional peace and cooperation." However, Healy (2011: Viii) maintains that the close socioeconomic ties connecting people along borders "underpin trading networks that play a vital part in the economic life of the region."

For instance, trade along borders is essential for supporting pastoralist livelihoods in Somalia as far as formal trading regime that has collapsed with the demise of the state is concerned (Healy, 2011). The flexibility of cross-border traders to fix with the changing environment also represents a robust resource for market-based cooperation and local economic security and in the Kenya-Somalia borderlines an "economic community practically exists already with free (unregulated) movement of people and capital, and free (unrestricted) movement of goods across borders" (Healy, 2011).

Port access is an essential for trading economy and economic interdependence in the Horn region as it consists of three landlocked states: Ethiopia, Uganda and South Sudan. More than seven ports services are available for the landlocked states: Assab and Massawa in Eritrea; Djibouti; Berbera in Somaliland; Bossaso, Mogadishu and Kismayu in Somalia; Port Sudan and Mombasa in Kenya (Healy, 2011). Despite accessibility, the actual utility of these ports was largely cancelled either by distance, the politics of the region, or lack of infrastructure and port facilities (Yohannes, 2011). Yet, the utilization of transit states' ports by the Horn landlocked states certainly bears economic benefits for both states and it has also strong impetus for economic integration. For instance, Eritrea earned its 22.6% public revenue from Ethiopia's continued uses of Asseb (1993- 1998) (Healy, 2011). Djibouti also earned nearly US$

one billion per year from Ethiopia's use of its port (Getachew, 2013; Yohannes, 2011). One can also imagine the amount of money that Uganda's dependency on Kenya's port brings into the latter's coffer. In addition, the economic benefits the utilization of neighbors ports has potential for economic integration as "the shift of Ethiopia's external trade to Djibouti has spawned much closer economic integration between the two countries including an electricity power line connecting Djibouti to Ethiopia's national grid and substantial investment in road and rail links (Healy, 2011: 31).

The oil triggered positive Ethio-Sudanese relation has also stimulated Sudanese investors to invest on and engage in some business areas in Ethiopia that is responded by the latter's eagerness to make use of Port Sudan. Such initiatives for further economic cooperation has contributed to the development of infrastructure especially road as the 880-km highway linking Addis Ababa to Metema launched in 2010 testified (Medhane, 2004; Healy, 2011).

Despite such initiatives varying degree on infrastructural development such as on road and railway are important to connect the Horn of Africa state's one and potentially drives economic integration in the region and widen alternative routes to landlocked states and thus downplays their exposure to blackmail by their transit states. However, Ethiopia's heavy dependency on the port of Djibouti for its external trade to the extent that "when Djibouti sneezes, Ethiopia gets a cold'' (Healy, 2011) and Uganda's on Kenya, in a region, where states have hangover to exploit each other's security, they could easily exposed to blackmail.

Economic cooperation based on energy (i.e. oil and water) is also potential area of remedies. Energy (oil and hydropower) acts as a drive for economic integration such as in infrastructure and port linkages (Medhane, 2004). Sudan (including South Sudan) is the sole oil producer in the Horn and with 6.3bn barrels reserves itbecame Africa's fifth largest produces with output of about 500,000 barrels a day. Promising oil reserve areas are also identified: the Albert basin in Uganda and the Ogaden regionin Ethiopia (Healy, 2008). Ethiopia increasingly dependence on Sudan for its oil supplies due to its speedy raise in fuel consumption that grew, for instance, by 47% from 1993 to 2003 (Healy, 2008; Medhane, 2004). The economic significance of Sudanese oil for the Horn states (especially landlocked) is apparent. It saves costs otherwise incurred to transport oil from the Gulf States. Its economic imperatives rings sound than others for landlocked states since they are forced to incur additional costs to transport oil through their transit states (Medhane, 2004).

The oil triggered positive Ethio- Sudanese relation has also inspired Sudanese investors to invest on and engage in some business areas in Ethiopia that is responded by the latter's eagerness to make use of Port Sudan (Medhane, 2004). Such initiatives for economic cooperation has contributed to the development of infrastructure specially road as the 880-km highway linking Addis Ababa to Metema launched in 2010 testified (Healy, 2008). Thus, Sudan's oil is powerful impetus for regional economic cooperation and to subdue the succession of conflicts in the Horn. In sum, the economic and political barriers are powerful enough in undermining the economic initiatives that are set in motion for economic integration to flourish in the region.

Ethiopia is the water tower of the Horn with suitable terrain to generate hydropower and export electricity to its neighbors though such potential is not yet tapped sufficiently (Mesfin, 1999). It is now generating 2000MW electric power from its total potential of 45000MW and plan to generate 10000MW at the end of 2013/14 (GTP, 2010). The desire to increase power production is meant to export it to the neighboring states such as Djibouti, Sudan, South Sudan, Kenya, and including Egypt and Yemen (Healy, 2011; Verhoeven, 2011). To this effect, Ethiopia has signed power exchange agreements with all these states, save Egypt (Yacob, 2007; Reuters, 2011). Ethiopia has already started exporting electric power to Sudan and Djibouti, 100MW and 50MW, respectively (Reuters, 2011).

Power transmission lines installation works have also been underway varying in success to connect the remaining states to a single electricity grid by 2016 (Healy, 2011). Water as a drive for economic

cooperation due to its ability to generate electricity is also energy for agriculture. Ethiopia's hydropower potential if exploited as planned and is able to fuse the economy of the Horn states it would accelerate regional economic integration. In sum, IGAD as regional institution for collective actions and the synergies between oil and water as engine for economic integration should be developed well to undermine the interface between internal and external security threats to the Horn states and its implications on the various security dimensions of landlocked states.

Conclusion

This paper sets to address how regional security dynamics in the Horn of Africa constraints the region's 'prisoners of geography' quest for dependable access to and from the sea and weight the strength of individual states' and collective (i.e. under IGAD) initiatives in the region against the challenges posed. From the analysis made two conclusions could be drawn. First, regional security relations in the Horn of Africa that has typically been characterized by states and regimes that have long begged each other 's security is rather a curse for the Horn region's landlocked states' security in economic and politico-military terms. Secondly, individual states' driven economic cooperation particularly through energy exchanges (oil and electricity) and infrastructure development and the region's states collective actions under IGAD to subdue the succession of conflicts in the Horn of Africa – despite it achieves a measure of successes in that end – seems to be weak in pacifying the Horn of Africa states security relations and reducing the vulnerabilities of the region's 'prisoners of geography.' It is therefore that individual states' led economic cooperation predicated particularly on energy exchanges and infrastructure development should be strengthen for two of its benefits. First is that it could set the motion for larger regional economic cooperation and integration to take place. This, in turn, would also provide the Horn landlocked states with the economic imperatives that militate against high transport and trade transaction costs through providing nearby integrated market, and a collectively developed highway systems for using alternative routes to the sea and a harmonized legal and administrative policy frameworks for easing international trade.

References

---------- (1997) Defining Security: A Subaltern Realist Perspective, In Krause, K., and Williams, M., (1997) (ed.) *Critical Security Studies: Concepts and Cases.* London: University College London Press.

---------- (2002) *Al-Itihadi: Political Islam and Black Economy in Somalia,* A/A: Mega Printing.

---------- (2004) *Turning Conflict to Cooperation: Towards an Energy-Led Integration in the Horn of Africa.* A/A: Friedrich-Ebert-Stiftung.

---------- (2004) Understanding Conflicts in the Horn of Africa. In Sriram, C.L. and Nielsen, Z. (2004) *Exploring Sub-regional Conflict: Opportunities for Conflict Prevention.* Boulder: Rienner.

---------- (2011) *Hostage to Conflict: Prospects for Building Regional Economic Cooperation in the Horn of Africa,* Chatham Horse: Chatham House: Royal Institute of International Affairs

Acharya, A., (1997). The Periphery as the Core: The Third World and Security Studies, In Krause, K., and Williams, M., (1997) (Ed.), *Critical Security Studies: Concepts & Cases*. London: University College London Press.

Alexander, A.V. (2003) Major geopolitical explanation of conflict in the Horn of Africa, In *4 Quartal,* NORD- SUD aktuell, Pp, 627-634.

Amare, Tekle (1996). International Relations in the Horn of Africa, In *Review of African Political Economy*, *Vol.23,* No.70 (December), Pp.499-509

AU (2013) *Delimitation and Demarcation of Boundaries in Africa: General Issues and Case Studies.* A/A: Commission of the Africa Union, Department of Peace and Security.

Ayoob, M. (1995) *The Third World Security Predicament: State Making, Regional Conflict and the International System*. Boulder, Colorado, Lynne Rienner Publisher, Inc.

Bahru, Zewde (2nded.) (2002). *A History of Modern Ethiopia: 1855-1991*. A/A: AAU.

Baylis, J., (2001). International and Global Security in the post-Cold War Era, In Baylis, J., and Smith, S., (ed.) (2001) (2nd ed.). *The Globalization of World Politics: An Introduction to International Relations.* New York: Oxford University Press.

Bereket, Habte Selassie (2003). Italy and the Horn of Africa: Colonial Legacies and Challenges in the Age of Globalization. *In Northeast African Studies*, Vol. 10, No.3, Pp. 139-162.

Berouk, Mesfin (2011). The Horn of Africa Regional Complex, In Berouk Mesfin and Roba, Sharamo (2011) (ed.) *Regional Security in the post-Cold War Horn of Africa, ISS,*

Booth, K. (2007). *Theory of World Security*, New York: Cambridge University Press.

Boyd, B.B, Jr. (1979). African Boundary Conflict: An Empirical Study, *In African Studies Review*, Vol. 22, No. 3 (December), Pp.1-14.

Buzan, B. (2nded.) (1991). *People, States and Fear: An Agenda for International Security Studies in the Post- Cold War Era.* New York: Harvester Wheatsheaf.

Buzan, B. and Hansen, L., (2009). *The Evolution of International Security Studies,* Cambridge: Cambridge University Press.

Buzan, B. and Waever, O. (2003) *Regions and Powers: The Structure of International Security.* Cambridge: Cambridge University Press.

Buzan, B. Waever, O. and de Wilde, J. (1998) *Security: A Framework for Analysis.* London: Rienner.

Caldwell, D. and Williams Jr., (2012) (2nd ed.) *Seeking Security in an Insecure* World, Lanham: Rowman and Littlefield Publishers, Inc.

Cliffe, L. (1999). Regional Dimension of Conflict in the Horn of Africa, In *Third World Quarterly,* Vol. 20, No. 1, (February), Pp.89-111.

Crummey, D. (2003). The Horn of Africa: Between History and Politics. In *Northeast African Studies*, New Series, Vol. 10, No.3, Pp. 117-138.

Daniel, Kendie (1994). Which Way the Horn of Africa: Disintegration or Confederation? In *Northeast African Studies,* New Series, Vol.1, No. 1, pp.137-167.

Development Perspective, Washington D.C: The World Bank.

Dias, M.A. (2013). Introduction, In Dias, M.A., (ed.) *State and Social Challenges in the Horn of Africa: Conflict and Processes of State Formation, Reconfiguration and Disintegration.* Lisbon University: Center of African Studies.

Djankov, S., Freund, C., and Pham, C., (2006), Trading on Time. Washington, DC: World Bank.

Dunne, T., and Schmidt, B. C., (2001), Realism, In Baylis, J., and Smith, S., (ed.) (2001) (2nded.), *the Globalization of World Politics: An Introduction to International Relations.* New York:

ECA (2009) The Transport Situation in Africa, Sixth session of the Committee on Trade, Regional Cooperation and Integration, 13-15 October 2009, Addis Ababa, Ethiopia

Factors in the Horn of Africa's Raging Conflicts, UPPSALA:Discussion Paper 67, Kinfe Abraham (2002). *Somalia Calling: The Crisis of Statehood and the Quest for Peace.*

Fierke, K.M., (2007). *Critical Approaches to International Security, Cambridge:* Polity Press.

Foster, V., and Briceño-Garmendi, C., (2010) (Eds.), *Africa's Infrastructure: A Time for Transformation.* Washington, DC: World Bank.

Gilkes, P. (1999). *Ethiopia: Perspectives of Conflict 1991-1999.* Swiss Peace Foundation, Institute for Conflict Resolution.

Glassner, Martin Ira (1993). *Political Geography*, New York: Wiley.

Grizold, A. (1994). The Concept of National Security in the Contemporary World, In *International Journal on World Peace,* Vol. 11, No.3 (September), Pp. 37-53.

Guzzini, S. and Jung, D., (2004) (ed.), *Contemporary Security Analysis and Copenhagen Peace Research*, London: Taylor & Francis Group.

Healy, S. (2008) *Lost Opportunities in the Horn of Africa: How Conflicts Connect and Peace*

Hough, P. (2008) (2nd ed.) *Understanding Global Security*, London: Routledge

Hrituleac, A. (2011). The Effects of Colonialism on Africa Economic Development: A Comparative Analysis between Ethiopia, Senegal and Uganda, MSc Thesis, Aarhus University.

Ikome, F. N., (2012). *Africa's International Borders as Potential Sources of Conflict and future in Europe*. London: Pinter.

Keller, E.J. (1997) Rethinking African Regional Security, In Lake, D. A., and Morgan, P.M., (ed.) (1997)

Khadiagala, G.M. (1993). Uganda's Domestic and Regional Security since the 1970s, In the *Journal of Modern African Studies*, Vol. 31, No.2 (June), pp. 231-255.

Khapoya, V.B., (2012) (4thed.), *the African Experience*, Pearson Education, Kidane, Mengisteab (2011) Critical

Krause, K., & Williams, M., (1997), *Critical Security Studies: Concepts and Cases.* London: University College London Press

Lamy, S.L., (2001) Contemporary Mainstream Approaches: Neo-realism and Neo-liberalism. In Baylis, J., and Smith, S., (ed.) (2001) (2nded.), *the Globalization of World Politics: An Introduction to International Relations.* New York: Oxford University Press.

Lefebvre, J.A. (1996). Middle East Conflicts and Middle Level Power Intervention in the Horn of Africa, In *Middle East Journal*, Vol.50, No. 3, pp.378-404

Leffler, M.P. (1990). National Security, In *the Journal of American History,* Vol. 77, No. 1 (June), Pp. 143-153, London: Adonis and Abbey Publishers Ltd.

Makinda, S.M., (1982) Conflict and the Superpowers in the Horn of Africa, In *Third World Quarterly,* Vol. 4, No. 1 (January) pp. 93-103

Medhane, Tadesse (1999). *The Eritrean-Ethiopia War:Retrospect and Prospects.* A/A: Mega Printing

Mesfin, Woldemariam (1999). *The Horn of Africa: Conflict and Poverty.* A/A: Commercial Press.

Mkutu, K. (ND). Pastoralism and Conflict in the Horn of Africa, Africa Peace Forum: University of Bradford, Monograph, No. 178.

Nicholson, M., (1998) Realism and Utopianism Revisited. In Booth, K., Cox, M., and Dunne, T., (1998) (ed.).*The Eighty Years' Crisis: International Relations 1919-1999*, Cambridge: Cambridge University Press

Nye, J. Jr., and Welch, D. A., (2011) (8thed.), *Understanding Global Conflict and Cooperation: An Introduction to Theory and History*. New York: Pearson Education, Inc.

Nye, J.S. (2005).*Understanding International Conflicts*, London: Pearson Longman.

Ogaba, P. A, and Klay, K. Jr. (ed.) (2007), *Reconstituting the State in Africa*, New York: Palgrave.

Okumu, W. (2010), Resources and border disputes in Eastern Africa, In *Journal of Eastern African Studies*, Vol. 4, No.2, (July), pp 279-297

Omeje, K., & Galadima, H., (2010) (ed.) *Conflicts of Securities: Reflections on State and Human Security in Africa.*

Omeje, K., (2010). Whose Security? The Global Security Debate and the African Paradox, In Abubakar, J.J., Oxford University

Regional Orders: Building Security in a New World. Pennsylvania: Pennsylvania State University Press, *Relations*, New York: Routledge.

Stolberg, A. (2012) *How Nation-States Craft National Security Strategy Documents, Strategic* Studies Institute: U.S Army War College.

Threats to Peace and Security, Institute for Security Studies (ISS), May, Paper 233.

Uprety, K. (2006). *The Transit Regime for Landlocked States: International Law and* Waever, O., (2004). Aberystwyth, Paris, Copenhagen: New 'Schools' in Security Theory and their Origins between Core and Periphery. Paper presented at the annual meeting of the International Studies Association, Montreal, March 17-20, 2004.

Waever, O., Buzan, B., Kelstrup, M., and Lemaitre, P. (1993), *Identity, Migration and the New Security Agenda*

Walt, S. M. (1991), The Renaissance of Security Studies, In *International Studies Quarterly*, 35(2), p.211–239

Williams, P.D. (ed.) (2008). *Security Studies: An Introduction. London*: Routledge.

Woodward, P., (2003). *The Horn of Africa: Politics and International Relations*. London: I.B. Tauris.s

Wyllie, J. (2nd ed.) (2008), Force and Security, In Salmon, C.T, and Imber, F. M., (ed.) *Issues in International*

Wyn Jones, R. (1999). *Security, Strategies and Critical Theory*, New York: Oxford University Press.

Yacob, Arsano (2007). *Ethiopia and the Nile: Dilemmas of National and Regional Hydro politics.* Zurich: Swiss Federal Institute of Technology.

Yohannes, Tekalign (2011), *The National Security Effects of Ethiopia's Landlockedness.* Saarbrucken: VDM.

CORPORATE SOCIAL RESPONSIBILITY IN RESOURCE-RICH COUNTRIES EFFECTS ON ECONOMIC GROWTH

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ABSTRACT

Currently, the reputation of companies worldwide is determined by the extent to which they adhere to corporate social responsibility. In international practice, corporate social responsibility measures play a greater role in the company's activities and increase the importance of this institution. Corporate social responsibility standards differ according to the legal framework, level of development and public attitudes of each country. Globally, all types of firms, especially large corporations and holdings, are increasingly encouraged to adopt corporate social responsibility (CSR) practices that aim to contribute to the improvement of society due to the high expectations of their stakeholders (Mensah, Yensu, & Atuilik, 2017). ; Golob &). Podnar, 2019). While working relations in America are based on the principle of individuality, in Europe it is based on collective relations. While social programs implemented through aid programs are preferred in America, business projects and targeted programs are preferred in Europe. Although it has been widely used in Germany for a long time, the concept of corporate social responsibility is still considered a foreign term. Discussions on corporate social responsibility mainly focus on human rights, environmental issues and the fight against corruption. In Austria, special attention is paid to cooperation in solving labor and social problems. The law, passed in 1966, emphasized the importance of the company's service not only for entrepreneurs and employees, but also for the common good. Although the government's interest in social and environmental issues has decreased due to the economic problems associated with the transition to a market economy in the post-communist countries of Central and Eastern Europe, Corporate Social Responsibility is currently being implemented successfully. Looking at Corporate Social Responsibility (CSR) in the CIS, it should be noted that from the 1990s, economic policy in the post-Soviet countries became more radical. Thus, unlike the Soviet era, companies' interest in CSR, especially in the metallurgical and oil and gas industries in Russia, has increased significantly in recent years. There is no specific law on CSR in Ukraine. Relevant recommendations are provided in the Azerbaijan Corporate Governance Standards to guide Azerbaijani companies in this area. For example, a company must respect the rights and interests of all its stakeholders, including its creditors, employees, customers, suppliers, local communities and the general public. The company should consider the interests of employees, creditors, customers, suppliers and local communities when making decisions, make these decisions feasible and realistic, and consider how its decisions may affect stakeholders. Such problems are reflected in the report.

Keywords: corporate social responsibility, utilities, social practices, business projects

The processes in the globalizing world do not go unnoticed in the business environment. An increasing number of institutions, organizations and companies are trying to keep up with modern times. This modernity is not ineffective in their management. In modern times, there is no institution or company that ignores events in society and the global world. Each of the companies has departments, divisions and departments that deal with corporate social responsibility. Thanks to these corporate social responsibility (CSR) departments, annual CSR projects focusing on many points are approved. Experiences that aim to contribute to society also contribute to the formation of an inter-company competitive environment. These experiences are accepted as positive steps towards the environment, society and social issues.

The areas covered by Corporate Social Responsibility are:

• Institutional social policy related to society;
• Corporate governance and corporate ethics;
• Health and labor protection;
• Environmental policy;
• Human rights;
• Human Resources Management;
• Community interaction, development and investment;
• Corporate philanthropy and volunteering;
• Adherence to the principles of consumer policy and fair competition;
• Anti-bribery and anti-corruption measures;
• Accountability, transparency and performance awareness;
• Domestic and foreign suppliers, etc. related human rights issues.

Correctly taken CSR steps mean not only a positive image of the organization, but also happy employees and happy customers. Corporate social responsibility starts with paying taxes, respecting the environment and providing suitable working conditions for its employees in the society in which the company or organization lives. This activity then goes on to develop and support any problem or paradigm that benefits society. Corporate social responsibility is an action that concerns the public. It is different from other marketing activities and has similar aspects. The difference is that a company or organization contributes to any problematic area of the society during its corporate social responsibility activities and this assistance is permanent. Unlike other marketing actions, the media also fulfills its obligation to undertake corporate social responsibility. Therefore, companies are also interested in fulfilling corporate social responsibility. Thanks to this garden, mutual trust and expectations between the company and society increase. However, in addition to mutual benefits, it can have the opposite effect, damaging the image of the company for not meeting expectations. CSR and philanthropy are often confused in society. However, these are completely different concepts. CSR is a purposeful strategic line. It covers all activities of companies. The company's CSR activities, budget and strategy are determined in advance and implemented throughout the year. Philanthropy happens once or several times a year. All employees of the company are involved in CSR activities. Philanthropy is usually limited to the activities of company management.

What is the approach to institutional social responsibility in the world? Approaches to institutional social responsibility vary around the world. Philip Kotler identified 6 types of CSR. The ranking is as follows:

1. Institutional social marketing
2. Institutional philanthropy
3. Benevolent marketing
4. Voluntary work for the benefit of the local community
5. Exaggeration of any social problem
6. Approaches to social action in business management

European Commission (European Commission) - Institutional social responsibility is a concept in which companies voluntarily integrate social and environmental policies into their business operations and interactions with stakeholders. In other words, CSR is a concept that reflects the desire of companies to participate voluntarily in the development of society and the environment. The World Bank - CSR is responsible for contributing to sustainable economic growth in a way that benefits both society as a whole, both work and development, in order to improve the living conditions of its employees, families and the local population. According to Philip Kotler, CSR is a free choice of the company in terms of the commitment to improve the welfare of society by using appropriate tools for business management and spending institutional resources. Of course, experimentation and information

in the field of institutional social responsibility (CSR) sometimes lead to controversy and debate. For example, proponents of the CSR concept say that companies have a strong economic base and can operate in the long run. In other words, institutions that apply the concept of institutional social responsibility are choosing a long-term path of development instead of a short-term income. However, critics of the CSR concept claim that this reduces the business world's role as a fundamental economic role in society. However, the adoption of this concept by large companies and organizations in the developed countries of the world and the fact that the activities in this area are very wide, shows that the CSR does not lead to the negative tendencies, as the critics say.

The REA Leadership Alliance says business leaders must change the world. A number of religious and cultural traditions state that the economy should serve the people and that economic organizations are accountable to society. In this context, today, there are many organizations that take encouraging measures to bring businesses to corporate social responsibility. For example, under the Social Responsibility Sign project, the Social Responsibility Sign allows customers and joint ventures to use their brand in exchange for social projects. Today, organizations such as British American Tobacco, BP and McDonald's implement various projects, especially in the field of ecology, on social issues that concern both their employees and the society, based on their corporate social responsibility understanding. In addition, the Shell Foundation has been implementing a number of aspects of the CSR concept for many years in the so-called Flower Valley of South Africa. Thus, the Foundation established education centers in the region for the education of local people, especially children. Marks & Spencer is also active in this field. With the support of this organization, a fair trade network was established in Africa, in which centers for the fight against AIDS and HIV, as well as educational literacy for adults, were opened. Perceptions regarding the concept of CSR are also opening up to the business environment in Russia. So the most common form of CSR in this country is investments in social investments. For example, Gazpromneft establishes its activities in areas with infrastructure facilities by employing only local people living in those areas. As can be seen, a number of companies around the world apply the concept of corporate social responsibility by investing in social investments mainly in African countries. But there are companies in the West that perceive CSR only in a very primitive way, such as helping the poor and needy in developing countries. However, it is clear that the vast majority of large companies operating in the world today find this approach wrong. Because with this approach, it will not be possible to improve the living standards of the local people due to the lack of financial means. The views of the economist V. Bayramov are justified in this prism. He says: “In some cases, commercial charities are equated with corporate social responsibility. Corporate social responsibility is not philanthropy but a broader and more comprehensive approach. Corporate social responsibility is different from philanthropy and means supporting projects that promote the development of society through business. In this context, corporate social responsibility contributes to the development of the business world and the country as a whole.

Therefore, from international experiences, the concept of CSR in the world is mainly used by large companies in education, health, infrastructure, etc. We see it used in the fields. It aims to improve people's literacy, health and living conditions by investing in social sectors. What is the situation regarding CSR in our country? The current state of corporate social responsibility in Azerbaijan cannot be considered satisfactory.

Because the social activities of companies in Azerbaijan are currently limited to two of the six activities available, including sponsorship or charitable activities. State oil company SOCAR, one of the largest companies that stand out with its CSR activities, has undertaken many projects in this direction. According to the company's social report, Neftçi Sports and Health Center, which plays an important role in the promotion and development of sports, was established and food aid was provided to IDPs in the Agdam region within the scope of humanitarian measures. As part of regional events, the company

carried out repairs in schools and kindergartens. BP Azerbaijan, which operates the Azeri-Chirag Gunasli oil and Shah Deniz gas fields, is one of the largest CSR companies in the country. The company implemented projects related to social, economic and educational development and took charitable measures. BP-Azerbaijan established Project Management School in 2010. The school develops project management skills mainly in the private and public sectors. In addition, the company opened five new laboratories for the Faculty of Chemical Engineering at Qafqaz University (Baku Engineering University) in 2011. He has developed scholarship programs to support local students in the Faculty of Petroleum Engineering at universities in Azerbaijan and Turkey. The activities of banks in the field of CSR are also reflected in the country. That is why the social report of Bank Technique states that in May 2013 the bank organized a blood donation campaign for children with thalassemia, a chess tournament and a football championship in connection with the 90th anniversary of the National Leader Heydar Aliyev. At the same time, the bank launched the "Now" project to support talented young people in the field of art. Pasha Bank, which received an award in the "Europe's Best CSR Program" nomination, also accomplished great things. Education, sports and cultural projects were implemented. Atabank also places special emphasis on corporate social activities, sports, culture and education projects. Within the scope of humanitarian aid activities, the Bank organized a painting competition among orphans, visited orphanages on the eve of Newroz Festival, and organized a hockey championship to keep the sport alive. Among mobile operators, Bakcell's CSR activities should be noted first. For this reason, in cooperation with Bakcell and UAFA, Bakcell visited orphanages in many regions of Azerbaijan and organized events on the occasion of June 1 Children's Day. The company supported SOS Children's Villages. He developed the "Tolerance Education for Children" project in relation to the development of women's sports and physical education in Azerbaijan and its activities in this field, and signed the "Sports for Women" project. Philanthropy is also at the forefront of Nar Mobile's CSR activities. In 2012, the company organized a joint blood donation campaign with the Savab World Thalassemia Association. Projects for education and youth dominate the CSR policy of Nar Mobile. Thus, during the career week, the company met with young people at the Azerbaijan Diplomatic Academy and informed them about the company's activities and career opportunities there. Corporate social responsibility projects implemented in Azerbaijan are mostly implemented by oil companies and banks. In conclusion, there are reasons that prevent the strong development of CSR in our country. At the same time, some institutions say that a special law is needed to take CSR ideas seriously. They consider it important to pass a law that imposes CSR obligations on companies and supports NGOs in this field. However, the members of the National Assembly do not see the need to pass the law. Critics point to some problems with the law. Therefore, it is not possible for the law to cover all corporate activities. Another problem is the burden on the economy.

References:

Guliyev R. H. - Institutional Social Responsibility (2017)
Adilov N. A. - Institutional social responsibility in the business world (2020)
Jafarov J.M. Isgandarov I.I., Aliyev S.I. - Institutional social responsibility (2015)
Philip Kotler, Nancy Lee - Corporate Social Responsibility (2005)

A STUDY OF MOBILE AD HOC NETWORK

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ABSTRACT

In distributed point to point infrastructure less wireless communication network called Mobile Ad hoc Network (MANET) is a network without infrastructure dynamically formed by autonomous system of mobile nodes that are connected via wireless links. Mobile nodes communicate with each others on the fly, in this network each node also acts as a router. MANET nodes square measure distinguished by their restricted resources like multipath communication, end-to-end delay, routing conjunction, remaining energy, bandwidth and storage. MANET routing is serious issue as a result of topology i.e. changeable because of nodes quality. Particularly energy economical routing is most vital as a result of all the nodes square measure battery powered. Since each mobile node has restricted energy offer, energy depletion is become one in all the most threats to the period of time of the MANET. The battery power and the bandwidth are very scarce resources in this network. The network lifetime and connectivity's of nodes depend on battery power. Therefore, in energy is a valuable constraint which should be efficiently used, objective of in this survey research paper is to create taxonomy of the MANET protocol and provide a brief survey of current status issues in MANET.

Keywords: Ad hoc Network, Routing Protocols, MANET, Homogeneous Network.

I. INTRODUCTION

MANET appeared in the 1970s with the Packet Radio Network (PRNET) program of the Defense Advanced Research Projects Agency (DARPA). Initially designed for tactical networks, MANET has benefited from a growing interest in the research community since the 1980s. Indeed, since no fixed infrastructure manages the network, the MANET experiences several problems, such as frequent disconnections of links, hidden nodes, varying topology due to mobility, more interference and limited bandwidth due to the shared medium, and quick power consumption on the mobile nodes. For these reasons and many others, it has become a challenging research area, and the MANET group of the Internet Engineering Task Force (IETF) has proposed some design guidelines for MANET routing protocols. Ad-hoc networks consist of a collection of wireless hosts that are free to move randomly. These networks operate without the support of any fixed infrastructure or centralized administration (i.e. Infrastructure less Networks) and are completely self-organizing and self-configuring as in fig 1 Nodes are connected dynamically and in an arbitrary manner to form a network, depending on their transmission ranges and positions. Nodes can communicate directly with all nodes within transmission range. As transmission ranges are limited, two nodes may not be able to communicate directly and they must rely on other nodes to forward their packets. Thus, nodes must cooperate to provide connectivity and paths are normally multichip. Considerable work has been done in the development of routing protocols in different types of ad hoc networks like MANET, WMN, WSN and VANET etc. In recent years, the interest in ad hoc networks has grown due to the availability of wireless communication devices that its capability to work in the ISM bands. While designing an ad hoc network in particular we are concerned with the capabilities and limitations that the physical layer imposes on the network performance.



Figure 1 Ad hoc Network

II. MOBILE AD HOC NETWORK

MANET is collections of autonomous mobile nodes or terminals that communicate with each other by forming a multi-hop wireless radio network. Each of the nodes has a wireless interface and communicates with each other over either radio or infrared. Laptop computers and personal digital assistants that communicate directly with each other are some of the examples of nodes in an ad-hoc network. Nodes in the ad hoc network are often mobile, but can also consist of stationary nodes, such as access points to the internet. Fig 2 shows a simple MANET with three nodes. The outermost nodes are not within transmitter range of each other. However the middle node can be used to forward packets between the outermost nodes.

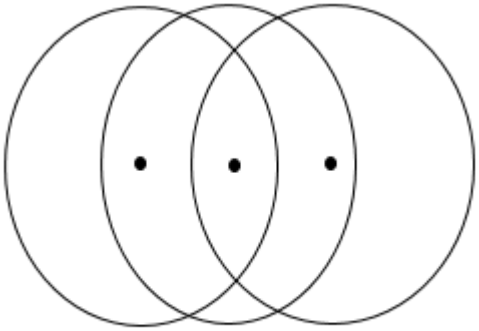

Figure 2 A Simple MANET

MANET does not use any centralized administration. This is to ensure that the network won't collapse just because one of the mobile nodes moves out of transmitter range of the others. Nodes should be able to enter/leave the network as they wish. Because of the transmission range limit of the nodes, multiple hops may be needed to reach other nodes. Every node wishing to participate in an ad hoc network must be willing to forward packets to other nodes. Thus each node in a MANET can act as both a host and a router to receive and forward packets, and it can randomly move around, leave the network or switch off. Moreover, new nodes may join the network unexpectedly. MANET takes advantages of the nature of the wireless communication medium. In other words, in a wired network the physical cabling is done a priori restricting the connection topology of the nodes, this restriction is not present in the wireless domain and, provided that two nodes are within transmitter range of each other, an instantaneous link between them may form. These characteristics make a MANET an unstable network where links between nodes frequently break. In such dynamic topologies, each node is responsible for establishing connections with neighbour nodes and for relaying packets on behalf of other nodes, and therefore, temporary networks can be set up with no or limited infrastructure support. Due to these properties,

MANET has great application potential in various scenarios, such as battle field communication and disaster recovery.

Characteristics of MANET: MANET has several distinct characteristics that make them quite different from conventional cellular networks. These characteristics are mainly due to the absence of any fixed infrastructure, the wireless propagation medium, and limited resources of the mobile devices: dynamic topologies, limited bandwidth, energy constrained, limitation of the medium and limited physical security

Challenges of MANET Network: A number of challenges are given below which affect the MANET. **Application Layer:** There are Numbers of identifications like communication partners, privacy quality of service, user authentication, and a number of constraints on data syntax are identified. The application services provided by application layer are file transfers, e-mail and network software services. **Transport Layer:** The transport layer is accountable for end-to-end connection establishment, end-to-end data packet delivery, congestion control, and flow control. **Network Layer:** In MANET the source and the destination are not in the direct transmission/reception range of each other. Multi-hop forwarding is used for the nodes that are not in direct communication range. Such indirect communication through multi-hop forwarding is called routing. Set up and maintain of routes from a source to any desired destination is the responsibility of the network layer. **Physical Layer:** The physical layer is the modem hardware in simple terms. Electronics parts of the physical layer are the antenna and the transmitter/receiver as an e.g. in a wireless node. Main functions are Modulation and coding of the physical layer. **Link Layer:** The limited bandwidth of the wireless channel combined with radio propagation loss and the broadcast nature of radio transmission make communication over a wireless channel inherently unreliable.

III. ROUTING PROTOCOL IN MANET

A routing protocol in MANET is required whenever a packet has to be transmitted to a destination via variety of nodes and numerous routing protocols are proposed for such quite Adhoc networks. These protocols notice a route for packet delivery and deliver packet to the correct destination. Basically, routing protocols are often generally classified into three varieties as Table–Driven / Proactive routing protocol, On-Demand / Reactive routing protocol and Hybrid routing protocol. **Proactive:** Proactive routing protocols acquire routing information periodically and store them in one or more routing tables. The differences among the protocols in this class are routing structure, number of tables, frequency of updates, use of hello messages and the existence of a central node. Therefore, each protocol reacts differently to topology changes. Flooding of routing information is the mechanism that is often used to discover and update routes. However, it is common that proactive protocols generate more control traffic and overhead than other protocol classes because of periodic updating which increases as the number of nodes increases. Moreover, they extensively use memory for storing those tables. **On-Demand / Reactive:** Reactive routing protocols discover or maintain a route as needed. This reduces overhead that is created by proactive protocols. Flooding strategy is used to discover a route. Reactive routing protocols can be classified into two groups: source routing and hop by hop routing. In source routing, data packet headers carry the path to destination. Hence, intermediate nodes do not care about maintaining the routing information. On the other hand, this kind of protocols may experience high level of overhead as the number of intermediate nodes increases. Also they have a higher chance of a route failure. Packets in the second group of reactive protocols have to carry only destination and next hop addresses which means that nodes have to maintain and store routing information for active routes. **Hybrid:** This protocols exhibit both reactive and proactive features. Proactive strategy is used to discover and maintain routes to nearby nodes, while routes to far away nodes are discovered reactively. Consequently, overheads and delay that are introduced by proactive protocols and reactive protocols, respectively, are minimized. Hybrid protocols have been known to be more scalable than others fewer nodes take part in routing and topology discovery. Communications between nodes depend on their locations in the zone.

Problem with Routing in MANET: Routing is the most fundamental research issue in MANET and must deal with limitations of power, bandwidth, and mobility of nodes. Some of the problems with routing in MANET are as follows: Asymmetric links, Routing Overhead, Interference and Dynamic Topology.

IV. PERFORMANCE OF ROUTING PROTOCOL IN MANET

Performance of routing protocols in MANET discussed in the following tables. In Table 1 are discussed various merits and demerits in proactive, reactive and hybrid routing protocols.

Table 1 Merits & Demerits Routing Protocols

Protocols	Merits	Demerits
Proactive Protocols	Information is always available. Latency is reduced in the network.	Overhead is high. Routing information is flooding in the whole network.
Reactive Protocols	Path is available when needed. Free from loops and Overhead is low.	Latency is increased.
Hybrid Protocols	Suitable for large networks and up to date information is available.	Complexity increases.

RESEARCH ISSUES IN MANET:

Some issues in mobile ad-hoc networks are: Energy efficient and Security which are as follows. Energy Efficient: Limited power supply is the biggest challenge of an ad-hoc network. A wireless network interface can be in one of the following four states: transmit, receive, idle or sleep. minimum energy consumption, maximize network connectivity, minimum variance in node power levels, security, confidentiality, availability, authentication, integrity, non-repudiation, multipath routing, overhead, delay, collisions and misbehavior attacks.

V. CONCLUSIONS

One of the recent developed in the world of communication technology is the use of MANET which was initially developed for military applications. The rapid use of MANET has results in the identification of several problems. Although the widespread deployment of MANET is still years away, the research in this field continues being very active and imaginative. In this paper, we have review and current survey of MANET and the basic concepts, applications, challenges and research issues in MANET. In this survey is very useful for many researchers in the field of MANET. Mobile computing will keep flourishing and an eventual seamless integration of MANET with other wireless networks and the fixed “infrastructure appears inevitable. Our future research work we surveyed core issues of secure multipath routing and power aware/energy efficient routing.

REFERENCES

1. G.Forman and J.Zahorjan, “Mobile Wireless Computing”, IEEE Spectrum, Vol.27, No.4, 1994, pp: 38-47.
2. Basagni.S, et al, “Ad Hoc Networking”, IEEE Press Wiley, Vol.6, No.2, 2003, pp: 46-55.
3. R Ahlswede, et al, “Network information flow”, IEEE transactions on information theory, Vol.56, No.12, 2010, pp: 5893-5905.
4. C. S. R. Murthy et al, “Adhoc Wireless Networks Architecture and Protocols”, Prentice Hall, Vol.2, 2007.

5. A. Jameli, et al, "Comparative Analysis of Ad Hoc Networks Routing Protocols for Multimedia Streaming", IEEE, Vol. 3, No.1, 2011, pp: 22-45
6. K. Prabu, et al, "A Survey of Wireless Ad hoc Network for MANET", IJARCS, Vol-3, Iss-7, 2012, pp: 279-283.
7. Punya Peethambaran, et.al, "Survey of MANET Misbehaviour Detection Approaches" IJNSA, Vol.6, No.3, 2014, pp.19-29.
8. K.Thamizhmaran and M.Anitha, "A Survey of Routing Protocols in Mobile Ad-hoc Network", International Journal of Applied Engineering Research, Vol. 10, No. 1, pp. 490-496, 2015.
9. Sengathir, J. and Manoharan, R. "Exponential Reliability Coefficient based Reputation Mechanism for Isolating Selfish Nodes in MANETs", Egyptian Informatics Journal, Vol. 16, No. 2, 2015, pp. 231–241.
10. Parth Patel., Rajesh Bansode., and Bhushan Nemade., "Performance Evaluation of MANET Network Parameters Using AODV Protocol for HEAACK Enhancement", Proceedings Of 7th International Conference on Communication, Computing and Virtualization, Mumbai, March, 932-939, 2016.
11. Sally E. El Khawaga, Ahmed I. Saleh and Hesham A. Ali, "An Administrative Cluster-based Cooperative Caching (ACCC) strategy for Mobile Ad Hoc Networks", Journal of Network and Computer Applications, Vol. 69, 2016, pp. 54–76.
12. Farooq Aftab, Zhongshan Zhang and Adeel Ahmad, "Self-Organization Based Clustering in MANETs Using Zone Based Group Mobility", IEEE Translations and content mining, Vol. 5, 2017, pp. 27464-27476.
13. Neha, k., Rohit, K., and Rohit, B., "Energy Efficient Communication Using Reconfigurable Directional Antenna in MANET", Procedia Computer Science, Vol. 125, No. 2, 2018, pp. 194-200.
14. L. Femila and M. Marsaline Beno2, "Optimizing Transmission Power and Energy Efficient Routing Protocol in MANETs, Wireless Personal Communication, Vol. 106, 2019, pp. 1041-1056.
15. A. Christy Jeba Malar, M. Kowsigan, N. Krishnamoorthy, S. Karthick, E. Prabhu and K. Venkatachalam, "Multi constraints applied energy efficient routing technique based on ant colony optimization used for disaster resilient location detection in mobile ad hoc network", Journal of Ambient Intelligence and Humanized Computing, Vol. 23, 2020, pp. 273-285.
16. Yutao Liu, Yue Li, Yimeng Zhao and Chunhui Zhang, "Research on MAC Protocols in Cluster-Based Ad Hoc Networks" Wireless Communications and Mobile Computing, Vol. 23, 2021, pp. 1-12.

GÜRCÜSTAN VƏ ERMƏNİSTAN ARASINDA NATO VƏ İKİTƏRƏFLİ ƏMƏKDAŞLIQ ÇƏRÇİVƏSİNDƏ HƏRBİ VƏ TƏHLÜKƏSİZLİK SAHƏSİNDƏ ƏLAQƏLƏR

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TEZİS

Cənubi Qafqazın hərbi və təhlükəsizlik prizmasından aparılan araşdırmalar öz kompleks xüsusiyyəti ilə seçilir. Region, uzun illərdir ki, hərb, sülh və təhlükəsizlik baxımından öz qeyri stabilliyi ilə fərqlənir. Cənubi Qafqaz regionu ikitərəfli və çoxtərəfli maraqların kəsişdiyi mühüm əhəmiyyət kəsb edən regiondur. Onun geostrateji vəziyyəti bu bölgəyə böyük güc mərkəzlərinin maraq göstərməsinə səbəb olmuşdur. "Soyuq müharibə"dən sonra isə bu amilə bölgənin enerji ehtiyatlarının mənbəyi və daşınması xətti kimi geoiqtisadi əhəmiyyəti də əlavə olunmuşdur. Geosiyasi baxımından Cənubi Qafqaz regionunun strateji əhəmiyyəti aşağıdakı amillərlə izah oluna bilər:
- Xəzər dənizinin, eləcə də Mərkəzi Asiyanın enerji ehtiyatlarının Türkiyəyə,Qara dəniz limanlarına və Avropaya daşınması üçün dəhliz rolu oynayır;
- Cənubi Qafqaz Xəzər dənizində yerləşən böyük neft yataqlarına birbaşa bitişik olan bir bölgədir;
- Qara dəniz və Xəzər dənizi arasında yerləşən bu bölgə Cənub-Şimal və Qərb-Şərq nəqliyyat xətlərinin kəsişməsində yerləşir;
- Hərbi nöqteyi-nəzərdən quru qoşunları, aviasiya və donanmanın yerləşdirilməsi və hərəkəti üçün sərfəli plasdarmdır. Tarixən Rusiya və İran arasında təsir dairəsi uğrunda mübarizənin getdiyi Cənubi Qafqaz bölgəsi müasir dövrdə qlobal geosiyasi güclərin rəqabət meydanına çevrilmişdir.
Cənubi Qafqaz Avrasiyada mühüm geosiyasi mövqeyə sahibdir. Regionun bu xüsusiyyəti Sovet İttifaqının süqutundan sonra yeni siyasi, iqtisadi,təhlükəsizlik və hərbi motivlərin əlavə olunması ilə zənginləşmişdir. Bölgə təbii coğrafi quruluşuna görə tarix boyunca xalqların və mədəniyyətlərin cənubdan şimala,şərqdən qərbə köç yolu olmuşdur. Bu köçlərin Cənubi Qafqaz xalqlarının siyasi tarixinin formalaşmasında ciddi nəticələri olmuş və dərin izləri qalmışdır. SSRİ-nin süqutundan sonra Cənubi Qafqazda yaranan 3 müstəqil ölkə -Azərbaycan, Ermənistan, Gürcüstan kimi suveren dövlətlərin formalaşması nəticəsində bölgə dünya dövlətlərinin maraq dairəsinə daxil oldu. Məqalənin başlıca və əsas məqsədi Ermənistan və Gürcüstan arasından olan hərbi və təhlükəsizlik istiqamətində olan əlaqələri analiz etməkdir.

Açar sözlər: Ermənistan,Gurcüstan,Rusiya,Nato,hərbi,təhlükəsizlik,müqavilə.

Giriş

Ermənistan ilə Gürcüstan arasında diplomatik əlaqələr 1992-ci il iyulun 17-də qurulub . SSRİ-nin dağılması və Cənubi Qafqaz respublikalarının müstəqilliyinin elan edilməsindən sonra Ermənistan-Gürcüstan münasibətlərinin inkişafı bir sıra amillərlə şərtlənirdi.

Ermənistan Rusiyanın strateji müttəfiqidir: Rusiyanın hərbi bazası Ermənistan ərazisində yerləşdirilib və Ermənistan Kollektiv Təhlükəsizlik Müqaviləsi Təşkilatının, eləcə də Avrasiya İqtisadi Birliyinin üzvüdür. Ermənistanın strateji müttəfiqi və bir nömrəli təhlükəsizlik ortağı Rusiyadır .

Rusiya Gürcüstanda separatçıları dəstəkləyir və hətta Abxaziya və Cənubi Osetiyanın müstəqilliklərini tanımış onlarla qarşılıqlı diplomatik-siyasi münasibətlər yaratmışdı. Gürcüstan isə NATO-ya qoşulmaq öz ərazisində NATO-nun hərbi bazalarının yerləşdirilməsini planlaşdıran dövlətdir.Gürcüstan Azərbaycan və Türkiyə ilə hərbi sahədə daha çox əməkdaşlıq edir.

1990-cı illərdə Rusiya rəhbərliyinin passiv siyasəti və bir sıra səhvləri bu ölkələrdə Rusiyanın mövqeyini əhəmiyyətli dərəcədə zəiflətmiş, iqtisadi və mədəni əlaqələr pozulmuşdu. *"Rusiyanın zəifliyi və eyni zamanda yeni müstəqillik qazanmış dövlətlərin öz suveren statuslarını təsdiqləməsi, müstəqil siyasət həyata keçirmək cəhdləri bölgəyə dünyanın aparıcı və regional güclərinin marağını artırdı. Onlar isə məqsədyönlü şəkildə bu yeni yaranmış dövlətləri öz nüfuz dairələrinə salmağa cəhd edirdilər."[8].*

Hal-hazırda regional və qlobal səviyyədə bir sıra dövlətlər və qurumlar bu bölgədə güc və təsir qazanmaq və enerji təhlükəsizliyi uğrunda mübarizə aparırlar. Tərəflərin hərbi - siyasi və təhlükəsizlik sahəsində fəaliyyəti regiondakı vəziyyətə təsir göstərir. Regional (Türkiyə və İran) və qlobal güclərin (ABŞ, Rusiya və Çinin) bölgəyə təsirini və marağını xüsusi qeyd etmək lazımdır. Cənubi Qafqazda gedən proseslərə bu dövlətlərlə yanaşı, beynəlxalq təşkilatlar da (NATO, Aİ və b.) cəlb olunmuşdur.

Cənubi Qafqazın hərbi və təhlükəsizlik prizmasından aparılan araşdırmalar öz kompleks xüsusiyyəti ilə seçilir. Region uzun illərdir ki, hərb, sülh və təhlükəsizlik baxımından öz qeyri-stabilliyi ilə fərqlənir. Bu kimi status-kvonun siyasi əlaqələrə əlavə olaraq, regional iqtisadiyyata və inkişafa vurduğu ciddi ziyan da göz önündədir. Belə ki, regionda hərbi və təhlükəsizlik baxımından qeyri-adekvat və irrasional davranışlar sərgiləyən və Rusiyaya meyilliliyi ilə seçilən Ermənistan, digər tərəfdən isə Qərbyönümlü siyasət yürütməyə və regionda balansı qorumağa çalışan Gürcüstan elmi tədqiqatları daha da maraqlı bir hala çevirməkdədir.

Müstəqillik elan edildikdən sonra regionda təhlükəsizliyin və sabitliyin bərqərar olması ölkənin normal inkişafı üçün zəruri amilə çevrildi. Bunun əsas şərti ən yaxın qonşularla mehriban qonşuluq münasibətlərinin qurulması idi. Ümumiyyətlə, 90-cı illərdən danışırıq. XX əsrdə bir faktı qeyd etmək lazımdır ki, hərbi-siyasi və iqtisadi layihələrin həyata keçirilməsində maraqlı dövlətlər tərəfindən manipulyasiya faktoru mövcud idi ki, bu da regionun təsir zonalarına bölünməsinə səbəb olmalı idi. Bu, təbii ki, Ermənistan Respublikasının regional siyasətinə mənfi təsir göstərdi. Bu mənada, kənardan gələn təzyiqlərə tab gətirmək, qonşularla konstruktiv münasibətlər qurmaq o dövrdə həlli çətin olan, lakin arxa plana keçməsi mümkün olmayan ən mühüm xarici siyasət problemləri idi. Lakin eyni zamanda, sonuncuya nəzarət üçün həm region daxilində, həm də onun hüdudlarından kənarda qarşıdurmanı kəskinləşdirmək mümkün deyildi, çünki bu, fəlakətli nəticələrə gətirib çıxara bilərdi. Cənubi Qafqaz regionu ölkələri arasında münasibətlərin inkişafının optimal variantının qəbulunu asanlaşdıracaq "qızıl orta" tapmaq lazım idi.

Qeyd olunanları nəzərə alaraq, Ermənistan öz xarici siyasətində ilk növbədə regiondaxili problemlərin həllinə əsaslanırdı. Amma Cənubi Qafqaz regionu ölkələri arasında mövcud olan problemləri də unutmaq olmaz. Bu rakursdan baxsaq, regionda təhlükəsizlik və sabitliyin yaradılması ideyasının demək olar ki, mümkünsüz olduğunu görməmək olmaz. Bildiyiniz kimi, Ermənistan Respublikası üçün hərbi-siyasi əməkdaşlıq sahəsində Rusiya Federasiyası ilə münasibətlər prioritetdir [7]. Regional əməkdaşlıq kontekstində Gürcüstana xüsusi yer ayrılır, çünki bu münasibətlər özünəməxsus şəkildə uzunmüddətli və toxunulmaz olmalıdır. Müvafiq olaraq, bu, Ermənistan Respublikasının xarici siyasətində prioritet istiqamətlərdən biridir.

Ermənistan Respublikası ilə Gürcüstan arasında diplomatik əlaqələr 1992-ci il iyulun 17-də qurulub [5]. SSRİ-nin dağılması və Cənubi Qafqazın müstəqilliyinin elan edilməsindən sonra Ermənistan-Gürcüstan münasibətlərinin inkişafına dövlətlər kimi amillər təsir edir;

1) Türkiyə, İran və Rusiya kimi regional güclərlə münasibətlərə fərqli yanaşmalar;

2) Regional antaqonizmlərin həlli ilə bağlı müxtəlif fikirlər;

3) Ermənistanın yuxarıdakıların blokadası şəraitində Gürcüstanın Azərbaycan və Türkiyə ilə əməkdaşlığı

Ermənistan-Gürcüstan münasibətlərinə Gürcüstan və Türkiyə arasındakı əməkdaşlıq böyük təsir göstərir. Türkiyə üçün Gürcüstan ilk növbədə Türkiyə ilə Azərbaycanı birləşdirən tranzit zona idi. 90-cı illərin birinci yarısında, Gürcüstanın ticarəti Rusiyanın hesabına Türkiyənin xeyrinə artmağa başladı, bunun nəticəsində iki ölkə arasında siyasi əlaqələr inkişaf etməyə başladı [3].

Regionda öz təsirlərini göstərən və maraqlarını qorumağa çalışan Türkiyə, Rusiya və İran kimi ölkələr olmasına baxmayaraq, ABŞ NATO, Avropa ölkələri - Avropa İttifaqı regional təsirlərini lokal aktorlara güzəştə getmək fikrində deyillər. Qoyulmuş tələblər çərçivəsində elmi- tədqiqat işində məqsəd olaraq sırf iki ölkə arasındakı münasibətlərə diqqət yönəlmiş, başlıca və əsas məqsəd kimi Ermənistan və Gürcüstan arasından olan hərbi və təhlükəsizlik istiqamətində olan əlaqələr təhlil edilmişdir. Bu əlaqələrin təhlili həm iki ölkə arasındakı ikitərəfli münasibətlər, həm də üçüncü tərəflərin iştirakı ilə qurulmuş əlaqələr istiqamətində aparılmışdır. Bu baxımdan, Avropa İttifaqı, NATO, Gürcüstan və Ermənistan arasındakı ikitərəfli və çoxtərəfli münasibətlər tədqiqat obyektinə çevrilmişdir.

Ermənistan Rusiyanın strateji müttəfiqidir: Rusiyanın 102 hərbi bazası Ermənistan ərazisində yerləşdirilib və Ermənistan Kollektiv Təhlükəsizlik Müqaviləsi Təşkilatının, eləcə də Avrasiya İqtisadi Birliyinin üzvüdür. Ermənistanın strateji müttəfiqi və bir nömrəli təhlükəsizlik ortağı Rusiyadır.
Tbilisi və İrəvanda keçirilən danışıqlarda NATO-nu türk generalı T.Özçeri təmsil edib [4]. Əsas məqsəd Ermənistan və Gürcüstanı NATO üzvlüyünə cəlb etmək idi.

Gürcüstan regional münaqişələrin saxlanmasının Rusiyanın əlində olduğuna əmin olduğunu bildirib və öz siyasətini Rusiyanın Cənubi Qafqaz regionunda təsir rıçaqlarının minimuma endirilməsi istiqamətində işləyib hazırlayıb [13]. Z.Qamsaxurdiya rejimi devrildikdən sonra, E.Şevardnadze hakimiyyətə gələndən sonra da bu siyasət dəyişmədi. Bunun bariz nümunəsi kimi MDB-yə üzvlük məsələsində Gürcüstanın kəskin mövqeyini qeyd etmək olar. 1992-ci ilin iyulunda macar jurnalistlərə müsahibəsində E.Şevardnadze qeyd edirdi ki, "Gürcüstanın MDB-yə qoşulması hazırda qeyri-mümkündür, çünki onun fikrincə, xalq bu ideyanı dəstəkləməyəcək və bunda Gürcüstana heç bir fayda yoxdur". E.Şevardnadze həmçinin qeyd edib ki, "Rusiya hərbçilərinin Gürcüstanda olması məqsədəuyğundursa, o zaman eyni müvəffəqiyyətlə NATO qoşunları da ola bilər".

1993-cü ilin sentyabrında Gürcüstan-Abxaz müharibəsində tam hərbi məğlubiyyət ərəfəsində olan E.Şevardnadze Müstəqil Dövlətlər Birliyinə daxil olmaq qərarına gələndə vəziyyət kəskin şəkildə dəyişdi. Lakin müharibə yalnız MDB sülhməramlıları İnqur çayı yaxınlığında yerləşdirildikdən sonra başa çatdı. Onların fəaliyyəti 1994-cü il mayın 14-də Gürcüstan, Abxaziya, Rusiya Federasiyası və BMT arasında imzalanmış sazişlə tənzimlənirdi.

Aydındır ki, Rusiyanın öz dövlətinin ərazisində hərbi mövcudluğundan Gürcüstan Abxaziyanın ərazi mülkiyyəti məsələsinin yekun həllini gözləyirdi. Lakin Rusiyanın bu məsələdə kəskin qərarlar qəbul etməyəcəyini anlayandan sonra qoşunların Gürcüstandan çıxarılmasını tələb etdi. Eyni zamanda Gürcüstanın siyasi dairələri NATO-ya qoşulmanın davamlılığını və Gürcüstan ərazisində NATO-nun hərbi bazalarının yerləşdirilməsini müzakirə etməyə başladılar. Bundan əlavə, Gürcüstan Azərbaycan və Türkiyə ilə hərbi sahədə daha sıx əməkdaşlıq etməyə başladı. Türkiyə-Azərbaycan qardaşlıq münasibətlərini nəzərə alsaq, əminliklə demək olar ki, bu, Türkiyə-Gürcüstan-Azərbaycan üçtərəfli əməkdaşlığına çevrildi. Təbbi ki, həm Rusiya həm də Ermənistan bu münasibətlərə qısqanclıqla yanaşırdılar. 1996-cı il fevralın 28-də Tbilisidə xarici işlər nazirliklərinin rəhbərləri ilə görüşdə E.Şevardnadze "Sülh naminə Qafqaz" layihəsini təqdim etdi və bu layihəyə aşağıdakı prinsiplər daxil edildi:

1) ərazi münaqişələrinin kollektiv şəkildə pislənməsi;

2) nəqliyyat və digər infrastrukturların kollektiv mühafizəsi və onların blokadaya alınmasının bütün Cənubi Qafqaz regionuna qarşı cinayət kimi kollektiv şəkildə pislənməsi;

3) regionda insan hüquqlarının müdafiəsi.

Ermənistan Respublikası ilə Gürcüstanın inteqrasiya proseslərinin müxtəlif istiqamətlərinə malik olduğunu nəzərə alsaq, bu, Ermənistan-Gürcüstan münasibətlərində də öz nəzərə çarpırdı. Regional əməkdaşlıq layihələrindən söz düşmüşkən, Gürcüstanın fəal iştirak etdiyi GUÖAM təşkilatı ilə bağlı problem Ermənistanda xüsusilə aktual qarşılandı. GUAM 1997-ci il noyabrın 25-də Bakıda yaradılmış və 1999-cu ildə Özbəkistan təşkilata qoşulub (GUÖAM adlandırılmışdır). Təşkilatın Nizamnaməsində hərbi qüvvələr istisna olmaqla, əməkdaşlıq etmək mümkün olan bütün infrastrukturlar nəzərə alınmışdır. Qeyd etmək lazımdır ki, 2001-ci il iyunun 6-da imzalanmış yuxarıda qeyd olunan Nizamnamədə belə bir tezis var ki, ona əsasən, "Tərəflərin qarşılıqlı razılığı ilə bu Nizamnaməyə ayrıca qaydada rəsmiləşdirilən dəyişikliklər və əlavələr edilə bilər. onun ayrılmaz hissəsi olan və bu Nizamnamənin 19-cu maddəsində müəyyən edilmiş qaydada qüvvəyə minən protokollarla bağlanır" [11].

1990-cı illərin ikinci yarısında. Gürcüstan Türkiyə ilə strateji əməkdaşlığın dərinləşdirilməsi istiqamətində konkret addımlar atıldı. Beləliklə, Gürcüstan Türkiyə üçün xarici siyasətdə prioritet olmağa çalışırdı. Bu fikrə 90-cı illərin ikinci yarısında aparılan müzakirələr kömək etməli idi. Gürcüstan və Türkiyə arasında maneəsiz nəqliyyat əlaqələrini təmin etmək üçün Bakı-Tbilisi-Ceyhan neft kəməri, Bakı-Tbilisi-Ərzurum qaz kəməri və Qars-Axalkalaki dəmir yolunun tikintisi layihənin əsasə hissəsi idi və iki dövlətin iqtisadi əlaqələrini təmin etməli idi. [15].

Gürcüstanın hərbi-siyasi sahədə prioritetlərindən danışarkən, Gürcüstanın NATO-ya üzv olmaq istəyini qeyd etmək lazımdır. Bu məsələyə 90-cı illərin sonlarından xüsusi diqqət yetirilməyə başlandı. Rusiya hərbi bazalarının Gürcüstan ərazisindən çıxarılması və bu planın həyata keçirilməsi üçün radikal ekstremistlərin və politoloqların Rusiyanın Abxaziya, Acarıstan və Cavaxetiyada hərbi bazalarının olmasını tənqid etməyə sövq etdi.

Öz növbəsində ABŞ hələ Gürcüstan və Rusiya Federasiyası arasında hərbi bazaların Gürcüstan ərazisindən çıxarılması ilə bağlı danışıqlara başlamazdan əvvəl bu prosesi maliyyələşdirməyə hazır olduğunu bildirmişdi. ABŞ müdafiə nazirinin müavini E.Uorner və Adi Silahların İxtisarı üzrə xüsusi elçi K.Dunkerlinin qısa fasilələrlə Gürcüstan paytaxtına səfər etməsi buna sübutdur. Həm Gürcüstan, həm də Azərbaycanın NATO-ya daxil olmaq üçün belə açıq istəyi, Kosovoda olduğu kimi, öz ərazi münaqişələrini NATO-nun qüvvələri və səlahiyyətləri vasitəsilə həll etmək istəyi ilə şərtlənirdi. Lakin o zaman NATO bu məsələlərdə yardımın təsdiqini vermədi, baxmayaraq ki, Gürcüstan və Azərbaycan Türkiyənin rəhbərliyi altında Kosovoda sülhməramlı missiyalarda iştirak edirdi.Həmçinin, Ermənistan Respublikasının Prezidenti R.Köçəryanın 2000-ci ilin martında Gürcüstana rəsmi səfəri zamanı NATO-ya daxil olmaq məsələsi müzakirə olundu. Gürcüstan Prezidenti E.Şevardnadze xüsusilə qeyd etdi ki, Gürcüstan 2005-ci ildə NATO-ya daxil olmağa hazırlaşır və lazım gələrsə, buna hətta 10 il sərf edə bilər [9].

Gürcüstan və Türkiyə arasında əməkdaşlığın dərinləşməsindən danışarkən, Ermənistan Respublikası üçün ortaya çıxan bir sıra problemləri qeyd etmək olar:

- Gürcüstan və Türkiyə arasında hərbi əməkdaşlıq şübhəsiz ki, erməni-gürcü dialoquna pis təsir göstərəcək;

- Gürcüstan və Türkiyə arasında maneəsiz nəqliyyat əlaqələrini təmin etmək üçün Qars-Axalkalak-Tbilisi dəmir yolunun tikintisi layihəsi (bununla Türkiyə artıq mövcud Qars-Gümrü-Tbilisi dəmir yoluna məhəl qoymadı);

- Türkiyənin mesxeti türklərinin köçürülməsi üçün əlverişli şərait yaratmaq niyyətləri;

- təkcə Ermənistan Respublikası üçün deyil, həm də KTMT-nin bütün üzv dövlətləri üçün təhlükə yarada biləcək birgə hava hücumundan müdafiə sisteminin yaradılması təhlükəsi.

1997-ci ildə ABŞ Konqresi Cənubi Qafqazı ABŞ-ın həyati əhəmiyyətli maraqları zonası elan etdi və bunun ardınca, ABŞ-ın Rusiyanı Cənubi Qafqaz, Xəzər dənizi və Mərkəzi Asiyadan sıxışdırıb çıxarmaq siyasəti başlandı. Bu siyasət ABŞ-ın müttəfiqləri, xüsusilə onun NATO üzrə müttəfiqləri və Yaxın Şərqin dövlətləri tərəfindən dəstəklənmişdir.*" Üç il sonra, 2000-ci ildə Rusiya da Qafqazı özünün həyati əhəmiyyətli mənafelərinin zonası elan etdi. 2000-ci il aprelin 21-də RF-nin Təhlükəsizlik Şurasının iclasında Rusiya prezidenti Vladimir Putin Qafqaz regionunun «Rusiyanın milli maraqlarının ənənəvi zonası» olduğunu təsdiqlədi."[8].*

1998-ci ildə yəhudi əsilli amerikalı politoloq Ariel Koen qeyd edirdi: *"Qafqazda ABŞ-ın maraqları*

- *Azərbaycan, Gürcüstan və Ermənistanın müstəqilliyi və ərazi bütövlüyünə zəmanət və dəstək vermək;*
- *İrana və islam fundamentalizminin bütün təzahürlərinə nəzarət etmək;*
- *Enerji resurslarından istifadəni təmin etmək;*
- *Regionda Rusiyanın imperiya ambisiyalarının mümkün dirçəlişinin qarşısının alınmasına yönəldilmişdir*" ."[8]. Onun fikrincə, ABŞ öz strateji maraq dairələrini mümkün təhlükələrdən qorumalı, üç Cənubi Qafqaz respublikalarında vətəndaş institutları və iqtisadi bazarları gücləndirməli, Türkiyə və İsrail tərəfindən dəstəklənən Gürcüstan və Azərbaycan koalisiyasını inkişaf etdirməlidir. ABŞ Cənubi Qafqazda planlarını həyata keçirmək üçün "yumşaq güc" metodundan və onun alətlərindən istifadə etdi. "Yumşaq güc"dən yalnız Cənubi Qafqaz ölkələrinin əhalisinin rəğbətini qazanmaq üçün deyil, həmçinin Rusiya ərazisində, Şimali Qafqaz respublikalarında da istifadə olundu. KİV, siyasət, mədəniyyət xadimləri, müxtəlif təhsil mərkəzləri, Amerika həyat tərzini təbliğ edərək Amerika idealları, ədaləti və yüksək mədəniyyətini təşviq etməyə başladılar. ABŞ-ın müxtəlif fondları tərəfindən maliyyələşdirilən kiçik biznes sahəsində proqramlar, kadrların yenidən hazırlanması, xarici dilin tədrisi, müəllimlər və şagirdlər üçün təlim proqramları fəaliyyət göstərməyə başladı. Bu proqramların bir çoxu bu gün də fəaliyyət göstərir. Hər hansı bir zor tətbiq etmədən, tərəfdarların və köməkçilərin dairəsini genişləndirmək yolu ilə ABŞ-ın bölgədə təsirini təmin etmək kimi bir strateji vəzifə həll edilir. Bunun üçün KİV, internet və müasir rabitə vasitələrindən istifadə edilir. ABŞ «yumşaq güc» siyasəti vasitəsilə Gürcüstanda müəyyən uğurlar əldə etmişdir. Gürcüstan qısa zaman ərzində bir «demokratiya qalası»na çevirməyə nail olmuş, digər postsovet ölkələri üçün bir model və nümunə olmuşdur.*" «Rustavi-2» televiziya kanalının məlumatına görə, 2012-ci ilin mart-aprel aylarında keçirilən ictimai rəy sorğusunun nəticələrində rəyi soruşulanların 60%-i Gürcüstanın ən böyük tərəfdaşı kimi ABŞ-ı görmüş, sorğuda iştirak edənlərin 82%-i isə Gürcüstana böyük təhlükənin Rusiyadan gəldiyini qeyd etmişlər. Rəyi soruşulanların 79%-i Gürcüstanın NATO-ya inteqrasiyasını dəstəklədiyini bildirmişdir."[8].*

Əsas geosiyasi məqsədi dünya ağalığına nail olmaq olan ABŞ-ın Avrasiyada hegemonluğu şərtdir və bu məkanda onun əsas rəqibi Rusiyadır. Rusiyanın ətrafında keçmiş sovet respublikalarından təşkil olunmuş təhlükəsizlik zolağı, Rusiyanın öz ərazisində isə sərhədləri boyunca və daxilində qeyri-sabitlik zolağı yaratmaq vacibdir. Rusiyanın zəiflədilməsi üçün Cənubi Qafqaz, eləcə də Şimali Qafqaz ən uyğun və vacib bölgələrdir *[2].*

Cənubi Qafqazda öz siyasətini uğurla həyata keçirmək üçün maraqlı aktorların region ölkələrinin dəstəyini alması şərtdir. Qərbin Yaxın Şərq planlarının həyata keçirilməsi üçün Azərbaycan və Ermənistana təsir göstərmək üçün alətləri çox zəifdir. Bu planda Rusiya daha əlverişli mövqedədir. Region Rusiya üçün mühüm əhəmiyyət kəsb edir. Cənubi Qafqaz Rusiya Federasiyasının ən qeyri-sabit bölgəsi - Şimali Qafqazla sərhəddə yerləşir. Rusiyanın sərhədlərinin təhlükəsizliyi Cənubi Qafqazdakı vəziyyətdən asılıdır.

Ermənistanın quru sərhədə və demək olar ki, daha açıq iqtisadi və siyasi əlaqələrə malik olduğu yeganə ölkə Gürcüstandır. Düzdür, Ermənistanın İranla da quru sərhədi var, amma İran sanksiya altında olan ölkədir. Yəni, yeganə perspektivli ölkə Gürcüstandır. Ona görə də Gürcüstanla Ermənistanın dərin münasibətləri və bu münasibətlərin daha da genişləndirilməsində maraqlı olmaları təbii prosesdir.

Ermənistan dənizə çıxışı olmayan bir ölkədir, əsas strateji tərəfdaşı olan Rusiya ilə ümumi sərhədi yoxdur. Gürcüstanın isə əksinə, Qara dənizə çıxışı var və Ermənistanı Rusiyadan ayırır.

Ermənistan Rusiyanın rəhbərlik etdiyi hərbi Kollektiv Təhlükəsizlik Müqaviləsi Təşkilatı (KTMT) və iqtisadi Avrasiya İqtisadi Birliyi (AİB) bloklarının üzvüdür və Rusiya Ermənistan iqtisadiyyatının əhəmiyyətli hissələrinə nəzarət edir. Ölkədə bir neçə Rusiya hərbi bazası yerləşir və sərhədləri Rusiya hərbi qüvvələri tərəfindən qorunur.

Ermənistanın qonşu Türkiyə və Azərbaycanla heç bir diplomatik əlaqəsi yoxdur. Azərbaycanla isə Qarabağa yönəlmiş iddialarına görə müharibə vəziyyətindədir. Türkiyə və Azərbaycan tərəfindən bağlanan sərhədlər və blokada səbəbindən Gürcüstan və İran Ermənistanın xarici dünya ilə yeganə əlaqəsini təmin edir. Ermənistan dünyada çox az sayda olan monoetnik ölkədir və digər monoetnik ölkələrdən fərqli olaraq bu xüsusiyyəti ermənilər süni olaraq yaratmışlar.”Dənizdən- dənizə böyük Ermənistan” yaratmaq xülyası ilə yaşayan ermənilər ağlasığmaz vəhşiliklərə əl atmış, Rusiya imperiyasının aləti olaraq dəfələrlə azərbaycanlılara qarşı soyqırımı həyata keçirmişlər.Onların əsas məqsədi tarixi saxtalaşdırmaq, azərbaycanlılara məxsus nə varsa hamısını məhv etmək, Qərbi Azərbaycanı və Qarabağı erməni torpağı kimi təqdim etmək, beynəlxalq normaları pozaraq özününkiləşdirməkdir.

Gürcüstan üçün də Ermənistanla münasibətlər çox vacibdir. Tbilisi İrəvanın Cavaxeti ilə bağlı ambisiyalarını neytrallaşdırmaq istəyir. Eyni zamanda, Gürcüstan faktiki olaraq Ermənistan bazarına da çıxış-tranzit yolunu saxlayır. Gürcüstan buna görə əlaqələrə diqqətlə yanaşır. Ermənistan isə Gürcüstan ərazisindən tranzit olunan Rusiya qazından, port vasitəsilə Ermənistana gələn ərzaq daşımasından tutmuş hər sahədə faktiki olaraq qonşu ölkədən asılıdır.

Ermənistan-Gürcüstan münasibətləri müəyyən assimmetirya və fərqli prioritetlərlə xarakterizə olunur. Hazırda Ermənistan üçün Gürcüstan tranzit ölkə rolunu oynayır. Ölkənin 75% yükləri Gürcüstan üzərindən daşınır. Bununla belə, Gürcüstan Ermənistanı yan keçən alternativ nəqliyyat dəhlizi layihələrində iştirak edir. Ermənistan isə öz növbəsində tanınmayan separatçı Abxaziyadan keçən strateji əhəmiyyətli dəmir yolu ilə Rusiyaya çıxış əldə etmək istəyir. Təbii ki, bu Tbilisi üçün heç də xoş perspektiv deyildir. Ermənistan Rusiyadan gələn həyati əhəmiyyətli qaz kəmərini təhlükəyə ata biləcək yeni gürcü-rus gərginliyinin yaranma ehtimalından, bundan başqa Gürcüstanın Azərbaycan və Türkiyə ilə əməkdaşlığından narahatdır. Belə ki, bu əməkdaşlıq Ermənistanın milli təhlükəsizliyinə təhdid kimi qəbul olunur *”[10].*

Gürcüstanın cənubunda yerləşən və etnik cəhətdən ermənilərin yığcam yaşadıqları Cavaxeti bölgəsində də ermənilərlə bağlı məsələlərdə fərqli mövqelər var. Ermənistan israr edir ki, yerli ermənilər öz ana dillərində keyfiyyətli təhsil almaqda çətinlik çəkirlər və iqtsadi-siyasi sahədə ayrı- seçkiliklə üzləşirlər. İkili vətəndaşlığın qanuni olaraq qadağan edilməsi səbəbindən bir çox ermənilər başqa yerlərdə daha yaxşı imkanlar axtarmaq üçün gürcü vətəndaşlığından imtina edirlər və bununla da Gürcüstan ermənilərinin sayı getdikcə azalır. Mədəni irs sayılan, yəni Gürcüstandakı erməni apostol yepiskopluğunun iddia etdiyi bir çox kilsə ilə bağlı davam edən mübahisələr var. Gürcüstan bütün əks

iddiaları əsassız sayır. Gürcüstanın da bir çox məsələlərdə öz narahatçılığı var. İqtisadi cəhətdən erməni yük daşımalarından Gürcüstan faydala bilir, amma bəzi tranzit məsələlərində, əsasən də təcili xarakter daşıyan tranzitlərdə Gürcüstan Rusiyadan gələ bilən təhdidləri ciddi qəbul və analiz edir. Rusiya Gürcüstanın təhlükəsizliyinə birbaşa təhdid kimi qəbul olunur. Tbilisi İrəvanın Rusiyanın güclü təzyiqlərinə müqavimət göstərmək qabiliyyətinin olmadığı səbəbindən Rusiyanın Ermənistandakı hərbi mövcudluğundan, eləcə də, Ermənistanın Rusiyanın başçılıq etdiyi KTMT-yə üzvlüyündən narahatdır. Cavaxetidə yaşayan erməni icması assimilyasiya qorxusundan Gürcüstan cəmiyyətinə daha çox inteqrasiya olunmaq istəməməsi səbəbindən narahatlıq mənbəyi olaraq görülür. 19-cu əsrdə Cavaxeti ermənilərinin əksəriyyəti Rusiya imperiyası tərəfindən Türkiyədən köçürüldü, buna görə də mədəni irsə sahib olmaq uğrunda mübahisələr başlandı. Bundan əlavə, nüfuzlu erməni siyasətçiləri və qruplar tərəfindən Cavaxetinin Gürcüstandan alınaraq Ermənistana ilhaq edilməsi ilə bağlı çağırışlar oldu*"[14]*.

Münasibətlərin soyumasına 2018-ci ilin avqust ayında baş vermiş rus-gürcü müharibəsi də əlavə olundu. Müharibə Gürcüstan, Rusiya və Rusiyanın dəstəklədiyi özlərini "müstəqil Cənubi Osetiya və Abxaziya Respublikası" elan etmiş qondarma respublikalar arasında idi. Müharibədən sonra Ermənistanın keçmiş prezidenti Levon Ter-Petrosyan gürcüləri osetiyalıların soyqırımında ittiham etdi. Bundan başqa Abxaziyadakı separatçı hərbi qüvvələrin tərkibində çoxsaylı erməni hərbi birləşmələrinin Gürcüstana qarşı vuruşması faktı da bu münasibətlərdə soyuqluğa gətirib çıxartdı.*"[14].* Qarabağ münaqişəsinin yenidən alovlanma təhlükəsi Gürcüstanın sabitliyinə ciddi təhdid kimi qiymətləndirilir. Buna səbəb Gürcüstanda yaşayan etnik erməni və azərbaycanlıların yaşaması və onlar arasında potensial toqquşmaların olması ehtimalıdır. Bundan başqa, iki ölkə arasında müharibə nəticəsində yarana biləcək qaçqın axını Gürcüstan hakimiyyətini narahat edir. Ərazisindən keçən enerji layihələrinin mümkün təhlükə altına girməsi Gürcüstan üçün heç də arzu olunan hal deyildir.

Əlbəttə, yuxarıda göstərilən və hər iki tərəfi narahat edən məsələlər çoxdur. Buna baxmayaraq Ermənistan və Gürcüstan hakimiyyətləri bir-birinə qarşı münasibətlərdə rəsmi baxımdan ittiham edici fəaliyyətləri olmamışdır. Bu münasibətlərə xarici təsirlərdən danışarkən Rusiya faktorunu unutmaq olmaz. Rusiyanın səyləri birbaşa olaraq Ermənistan və Gürcüstan münasibətlərinin pozulmasına yönəlməsə də, nəzərə almaq lazımdır ki, Rusiyanın hər hansı fəaliyyəti ikitərəfli münasibətlərə təsir göstərir. Ermənistanın xarici siyasətinə Rusiyanın təzyiqi və onun qərar qəbul etməsinə birbaşa təsir edə bilən Rusiya onun de-fakto suverenliyini əlindən alır. Eyni vəziyyət Rusiyanın bu ölkədə hərbi mövcudluğu və Ermənistanda əsas enerji və nəqliyyat infrastrukturuna nəzarət ilə bağlıdır. Gürcüstanın enerji təhlükəsizliyinə töhfə verə biləcək İran-Ermənistan qaz kəmərinin imkanlarının mümkün məhdudlaşdırılması buna misal göstərilə bilər. Nəzərə almaq lazımdır ki, Rusiya Gürcüstanda daha az təsir imkanlarına malikdir. Amma media vasitəsi ilə Gürcüstanda yaşayan və qərbə meylli olan insanları anti-qərb ritorikası ilə hədəfə alır. Rusiya hökümətinə bağlı düşüncə mərkəzlərinin, araşdırma institutlarının və bəzi hallarda hökümətdə təmsil olunan insanların media vasitəsilə erməni-rus sərhədi yaradılması, Gürcüstanın nailiyyətlərinin illüziya xarakter daşıması, hətta ölkənin mümkün parçalana bilməsi və bunun qaçılmazlığı ilə bağlı mesajlar verilməsi əslində erməni ictimaiyyətinə yönəldilir.

Lakin şübhəsiz ki, Gürcüstanın xarici siyasətinə təsir edən qüvvə tək Rusiya deyil. Ölkənin qərbyönümlü istiqaməti təbii olaraq Avropa və ABŞ-ın təsirinə həssaslığını şərtləndirir. Gürcüstan üçün regionda ən böyük ticarət tərəfdaşlarından, tranzit istiqamətlərindən və hərbi yardım təminatçılarından biri Türkiyədir. İki ölkə arasında dostluq münasibətləri zaman-zaman inamsızlıq və ehtiyatla davranma ilə müşayiət olunur. Əlavə olaraq, Gürcüstanın Azərbaycan siyasəti Ermənistan-Azərbaycan qarşıdurması ilə bağlı olaraq balanslı mövqe tutmağa xüsusi diqqət yetirməklə məhdudlaşdırılır. Münasibətlərə təsir edən çox sayda daxili amillər da var. İlk növbədə bunlar hər iki hökümətin nəzərə aldığı ictimai münasibət, gözləntilər və şikayətlərdən ibarətdir. Daha geniş ictimaiyyət tariflər, yük qaydaları ilə bağlı deyil, əsasən Cavaxeti ermənilər, mədəni irsə sahib olma və təhlükəsizliklə bağlı məsələlərlə maraqlanırlar. Vətəndaş cəmiyyətinin, populist siyasətçilərin və medianın təsir göstərdiyi

bəzən gərginliyi artıran, qarşılıqlı etimadsızlıq yaradan, bəzən də tam tərsinə, tolerantlığı və əməkdaşlıq münasibətlərini artırmağa yönələn addımlar atılır. Hökümətlər isə, milli maraqları qurban verdiklərində belə təhlükəli təəssürat yaratmadan gərginliyi sakitləşdirməyə çalışırlar.Regionda yaranan geosiyasi təzyiqlər ölkələri müxtəlif istiqamətlərə yönəldir. Amma buna baxmayaraq hər iki ölkədə xüsusən də Qərb təhsilli insanlar Avropa və demokratiya tərəfdarı gündəliyi təbliğ edən çoxsaylı vətəndaş cəmiyyətləri və siyasi qruplar mövcuddur. Bu cür təşkilatlar ortaq layihələr həyata keçirərək ikitərəfli münasibətlərdə çox vaxt ümumi əməkdaşlıq münasibətlərini təbliğ edirlər. Ermənistanda Qərbin fəallığı ilə bağlı vəziyyət Rusiyanın daha güclü təsiri səbəbindən bir qədər qeyri-müəyyəndir. Rusiyanın Ermənistanın suverenliyini məhdudlaşdırma işlərinə ermənilər narahatlıq keçirdilər və beləliklə Ermənistanda hakimiyyət Qərb yönümlü insanların əlinə keçdi. Bu dəyişiklik Rusiya ilə əlaqələrdə ciddi soyuma ilə müşayiət olunurdu. Rusiyanın Qarabağ münaqişəsini regional təsirin mərkəzində saxlamağa davam edərək Azərbaycana qabaqcıl hərbi silah satması və Ermənistanın Gümrü şəhərində yerləşən 102-ci hərbi baza ilə əlaqəli bir neçə qalmaqaldan sonra vəziyyət daha da pisləşdi.

Ermənistanı narahat edən əsas məsələlərdən biri Gürcüstan, Azərbaycan və Türkiyə arasında strateji münasibətlərin dərinləşməsidir. Ermənistanın iddiasına görə, Gürcüstan bu üçbucaqda bərabər tərəfdaş deyil. Azərbaycan və Türkiyə Gürcüstanda təsir imkanlarını genişləndirir və Gürcüstan-Ermənistan münasibətlərinə və Gürcüstanın Ermənistanla bağlı siyasətinə təsir göstərmək üçün Gürcüstandakı imkanlarından istifadə edə bilirlər.Saxta erməni soyqırımı faktının Gürcüstan bu günə qədər rəsmən tanımaması da Ermənistanda dost olmayan bir hərəkət kimi qiymətləndirilir və qismən də Gürcüstanın Azərbaycan və Türkiyə ilə yaxın münasibətləri ilə izah olunur.

Rusiya ilə Qərb arasında mövcud böhranın Ermənistan-Gürcüstan münasibətlərinə mümkün təsiri təhlükəsizlik və xarici siyasət sahələri üçün digər vacib bir mövzudur. Rusiya postsovet məkanında öz təsirini gücləndirmək üçün fəal səy göstərdiyi üçün, xüsusilə də Qərb və ABŞ-ın bu hərəkətlərin qarşısını almaq təhdidləri ilə böhranın ikitərəfli münasibətlərə mənfi təsir göstərə biləcəyinə dair açıq bir narahatlıq var. Gürcüstan-Ermənistan münasibətlərinin böyük ölçüdə Böyük Aktyorlar arasındakı münasibətlərlə əlaqəli olduğu ortaq bir fikir var. Gürcüstan xaricində olan bəzi qüvvələrin, Gürcüstan cəmiyyətində Ermənistana və Gürcüstanda yaşayan ermənilərə qarşı etimadsızlıq və şübhə mühiti yaratmaq üçün Ermənistanın Rusiyanın strateji müttəfiqi olması faktını manipulyasiya edə biləcəyinə inanılır.

Son geosiyasi hadisələr – Rusiya və Qərb arasında münasibətlərin pisləşməsi, həmçinin İran və 5+1 dövlətləri arasında mümkün nüvə sazişi Ermənistan və Gürcüstan üçün regional təhlükəsizlik dinamikasına güclü təsir göstərir. Ən aktual məsələ Rusiya ilə ABŞ arasında Avropada Cənubi Qafqazın da daxil olduğu yeni bölücü xətlər yarada biləcək yeni "Soyuq müharibə" nin getdikcə artan ehtimalıdır. Bununla yanaşı qeyd etmək lazımdır ki, qeyri-müəyyənlik səviyyəsi çox yüksəkdir. Buna görə də gələcək inkişaflarla bağlı etibarlı orta və uzunmüddətli strateji proqnozları vermək mümkün olmur. Qeyri-müəyyənliyin yüksək səviyyəsi mövcud beynəlxalq münasibətlərin əsas xüsusiyyətlərindən biridir.Rusiya - Qərb və xüsusilə Rusiya-ABŞ, Rusiya - NATO münasibətlərinin açıq düşmənçiliyə çevrilmə potensialı ola bilər. Bu tendensiya təbii ki, Cənubi Qafqaz üçün çox ciddi mənfi rol oynayır. Qeyd etmək lazımdır ki, Rusiya - ABŞ münasibətləri Vladimir Putinin Kremlə ikinci dəfə qayıtmasından sonra daha da pisləşməyə başlandı. İki tərəf arasındakı ziddiyyətlər və mövcud böhranın kökündə Suriyadakı vəziyyətin qiymətləndirilməsi, Rusiyada insan hüquqları ilə əlaqəli məsələlər dururdu. 2014-cü ilin fevral ayında Ukraynada baş verən Avromaidan inqilabından sonra Rusiya Qərbyönümlü hakimiyyəti tanımadı və bunu konstitusiya çevrilişi kimi qiymətləndirdi. Ukrayna Avro-Atlantika inteqrasiya xəttini açıq şəkildə ifadə etdi. Ukrayna inqilabının ardınca Krımda və Şərqi Ukraynadakı hadisələr Rusiya-Qərb münasibətlərində müşayiət olunan Soyuq müharibə özünün ən pik həddini yaşayırdı. Ukraynaya həll yolu tapmaq üçün fərqli diplomatik səylərə baxmayaraq 1-ci və 2-vi Minsk müqavilələri daxil olmaqla böhran münaqişənin səbəbləri və mümkün uzunmüddətli həlli ilə

bağlı əsas ziddiyyətlər hələ də qalmaqdadır. Bununla yanaşı, Ukrayna hadisələri NATO-da Rusiyanın davranışına cavab olaraq Şərqi Avropa və Baltikyanı bölgədəki hərbi duruşunu gücləndirməyin zəruriliyi ilə bağlı güclü bir mübahisəyə səbəb oldu.*"[1].*

NATO Müdafiə Nazirləri 2015-ci il fevral tarixli qərarı ilə yüksək hazırlıq qüvvəsinə malik 5000 əsgərdən ibarət "Nizə" qüvvələrinin işə salınması qərarı, Rusiyaya Alyansın hərbi imkanlarını gücləndirmək üçün ciddi addımlar atdığının açıq bir mesajı idi. Tezliklə ABŞ 5000 əsgərlə yanaşı tankları, piyadaların döyüş maşınları və digər ağır silahları Rusiya sərhədləri yaxınlığında bir neçə Baltikyanı və Şərqi Avropa ölkələrində yerləşdirdi. Rusiya tərəfi bunu çox sərt tənqid etdi. Rusiya Xarici İşlər Nazirliyi ABŞ-ı 1997-ci ildə Rusiya və NATO arasında imzalanmış 5-ci Təsis Aktını pozmaqda günahlandırdı. Həmçinin prezident Putin texniki cəhətdən ən inkişaf etmiş raket əleyhinə müdafiə sistemlərini dəf edə biləcək 40-dan çox yeni qitələrarası ballistik raketin 2015-ci ildə Rusiyanın nüvə arsenalına əlavə olunmasını tapşırması qarşılıqlı etimadın olmamasının bariz nümunəsi idi. *"[6]* .

NATO-nun Şərqi Avropa və Baltikyanı ölkələr üçün təhlükəsizliyin qarantiyası kimi əhəmiyyətli rolu ABŞ müdafiə naziri Eşton Karterin 2015 -ci ilin iyununda Avropaya səfəri zamanı da müzakirə edildi.Qərb ekspertləri yeni bir Soyuq Müharibə ehtimalı və Rusiyanın postsovet və postsosialist məkanında təsirinin artmasının qarşısını almaq lazım olduğunu müzakirə edirdi.

Bu baxımdan Rusiyanı sıxışdırmaq üçün iki əsas güc mərkəzinin yaradılması müzakirə olundu. Bunlardan biri, Şimali Avropada və xüsusən də Rus azlığı olan Baltikyanı ölkələrdə Rusiyanın təsirini məhdudlaşdırmaq üçün üç Baltikyanı ölkəni, həmçinin İsveç, Norveç, Danimarka, Finlandiya və İslandiyanı əhatə edə biləcək Baltik Skandinav müdafiə təhlükəsizliyi əməkdaşlıq sahəsinin yaradılmasıdır. ABŞ ağır hərbi texnikasının üç Baltikyanı ölkədə, eləcə də Polşa, Rumıniya və potensial olaraq Bolqarıstanda yerləşdirilməsi ilə bağlı son məlumatlar, Rusiya-Qərb və xüsusən də Rusiya-ABŞ artan rəqabətinin göstəricisidir.Başqa bir potensial qorunma zolağına Türkiyə, Rumıniya, Bolqarıstan və Ukrayna kimi Qara dəniz sahilindəki dövlətlərin cəlb edilməsi ilə NATO -nun Cənub cinahı daxil ola bilər. Bu kontekstdə Gürcüstan və Azərbaycanın bu "ittifaqa" mümkün iştirakı da müzakirə olunur.*"[16]*. AB-nin Assosiasiya Sazişinin imzalanması və 2008-ci il Rusiya-Gürcüstan müharibəsindən sonra Rusiya ilə münasibətlərin gərginləşməsi, Rusiya-Qərb münasibətlərində mövcud durğunluq və artan davalı ritorika da daxil olmaqla Gürcüstanın Avroatlantik istəklərini nəzərə alaraq Rusiya-Gürcüstan münasibətlərini daha da çətinləşdirə bilər. . Rusiyanın Abxaziya və Cənubi Osetiya ilə strateji tərəfdaşlıq müqavilələri imzalamaq üçün etdiyi son addımlar Tbilisilə Moskva arasındakı münasibətlərdə əlavə gərginlik yaratdı. *"[12].*

Nəticə

Cənubi Qafqazın regional təhlükəsizlik və hərbi prizmadan verilmiş siyasi təhlilləri və elmi tədqiqatları Gürcüstan və Ermənistanın iştirakı olmadan aparılmamalıdır. Bu baxımdan, məqalənin nəticəsi olaraq, aşağıdakı nüanslar diqqət mərkəzindən qaçmamalıdır:

1. Ermənistan Qərbyönümlü təhlükəsizlik və hərbi əlaqələr baxımından, regionda ən zəif ölkədir və demək olar ki, tam şəkildə Rusiyadan asılıdır;
2. Gürcüstan isə NATO və Aİ ilə əlaqələri prioritet istiqamət kimi dəyərləndirir və Rusiyanın regional təsirindən çıxmaq niyyətindədir;
3. Ermənistanın Türkiyə və Azərbaycan ilə sərhədlənməsi və Rusiya ilə tranzit yollarının Gürcüstan ərazisindən keçməsi, Azərbaycanın neft və qaz lahiyələrindən kənarlaşdırılması, ölkənin vəziyyətini daha da kritik həddə çatdırır. Nəticə olaraq, Ermənistan Gürcüstanla hərbi və siyasi əlaqələrini toxunulmaz saxlamağa çalışır;
4. Gürcüstanın həm Azərbaycan, həm də Türkiyə ilə münasibətlərini "isti" saxlaması həm Ermənistan, həm də Rusiyanın narahatlıq mənbəyidir. 2008-ci ildən ərazisinin

bir qismini de-fakto itirən Gürcüstan, maksimum ehtiyat daxilində NATO və Aİ ilə də əlaqələrini genişləndirməyi hədəfləyir;

5. Regionun sülh, təhlükəsizlik və hərbi vəziyyətininin son xəritəsi göstərir ki, Cənubi Qafqaz hələ də, tam və stabil təhlükəsizliyə qadir deyil. Belə bir halda, ərazi münaqişələrinin aktuallaşması gözlənilən olmalıdır.

İstifadə edilən ədəbiyyat siyahısı:

1.ARF wants a sovereign Javakh. A1Plus, 6, 2004. http://en.a1plus.am/1471.html.
2.Comment by the Information and Press Department on US plans to store military equipment onNATO's'easternflank', http://www.mid.ru/brp_4.nsf/0/BC6D2C43E4EBC6C643257E660033FC97
3.Сесайр М. Нулевые проблемы 2.0: Турция как кавказская держава. http://inosmi.ru/caucasus/20120922/199645113.html
4.Свободная Грузия. Тбилиси. 19.08.1995.
5.Двусторонние отношения http://mfa.am/ru/country-by-country/ge
6.Defence Ministers agree to strengthen NATO's defences, establish-Spearhead.Forcehttp://www.nato.int/cps/en/natohq/news_117188.htm?selectedLocale=en.
7. Ministry of Foreign Affairs of the Republic of Armenia. InventoryFile 236. Səhifə 136 (erməni dilində).
8. Место Кавказа в геополитике США . http:// www.geopolitics.ru/2012/12/mesto-kavkaza-v-geopolitike-ssha
9. Ministry of Foreign Affairs of the Republic of Armenia. Inventory. File 136. Səhifə 42 (erməni dilində).
10. U.S. and İranian Strategic Competition: Tukey and the South Caucasus. By Anthony H.Cordesman, Bryan Gold, Robert Shelala and Michael Gibbs. www.csis.org 06/02/2013
11. Устав Организации за демократию и экономическое развитие.ГУАМ http://guam-organization.org/node/449
12. Putin Signs Law Ratifying Russia Abkhazia Strategic Partnership Treaty, http://www.rferl.org/content/putin-law-abkhazia-georgia-treaty-south-ossetia-agreement-tibilov/26829932.html.
13. Shah Deniz Final Investment Decision Paves Way for Southern Corridor Gas Link with Europe, http://www bp.com/en/ global/corporate/press/press-releases/shah-deniz-finalinvestment-decision paves-way.html.
14. Ter-Petrosian Blames Georgia For Conflict With Russia. Azatutyun,August 21, 2008. https://www.azatutyun.am/a/1596952.html
15.Топливно-энергетический-комплекс-Грузии. http://newsruss.ru/doc/index.php/%D0%A2%
16.Vladimir Putin announces Russia will add more than 40 intercontinental ballistic missiles to nuclear arsenal in 2015,http://www.independent.co.uk/news/world/europe/vladimir-putinannounces-russia-will-add-40-new-ballistic-missiles-to-nuclear-arsenal-in-2015-10323304.html.

PHOTON ACTIVATED TUNNELING IN ABO_3 TYPE MULTIFERROIC DOMAIN WALL

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ABSTRACT

We present photon assisted tunneling in multiferroics of type ABO_3. It is seen that the interactions of photons with this analytic molecules accelerate the electron transmissions. It is clarified that the existence of ferromagnetic, ferroelectric and piezoelectric in multiferroic materials are consequence of magnetic anisotropy, dipole segregation and strain. The effect of photon is therefore, to disassemble existing electronic states or assembles to form new electronic states by enhancing its transmission rates. On the other hand, photons with definite frequency are expected to overcome, the Vander Waals interactions. It is expected that photon assisted tunneling/hopping will cause an electric dipole separations. Hence photon assisted tunneling in multferroic domain walls will be dealt.

Keywords: Dipole segregation, domain walls, ferroelectricity, ferromagnetic, magnetic anisotropy, multiferroic, photons, strain, tunneling, Vander Waals interaction

1. Introduction

Multiferroics are multifunctional materials, which combine two or more of the ferric order parameters spontaneous polarization, magnetization and strain, exhibited individually in ferroelectric, magnetic, and Ferro elastic materials respectively. Historically, they are referred to as ferroelectromagnets. As explained by Alaska Subedi, 2008 [1], multiferroics are materials that show spontaneous electric and magnetic polarization. Ferroics and multiferroics have greater potential to sense to external stimulus, actuate controlled response and be embedded in b/n different parts of nanoelectronics.

Multiferroicity can exist in different materials though the degree of formation may different. Even it can exist in a single material. However, a prospect and reliability of multiferroic/smart materials are obtained by combining ferroelectric and magnetic materials. This can be done by either doping a host crystal DMS oxides, ZnO, Fe_2O_3, TbO_3, BiO_3 etc, with magnetic materials or forming a series of chemical reactions among ferroelectric and ferromagnetic materials.

The origin of Ferroelectricity in multiferroics is estimated from the long-range dipole-dipole interaction and a short-range interaction. In perovskites, of type $BiFeO_3$, O_3 promotes the existence of magnetic and ferroelectric order. However, Bi^{3+}, Fe^{3+} are responsible for electric polarizations.

As jotted by Armin Kargol et al, [2], multiferroics and magnetic nanoparticles are used in vitro applications such as magnetic tweezers and magnetic separation of proteins and DNA molecules, targeted delivery of drugs and radioactive isotopes for chemotherapy and radiotherapy. An important class of these materials includes magneto electrics (MEs), nano sensors, spins valves, biosensors and memory storage.

In the contemporary world, studies by R.S. Dahiya, M. Valle, 2013 [3] and others realize piezoelectric applications of smart materials for vibration control, aerospace and astronautically applications of flexible surfaces and structures, sensors for robotic and micro nanostructure (POSFET). Other researchers including Muhammad Amin 2018, [4] stated the existence of many interesting features that occurs at the interface of multiferroic perovskite oxides Hetrostructures. More specifically, spinning filter, resistive RAM, multiferroic nanomaterials like $BaTiO_3/CoFe_2O_4$) strain induced orbital order, electronic reconstruction, and enhanced mobility. Besides, photon activated tunneling at the interface

ensures superconductivity. In additions as illustrated in the work of Elzbieta Gradauskaite et al. 2019 [5], multiferroic thin-film heterostructures combining ferroelectric and ferromagnetic orders are a prospect for energy efficient electronics.

2. Origin of Multiferroicity in ABO_3, nanomaterials

Multiferroic materials of type ABO_3 are referred to as a single phased multiferroic. Multiferroic materials with coupled ferroelectric and magnetic orders coexist together have drawn intensive interests due to their fundamental significance. In addition, the existence of both 2D ferromagnetism and ferroelectricity in multiferroics make them a special area theoretical, experimental and computational condensed matter physics. More specifically, Multiferroics that are modeled by 2D Ising models are critically important in different aspects of physics and electromagnetic engineering.

Based on their origin, multiferroic materials are classified type I and type II multiferroics. In type I multiferroics Ferroelectricity and magnetism appear independently which have different origins and order temperatures. They have weak magnetoelectric coupling. However, in type II multiferroic: ferroelectricity and magnetism coexist with the same microscopic origin and order temperature. In this material magnetoelectric coupling is strong due to induced ferroelectricity. Here, the most common multiferroic material having this property are $BiFeO_3$and $TbFeO_3$etc.

2.1 Multiferroicity in $BiFeO_3$

M. A. Jalaja, Soma Dutta, 2016 [6] $BiFeO_3$ studied in depth the applications of ferroelectric, magnetic, magneto electrics and photovoltaic. It has narrow band gap energy with 2.2eV to 2.8eV. The narrowing in the band gap is resized by strain modeling. Strain can be developed in the crystal lattice structure of BFO by external uniaxial/hydrostatic pressures, chemical pressures or lattice mismatching.
It is detected that a large polarization observed in $BiFeO_3$ nanofilms results from Bi^{3+} ion, and Fe^{3+}spin order. Camille Blouzon, 2016 [7] determined, a $BiFeO_3$ has an absorption coefficient more than three times larger than $BaTiO_3$ or $LiNbO_3$.

It is demonstrated **Jin Peng** et al, 2018 [8] that in $BiFeO_3$, ferroelectricity originates from 'ferroelectric active' ions those with the d^0 configuration or with the $6s^2$ lone pair, as found in $BiFeO_3$, $BiPbO_3$.

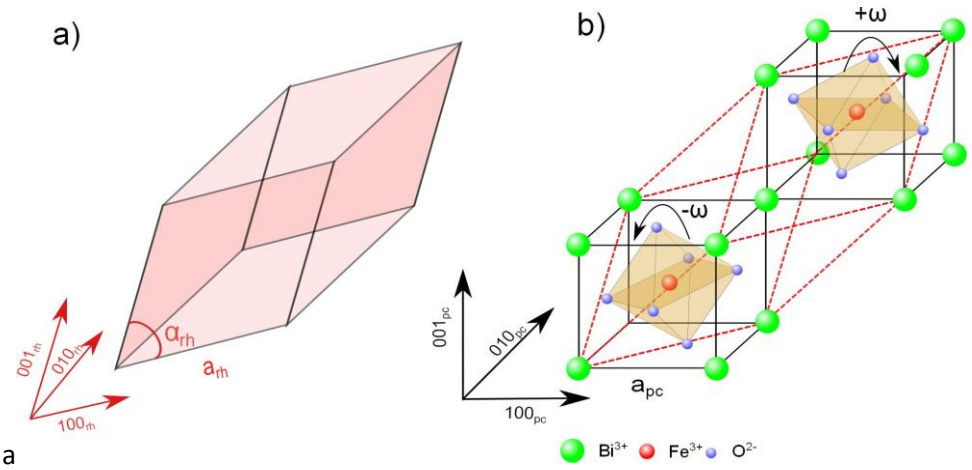

Figure. 1 Rhombohedra a) Rhombohedra unit cell of $BiFeO_3$ in the ferroelectric α phase where $\boldsymbol{a_{rh}}$ the rhombohedra angle and $\boldsymbol{a_{pc}}$ is the lattice parameter. b) Accommodation of two perovskite unit cells into one rhombohedra cell, (Ref. **H. Akash Bhavnagar, 2014 [9])**

Nearly two decades ago, $BaTiO_3$ was considered as the only multiferroic exhibiting ferromagnetic and ferroelectric properties. Due to its high ferroelectric polarizations, $BaTiO_3$ is considered as the first grade multiferroics materials. The diverse use of $BaTiO_3$ ceramics in multilayer capacitors enables better understanding of compositional, defect, and powder processing of $BaTiO_3$.

2.2 Multiferroicity in $TbFeO_3$

$TbMnO_3$ is type-II multiferroics, whose mechanism of magnetoelectricity can be applied to many other type-II multiferroics with non-collinear spin orders. Shifeng Zhao 2015, [10] had verified that at a low energy cluster beam deposition (LECBD), the phase formation of Tb-Fe nano clusters (or nanoparticles) is achieved in the condensation chamber at high temperature, while the deposition of Tb-Fe nanocluster beam onto the substrate is achieved with low energy. This action indicates that no reaction will take place between Tb-Fe and PZT layers except ion segregations giving rise to ferroelectric and weak ferromagnetism. As detected by Chengliang Lu, 2019 [11], type - II multiferroics usually show strong spin - lattice coupling, which guarantees the cross-control of phonons (spin excitations) either by a magnetic field or electric field. By varying the temperatures for different points at the ferroelectric to paraelectric phase transitions, a hysteresis loop is observed with respect to the peak dielectric anomaly.

Prabhasini Gupta et al. 2020 [12] described that the variation of the hysteresis loop with temperature points at a ferroelectric paraelectric transition $TbFeO_3$ nanoparticles and domain wall is due to relatively low dielectric loss.it also reveals that the dielectric peak is observed for all the frequencies which make a potential applications of $TbFeO_3$in software engineering and technology.

2.3 Multiferroicity in $YbMnO_3$

Multiferroic nanomaterials like $YbMnO_3$and $DyMnO_3$ are referred to as magnetochromism since they because they can exhibit different colors, or magneto-optic effect when exposed to magnetic fields. Some ferroics such as hexagonal manganite's (perovskites), $YMnO_3$violates the " d^0- ness" rule though they look a similar structural formula as ABO_3. They have quite different crystal and electronic structure. Researches Rubi et al. 2019 [13] indicates that the saturation magnetization MS evolves as a function of temperature in orthorhombic $YbMnO_3$ and $YMnO_3$ thin films, which points toward a general mechanism in manganite thin films.

2.4 Multiferroicity in $DyMnO_3$

$DyMnO_3$ is a type II multiferroic with hexagonal crystal structure. DyMnO3 exhibits the lowest lattice mismatch with the substrate among manganite's of rare earth elements. Like any other type II multiferroics, $DyMnO_3$ has a magnetic origin. $DyMnO_3$ are antiferromagnetic ferroelectrics.

According to S. Dong et al., 2015 [14] $TbMnO_3$ and $DyMnO_3$ are classified into the zoo of spin–orbit coupling. Magnetostriction marked the leakage between polarizations and Magnetism. As illustrated by C. Lu and J. M. Liu, 2016 [15] $DyMnO_3$ possesses two major microscopic mechanisms for ferroelectricity generation, i) the inverse Dzyaloshinskiie - Moriya interaction between M n spin pairs and ii) the exchange striction between Dy- Mn spin pairs.

3. Theoretical Methods

The properties of either type I or Type II multiferroics depends on different parameters. Some of the properties that characterize their properties are synthesis methods, dopant element, concentration of ions present, crystal morphology, type of interactions and external stimulus, namely magnetic fields, electric fields, temperature and light photons. As a prime example, $BiFeO_3$ synthesized by solution evaporation methods exhibits rhombohedra crystal symmetry; thus exhibit multiferroicity due to such morphology, and defects induced by oxygen vacancies.

3.1 Dynamic multiferroic theory

In order to develop a model that govern the mechanism of interactions in multiferroics, it important to consider the up spins and down spins as parallel current carrying wires as shown in the figure 3.2. This again means that since the spins are opposite, the magnetic field created between the two spins must be strong. In dynamic multiferroic formalism, the relations among the magnetic character, magnetizations (m), and electric parameter, polarizations (p) are related by,

$$M \sim P x \frac{\partial P}{\partial t} \qquad 3.1$$

Where, x represents a cross product of the vectors.

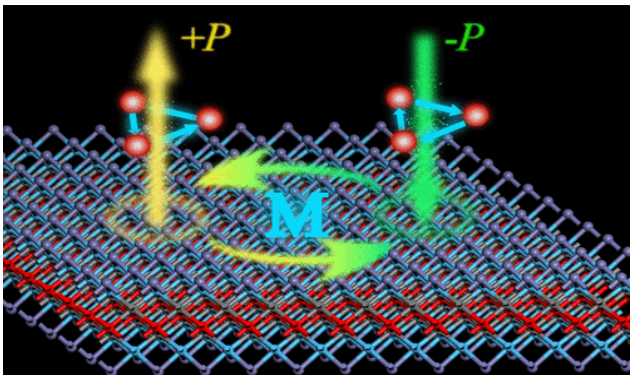

Figure 3.1 Coupling between electric polarizations and spontaneous magnetizations (Refe. Jun Jie Zhang et al, 2018 [16])

Magnetization is associated with time reversal symmetry, while polarization is related with space inversion symmetry as given in equations (3.1) and (3.2) respectively.

For magnetically driven ferroelectricity, the electric polarization, is given in terms of the magnetization, by

$$P \sim M(\nabla_r x M) \qquad 3.2$$

$$\mathrm{dM} = \chi \mathrm{dH} \qquad 3.3$$

Where, dH is an element of magnetic field, and χ is a magnetic susceptibility. The infinitesimal change in the magnetic field, dH is

$$\mathrm{dH} = \frac{\mathrm{ZJdM}}{2(\mathrm{g}\mu_{\mathrm{B}})^2} \qquad 3.4$$

2.5 landau phase transitions

The free energy of the system

$$G = G_o + A(T - T_C)P_2 + BP_4 \qquad 3.5$$

If the higher order terms are neglected, then the constant in equation, 3.5 above is, $A = \frac{G-G_o}{(T-T_c)}$. Thus, the landau free energy characterizes the thermodynamic property and phase transitions at a particular temperature.

By tuning the minimum energy to be 2.25eV and varying temperature from room temperature, it is possible to determine the constant; A so that the resulting first order polynomial can be fitted.

For the interactions of electrons,

$$\hbar v_o = \frac{p^2}{2m_e} + \sum_{i=1} u_{ij}(r) \qquad 3.6$$

For the electrons, that transit through the crystal, the linear momentum, is

$$p = \hbar k \qquad 3.7$$

$$P = 3.5x10^{-13}\left(\frac{v}{\hbar} - \frac{k^2}{2m_e}\right)^{-1} \qquad 3.8$$

Where, P is polarization, **ν**-is frequency, K is the wave vector, $m_e$is the mass of electrons, and $\hbar$ is the planks constant.

4. Discussions

4.1 Surface Interface effect

S. Toyoda, N. Abe, and T. Arima, 2015, [17] had been found large magnetochromism in a multiferroic $MnWO_4$ accompanied with the phase transitions caused by a spin-forbidden d-d transition of Mn^{2+} where the intensity of the absorption fluctuated with magnetic fields.

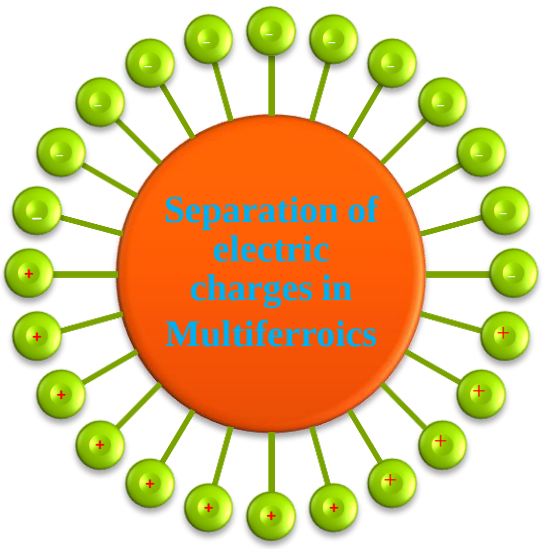

Figure 4.1 Magnetochromism

The magneto-elastic, magneto - electric and piezoelectric dipoles couples at the surface interface junctions. The couplings between these dipoles in multiferroic are promising for electronic devices. The multiferroic nanofilms are composed of a strained layer at the interface with the substrate and of a

relaxed layer on top of it. When a photon of sufficient energy strikes interface of strained layer, quantum tunneling of either electrons or incident photons occurs.

Equation 3.1 shows that magnetization can be flipped by electric field along the time reversal of $M_{Dy} - Dy$ from z - axis to b – axis. Conversely, equation (3.2) shows that the component of electric polarizations, P_{Mn}- Mn can be flipped by magnetic field *H* from one direction *c*-axis to another a-axis. Most of time, type II multiferroics exhibits hybrid mechanisms which requires more than one magnetic cation, such as Dy and Mn in DyMnO3, which reinforce formations of ferrimagnetic crystal lattice. The phenomenon is equated with the tunneling of particles including excitons/ electrons at the interface layer by the action of photon.

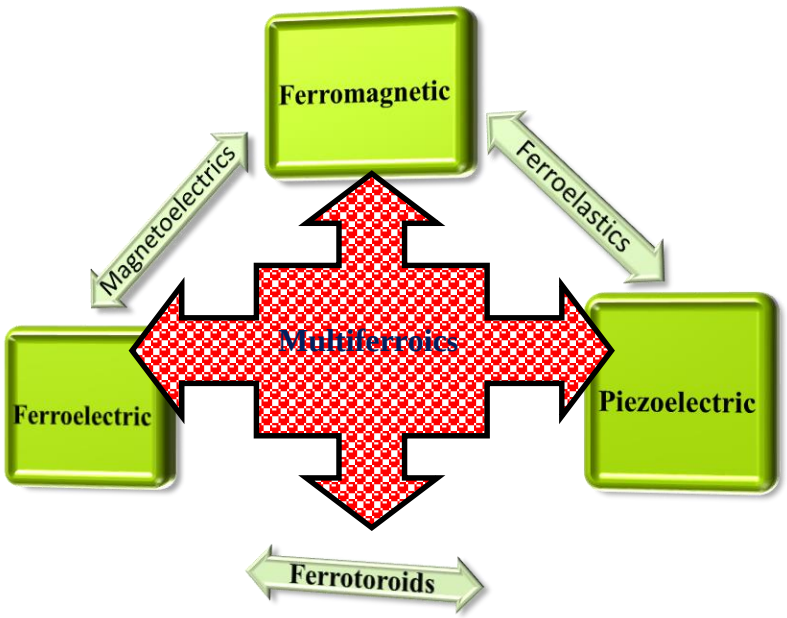

Figure 4.2Multiferroicity **ABO_3** type Materials

The existence of toroidal moments (ferrotoroids) in multiferroic nanomaterials is an evidence for magnetoelectric coupling in the material. Another multiferroics, discussed by Andrea Urru et al, 2020 [18] comprising layered- perovskite metal like $Bi_5Mn_5O_{17}$ is a ferromagnet, ferroelectric, and ferrotoroid which exhibit long sought of a room temperature ferromagnetic single-phase multiferroic strongly coupled, primary - order polarization and magnetization.

4.2 Effects of doping

At low doping, hopping between impurity states results in sideways vibrations. Cheong et al 2007, [19] had been noticed that in applied magnetic fields, RE metals as if Dy doped $TbMnO_3$ shows a spin-flop transition, along the transverse polarizations.

A K. Kundu et al. 2006 [20] had interpreted that doping of ABO_3, multiferroics like $BiFeO_3$with La and Mn reinforce ferromagnetic coupling due to $Fe^{3+} - O - Mn^{3+}$ interactions and antiferromagnetic coupling due $Fe^{3+}(Mn^{3+}) - O - Fe^{3+} + (Mn^{3+})$ interactions. However, ferroelectricity is associated

with electric polarization due to polazibility induced by the $6S^2$ lone pair of Bi^{3+} cations. Another study B. J. Kirby, D. Kan, A. Luykx, et al. 2009 [21] on type II multiferroics reveals that an additional complexity is important to rich $TbMnO_3$ magnetoelectric phase diagram and have important implications for the role of $TbMnO_3$ as a biasing multiferroic antiferromagnet. This shows that doping is an important entity to ensure the multiferroic states and its multifunction.

4.3 Photoelectric effect

Using Wigner spherical functions, B. Mettout & P. Gisse, 2017, [22] had predicted the existence of light-induced crystal tensor. This idea enables to describe the angular variations of photo-induced effects including photovoltaic, photo magnetic, photo galvanic, photo elastic or optic rectification effects. A current scientific research conducted by H. A. Bhatnag, 2014 [23] on photo ferroelectrics indicates that abnormal photovoltaic (PV) effect in BiFeO3 (BFO) thin films with large open circuit voltages is more than band gap of BFO, 2.7eV. This constraint can be resolved by narrowing the band gap by strain engineering. By applying uniaxial/hydrostatic pressures, externally or by lattice mismatching or chemical pressure strain can be developed in the lattice structure of BFO.

Reda Moubah et al, 2012 [24] had been able to slow that heating rate and long sintering time are responsible for the creation of oxygen vacancies ABO_3 like $BiFeO_3$ nanocrystal. Marin Alexe & Dietrich Hesse et al, 2010 [25] detected that the photoexcitation performed by a laser with the photon energy of 3.06 eV ($\lambda = 405$ nm), reveals optically induced transitions in BFO which are of band-to-band type, from the valence band to the conduction band which allows both ferroelectric domains and surface.

4.6 Photon activated tunneling in ABO_3 type Multiferroic domain walls

Tunneling is the phenomenon of a particle transit through a region where the potential energy function of the particles exceeds the total energy of the particle. It is a quantum phenomenon and occurs when particles move through a barrier where the barrier is a magnetic/multiferroic insulator in this context. When a particle absorbs light of sufficient energy, it can be reflected, transmitted or absorbed. It should be noted that the tunneling current is proportional to the distance from the microscope.

Multiferroics are indispensable from photon effect; particularly ABO_3 type multiferroics. For exemplifications, as resistance memory switching and photovoltaic applications of $BiFeO_3$ rely on the photon effect. On the other hand, literature including N. Balke et al. 2009 [26] indicates that controlling polarization switching mechanisms in ferroelectric and multiferroic materials is a critical step towards the realization of oxide-based electronic devices including non-volatile random access memories, tunneling barriers, and field-effect transistors (MOSFET& POSFET).

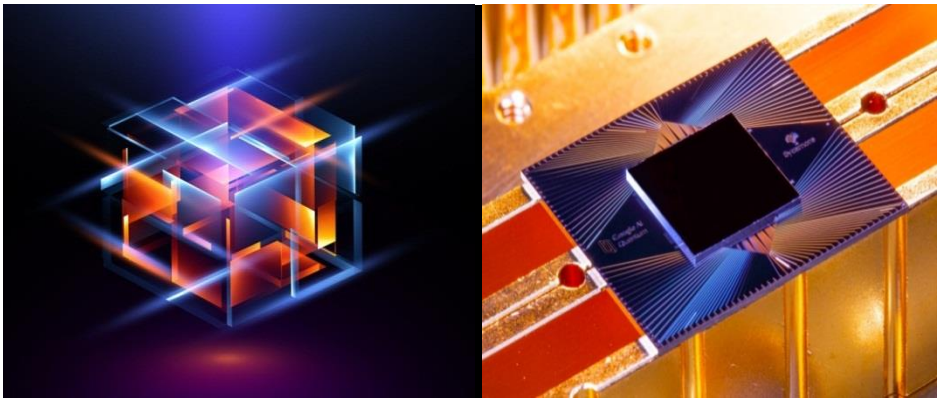

Fig 4.3 a) Quantum technology involving multiferroic b) Sycamore-quantum-processor

As shown in the figure a), the trap assisted conduction mechanisms are responsible for photo excitation phenomenon noticed in a multiferroics with a strong dielectric like $BiFeO_3$. Tunneling cause's multiferroic thin insulating layers to become leaky i.e it makes the surface with many holes. Jia et al. 2018 [27] revealed that the magnetoelectric properties and coupling behavior of single-phase multiferroics are dominated by their domain structures.

Thomas Lottermoser and Dennis Meier [28] another way to induce a centricity in otherwise Centro symmetric structures is magnetism, which can lead to a spontaneous electric polarization and hence multiferroicity. By definition, magnetically induced ferroelectricity is improper (or pseudo proper) and, in many materials, originates from magnetic frustration. E.g TbMnO3, $MnWO_4$). Pavan Kumar Naini et al, 2020 [29] co-existence of magnetic and electric behavior in case of multiferroics is analyzed by heat capacity measurements from low temperature (2 K) to room temperature (300 K) under different magnetic fields. Herein, the existence of antiferromagnetic and ferroelectric phase transitions are attributed to the structural ordering or alignment of Mn^{3+} ions and R^{3+} ions.

For tunneling to occurs, the transmission coefficient,$T \approx e^{-KL}$, where L is the thickness of the barrier and reflections coefficient, $R \approx 0$. Squeezing the multiferroic, walls reduce the tunneling potential barrier. Usually, as demonstrated by S. Miyahara and N. Furukawa, 2014, [29] toroidal Magnon excitations in multiferroics relate to magneto-optical effects.

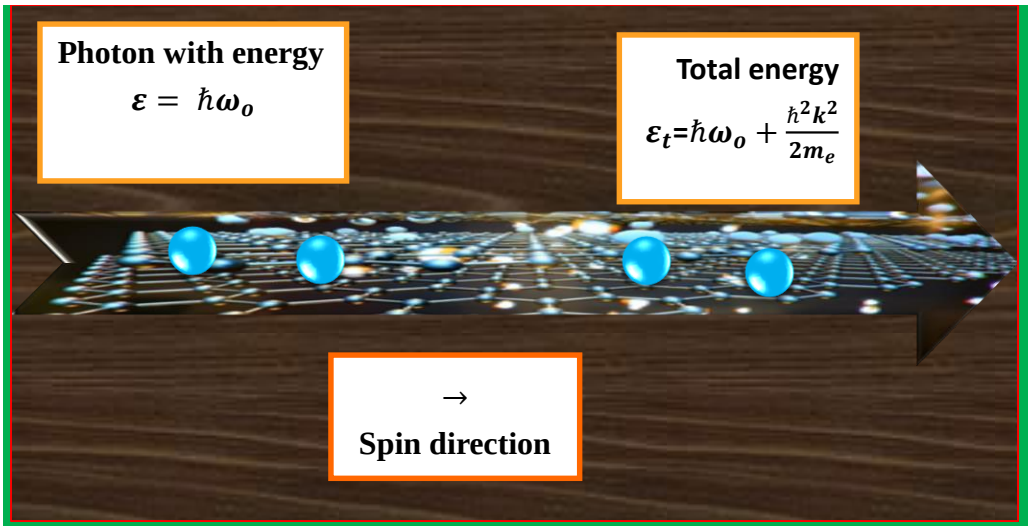

Figure 4.4 Electron tunneling through Multiferroic crystal domain Walls

To sum up, different researchers have verified different mechanism of multiferroics. For instance, Wang et. al, 2003, [31] reason out that lone pair electrons are responsible for MF in $BiFeO_3$, and $BiMnO_3$, Kimura et al, 2003 [32] identified that $YMnO_3$, $InMnO_3$, exhibits multiferroicity due to hexagonal crystal structure, Van Aken et al, 2004 [33] stated $TbMnO_3$, $YMnO_3$, and $BiMn_2O_3$ exhibits magnetoelectric structure modulations and Etremov et al, 2004 [34] mentioned a superposition's of d/t charge ordered states for expected multiferroicity. In the hexagonal structure of $YMnO_3$, tilting leads to a loss of inversion symmetry and to FE, with dipole moments mostly formed by Y- O pairs. Van der Vegte, and Marcus Antonius, 2010 [35] explained that Heisenberg exchange is the strongest interaction between spins in transition metal oxides; this type of exchange is likely to be the strongest source of magnetoelectric coupling. For the present work and Photon activated multiferroics, Cooper-pairs and magnetic anisotropy are also responsible.

N. Ortega et al., [36] demonstrated that the higher drying temperature affects the ferroelectric properties due to higher crystallinity with the c-axis preferred orientation; as a result, the highly c-axis oriented $YMnO_3$ thin films exhibited higher remnant polarization, $\left(2P_r = 3.6\frac{\mu}{cm^2}\right)$ compared with randomly oriented $YMnO_3$ thin films.

The polynomial fit of polarization as a function of displacement is obtained by the equation; **P = P_o + q_1*X + q_2*X^2**

Table 4.1 shows a data obtained by fitting the electric polarizations as functions of displacement. The data are generated for first and generated for the first and second orders for three parameters, A, B_1 and B_2, t represents transfer integral, F is the probability amplitude, so that the mean values are taken for N number of events.

Parameter	Value	Error	t-Value	Prob > |t|
A	-1	1, 39942077E-15	-7,1458136E14	<0.0001
B1	1	5, 20152944E-16	1,92251147E15	<0.0001
B2	1, 38777878E-17	4, 25935363E-17	0, 3258191	0, 75562467

R-Square (COD)	Adj. R-Square	Root-MSE (SD)	N
1	1	7,47513528E-16	9

ANOVA Table:

Item	Degrees of Freedom	Sum of Squares	Mean Square	F Statistic
Model	2	60	30	3E21
Error	6	3,35265885E-30	1E-20	
Total	8	60	0	

Prob > F < 0.0001

Fit and Residual data have been saved into DATA1 worksheet

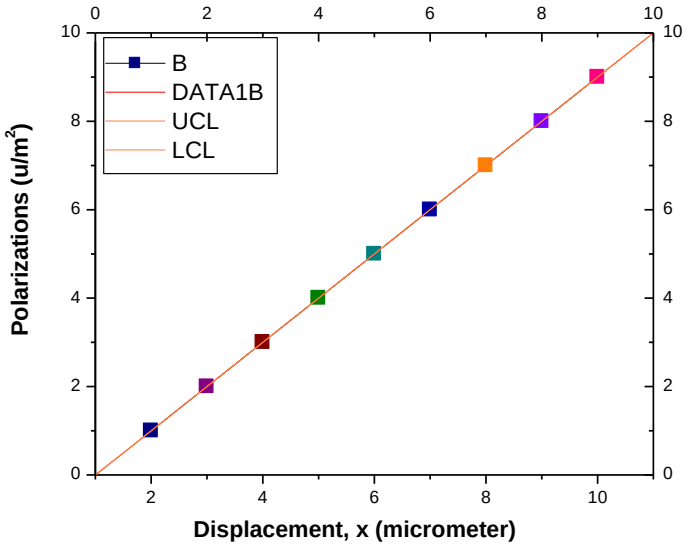

Figure 4.5 The relation between Polarization and displacement of ABO_3 multiferroics

From the Anova table it is shown that the upper confidence limit (UCL) is 95%. Similarly, the same instrument from the polynomial fits gives the lower confidence limit (LCL) of 95%. In all the process the linear polarizations is considered although the values of electric polarizations and magnetizations are obtained at different temperature. The graph is sketched by considering the relations between electric dipole moment and linear displacements between segregated charges, q_{ij}.

The degree of competition between ferroelectricity and ferromagnetism can be explained in terms of scarcity. Whence the scarcity of multiferroics is understood in terms of electronic states, electronic band structure, parity and symmetry. It should also notice that the photovoltaic response of each domain in the wall depends on the directions electric polarizations and thus photocurrent. In additions Kenta Shimamoto et al. 2017 [37] using the neutron diffraction realized that highly strained $TbMnO_3$, multiferroic films could change from bulk to bc - cycloidal magnetic order so that the multiferroic ground state of $TbMnO_3$ is dramatically modified by epitaxial strain.

It is explored Cheong et al. 2007, [19] that magnetic frustration naturally gives rise to multiferroic behavior due to disappearance of inversion symmetry at high temperature, and ionic relaxations in magnetic states.

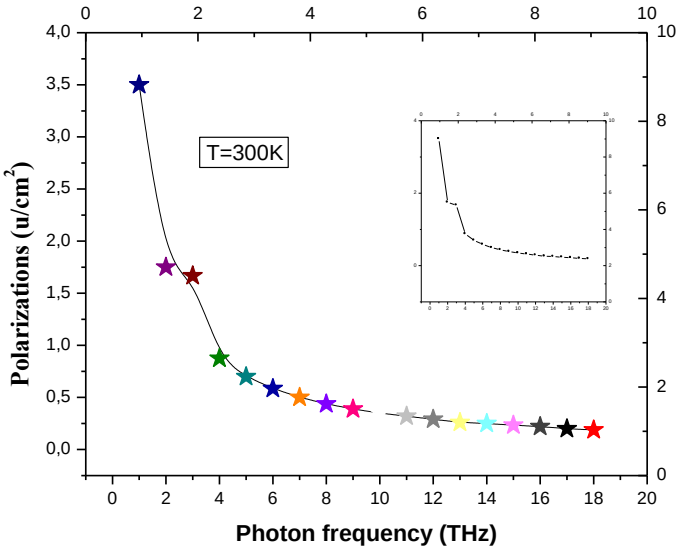

Figure 4.6 Polarization ($\frac{\mu}{mm^2}$) against frequency (THz)

The result in equation 3 shows that the photon activated tunneling is accompanied by the combined effect from photon and Phonon contributions.

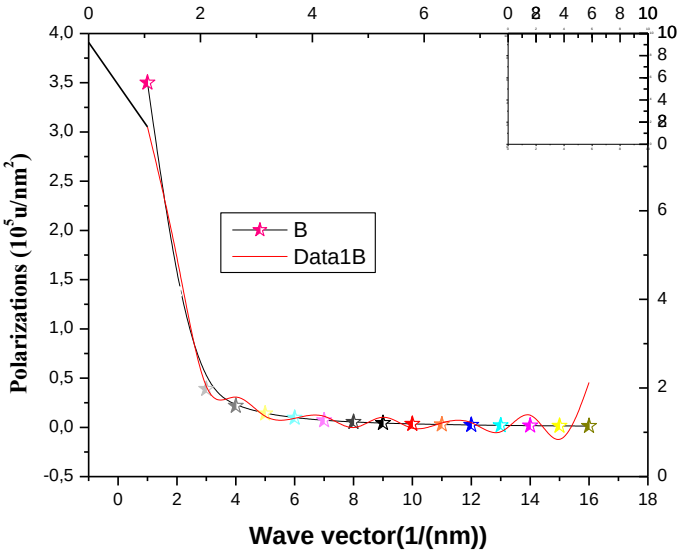

Figure 4.7 The relations between Polarizations and wavevectors

As show in the figure above the amplitude threshold in the line labeled red is 2, 50448106. It is shown that as the polarization increase, the wave decrease quadratic ally. The line labeled by a black color represents a relation between wave vector and polarizations in the absence of photon influence. However, as the multiferroic is exposed to light (photon) with definite energy, it enhance tunneling of electrons/photons periodically at higher wavevectors. It is important to stress that Photon activated tunneling will ensure a great promise for feature superconductivity. This action is equated with Photo current distributions of Metals. For the seek of simplicity, the graph is sketched in the first Brillion zone.

Researchers including U. Satya Sainadh et al, 2020 [38] verified that fields including magnetic and electric fields reduce delay time and enhance photoelectrons current distributions.

As demonstrated by M. A. Jalaja, & Soma Dutta, 2015 [39], in $BiFeO_3$ single crystals, the photo generation of charge carriers and their recombination are mainly affected by shallow energy levels. This shows that the lifetime of carriers within the multiferroic domain is for generation and recombination's of photo-excited carrier is larger than the domain walls. Another study by Avneesh Anshul, 2013 [40] on electric field dependent photo-excitation carried out on BFO thin film shows optical bluish –green emissions at peak wavelength 485nm, confirming photoluminescence. Hybrid nanophotonic systems hold the promise to couple electron spins with light at the surface of multiferroic domain wall, enabling integrated networks for quantum nanophotonics.

Consequence of photon activated tunneling: unlike to normal tunneling, photon activated tunneling enable's zero reflectance coefficients, reduce surface absorptions, and maximize transmission coefficient, enabling pulse of maximum output (intensity). It enables excitations in energy levels and enhances spin injections and spin density states. These effects enable communications rate at an alarming speeds.

5 Conclusions

In this reseach, the effect of photon on tunneling from multiferroic crystal wall is noticed. It is shown that photon assisted tunneling through a multiferroics domain wall exhibits two important relations, i) ferro-electric vs photon frequency, Ferroelectric vs Phonon. This again indicated that when a multferroic crystal absorbs photon with energy, E, they create new property of solids Phonons, whose frequency is related to its wavevectors. It is realized that the possible mechanisms in ABO_3 multiferroics are lone pair, Geometrical structure including magnetic anisotropy, charge order. Generally, in ABO_3 type multiferroics, ferroelectricity originates from 'ferroelectric active' ions (e.g. those with the d_o configuration or with the $6s^2$ lone pair. However, ferroelectric and ferromagnetic properties are noticed at different temperature. However, ferroelectric and ferromagnetic properties are noticed at different temperature. For the present work and Photon activated multiferroics, Cooper-pairs are also responsible. It is also proved that photon activated Multiferroics materials will replace the future superconductors. In the future work, a completions between photon activated high temperature multiferroics and high temperature superconductors will studied in detail due to the fact that, both multiferroics & superconductors, constitutes defects related to oxygen.

References

1. Alaska Subedi, Multiferroics, 2008, 13, pp. 1-18
2. Armin Kargol, Leszek Malkinski and Gabriel Caruntu, Biomedical Applications of Multiferroic Nanoparticles, 2012, 65. PP. 90 -113.
3. R.S. Dahiya, M. Valle, Robotic Tactile Sensing, 2013, 978-94-007-0579-1
4. Muhammad Amin, Exploring the Multifunctional Properties of BiFeO3 -Based Multiferroics 2018, Lahore, 54590
5. Gradauskaite, Elzbieta, Meisenheimer, Peter, Muller, Marvin, Heron, John and Trassin, Morgan, multiferroic heterostructures for spintronics, physical science Review, 2021, 2, PP 2019 - 0072
6. M. A. Jalaja, Soma Dutta, Ferroelectrics and multiferroics for next generation photovoltaic, Adv. Mater. Lett. 2015, 6(7), 568-584
7. Camille Blouzon, photoelectric and magnetic properties of multiferroic domain walls in BiFeO3, Physics, University Pierre et Marie Curie - Paris VI, 2016, PA066006ff

8. J Peng et al, New iron-based multiferroics with improper ferroelectricity J. Phys. D: Appl. Phys. 51 (2018) 243002
9. Herrn Akash Bhatnagar, et al. Electronic and Photoelectronic processes in Multiferroic Materials; 2014
10. Shifeng Zhao, Advances in Multiferroic nanomaterials Assembled with Clusters, Volume 2015, Article ID 101528, pp. 1-12
11. Chengliang Lu, Single-phase multiferroics: new materials, phenomena, and physics, National Science Review 2019, 6: 653- 668
12. Prabhasini Gupta, P. K. Mahapatra, and R. N. P. Choudhary
13. D. Rubi et al. Ferromagnetism and increased ionicity in epitaxially grown TbMnO3 films, physical review B. 79, 014416 (2009)
14. Shuai Dong et al., multiferroic materials and magnetoelectric physics: symmetry, entanglement, excitation, and topology, Advances in Physics, (2015) 64:5-6, 519-626
15. Chengliang Lu and Jun Ming Liu, a model system of type II- Multiferroics, 2016, 2, 213-224.
16. Jun - Jie Zhang, et al, type - II multiferroic $Hf_2VC_2F_2$ MXene Monolayer with High Transition Temperature, J. Am. Chem. Soc. 2018, 140, 30, 9768–9773
17. S. Toyoda, N. Abe, T. Arima, and S. Kimura, Physical Review B **91**, 054417 (2015)
18. Andrea Urru et al, A three-order-parameter bistable magnetoelectric multiferroic metal 2020
19. Cheong, S. W & Mostovoy M. (2007), Multiferroics: a magnetic twist for ferroelectricity. Nature Materials, 6(1), 13-20.
20. A.K. Kundu, P. Nordblad and C. N. R. Rao, J. Phys. Condens. Matter, 18, 4809 (2006)
21. B.J. Kirby, D. Kan, A. Luykx, et al. Anomalous ferromagnetism in thin films, J. Appl. Phys. 2009, V. **105**, 07D917
22. B. Mettout & P. Gisse, Theory of the photovoltaic and photo-magneto-electric effects in multiferroic materials, 2017, V 506, 1 pp. 93 -110
23. Y. H. Kim, A. Bhatnagar, E. Pippel, M. Alexe, and D. Hesse, Microstructure of highly strained BiFeO3 thin films: Transmission electron microscopy and electron energy loss spectroscopy studies," Journal of Applied Physics, vol. 115, p. 043526, 2014.
24. Reda Moubah et al, Photoluminescence Investigation of Defects and Optical Band Gap in Multiferroic BiFeO3 Single Crystals, Applied Physics Express 5 (2012) 035802
25. Marin Alexe1 & Dietrich Hesse et al, 2010, 2:256
26. N. Balke et al. Deterministic control of ferroelastic switching in multiferroic materials, nature nanotechnology, 2009, V. 4
27. Jia et al. Zhenxiang Cheng, Hong yang Zhao, et al. Domain switching in single phase multiferroics Appl. Phys. Rev. 5, 021102 (2018)
28. Thomas Lottermoser and Dennis Meier, 2020-0032
29. Pavan Kumar Naini et al, Thermomagnetic Properties of $Dy_{0.9}Ho_{0.1}MnO_3$ Multiferroics 2020 V. 217, issue 17
30. S. Miyahara and N. Furukawa, Theory of magneto-optical effects in helical multiferroic materials via toroidal Magnon excitation, Phys. Rev. B 89, 195145 (2014).
31. Wang et al, science, 299, 1719, 2003
32. Van Aken et al, nature materials, 2004, 3, 164.
33. Kimura, nature physics, 2003, 426, 55
34. Etermov et al. nature materials, 2004, 3, 857
35. Van der Vegte, M. A. competing interactions in multiferroics and low dimensional systems, 2010, PP. 9-20

36. N. Ortega, Ashok Kumar, P. Bhattacharya, S. B. Maunder, and R. S. Katiyar. Impedance spectroscopy of multiferroic $PbZr_xTi_{1-x}O_3$ /$CoFe_2O_4$ layered thin films. Phys. Rev. B 77, 014111 (2008).
37. Kenta Shimamoto et al. Tuning the multiferroic mechanism of $TbMnO_3$ by epitaxial strain, 2017. 7. 44753
38. U Satya Sainadh, R T Sang, and I V Litvinyuk, Attoclock and the quest for tunneling time in strong-field physics; J. Phys. Photonics (2020), V. 2. 042002
39. M. A. Jalaja, & Soma Dutta, Adv. Mater. Lett. 2015, 6(7), 568-584
40. Avneesh Anshul, Ashok Kumar, Bipin K. Gupta, et al. Photoluminescence and time-resolved spectroscopy in multiferroic $BiFeO_3$, Appl. Phys. Lett. 102, 222901 (2013)

AZERBAYCAN'DA MÜLTECİ SORUNLARININ TARİHİ KÖKLERİ VE GÜNÜMÜZDEKİ YANKILARI

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ÖZET

Makale`de belirtilir ki, Çarlık Rusyası Güney Kafkasya'da güçlenmek, Hazar eyaletleri aracılığıyla Hint Okyanusu'na erişmek, Türkiye ve İran ile sınır güvenliğini ve Güney Kafkasya'daki kendi etkisini korumak amacıyla 1828-1829 yıllarında bu topraklara Ermenilerin toplu yerleştirilmesini organize etti. Ermenilerin göç ettiği yerlerde yerel nüfus uzaklaştırıldı. 19. yüzyılın sonundan bu yana, Ermeniler amaçlarına ulaşmak için terör örgütleri kurdular ve Azerbaycanlıları topraklarından terörle kovmaya çalıştılar. Bakü'de ve daha sonra Revan, Nahçıvan, Gence, Karabağ, Zanggazur, Gazakh, Şirvan, Şuşa, Jabrail, Javanshir, Garyagin ve Tiflis'te Azerbaycanlılara karşı katliamlar yapıldı. 1914-1918 yıllarında I Dünya Savaşı döneminde Rusya İstanbul'u, Doğu Anadolu'nu sahiplenmek, Türkiye'yi zayıflatmak ve Güney Kafkasya'da güçlenmek için Ermeni silahlı örgütlerinin faaliyetlerinden kullandı, Türkiye`de yaşayan Ermeniler`in hükümete karşı isyanlarını düzenledi ve onlarca Ermeni gönüllü çetelerinin oluşumunda Taşnaksutun ve Hnchak örgütleriyle aktif bir rol oynadı. Türkiye'de amaclarına ulaşamayan terörist Ermeniler Azerbaycan'a geldiler ve Bakü, Shamakhi, Guba ve Shaumyan dahil olmak üzere diğer bölgelerde Azerbaycanlılara karşı soykırım yaptılar. Makale`de ayrıca, "Büyük Ermenistan" rüyasında yaşayan Ermenilerin Sovyet döneminde de Azerbaycanlıların sayısını azaltmak amacıyla yerel nüfusun Revan`dan ve diğer Azerbaycan bölgelerinden dışlanması ve Ermenilerin yurt dışından hemin topraklara göç ettirilmesi meseleleri ve mülteci sorunlarının günümüzdeki yankıları araştırılmıştı. Çatışmanın çözümü, mültecilerin ve ülke içinde yerinden edilmiş kişilerin sorunlarını aşmak ve eve dönmelerini sağlamak en önemli konulardan biridir. İşgaldan kurtarılan bölgelerde Ermenistan tarafından "yakılmış toprak" taktiklerin uygulanması, bu toprakların kullanımını uzun süre imkansız hale getirmekte ve çölleşmeye yol açmaktadır. Çünkü yıkılmış, yakılmış bölgelerin hızlıca restorasyonu mümkün değil. Ülke içinde yerinden olmuş kişilerin güvenli bir şekilde geri dönüşü ile ilgili sorunlardan biri de mayın riskidir.

Anahtar Kelimeler: Kafkasya, Ermeni terörü, yerel nüfus, mülteci sorunları, göç.

1804-1813 ve 1826-1828 yıllar Rus-İran savaşları sırasında, 1877-1878 yıllar Rusya-Türkiye Savaşı sırasında Ermenilerin İran ve Türkiye'den Azerbaycan'a göç ettirilmesinin ardından Azerbaycanlıların Erneniler tarafından tarihi topraklarından terörle kovulması politikası başladı. Çarlık Rusyası, Güney Kafkasya'da güçlenmek, Hazar bölgelerinden Hint Okyanusu'na erişmek için Azerbaycan topraklarını birleştirmeye büyük önem veriyordu. 1801 yılında, Doğu Gürcistan`ın (Azerbaycan'ın Gazakh ve Şamsaddil sultanlığının, Borchali bölgesinin)[1] Rusya'ya birleştirilmesi, 1803'te Car-Balakan topluluğunun ve 1804'te Gence hanlığının işgali Azerbaycan topraklarının işgal sürecinin ilk adımlarıdır. Çarlık Rusyası'nın işgali, 1804'te Rus-İran savaşının başlamasına yol açtı. 13 Ekim 1813'te Karabağ'ın Gulustan köyünde imzalanan barış antlaşmasıyla Azerbaycan topraklarının çoğunluğu Rusya'ya katıldı[2]. Rus-İran savaşı 1826'da yeniden başladı ve 10 Şubat 1828'de Türkmençay barış antlaşmasıyla sona erdi. Azerbaycan'ın tarihi toprakları Rusya ve İran arasında bölündü. Rusya, Güney Kafkasya'daki etkisini sürdürmek için milli-etnik ihtilaflardan faydalanmak amacıyla Ermenilerin bölgeye yerleştirilmesi politikasına odaklandı.

[1] Karabağ Beylerbeyi Uğurlu Han Ziyadoğlu`nun, Nadir Şah'a muhalefetde olmasından dolayı, Nadir Şah 1736'da Karabağ Beylerbeyinin yönettiği Gence Hanlığı'nın otoritesini zayıflatmak için Gazakh, Şamsadil ve Borçalı ilçelerini Kahetiya Çarlığı`na vermiştir.

[2] Gülüstan Antlaşması konusunda bak: Süleymanov M. Gülüstan müqaviləsi. I hissə, Bakı: "Elm və təhsil", 2014, 624s. Süleymanov M. Gülüstan müqaviləsi. II hissə, Bakı: "Elm və təhsil", 2014, 608 s.

Türkmençay barış antlaşmasının 15. maddesince Ermenilerin İran'dan Rusya'ya sorunsuz geçişi sağlanmış oldu.[3]

1828-1829 yıllarında Rusya-Osmanlı Savaşı sırasında, Rusya'da yaşayan Müslümanlar Osmanlı İmparatorluğu, Osmanlı İmparatorluğu'nda yaşayan Ermeniler ise Rusya tarafında savaştılar. Savaş, Osmanlı İmparatorluğu'nun yenilgisi ile sona erdi, 2 Eylül 1829'da Edirne Antlaşmasıyla Türkiye Anapa`nı ve Poti`ni Rusya'ya verdi. Bosfor ve Dardanel boğazları Rusya'ya ticaret gemileri için açık tutuldu.

Edirne Antlaşmasından sonra Müslümanlar işgal altındaki Rusya topraklarından ayrılmaya ve Osmanlı Devleti'ne göç etmeğe başladı. 1829'da Revan`dan 9 bin Azerbaycanlı Osmanlı İmparatorluğu'na gitti. Osmanlı Devleti'nde yaşayan Ermeniler, Revan da dahil olmak üzere Rusya`nın işgali altındaki bölgelere yerleştirildi. Osmanlı İmparatorluğu, Ahıska paşalığının (şu anki Gürcistan'daki Samtskhe-Javakheti Bölgesi) bir bölümünü Rusya'ya verdi ve Ermenilerin Güneydoğu Anadolu'dan bu bölgeye yeniden yerleştirilmesi konusunda anlaşma sağlandı. Ermeniler Ahıska ile birlikte Tiflis, Revan ve Nahçıvan'da yerleştirildi. Erzurum'un çevresinden günümüz Ermenistanına 100.000'den fazla Ermeni göç ettirildi.

ABD tarihçileri C. McCarthy ve K. McCarthy yazıyorlar ki, o zaman 10.000 Ermeni ailesi Doğu Anadolu'dan göç etmiş ve Rusya'nın işgal ettiği bölgelere yerleşmiştir.[4] Göç etmiş Ermenilerin sayısı 40.000'den fazla idi.

Rus araştırmacı N.İ. Şavrov "Sömürge faaliyetimiz Güney Kafkasya'ya Rusların değil, Rus olmayanların yerleşmesiyle başladı. Öncelikle, 1819'da, yaklaşık 500 Alman aile getirdik ve Güney Kafkasya, Tiflis, Elisavetpol illerinde bağımsızlığımızı destekledik. Onlara hazinenin en iyi toprakları ve çeşitli imtiyazlar verildi. Daha sonra, 1826-1828 yıllar savaşının bitiminden sonra, 1828-1830 yıllarında 40.000 İran ve 84.600 Türkiye Ermenisini Güney Kafkasya'ya yerleştirdik ve onları Ermeni nüfusunun küçük bir sayıda olduğu Yelizavetpol ve Revan, Tiflis, Borchali, Ahıska ve Ahalkalaki bölgelerinin en iyi devlet topraklarına yerleştirdik. Göçürülen insanlara 200.000 dönümden fazla devlet toprağı verildi ve Müslümanlardan 2 milyondan fazla ruble değerinde toprak satın alındı. Bu Ermeniler, Yelizavetpol ilinin dağlık bölgelerine (Dağlık Karabağ) ve Goyçe Gölü'nün (Ermeniler Sevan – R.D. olarak adlandırır) kıyılarına yerleşmişlerdir. 124.000 Ermeni'nin resmi olarak yerleştirilmesinin yanı sıra, resmi olmayan yerleştirmelerin olduğu not edilmelidir. Göç etmiş kişilerin toplam sayısı 200.000'den fazladır"[5] diye belirtiyordu. Avusturyalı araştırmaçı E.Feyql ise kitapında şu şekilde yazmıştı: "1829'da Rusya ile Osmanlı İmparatorluğu arasında imzalanan Edirne Antlaşmasına göre, 100.000'den fazla Ermeni Erzurum'dan günümüz Ermenistanına ve Kafkasya`da olan Müslümanların çoğu Anadolu'ya göç ettirildi.

1828 Türkmençay Antlaşması'na göre, Revan ve Nahçıvan hanlıkları Rusya'ya katıldı. I Nikolay bu hanlıklarda "Ermeni bölgesi"nin yaratılmasını emretti. Şimdiye kadar Revan'da yalnızca Müslümanlar yerleşmiştiler" [6].

1853-1856, 1868-1876 yıllar Rusya-Osmanlı savaşından sonra Ermenilerin Güney Kafkasya'ya yerleşim süreci devam etti.

N.İ.Şavrov "1864-1876 yıllarında gayri resmi olarak Karadeniz kıyılarına Ermenileri ve Yunanları, ardından Estonyalıları, Letonyalıları ve Çekleri yerleştirdik. Yeni yerleşimcilere en iyi devlet toprakları verilmiştir" diye yazıyordu. 1877-1878 yıllar Rusya-Türkiye Savaşı'ndan sonra yaklaşık 50.000 Ermeni ve yaklaşık 40.000 Yunanlı Kars'a göç etti. Bu göç birçok diğer milletlerin bölgeyi boşaltmasına neden oldu. Ayrıca, General Ter-Gukasov, Türkiye`den 35.000 Ermeni'ni Revan'ın Surmali kazasına getirdi. Küçük Asya'dan bu bölgelere Ermenilerin sürekli akışı başladı. Büyük ölçekte Ermenilerin göç ettirilmesi 1893-94 yıllarında Türkiye'deki Ermeni isyanı

[3]Семенов Л.С. *К вопросу о значении Туркманчайского договора для истории Армении*, Ленинград, s.105. http://hpj.asj-oa.am/65/1/59-4(105).pdf.

[4]Джастин Маккарти, Каролин Маккарти. *Тюрки и армяне. Руководство по армянскому вопросу*. Washington, D. C., Committee on education assambly of turkish american associations, 1989, s.13.

[5] Шавров Н.И. *Новая угроза русскому делу в Закавказье: предстоящая распродажа мугани инородцам*. Санкт-Петербург, 1911. https://javakhishviliinstitute.files.wordpress.com/2009/07.

[6]Erich Feigl. *Armenian Mythomania. Armenian Extremism: Its Causes and Historical Context*. , 2007, www.google.az, s.52-53.

zamanı başladı. 1894-1897yıllarında, Prens Golitsi'nin döneminde yaklaşık 900.000 Ermeni Güney Kafkasya'ya göç etti. Küçük Asya'dan yaklaşık 35.000 Ermeni ailesi Kars'a taşındı. İ.Şavrov yazıyordu ki, "şu anda Güney Kafkasya'da yaşayan 1.300.000 Ermeni'nin 1 milyonundan fazlası yerel nüfusun bir parçası olmayan İran ve Türkiye Ermenisidir"[7].

General Adjutant Sheremetyev, Güney Kafkasya'daki Ermeni nüfusunu şöyle sıralıyor: "Yaklaşık 900.000 olan Ermeniler 1908'de zaten 1 milyon 300 bin idi ve bu dönemde sayıları 400 binin altına düşmemişti. Bence 1 Ocak 1907'ye kadar Güney Kafkasya'nın nüfusu 6.318.000'e ulaştı. Toplam nüfusun 100de 25'ten fazlası dışarıdan göç edenlerdi. Güney Kafkasya'daki ekonomik güç Ermenilerin elindedir, onlar zaten eyaletin sahipleridir. Güney Kafkasya'da sömürgeleştirme politikamızın sonucu üzücüdür"[8]. 1800 yılında Kafkasya'da yaşayan Ermenilerin sayısı 200.000, 1900'de ise 1 300.000 idi[9]. Ermenilerin Güney Kafkasya'ya büyük yer değiştirmelerine rağmen, Revan ve Nahçıvan hanlıklarını işgal eden Rus General Paskevich, Ermenilerin yerleştirilmesinden sonra bile Revan bölgesi nüfusunun dörtte üçünün Azerbaycan Türkleri olduğunu itiraf ediyordu[10].

Azerbaycanlılar, 20. yüzyılda dört aşamada büyük Ermeni terörüne maruz kalarak ana vatanlarını terk etmek zorunda kaldılar. 19. yüzyılın sonundan bu yana, Ermeniler hedeflerine ulaşmak için terör örgütleri oluşturmaya başladılar. 1885'te Van'da kurulan Armenakan, 1887'de Cenevre'de kurulan Hnçak ve 1890'da Tiflis'te kurulan Daşnaksutun örgütlerinin amacları Dağlık Karabağ, Nahçıvan ve Anadolu`nun yerel nüfusunun terörle kovulması ve bu topraklarda "Büyük Ermenistan" oluşturulmasıydı. Böylece, batı ülkelerinde yetiştirilen ve örgütlenen Ermeniler, kirli niyetlerini gerçekleştirmek için teröre başvurdular. İlk terör saldırıları 1905-1906'da ortaya çıktı. 1905-1906 yıllarında Ermenilerin Azerbaycanlılara yönelik katliamları ile ilgili belgeler Sovyet döneminde Ermeniler tarafından yok edildiği için zamanın olaylarını Memmed Said Ordubadi ve Mir Mohsun Nevvab'ın anılarının yansıdığı kitaplarından öğrenmek mümkündür. Memmed Said Ordubadi'nin "Kanlı Seneler" və Mir Mohsun Nevvab'ın "1905-1906 Yıllarında Ermeni Musluman Catışması" kitapları Ermenilerin Azərbaycanlılara karşı yaptıkları katliamların araştırılması için bir kaynaktır[11].

1905-1906 yıllarında Çarlık Rusyası, Türkiye'den, İran'dan ve diğer ülkelerden Kafkaslara göç etmiş Ermenileri Azerbaycan nüfusuna karşı silahlandırdı. 1905-1906 yıllarında Rusya'daki ayaklanmalardan yararlanan Ermeniler, önce Bakü, sonra Revan, Nahçıvan, Gence, Karabağ, Zangazur, Gazakh ve Tiflis'te sivillere karşı katliamlar yaptılar. 1905 6-10 Şubat tarihleri arasında Bakü'deki şiddetli katliamlar sırasında her iki taraftan binlerce insan katledildi. Tüm uğraşlara rağmen Ermeniler mağlup oldular. Bakü'de başlanan Ermeni-Azerbaycan katliamı Mayıs-Haziran aylarında Gence, Karabağ, Şirvan, Zangazur, Revan, Şuşa, Jabrayil, Javanşir, Karyagin, Gazakh ve diğer bölgeleri de kapsadı. Mayıs 1905'te Nahçıvan'da Ermenilerin Azerbaycanlılar'a karşı katliamları başladı. Ermeni yazar S. Zavarian'ın "Karabağ'da Ekonomik Durum ve 1905-1907 Yıllarında Açlık" adlı eserine göre, bu dönemde Şuşa'da 12, Cavanşir'de 15, Jabrayil kazasında 5, Zangazur kazasında 43 (toplam 75) Müslüman köy yıkıldı.[12]

Dönemin aydınları, Ahmed bey Agayev, Alekper bey Rafibeyli, Molla Mohammed Pişnamazzade ve diğerleri, Armenakan, Hnçak, Daşnaksutun gibi terör örgütlerine karşı "Difai" olarak

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[7] Шавров Н.И. *Новая угроза русскому делу в Закавказье: предстоящая распродажа Мугани инородцам*.....

[8] Yine orada.

[9] Nejdet Karaköse, Birinci Dünya Savaşından Sovyet Özerk Yönetimine Kadar Karabağda Meydana Gelen Siyasi ve Askeri Gelişmeler (1914-1923). *Kanayan Yara Karabağ.* Derleyen: Bahadır Bumin Özarslan, Astana Yayınları, Ankara, 2016, s.70.

[10] Hacıyev İ. *Ermənilərin Azərbaycana qarşı ərazi iddiaları və qanlı cinayətləri*. Naxçıvan: "Əcəmi" Nəşriyyat-Poliqrafiya Birliyi, 2012, s.33.

[11] Bu eserlerde gösterilmiş olayların tarihi analizi konusunda bak: Asker Ali, Serap Bozpolat Ayan, Tarihe Tanıklık: Mir Mohsun Nevvab ve 1905-1906 Yıllarında Ermeni Musluman Catışması, Savaş ve Toplum: Savaş Uzerine Yazılar (Editörler: Gursoy Akca-İkbal Vurucu), Eğitim yayınevi, Konya 2016, s. 381-400; Asker Ali, Esme Özdaşlı, Kafkaslarda Ermeni Mezalimi (1905-06) ve "Kanlı Seneler"in Bitmeyen Öyküsü , *Ermeni Araştırmaları* 37, 2018, Sayı 59, s. 37-62.

[12] Mustafa N. *Mənbələr azərbaycanlıların 1905-1906-cı illər soyqırımı haqqında*. http://www.anl.az/down/meqale/xalqqazeti/xalqqazeti_mart2009/73453.htm

adlandırdıkları bir savunma örgütü kurdular. "Difai" ve üyelerinin, yanısıra Müslümanların güçlü birliği sayesinde, Ermeni silahlı örgütleri Azerbaycan topraklarında cirit atamadılar. Bazı köylerde 1908-1913 yılları arasında çatışma olmasına rağmen, önceki yıllarda olduğu kadar şiddetli değildi.

1918'den 1920 yıllarına kadar Azerbaycanlılar Ermeniler tarafından terörle tekrar mülteci durumuna düştüler. Birinci Dünya Savaşı yıllarında Rusya, İstanbul ve etrafındaki boğazlara, Doğu Anadoluya sahip olmak, Türkiye'yi zayıflatmak, Güney Kafkasya'da yerleşmek için ermeni silahlı birliklerini kullanmış, Türkiye sınırları içerisinde yaşayan Ermenilerin hükümete karşı ayaklanmalarını organize etmiştir. Rus yöneticiler "Ermeni meselesi"nden Türkiye`ye karşı kullanıyorlardı. Ermeniler Van, Bitlis, Tiqranakert, Erzurum, Harberd ve Sebastiya, bunun yanısıra Klikiyanın Türkiye'den alınarak Ermenilere verilmesi ile Ermeni devletinin oluşturulması, böylece, "Ermeni meselesi"nin çözülmesi amaçıyla savaşa katılmışlardı. Aslında Rusya, Fransa, İngiltere, bağımsız bir ermeni devletinin kurulmasını değil, Türkiye`ni Ermenilerin eliyle zayıflatmayı amaçlıyorlardı. Rus ordusunda Batı ve Kafkasya cephesinde 300 bin Ermeni savaşıyordu[13]. Bunun yanısıra, Ermeni Milli Konseyi ve Çar Rusyası arasında gönüllü Ermeni birliklerin oluşturulması konusunda anlaşma sağlanmıştı. Ermeni drujinalarının oluşturulmasına Daşnaksütun ve Hnçak örgütleri aktif katılımda bulundular. Daşnaklar tarafından Türkleri katl etmek amaçıyla 40 bin ermeni toplanmıştı. Onlarla humba oluşturulmuştu. Sonuç olarak ermeni silahlı örgütü Birinci Dünya savaşı yıllarında, Doğu Anadolu'da ve Kafkasya'da sivil Müslüman nüfusuna karşı görülmemiş bir katliam yaptı. Ermeni askeri birliklerine Andranik Ozanyan, Dro, Hamazasp, Keri, Xeço, Vardan gibi deneyimli savaşçılar ve terroristler komutanlık yapyorlardı. 4 yönden hareket etmesi gözönünde bulundurulan ermeni gönüllü drujinaları ermeni ahalisinin daha fazla mukim olduğu yönlerde faaliyet göstermeli idiler. 1. drujina İran-Başkala-Van, 2. drujina İğdır-Beyazit-Bepkri-Van, 3. drujina Kagızman-Alaşkert-Manazkert-Bitlis, 4. drujina Sarıkamış-Kars-Orzan-Kepri-Key-Erzurum yönlerinde yürüyecekti[14]. Bu dört drujina tüm önemli operasyonlarda – Sarıkamış`tan Erzurum`a kadar türklere karşı savaştılar. Ayni zamanda Rus ordusu ve Ermeniler yerel nüfusun Türk devletine karşı isyanını teşkil ettiler. Fransa, İngiltere, ABD ordusunda daha 50 bin ermeni savaşırdı[15]. I. Dünya Savaşı sırasında Ermenilerin Türkiye'ye ihanetini Ermeni araştırmacılar bile itiraf ediyorlar. M.Karapetyan belirtmiştir ki, I Dünya Savaşı yıllarında Ermeniler Türkiye`yi ve onun müttefiklerini dağıtmak için en aktif unsurlar idiler. Ermeniler nerdeyse tüm savaş bölgelerinde savaşıyorlardı[16]. A.Zakaryan yazıyor ki, Ermenilerin 2. ve 3. savaş taburu Erzincan`dan Karakilse ve İrevan`a, Bakü`ye kadar gittiler [17].

Türk devletine ihanet eden Ermenilerin yenilgisinden sonra kitlelerin Kafkasya'ya üçüncü göçü başladı. Bu dönemde Ermeni göçmen sayısı yaklaşık 300-500 bini bulmuştu. Çar Rusyası'nın Kafkasya'da güclenme ve bu amaçla Ermenileri kullanma politikasını Bolşevik Rusyası sürdürdü. 7 Mart 1917'de 52 üyeli Bakü Konseyi kuruldu. Orada bir Azerbaycanlı bile temsil edilmedi. V.I .Lenin, Güney Kafkasya'nın bolşevikleşmesi için S. Şaumyan'ı Kafkasya geçici olağanüstü komiseri olarak atadı.

1917'nin sonu - 1918'in başında Bakü 'de Taşnak-Bolşevik grupları, Azerbaycan liderlerine karşı açık bir mücadeleye başladı. Rusya'da Ekim 1917 devrimi ve Kafkasya cephesindeki Rus birliklerinin silahlarını bırakarak kendi topraklarına gitmeleri, Ermeni taşnaklarının faaliyetlerine ivme kazandırdı. Şaumyan, diğer taşnak Nazarbekyan ile birlikte, Rus ordusunun silahlarıyla donatılmış bir ordu yarattı. Nazarbekyan, Doğu Anadolu'da Türk ve Müslüman nüfusa karşı katliamlar yapmış olsa da, Osmanlı ordusu ilerledikçe, Doğu Anadolu'yu katliamdan kurtarmayı başardı. Kafkasya cephesinden dönen askerler memleketlerine geri dönmek yerine Bakü'de toplandılar. Ermeni askeri birlikleri Azerbaycan'ın Revan, Şarur-Daralayaz, Dağlık Karabağ, Bakü ve diğer bölgelerine geldiler. Öte yandan, Türkiye

[13] Арутюнян А. О. *Кавказский фронт. 1914—1917 гг.* Ереван: Айастан, 1971, с.296
[14] Арутюнян А. О. *Кавказский фронт. 1914—1917 гг.* Ереван: Айастан, 1971, с.299
[15] Марутян А. *«К вопросу об иконографическом восприятии памяти Первой мировой войны в армянской действительности».* http://hpj.asj-oa.am/5828/ 1/2013-1(3).pdf , с.355.
[16] Арутюнян К. А. «Карапетян М.Участие армян в Первой мировой войне (1914-1918гг.), Ереван: изд.-во «Гитутюн», 2014. http://lraber.asj-oa.am/6375/ 1/2014-3(354).pdf
[17] Закарян А. *«Поэт-генерал Александр Кулебякин и Армения»* http://hpj.asj-oa.am/4291/1/2001-2(99).pdf,с.121-122.

topraklarından kaçan Ermeniler de Azerbaycan'ın batı topraklarına yerleştiler[18]. Bolşevik-Taşnak güçlerinin birleştiği Bakü Sovyeti'nin, çoğunluğu Ermeni olan 20.000 kişilik "Kızıl Ordu" adı altında Silahlı Kuvvetleri toplandı. Bakü'de, Azerbaycan milli kuvvetlerinin sayısının az ve hazırlıksız olduğunu bilen Şaumyan katliam için hazırlanıyordu. Taşnaksutyun partisi ve Ermeni Milli Konseyi Bakü'de toplanan Ermeni silahlı kuvvetlerini kontrol ettiğinden, bu güçleri kendi Ermeni devletlerini oluşturmak için kullanmayı amaçladılar. Bakü'deki bolşevik kuvvetleri tarafından özel bir Müslüman ekibi olan Evelina'nın silahsızlanmasının talep edilməsi milli katliam başlatmanın bahanesiydi. Müslüman grubun reddi tüfekler ve mühimmattan ateşlenerek cevaplandı. Böylece, sivillerin katledilmesi 30 Mart akşamı başladı. Bakü'de, Guba'da, Şamakhi'de, Lankaran'da, Salyan'da, Goychay'da ve diğer yerlerde Ermeniler Azerbaycanlılara karşı acımasızca soykırım gerçekleştirdiler. Çocuk, kadın, yaşlı adam, hiçbir ayrım yapmadan, kulaklarını ve burnunu kesip, karınlarını yırttılar. 12 Kasım 1918'de Olağanüstü Soruşturma Komisyonun toplantısında Şamakhi'nin Nabur köyünün yerel nüfusunun Ermenilerin ettikleri katliamlar konusunda hazırladıkları raporda böyle belirtiliyordu: "1. Ermeniler tarafından işgal edilene kadar, köyümüz 280 ev ve 1.486 kişiden oluşuyordu. 2. Ermeniler köyü soyarken 200 ev yakıldı ve 1012 kişi öldü[19]. Saldırı arifesinde, tüm Ermeniler kasabanın Müslüman kısmından şehrin Ermeni kısmına taşınmışlardı. Müslüman kesimde Hıristiyan nüfustan Ruslar ve Gürcüler vardı. Bakü katliamında bolşevikler Y.Kurganov ve Petrov ile birlikte A. Mikoyan'ın, Hamazasp'ın, Avetisyan'ın ve Lalayan'ın terör çeteleri özel olarak seçildiler. Azerbaycan Demokratik Cumhuriyeti tarafından oluşturulan Olağanüstü Soruşturma Komisyonu`nun belgelerine göre, Mart 1918'de Bakü'de yaklaşık 11 bin Azerbaycanlı öldürüldü. Görgü tanıklarının ifadesine göre, Ermeniler suçlarını örtbas etmek için cesetleri yakılan evlere, denize ve kuyulara attılar. Taşnak Mikoyanın liderliğinde İçeri Şehir'deki içinde 2 bin kişi olan bir hastane yakıldı, kaçmaya çalışanlar öldürüldü. Mart ayının başında Bakü'den Şamakhi'ye yaklaşık üç bin Ermeni geldi. Şamakhi'de Azerbaycanlıların katledilmesi birkaç gün sürdü. Soruşturma belgelerine göre Ermeniler Şamakhi'nin elli üç köyünde 4.909 erkek, 2560 kadın ve 1.277 çocuk olmak üzere 8027 kişiyi öldürdüler. 1918'in ilk beş ayında, Hamazasp'ın Guba'daki çetesi tarafından toplam 16 bin insan öldürüldü. Lankaran'da iki bin kişi katl edildi. Zangazur'un 115 köyünde 3257 erkek, 2.276 kadın ve 2196 çocuk olmak üzere 10.068 kişi hayatını kaybetti. Ağustos 1918'de İğdır ve Echmiadzin'de Dron'un (Drastamat Kanayan) emriyle 60'ı aşkın Müslüman köyü yıkıldı ve yakıldı. Revan'da 88 köy yıkıldı, 1.920 ev yakıldı ve birkaç ay içinde 132.000 Azerbaycanlı katledildi. Urmiye'de, Hoy'da, Tebriz'de, Selmas'da ve Güney Azerbaycan'ın diğer ilçelerinde Ermeni ve Aysor terör çeteleri tarafından bir gece boyunca 1500 Azerbaycanlı öldürüldü. Ancak, katledilenlerin sayısı gösterilen rakamlardan daha yüksekti. Müslümanlar terörle kaçmaya zorlandıklarından öldürülenlerin çoğunun kimliği ve sayıları bilinmiyordu[20]. 1918-1920'de Ermenistan'da yaşayan 575.000 Azerbaycanlı'nın toplam 351.000'i öldürülmüş ve geri kalanı terörle sınır dışı edilmiştir. Gürcü araştırmacı Kuram Marxulia, 1918-1920 yılları arasında Ermenistan'da yaşayan 575.000 Azerbaycanlı'nın 565.000'in öldürüldüğünü ya da kovulduğunu, sonuçda taşnaklardan sonra Ermenistan'dakı Azerbaycanlı nüfusunun sadece 10.000'den bir az fazla olduğunu belirtti[21].

Andranik'in Zangazur'daki terör gruplarının misyonu ile bağlantılı olarak 25 Ocak 1919'da Şuşa, Javanşir, Jabrayil ve Zangezur ilçeleri Gence ilinden uzaklaştırıldı ve merkezi Şuşa olmakla Karabağ Genel Valiği kuruldu. Khosrov bey Sultanov'un genel vali olduğu Karabağ Genel Valiliğinin kurulması, Azerbaycan Halk Cumhuriyeti döneminde Ermeni taşnaklarının faaliyetine son verdi. Azerbaycan'da 23 ay boyunca iktidarda olan Azerbaycan Demokratik Cumhuriyeti, 28 Nisan 1920'de XI Kızıl Ordu

[18] *Документы и Материалы по внешней политике Закавказье и Грузии*. Тифлис: Типография Правительство Грузинской Республики, 1919, с.85.

[19] Şamaxı qəzasında erməni vəhşilikləri haqqında arxiv materialları (1918 il).http://azerbaijan.az/_Karabakh/_Documents/Documents/document_11_a.html

[20] Dadaşova R.B. *Ermənistan-Azərbaycan, Dağlıq Qarabağ münaqişəsi: tarixi, siyasi hüquqi təhlil*. Bakı: Mütərcim, 2019, s.34-35.

[21] Мархулия Гурам. *Армяне в поисках Армении*. Тбилиси, 2010, s.128.

tarafından işgal edildi ve Azerbaycan Sovyet Sosyalist Cumhuriyeti kuruldu. Ermeniler, Sovyet döneminde de "Büyük Ermenistan" yaratma planlarını sürdürdüler. Azerbaycanlıların toplu halde yaşadıkları yerlerde Ermenilerin sayını artırmak, Azerbaycanlıları ekonomik ve stratejik öneme sahip yerleşim yerlerinden çıkarmak amaçıyla Ermenistan, 1948-1953 yılları arasında Azerbaycanlıları sınır dışı etti. Bu amaçla, Azerbaycanlılar Revan yakınlarındaki yerleşim alanlarından tahliye edildi ve daha sonra ilçe merkezlerinin, köylerin nüfusu boşaltıldı. 1948-1953 döneminde, 11.914 çiftlik (53.000 kişi), Ermenistan'dan Azerbaycan'ın Kur-Araz Ovası`na taşındı[22]. Kur-Araz Ovası'nın iklim koşullarına uyumun zayıf olması nedeniyle orada yerleşen nüfus arasında çok sayıda ölüm vakaları gözlemlendi.

Aynı zamanda, iç taşınma adı altında Dağlık Karabağ'dan 132 aile (549 kişi), 1949'da Azerbaycan'ın Hanlar ilçesine (şimdi Göygöl) nakledildi[23]. Genel olarak, 1948-1953 yıllarında Ermenistan'ın 23 ilçesinden 100.000 Azerbaycanlı'nın gönüllü olarak yeniden yerleştirilmesi planlansa da baskılar sonucunda 24 ilçeden ve Revan şehrinden (200 yerleşim yerinden) yaklaşık 150.000 Azerbaycanlı göçe zorlandı[24]. Boşalan yerlere acil olarak yurtdışındakı Ermeniler yerleştirildiler. Bu olaylardan Ermeni yazarların eserlerinde de bahs edilmiştir.
Ermeni kaynakları, 1946'nın başlarında 130.000 Ermeni'nin Ermenistan'a taşınma isteği beyanında bulunduğunu göstermektedir[25].
Hnçak ve Armenakan partileri, Ermenilerin yeniden yerleşimi için 1 milyon dolar harcadı. 1946'da Suriye, Yunanistan, Lübnan, İran, Bulgaristan ve Romanya'dan 50,900 ve 1947'de Filistin, Suriye, Fransa, ABD, Yunanistan, Mısır, İran ve Lübnan'dan 35,400, 1948'de Suriye, Lübnan, Fransa, ABD, Mısır, Bulgaristan ve Romanya'dan yaklaşık 10.000, genellikle 1946'dan 1948'e kadar yaklaşık 100.000 Ermeni farklı ülkelerden Ermenistan'a transfer edildi[26]. Sonraki yıllarda Ermenilerin boşalan yerlere göç ettirilmesi devam etti ve 1962-1965 yıllarında yaklaşık 7.000 Ermeni Kıbrıs, Mısır, Suriye, İran, Amerika Birleşik Devletleri, Türkiye, Urugvay, Arjantin ve diğer ülkelerden göç ederek çoğu Revan'da ve Nor Areş, Zeytin, Nor-Clikia ve Vedi gibi ilçelerde yerleşti.
Genellikle, 1962-1973'te toplam 26.100 Ermeni dış ülkelerden Ermenistan'a göç etti[27].1940-1980'lerde, çoğu sanatçı ve yazar olan 130.000 Ermeni Ermenistan'a gönderildi ve gelen Ermeniler Ermenistan'da yaşayan Ermenileri Azerbaycanlılara karşı kaldırdılar. Yurtdışındaki Ermeni diasporası Ermenistan'ın şoven politikasını finanse ediyordu. 1964 yılında, Ermenistan'da yaşayan Ermenilerin yurtdışında yaşayan Ermenilerle siyasi işbirliğini sağlamak için Diaspora ile Kültürel İlişkiler Komitesi kuruldu. Diaspora Ermenileri ve Ermenistan'da yaşayan Ermenileri, "Ermeni meselesi"ne dayanan bir "Türk nefreti" politikası izleyerek bir araya getirdi.

25 Ocak 1988'den itibaren Ermeniler yeniden Azerbaycanlıları anavatanlarından kovmaya ve öldürmeye başladılar.
Şubat 1988'de Ermeniler, Dağlık Karabağ'ın Ermenistan'a birleşmesini talep ederek Revan ve Khankendi'de protesto gösterileri düzenlediler. 19 Şubat'ta Revan'da büyük çapta mitingler başladı. Mitingin katılımcıları "Ermenistan Türklerden temizlenmeli!", "Ermenistan sadece Ermeniler içindir!" gibi sloganlar atıyorlardı
Dağlık Karabağ Özerk Bölgesi'nin Ermeni liderleri Ermenistan'dan kovulmuş Azerbaycan'lıların Dağlık Karabağ'a yerleşmesine izin vermediler.
15 Haziran'da, Ermenistan SSR'nın Yüksek Sovyeti, Dağlık Karabağ Özerk Bölgesi'nin Ermenistan'a katılması konusunda karar verdi.
Azerbaycan bu kararı kategorik olarak reddetti.
22 Kasım - 7 Aralık 1988 tarihleri arasında 22 ilçede Azerbaycanlıların yaşadıkları 170 ve

[22] Paşayev A.Ə. *Köçürülmə*. Bakı: Azərnəşr, 1995, s.22.
[23] Əsir və itkin düşmüş, girov götürülmüş vətəndaşlarla əlaqədar Dövlət Komissiyası. Ermənistan-Azərbaycan, Dağlıq Qarabağ münaqişəsi nəticəsində itkin düşmüş, əsir-girov götürülmüş, həmçinin azad edilmiş şəxslərlə bağlı statistik məlumatlar. http://www.human.gov.az; Nağıyev A. *Qarabağ müharibəsi*. Bakı: QAT, 2011, s.26.
[24] Arzumanlı V., Mustafa N. *Tarixin qara səhifələri. Deportasiya. Soyqırım. Qaçqınlıq*. Bakı: Qartal, 1998, s.55.
[25] *История армянского народа: С древнейших времён до наших дней* / Г.Х. Саркисян, Т.Х. Акопян, А. Г. Абрамян и др.; Под ред. М. Г. Нерсисяна. Ереван: Изд-во Ереван. ун-та, 1980, s.283
[26] *История армянского народа: С древнейших времён до наших дней*....., с.283-284.
[27] *История армянского народа: С древнейших времён до наших дней*....., с.322.

Azerbaycanlıların ve Ermenilerin yaşadıkları 94 yerleşim bölgesi tahliye edildi. Azerbaycan'a 250.000'den fazla Azerbaycanlı göç etti. Olaylar sırasında 57 kadın, 18 çocuk olmak üzere 216 kişi hayatını kaybetti[28]. O sırada Şuşa'ya yaklaşık 1000 Azerbaycanlı aile yerleştirilmiş olmasına rağmen, Dağlık Karabağ Özerk Bölgesi'nin başkanı Pogosyan'ın Moskova'ya yaptığı çağrının ardından hükümet tarafından yanlış adım atılması bu kişilerin yerinden edilmesine ve Aran bölgelerinde yerleşmesine neden oldu[29].

Ermenistan'ın Azerbaycan'a yönelik askeri saldırganlığı sonucu olarak işgal altındaki bölgelerdeki eğitim, bilim ve kültürel anıtlar büyük zarara uğradı, orta ve yüksek öğretim kurumları da dahil olmak üzere Cumhuriyetin diğer şehir ve bölgelerindeki kamu binalarında mültecilerin ve yerinden edilmiş kişilerin yerleştirilmesi eğitim sisteminin zayıflamasına, aynı zamanda mültecilerin ve yerinden edilmiş kişilerin sosyo-ekonomik durumu sıtma salgınının yayılmasına neden oldu. Azerbaycan'ın işgal altındaki topraklarından göç etmiş 81917 kişi kamu binalarında, 83029 kişi yurtlarda, 34.887 kişi eğitim kurumunda ve anaokullarında, 24.634 kişi sanatoryumlarda, pansiyonlarda, dinlenme evlerinde ve turist üslerinde, 47608 kişi kamplarda, 5263 kişi vagonlarda, 95.620 kişi akraba evlerinde, 25.722 kişi bahçe evlerinde, 9.125 kişi bitmemiş binalarda, 26.757 çiftlik, sondaj ve yol kenarlarında yerleştiler[30]. İşğal edilmiş şehir ve bölgelerden göç etmiş insanların sosyal kurumlarda yerleşdirilmesi bu kurumların sona ermesi, orta ve yükseköğretim kurumlarının çoğunda artan işsizlik, yetersiz eğitim ve kötü yaşam koşullarına yol açmaktadır. Ermenistan'ın saldırganlığının bir sonucu olarak, 137 sanayi ve inşaat şirketi Dağlık Karabağ Özerk Bölgesi`nde, 38'i Agdam'da, 37'si Fuzuli'de, 16'sı Lachin'de, 19'u Kalbajar'da, 18'i Jabrail'de, 17'si Gubadli'de ve 18'i Zangilan'da işgal altında kaldı ve işsizliğin artmasına neden oldu. İşgal altındaki Dağlık Karabağ bölgesi Azerbaycan'ın en büyük tarım bölgesiydi. Bu bölgelerde 311 tarım işletmesi, 145 modern ekipmanlarla donatılmış yeni bağçılık ve şarap üreticisi, ünlü Karabağ damızlık yetiştiricisi Ağdam at yetiştirme çiftliği, 135 kolhoz ve 31 çiftlik yok edildi[31]. Ermenistan'ın işgali sonucunda 647.500 hektar tarım arazisi kapandı[32].

Azerbaycan Cumhuriyeti, mülteciler ve ülke içinde yerinden edilmiş kişilerin sorunlarını ortadan kaldırmak, finansal durumlarını ve yasal statülerini iyileştirmek ve geri dönüşlerini sağlamak için Birleşmiş Milletler Mülteciler Yüksek Komiserliği ile işbirliği yapıyor[33]. Birleşmiş Milletler Genel Kurulu`nun 20 Aralık 1993'te kabul etdiği "Azerbaycan'da Mültecilere ve Mecburi Göçmenlere Olağanüstü Uluslararası Yardım" adlı 48/114 sayılı kararı tüm devletleri, uluslararası örgütleri, BM programlarını, uzman kurumları, diğer hükümetlerarası ve sivil toplum örgütlerini mültecilere ve ülke içinde yerinden edilmiş kişilere yeterli finansal, tıbbi ve maddi yardım çağrısında bulunuyor[34]. Karara göre, Genel Sekreter, Azerbaycan'daki mültecilerin ve ülke içinde yerinden edilmiş kişilerin durumu ile ilgilenmeli, iyi hizmetler sunmalı ve Birleşmiş Milletler Mülteciler Yüksek Komiserliği BM kurumlarıyla işbirliği içinde ilgili hizmetler sağlamalıdır. Mültecilerin ve ülke içinde yerlerinden edilmiş kişilerin sosyal sorunları kısmen çözülmüş olsa da, Birleşmiş Milletler

[28] Əhmədov E.İ. *Ermənistanın Azərbaycana qarşı təcavüzü: etnik təmizləmə, soyqırımı, terror, işğal.* II kitab. Bakı: Azərbaycan Respublikasının Prezidenti yanında Elmin İnkişafı Fondu, 2015, s.41.

[29] Abdullayev Ə.İ. *Ermənistanın Azərbaycana qarşı təcavüzkarlıq siyasəti (XIX əsrin axırı-XX əsr).* Bakı: Elm, 1998, s.209

[30] *Ermənistanda aparılan etnik təmizləmə və Ermənistan silahıl qüvvələri tərəfindən Azərbayanın 20 faiz ərazisinin işğalı nəticəsində yaranmış bir milyonadək qaçqın və məcburi köçkünlər haqqında məlumat (1988-2005-ci illər).* Bakı, iyul 2005, s.26.

[31] Həsənov T.G. *Azərbaycan ərazilərinin Ermənistan tərəfindən işğalının ağır sosial-iqtisadi nəticələri.* Bakı: Çaşıoğlu, 2002, s.47.

[32] Həsənov T.G. *Azərbaycan ərazilərinin Ermənistan tərəfindən işğalının ağır sosial-iqtisadi nəticələri*.....s.53.

[33] Dadaşova R.B. Ermənistan-Azərbaycan münaqişəsi nəticəsində yaranmış qaçqın probleminin həlli üçün BMT-nin fəaliyyətinin gücləndirilməsi perspektivləri //*AMEA-nın Xəbərləri*, 2009, №11, s.245-253.

[34] Сборник документов ООН по армяно-азербайджанскому нагорно-карабахскому конфликту, Баку, Министерство Иностранных Дел, 2009, s.64-66.

Mülteciler Yüksek Komiserinin Başkanı Kayser Zaman'ın söylediği gibi, "Azerbaycanlılar eve dönmeleri için mücadele ediyorlar"[35].

BM Güvenlik Konseyi'nin Ermenistan-Azerbaycan, Dağlık Karabağ ihtilafı konusundaki kabul etdiği kararların her birinde, mültecilere ve ülke içinde yerlerinden edilmiş kişilere insani yardım ve güvenli geri dönüş Genel Sekreter ve ilgili uluslararası örgütlerden rica ediliyor.

Ülke içinde yerinden olmuş kişilerin güvenli bir şekilde geri dönüşü ile ilgili sorunlardan biri de mayın riskidir. Ermenilerin mayınladıkları bölgelerde çocuklar da dahil olmak üzere siviller öldürülüyor veya sakat bırakılıyor. Ayrıca Ermeniler çocukları cezbetmek için oyuncak şeklinde patlayıcılar kullanıyorlar[36].

İşgal edilen toprakların büyük bir kısmının Azerbaycan Ordusu tarafından kurtarılmasından sonra, 10 Kasım 2020'de Azerbaycan Cumhurbaşkanı, Rusya Başkanı ve Ermenistan Başbakanı savaşın sona ermesi çağrısında üç katmanlı bir açıklama imzaladılar. Açıklamanın 7. paragrafı, mültecilerin ve ülke içinde yerinden edilmiş kişilerin Birleşmiş Milletler Mülteciler Yüksek Komiserliği'nin gözetiminde güvenli bir şekilde geri dönüşünü öngörmektedir[37]. Ancak kurtarılan bölgelerdeki mayın ve çölleşme sorunu insanların geri dönmesini engelliyor. Ermenistan kapitülasyon belgesini imzaladıktan sonra dahi sınırı geçmeye çalışan Ermeni teröristlerin amacı, sınırı mayınlarla kapatmak ve provokasyon yapmaktır. Ancak ihtiyatlı Azerbaycan askerleri ve subayları teröristleri etkisiz hale getiriyorlar. Ermenistan, savaşın bitiminden sonra bile mayınlı alanların haritasını Azerbaycan hükümetine vermiyor. Savaştan sonra, 150'den fazla asker veya hizmet veren gazeteci sivil mayınlar tarafından öldürüldü, yaralandı veya felç oldu.

Mültecilerin ve ülke içinde yerinden olmuş kişilerin evlerine dönmeleri için topraklar mayınlardan temizlenmelidir. Kurtarılan bölgelerin konut altyapısının modern standartlara uygun olarak üst düzeyde düzenlendiğini belirtmek gerekir.

Sonuç

Çarlık Rusyası, kışkırtıcı özelliklerinden yararlanmak için Ermenileri Güney Kafkasya'da, özellikle de Azerbaycan'da yerleştirdi. Çarlık Rusyası'nın Azerbaycan'a "armağanı" olan Ermeniler 1905-1907yıllarında, aynı zamanda Ermenistan hükümeti 1918-1920, 1948-1953 ve 1988-1992'de Azerbaycanlılara karşı etnik temizlik ve terör politikası uyguladı. Sadece 1988-1992 yıllarında 250.000'den fazla Azerbaycanlı tarihi toprakları olan Ermenistan'dan kovuldu. 1988-1993 yıllarında Ermenistan silahlı kuvvetlerinin Azerbaycan'ın Dağlık Karabağ ve çevre bölgelerini işgal etmesinin sonucu olarak, yaklaşık 700.000 Azerbaycanlı, ülke içinde yer değiştirdi ve Cumhuriyet'in çeşitli şehirlerine ve bölgelerine yerleşti. Şu anda Azerbaycan'da olan 1 milyondan fazla mültecinin yaklaşık 700.000'i ülke içinde yerinden edilmiş kişiler, 250.000'i Ermenistan'dan kovulanlar, 50.000'i 1992'de Özbekistan'dan kovulan Ahıska Türkleri, 11.000'i Çeçenistan, Afganistan ve diğerleri olmak üzere üçüncü ülkelerden olan kişilerdir[38]. İngiliz araştırmacı Thomas de Vaal, Azerbaycan'ın ülke içinde yerinden edilmiş kişilerin sayısı açısından dünyada ilk sırada yer aldığını yazıyor. Mutlak rakamlar Afganistan ve Kongo'da olabilir, ancak Azerbaycan'da her on kişiden biri Karabağ savaşının kurbanıdır[39].

Çatışmanın çözümü, mültecilerin ve ülke içinde yerinden edilmiş kişilerin sorunlarını aşmak ve eve dönmelerini sağlamak en önemli konulardan biridir. Bunun için kurtarılan bölgelerdeki

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[35] Письмо представителя Азербайджана от 15 ноября 1993 года на имя Генерального секретаря, Документ S/26762, Совет Безопасности. Официальнее отчеты сорок восьмой год дополнение за октябрь, ноябрь, декабрь 1993 года, Организация Объединенных Наций, Нью-Йорк, 1997 год, с.251.
Ermənistanda aparılan etnik təmizləmə və Ermənistan silahıl qüvvələri tərəfindən Azərbayanın 20 faiz ərazisinin işğalı nəticəsində yaranmış bir milyonadək qaçqın və məcburi köçkünlər haqqında məlumat (1988-2005-ci illər). Bakı, iyul 2005.

[36] Dadaşova Ramile. Ermenistan'ın Azerbaycana Karşı Askeri Saldırısı Zamanı Çocuk Hakları Maruziyeti. Antalyada keçirilən II Uluslararası Türk Dünyası Eğitim Bilimleri ve Sosyal Bilimler Kongresi. 6.cild, Sosyal Beşeri ve İdari Bilimleri-2 Ankara, 2018, s.159-166.

[37] İlham Əliyev xalqa müraciət edib. 10.11.2020. https://president.az/articles/45924

[38] Əliyev İ.H. *İnkişaf – məqsədimizdir*: 94 kitabda, 10-cu kitab, Bakı: Azərnəşr, 2012, s.263.

[39] Ваал Т. *Черный сад Армения и Азербайджан между миром и войной.* М.: Текст, 2005, с.293.

mayınların tamamen temizlenmesi gerekiyor. Aynı zamanda kurtarılan ilçelere konut altyapısının sağlanması gerekiyor ve bu alanda ciddi çalışmalar yapılıyor.

Kaynaklar:

Abdullayev Ə. İ. *Ermənistanın Azərbaycana qarşı təcavüzkarlıq siyasəti (XIX əsrin axırı-XX əsr).* Bakı: Elm, 1998.
Arzumanlı V., Mustafa N. Tarixin qara səhifələri. *Deportasiya. Soyqırım. Qaçqınlıq*. Bakı: Qartal, 1998.
Asker Ali, Esme Özdaşlı, Kafkaslarda Ermeni Mezalimi (1905-06) ve "Kanlı Seneler"in Bitmeyen Öyküsü , *Ermeni Araştırmaları* 37, 2018, Sayı 59, s. 37-62.
Asker Ali, Serap Bozpolat Ayan, Tarihe Tanıklık: Mir Mohsun Nevvab ve 1905-1906 Yıllarında Ermeni Musluman Catışması, Savaş ve Toplum: Savaş Uzerine Yazılar (Editörler: Gursoy Akca-İkbal Vurucu), Eğitim yayınevi, Konya 2016, s. 381-400.
Dadaşova R.B. *Ermənistan-Azərbaycan, Dağlıq Qarabağ münaqişəsi: tarixi, siyasi hüquqi təhlil.* Bakı: Mütərcim, 2019.
Dadaşova Ramile. Ermenistan'ın Azerbaycana Karşı Askeri Saldırısı Zamanı Çocuk Hakları Maruziyeti. Antalyada keçirilən II Uluslararası Türk Dünyası Eğitim Bilimleri ve Sosyal Bilimler Kongresi. 6.cild, Sosyal Beşeri ve İdari Bilimleri-2 Ankara, 2018, s.159-166.
Dadaşova R.B. Ermənistan-Azərbaycan münaqişəsi nəticəsində yaranmış qaçqın probleminin həlli üçün BMT-nin fəaliyyətinin gücləndirilməsi perspektivləri //*AMEA-nın Xəbərləri*, 2009, №11, s.245-253.
Erich Feigl. *Armenian Mythomania. Armenian Extremism: Its Causes and Historical Context*, 2007, www.google.az
Əhmədov E.İ. *Ermənistanın Azərbaycana qarşı təcavüzü: etnik təmizləmə, soyqırımı, terror, işğal.* II kitab. Bakı: Azərbaycan Respublikasının Prezidenti yanında Elmin İnkişafı Fondu, 2015.
Əliyev İ.H. *İnkişaf – məqsədimizdir*: 94 kitabda, 10-cu kitab, Bakı: Azərnəşr, 2012.
Əsir və itkin düşmüş, girov götürülmüş vətəndaşlarla əlaqədar Dövlət Komissiyası. Ermənistan-Azərbaycan, Dağlıq Qarabağ münaqişəsi nəticəsində itkin düşmüş, əsir-girov götürülmüş, həmçinin azad edilmiş şəxslərlə bağlı statistik məlumatlar. http://www.human.gov.az
Hacıyev İ. *Ermənilərin Azərbaycana qarşı ərazi iddiaları və qanlı cinayətləri*. Naxçıvan: "Əcəmi" Nəşriyyat-Poliqrafiya Birliyi, 2012.
Həsənov T.G. *Azərbaycan ərazilərinin Ermənistan tərəfindən işğalının ağır sosial-iqtisadi nəticələri*. Bakı: Çaşıoğlu, 2002.
İlham Əliyev xalqa müraciət edib. 10.11.2020. https://president.az/articles/45924
Mustafa N. Mənbələr azərbaycanlıların 1905-1906-cı illər soyqırımı haqqında. http://www.anl.az/down/meqale/xalqqazeti/xalqqazeti_mart2009/73453.htm
Nağıyev A. *Qarabağ müharibəsi*. Bakı: QAT, 2011.
Nejdet Karaköse, Birinci Dünya Savaşından Sovyet Özerk Yönetimine Kadar Karabağda Meydana Gelen Siyasi ve Askeri Gelişmeler (1914-1923). *Kanayan Yara Karabağ*, Derleyen: Bahadır Bumin Özarslan, Astana Yayınları, Ankara, 2016, s.37-81
Paşayev A.Ə. *Köçürülmə*. Bakı: Azərnəşr, 1995.
Süleymanov M. *Gülüstan müqaviləsi*. I hissə, Bakı: "Elm və təhsil", 2014.
Süleymanov M. *Gülüstan müqaviləsi*. II hissə, Bakı: "Elm və təhsil", 2014.
Şamaxı qəzasında erməni vəhşilikləri haqqında arxiv materialları (1918 il).http://azerbaijan.az/_Karabakh/_Documents/Documents/document_11_a.html
Арутюнян А. О. *Кавказский фронт. 1914—1917 гг*. Ереван: Айастан, 1971.
Арутюнян К. А. *«Карапетян М.Участие армян в Первой мировой войне (1914-1918гг.),* Ереван: изд.-во «Гитутюн», 2014. http://lraber.asj-oa.am/6375/ 1/2014-3(354). pdf
Ваал Т. *Черный сад Армения и Азербайджан между миром и войной*. М.: Текст, 2005.
Джастин Маккарти, Каролин Маккарти. *Тюрки и армяне. Руководство по армянскому вопросу*. Washington, D. C., Committee on education assambly of turkish american associations, 1989.
Документы и Материалы по внешней политике Закавказье и Грузии. Тифлис: Типография Правительство Грузинской Республики, 1919.
Закарян А. «Поэт-генерал Александр Кулебякин и Армения» http://hpj.asj-oa.am/4291/1/2001-2(99).pdf.

История армянского народа: С древнейших времён до наших дней/ Г.Х. Саркисян, Т.Х. Акопян, А. Г. Абрамян и др.; Под ред. М. Г. Нерсисяна. Ереван: Изд-во Ереван. ун-та, 1980.

Марутян А. «К вопросу об иконографическом восприятии памяти Первой мировой войны в армянской действительности». http://hpj.asj-oa.am/5828/ 1/2013-1(3).pdf.

Мархулия Гурам. *Армяне в поисках Армении*. Тбилиси, 2010.

Письмо представителя Азербайджана от 15 ноября 1993 года на имя Генерального секретаря, Документ S/26762, Совет Безопасности. Официальнее отчеты сорок восьмой год дополнение за октябрь, ноябрь, декабрь 1993 года, Организация Объединенных Наций, Нью-Йорк, 1997.

Сборник документов ООН по армяно-азербайджанскому нагорно-карабахскому конфликту, Баку, Министерство Иностранных Дел, 2009.

Семенов Л.С. К вопросу о значении Туркманчайского договора для истории Армении, Ленинград, s.105. http://hpj.asj-oa.am/65/1/59-4(105).pdf.

Шавров Н.И. Новая угроза русскому делу в Закавказье: предстоящая распродажа мугани инородцам. Санкт-Петербург, 1911. https://javakhishviliinstitute.files.wordpress.com/2009/07.

ONE SEEING IS WORTH A HUNDRED WORDS: EFFECTS OF AV AIDS ON ESL LEARNERS' VOCABULARY SKILLS

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ABSTRACT

Human beings need a language to communicate with the people of the world. For this purpose, there is a dire need of a language of international level. Obviously, English has won this status and has become a source of communication among the people of different parts of the world. Recently, AV. aids are being used frequently in the classrooms to make the teaching learning process easy, attractive and interesting. The current study was designed to enhance the vocabulary of the learners skillfully. The researchers selected this area for his research as he thinks that vocabulary plays very important role in acquiring language. The main objective of the study was to make effective use of Av. aids to improve vocabulary of the students at secondary level. The population of the current study was the students of grade-9 from Govt. S.D High School, Bahawalpur. The study adopted pretest-posttest control group experimental design. The experimental group was exposed to learn vocabulary with the help of Av. aids while the control group was exposed to learn vocabulary through traditional ways. The effectiveness of the study was also confirmed when the scores of the experimental group pre-test were compared with the scores of its post-test. Data collected was analyzed. There was a significant main effect of treatment on the vocabulary learning of secondary level students. It was concluded that when a teacher creates a learning environment in the classroom by using interesting Av. aids then naturally the students' response is positive. Based on the findings, the researchers recommend that English language teachers should use Av. Aids for teaching English in general and for improving vocabulary in particular at secondary level.

Keywords: Vocabulary, A.V. Aids, Improve, Effects**,** Awareness.

Introduction and Review of Related Literature

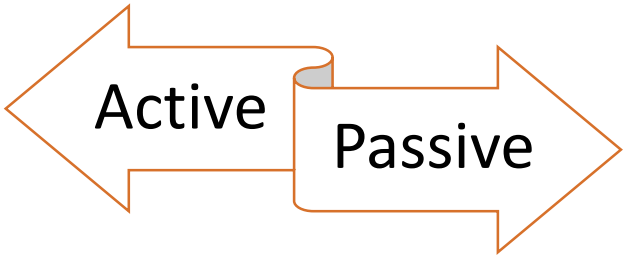
Language is something we use. Language is a skill subject and the basis of language is practice. English is a foreign language for us but its importance can never be denied. Communication is an art. It is not important what we say, the most important is how we say and how we communicate with people. Teacher has great importance to make his students proficient in English language skills. A teacher can play a significant and positive role in this regard. So he should have command over his subject and possess a great deal of knowledge.

The unknown words used in books make it boring and monotonous. This makes the learner divert his attention from work. That's why the importance of vocabulary cannot be neglected at any stage whether the students are learning speaking, reading or writing skills. They are constantly in touch with vocabulary and vocabulary is important in shaping students' perception. As A.G Jimson says that all languages are spoken and begin with ears. To speak any language, a person must know 100% phonetics, 90% its grammar and 10% vocabulary. So the importance of vocabulary for making teaching and learning process interesting cannot be over looked. Because it is a "stock of words" used in a language. At this time the use of visual materials i.e. pictures and charts plays a vital role for teaching vocabulary at any level. In fact, pictures and charts are the natural source and human beings have been relying on them since their creation. Pictures are the realistic representation of the objects represented and provide

the realistic basis for teaching vocabulary. Pahuja (1995) says that vocabulary is the list of words that plays an important role in teaching learning process. At the same time Majid (2000) suggested that the spirit for learning can be achieved by the use of pictures and charts in teaching vocabulary. Vocabulary is related to language, if language is family then words are the members of this family, if Language is a building then words are the bricks of this building if language is a tree then words are the roots and leaf of this tree. So we can say that language and vocabulary are intermingled. According to Hornby, vocabulary is total number of words which (with rules for combining them) make up a language (1974: 959). Webster (1993: 327) said that vocabulary is "A list of group of words and phrases, usually in alphabetical order." From the definitions above, the researcher concludes that vocabulary is a stock list of words that is used individually or in a group arranged in alphabetical order and has meanings.

Kinds of Vocabulary

Verges (1990) divided vocabulary into two kinds:



I. Active Vocabulary

There are some words which are correctly used by language users in their speech and writing. These are common and familiar words (Verges, 1990).

II. Passive Vocabulary

Verges (1990) defines that there are some words which are in print or in speech that seem unfamiliar. The learner has to recognize these words.

Vocabulary teaching needs to be presented in a classroom attractively. Repetition and drills are useful for familiarizing students quickly with a specific structure or formulaic expression (Doff, 1990). Teachers need various aids or suitable media to improve this process. Pictures are one of suitable media in teaching vocabulary. As (Wright, 1989) stated that picture is not just an aspect of method but through its representation of place, object, and people, it is essential part of the overall experiences. Furthermore, studies show that foreign words are learned more easily when associated with actual objects or a corresponding picture, or imagery techniques, or translation (Plass, Chun, & Leutner, 1998). It stands to reason that pictures are motivating and draw learners' attention, (Wright, 1990). Many people have worked in vocabulary development. As mentioned by Burg (1998) in vocabulary building the problem is not, much finding new words, even finding out what they mean, the problem is to remember, then to fix them permanently in the learner's mind. This quality of vocabulary can be achieved only by using visual material in the class room. Majid (2000) argued that different visual materials are used in teaching vocabulary. So the main focus of this study will remain on teaching vocabulary with the help of visual materials. Imparting English vocabulary to the young learners through AV. aids is a new idea in educational institutes of Bahawalpur. Most of the English teachers are unaware of this innovative technique. That's why it seems them difficult to switch over to this new technique of teaching. The students also remain dull in learning vocabulary in traditional classrooms. In our government schools, the majority of the students cannot comprehend the words they have been taught.

Importance of Learning Vocabulary

We cannot convey a single idea without vocabulary. The importance of vocabulary can be shown with the help a British linguist David. A. Wilkins (1972) quote: "Without grammar, very little can be conveyed; without vocabulary nothing can be conveyed".

Majid (2000) argued that the importance of vocabulary cannot be neglected at any stage, whether the students are learning speaking, reading or writing skills. They are constantly in touch with vocabulary and vocabulary is important in shaping one's perception. Thoughts and perception become fully conscious which must be formulated in words. Without words no one can either understand or retain any sort of material. Haq (1994) considers English a rich language having more than five Lac words and says that it is impossible for the teacher to teach all these words even in the years which are devoted to its study. It is a fact that the knowledge which is gained by the learner at early stage is permanent and everlasting. So, the students must be given a good knowledge of vocabulary. Robinett (1988) also supports the idea of Pahuja (1995) and gives importance to teach vocabulary items as they carry cultural information. Wright (2005) suggested the way the speakers of a language view their experience has a bearing on the way in which they categorize ideas and certain problems may develop in learning system because of the pre-disposition of the speakers of a language to categorize the meaning in particular way in their first language. The pre-disposition tends to be carried out into the second language.

Haq (1994) widely recognized that audio- visual materials mean the devices which can be used in teaching for their appeal to the ear and the eye. (Bajwa 2003) supported this fact by reporting that the learners need assistance for understanding at every stage of lesson. This assistance is given two ways. Firstly, suitable examples should be given. Secondly, by using the audio- visual materials these examples increase the effectiveness of learning because they help the learners to understand the idea more clearly. They make the classroom activities more meaningful and interesting.

Objectives of the Study

This study was based on the following objectives:

1. To find out the role of AV aids in retaining vocabulary for language by the learners.
2. To find out the factors which effect teaching vocabulary through AV aids.
3. To highlight the role of pictures in teaching learning situation to facilitate the ESL learner to use vocabulary in his real life situation more confidently.
4. To find out the methods and techniques which enhance teachers' expertise while using pictures for the vocabulary development of ESL Learners.

Research Hypothesis

Learning vocabulary of English is essential to get command over any subject. In the class room, AV. Aids are useful media to enhance the vocabulary skills of students at secondary level in English subject. In this investigation, the researchers attempted to give a tentative solution to the problem. The hypothesis could be stated as follows: Vocabulary skills of ESL learners can be improved through AV. aids.

H1. There is no difference between scores of control group and experimental group in pre- test.

H2. There is difference between scores of control and experimental groups in post-test.

Significance of the Study

AV aids are important for improving vocabulary. The positive results of this research can support the English language teachers to apply this media in developing vocabulary of their students and even they can change their methods to make the students motivated and relaxed in teaching learning process. This study can help the students in focusing their attention, stimulating their interest, giving them real impact,

making them aware, modernizing their learning and acquisition. This research is expected to be beneficial for the students, the teachers and the institution theoretically and practically.

Population, Sample and Sampling Technique

The study was conducted among all the secondary level students and teachers belonging to Govt. S.D. High School, Bahawalpur. The participants were chosen on the basis of random selection procedure. A total of 50 participants were chosen who were further divided into two groups: Experimental and Controlled.

Research Design

The study was designed according to the experimental approach. Two groups of the students were assigned as the participants of the study: an experimental group and a control group. The researchers have chosen "Randomized control group pre-test post-test design". For the observation purpose, pre-test was conducted from the class and the results were recorded. The experiment continued for six weeks. The post-test was administered and the analysis was made to explore the significant difference among the students. At the same time, a questionnaire was also prepared for the teachers to collect information about the development of vocabulary through AV. aids for secondary level students learning English.

Research Tools

1-Questionnaire for teachers working at secondary level 2-Lesson Plans

3-Pre-test and Post-test for checking the progress of experimental and control groups.

Data Analysis and Results

Significance of difference between the mean scores of Experimental & Control groups in Pre-test

Paired Samples Test

	Paired Differences					t	df	Sig. (2 - tailed)
	Mean	Std. Deviation	Sd.Error Mean	95 % Confidence Interval of the Difference				
				Lower	Upper			
Control group Experimental group	.240	.523	.105	.024	.456	2.295	24	.031

Significance of difference between the mean scores of Experimental & Control groups in Post-test

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 2 PT Control group	30.96	25	8.974	1.795
PT Experimental Gr	37.88	25	7.518	1.504

Paired Samples Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Control group	24.48	25	8.574	1.715
	Experimental group	24.24	25	8.526	1.705

	Paired Differences					t	df	Sig. (2 - tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference				
				Lower	Upper			
PT Control Group PT Experimental Group	-6.920	2.216	.443	-7.835	-6.005	-15.615	24	0.000

So from the results, it is obvious to accept the general hypothesis that "Vocabulary skills of ESL learners can be improved through AV. aids."

Findings, Conclusion, Suggestions and Recommendations

After completing the analysis of data, the researcher found the following information:

Teachers' and parents' cooperation in regard of sharing of academic performance of students is a way to increase vocabulary level of students. Group work and pair work stimulate the weak students as it is a mixed ability class. Researcher found that the weak students got a chance to reveal themselves, removed their shyness & took part in all activities trustfully which made students to depend on himself rather than teacher. There must be utmost need to develop vocabulary. So, vocabulary must be given more importance in the language teaching to command them in the language being taught. English language teachers should use AV aids for teaching English in general and for improving vocabulary in particular at primary level.

The researcher makes following suggestions and recommendations:

- Teachers should also work on sounds for correct pronunciation.
- Simple sentence structures can effectively be taught by using pictures technique.
- Teachers should also be encouraged to enhance their teaching skills as well.
- Grammar Translation Method must not be relied upon too much.
- Teachers should be trained and motivated to select and tackle pictures.
- The lessons should be based on functional language.
- There must be a systematic progression in lessons e. g. from easy to difficult.
- The classroom environment should be pupil centered.
- Curiosity and creativity of the students should be encouraged through use of AV aids in group-work and pair-work techniques.

References

-Ameh, I. O. (2012). Motivating Use of Audio-visuals in a Nigerian Technological University Library. Journal of Educational and Social Research, 2 (1), 217-223.

-Haq, M.S., (1989) An Approach to the Teaching of English.

-Hill, David A. (1990). Visual Impact: Creative language learning through pictures. Essex: Longman Group UK Limited.

-Hornby, Oxford Advanced Learner's Dictionary of Current English, New York, Oxford University Press. 1974

-Majid, S., (2000) The Effect of Pre-School Education on language Comprehension of Children. Unpublished M. P.hil Thesis Teacher Education Department, AIOU, Islamabad.

-Pahuja, N P., (1995) Teaching of English Annual Publishers Private Limited New Delhi.

-Plass, Jan L., Chun, Dorothy M., & Leutner, Detlev. (1998). Supporting Visual and Verbal Learning Preferences in a Second-Language Multimedia Learning Environment. Journal of educational psychology, 90 (1), 25-35.
-Swank, R. C. (2011). The Educational Function of the University Library.

-Wekster, N. (2004). Language and learning (3rd ed.). Oxford University Press.

-Wright, Andrew. (1990). Pictures for Language Learning. Cambridge: Cambridge University Press.

PERFORMANCE ASSESSMENT OF LOCALIZATION RANGE-FREE BASED ALGORITHMS IN WIRELESS SENSOR NETWORKS

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ABSTRACT

Recently, wireless sensor networks are promising as a solution means for data acquisition in several applications. In many of these applications, sensors need awareness of the source of the sensing information. Therefore, it is very important to make sure that sensors can find out their location. However, the accurate position information can significantly enhance the performance of missions' just like routing, and energy consumption. Moreover, localization algorithms of the sensors have a fundamental weight on location error, as well as the amount of detected nodes due to the inherent characteristics of sensor networks. Generally, the work focuses on several of the recent algorithms which are extensively used in many applications such as HiRLoc, SeRLoc, Centroid, ADLA, HADLA, DIL, and RAL schemes. However, this paper it focuses on an effect of anchor's antenna type on the average localization error and detected nodes. Therefore, the simulation results show that the highest reachable numbers of the detected sensor nodes are recorded by ADLA and HADLA and Centroid algorithms respectively. In the other side, HADLA, RAL, DIL and HIRLOC algorithms are recorded minimum average localization errors.

Keywords: Wireless sensor networks, Range-free, localization error, detected nodes.

I. Introduction

Wireless Sensor Networks (WSNs) is an infrastructure-less of thousands of spatially tiny, cost effectiveness, distributed sensor nodes that are connected by wireless media to form a sensor field. They are work together to observe and gather data relating to ecological situation. Not only it monitor temperature and pressure, but also it monitor motion and sound, besides another phenomenon[1, 2]. After that they process, analyze, and send the data to the end user through base stations [3, 4]. These WSNs form smart environments by offer access to information concerning the environment. The WSNs attracted a lot of interests in numerous applications and have shown more attractiveness for both military mission and civil applications [5-11]. Furthermore, to structure health monitoring [12, 13], habitat plus environment monitoring [6, 7], vehicle networks besides intelligent transportation systems[9, 14, 15]. However, sensor network can be used to sign a machine break down to the control center in some factories; also it can be used for warning that concern smoke on a distant forest hill as an indicator for the forest fire. In contrast wireless sensor nodes may be constructed to notice the earth sensations that caused by quiet footsteps of a thief and hence activate an alarm [16].

The WSNs have not less than one base station, which workings as an entrance between the wireless sensor network along with external globe. The sensor nodes first sense the physical quantity after that transmit the information to base station either through single hop or multi-hop communication. Thus, the data that stored at base station can be accessible easily by users [17].

Sensors are described as low-priced, low power devices that having restricted sensing, calculation, and wireless transmission abilities. Conversely, a sensor node consists of five units the sensing unit, the data processing unit, the communicating unit, the storage unit besides the power-supply unit. It is noteworthy that the power-supply unit contains a battery which provides a limited amount of energy to the node [17, 18].

Localization in Wireless Sensor Network is the procedure of determining the physical coordinates of the sensor nodes. The request for location arises as the number of nodes is huge, and it is difficult for the base station to find the nodes location, therefore, the node has to send the location information accompanied by the information collected to provide the precise position to the user. This means the node must localize itself [3]. The nodes that having known positions are named anchor nodes while nodes whose locations are known are just called sensor nodes or unanchored nodes. Coordinates necessitated being either global or comparative, not only the node can compute its range, but also can compute angle among itself and the reference points. However, its position can be determined in two dimension space if a node recognizes its range from three reference areas. Furthermore, another reference point is wanted in the three dimension space to know the existing place of the target device[1, 3].

Precise of situation information can considerably enhance the performance of the tasks such as routing and energy conservation, besides data aggregation plus preserving network security. Location guessing methods essentially are made of two basic stages: the distance (or angle) valuation as well as the distance/angle) combining. To determine the position of a sensor node, there are two procedures exist which are range-free and range-based. The range-free methods utilize the information among connecting neighboring nodes to determine the node's situation; whereas the range-based methods need ranging and information which can be utilized to determine the range among two neighboring nodes [3, 16, 19, 20].

II. Localization Techniques

Localization techniques are one of the greatest vital issues in wireless sensor network to decide the location and direction of sensor nodes. However, location information is valuable for both network organizations as well as for sensor data reliability. Therefore, in a lot of wireless sensor network applications, sensor nodes are needed to identify their locations with a high degree of accuracy such as in forest fire detection, etc. In several applications, the location itself is the information of importance in monitoring and tracking the object routing based on the position information. Thus, localization techniques in secondary sensor nodes to find out their position in the sensor network will be determined according to whether the actual distance or angle that measured between the nodes in the positioning process [3, 21, 22]. In spite of the fact that the range-based calculations are more precise than the range-free but they require a surprising expense[23, 24]. However, the range-free methods do not need any extra hardware and utilize proximity information to find the position of the nodes in a WSN, and hence have limited accuracy [25, 26]

III. Localization Algorithms

The Localization algorithms act as an important role in optimization by the calculating the coordinates of a node and finds the location distance using one of the localization techniques [16, 18, 27, 28]. However, the localization Algorithms are classified into: centralized localization algorithms that are based on forwarding the complete node measuring amounts to the central base station in which the final computational is done to obtain either absolute or comparative positions of the nodes. On other hand distributed localization algorithms are relied on each sensor node being able to find out its location with only limited communication, and each node is responsible for performing calculations to derive its position [16, 29-32]. However, next section focused on a number of the recent range-free algorithms which are extensively used in many applications.

IV. Range-free localization systems

The chief benefit of Range-free algorithms is reducing the location error with no extra hardware price. Conversely, the range-free algorithms, generally determine the position of regular nodes that their

locations are unidentified, after receiving signals that sent by the locator and beacon nodes that have known locations. Thus, the following subsections are focused on the recent algorithms as well as the majority of the usage in WSNs.

A. Hop Count Localization Algorithm

This method is utilized to determine the distance between two nodes. As known that a signal takes digit of hopes from the sender node to the receiver node and after that multiplies with the maximum communication distance of a node. Therefore, this procedure gives an accurateness of about 50 % of all-out range of a node and does not need complex calculations. Note that errors can be decreased up to 20 % of the maximum range at what time the neighbor nodes are more than 15 [33].

B. Approximate Point in Triangle

Approximate point in Triangle (APIT) is an algorithm [33, 34] where an unknown node finds out whether it is within the triangle shaped by three anchors in the neighborhood or not. The node location is estimated to be center of the triangle in case it is inside the triangle of three anchors. Occasionally errors occur deciding whether an unknown node is within the triangle or not, particularly when it is near the border of a triangle formed by anchors. Nevertheless, the modified version of Approximate point in Triangle (APIT) in [35] defeats this error by determining individual areas of the triangles formed in equally in case and out case and after that comparing it with total area. The APIT is more accurate than simple the Centroid algorithm but has a little larger communication overhead than Centroid. Thus, more anchor nodes, the more triangles fashioned around unknown node and therefore, the more accuracy.

C. Centroid Localization Algorithm

In Centroid based algorithm as in [36], in which all anchors first send their situations to every sensor node inside their transmission distance. Every unidentified node listens for a particular period of time then gathers all the beacon indications it receives from several reference points. Secondly, every unidentified sensor nodes' locations are calculated by the centroid determination from entirely locations of the anchors that in range. Consequently, the centroid location algorithm is simple excluding the localization error is high because of the centroid formula.

D. Active Distributed Localization Algorithm

Active Distributed Localization Algorithm (ADLA) is range free algorithm that is distributed to find an un-localized node range. The ADLA for sensor node is derived from the current location systems and turned in programming style. However, for finding the a node's coordinates a grid-based arrangement is utilized for capturing the sensor nodes [37].

E. High-Resolution Robust Localization

The High-Resolution Robust Localization (HiRLoc) technique lets sensors to find out the position of each one with high correctness even in the occurrence of security risks. The concentration here in the localization procedures that planned in HiRLoc. This algorithm reflects two kinds of nodes; the locator nodes that send out beacons including position information plus normal nodes. Moreover,

the algorithm put in consideration that the normal nodes will find its position by getting beacon signal from the anchor. The beacon signal transferred by anchor/ locator node includes the coordinates of the locator, an angle of directional antenna, in addition to locator coverage distance. This information will be sorted out every time by the locator and retransferred it to ordinary nodes.

It is founded that SeRLoc devoid of increasing the digit of locators besides sectored antennas so as to reduce the area of sector intersection. The HiRLoc attains greater localization accuracy by using directional antennas and changeable transmission power, along with increases computational and transmission density. As mention, this allows sensors to detect their position with great precision even in the existence of security risks.

The HiRLoc provides passive sensor localization techniques derived from beacon information sent from the locators. The locator's communication range is changeable, and each locator transmits beacon information more than once in multiple rounds. This technique is more precise and robust as in every round the locator might alter its direction or its range or might be both, the sensor first finds the locators where they are concerned and determines the main calculation for its location, the sensors after that collect the beacon information in the multiple rounds. However, the locators can change its direction along with range in the multiple rounds [38-41].

F. Secure Range-Independent Localization

Secure Range-Independent Localization for Wireless Sensor Networks (SeRLoc) can be described as a distributed algorithm which is derived from two-tier network architecture. It permits sensor nodes to inactively discover their location without helps of other sensor nodes in the network. Every locator sends dissimilar beacons at each antenna sector, which is accepted by the sensor nodes inside their range. Note that each beacon includes the particular beacon coordinates along with the sector boundary lines. They transmit anchor beacons to unidentified nodes, wherein includes their locations and the sectors of the antenna. As soon as a node gets multiple locators' information, it calculates the sectors' center of gravity that matching to locators as its location [40] of the extends beyond area of the different sectors.
Furthermore, the SeRLoc is strong against harsh WSN attacks, like the wormhole attack and the Sybil attack in addition to cooperated sensor nodes. Nevertheless, SeRLoc [40, 42] is founded on the belief there is no blocking of the wireless medium is possible. In addition to it cannot defend in contradiction of attacks on locator's information that are evaded by examination of network properties, for example, sector individuality and communication distance. To reduce the district of sector intersection to get better localization, the amount of locators and sectored antennas must be increased [40].

G. Distributed localization algorithm

Distributed localization algorithm (DIL) is an algorithm that is proposed three kinds of nodes those are the normal nodes, the beacon nodes, plus the locator nodes. The beacon nodes are deployed arbitrarily over the network at the same time as locator nodes are organized manually or arbitrarily. The WSN is separated into numerous clusters each one must has a minimum one locator. This algorithm undertakes a rectangular an outdoor monitoring area, then it supposes that ordinary nodes can get their angle information from locator nodes also, the nodes are supposed to be deployed on $m \times n$ observed region with the communication range of the locator node is double the sensing range, $\mathrm{RL} = 2\,R_s$ where R_s is the sensing range of every ordinary node.

The DIL utilizes a received signal strength indicator (RSSI) to get the distance among the locator nodes and ordinary nodes, it is noticeable that by using RSSI technique, the wireless communication channel might be subjected to fading and shadowing effects[43, 44].

H. Restricted Area based Localization Algorithm

Restricted Area based Localization Algorithm (RAL) is considering only two kinds of nodes the ordinary nodes plus anchors' nodes. The position for ordinary node is determined by measuring the received signal at ordinary node consistent with dissimilar power levels for anchor and utilizing radio connection and standard of at right angles besides bisectors are utilized to shape restricted region [45].

İ. Power Tuning Of Anchors

In Power Tuning Of an Anchors (PTA) algorithm is supposed that every anchor is able to regulate its communication power and send beacon signals at diverse power levels beginning with the highest to the smallest received by an ordinary nodes. This algorithm considers two sorts of nodes that are ordinary nodes in addition to anchor nodes. Furthermore, the algorithm supposes the mobility of ordinary nodes [46].
However, the location for every mobile node is determined by utilizing the received beacon indications from dissimilar three anchors. After that the mobile node recognizes the anchors and asks for retransmission of beacon in decreased power. Then, anchors will decrease the power level and resend the beacon signals once more. Mobile nodes choose two power levels for every chosen anchor therefore, from this information the mobile node could find out its exact situation [45].

V. Wireless Sensor Network Localization Simulator

It designs and implements an integrated framework utilized for localization in WSNs, which is available for the analysis of dissimilar types of localization schemes whatever Range-free, Range-based or hybrid localization algorithms. However, the achieved framework is simple and easy to be utilized to demonstrate the performance evaluation as well as a comparison among different types of localization systems. It can also be extended to contain numerous localization algorithms by the researchers.

VI. Wireless Sensor Network Model

The WSN network is assumed to contain a group of N sensor nodes of unidentified locality along with a set of especially equipped nodes L well-known as anchors with recognized position. The situation of the locators could be obtained by using GPS receivers [38]. Note that an entirely network nodes are assumed to be installed arbitrarily in a definite network district of area A. This arbitrary installation of the network nodes could be modeled by means of a spatial homogeneous Poisson point process. However, the arbitrary deployment of the anchors using a density $\rho_L = \frac{|L|}{A}$ ($|.|$ denotes the cardinality of the set), is corresponding to a succession of occasions subsequent of homogeneous Poisson point process of a degree ρ_L. Provided L events happen in the mention area A, noticeable that these events are uniformly deployed inside A. Thus, the arbitrary distribution of sensors with a density$\rho_S = \frac{|N|}{A}$, is corresponding to a arbitrary sampling of the A with rate ρ_S[38]. By assuming that LH_S indicate the group of locators that overheard by a sensor s. Then the probability that s hears just k locators (anchors) $P(|LHs| = k)$ is identical to the probability that k anchors are distributed inside a region of size πR^2, where R is the anchors -to-node communication

range. As anchors distributed according to a spatial Poisson process which is arbitrarily arranged in a precise area, then it can be given by $P(|\text{LHs}| = K) = \frac{(\rho_L \pi R^2)^K}{K!} e^{-\rho_L \pi R^2}$.

VII. Wireless Sensor's Antenna Model

Wireless sensors are presumed to be prepared using omni-directional antennas with a node-to-node transmission range r. Moreover, anchors are supposed to be prepared utilizing sectored antennas that having M sectors along with antenna gain $G(M)$ [38 - 39]. Assuming that the anchors transmit with maximum power than the normal sensors and therefore, having an anchor-to-sensor communication range greater $R > r$. Because of the directivity of the locator's antennas, in addition to the maximum locator communicating power, then the anchor -sensor linkage is asymmetric. Therefore, the sensor-to-anchor communication range can be given by $d = rG^{\frac{1}{\gamma}}$ in which γ denotes the signal attenuation factor [39]. More assumptions can be valuable that locators/ anchor can at the same time communicate in all their antenna sectors.

VIII. Simulation Results

The main parameters that measured the efficiency of localization algorithms not only localization error, which is the distance between the actual position and predictable position of a sensor node but also the number of detected unidentified sensor nodes in a distributed area. Nevertheless, in this section the first case studies algorithm's efficiency opposite to locator's antenna type, whether it's directional or omni-directional antenna.

a) Locator's antenna type

The simulation results of using the directional and omni-directional antenna for transmitting the localization signal shown in figure 1and 2. After using the same scale for the results then table 1 can be obtained. From which it is founded the directional antenna enhances the number of detected sensors (D. S) except for RAL algorithm, which is used in restricted area. In another hand, omni-directional antenna decreases average (Avg.) localization error for all types of algorithms.

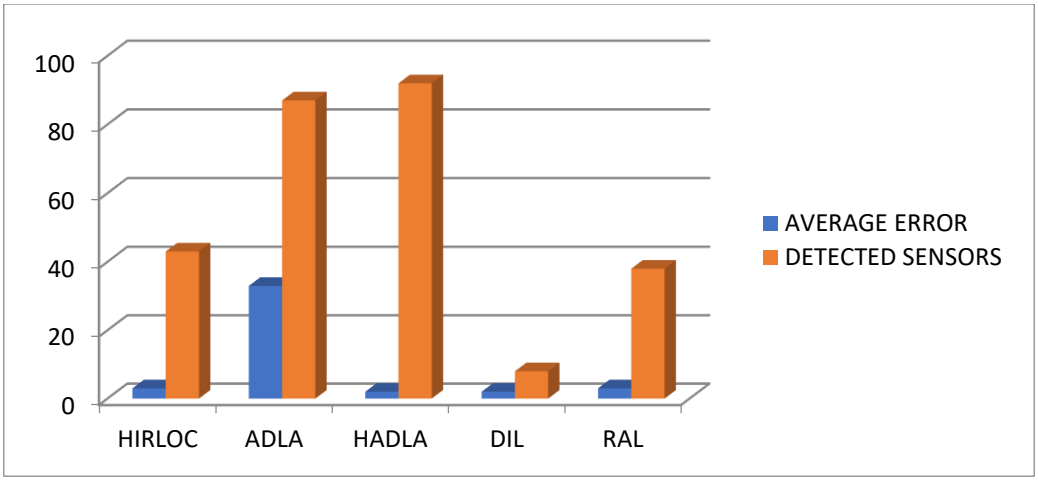

Figure 1: Algorithm's efficiency Vs Locators Omni-directional antenna

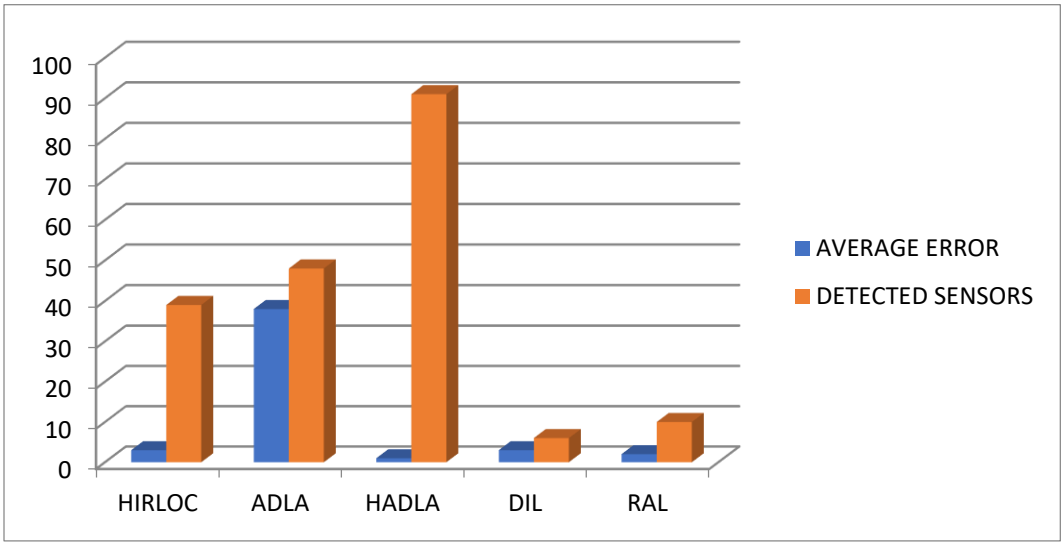

Figure 2: Algorithm's efficiency Vs Locators' Directional antenna

Table 1: compare the number of detected nodes and average localization error

Algorithm / Antenna type	HIRLOC		ADLA		HADLA		DIL		RAL	
	Avg.	D.N	Avg.	D.N	Avg.	D.N	Avg.	D.N	Avg.	D.N
Omni-directional	0.15	2.1	1.6	4.2	0.1	4.5	0.1	0.4	0.15	1.8
Directional	0.33	3	3.7	4.6	0.13	8.8	0.33	0.5	0.25	1

Directional antennas in sensor networks are getting increasing attention and research because of the potential to augment throughput and decrease delay and interference, at the same time needing lower transmission power[47].

Based-on the study that compares the Omni-directional with directional antenna, and for the mentioned reason that the energy consumption in WSNs is very important for their lives's time; therefore the next section concerns the comparison between different algorithms in terms of localization error and detected sensors using the directional antenna.

b) Localization Error and Detected Sensors

Different constant parameters which have an impact on the simulation are shown in table 2. The network simulator with mentioned parameters shows that the highest achievable of detected sensor is recorded by ADLA and HADLA and Centroid algorithms respectively. In the other side, HADLA, RAL, DIL and HIRLOC, algorithms are recorded minimum average localization errors as shown in figure 3.

Table 2: Settings parameters of simulation

Parameters	Values
Localization parameter	Position estimation
Type of sensors	Static

Locator radio range	250m
Beacon radio range	40m
Locator beam width	45°
Number of beacons	50
Number of random locators	8
Number of static sensor nodes	200
Locator antenna type	Directed
Locators deployment Strategy	Grid with 8 locators

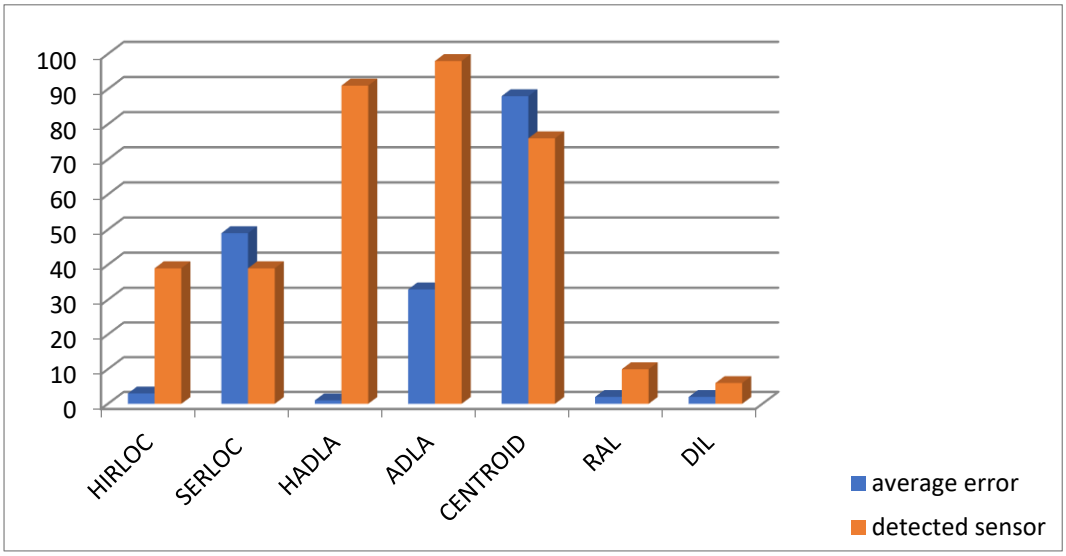

Figure 3: Comparison between Algorithms in terms of localization error and detected sensors

IX. Conclusion

Localization is discovering the location of sensor nodes in wireless sensor networks. There are a diversity of applications for example health monitoring, human tracking, environment monitoring. In such application, there is a need to find the position of sensors to find the affected area. However, there are different techniques, which are used by different authors and each with its advantages and disadvantages. Nevertheless, there are a variety of parameters such as localization error, and the number of detected sensor nodes on which one can choose the benefits of the localization technique.

References

1. VARGA, A.K., *LOCALIZATION TECHNIQUES IN WIRELESS SENSOR NETWORKS.*
2. Khalifeh, A., et al., *Wireless Sensor Networks for Smart Cities: Network Design, Implementation and Performance Evaluation.* Electronics, 2021. **10**(2): p. 218.

3. Nicolett, M. and K.M. Kavanagh, *Magic quadrant for security information and event management.* Gartner RAS Core Reasearch Note (May 2009), 2011.
4. Ituen, I. and G.-H. Sohn, *The environmental applications of wireless sensor networks.* International Journal of Contents, 2007. **3**(4): p. 1-7.
5. Pister, K.S. *Military applications of sensor networks*. in *of Institute for Defense Analyses Paper P-3531, Defense Science Study Group*. 2000. Citeseer.
6. Arampatzis, T., J. Lygeros, and S. Manesis. *A survey of applications of wireless sensors and wireless sensor networks*. in *Intelligent Control, 2005. Proceedings of the 2005 IEEE International Symposium on, Mediterrean Conference on Control and Automation*. 2005. IEEE.
7. Stankovic, J.A., A.D. Wood, and T. He, *Realistic applications for wireless sensor networks*, in *Theoretical Aspects of Distributed Computing in Sensor Networks*2011, Springer. p. 835-863.
8. Stanković, S., *Medical applications based on wireless sensor networks.* The IPSI BgD Transactions on Internet Research, 2009. **19**.
9. Chen, W., et al. *Wits: A wireless sensor network for intelligent transportation system*. in *Computer and Computational Sciences, 2006. IMSCCS'06. First International Multi-Symposiums on*. 2006. IEEE.
10. Paul, A.K. and T. Sato, *Localization in Wireless Sensor Networks: A Survey on Algorithms, Measurement Techniques, Applications and Challenges.* Journal of Sensor and Actuator Networks, 2017. **6**(4): p. 24.
11. Rahmati, V., *Near optimum random routing of uniformly load balanced nodes in wireless sensor networks using connectivity matrix.* Wireless Personal Communications, 2021. **116**(4): p. 2963-2979.
12. Patil, N. and A. Mulla, *Medical application based on wireless sensor network.* International Journal of Computer Science and Communication Engineering, 2013. **2**(2): p. 43-46.
13. Virone, G., et al. *An advanced wireless sensor network for health monitoring*. in *Transdisciplinary Conference on Distributed Diagnosis and Home Healthcare (D2H2)*. 2006.
14. Selvarajah, K., et al., *Deploying Wireless Sensor Devices in Intelligent Transportation System Applications*2012: INTECH Open Access Publisher.
15. Abrams, M. and J. Weiss, *Malicious control system cyber security attack case study–Maroochy Water Services, Australia.* McLean, VA: The MITRE Corporation, 2008.
16. Crow, B.P., et al., *IEEE 802.11 wireless local area networks.* Communications Magazine, IEEE, 1997. **35**(9): p. 116-126.
17. Pal, V., G. Singh, and R.P. Yadav, *SCHS: Smart cluster head selection scheme for clustering algorithms in wireless sensor networks.* 2012.
18. Mahanta, D., M. Ahmed, and U.J. Bora, *A study of Bandwidth Management in Computer Networks*, 2013, IJITEE.
19. Daliri, S., *Feasibility of creating SOC in Agricultural Bank of Iran.* 2015.
20. Pabla, P., et al., *REVIEW OF VARIOUS LOCALIZATION TECHNIQUES IN WIRELESS SENSOR NETWORKS.*
21. Vacca, J.R., *Network and system security*2013: Elsevier.
22. Sukhadeve, S., K. Tambe, and Y.K. Avulapati, *Review On Localization Techniques In Wireless Sensor Networks.* 2016.
23. Wen, W., et al., *Range-free localization using expected hop progress in anisotropic wireless sensor networks.* EURASIP Journal on Wireless Communications and Networking, 2018. **2018**(1): p. 299.
24. Larbi-Mezeghrane, W., et al., *Geometric and decentralized approach for localization in wireless sensor network.* Journal of Ambient Intelligence and Humanized Computing, 2021. **12**(2): p. 1679-1691.
25. Morsi, I. and L.M. El-Din, *SCADA system for oil refinery control.* Measurement, 2014. **47**: p. 5-13.
26. Gaumnizt, W., *Controls and Safeguards.* The Phi Delta Kappan, 1939. **22**(4): p. 155-157.
27. Islam, A., *A. Net Framework Approach for a Network Monitoring Tool.* International Journal of Computer Applications, 2012. **55**(10).

28. Cecil, A., *A summary of network traffic monitoring and analysis techniques.* cit, 2012: p. 10-25.
29. Garg, V. and M. Jhamb, *A Review of Wireless Sensor Network on Localization Techniques.* International Journal of Engineering Trends and Technology (IJETT), 2013. **4**(4).
30. Virmani, D. and S. Jain, *An Efficient Hybrid Localization Technique in Wireless Sensor Networks.* arXiv preprint arXiv:1303.3817, 2013.
31. Samanta, S., P.U. Tembhare, and C.R. Pote, *A survey on 3D localization in wireless sensor networks.* International Journal of Computational Engineering Research, 2013. **3**(1): p. 90-94.
32. Nemer, I., et al., *Performance evaluation of range-free localization algorithms for wireless sensor networks.* Personal and Ubiquitous Computing, 2021. **25**: p. 177-203.
33. Boudhir, A.A., B. Mohamed, and B.A. Mohamed, *New technique of wireless sensor networks localization based on energy consumption.* Int. J. Comput. Appl, 2010. **9**(12): p. 25-28.
34. Alikhani, S., *iCCA-MAP: A Mobile Node Localization Algorithm for Wireless Sensor Networks*, 2010, Carleton University Ottawa.
35. Gupta, D.K., *A review on wireless sensor networks.* Network and Complex Systems, 2013. **3**(1): p. 18-23.
36. Buratti, C., et al., *An overview on wireless sensor networks technology and evolution.* Sensors, 2009. **9**(9): p. 6869-6896.
37. Singh, S., R. Shakya, and Y. Singh, *Localization Techniques in Wireless Sensor Networks.* International Journal of Computer Science and Information Technologies, 2015. **6**(1): p. 844-850.
38. Chen, C.-C., C.-Y. Chang, and Y.-N. Li, *Range-free localization scheme in wireless sensor networks based on bilateration.* International Journal of Distributed Sensor Networks, 2013. **2013**.
39. Haleem Farman, H.J., M. Arshad, and S. Ullah, *Performance Analysis of High-Resolution Robust Localization and Secure Range Independent Localization in Wireless Sensor Networks.* World Applied Sciences Journal, 2012. **20**(5): p. 709-714.
40. Lazos, L. and R. Poovendran, *HiRLoc: high-resolution robust localization for wireless sensor networks.* Selected Areas in Communications, IEEE Journal on, 2006. **24**(2): p. 233-246.
41. Jiang, J., et al., *Secure localization in wireless sensor networks: A survey.* Journal of Communications, 2011. **6**(6): p. 460-470.
42. Dodwaria, N. and N. Chauhan, *Sybil-Free Hybrid Localization Scheme in Wireless Sensor Networks*, in *Advances in Communication and Computational Technology*2021, Springer. p. 561-581.
43. Sahoo, P.K. and I.-S. Hwang, *Collaborative localization algorithms for wireless sensor networks with reduced localization error.* Sensors, 2011. **11**(10): p. 9989-10009.
44. Khan, F. and S.K. Nguang, *Distributed localization algorithm for wireless sensor networks using range lookup and subregion stitching.* IET Wireless Sensor Systems, 2021.
45. Hassanien, A., M. Tolba, and A. Azar. *Advanced Machine Learning Technologies and Applications*. in *Second International Conference, AMLTA*. 2014.
46. Nabil, M., et al., *A Comparative Study of Localization Algorithms in WSNs*, in *Advanced Machine Learning Technologies and Applications*2012, Springer. p. 339-350.
47. Al Ameen, M., S. Islam, and K. Kwak, *Energy saving mechanisms for MAC protocols in wireless sensor networks.* International Journal of Distributed Sensor Networks, 2010.

ERMENİ TERÖRİSTİN PSİKOLOJİK PORTRESİ

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ÖZET

Makale Ermeni teröristinin psikolojik portresini incelemektedir. Yazar, Ermeni terörizminin psikolojik kökenlerini araştırıyor, nekrofili (E. Fromm) kavramı çerçevesinde Ermenilerin etnik özelliklerine açıklık getiriyor.

Kurnazlık ve aldatmanın belirli grupların davranış ve davranışlarında defalarca tekrarlandığı, Ermenilerin etnik bir stereotipi ve yönelimi haline geldiği ve etnos üyelerinin ahlaki gelenek ve tutumlarında, davranışlarında nesilden nesile aktarıldığı belirtilmektedir. Terörizm eğilimi ve yaygın kullanımı, bu etnosun birçok üyesinin tipik bir etnik özelliğidir. Etnosentrizm, şovenizm, intikam ve terör, Ermenileri eğitmenin bu tipik yönteminde merkezi bir yer tutar.

Anahtar Kelimeler: Ermeni etnos, Ermeni terörist, etno-psikolojik özellik, psikolojik portre, nekrofili.

PSYCHOLOGICAL PORTRAIT OF AN ARMENIAN TERRORIST

ABSTRACT

The article analyzes the psychological portrait of an Armenian a terrorist. The author examines the psychological roots of armenian terrorism and explains the ethnicity of armenians during the process of understanding of neurophilia (E.Fromm).

It is noted that the cunning is repeatedly revised in the behavior of the certain groups, and becomes an ethnic stereotype and orientation of the armenians, following by appearing in the moral habits, attitudes and behaviors of ethnos members in the system of relationships towards others. Terrorism tendency, and its wide-scale use is the typical ethnic sign of many representatives of that ethnicity. Ethnocentrism, chauvinism, revenge and terror occur as the main place in the typical nurture methods of armenians.

Keywords: Armenian ethnos, Armenian terrorist, ethno-psychological feature, psychological portrait, necrophilia.

Modern dünyada yaşanan çelişkili süreçler, küreselleşmenin yeni doğası insanları, sosyal birlikleri, etnik grupları, toplumları vb. arasındaki iletişim teknolojisini dönüştürmeyi gerekli kılmıştır. Yüzyıllardır çatışmalar ve karşılıklı iddialar içinde yaşayan halklar, etnik ilişkilerini yeniden gözden geçirmeye ve mevcut iletişim eksikliklerini gidermeye çalışıyorlar. Azerbaycanlılar ile komşu Ermeni etnosları arasındaki iletişim, tarihsel olarak zaman zaman imkansız iddialarla karşı karşıya kalmıştır. Bunun temel nedenlerinden biri, Azerbaycanlıların tarihi düşmanlarını "yakın komşu" olarak algılamaları ve patolojik Ermeni psikolojisi hakkında derin bir bilgiye sahip olmamalarıdır. Bu açıdan Ermeni etnosunun karakteristik özellikleri incelenmeli, psikolojik portre incelenmeli ve bu hususlar netleştirilmelidir.

19. yüzyılın sonlarında yaşayan Rus araştırmacı Vasily Lvovich Velichko'nun Kafkasya (Rus eseri ve kabileler arası meseleler) adlı eseri, Ermenilerin psikolojik portresini anlatmak için değerli bir kaynaktır.

V.L.Velichko, "Kafkasya'daki yaşam olayları ve insan karakterleri aynı zamanda çok belirgin ve karmaşıktır" diye yazmıştır (11, s. 16). Kafkas halklarının özelliklerini mükemmel bir şekilde analiz eden V.L.Velichko, Azerbaycanlıların, Gürcülerin ve Dağıstan'ın dağlık bölgelerinin etnografyasına, kültürel düzeyine, etno-psikolojik özelliklerine çok dikkat etti. Velichko'nun Ermenilere yaklaşımı ilginç. V. Velichko'nun Ermeniler ile diğer Kafkas halkları arasındaki keskin farka oldukça şaşırdığı ve bunun nedenlerini araştırdığı eserin analizinden de anlaşılmaktadır. Tarihsel süreçleri analiz ederken, bunun nedenlerini netleştirmeyi başardı. Daha sonra büyük güçlerin çıkarları doğrultusunda Kafkasya'ya yerleştirilen Ermeniler, bu bölgenin otokton halkı değildir ve bu nedenle pan-Kafkasya etno-psikolojik durumu ile Ermenilerin etno-psikolojik durumu arasında keskin farklılıklar vardır.

V.L.Velichko'nun eserinde Ermenilerden "kökeni meçhul bir halk" olarak bahsedilir (11, s. 7). Ermenilerin 19. yüzyılın ilk yarısında Türkiye'den Güney Kafkasya'ya göç ettiklerini ve yerli olmadıklarını vurguluyor. "Türkiye'den sınır dışı edilen on binlerce Ermeni, ülkeye pratik talihsizlik getirdi" dedi. V.L. Velichko eserinde Ermenileri provokatör olarak adlandırır ve onların ülkenin Müslüman nüfusunu yok etmeyi ve gelecekte topraklarını ele geçirmek için kullanmayı düşündüklerini gösterir (11, s. 50).

Velichko, "Ermenilerle ilgili kötü bir fikir uzun zamandır ortalıkta dolaşıyordu ve bu kesinlikle asılsız değil, aksi halde bu fikir birçok millette ve farklı zamanlarda oluşmazdı" dedi. Rus araştırmacı, Rusların Ermenilere, özellikle de bu halkın kışkırtıcı şovenist temsilcilerine karşı tutumunu şu cümleyle ifade ediyor: çok iğrenç bir şekilde hayat buluyor"(11, s. 46).

Analizimiz sonucunda, V.L.Velchiko'nun Ermenilerin psikolojik portresini yorumlarken aşağıdaki hususları tespit ettiği sonucuna varıyoruz:

- Anormal benlik saygısı; şöhret hırsı; geçmişteki büyüklüğün abartılması ve reklamı; ahlaksızlık ve ihanet; ikiyüzlülük ve ikiyüzlülük; nefret ve kıskançlık.

Rus yazar Orest Yevetsi, "herkesin bildiği gibi, "kurnaz ve bazen" şakacılığın "Ermenilerin bir özelliği olduğunu" belirtiyor (8).

Benzer ifadeler Fransız yazar A.Dumas tarafından yazılmıştır. 1858 yılında Kafkasya'ya yaptığı geziden sonra kaleme aldığı "Kafkas gezisi" adlı eserinin ilk bölümünde bölgede yaşayan halklarla ilgili gözlemlerini şu şekilde dile getirmiştir: "Kafkasya'da yaşayan her milletin kendine has özellikleri vardır. Farsça (tat) ipek ticareti yapar, Lezgi halıları satar, Tatar silahları satar, Ermeni özelliği taşımaz, satılan her şeyi satar, satılmayanları bile. Genel olarak Ermeniler iyi bir izlenim bırakmadı "(5, s. 57).

Ermenilerin karakteristik özelliklerinin belirsiz kökenleriyle bağlantısı, Ermeni yazarların araştırmalarında da belirtilmiştir. Örneğin Ermeni yazarlardan Manuk Abekyan şöyle yazıyor: "Ermeni halkının kökeni nedir, ne zaman ve nereye, hangi nedenlerle buraya geldiler, Ermeni olmadan önce ve sonra hangi halklarla ilişki kurdular, kim dilini ve etnik kökenini nasıl etkiledi? Bunu ispatlayacak açık ve kesin bilgiye sahip değiliz" (12, s. 124).

Kafkasya'da Ermeni devletinin kurulmasına kadar Ermeni halkı kilise tarafından yönetiliyordu. Bu insanlar yüzyıllardır vatansızlıktan muzdarip. Bu çok acı sonuç bilimde "Ermeni hastalığı" adı verilen bir sendromun ortaya çıkmasına neden oldu. Bir devletleri var, devlet gelenekleri var derken yalan söylüyorlar. Kendilerinden başka kimse onların tarihini doğrulamaz. Bu görüşler Rus tarihçi İgor Pechenev tarafından da doğrulanmıştır (8).

Gürcü yazar ve yayıncı I.Javachavadze'nin "Ermeni bilim adamları ve çığlık atan taşlar" adlı kitabında Ermenilerin yerleştikleri topraklara isim verdiklerini gösteriyor. Bu iğrenç yalanları ve Ermenilerin Gürcülere karşı tarihsel ve arkeolojik saldırganlığını açığa vurarak şunları yazdı: Onlar da bizim tarihi hazinelerimizi inkar ediyor ve kendi adlarına çeşitli sahtekarlıklar yapıyorlar" (4, s. 9).

Görüldüğü gibi, "Ermenilik alışılmadık, olağanüstü bir özelliktir: Azerbaycan dahil olmak üzere diğer milletlere, özellikle Türk halklarına karşı güçlü bir milliyetçi tavır alır ve amaçlarına ulaşmak için sözde hayali fikirleri teşvik eder, insan kanına susamış, terörün en korkunç eylemlerini gerçekleştiren,

kültür ve medeniyetten uzak bir saldırgan, bir ideoloji ve politikanın tezahürü olarak ortaya çıkmıştır. Kısacası, bu özelliğin ana klinik belirtileri patolojik yalan, intihar düşüncesi, zulüm ve zorunlu sanrılardır" (7).

Her ulusun psikolojisi, onu bir ulus olarak düşünebilen, tarihsel gelenekleriyle bağlantılı, mevcut amaç ve niyetlerinin, iç ve dış politikalarının bilincinde olan temsilcisi tarafından iyi bilinir. Ermeni araştırmacı Samvel Hrant (Grant) Sukiasyan, Ermenilerin ruhunu analiz ederken şunları söylüyor: "Benmerkezcilik ve bireycilik, Ermenilerin parlak ulusal özellikleri arasındadır. Bu özellikler "yaşlıların psikopatizasyonu" ile ilişkilidir. ... bu sorun Ermenilerin vurgulanan şüphelerinden kaynaklanmaktadır ve tarihle bağlantılıdır. Ermeni şüphesinin merkezinde hipertrofik (aşırı büyümüş) bir ego vardır. Çok yönlü, renkli, çelişkili, birbiriyle çelişen duygu ve duyguları, hayalleri ve eylemleri yaratan işte bu tür bir "ben"dir. Ermenilerin kültürsüzlüğünü, tembelliğini ve pasifliğini, teşkilatsızlıklarını ve gösterişsizliklerini, saldırganlıklarını ve kayıtsızlıklarını görünce çoğu zaman şaşırıyoruz." (13, s. 42). Ermenilerin milli psikolojik patolojileri gibi Samvel Hrant (Grant) Sukiasyan'ın tespit ettiği özellikler, esirler tarafından tekrarlanarak genetik hafızaya dahil edilmiştir.

"Ermeni" terimi ile eş anlamlı olabilecek "sahtecilik" olgusu, bu milletin milli karakterinin en doğru ifadesidir. Kurban, Ermeni ulusunun bütün varlığıyla bağlantılıdır. Azerbaycan ve Türkiye topraklarında devlet kuran, yalan bir tarih uyduran, sürekli terör eylemleri yapan ve bunun için milyonlarca dolar harcayan ama aynı zamanda kendilerini dünyaya soykırımcı bir mazlum millet olarak sunan Ermenilerin bu özelliği, , miras alınır.

E.Elgun'a göre: "Tecrit, Ermeni toplumunda dikkat çeken psikolojik rahatsızlıklardan biridir. Başka bir deyişle, bu toplum, yanlış bir tarih yaratarak, sahte düşmanları belirleyerek ve çözülmesi imkansız görünen hedefler belirleyerek okyanusta bir ada rolünü oynamaya daha yatkındır. Bunun nedeni aslında toplumdaki psikolojik dengenin bozulması yani mutlak gerçeklik ile hayal arasındaki sınırın ortadan kalkması sonucu kişiliğin ikiliğini anımsatan bir durumdur" (6, s. 15].

S.H.Sukiasyan, Ermenilere özgü bu psikolojik rahatsızlığı şöyle analiz ediyor: "Ribo yasasına göre (ilerici amnezi) Ermenilerde yaşlılara özgü bir hafıza zayıflığı var. Bu yasaya göre insan, şimdiyi yavaş yavaş unutarak geçmişe alışır ve hayali ya da karma bir geçmişte kalır. Sonuç olarak, geçmiş onun için güzelleşir, özellikle değerli ve daha yetenekli hale gelir. Bu özellikler sadece yaşlılar için geçerli değil, aynı zamanda varoluşsal bir boşlukta, ahlaki bir kriz yaşayan, geçmişi gerçekleştirebilen ve gerçek çevreye uyumsuzluğa yol açan yeni nesil için de geçerli olabilir. Bir "şimdi"si olmayan ve "bugün"ü yaratamayan insan, tamamen geçmişte yaşar. Ermeniler geçmişe: eski Urartu devleti, Büyük Ermenistan hayali vb. Bu, ayarlama patolojisini açıklayabilir "(13, s. 44).

Yeni tarihini inşa etmeye çalışan bir Ermeni'nin tek başına hiçbir şey başaramaması bu fanteziden kaynaklanmaktadır. Her zaman ve sürekli olarak birilerinin himayesinde ve çoğu zaman Rusya'nın himayesinde ve Kafkas politikasının bir parçası olarak hareket etmiştir. Bu koşullar altında Ermenistan'da var olma olasılığı, başkaları tarafından yönlendirilerek veya yönetilerek bir etki gücü olma karakterini oluşturmuştur.

E. Elgun'un işaret ettiği gibi: "Ermeniler, bireysel olarak iddialı düşüncelerine, entelektüel ve ahlaki özelliklerine göre hiçbir şey yapmazlar. Ermeni bireyin kendini savunması inkarla başlar. Dolayısıyla bir Ermeni, bizi inkar ederek kendini kanıtlamaya çalışan kişidir. Bu, Ermeni psikolojisinin temel direklerinden biridir" (6, s. 19).

Kişilik, insan psikolojisi, belirli etnik gruplara özgü tipik yetiştirme yöntemleriyle oluşur. Terörizm eğilimi ve yaygın kullanımı, Ermeni etnosunun birçok üyesinin tipik bir etnik özelliğidir. Bu husus, Ermenilerin karakteristik özelliklerini ve psikolojik portrelerini inceleyen birçok yabancı uzman tarafından doğrulanmaktadır (3, s. 435).

Ermenilerin hastalıklı psikolojisinin bir sonucu olarak, geçmişe dayalı büyük bir Ermenistan kurma hayali, sivillere yönelik zulümleri de beraberinde getirdi. Ermenilerin belirli bir nesneyi - Türk

ulusunu - öldürme ve işkence yapma eğilimi, belirli insan türleri üzerinde yoğunlaşan akıl hastası manyakların patolojik davranışlarını hatırlatıyor.

Ermenilerin psikopatolojik özelliklerinden biri de, Azerbaycanlıları güçlü bir düşman olarak tanımlamaları ve 70 yıllık SSCB himayesinde korumaları boyunca sürekli olarak karşı Azerbaycan'ın propagandasını yapmaları ve savaşa hazırlanmalarıdır. Buradaki patoloji, gizli bir düşmanın seçimi ile ilgilidir. Azerbaycanlılardan herhangi bir yüzleşmeyi, aşağılayıcı muameleyi, sosyal ve siyasi izolasyonu vb. kabul etmiyorlar. Yüzleşmeseler bile halkımıza karşı yıkıcı bir kin besliyorlar. Ermeniler, Azerbaycanlıları tarihi düşman olarak sunmanın alışılmadık bir yolu olarak "gösterici toplu suikast" kullanıyorlar.

Bu milletin milli bilinci, Türklerin tutsak kolonilerinde oluştuğundan, bugün sömürgeci düşünce sistemleri patolojik düzeydedir. Türk şövalyelerinin karşısındaki zayıflık, tarihsel olarak onlara patolojik bir kurnazlık, "kusurlar kompleksi" olarak pohpohlayıcı bir psikoloji vermiştir. Devletlerin yokluğu nedeniyle yaşam tarzları, psikolojileri, fiziksel, fizyolojik ve biyolojik özellikleri eksikti. Hayata karşı doyumsuzluk, iftira, kapkaç vb. gibi düşünceleri hep taşımışlardır. Daima başkalarının olumlu niteliklerine sahip çıkarlar ve bu psikolojik sendromdan kurtulamazlar (9, s. 25).

Ermenilerde patolojik kolektivizm, diğer milletlere, kültürlere, dinlere karşı hoşgörüsüzlük vb. bu kökenle beslenir. Ermenilerin bir millet olarak patolojik bir psikolojiye sahip oldukları, grup faaliyetleriyle kanıtlanmıştır. Böylece Ermenilerin çoğunluğu, Türklere ve özellikle Asala, Taşnaksutyun, Krunk ve diğerlerine karşı gizli veya açık olarak hareket etmektedir. terör örgütü üyesidir ve bilindiği gibi teröristlerin çoğu sapkın görüşlü ve iyi huylu kişilerdir. Ermenilerin ve Ermeni teröristlerin ruhlarında Azerbaycanlılara ve Türklere karşı düşmanlığın ağır basması, onları masum insanlara karşı mezalime sevk etmekte ve bir akıl hastalığı belirtisi olarak kendilerini ahlaki olarak haklı çıkarmaya çalışmaktadırlar. Ermenilerin terör faaliyetleri, eylemleri ve eylemleri yıkıcıydı ve kendilerini bir millet olarak gerçekleştirmeye ve kabul etmeye yönelikti.

Ermeni terörist de dahil olmak üzere bir teröristin, mevcut yaşam ilkelerini ve ahlaki normları inkar ederek kendisini haklı çıkarması, onun olumlu bir etki yapmasına izin vermez. Çünkü beynini meşgul eden niyet ve düşüncelerden uzaklaşması çok zordur. Kalbine terörist eylemlere ilişkin düşünceler hakim olduğunda ortaya çıkan duygu ve hisler genellikle katı ve saldırgandır, ancak depresyon tehlikesini görmez.

Nesiller boyu tekrarlanan aynı muamele ve davranış şekli, yani zulüm ve vahşet, etnik bir özelliktir ve özel bir mekanizmaya sahiptir. Bu mekanizma nekrofili ile ilişkilidir. Ünlü filozof ve psikolog Erich Fromm tarafından incelenen nekrofili (işkence, zorla öldürme, parçalama, parçalama, yıkım) eğiliminin Ermenilerin etnik bir özelliği haline geldiğini görmek zor değil. Nekrofiller canlı organizmaları ve yapıları parçalamaya çalışırlar. Nekrofilik bir katilin asıl amacı, genel olarak kimseyi öldürmek değil, cesedi parçalara ayırmak, cesedi öldürmektir. Bu durum, Ermeni teröristlerin eylemlerine de açıkça yansımıştır (2, s. 147). Yani nekrofili, Ermeni zulmünün psikolojik bir mekanizmasıdır.

A.Bayramov'un araştırmasına göre, "Yirminci yüzyılda Kafkas bölgesinde etnik çatışmalar ve Ermenilerin terör eylemleri, Moskova'da Ermeni manyaklar tarafından 30'dan fazla kadına yapılan işkenceler, zulmün, sadizmin, ihanetin" analizini açıkça göstermektedir. belirli etnik grupların davranışları zaman zaman özel bir klişe ve yönelim olarak kendini gösterir ve nekrofilik doğası, bireylerde, özellikle birçok Ermeni manyakta kendini açıkça gösteren nekrofilinin bir tezahürüdür ”(3, s.151).

Kronolojik olarak nekrofili, her türlü ölüm, çürüme, sağlıksız koku ve pis kokuya karşı duyulan tutkulu bir arzudur. Eric Fromm'un bir görüşü dikkat çekicidir: "Bence, nekrofili gelişiminde genetik faktörler kilit rol oynuyor" (14, s. 146).

Ermenilerin işlediği etnik çatışmalar ve suçlar, nekrofili'nin etnik bir özellik olarak Ermenilerin kanına işlendiğini açıkça göstermektedir. Akut nekrofilinin, nefret, ırk ve din ayrımcılığının, savaş açlığının, kan dökülmesinin ve yıkımın açıkça tezahür ettiği çok tehlikeli olduğu bilinmektedir. 1980'lerde ve 1990'larda Ermeniler, Şuşa ve Karabağ'ın kasaba ve köylerini yıkmanın yanı sıra, 2006'da halkımızın maddi kültürünün izlerini yok etmek için binlerce hektarlık alanı ateşe verdiler. Belə bir vandalizm xisləti erməni etnosunda kiçik yaşlarından uşaqlarda "düşmən obrazı" yaratmaq, bu düşmənçliyi onların təhtəlşüur səviyyəsində daima möhkəmləndirməklə bağlıdır. Öldürülən qocaların, qadınların, körpə uşaqların meyitlərini parçalamaq, doğramaq, öldürüləndən sonra gözlərini çıxarmaq, burnunu, qulaqlarını kəsmək, bədənini deşik-deşik etmək, diri-diri oda atıb yandırmaq kimi hallar bu etnosun müəyyən qrupunda qəddarlığın, nekrofil xislətin, yəni dağıntıya olan ehtirasların, nekrofil sadizmin aydın təzahürüdür. Erix Frommun fikrincə, bu, bir tərəfdən "cinayətkarların cəzasız qalmaları ilə əlaqədardırsa, digər tərəfdən həmin "adamların"sadist meyillərinin ödənilməsi imkanları, başqa sözlə, nekrofil təbiətləri ilə bağlıdır" (3, s.153).

Hocalı soykırımı sırasında Ermeniler bu özelliklerini detaylı bir şekilde göstermişlerdir. Ya da Azerbaycanlı esirlerin canlı uzuvlarını alıp dış pazarlarda bağışçı üye olarak satarak, işkence ederek işkence etmek onların gaddarlığının ve nekrofilliklerinin kanıtıdır.

Söylenenlerden, sadece tek tek ülkelerde değil, tüm dünyada yaygın olan terörün, tehlikeli bir toplumsal bela olarak derin bir psikolojik mekanizmaya sahip olduğu açıktır. İşte benmerkezci yönelim, içsel nefret ve öfke, nefret, hırs, psikopatik davranış biçimleri, sosyal enfeksiyon vb. Psikolojik mekanizmalar gibi önemli bir rol oynamaktadır. Bu nedenle, bir kişiyi terör eylemlerinden kurtarmak için, iç psikolojik durumuna, sosyal çevre ile ilişkiler sisteminin içeriğine özel dikkat gösterilmelidir. Ermeni etnosunun temel faaliyetlerinden biri olan ve evrensel bir sorun haline gelen terörün, başta bölgemiz olmak üzere tüm dünyaya büyük sıkıntılar getirebilecek çok tehlikeli bir gelenek olarak yayılmasının önüne geçilmelidir.

Dolayısıyla, Ermeni teröristinin kısa bir psikolojik portresinin oluşturulmasının analizi, Azerbaycanlıların, başkalarının elinde bir araç olarak sinsi politikalar izlemede kahramanlık gösteren bir milletin her türlü davranışa muktedir olduğunu akılda tutması gerektiğini ortaya koymaktadır. Ermeni teröristin patolojik ruhu, kendisini dünyaya eziyet çeken, yoksul, ezilen bir taraf olarak sunmaktır, oysa gerçekte bu yıkıcı ve nekrofiliktir.

Kaynakça

1. Arzumanlı V., Mustafa N. Tarixin qara səhifələri, Deportasiya. Soyqırım. Qaçqınlıq., Bakı: Qartal, 1998, 218 s.
2. Bayramov Ə. Etnik psixologiya. Dərslik. Bakı: Renessans, 2001, 374 s.
3. Bayramov Ə., Əliyev B. Hüquq psixologiyası (dərslik). Bakı: Təhsil, 2012, s. 656 s.
4. Cavaçavadze İ.Q. Erməni alimləri və fəryad edən daşlar. B., 1995, 80 s.
5. Düma A. Qafqaz səfəri. B., 1985, 142 s.
6. Elgün E. Erməni psixologiyası. Çaşıoğlu, 2014, 122 s.
7. Əliyev Z. www.azadliq.az. Tarixin sandığından: Ermeni xesteliyi və qul psixologiyası – araşdırma /10/04/2015/
8. Hüseynova İ. Ermənilərin Cənubi Qafqazda məskunlaşması: reallıqlar və xülyalar / https://az.trend.az/azerbaijan/society/3045174.html)
9. Sadıq İ. Elmdə erməni virusu. Bakı, 2009, s. 25.
10. Sertçelik S. Rus və erməni problemi. Meydana çıxma prosesi. 1678-1914. Ankara, 2017, 398 s.

11. Veliçko V. Qafqaz. Rus işi və tayfalararası məsələlər. Bakı: Azərbaycan nəşriyyatı, 1995, 192 s.
12. Абекян М. История древнеармянской литературы. Ереван: изд. АН Армянской ССР, том 1, 1948, 524 с.
13. Самвел Грант Сукиасян. Психопатология армянского этноса / Философский, психоаналитический и педагогический журнал “Эдип” / 2007/01/01, с. 42-48.
14. Фроом Э. Иметь или быт? М., Прогреесс, 1986, 179 с.

THE IMPLEMENTATION OF THE EUROPEAN COURT OF HUMAN RIGHTS DECISION

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ABSTRACT

The European Court of Human Rights is a judicial institution that gives hope and justice to citizens that have not found it in the judicial system of their own country. For this reason, it is crucial to research and present the system of implementation of decisions by the European Court of Human Rights. This paper covers the implementation of the European Court of Human Rights decisions concerning fair compensation and the implementation of the decisions of the European Court in the part of special and general measures, as well as the systems and supervision of the implementation of the decisions of the European Court for human rights.

The enforcement of decisions from European Court of Human Rights fulfills the mutual obligation, the obligation to the party against whom a violation of freedom or right has been done, and the obligation of the state to implement the European Charter of Human Rights and Freedoms.

The number of cases brought before the European Court of Human Rights and the number of decisions enforced in a state is a clear indicator of the state level in terms of guaranteeing human rights and freedoms, and the efficiency of a state institution to guarantee and protect the freedoms and rights of its citizen. For these reasons, it is more than necessary to reinforce the capacity and functionality of the Bureau of representation of the Republic of North Macedonia before the European Court of Human Rights and the interim committee for the implementation of the decisions of the European Court of Human Rights.

Keywords: European Court of Human Rights, enforcement of judgments, compensation, general measures, special measures, systems for monitoring the implementation of decisions, etc.

Introduction

The European Charter of Human Rights guarantees the right to a fair and public trial within a reasonable time by an independent and impartial tribunal regulated by law, both in civil and criminal matters (Article 6 of the European Charter of Human Rights).

The European Convention is of great importance because it is the first document that has turned declarative rules into contractual rules (has given them a binding character); has provided a mechanism which has to ensure the implementation of fundamental human rights and freedoms among entities of a region; and finally, the respect for human rights is a must to enter the Council of Europe.

In this way, the degree of democracy in any country is clearly measured by the government's attitude towards fundamental human rights and freedoms. The modern state that respects human rights is usually characterized as a democratic state where the rule of law prevails and implements an appropriate social policy (Mr. Gruda: 2000, 53).

I. Implementation of the European Court of Human Rights decision

1. Enforcement of the decision of the European Court in the payment of fair compensation

The period of three months for the payment of legal compensation set out in the decision derives from receiving the notice from the European Court.

In case of non-compliance with the payment deadlines, the interest determined in the decision of the European Court is calculated (Article 16 of the Law on the implementation of the decisions of the European Court of Human Rights).

Within 15 days of receiving the decision given by the European Court, the Bureau shall request the appellant or his authorizer to submit bank statements for the payment of certain funds.
The claimant must submit the data within five days from the day of receipt of the request.
Upon receipt of the data, the Bureau prepares reports on the validity of the decision, which then submits it to the Ministry of Finance; consequently, the Ministry of Finance within five days after receiving the report will give the Bureau a proposal - the payment of certain funds given by decision. The period from receiving the final decision until the submission of the information and the government's decision cannot be longer than 45 days (Article 17 of the Law on the implementation of the decisions of the European Court of Human Rights).
The Ministry of Finance immediately implements the decision taken by the government to pay the funds, at the latest, until the expiration of the three months, counting from the day the decision of the European Court becomes final.
She submits to the Bureau the evidence for the payment of funds which is evidence that the decision has been implemented in the payment of fair compensation. The Bureau shall, within five days from the day of receipt of the payment proof, submit to the Sector for Enforcement of judgments of the European Court of Human Rights and legal affairs of the Council of Europe and the permanent mission of the Republic of Northern Macedonia to Council of Europe (Article 18 of the Law on the Implementation of Judgments of the European Court of Human Rights).
On the other hand, the lack of account data by the complainant does not constitute an obstacle to the implementation of the decision of the European Court in the part of just satisfaction. If the claimant does not submit the bank account data within the set deadline, the Ministry of Finance deposits the funds determined by the decision in an account of the Ministry of Justice. The Ministry of Justice will release the allowed funds into the claimant's account upon receipt of the account details. The funds deposited into the account will be available to the claimant for a maximum of five years after their deposit. After the expiration of this deadline, the funds will be returned to the Budget of the Republic of Northern Macedonia (Articles 19 and 20 of the Law on the Implementation of the Decisions of the European Court of Human Rights).
In case of death or changes in the status of the claimant, the just compensation in accordance with the decision of the European Court is paid to the heirs of the person, respectively the legal heirs of the natural person following the law (Article 21 of the Law on Enforcement of Court decisions European Commission on Human Rights).

2. Implementation of the decision of the European Court in the part of special and general measures

Specific and general measures

The Bureau, within two months after the submission of the decision of the European Court confirming the breach of the rights guaranteed by the Convention, shall notify the Supreme Court of the Republic of Northern Macedonia, the Administrative Court of the Republic of Macedonia, all Appellate Courts, the County Courts, and all institutions or entities that have been directly involved in the specific case for which the ruling was rendered. With the submission of the verdict to the subjects mentioned above, the translation of the verdict in the Macedonian language and its Cyrillic alphabet is also submitted (Article 22 of the Law on the Implementation of the Decisions of the European Court of Human Rights, Article 5 of the Law on Amending and Supplementing the Law on the Implementation of the Decisions of the European Court of Human Rights). Furthermore, the Bureau shall immediately, and no later than three months after the submission of the decision of the European Court, notify the Commission of the

decision taken for the violations and propose possible general and specific measures to eliminate the violations concluded in the decision.
The Commission analyzes the decision of the European Court, reviews the measures, and prepares the recommendation for the competent state bodies, local self-government units, courts, and the public prosecutor's office to take appropriate general and specific measures to avoid possible violations found by the European Court and prevent the infliction of the same or similar breaches. The bodies mentioned above will notify the Commission of the action recommended following the law (Article 24 of the Law on the Implementation of Decisions of the European Court of Human Rights).

A) Special measures

The subjects take special measures to avoid the violation and the consequences caused by the breach. The particular measure is recommended depending on the breach found and the claimant's situation at the time of the breach (Article 25 of the Law on the implementation of the decisions of the European Court of Human Rights). They aim to avoid the consequences which the applicant has suffered as a result of the violation of the Convention, contracted in the decision of the European Court of Human Rights, and they aim to achieve the "restitutio in integrum" to the greatest extent possible.
The obligation to take individual measures has two aspects (Annual report on the work of the Commission for the implementation of the decisions of the European Court of Human Rights for 2020, Ministry of Justice, Bureau of representation of Republic of Northern Macedonia before the European Court of Human Rights):

-The State is obliged to pay the applicant a certain amount of money in the name of compensation, respectively, compensation for damage found in violation of the Convention, while adjudicated by the European Court following Article 41 of the Convention.

-The second aspect refers to the fact that the consequences of the injury are not always adequately compensated, especially with the payment of compensation in the amount adjudicated by the European Court of Human Rights or only by the European Court itself. Depending on the circumstances, the obligation of restitution in integrum may require further measures, such as the repetition of a procedure for which the European Court of Human Rights has found that it violates Article 6 of the Convention.
These measures are generally taken when the compensation ordered by the European Court is not sufficient to avoid all the consequences of the violation of the law under the European Convention, when the individual, even after the judgment, suffers the consequences of the breach. Such measures are, e.g., reopening of court proceedings, deletion of the criminal file, issuance of a residence permit, withdrawal of the extradition decision, etc. Reopening the proceedings before the country's courts can be an effective way of avoiding the consequences of violating the rights guaranteed by the Convention. However, the repetition of the procedure will still have to be done in these situations (Milan Paunovi, Slavoljub Cariq: 2006, 77):

a)The injured party has very negative consequences due to the procedure, which can not be settled with monetary compensation, or in other ways, except with the re-examination of the dispute.

b)The ruling of the European Court of Human Rights concludes that the decision of the national courts is contested, contrary to the Convention or when the violation has been established as a result of a procedural error, or lack of such remedy which could have seriously called into question the conclusion of the proceedings before national courts.

B) General measures

Suppose the decision of the European Court concludes that the violation arises from the law, other provision, or practice of the subjects from article 24, paragraph (1) of this law. In that case, it is recommended to take general measures to overcome the deficiency that has caused the appeal to the European Court and adequately prevent the same or similar violations found by the European Court.
In concluding the general measures, the Committee of Ministers pays special attention to the effectiveness of the measures in terms of preventing possible cases in the future of non-compliance with the European Convention on Human Rights and thus preventing the so-called "cloned cases" before the European Court of Human Rights, with the same indications, respectively similar violations of the Convention as those now found by the European Court in earlier judgments. This is particularly important given the extremely large number of applications that the European Court of Human Rights has faced in recent years and the need to ensure the long-term efficiency of the enforcement system (Annual Report 2020, Ministry of Justice).

The general measures are (Article 27 of the Law on the Implementation of Decisions of the European Court of Human Rights:

1. Amendments and supplements to laws and other provisions due to which the established violation has been caused and monitoring their implementation;

2 . Changes in the action of competent entities following the law;
3. Providing legal expertise of the laws;
4. Professional training of judges, public prosecutors, lawyers, employees in state administration bodies, employees in migration services, and other categories of employees, whose work is related to the implementation of laws and other provisions, with the intention of adequate implementation of the Convention and the legal practice decided by the European Court, and
5. Other measures determined by the decision of the Court on the prevention of violations of the Convention to eliminate gaps of a systematic nature and to provide compensation for the consequences of the breach, under the supervision of the Committee of Ministers of the Council of Europe.

So, the violation of the law may be a consequence of (Milan Paunovi,, Slavoljub Cariq: 2006, 77-78):

1. Deficiencies in the legislation itself, so that the general measures can be seen in addition to the amendment of constitutional acts, laws, and bylaws or the adoption of new acts, if the reason for the violation of the right is their absence;

b) Misinterpretation of existing legislation and the European Convention and the bad practice of judicial bodies.

II. Implementation monitoring systems

"Two lenses" system - identification of priority cases.

To respond to the needs for greater efficiency of the surveillance system of the implementation of the rulings of the European Court of Human Rights, the model from 2010 has provided the surveillance system which is based on "two lenses," and which enables the Committee of ministers to focus on cases

with "enhanced oversight," unlike other cases, the implementation of which is under the "standard surveillance" of the Committee of Ministers (Annual Report for 2020, Ministry of Justice).

- "Enhanced Surveillance" and "Standard Surveillance"

The rules of the Committee of Ministers provide that under "enhanced surveillance" to be followed:

-Cases that require urgent individual measures

-Pilot judgments

-Judgments that identify the existence of large structures and/or complex problems identified by the European Court of Human Rights and/or the Committee of Ministers

-Interstate subjects

The classification of cases is done by the Committee of Ministers, who can decide which case will be pursued under "enhanced surveillance" at the State's initiative - members of the Council of Europe or at the initiative of the Secretariat. This initiative can be taken at any stage of implementing the surveillance procedure. Similarly, a subject can move from "enhanced surveillance" to "standard surveillance" when the development of the event within the national implementation process does not determine the need for "enhanced surveillance." For example, the transfer from "enhanced" surveillance to "standards" may occur when the Committee of Ministers is satisfied with the action plan presented or its implementation when the State will overcome the obstacles that have existed in the implementation process of concrete judgment or when urgent individual measures needed in accordance with the circumstances of the case will be taken (Milan Paunovi, Slavoljub Cariq: 2006, 79)

Contrary, the transfer from "standard" to "reinforced" surveillance is possible due to:

- Lack of action plan, respectively report

Suppose the State does not bring an action plan, i.e., a report within 6 months after the European Court of Human Rights final decision. In that case, the Secretariat will bring a reminder, if the State does not bring an action plan, respectively a report within 3 months after receiving the reminder. In that case, the Secretariat can propose that this case be implemented following the rules of "reinforced surveillance."

- Disagreement between the State and the Secretariat about the content of the action plan, respectively the report

In some cases, there may be disagreement between the State and the Secretariat regarding the measures or the type of measures that should be taken to implement the decision. Therefore, the State and/or the Secretariat may initiate the implementation of the case under "Enhanced procedure" to enable the Committee of Ministers to make a recommendation, and thus to contribute and assist the implementation process.

- Serious delays in the implementation of the measures foreseen in the action plan, at the initiative of the Secretariat

2. Surveillance system based on "Action Plans" and "Implementation Reports."

Supervision over the implementation is done based on action plans and action reports prepared by the competent state bodies related to each case or group of cases. They should clarify the measures already taken or planned to be taken (general or individual) to implement a particular judgment of the European Court of Human Rights due to a violation of the European Convention on Human Rights concluded by the Court.

The action plans, among others, contain the deadlines for the measures planned to be taken by the State, respectively, by the competent national bodies, in the same way as the action reports that contain indications for when the measures were taken for which the State notifies.

Attached to the reports can be submitted the relevant materials as an appendix and evidence of the measures taken. The rules of the Committee of Ministers, which regulate the supervision of the implementation of rulings and decisions, stipulate that action plans must be submitted as soon as possible, at the latest is within 6 months from the final decision, respectively the decision on the implementation of to whom it refers.

After the State accepts the action plan, the Secretariat evaluates the foreseen measures for their implementation and its dynamics. At this stage, the Secretariat has the opportunity to request additional information from the State, clarification, etc., in order to harmonize the text of the proposed action plan (Annual Report for 2020, Ministry of Justice).

References:

- European Convantion on Human Rights, Rome, 4. XI.1950
- Zejnulla Gruda, Mbrojtja ndërkombëtare e të drejtave të njeriut, Univeristeti i Prishtinës&Këshilli për mbrojtjen e të drejtave r të lirive të njeriut, Prishtinë 2000,
- Marek Piechowiak, Çka janë të drejtat e njeriut? Koncepti i të drejtave të njeriut dhe arsyetimi ekstra juridik i tyre, Raija Hanski&Marrku Suksi, Instituti për të drejtat e njeriut, Univeristetii Abo Akademi, 1999,
- Ligjit për zbatimin e vendimeve të Gjykatës Evropiane për të drejtat e njeriut.
- Ligjit për ndyshimin dhe plotësimin e Ligjit për zbatimin e vendimeve të Gjykatës Evropiane për të drejtat e njeriut
- Raporti vjetor për punën e komisionit ndërresor për zbatimin e vendimeve të Gjykatës Evropiane për të drejtat e njeriut për vitin 2020, Ministria e Drejtësisë, Byroja e përfaqësimit të RMV para Gjykatës Evropsiane për të drejat e njeriut
- Milan Paunoviq, Slavoljub Cariq, Evropski sud za ljudska prava, osnovni naçela i tok postupka, Pravni Fakultet Universiteta u Beogradu, Sluzbeni Glasnik, 2006

SSCB'NİN DAĞILMASINDA GÖRÜLEN VE GÖRÜLMEYEN İÇ VE DIŞ NEDENLER ÖZET

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ÖZET

XX yüzyılın 80'li yıllarının sonu, 90'lı yılları'nın başları SSCB için adeta sonun başlangıcı oldu. 70 yıl boyunca tüm dünya'yı korku içinde saklayan, II Dünya savaşı'nın kaderini etkileyen, 1962 yılında Küba krizinde ABD'ni baskı altında kararını değişmeye zoorlayan, Doğu Avrupa ve Balkanları kendi etkisi ile kapitalizme karşı yıllarca kommunizm kuruluşunda saklamağı başaran SSCB içindeki ekonomik durumun kötüye doğru gitmesi, iktidarın iyi idare edilememesi, Afganistan savaşının kaypedilmesi ve ittifak dahilinde artmakta olan mesepsel, dini, etniksel ve s. çatışmalar yüzünden hızla dağılmağa doğru ileriliyordu.

SSCB'nin dağılma sürecinde iki önemli faktörü özellikle kaydetmek mümkündür. Birincisi, ekonominin kötüye doğru hızla ilerlemesi, ikincisi ittifak dahilinde baş veren etnik, dini, meshep ve s. çatışmalar. Bu hususta 1986'da Kazakistanda baş veren olayları, 1988'de Azerbaycan'ın Karabağ bölgesinde baş veren olaylar ve sonucunda Azerbaycanda başlayan bağımsızlık hareketleri, 1990 yılının ocak ayında başkent Baküde SSCB ordusu tarafından yapılan katliam, 1989 yılının sonu 1990 yılının başlarında Gürcistanda başlayan bağımsızlık hareketleri, Aynı zamanda Baltık ülkelerinde merkezi yönetime karşı başlayan ayaklanmalar ve s. olaylar SSCB-nin sonunu getirmiş oldu.

Tabii ki, bu durun uzun zaman içinde ve pilanlanmış formada hayata geçrilmiş politikanın sonucu olarak ortaya çıkmıştır. Bu konuda 1986 yılında Gorbaçov'un ilan etdiyi Prestrokya ve Glasnost politikası de kendi etkisini göstermiş oldu.

SSCB'nin dağılmasından sonra da Rusya dış politikada geçmiş SSCB ülkelerini kendi etkisinde saklama politiksını yürütmeye başlamıştır. Bu konuda Azerbaycan'da Karabağ olyları, Moldova'da Dinestryanı araziler, Gürcistan'ın Abaziya ve Güney Osetya olayları bu işte Rusyanın kendi politikasını iyi şekide kullanmasına yardımcı olmuştur. Son dönemler Ukrayna'da başverenler ise Rusya'nın yeniden SSCB ye uygun kurum ve kuruluşu formalaştırmak isteğinden ileri geldiyini düşünmek mümkündür.

Açar sözler: SSCB, Etnik çatışmalar, İç ve Dış politika, Bağımsızlık

II Dünya savaşında Batı ülkelerinin desteğini arkasına alarak Hitler Almaniyasını mağlup eden SSCB savaşın bitmesi'nin hemen ardından ikikutplu dünyanın oluşumunu hızlandırdı. 1920 yılında kurulmasına rağmen 1945 senesinden başlayarak hem kendi içinde, hem de Doğu Avrupa da komunizm yayılmacılık politiksaını benimseyen SSCB neredeyse 45 sene içersinde ABD başta olmakla Batı bloğuna karsı barışmaz pozisyonda durmayı ve kendi yaşamını korumağı başarmıştır. Tabii ki, şurada özellikle da kaydetmek mümkündür ki, SSCB burada yalnız değildi. Onunla birlikde Küba, Orda Doğu ve Kuzey Afrika dakı bazı arap ülkeleri, Balkanlarda Yugoslaviya, Güney Doğu Asyada Vyetnam, aynı zamanda Kuzey Kore ve Çin de vardı. II Dünya Savaşından sonra SSCB nin artan nüfuzu ABD başta olmakla batılı ülkeleri direk rahatsız etmeye başladı. Aynı zamanda Kübada Fidel Castro'nun 16 Şubat 1959 yılında Amerika Birleşik Devletleri'nin kontrolündeki Batista rejimini yıkarak iktidara gelmesi üzerine ABD doğrudan rahatsız olmağa başladı[40]. Tabii ki, burada hem ABD köntrölündeki Batista'nın devrilmesi, hem de SSCB'nin Kübada artan nüfuzu adeta ABD içi bir tehtit niteliği taşımakta idi. Onun için de Başkan Kennedi'nin talimatı üzre ABD ordusu Küba'ya karşı Domuzlar Körfezi adı altında bir

[40] KÜBA DEVRİMİ – FIDEL CASTRO & CHE GUEVARA VE KOMÜNİZM - https://www.bizevdeyokuz.com/kuba-devrimi-fidel-castro-che-guevara-ve-komunizm/

harekata başlattı. ABD'nin diğer korkusu SSCB nin Avrupanın NATO'ya dahil olan devletleri için büyük tehtit yaratmasıdır. Bu yüzden ABD NATO ülkelerini artan SSCB tehtidinden korumak için ittifakın doğu kanadında yerleşen Türkiyede Füze yerleştirmek kararı verdi. 1959 yılında ABD ve Türkiye arasında elde edilmiş anlaşmaya uygun olarak 1961 yılında ABD Jüpiter füzelerini Türkiye'ye yerleştirdi. ABD nin bu adımı SSCB ni adeta çileden çıkardı. Buna cavap olarak SSCB Kübada füze yerleştirmek kararı aldı. SSCB'nin bu kararı ise ABD ile soğuk savaşın en keskin dönemine girmesine sebep oldu. SSCB nin Kübada füze yerleştirmek kararı ABD için bir alarım oldu ve bundan sonra SSCB nin çökmesi için tüm imkanlarını kullayanma başladı[41].

SSCB 1973'de petrol krizinin patlak vermesinin ardından uluslararası düzen çığırından çıkmaya ve kaos ortamı oluşmaya başladı. Tabii ki, 1973 yılındakı petrol krizi SSCB ekonomisini doğrudan etkilemeye başlamıştır[42]. Aynı zamanda SSCB'nin bölgesel sorunları da baş kaldırmaya başladı. 1987 yılında Afganistan Halk Partisi başkanı ve devlet başkanı, aynı zamanda SSCB ile iyi ilişkilere sahip Nur Muhammed Tereki kendi rakibi Hafızullah Amin tarafında öldürüldü. Afganistanda iktidar Amin başkanlık etdiyi "Hezb" kanadının eline geçti. Afganistanda iktidar değişimi halkın ekonomik durumuna hiç de iyi şekilde etki yapmadı[43]. Bu durum Afganistanda Amin iktidarının sonunu getireceğini düşünen SSCB hükumeti Afganistana müdahile etmek kararını aldı. Bunun ardından Leonid Brejnevin emri üzerine 24 aralık 1979 senesinde SSCB nin Afganistana askeri müdahilesi başladı. SSCB nin Afganistan müdahilesi uluslararası alanda büyük tepkiye sebep oldu. BM Baş Meclisi SSCB nin en kısa sürede Afganistan işgaline son koyması için karar kabul etti. Aynı zamada bir takım ülke SSCB nin Afganistanı işgal etmesine tepki olarak 1980 Moskova Olimpiyat oyunlarına katılmaktan vaz geçti[44]. SSCB nin Afganistana yaptığı müdahile zamanı Hindistanın SSCB nin destek verdiği Afgan hükümetinin yanında yer alsa da, savaşı fırsan bilen ABD, Suudi Arabistanı, Pakistan, Çin ve başka ülkeler Talibanın önderlik etdiği afgan mücahitlere destek vermeye başladı. Dış ülkelerin afgan mücahitlere destek vermesi sonuç itibarı ile SSCB nin ağır kayıplar vermesine sebep oldu. SSCB nin Afganistana karşı 10 yıla kadar devam eden işgalci savaşında 2 milyondan artık sivil afganistanlı öldürülürken 3,5 milyon afgan sivil ise Pakistan ve İranda mülteci durumuna düştü[45]. SSCB 14427 asker ölmüş ve 54 binden fazla asker yaralanmıştır. SSCB bu savaşta 147 tank, 1314 zırhlı araç, 433 hava savunma ve artileri, 118 savaş uçağı, 333 helikopter kaypetdi. On yıllık zaman diliminde SSCB Afganistan hükumetine yaklaşık 800 milyon dolar yardım yapmış, aynı zamanda SSCB'nin Afganistanda görev yapan 40-cı ordunun saklanmasına ise 3 milyar dolların üzerinde para harcamıştır. Tabii ki, bu durum SSCB nin dağılmasını biraz daha hızlandırdı[4647].

SSCB nin Afganistanı işgale başladığı 1979 senesinden itibaren artıq ittifak içinde hem siyasi, hem ekonomik, hem sosyal açıdan durum iyice ağırlaşmağa başladı. 1970 yıllarının sonu, 80 yıllarının başlarından itibaren SSCB de rustlaştırma politikası iyice hız kazanmaya başladı. Bu politikanın bir parçası olarak 1964 yılından bu yana Kazakistan Kommünist Partisi birinci sekreteri olarak iktidardakı kazak kökenli Dinmuhammet Kunayev 1986 yılının aralık ayında iktidardan uzaklaştırıldı. Onun iktidarını rus asıllı Gennadi Kolbin devraldı. Bu duruma karşı 17 aralık sabahı 1986 da Kazakistanın o

[41] Türkiye – ABD Güvenlik ve İşbirliği Anlaşması Kaynak Linki : https://hukukbook.com/turkiye-abd-guvenlik-ve-isbirligi-anlasmasi1959/
[42] 1973 PETROL KRİZİ VE SONUÇLARI - https://www.researchgate.net/publication/337211970_1973_PETROL_KRIZI_VE_SONUCLARI
[43] SSCB'nin Afganistan'ı İşgali ve İç Savaş - https://asimetriksavaslar.wordpress.com/2011/04/03/200/
[44] 34 YIL ÖNCE SSCB'NİN AFGANİSTAN'I İŞGALİ – (27 Aralık 1979) - https://iskenderaktas.wordpress.com/2013/12/16/sscbnin-afganistani-isgali-27-aralik-1979/
[45] SSCB'nin Afganistan'ı İşgali (1979) - https://www.tarihbilimi.gen.tr/sscbnin-afganistani-isgali-1979/
[46] The Soviet-Afghan War: Breaking the Hammer & Sickle - https://web.archive.org/web/20060718225045/http://www.vfw.org/resources/levelxmagazine/0203_Soviet-Afghan%20War.pdf
[47] Economic Development in Afghanistan During the Soviet Period, 1979-1989: Lessons Learned from the Soviet Experience in Afghanistan - https://apps.dtic.mil/dtic/tr/fulltext/u2/a475460.pdf

dönemdeki başkenti Alma-Atada ("Jeltoksan") barışçıl öğrenci gösterileri olarak başlayan olaylar patlak verdi. Baş kaldıran olayları yatırmak için SSCB rehberliyi Kazakistanın o dönemki başkenti Alma-Ata ya ordu yeritmek kararı aldı. Alınan karara uygun olarak 50 binden fazla asker başkente yeridildi. Birkaç gün devam eden protestolar sonucu 3 kişi hayatını kaypetti. Kazakistan olayları SSCB içinde milliyetçi kavramın güçlenmesi ile beraber hem de ittifakın çöküşünü daha da hızlandırmış oldu[48].

1985 yılında Mihail Gorboçov iktidara geldikten bir yıl sonra, yani 1986 senesinde SSCB'de yeni politika uygulamağa başladı. Bu politika Perestroyka ve Glasnost adını aldı. Gorbaçovun uyguladığı politika doğru işlemeyince SSCB ekonomisi hızla geriye gitmeye başladı. Bu gerileme yalnızca ekonomide diğil, aynı zamanda ittifak içinde halklararası ilişkilere de olumsuz yönden etki yaptı[49]. Sonuçta ittifak içindeki bazı ülkelerde hareketlenme artmaya başladı. Bu konuda Kazakistan olayları bir ilk oldu. Kazakistan olaylarından 2 yıl sonra sıra Azerbaycana geldi.1988 yılında Azerbaycanın tarihi toprakları olan şimdiki Ermenistanda yaşayan azeri türklerinin kovulması prosesleri başladı. Şu olaylarda yaklaşık 250 binden fazla azeri türkü kendi yurtlarından kovulmuştur. Tabii ki, ermeni zalimliyi şununla da sınırlı kalmamış, 1988-1990 yılları arasında Ermenistanda 216 azeri türkü katledilmiştir. Bu durum hem de bir halka yapılan soykırım olarakta kabul ediliyor. 19 şubat 1988 de Ermenistanın başkenti Erivanda büyükçaplı protestolar başlamıştır. Tabii ki, bu protestoların esas ana hedefi azeri türkleri idi. Baş kaldıran protestolarda esas şiarlar şunlardı; "Ermenistanı türklerden temizlemeli!", "Ermenistan yalnızca ermeniler içindir!". Şu durum aynı zamanda Ermenistan ve Azerbaycan arasında başlayan ve haylen de devam eden düşmanlığın daha da güçlenmesine destek oldu. Erivandakı bu olaylardan 8 gün sonra Azerbaycanın Sumgayıt şehrinde SSCB Devlet Tehlikesizlik Komitesinin kurgusu üzerine olaylar patlak verdi. Bu olaylarda 26 sı ermeni, 6 sı azeri türkü olmakla 32 kişi hayatını kap etti[50]. Erivan ve Sumgayıt olayları ile paralel olarak Azerbaycanın Karabağ bölgesinde de ermeniler ve azeri türkleri arasında olaylar patlak vermeye başladı. 20 şubat 1988 de Karabağ Milli Konseyi geçmiş Dağlık Karabağ'ın Ermenistan Sovyet Sosyalist Cumhuriyeti'ne verilmesi için talepte bulunmuştur. Bu durum Karabağda yaşayan azeri türklerinin endişesine sebep olmuş, bu yüzden 22 Şubat 1988'de Hankendide yerleşen Sovyetler Birliği Komünist Partisi'nin yerel merkezlerini kuşatıp Hankendi'nde Azerilerin öldürüldüğüne dair bilgiyi istediler. İstedikleri cevabı alamayan Azeri türkleri kalabalık şeklinde Dağlık Karabağ'a doğru yürümeye başlamıştır. Bölge yetkilileri yaklaşık bin polisiyle azeri türklerinin isyanlarını bastırmıştır. Olaylar sonucu Azerbaycanın Askeran bölgesinde iki Azeri türkü öldürülmüş ve 50 Ermeni köylü ve belirsiz sayıda Azeri türkleri ve polisler yaralanmışlardır. 1987 sonlarına yakın Ermenistanın Karabağı kendisine birleştirmek ve Karabağdakı Tophana ormanı'nın mahv etmek girişiminde bulununca Azerbaycanda halk hareketlenmeye başladı[51]. Azerbaycana karşı kurulan çirkin olayları durdurmak için Azerbaycan halkı sokaklara dökülmeye başladı[52]. Böylelikle Azerbaycanda birtakım aydınların katılımı ile halk harekatı formalaşmaya başladı. 17 kasım 1988 yılında ise Azerbaycandakı Halk Harekatı bugünü Dirçeliş günü kimi kaydetmeye başladı. Gorbaçov başta olmakla SSCB nin başında duranlar tabii ki, Bakûdeki bu durumdan rahatsızlardı. Kreml hükumeti Bakûdeki olayları kısa sürede boğmak için oraya ordu göndermeyi pilanlıyordu. 19 ocak 1990 senesinde rus sovyet tankları Bakü sokaklarında görünmeye başladı. 19 ocak akşamdan 20 ocak sabaha kadar rus sovyet ordusu Azerbaycanın başkenti Baküde katliyam yaptı. Resmi belgelere göre bu katliyam ve soykırım sonucu 143 kişi hayatını kaypetmiş, onlarca kişi yaralanmış ve sakat kalmıştır. SSCB yönetiminin başarısız politikaları, ittifak içinde halklararası ziddiyeti daha da körüklemek politikasını

[48] ALMAATADA 1986 ARALIK OLAYLARI: JELTOKSAN Füsun KARA - https://www.acarindex.com/dosyalar/makale/acarindex-1423933332.pdf
[49] Glastnost (Açıklık) ve Perestroyka (Yeniden Yapılandırma) - https://www.tarihiolaylar.com/tarihi-olaylar/glastnost-aciklik-ve-perestroyka-yeniden-yapilandirma-379
[50] Sumgayıt Olayları Kgb'nin Planıydı" - https://www.haberler.com/sumgayit-olaylari-kgb-nin-planiydi-10591230-haberi/
[51] Karabağ Savaşı (Şubat 1988 - Mayıs 1994)- https://www.ensiklopediya.az/tr/karabag-savasi
[52] Azerbaycan Türklerinin Ermenistan'dan Zorunlu Göçü - Prof. Dr. Aygun Attar - https://ednews.net/tr/news/conflicts/405870-azerbaycan-turklerinin-ermenistandan-zorunlu-gocu

tutması daha da kızıştı. Azerbaycanda gerçekleşen 20 ocak 1990 olayları halkda SSCB'ye inamı ve güveni tamamen kırdı. Böylelikle de SSCB nin çöküş süreci biraz daha hızlanmış oldu. Halk Bağımsızlık istiyordu. 18 ekim 1991 yılında Azerbaycan referandum yaparak kendi bağımsızlığını ilan etti. 24 aralık 1991'de SSCB nin dağılması sonucu yerinde 15 bağımsız devlet kuruldu. Tabii ki, yıllarca kendi kontrölünde sakladığı halkları kolayca kendi başına burakmak istemeyen geçmiş KGB düzeni SSCB döneminden saatli bombaya okşar Karabağ olaylarını yeniden kızıştırmaya, Ermenistan ve Azerbaycan arasında savaşı hızlandırmaya başladı. 1992-1993 yıllarında Ermenistanın işgalci politikasına destek veren eski SSCB yetkilileri Azerbaycanın 20 % toprağının işgaline imkan tanıdı. 1992 senesinden başlayarak ise kendisini SSCB varsi gibi gören Rusya bu politikayı izlemeye ve başladı[53].

SSCB'nin çöküşü sırasında yalnızca Kazakistan ve Azerbaycanda yapılmış olaylar değil, aynı zamanda ittifakın diğer ülkesi Gürcistanda da yapılmış olaylar etkin rol oynadı. 9 Nisan 1989'da Sovyet ordusu Gürcistanın başkenti Tiflis'in Şota Rustaveli Caddesi'nde bağımsızlık için miting düzenleyen vatandaşlara karşı silahlı müdahale etmiştir. Bu müdahale sonucu mitinge katılmış 21 gösterici hayatını kaybetmiş ve yüzlerce kişi yaralanmıştı. Bundan sonra Gürcistanda bağımsızlık hareketleri iyice hızlanmış ve Gürcistan, bu olaylardan 2 yıl sonra 9 Nisan 1991'de bağımsızlığını ilan etmişti. Gürcistanın kendi bağımsızlığını ilan etmesine rağmen kendi topraklarını korumayı başaramamıştır[54]. 1991 yılında kazandığı bağımsızlıkdan sonra 2008 senesine kadar Gürcistan için Abaziya ve Güney Osetya sorunu her zaman tazelyini koruyordu. Kuzey Osetyaya birleşmek istemesi ile 1989 senesinden itibaren Gürcistan ve Güney Osetya arasında gerginlik iyice artmaya başladı. Gürcistana katılmayı istemeyen Güney Osetya 1990'da kendisini Demokratik Güney Osetya Sovyet Cumhuriyeti ilan etti. Bu duruma karşı Gürcistan hükumeti bölgenin bölgenin özerkliğini kaldırmıştır. Gürcistanın 1991 yılında Güney Osetyanın başkenti Tshinval'ye askeri müdahilesi sonrası çatışmalar başladı. Ruslar, Gürcüler ve Osetinlerin katılımı ile kurulmuş barış gücü 14 Temmuz 1992'de ateşkesi sağlamıştır. Gücü askeri birlikleri şiddetli çatışmalardan sonra, yani 1994 yılında imzalanan ateşkes anlaşmasına uygun olarak Abhaziya'yı terk etmek zorunda kalmıştı. Sözkonusu anlaşmaya göre Rusya burada 3 bin barış gücü askeri bulundurma hakkına sahip olmuş, ancak bugüne kadar orada sadece 2 bin 500 askeri personel bulundurmuştu. Gürcistandan ayrılmak için Güney Osetya tarafından iki referandum yapıldı. İlk referandum 1992'de Osetyanın Gürcistandan fiilen ayrıldıktan sonra gerçekleşti ve bu ilk referandumda Osetinlerin yüzde 98'i, daha sonra ise ikinci referandum 2006'da yapıldı ve bu referandumda ise yüzde 90'ı bağımsızlığı seçti[55]. Her şeye rağmen hiç bir ülke onu tanımadı. 26 Ağustos 2008 tarihinde Rusya devlet başkanı Dimitri Medvedev, Rusya'nın Güney Osetya Cumhuriyeti'nin bağımsızlığını tanıdığını açıklamıştır. Tabii ki, bu durum onu gösterdi ki, SSCB döneminde bilerekten kurgulanmış olaylardandır. Kazakistanda, Azerbaycan, Baltık ülkelerinde ve s. bölgelerde böyle olayları kurgulamakla aslında gelecek dönemde eski SSCB coğrafiyasında etkin olmağı amaçlanıyormuş[56].

1991 yılının başlarında SSCB'nin diğer bölgelerinde olduğu gibi Baltık ülkelerinde de bağımsızlık hareketleri artmaya başladı. Onun için de 11-13 Ocak 1991 tarihleri arasında Litvanya'da Sovyet güçlerinin müdahalesi sırasında birtakım olaylar yaşandı. 13 Mart 1990 tarihinde Litvanya'nın kendi bağımsızlığını ilan etmesinin ardından SSCB yetkilileri müdahale etme kararı aldı. SSCB nin bu olaylara müdahilesi sonucunda 14 sivil vatandaş öldü ve 702 sivil vatandaş yaralandı. Litvanya olayları yalnızca başkent Vilnuste değil, aynı zamanda Alytus, Siauliai, Varena, ve

[53] BAKÜ KATLİAMI (20 OCAK 1990) - https://yenidenergenekon.com/98-baku-katliami-20-ocak-1990/
[54] Gürcistan'da Bağımsızlık Mücadelesinde Hayatını Kaybedenler Törenle Anıldı - http://www.olay53.com/haber/gurcistanda-bagimsizlik-mucadelesinde-hayatini-kaybedenler-torenle-anildi-815344.htm
[55] Rusya-Gürcistan Savaşı Çıktı - http://forum.turksportal.net/vb/showthread.php?page=2&t=65318
[56] ABHAZYA VE GÜNEY OSETYA SORUNU: AVRUPA BİRLİĞİ - GÜRCİSTAN İLİŞKİLERİNİN "İSTENMEYEN" GÜNDEMİ Ülviyye Sanılı Aydın - https://www.academia.edu/30958750/ABHAZYA_VE_G%C3%9CNEY_OSETYA_SORUNU_AVRUPA_B%C4%B0RL%C4%B0%C4%9E%C4%B0_G%C3%9CRC%C4%B0STAN_%C4%B0L%C4%B0%C5%9EK%C4%B0LER%C4%B0N%C4%B0N_%C4%B0STENMEYEN_G%C3%9CNDEM%C4%B0

Kaunas kentlerinde gerçekleşti. SSCB güçleri 13 Ocak 1991 tarihinde Litvanyadan geri çekildi. SSCB de baş kaldıran olaylar, dünya çapında büyük etki yaratmış ve bu durum Baltık ülkelerinin bağımsızlığı için bir imkan tanımıştır. Kısa süre sonra, yani 6 Eylül 1991 tarihinde SSCB Litvanya'nın bağımsızlığını tanımıştır[57].

SSCB döneminde Sovyet yönetiminin yarattığı yapay çatışma bölgelerinden biri de Moldovyanın Dnestryanı bölgesi idi. SSCB yönetimi bu bölgede yarattığı ayrımcılık kavramı ile Moldova da Azerbaycan ve Gürcistan gibi zor bir döneme girdi. Önce SSCB yönetimi, bağımsızlıktan sonra ise Rusya yönetimi bölge ile sıkı temasa geçti. Çarlık Rusyasından ve SSCB'den kalan zihniyyetin esas amacı bölge halklarını ve ülkelerini bir şekilde kendi etkisi altında saklamaktır. SSCB'nin dağılmasına yakın, yani aralık 1990 da Moldovyanın Dnestryanı bölgesinde sözde referandum geçrildi ve Dnestryanı bağımsız devlet kuruldu[58]. Tabii ki, Moldova hükumeti bu kararı tanımadı ve sorun gittikce daha da zorlaştı. Derinleşen sonuc itibarı ile 1992 yılında Moldova ve sözde Dnestryanı Bağımz Devlet arasında savaş başlamış oldu. Rusya Federasyonu sözde Dnestryanı bağımsız devlete bölgede bulunan 14-cü ordusu aracılığı ile yardım etti. Bu konuda 14-cü ordu komutanı general Lebedem Rusyanın talimatı üzre ayrımcılara büyük testek sağladı.Yaranmış durum sonucu Moldova ordusunu sıkıştırmağa ve barışa getmeye zorladı. 22 Temmuz 1992'de Rusyanın arabuluculuğu ile Moldova ve sözde Dnestryanı bağımsız devlet arasında ateşkes oluşturuldu. Tarafların birge onayı ile bir tampon bölge kuruldu. Burada hem Moldova, hem sözde Dnestryanı bağımsız devletin, hem de Rusyanın askeri bulunmaya başladı. Moldovadan 300, sözde Dnestryanı bağımsız devletinden 300, Rusyadan ise 500 asker bulunmaya başladı[59]. Önceleri taraflar arasında ikili müzakireler yürütülürken, daha sonra bu format değişime uğradı. Moldova, Dnestryanı bölgə, AGİT, Rusya və Ukrayna, aynı zamanda ABD və Avropa İttifakından gözlemcilerin de katılımı ile “5+2” formatına geçit oluştu. 30 yıla aşkın bir süredir ki, SSCB'nin yarattığı bölgesel, etniksel ve mesepsel sorunlar yüzünde Rusya askeri barış gücü adı altında Moldova topraklarında bulunuyor[60].

Sonuç

SSCB'nin yarattığı iç bölgesel sorunlar devletlerin 30 yıllık bağımsızlık döneminde bile hayla çözülmemiş sorun olarak kalmaktadır. SSCB yönetimi zamanında yarattığı yapay sorunlar yüzünde bölge halkları zor bir durumla karşı-karşıya kalmaktadır. Rusya'nın sözkonusu bölgelerde kendine bağlı kukla rejimler kurmakla bazı geçmiş SSCB devletlerini kendi tesir alanında saklama anlayışı bölgede sonu görünmeye sorunları yaratmakla yanaşı kendi sonunu da getirmiş oldu. Bugün Ukrayna'da yapılanlar da şu politikanın içinde yer alıyor. 5 Aralık 1994'de Budapeşt Memorandumu ile Ukraynanın tehlikesizlik ve bağımzılığına teminat vermiş Rusya 20 yıl sonra, yani 2014 yılında Ukraynanın Kırım bölgesini işgal etmiş, Donesk ve Luhansk bölgelerinde ise kendisine bağlı ayrılıkçı rejimler kurmuş. 24 şubat 2022'den itibaren ise Rusya Ukraynanı işgal girişimine başlamıştır.

SSCB'nin 70 yıla aşkın bir sürec içinde kendisini bölgede tek hegemon güç bilmesine rağmen hem iç, hem de dış sorunlar yüzünde XX yüzyılın 70-80'li yıllarında itibaren dağılma sürecine girdi. Ekonominin kötüye girmesi, Afganistan savaşı, iç sorunlar ve s. meseleler SSCB ni doğrudan yıprattı. Bunun sonucunda da 1990'lı yılların başlarında SSCB hızla dağılma sürecine girdi. 24 Aralık 1991 yılında SSCB resmen dağıldığını ilan etti. Bununla da hem Soğuk Savaş, hem de SSCB kontrölünde kommünist rejimleri çökmeye başladı. Aynı zamanda dünyanın siyasi düzeni ABD nin kontrölündeki yeniden ikikutbpuluktan tekkutupluluğa geçti.

[57] The January bloodbath in Lithuania 25 years on - https://www.dw.com/en/the-january-bloodbath-in-lithuania-25-years-on/a-18976152
[58] DNESTRYANI-SONU GÖRÜNMƏYƏN YOL - http://regionplus.az/az/articles/view/5432
[59] Moldova ile Rusya arasındaki "Transdinyester" krizinde sıcak gelişme - https://www.haber7.com/dunya/haber/3129476-moldova-ile-rusya-arasindaki-transdinyester-krizinde-sicak-gelisme
[60] Dnestryanı münaqişəsi: Sadə göründüyü qədər mürəkkəb problem – REPORTAJ - https://apa.az/az/xeber/xarici-siyaset/Dnestryani-munaqissi-Sad-gorunduyu-qdr-murkkb-problem-lessfont-colorredgreaterREPORTAJlessfontgreater-189821

QATAR: A MAJOR COMPONENT OF INDIA'S FOREIGN POLICY IN THE GULF

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ABSTRACT

This paper is about the importance of Qatar in India's foreign policy making.
Qatar today has become a crucial component of India's external policy in the Gulf region. This is an attempt to look at the various factors influencing the formulation of India's foreign policy towards Qatar. The look west policy of India focuses on countries like Qatar due to its rise in world stature.

Keywords: Migrants, GCC, Remittances, Natural Gas, External Policy

Introduction

In modern times with the formation of nation-states, the study of foreign policy has recieved utmost importance for the survival and growth of the country. Today, one of the factors which determines a countries strength and a respectable position amongst other nations is how well does it manages its external policy. Many things goes into the making of a countries foreign policy. Behind the curtain many actors are involved who pull the strings. Various think tanks, committees, bureaucrats, experts and officials are involved in the formulation of foreign policy of any country.

The Indian state is a recent creation, about seventy years ago, while the Indian civilisation is centuries old, in fact one of the oldest in the world. It had cultural, economic and diplomatic relations with its neighbours as well as far off places. India is located at the heart of Asia, it commanded the various land trade routes as well as the maritime trade routes in the Indian Ocean. Throughout its history, it was in continuous contact with the outside world. Ancient seaports on the coasts of India had links to the Greek civilisation in the west and China and Japan in the east. Various scholars, students and visitors came to India in search of knowledge that flourished in its various ancient universities. Caravans passed across the subcontinent from East Asia via South Asia to Central and West Asia. India became a melting pot of various cultures, languages, religions, cuisines from all over the world, that the end product was a syncretic tradition that flourished in India. The influence of Indian theology, traditions, sciences, art, culture is well entrenched in the everyday life of people across the globe due to its magnificent past of vibrant trade and commerce. India as well as the world has gained enormously due to this exchange of ideas and people in course of world history[61].

Throughout its history, the ruling powers of India determined their external policy according to their needs and requirements. Each new empire had its own set of allies and enemies which changed very often with the change in the ruling elites. The last empire which ruled over India until it got independence had left a remarkable imprint on India's foreign policy makeup which is still visible. The British Empire was nothing like the earlier empires which ruled over India. Its nature and characteristic were totally different from the previous empires[62]. The British Empire was truly global in presence, not only physically but also economically and ideologically. With the Industrial Revolution in Britain, all the spheres of human life and society were revolutionised in the sense that there was far more technological and scientific advancement. The world got interconnected as it had never before in human history. New nation-states were formed during the British Raj and the discipline of foreign policy formulation in its modern form came into existence.

61 Pande, Aparna (2017), *From Chanakya to Modi: Evolution of India's Foreign Policy*, HarperCollins, p. 35.
62 Mahajan, Sneh (2018), Foreign Policy of Colonial India: 1900–1947, Routledge, p. 68.

In the post-independent period India embarked on its journey of forging international ties and friendships with other nations. For this New Delhi formulated its own independent external policy sans foreign interference or pressures. India has always supported the right to self-determination of the oppressed and colonised nations of the world as it had gained its liberation through a long and bitter struggle against colonialism and thus had a natural sympathy towards other countries of Africa and Asia who had gone through similar pain to achieve independence[63]. Through various international platforms like the United Nations (UN) and Non-Aligned Movement (NAM), New Delhi lent support to the newly born countries of the global south[64].

Determinants of Foreign Policy

Traditionally, foreign policy makers have relied on certain markers to formulate the external policy of the country. There are certain factors which determine the way two countries interact and the kind of relations they have. In modern times with the formation of nation-states, the study of foreign policy has recieved utmost importance for the survival and growth of the country. Today, one of the factors which determines a countries strength and a respectable position amongst other nations is how well does it manages its external policy. Many things goes into the making of a countries foreign policy. Behind the curtain many actors are involved who pull the strings. Various think tanks, committees, bureaucrats, experts and officials are involved in the formulation of foreign policy of any country. These factors are not in any way arranged in the order of importance or priority but the making of foreign policy is a permutation combination of all the these factors.

1) Size of a country:

The land is an important capital. This capital can be utilised by a State to gain favourable bargaining power at international platforms due to its large landmass. Though vast territory is definitely a booster but even territorially small countries punch above their weight due to other factors like strategic importance or high wealth[65].

2) Geographical factors:

Where a country is placed on the world map makes a lot of difference in the way it looks at the world. Geopolitics goes a long way in determining countries foreign policy[66]. A countries neighbours play a crucial role which determines the course of action the country will take on important issues. If the neighbours are friendly and relations are healthy then prosperity ensures but if there is enmity amongst the neighbours then the country opts to find distant allies to counter its neighbours. Thus, a country will look out for regional allies.

3) Internal factors:

The external policy of any country is the reflection of its internal situation. A high level of economic development comes in handy in securing foreign policy goals. Stable economic growth and sound infrastructure are a sign of economic power. This relative economic advantage could be used while bargaining at international platforms.

63 Deora, M.S. (1994), *Documents on India's Role in Afro-Asian Liberation Movement*, Discovery Publishing House, p. 81.

64 Ali, Wajid H. M. (2004), *India and the Non-aligned Movement*, Adam Publisher, p. 95.

65 Mintz, Alex and Karl DeRouen Jr (2010), Understanding Foreign Policy Decision Making, Cambridge University Press, p. 56.

66 Kaplan, Robert D. (2013), *The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate*, RHUS, p. 49.

4) Historical and cultural factors:

Each country has its unique historical trajectory which shaped it into current form. History weighs heavy on the present and no one can deny the immense contribution of historical experiences for formulating foreign policy. The colonial and imperial policies in the past still influence many countries that were impacted by these policies. The cultural links between people across the border do make its presence in the country external policy[67].

5) Form of Government:

Although the nature of government does not play any decisive role in the countries external policy, still it matters. The type of government whether dictatorial, democratic, socialist, theological, monarchy, liberal or military junta does shape the countries world outlook. Ideological ambitions and constraints associated with the form of government can at times prove decisive[68].

6) Public Opinion:

There is no doubt that the external policy is the sole responsibility of the government but the civil society consisting of ordinary citizens do influence the countries foreign policy. There have been instances in the past when the government was forced to change its policies due to popular public opinion which went against the government's stand[69].

7) International treaties:

The foreign policy of a nation cannot be formulated in a vacuum. The international pressures and compulsions have to be taken into consideration while deciding upon the policy matters. The countries treaties with various international organisations from financial to military pacts have to be respected to maintain a stable global order. There are numerous trading blocs and trading agreements which a country is obliged to respect[70]. Thus, due to the growing interdependence of countries on each other, the foreign policy are tailored to suit the international treaties.

Qatari exceptionalism

The tiny peninsular State of Qatar is different than its neighbouring Gulf countries in many ways. Qatar is uniquely unique. It is full of contradictions. Although it is a small country territorially (under 12,000 square kilometres)[71] it is at the same time one of the richest in the world in terms of per capita income (about 70,000 USD)[72]. It is one of the smallest Arab states jutting outside the east coast of the Arabian peninsula into the Gulf, by which it has its sole neighbour Saudi Arabia with a narrow land border and yet it has one of the highest immigrant populations of about 2.3 million people which is about 90 per cent of the total population of Qatar[73]. It has vast resources of oil and natural gas within its tiny land area. Qatar is kind of an absolute monarchy and has one of the highest HDI in the Arab world. It may seem in first instance that this desert, sandy and dry part of the world has nothing to offer, until one dwels into its history.

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67 Melissen, Jan (2007), *The New Public Diplomacy: Soft Power in International Relations,* Palgrave Macmillan, p. 45.

68 Smith, Steve and Amelia Hadfield and Tim Dunne (2012), *Foreign Policy: Theories, Actors, Cases,* Oxford University Press, p. 78.

69 Headley, James and Andreas Reitzig and Joe Burton (2012), *Public Participation in Foreign Policy,* Palgrave Macmillan, p. 58.

70 Petrič, Ernest (2013), *Foreign Policy: From Conception to Diplomatic Practice,* Martinus Nijhoff, p. 12.

71 CIA (2020), *The World Fact Book. Middle East: Qatar,* [Online: web] Accessed 06 Dec. 2020 URL: https://www.cia.gov/the-world-factbook/countries/qatar/.

72 World Bank (2020), *World Development Indicators Online database,* [Online: web] Accessed 10 Nov. 2020 URL: https://datacatalog.worldbank.org/dataset/world-development-indicators.

73 Wiedmann, Florian and Ashraf M. Salama (2019), *Building Migrant Cities in the Gulf: Urban Transformation in the Middle East,* I.B. Tauris, p. 157.

Figure 1: Political map of Qatar



Source: World Atlas

Qatar peninsula was continuously inhabited for thousands of years. It may seem unbelievable today but Qatar was not always dry and sandy throughout its history. In fact, between 8000 and 4000 BCE, it received substantial rainfall to sustain flora and fauna[74]. Tools have been found by archaeologist dating back to 50,000 years. The Qatari peninsula was an important entrepot on the maritime route between Mesopotamia and India. The ancient Dilmun civilisation in the region had trade links with the Indus valley and Babylonian civilisations[75]. The *dhow* a traditional sailing vessel in the Gulf intrinsic to the culture and economy of the region was made from Indian teak wood[76]. In the medieval period with the

74 Stone Pages (2011), *Qatar's earliest human settlement found*, [Online: web] Accessed 07 Oct. 2020 URL: https://www.stonepages.com/news/archives/004595.html.
75 Skutsch, Carl (2004), *Encyclopedia of the World's Minorities*, Routledge, p. 65.
76 Erskine-Loftus, Pamela, Mariam Ibrahim Al-Mulla and Victoria Hightower (eds) (2016), *Representing the Nation: Heritage, Museums, National Narratives, and Identity in the Arab Gulf States*, Routledge, p. 52.

advent of the Age of Discovery, European powers like the British, Dutch, Portuguese and French began the scramble of the Gulf region. Each one tried to grab this territory due to its strategic importance. Numerous battles were fought amongst them for the possession of the Gulf region. Finally, after defeating the Portuguese the British became the sole hegemon in the region[77]. The British presence bought the much-needed stability in this region from the sheikhs infighting and the nuisance of pirates. The pearl industry was the main source of income in the state and provided jobs to hundreds of people engaged in the industry from labourers to merchants. The raw pearls were exported to Bombay to be polished and then sent to the world market in the form of processed jewellery. Many Indian merchants were operating in Qatar in the nineteenth century. Thus, Qatar was so tightly knitted with British India in many aspects that it was considered to be the westernmost part of British India. Some even called it an extended Bombay. One can understand the level of integration between Qatar and India from the fact that until Qatar's independence the Indian rupee was the official currency of Qatar[78]. In the early 1930s with the Great economic depression in the US, the international pearl trade collapsed. This had negative consequences on Qatar's economy which was heavily dependent on a single export to sustain itself. With the exploration of oil in 1939 in the Dukhan oil field, Qatar's fortune knew no bounds. In 1949 Qatar started exporting oil in huge quantities with the assistance of Britain[79]. Money started to flow in and there was a rapid transformation of the economic and social life in the country. Qatar is one of the best examples of rags to riches story. It went on to become one of the richest countries in a matter of a few years from the poorest country in the region.

Key features of India's foreign policy towards Qatar

The foreign policy of New Delhi towards Doha cannot be understood unless one links it with the global happenings of the past few years. The last few years since the ties begun was a significant period in the modern history of the world. There are quite a few reasons for it. It marked the 'end of history' according to the US political scientist Francis Fukuyama, which is the triumph of the free market, capitalist economy over the socialist one with the fall of the Union of Soviet Socialist Republics (USSR)[80]. However, flawed this argument is including the fact that Fukuyama completely neglected another socialist giant in the East, China, it holds true for a brief period of time. For a few years, the US was the only giant the world had seen with no parallel to its all encompassing power. Afterall the US had a series of successes one after the other in this decade starting from its victory in Afghanistan in the early 1990s to the first Gulf war[81]. Post 9/11 the hegemony of the US started to decline with its failure in Iraq and Afghanistan and its allies in the region Israel facing defeat for the first time in its history in the Lebanon War of 2006[82]. The rise of the US was cut short with a tough challenge to its power from the east, from countries like China, Russia and India rising in prominence.

The 1990s was also a significant year in Indian history as it brought a paradigm shift in its economy, politics and society in general. The Bretton wood institutions like the IMF and World Bank got a second life, a sort of resurrection after it being on the course of destruction in the previous decade due to the

77 Bradshaw, Tancred (2019), *The End of Empire in the Gulf: From Trucial States to United Arab Emirates*, I.B. Tauris, p. 28.
78 Bennett, Oliver (ed.) (2020), *Cultural Diplomacy and International Cultural Relations: Volume I*, Routledge, p. 98.
79 Axon, Anthony and Susan Hewitt (2020), *Qatar 1975/76-2019*, Brill, p. 188.
80 Fukuyama, Francis (2006), *The End of History and the Last Man*, Simon & Schuster, p. 134.
81 Lowry, Richard S (2008), *The Gulf War Chronicles: A Military History of the First War with Iraq*, iUniverse, p. 28.
82 Lansford, Tom (2011), *9/11 and the Wars in Afghanistan and Iraq: A Chronology and Reference Guide*, ABC-CLIO; Annotated, p. 225.

withdrawal of the global south from its unfair policies[83]. Now, these institutions held sway over countries like India, who earlier was in the Soviet camp. These institutions forced structural adjustment programmes, which meant pushing the neo-liberal policies and austerity measures. Countries like India had no other option but to get assimilated into the globalised world market and open up their land and resources for global investments. Thus, a series of policies popularly known as LPG that is Liberalisation, Privatisation and Globalisation was undertaken by the Indian government[84].

Indian external policy experts have crafted a quite distinctive foreign policy towards Qatar looking at its special aspects. Some of the basic features of this policy are as follows. In the case of Qatar, the decade of 1990s could be said as the golden age in its history. Under the leadership of a new visionary Emir Khalifa bin Hamad Al Thani taking over the reins in his hands in 1995 and being assisted with the equally abled and efficient foreign minister and later on prime minister Hamad bin Jassim, they revolutionised Qatar's economy and world stature during their tenure. During this period Qatar witnessed an economic boom with the success of its gas exports and petrochemical industry.

Colonial hangover:

The British Raj which lasted for about two centuries in South Asia left its mark on the society, culture, politics and economy in the region. The colonial practises and institutions whether beneficial to the people or not was in many ways continued even after decades of freedom. This colonial imprint is explicitly or implicitly found in the Indian education, judicial, bureaucratic and social life. The realm of foreign policy formulation is not untouched by this overarching influence of the colonial legacy[85]. India naturally went close to the Anglophone countries, especially the commonwealth countries. The economic system of India under the British capitalist system was organised in such a manner that even after independence India had to rely on its former colonial masters or its markets in other former colonial countries for the well being of its industries and economy. Its relations with its neighbours are the best example of the colonial vestiges in New Delhi's policy towards its bordering countries. According to foreign policy analysts India has definitely moved on from the colonial government's goals and objectives while formulating its external policy still, in many aspects, we can see some reminiscence of the colonial baggage in India's foreign policy[86].

Cold War's impact:

In the second half of the 20th century, the foreign policy of India was heavily influenced by the changing contours due to the cold war between the two superpowers. India and some other countries of the global south decided not to be part of either superpower bloc and to move forward independently without the intervention of the two. They formed the Non-Aligned Movement in 1961, with the newly liberated countries of Asia, Africa and Latin America who did not want another imperialistic power controlling them[87].

Although India professed to be Non-Aligned yet it had developed close ties with the USSR owing to various reasons from strategic to economic. This closeness of India towards the rival Soviet Union had angered the US which to counter-balance the USSR in the region made alliances with India's neighbour

83 Boughton, James M. (2012),*Tearing Down Walls: The International Monetary Fund 1990-1999,* International Monetary Fund, p. 147.

84 Prakash, B. A. (2011), *The Indian Economy Since 1991: Economic Reforms and Performance*, PearsonEducation India, p. 349.

85 Hansel, Mischa (2017), *Theorizing Indian Foreign Policy,* Taylor & Francis, p. 22.

86 Ray, Jayanta K (2015), *India's Foreign Relations, 1947-2007,* Routledge, p. 646.

87 Jacob, Happymon and Amitabh Mattoo (2010), *Shaping India's Foreign Policy: People, Politics and Places* , Har-Anand Publications, p. 128.

like Pakistan[88]. The situation remained more or less the same throughout the second half of the 20th century, until the collapse of the Soviet Union at the turn of the millennium. During this period the changing global order due to cold war shaped India's external policy.

Regional factors:

The location of India in the Asian continent is at an important strategic point. The country commands the Indian Ocean in the south, the Arabian Sea in the west and the Bay of Bengal in the east. Therefore, the country plays a crucial role in the security of the maritime trading routes in its exclusive economic zone. In the context of regional security, the persistent threat to the sovereignty and territory of India came from Pakistan and China historically and in recent years from its erstwhile all season friends like Nepal. Even if we consider the Pakistan enmity as the colonial legacy, post-independent India and Pakistan did not move on to form renewed ties instead they became pawns in the hands of the western imperialist superpowers and engaged in skirmishes. Somewhat, similar is the case with China's relations with India[89]. Both the countries fear that the other in pursuit of becoming a superpower would harm their interest in the region and at the global level. Thus, periodic conflicts arise between the two on the issue of territorial encroachments, which both the countries claim as theirs. In the past few years, India's all-weather friends like Nepal, Bangladesh, Sri Lanka and even Bhutan have distanced themselves away from India and developed close relations with China owing to its enormous economic growth and its heavy financial investments in these countries. Thus, in such a dicey situation it becomes imperative for New Delhi to forge new ties beyond the region[90]. The situation of India in present times is somewhat similar to that of Qatar who has similar problems with its neighbours, be that Saudi Arabia, Iran or Iraq. Doha too is in search of new partners beyond the Gulf region and under such circumstances, emerging countries like India could be its best bet.

Energy trade

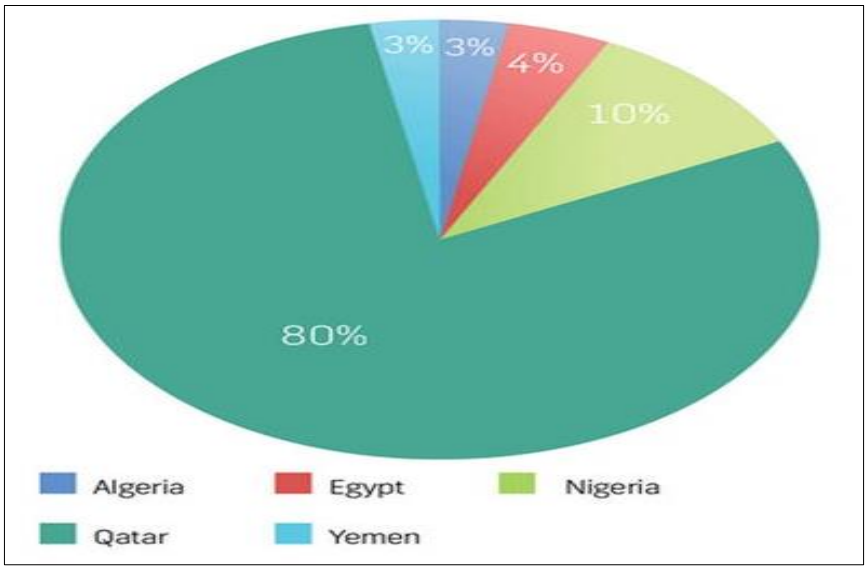
The state of Qatar is located on an important strategic and energy rich part of the Arabian peninsula. Both its land and waters contain highly valuable hydrocarbon sources, thus making Qatar one of the top most hydrocarbon producing and exporting country in the world. Its massive offshore North Field, which spans an area roughly equal to Qatar itself, is the largest non-associated natural gas field in the world. Qatar has become the LNG capital of the world. Qatar has the third largest reserves of natural gas in the world after Russia and Iran.

88 Kux, Dennis (2001), The United States and Pakistan, 1947–2000: Disenchanted Allies, Johns Hopkins University Press, p. 246.

89 Jain, B. M. (2017), China's Soft Power Diplomacy in South Asia: Myth or Reality?, Lexington Books, p. 51.

90 Sikri, Rajiv (2013), *Challenge and Strategy: Rethinking India's Foreign Policy*, SAGE India, p. 18.

Figure 2: Country wise LNG imports of India in 2012



Source: Oilprice.com at https://oilprice.com/

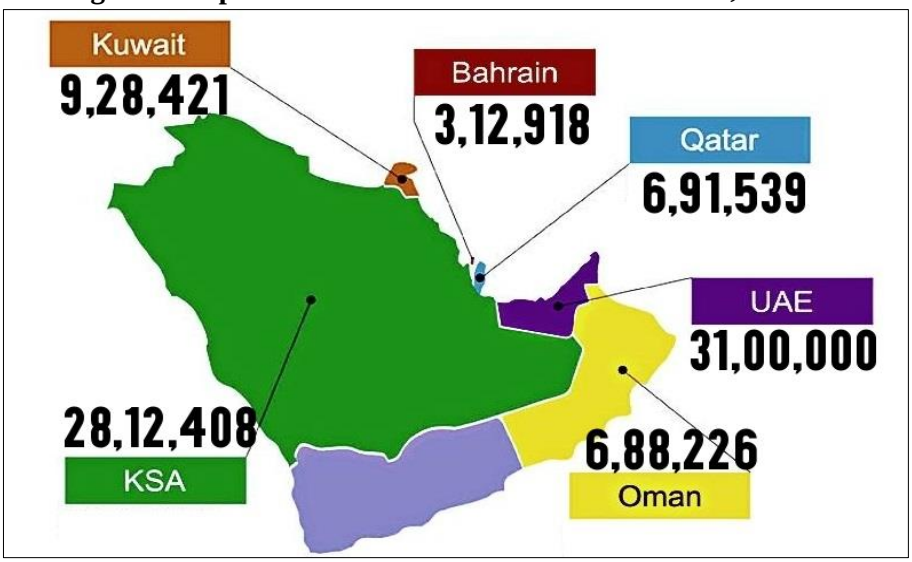
Qatar is the biggest exporter of natural gas to India. More than 80 per cent of India's imports of natural gas come from one country that is Qatar. In 2015, Petronet LNG, India's largest natural gas importer, and Qatar's RasGas signed an agreement for an additional supply of 1 millon tonnes of LNG annually from RasGas through the remaining twenty-five year contract which ends in the year 2028[91].
An underwater deep-sea gas pipeline from Qatar to India through Oman has also been proposed. This is going to be two thousand kilometer distance from Qatar via Oman to Indian states of Gujarat or Maharashtra. In 2008, Qatar invested about $5 billion USD in India's energy sector. Qatar plays a crucial role in India's energy security. Qatar now forms an important component of India's look west policy especially in the Gulf.

Indian Diaspora:

The Indian diaspora is one of the largest and well spread across the world. According to the Ministry of Overseas Indian Affairs (MOIA), the Indian diaspora is approximately twenty-five million strong and spread over all regions of the world[92]. Neha Vora views the Indian Diaspora in the Gulf as only second in importance to the Indian Diaspora in the Northern America, when it comes to the Diaspora influencing the host and home country in terms of external policy formulation[93]. Therefore, the diaspora is an asset for the home country rather than a liability. The diaspora forms one of the core components in India's soft power assertion[94].

91 Prasad, Gireesh Chandra (2015), "RasGas halves gas price for Petronet LNG, drops penalty", *Mint*, 31 Dec. 2015.
92 Ministry of Overseas Indian Affairs (2006), *25 million Overseas Indians across the globe*, 3rd Annual Report, p. 02.
93 Vora, Neha (2013), *Impossible Citizens: Dubai's Indian Diaspora*, Duke University Press, p. 157.
94 Kugiel, Patryk (2016), *India's Soft Power: A New Foreign Policy Strategy*, KW Publishers Pvt Ltd, p. 174.

Figure 3: Population of Indians in the GCC countries, 2018



Source: Created by the author with data from the MEA, annual report, 2018, online at

https://www.mea.gov.in/

New Delhi in understanding the importance of the Indian diaspora to its economic and strategic interests, keeps regular contact with the community through events like *Pravasi Bharatiya Divas* and through such events tries to build links with the host country. The Indian diaspora in some countries forms a significant part of the host country population, thus in such countries, it has the capacity to sway electoral outcomes. Policymakers argue that this large presence of Indian diaspora in the host country could be used as a bargaining power to lobby India's interests[95]. The diaspora can be used as both an asset as well as a liability by both India and Qatar in their interaction.

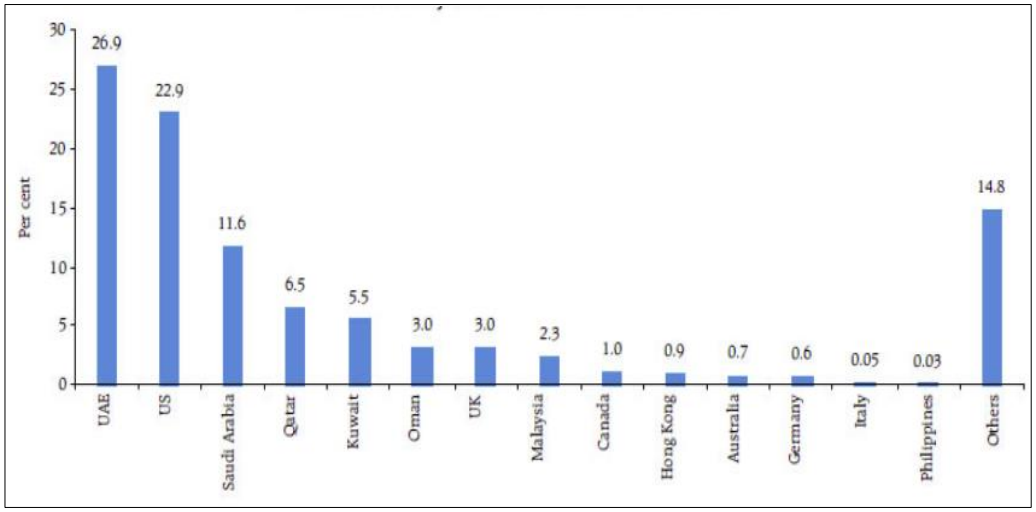
Remittances

According to the World Bank annual data on migration and remittances, India recieved the highest remittances in its history, about 83 billion USD in 2019. Although, the remittances inflow in India is the highest in the world, it did not play any significant role in its economy barring a few states in the southern part of the country where it might be a major source of income. In parts of India, this remittance money from Qatar played an important role in the economy of states like Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, UP and Bihar. This phenomena came to be known as the "money order" depended economy[96]. Interesting fact is that the remittances in the aggregate as well as per capita from overseas Indian workers in Qatar are significantly higher than remittances received from other destination countries.

Figure 4: Country-wise inward remittances in India, 2018

95 Thussu, Daya K. (2013), *Communicating India's Soft Power: Buddha to Bollywood*, Palgrave Macmillan, p. 37.

96 Krishnakumar, R. (2017), "End of the Gulf dream?", *Frontline*, 04 Aug. 2017.



Source: RBI Bulletin, November 14, 2018, online at https://www.rbi.org.in/

Remittances from Qatar and other GCC States are the life line of the Indian economy. Remittances are recorded in the "invisibles" component and plays an important role of cushion to India's Balance of Payments[97]. The remittance from diaspora in countries like Qatar plays a crucial role to avoid any Balance of Payment crisis like situation of the 1990s from recurring again in India. Higher the remittances higher will be the credit worthiness of any State. A good and higher ranking in the credit worthiness index for any country would be beneficial in many ways, like attracting investments from overseas or to borrow money from some international financial institutions like the World Bank. Qatar has increasingly become important to India owing to the vast economic advantages. Remittances from Qatar impacts India's foreign policy outlook towards Qatar.

Conclusion

To conclude the paper, it must be said that India and Qatar are getting closer to each other in the last few years. Their cordial relations is on account of an effective and well crafted foreign policy. There are some things which make India an ideal partner for Qatar and fits into its demands. Qatar has embarked on an ambitious project to build its brand in the international market and it needs cheap labour force to accomplish its gigantic dreams. India has the human resources which Qatar needs desperately. Likewise, India has a huge diaspora in Qatar and is proud of the fact that its citizens are playing such an important role in building and shaping the history of the country.

The leadership in Qatar has been extremely friendly and supportive to the Indian concerns. India too has responded favourably to the demands of Qatar and so far things have worked great for both of them. Qatar is looking forward towards India with lots of hope as India is poised to become one of the top economies of the world in coming decades. Qatar is investing heavily in India's budding gas industry, as it sees a lot of opportunities in this field[98]. India too needs this energy as it is energy deficient and depends on imports of oil and gas to fuel its industries. Thus, both Qatar and India have an excellent opportunity to build up their ties on the energy trading platform.

India holds Qatar in high esteem and considers it as the next big thing in the region and India wants to engage with it eagerly. India in the past had fairly good experience with the Gulf countries like that of

97 Chandrasekhar, C. P. and Jayati Ghosh (2018), "Remittance bonanza has shored up balance of payments", *The Hindu Businessline*, 18 Dec. 2018.

98 Abhyankar, Rajendra M. (2018), *Indian Diplomacy: Beyond Strategic Autonomy*, Oxford University Press India, p. 186.

Saudi Arabia, Kuwait, Oman and Bahrain dealing with them in terms of energy trade primarily in oil. Qatar has its own unique advantages amongst the heavy weights of this region as it is the only country having huge reserves of gas. Qatar holds special importance to countries like India due to its potential to supply huge quantities of gas. Gas is fast becoming a major source of clean energy putting behind traditional fuels like oil and coal. Thus, Qatar is of utmost importance to energy hungry countries like India.Qatar is not only economically and political important to India but in the recent past it is also assisting India in counter terrorism intelligence and co-operation. Qatar has become principal strategic partner of India in the region. Due to Qatar's role in India's energy security and its heavy investments in India it cannot be neglected by Indian foreign policy experts. Qatar has the potential to balance power equations in the Gulf for India. It is difficult to ignore Qatar and it will be imprudent to not include it while framing the external policy in the region.

"IMPLICATIONS OF BREXIT: ISSUES AND CHALLENGES" PAKISTAN: A CASE IN FOCUS

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ABSTRACT

The United Kingdom decided to depart from the European Union (EU) through referendum as an option for sovereignty on 23 June 2016. "Brexit" as it has been named, is a union of two terms i.e.'Br' taken from Britain and 'exit' means the European Union's Exit". Brexit rested on the proposal that UK part ways with the European Union and attempt to change its relationship to the union on trade, migration and security. The European Union, comprising of 27 EU countries is a unique union for economic and political. The predecessor of the EU i.e. European Economic Community (EEC), established in 1958 in the after-effects of the WW-II aimed at fostering economic cooperation and enhancing interdependence economically to avoid conflict initially between six countries: Belgium, France, Germany, Luxembourg, Italy and the Netherlands. Since then, 22 other countries joined leading to creation of a huge single market (also called as the 'internal' market) and continued to achieve its optimum potential. On 31 January 2020, the Britain exited the EU. EU was created mainly as an economic organization and has evolved into a union that spans policy areas, from environment, climate and health to security and external relations, migration and justice. This was demonstrated by a change of name from the EEC to the EU in 1993. David Cameron, UK's former PM made a commitment of holding the referendum on UK's membership of EU in January 2013 which lead to Brexit. What motivated initially was mainly political, however, it turned into a widespread economic impact globally. Brexit offers two pronged swords, it can change everything or it can change nothing. It is researched that the expected repercussions of Brexit would impact globally. However, it is hard to make assessment with respect to scope, size and duration fully as of now. The prevailing uncertainty both politically and economically as a result of the UK's post-referendum reality has been considered as initial impact of Brexit. It owes a huge probability of implications which may lead to a range of renewed socio-economic and political relationships of countries. In short, pro-leave group's narrative of enhancing competitiveness of UK by quitting regulations of EU fitted well to the competitiveness-led policy related goals of many supranational, national, and regional governments. The purpose of this research was to find out: what are the implications of Brexit including issues and challenges which arise after the withdrawal of Britain from European Union and how it may impact Pakistan. The researcher's conclusion with suggestion and recommendations was also summed up at the end of the study.

Keywords: BREXIT, Issues, Challenges, Implications, Security.

INTRODUCTION

The United Kingdom decided to depart from the European Union (EU) through referendum as an option for sovereignty on 23 June 2016. "Brexit" as it has been named, is a union of two terms i.e. 'Br' taken from Britain and 'exit' means the European Union's Exit". Brexit rested on the proposal that UK part ways with the European Union and attempt to change its relationship to the union on trade, migration and security. The European Union, comprising of 27 EU countries is a unique union for economic and political. The predecessor of the EU i.e. European Economic Community (EEC), established in 1958 in the after-effects of the WW-II aimed at fostering economic cooperation and enhancing interdependence economically to avoid conflict initially between six countries: Belgium, France, Germany, Luxembourg, Italy and the Netherlands. Since then, 22 other countries joined leading to creation of a huge single market (also called as the 'internal' market) and continued to achieve its optimum potential. On 31 January 2020, the Britain exited the EU. EU was created mainly as an economic organization and has evolved into a union that spans policy areas, from environment, climate

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[99]Andrew Gamble, "British politics after Brexit", *Political Insight* 8, no. 1 (March 2017): 5.
[100]Aisha Riaz, Muhammad Ayyoub, and Fouzia Yasmin, "Brexit: An Assessment, Implications, and Strategy for Pakistan", *Research Journal of Social Sciences and Economics Review (RJSSER)* 1, no. 3 (September 2020): 96.
[101]Mark Thissen, Frank van Oort, Philip McCann, Raquel Ortega-Argilés, and Trond Husby, "The implications of Brexit for UK and EU regional competitiveness", *Economic Geography* (October 2020): 14. https://doi.org/10.1080/00130095.2020.1820862 (accessed 15 February 2021).
[102]Andrew Gamble, "British politics after Brexit", *Political Insight* 8, no. 1 (March 2017): 5.
[103]Aisha Riaz, Muhammad Ayyoub, and Fouzia Yasmin, "Brexit: An Assessment, Implications, and Strategy for Pakistan", *Research Journal of Social Sciences and Economics Review (RJSSER)* 1, no. 3 (September 2020): 96.
[104]Mark Thissen, Frank van Oort, Philip McCann, Raquel Ortega-Argilés, and Trond Husby, "The implications of Brexit for UK and EU regional competitiveness", *Economic Geography* (October 2020): 14. https://doi.org/10.1080/00130095.2020.1820862 (accessed 15 February 2021).

CURRENCY OF THE TOPIC

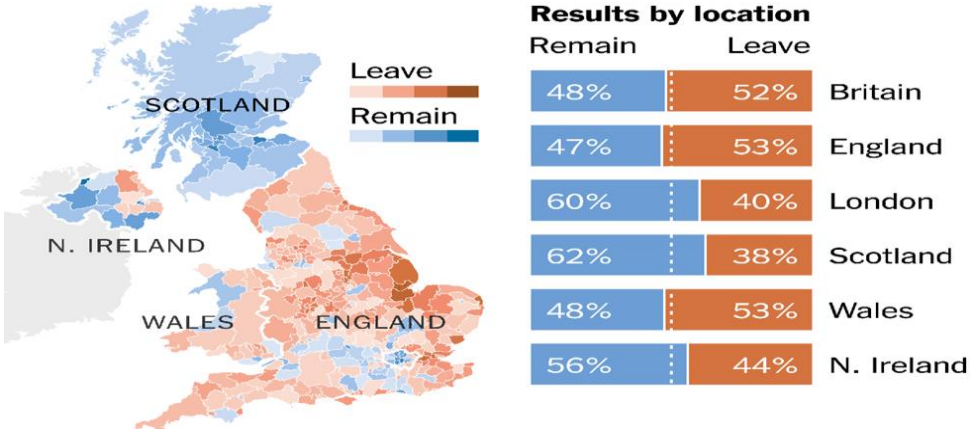


PROBLEM STATEMENT

The impacts of Brexit are in part to be determined by the UK-EU Cooperation and Trade Agreement which was agreed upon on 24 December 2020 and the UK Parliament ratified it on 30 December 2020. It has been applied "provisionally" by the EU since 31 December 2020.The economists are broadly assuming that economy of UK will likely be harmed by the Brexit and its real per capita income will reduce in the long term. The migration from European Economic Area (EEA) to UK is likely to reduce, and it may pose challenges for higher education of UK and academic research. UK announced the Turing scheme as a new exchange program for global students in early 2021 to sort this. Following Brexit, the EU Court of Justice does not hold supremacy over British laws or Supreme Court.

The purpose of this research is to find out what are the implications of Brexit including issues and challenges which arise after the withdrawal of Britain from European Union and how it may impact Pakistan.

MOTIVES FOR WANTING TO LEAVE AND STAY



105

[105]Benjamin Mueller, "What is Brexit? And What happens next?",*The New York Times*, 31 January 2020.

Immigration and national autonomy were the arguments made by the advocates for leaving[106]. The supremacy of European laws over British laws in the exit camp was not acceptable. Another issue was the UK's inability to stalk the pour of immigrants from other countries of EU. The counterargument of the remain camp was that one aspect of the four essential freedoms was free migration that is defined by the Treaty of Maastricht, 1993 as the Single Market set up. The UK will never be allowed by 27 remaining countries of the EU to leave one of the four i.e. keeping access to the single market in services, goods and capital without being a part of the single labour market. Thus withdrawing from the EU would bring increasing uncertainty about trading arrangements in future instead of rewards, which would lower employment, investment and growth. The globalization led nations in recent decades is to do away with borders by establishing economic unions as major response politically, leading to a reduction in country size. In the perspective of the Brexit, the argument by remain group is that UK may benefit by staying stuck in the EU and the Common Market. Given the context, the pattern of decision exhibited by the English regions to exit the EU might be explained by their residents having different behaviour towards immigration or witnessing more immigration than other areas.

IMPLICATIONS OF BREXIT

Widening Division Between Scotland And The UK

There is a widening division between United Kingdom and Scotland. In 2016, as the UK held a referendum and in the wake of a surprising "Leave" result, the UK was to leave the EU, but it was not supported by every nation. As a major fact, the nations within the UK that had a majority vote to exit the EU were Wales and England while Scotland is the nation to attempt to secede from the UK. Electorally, 62% of the inhabitants from Scotland voted to remain in the EU, which has increased tensions between Scotland and United Kingdom. There is ongoing tussle between Prime minister of UK and Nicola Ferguson Sturgeon who is the first minister of Scotland and leader of the Scottish National Party as it's said they were taken out of EU without their will.

Border between UK and Northern Ireland

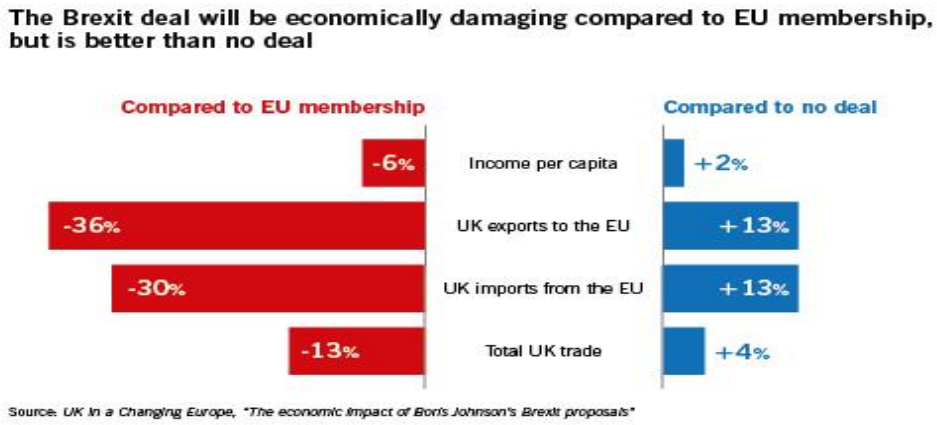
The Good Friday agreement between UK and Ireland brought an agreement that the border between Republic of Ireland and Northern Ireland would be virtually invisible having no border posts and no cameras. This was convenient when both were with the EU, and there was free movement of goods and people between the two regions. However, following Brexit, a new arrangement would be needed as certain goods would be required to be inspected at entry point given the fact that Northern Ireland is no longer part of the EU while the Republic of Ireland remains in the EU. As Irish border is the only land border between UK and EU, on one side there is Northern Ireland which is part of the UK and on the other side Republic of Ireland which is a full member of EU. After years long negotiations, UK and EU have reached an agreement known as Northern Ireland Protocol. It is implemented from 1 January 2021 onwards. It allows Northern Ireland to continue free movement of lorries across the border with no inspection.

Economic Effects

Concurrence to the EEC in 1973 set out a decade of weighty structural changes of deregulation, monetarism, liberalisation, deindustrialisation and trade union reform that shape the UK's economy today, for better or bad. There appears an approximate consensus predictions of the economic effects of

[106]AgustArnorsson, and GylfiZoega, "On the causes of Brexit", *European Journal of Political Economy* 55 (December 2018): 313.

Brexit on GDP of UK and per capita incomes: expected noteworthy but not catastrophic decline in growth. One model suggests that it will cost 6.4% of GDP, amid an annual fall in roughly half a percent growth.



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But what this reflects for trade of UK needs unpacking. The Brexit arrangement secures quota and tariff free access of goods reaching the UK. But it simultaneously takes UK out of the Common Market and Customs Union leading to new border checks and controls and new rules in service sectors. The impact of the new tariff barriers has been witnessed in everything right from the wholesale daily share trading transfer of €6bn from London to the EU, to loss of business for UK fishermen and delays.

It has been discussed[108] that the choice to exit the EU had numerous costs on the supervisory and regulatory frameworks and thus on economic integration of Europe. Before UK's exit, it was one of the most significant members of the European Common Market. This view is confirmed by empirical observations which show that the day after Brexit, the FTSE 250 index plunged 7.2% and the pound sterling fell sharply by more than 8% against the US dollar and 6% against the euro.

Immigration and Demographics

After withdrawal of UK from the EU on 31 January 2020, one of the most serious issues for the nation was immigration. People's free movement from UK to the EU and vice versa has finished at 11pm dated 31 December 2020. On 19 February 2020, the UK published a policy statement which stated that, from 1 January 2021, the free movement of people would be replaced with a system of immigration which is points-based under which non-EU and EU citizens will be rendered to the same treatment. Anyone from the UK wanting to stay in the EU for a period more than 90 days needs a visa now. The new system of points-based will allow the UK to get back control of its borders, decrease level of migration, and give precedence to the highest skilled and the greatest talents i.e. engineers, scientists, academics and other exceedingly skilled workers.

[107]Jonathan Portes, "Brexit and Beyond: how the UK economy will fare outside the EU", *Prospect Magazine,* 20 January 2021.
[108]Ben AmeurHachmi, and WaëlLouhichi, "The Brexit impact on European market co-movements", *Annals of Operations Research* (January 2021): 10.

Capital Movements, Transfers, Payments and Temporary Safeguard Measures

The EU and UK have made agreements on the free movement of capital, transfers and payments for services and goods to facilitate investment and trade. The provisions entails that the EU and UK can still follow objectives of public policy in their particular jurisdictions. Specific exceptions have also been agreed upon which allow the Parties to enforce appropriate provisional reservations, for example, in case of crisis of a balance of payments. UK annual membership fee to EU will end but still some bill that owe which need to pay off and if want to join any EU Schemes e.g. Scientific research that will also come at a cost.

EU-NATO Cooperation

Research has revealed[109] that since its attainment to the EU, the role of UK has been significant in the development and design of the EU's security, foreign and defence policy. It has been a major contributor to the development of the relationship between the two organizations, while being among the founding members of NATO.UK's decision to withdraw from the EU has raised questions regarding the implications of Brexit on EU–NATO cooperation.

Britain also faces an uncertain position within the European security architecture as the transatlantic bridge between the two organisations. The United Kingdom is conceived as a bridge between the two sides of the Atlantic and, in particular, between the two organizations (NATO and EU) at both institutional and operational levels. Taking into account the development of national security interests and recent political events, here are three possible Brexit scenarios for the EU-NATO relationship, one of which is the United Kingdom will continue to play an important role in enhancing its cooperation, with the United Kingdom becoming just another non-EU NATO member state and the relationships between them will slow down, and one that will trigger an imbalance and thus deadlock in the EU-NATO cooperation. The future of this special inter-organizational relationship will depend on the future relationship between the EU and the United Kingdom and how the EU and NATO will deal with the new circumstances in which their Member States will face another potential obstacle.

IMPLICATIONS OF BREXIT ON PAKISTAN

Besides prediction by policymakers about possible implication of Brexit on global economy and EU, it is viewed that it may have impacts for economies of developing countries too. The pertinent question for Pakistan is: how and how much it will impact? And how, the economy and citizens can be made immune to it. Experts share both views i.e. Brexit may have no large impacts on the economy of Pakistan and its pattern of international trade or it may have consequences for Pakistan too. The supporters of the first hypothesis[110] suggest that global markets relatively protect Pakistan as key trading partners of Pakistan are non EU countries like Saudi Arabia, China, UAE, Kuwait, Afghanistan, Iran, Malaysia, India, Japan, United Kingdom, Singapore and the USA with exception of Germany, France and Italy[111]. Only the weight of Pak-China trade is bigger than the collective trade weight of all main European countries. So it is not likely to modify the course of the economy considerably.

The substitute hypothesis renders that Pakistan's economy is not fully immune to the effects of Brexit. The situation requires a thorough analysis and extensive focus of policymakers. The followers of this

[109]Nele MarianneEwers-Peters, "Brexit's implications for EU-NATO cooperation: Transatlantic bridge no more?", *The British Journal of Politics and International Relations* (November 2020): 1369148120963814.
[110]Usman Javed, "How will Brexit impact Pakistan?",*The Diplomat*, 05 July 2016.
[111]IMF"s Direction of Trade Statistics (DOTS) database.

standpoint argue that Kuwait, UAE and Saudi Arabia are among the main trading players that have role in worsening balance of trade (BOT) of Pakistan. To reduce the deficit of trade, Pakistan is needs to rely more on foreign aids, higher export destinations, grants giving economies and sources of overseas remittances. Following the news of Brexit referendum, despite recurring assurances from the Commerce Ministry of Pakistan that exports of Pakistan to the EU will not be impacted, Pakistan's Stock market dropped by around 1400 points.

Foreign Trade Pattern of Pakistan

Statistics reveal[112] that export and import volumes of Pakistan worldwide is approximately $23 billion and $50 billion, respectively. In the previous EU, Pakistan's leading trading partners were UK, France, Germany and Italy. Whereas, UK and Germany are biggest export destinations of Pakistan and prime exports included clothing, textile and leather products.

Research discloses that[113], the EU market accounts for 21.2 percent of Pakistan's total exports, assisted by the GSP+ status, allowing for reduced or zero tariff exports. Although research reveals[114] that Pakistan got EU trade privileges with assistance of UK resulting into unprecedented exports to the EU at a milestone of $7 billion annually. January 2014 onwards, exports of Pakistan to UK increased by 40% and net Pakistani exports reached Euro 7.492 billion (2019) from Euro 4.532 billion (2013) facilitated by GSP+. The UK has remained the leading destination for Pakistan with 1555.4 Million USD for exports during 2012-2015[115].

CONCLUSIONS

In short, since the referendum in 2016, a great deal of attention has been paid to the potential impact of Brexit. It has many global implications and raises many issues and challenges on economic, political and social fronts. With the passage of the EU-UK Trade and Cooperation Agreement between the EU and the United Kingdom, many issues have been addressed with caution, including immigration, fisheries, trade tariffs, to name a few. However, few areas need careful handling, including the widening gap between the United Kingdom and Scotland, with regard to the referendum on the independence of Scotland. In addition, the long-term economic implications of Brexit for the EU and the United Kingdom will take time to show, but everyone is familiar with the consensus predictions of the direct economic impact on UK GDP and per capita income, and will be economically damaging to EU membership.

It also calls for a proactive policy aimed at identifying the nature of the challenges facing the Pakistani economy after Brexit. In the aftermath of the global impact of Brexit, there is also a thirst for the development of the Dynamic Response Mechanism. Due to the importance of the United Kingdom to Pakistan's political economy and foreign trade, there are many major implications of the Brexit strategy. Recent data shows that Pakistan's exports to the EU and the United Kingdom are not vulnerable to the British exit vote. However, this steady trend in exports is due to the current status of GSP Plus for the United Kingdom and the EU. We therefore expect that it will not change the international trade structure and direction of Pakistan's economy if we are able to retain this GSP Plus status. However, considerable attention on the part of trade policy makers is needed to maintain stable export trends on the continent of Europe. Only if Pakistan's independent policy can be strategized by Pakistani diplomats towards UK and the EU, we would be able to maintain the current GSP Plus status for our exports to the United Kingdom and the post-Brexit EU.

[112]Pakistan Economic Survey, 2016.
[113]Ibid.
[114]ShahzadParacha, "Brexit may hit trade between Pakistan, Britain",*The Daily Times*, 27 June 2016.
[115]Aisha Riaz, Muhammad Ayyoub, and Fouzia Yasmin, "Brexit: An Assessment, Implications, and Strategy for Pakistan", *Research Journal of Social Sciences and Economics Review (RJSSER)* 1, no. 3 (September 2020): 95.

RECOMMENDATIONS

Because of the importance of the UK to Pakistan's political economy and foreign exchange, Brexit calls for constructive policy action to recognize the essence of Pakistan's post-Brexit problems and adequate solutions. While one point of view is that Pakistan's exports to the EU and the United Kingdom are not likely to be subject to Brexit and are unlikely to shift Pakistan's foreign trade and economic path, another point of view is that, since June 2016, the steady trend in exports to the United Kingdom and the EU is due to the current GSP Plus status. This situation calls for considerable attention on the part of policymakers. Efforts should be made to sustain established trends in exports to the Europe and to maintain the current status of GSP Plus. In doing so, key suggestions that could be of assistance to Pakistan's strategy can be prioritized as follows: First, Pakistan needs a dynamic response mechanism and a keen focus by Trade Policy makers. Second, Pakistan should immediately modernize its political diplomacy in order to convince major powers (e.g. Italy, France and Germany) to have an appropriate market share in the EU post Brexit. The diplomats should devise separate policies for the United Kingdom and the post-Brexit EU in order to have a beneficial impact on the decision-making process. Third, since has happened formally, the United Kingdom will have to negotiate with all the world's nations on market access. It is generally believed, the United Kingdom will be more likely to strengthen its political and economic relations with the partners of the Commonwealth after Brexit. In order to protect the unilateral benefits of the post-Brexit UK, as Pakistan may not be high on the UK's priority list, new lobbying power would be needed. A proactive policy to identify the nature of the post-Brexit challenges facing the Pakistani economy.

References

Ahmed, Nabeel,KazimAlam, and Farhan Zaheer "Post-Brexit: What it means for the Pakistani economy", *The Express Tribune*. 24 June 2016.

Ameur, Hachmi Ben, and WaëlLouhichi. "The Brexit impact on European market co-movements." *Annals of Operations Research (January 2021)*: 1-17.

Arnorsson, Agust, and GylfiZoega. "On the causes of Brexit." *European Journal of Political Economy* 55 (December 2018): 301-323.

Chabe, Tamara. "Brexit will allow Britain to embrace the Commonwealth." *Daily Telegraph,* 14 March 2016.

Craig, Paul P. "The process: Brexit and the anatomy of article 50." *The Law and Politics of Brexit (Oxford University Press, 2017)* (May 2017).

Ewers-Peters, Nele Marianne. "Brexit's implications for EU-NATO cooperation: Transatlantic bridge no more?." *The British Journal of Politics and International Relations* (November 2020): 1369148120963814.

Gamble, Andrew. "British politics after Brexit." *Political Insight* 8, no. 1 (March 2017): 4-6.

Inglehart, Ronald F., and Pippa Norris. "Trump, Brexit, and the rise of populism: Economic have-nots and cultural backlash." (August 2016).

Javed, Usman, "How will Brexit impact Pakistan?",*The Diplomat*, 05 July 2016.

Mueller, Banjamin. "What is Brexit? And What happens next?".*The New York Times*, 31 January 2020.

Paracha, Shahzad, "Brexit may hit trade between Pakistan, Britain", *The Daily Times*, 27 June 2016.

Portes, Jonatham. "[1] Jonathan Portes, "Brexit and Beyond: how the UK economy will fare outside the EU". *Prospect Magazine,* 20 January 2021.

Riaz, Aisha, Muhammad Ayyoub, and Fouzia Yasmin. "Brexit: An Assessment, Implications, and Strategy for Pakistan." *Research Journal of Social Sciences and Economics Review (RJSSER)* 1, no. 3 (September 2020): 91-100.

Thissen, Mark, Frank van Oort, Philip McCann, Raquel Ortega-Argilés, and TrondHusby. "The implications of Brexit for UK and EU regional competitiveness." *Economic Geography* (October 2020): 1-25. https://doi.org/10.1080/00130095.2020.1820862 (accessed 15 February 2021).

GLOSSARY OF TERMS

Brexit	Britain's exit from EU
UK	United Kingdom
EU	European Union
EEC	European Economic Community
GSP	Generalized Scheme of Preferences
TEU	Treaty of European Union
GDP	Gross Domestic Product
FTA	Free Trade Agreement
WTO	World Trade Organization
NATO	North Atlantic Treaty Organization
EEA	Economic European Area
WW-II	World War Two

INSULIN PUMP THERAPY IN LIBYA: ASSESSMENT OF MEDICAL STAFF KNOWLEDGE

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ABSTRACT

Background: Diabetes Mellitus (DM) is a threat to peoples' lives around the world. Insulin pump therapy by itself is not a new therapy for DM, it is an alternative delivery mechanism for administration of insulin and is found to be superior to ordinary syringes and insulin pens. When insulin is administered subcutaneously via a properly programmed insulin pump, delivery of insulin is expected to mimic the insulin release pattern of a normal healthy pancreas better than other modalities of insulin delivery. Therefore, insulin pumps became a treatment option for patients with Type 1 diabetes mellitus (T1DM) and those with Type 2 diabetes mellitus (T2DM). However, information on how health care providers manage these devices and their knowledge about them is still lacking in Libya.
Objective: To examine the knowledge and experiences of health care providers (HCPs) regarding the characteristics and use of insulin pumps.
Methods and Sitting: The main three referral hospitals about insulin pump therapy in the western side of Libya: Diabetes and Endocrinology Hospital, Tripoli University Hospital and El-Galaa Hospital were included in the study. Method: Medical staff who work on insulin pump were invited to participate. Data were collected through face-to- face structured questionnaires.
Results: A total of seventy-two HCPs with work experience of (1-40) years were interviewed. Physicians and pharmacists had the highest knowledge followed by nurses and dietitians and then analysis technologist came last (90%, 83%, 70%, 65% and 43%) respectively.
Conclusion: The results of this study revealed that the knowledge among HCPs on insulin pump therapy in the western side of Libya was satisfactory.

Keywords: Diabetic-care team; Diabetes management; Diabetes mellitus; Health care providers; Knowledge; Insulin pump therapy.

INTRODUCTION

Diabetes is rapidly becoming a major health epidemic in most regions of the world [1]. Libya is one of the 21 countries and territories of the Middle East and North Africa (MENA). According to The International Diabetes Federation (IDF) MENA Region 2020; the prevalence of diabetes in Libyan adults is estimated to be 9.7% and total cases of diabetes in adults is 405,100 [2].

In the last three decades, the use of Continuous Subcutaneous Insulin Infusion (CSII), more commonly referred to as Insulin Pump Therapy (IPT) has been increased dramatically [3]. Statistics show that twenty to twenty-five percent of patients with type-1 diabetes are estimated to use insulin pumps in the United States and more than 350,000 people in the United States (US) use insulin pumps; and 10% in some countries in Europe [3,4].

The first insulin pump was developed in the 1950s was bulky machine had to be carried as a knapsack and was employed only for research purposes. Pumps were commercialized for use in the general

diabetic patient population in the 1970s and subsequent evolution in medical technology led to the development of a pocket-sized insulin pump. Modern pump is a small battery-operated electronic device about the size of a small mobile phone that holds a reservoir of insulin and is worn outside the body. IPT has several advantages compared to multiple daily injection regimen, it allows for more precise and flexible insulin dosing with fewer injections and help patients achieve glycemic control, prevent diabetes complications, which subsequently improves patients' quality of life and wellbeing [5].

Diabetes clinicians (diabetes care teams), endocrinologists, pharmacists, nurses, diabetes educators, dietitians, and others have important roles in promoting adherence to devices; they are the main source of education, support and troubleshooting for device use. To start insulin pump treatment, patients need comprehensive education that covers using the device itself, counting carbohydrates, checking blood glucose, and managing sick days.

Diabetes care teams not only improves patient outcomes, but can help prevent complications and counsel patients experiencing barriers to device use.[6]

Insulin pump therapy was firstly initiated in Libya at very small scale in the year 2008 as a trial and despite the clinical effectiveness of IPT and increasing their use worldwide, the use of insulin pumps in Libya was not acquired at large scale in the public health facilities until 2013. That was at the Pediatric Diabetes Clinic at the National Centre for Diabetes and Endocrinology, Tripoli and the target was about 450 pumps of the Roche type and 400 of Medtronic type [7].

Insulin pumps (IP) are available free to the patients; they are procured, and their distribution and supervision is conducted through the National Center for Diabetes and Endocrinology in Tripoli and the Scientific Committee for Modern Technologies, under the umbrella of the Ministry of Health and the suppliers or the agent companies that are responsible for the technical aspects of patient education and follow up.

By the year 2020 the number of patients wearing pumps is about 1400, using the available types of pumps which are from the most popular companies Roche and Medtronic.

There is only one version of the Roche type, which is the 2003 version "Accum check combo", and there are three versions of the Medtronic type "Medtronic veo, Minimed and the latest 640 which was introduced on 2019".

The choice of the type of the pump is a physician responsibility. The Medtronic type is more suitable for pediatric because it has a sensor, which alerts when a drop or a rise in the sugar level occurs and that help parents to take care of their child. The Roche type is more suitable for adults because it is not Arabized and needs adequate understanding of technology.

It was documented that IPT was positive in terms of achieving and maintaining good glycemic control in most of Libyan patients with type 1 Diabetes Mellitus (T1DM) wearing IPs, The study concluded that the slight increase in the Body mass index, necessitate to increase the Education Program about IP use, and the need for further studies on a larger scale [8].

No studies were conducted in Libya among diabetes clinicians to look at their knowledge and awareness about these wearable medical devices. Therefore, our study was the first and aimed to evaluate the basic knowledge about Insulin Pump Therapy among HCPs.

2. MATERIAL and METHODS

2.1. Ethical considerations

This study was approved by getting official permission from the managers of the selected hospitals for data collection. All participants provided verbal consent before filling the survey and confidentiality of data was assured.

2.2. Study Design, Setting, and Sampling

This study carried out between September 2020 and December 2020 after a year of COVID-19 outbreak, however the country was not in a period of strict or partial lockdowns. Thus it was feasible to us to conduct a structured face-to- face survey at three hospitals: Diabetes and Endocrinology Hospital, Tripoli University Hospital and El-Galaa Hospital.

These three hospitals were chosen because they are the referral hospitals about IPT that covers the whole western side of The State of Libya.

For the survey in this study, we used a questionnaire in which the questions were adapted from previously published researches on the knowledge of basic information regarding IPT [5, 9,10,11, 20].

This six-page questionnaire was designed in bilingual (Arabic and English versions), consisted of 10 questions with closed, open-ended and multiple-choice formats.

The questionnaire was organized in two sections; the first part included questions on demographic data (age, gender, year of graduation, specialty, practice setting and years of experience in the medical field). The second part contained questions addressed general knowledge of health care providers on IPT. This section covered the basic components of insulin pump, pump function, how to download it , type of insulin in the pump, methods of giving insulin, common myths regarding IPT and eligibility of patients.

The questionnaires were distributed to healthcare providers, working at the study hospitals, including physicians, pharmacists, nurses, dietitians and analysis technologists who agreed to participate in the study. Inclusion criteria for HCPs were: Libyan medical staff who deal directly with diabetic patients and have complied with preventative measures against COVID-19.

Data collectors gave a brief introduction to the participating clinicians by explaining the aims and significance of the study.

Data obtained from the questionnaires were collected and scores were calculated as the sum of the correct answers and analyzed by using descriptive statistics to analyze the data including numbers and percentages.

RESULTS

Socio-demographic Characteristics of HCPs

A total of 72 healthcare providers working at (Diabetes and Endocrinology Hospital, Tripoli University Hospital and El-Galaa Hospital) were participated in this study (Table 1). 40 (56%) were male, and 32 (44%) were female. Their graduation year was between 1980 -2020. Out of the 72 participants, 30 (42%) were physicians, 23 (32%) were pharmacists, 8 (11%) were nurses, 7 (10%) dietitians and 4 (5%) analysis technologist Figure (1).

Table 1: Demographic characteristics of the participating healthcare providers.

Characteristics of HCPs	Respondents (N)	Percentage (%)
Gender		
Male	40	56
Female	32	44
Specialty		
Physicians	30	42
Pharmacists	23	32
Nurses	8	11
Dietitians	7	10
Analysis technologists	4	5
Graduation year		
1980-2000	25	35

2001-2020	47	65
Years of experience		
21-40	25	35
1-20	47	65

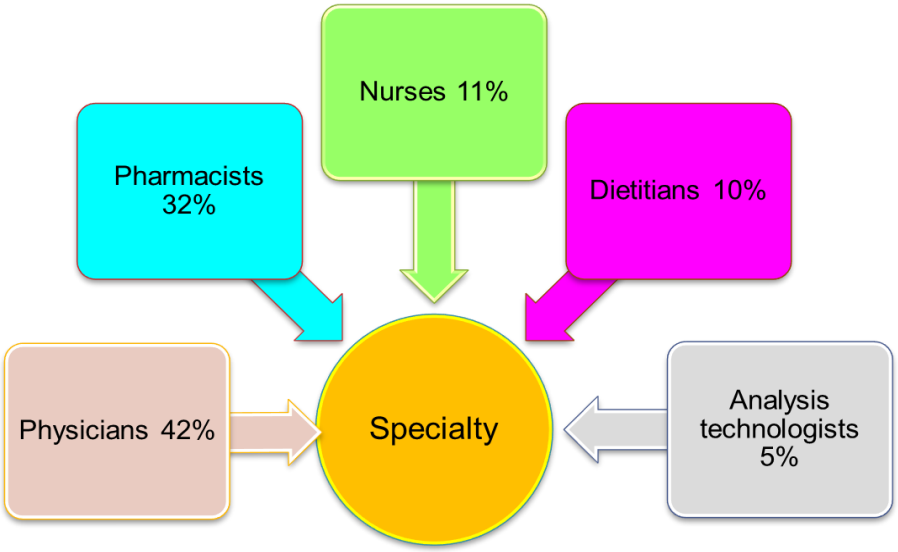

Figure 1: Percentages of healthcare providers participated in the knowledge evaluation study.

Assessment of the knowledge regarding insulin pump therapy

Based on information in the literature (See supporting information), the correct answer was determined for each question, and thus the results were evaluated and categorized (correct or incorrect). The results of the assessment of the health care providers' knowledge regarding insulin pump therapy are presented in Table 2.

Table 2: The overall knowledge of Insulin pump therapy among the health-care providers shown as the percentage.

Knowledge measurements of the basic information and features of insulin pump therapy.		
ITEMS	**CORRECT N (%)**	**INCORRECT N (%)**
1. What is the main function of insulin pump therapy?	72 (100%)	0 (0%)
2. What is the type of insulin that is commonly used in the pump?	50 (69%)	22(31%)
3. What is the insulin pump method for giving insulin?	58 (81%)	14 (19%)
4. Insulin pump therapy is mainly recommended for patient with:	63 (88%)	9 (12%)
5. Insulin pump therapy can be used for:	64 (89%)	8 (11%)
6. What are the basic components of insulin pump?	46(64%)	26 (36%)

7. How to download an insulin pump?	47 (65%)	25 (35%)
8. Who is the best candidate for insulin pump therapy?	56 (78%)	16 (22%)

The findings showed that all the participated HCPs 100% (n= 72) knew the role of insulin pump in improving glycemic control and reducing risks of hypoglycemia, 89% (n = 64) were aware that insulin pump can be used for all ages of diabetic patients and 88% (n = 63) of them were knowledgeable about recommendation of using the pumps for patients with type 1 diabetes, patients with type 2 and gestational diabetes.

The results revealed that most of the respondents 81% (n= 58) had adequate information about the insulin pump method for giving insulin; furthermore, 78% (n= 56) of them knew who is the best candidate for using insulin pump therapy.

More than half of HCPs have given the correct answers for the questions regarding the type of insulin that is commonly used in the pump, how to download the pump and the basic components of insulin pump (69%, 65% and 64%) respectively.

Our results indicated that majority of the participating HCPs (90%) exhibited a high level of knowledge about the types of pump devices and knew that the pump does not need minor surgery operation to be installed while 83% of them were aware that the pump does not eliminate the need for self-glucose monitoring while wearing a pump. These results are given at Table 3 and figure 2 whish show the overall knowledge measurements of the common myths regarding insulin pump therapy.

Table 3: The overall knowledge measurements of the common myths regarding insulin pump therapy.

Knowledge measurements of the common myths regarding insulin pump therapy.	**Yes (%)**	**NO (%)**	**I DONT KNOW (%)**
9.1. Are all insulin pumps the same?	4 (6%)	65 (90%)	3 (4%)
9.2. Is it necessary for the patient to have a high understanding of technology in order to be able to use an insulin pump?	25 (35%)	43 (60%)	4 (5%)
9.3. Does the insulin pump need a minor surgery operation to be installed?	5 (7%)	65 (90%)	2 (3%)
9.4. The pump can't be disconnected even for short time.	10 (14%)	54 (75%)	8 (11%)
9.5. The pump (especially if attached to continuous glucose monitoring) eliminates the need for self (finger-stick) glucose monitoring.	10 (14%)	60 (83%)	2 (3%)
10. Do you think the pump is the best solution for the complications of diabetes and hypoglycemic control?	68 (94%)	2 (3%)	2 (3%)

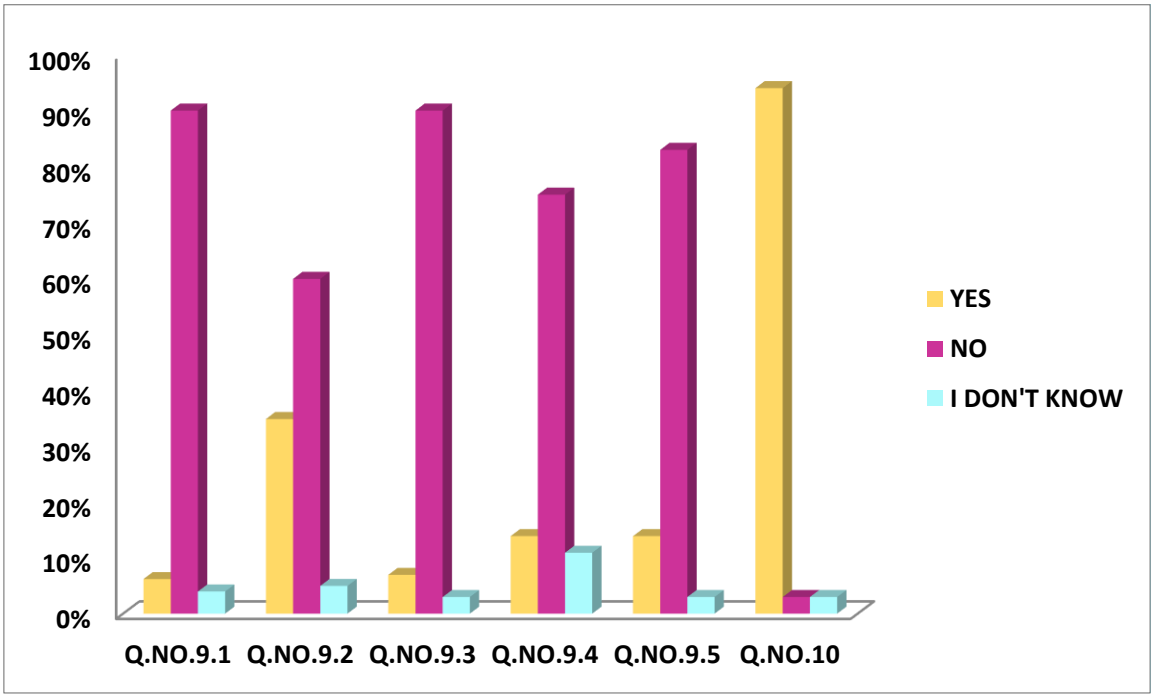

Figure 2: Knowledge measurements of the common myths regarding insulin pump therapy.

The researchers sought to compare the level of knowledge among HCPs towards insulin pump. Thus, they calculated the percentage of the correct answers for each group of the health care providers. In addition, they calculated scores as the sum of the correct answers for different themes; the highest possible score was 14 as demonstrated at (Table 4).

Our participating physicians and pharmacists had the highest knowledge (about 90% and 83%, respectively) followed by nurses and dietitians (about 70% and 65%, respectively) and analysis technologist came last (43%) as presented in figure (3).

Table 4. Comparison of knowledge scores between healthcare providers towards insulin pump.

Knowledge	Physicians N=30	Pharmacists N=23	Nurses N=8	Dietitians N=7	Analysis Technologist N=4
	Mean	Mean	Mean	Mean	Mean
The role and type of insulin within the pump.(score=3)	2.8	2.74	2.5	2	1
Common characteristics for using IPT.(score=3)	2.9	2.61	2.5	1.9	1.75
Basic information and features IPT. (score=3)	2.6	2.35	1.9	1.7	0.5
Common myths regarding the use of IPT. (score=5)	4.3	3.9	3.9	3.6	2.75
Total score (Score=14)	**12.6**	**11.6**	**10.8**	**9.2**	**6**

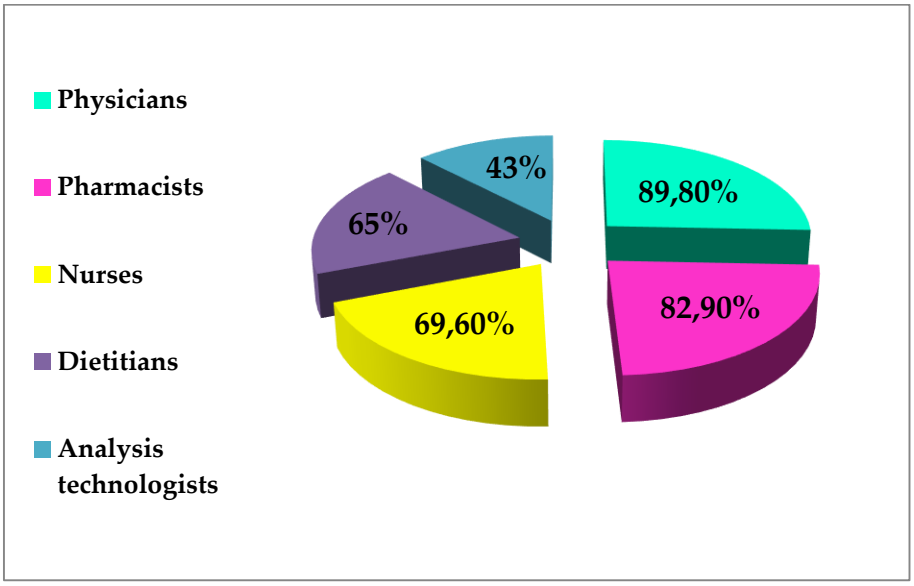

Figure 3: Comparison of knowledge between healthcare providers towards insulin pump in percentages.

DISCUSSION

Insulin pump therapy is an effective and safe mode of insulin delivery to diabetic patients. The use of the advanced features of the pump and the continuous glucose monitoring system will benefit glycemic control and keep it as near to the normal level as possible. IPT is an attempt to mimic physiologic insulin secretion, reduce the frequency and duration of hypoglycemia and as a result a substantial rise in insulin pump use around the world is noticed.

Basic knowledge and effective counselling on insulin pumps among healthcare professionals could contribute to the appropriate use of insulin pumps. This study represents the first analysis in Libya to assess the knowledge of insulin pumps among healthcare providers who work on the pumps, including physicians, pharmacists, nurses, dietitians, and analysis technologists.

The main findings indicated that 100% of medical staff knows the main function of the insulin pump, and 94% answered that the insulin pump is the best solution to overcome the complications of diabetes. For the other questions in the questionnaire, the percentages of the correct answers among the participated HCPs were ranging from 64% to 90%. This high level of knowledge among HCPs regarding the use of insulin pumps could be explained by the fact that the presence of continuing education units in the study hospitals and due to the educational sessions and comprehensive courses provided by the international companies responsible on supplying the pumps. This high knowledge among the leader HCPs in the field, who are participants in our study, might be a contributing factor to what was published in the first Libyan experience of a trained HCPs on the use of insulin pump therapy and indicated that IPT is very effective tool in hands of the medical staff to maintain good glycemic control in patients with T1DM [7]. Our results are also comparable with a research conducted in USA on management of diabetic inpatients which showed that with supervision of experts on a diabetes or endocrinology team having high knowledge on IPT and familiar with CSII use, patients can be continued on this technology or transitioned on and off this technology in a safe manner in order to achieve better glycemic control [5].

Two studies from Saudi Arabia compared the knowledge and attitude toward insulin pump among healthcare providers; the first had tested the knowledge of HCPs including: physicians, pharmacist and nurses while the second has conducted on 307 physicians including: family physicians, pediatricians, internists, pediatric endocrinologists, adult endocrinologists, and physicians from other specialties. Both

studies found that most of their participants have poor knowledge and they lack basic information regarding the insulin pump [9, 10]. Probably, because the targeted specialists in their studies were not dealing with IPT. Unlike our study which aimed to evaluate the medical staff members who are actually involved in IPT.

Our research team further analyzed the results to compare the knowledge among the different specialties; as percentages and as mean knowledge scores. Using both methods we can rank them in the following order: physicians > pharmacists > nurses > dietitians > analysis technologists. Unlike studies from developing countries which reported poor knowledge of diabetes and have found different deficits on IPT use among nurses and other medical staff [11,12,13,14,15,16,17,18,19, 20,21].

The high knowledge score among physicians and pharmacists (12.6 and 11.6, respectively) and the good score by the nurses (10.8) showed by the study could lead to several benefits. First, an increase use of insulin pumps among patients who could benefit from them; second, the incidence of positive events under treatment among patients using insulin pump; and third, will increase trust in HCPs and lead to enhance communication between patients/families and HCPs and ultimately will alleviate patients discomfort and increase their adherence to treatment and compliance due to high knowledge regarding the basic features of insulin pumps.

CONCLUSION

Insulin pump is a durable and effective mean of optimizing glycemic control in pediatric patients and individuals with type 2 diabetes mellitus improving their quality of life. This current study has produced encouraging results, since it revealed the high knowledge rates and sufficient understanding of insulin pump use among our participants from different medical specialties in Libya. Therefore; we recommend the Ministry of Health of Libya and the suppliers/the agent companies certainly to continue to use the same basic strategy in providing insulin pump training programs to increase the number of qualified medical staff who deal with patients on insulin pump therapy. Furthermore, despite this satisfactory awareness of IPT among HCPs; we strongly recommend all diabetes-care staff to keep attending continuing educational sessions and self-study through reading updated researches and attending online courses and webinars regarding insulin pump therapy.

STRENGTH OF THIS STUDY

The current study has its strengths. To our knowledge, this issue was not discussed previously in such a group of HCPs in Libya. Since the research group interviewed most HCPs who have been trained and worked on insulin pumps so far in Libya. Moreover, 35% of the participating HCPs were seniors with 20-40 years of work experience. It should be noted that due to political disputes during the civil war in Libya led to the fragility of the healthcare system and may have limited the distribution of the insulin pumps, in particular in the southern and eastern region of Libya. Thus, these three main diabetes centers included in the study covered the western side of Libya in reality could be considered the referral hospitals for the insulin pumps throughout almost the whole country.

REFERENCES

[1] Whiting D, Guariguata L,Weil C, Shaw J. IDF diabetes atlas: Global estimates of the prevalence of diabetes for 2011 and 2030. Diabetes Res. Clin. Pract. 1999, 94, 311–321. [CrossRef] [PubMed].

[2] The IDF Middle East and North Africa (MENA) Region. (Last updated February 25,2020). https://idf.org/our-network/regions-members/middle-east-and-north-africa/members/40-libya.html.

[3] Alsaleh FM, Smith FJ, Keady S, Taylor KMG. Insulin pumps: From inception to the present and toward the future. *J Clin Pharm Ther.* 2010; 35:127-138.

[4] Diabetes Self- Management Insulin Pumps. Available online http://www.diabetes self management.com/diabetes-resources/tools-tech/insulin-pumps/ (accessed on October 24, 2020).

[5] McAdams B, Rizvi A. An Overview of Insulin Pumps and Glucose Sensors for the Generalist. *J. Clinical Medicine*. 2016; 5(5). doi:10.3390/jcm5010005.

[6] Klonoff D, Buckingham B, Christiansen J,Montori V, Tamborlane W, Vigersky R, Wolpert H. Endocrine Society. Continuous glucose monitoring: An Endocrine Society Clinical Practice Guideline. *J. Clin. Endocrinol. Metab*. 2011; 96: 2968–2979. [CrossRef] [PubMed]

[7] BenRajab F, Alghazair N, Hamed W, Adala N. Gregni NB. First Libyan Experience with Insulin Pump Therapy: Impact on Glycemic Control and Patients Satisfaction. *Ibnosina J Med BS.* 2016;8(6):264-270.

[8] Ben Masaud B , Meeteig D , Ameed Kh , Mudallal N , Keshlaf1 S , Azzabi E, Shagrouni I, ShekiryW , NowaraS , Derbash A, Benhamed H . Impact of insulin pump therapy on glycemic control and body mass index on Type 1 diabetes mellitus, Tripoli Libya. Available online http://www.ljmr.com.ly , Vol.15 No.1 Year 2021 ISSN:2413-6069 ISSN: 2312-5365P. (accessed on August 20, 2021).

[9] Alghadeer S, Aljuaydi K, Alanazi M , Balkhi B, Alhossan A . The attitude and basic knowledge of insulin pump therapy among healthcare. *Biomed. Res.* 2019; 30: 446–451.

[10] Aqeel A, Almushaigeh A, Almijmaj M , Almesned R, Alsuhaibani M. Are Physicians in Saudi Arabia Ready for Patients with an Insulin Pump? An Examination of Physician Knowledge and Attitude. *Int. J. Environ. Res. Public Health.* 2020;17:9394. doi:10.3390/ijerph17249394

[11] Al Hayek A, Robert A, Al Dawish M, Braham R,Goudeh H S, Al Sabaan F. Efficacy of Insulin Pump Therapy on Diabetes Treatment Satisfaction and Glycemic Control Among Patients with Type 1 Diabetes Mellitus in Saudi Arabia: A Prospective Study. *Diabetes Ther*. 2015; 6: 227–236.

[12] Thompson B, Korytkowski M, Klonoff D, Cook C. Consensus Statement on Use of Continuous Subcutaneous Insulin Infusion Therapy in the Hospital. *J. Diabetes Sci. Technol.* 2018; 12: 880–889. [CrossRef] [PubMed].

[13] Drass J , Muir-Nash J, Boykin P, Turek J, Baker K. Perceived and actual level of knowledge of diabetes mellitus among nurses. Diabetes Care . 1989;12 (5): 351–356.

[14] Mogre V, Ansah G, Marfo D, Garti H. Assessing nurses' knowledge levels in the nutritional management of diabetes. *Int. J. Afr. Nurs. Sci*. 2015; 3: 40–43.

[15] Kamińska A, Reyer D, Polaszewska-Muszyńska M, Gronau M, Cibulla A, Olejniczak H, Zarzycka-Lindner G, W SawułaW. Ruprecht Z, Kałamaja S, Schneider A, Junik R.

The evaluation of the level of knowledge of nurses participating in the Regional Program of Workshops for Diabetic Education — initial report. *Clinical Diabetology*. 2013; 2:79–86.

[16] Alotaibi A, Gholizadeh L, Al-Ganmi A, Perry L. Examining perceived and actual diabetes knowledge among nurses working in a tertiary hospital. *Appl. Nurs. Res*. 2017; 35: 24–29. https://doi.org/10.1016/j.apnr.2017.02.014.

[17] Dafogianni C, Alikari V, Poli A, Mpilero E, Gerali M, Margari N, Zyga S Assessment of insulin treatment – related knowledge among nurses in pediatric hospitals. *IOSR J. Pharm.* 2016; 6: 20–25.

[18] Abduelkarem A, El-Shareif H. Assessment of diabetes-related knowledge among nursing staff in a hospital setting. *J. Diabetes Nurs.* 2013;17: 207–218.

[19] Kobosa E, Jacek I, Kryczkaa T, Szewczykb A, KnoffaB . Actual and perceived knowledge of type 1 diabetes mellitus among school nurses. *Nurse Education Today 87* 2020; 104304. https://doi.org/10.1016/j.nedt.2019.104304

[20] Tawalbeh L, Gharaibeh B. Diabetes knowledge among university nursing students in the north of Jordan. *Pak. J. Nutr*. 2014; 13:728–734. https://doi.org/10.3923/pjn. 728.734

[21] Odili V, Eke I. Knowledge of diabetes mellitus among registered nurses in Benin City. *Int. J. Health Res.* 2010; 3:145–151. https://doi.org/10.4314/ijhr.v3i3.70299.

[22] Orchard T, Nathan D, Zinman B, et al. .; Writing Group for the DCCT/EDIC Research Group . Association between 7 years of intensive treatment of type 1 diabetes and long-term mortality. *JAMA* 2015;313:45–53 [PMC free article] [PubMed] [Google Scholar]

[23] Diabetes Education Online. Diabetes Teaching Center at the University of California, San Francisco. https://dtc.ucsf.edu/types-of-diabetes/type1/treatment-of-type-1- medications-and-therapies/ insulin-pump-therapy/pump-faqs.

[24] American Diabetes Association: "How Do Insulin Pumps Work?" "Advantages of Using an Insulin Pump," "Insulin Pumps," "Prescription Assistance."
Diabetesforcast.org: "2012 Insulin Pumps. ,https://www.webmd.com/diabetes/insulin-pump.

[25] American Diabetes Association. Continuous subcutaneous insulin infusion.*Diabetes Care.* 2004; 27 (suppl 1):S110. https://www.diabetes.org/diabetes/medication-management.

[26] Klonoff D, Umpierrez G. Diabetes Technology Update: Use of Insulin Pumps and Continuous Glucose Monitoring in the Hospital. Diabetes Care. 2018; 41(8): 1579-1589. https://my.clevelandclinic.org/health/articles/9811-insulin-pumps. *Accessed 3/24/2021*.

[27] Pickup J, Sutton A. Severe hypoglycaemia and glycemic control in Type 1 diabetes: meta-analysis of multiple daily insulin injections compared with continuous subcutaneous insulin infusion. *Diabetic Medicine.* 2008;25: 765–774.

[28] Wong J, Neinstein A, Spindler M, Adi S. Minority of patients with type 1 diabetes routinely downloads and retrospectively reviews device data. *Diabetes TechnolTher*. 2015;17:555–562. [PMC free article] [PubMed] [Google Scholar].

[29] Insulin pumps | Diabetes UK, https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/treating-your- diabetes/insulin-pumps. *Accessed 3/24/2021.*

[30] Kingery N. In Education and Information Education and Information » Starting Insulin Pump Therapy: 8 Frequently Asked Questions. https://www.medtronicdiabetes.com/loop-blog/starting-insulin-pump-therapy-8-frequently-asked-questions.

[31] American Association of Diabetes Educators. Continuous Subcutaneous Insulin Infusion (CSII).AADE White Paper. June 6, 2014. http://www.diabeteseducator.org

[32] American Diabetes Association. https://www.diabetes.org/healthy-living/medication-treatments/blood-glucose-testing-and-control/hypoglycemia. *Accessed 3/24/2021.*

Supporting information

Questions	Correct answer
1.What is the main function of IPT?	Improving glycemic control and reducing risks of hypoglycemia in ambulatory patients [9].
2.What is the type of insulin that is commonly used in the pump?	Insulin pumps use rapid-acting insulin's such as lispro, aspart and glulisine. Because the pump delivers tiny amounts of insulin every few minutes, longer-acting insulin's are not necessary [22].
3.What is the insulin pump method for giving insulin?	The device releases insulin almost the way they bodies naturally would: a steady flow throughout the day and night, called basal insulin, and an extra dose at mealtime, called bolus insulin, to handle rising blood sugar from the eaten food. They program the pump for both basal and bolus doses. If the pump wearers are eating more than normal, they can program a larger bolus to cover the carbs in their food. A bolus can bring down high blood sugar at other times, too [23].
4. Insulin pump therapy is mainly recommended for patient with:	In the past, insulin pumps were used primarily by patients with type 1 diabetes. Now patients with type 2 and gestational diabetes are also choosing continuous subcutaneous insulin infusion (CSII) or insulin pump therapy because of its advantages compared with multiple daily insulin injection therapy [24].
5. Insulin pump therapy can be used for :(adult , adolescents , children)	All of them[25].
6. What are the basic components of insulin pump?	• **Tubing:** carries insulin from the pump to you • **Reservoir Connector:** end of the tubing that attaches the reservoir which holds the insulin • **Inserting Site Section:** other end of the tubing that attaches to user. • **Cannula:** tiny flexible tube places into wearer body** by the insertion needle included in the insertion site section. • **Adhesive:** holds the infusion set in place.

	• **Reservoir Compartment:** part of the pump where the reservoir fits [26].
7. How to download an insulin pump?	Computer software : all pumps have software that allows to upload pump activity into a program that can analyze the data. The program can save the data in a format that makes it suitable for sharing electronically with diabetes health professionals [27].
8. Who is the best candidate for insulin pump therapy?	Using an insulin pump is a personal preference. You may want to use an insulin pump if you: Experience delays in food absorption. Are active and may want to pause insulin doses when exercising. Have severe reactions to low blood sugar. Have diabetes and are planning a pregnancy. Insulin pumps can also be a good option for young people with Type 1 diabetes. A pump can deliver a steady supply of insulin, even for children and others who might have trouble sticking to a schedule for insulin injections[25].
9. Answer the following with (common myths "Yes, No, I DON'T KNOW ") **9.1. Are all insulin pumps the same?**	**NO** There are two types of pump devices: ▪Tethered pumps A tethered pump is attached to the body by another small tube that connects to cannula. ▪Patch pumps Patch pumps attached directly on to the body where the user chosen to place the cannula [28].
9.2. Is it necessary for the patient to have a high understanding of technology in order to be able to use an insulin pump?	Patients using pump therapy must possess good diabetes self-management skills. They must also have a willingness to monitor their blood glucose frequently (at least four times per day) and record blood glucose readings, carbohydrate intake, insulin boluses, and exercise [29].
9.3. Does the insulin pump need a minor surgery operation to be installed?	**NO** The pump has a little plastic piece called a “cannula” they insert into their belly, thigh, or upper buttocks areas they will learn to change out themselves every two to three days. The cannula delivers insulin under skin so pump wearers don’t have to take insulin shots anymore. NO surgery for this to happen, only a little training to learn how to do it all [30].
9.4. The pump can’t be disconnected even for short time	**NO , can be** Many infusion sets have a “disconnect” feature that allows to temporarily unhook the pump and tubing for situations such as bathing, sports, swimming, intimacy, and when undergoing medical tests (such as x-rays, computed tomography (CT scans), or magnetic resonance imaging (MRI)) [31]. Pump can suspended and disconnected from their infusion site with a simple pinch and turn (in most cases). However, it should never be interrupted or the insulin delivery stopped for more than an hour or so, unless there is a backup plan [29].

9.5. The pump (especially if attached to continuous glucose monitoring) eliminates the need for self (finger-stick) glucose monitoring.	**NO** Blood sugars they need to be checked while wearing a pump, no matter what, especially before eating. Even if pump users are wearing a continuous glucose monitoring system (CGM) along with their pump, they should check their blood sugar before eating and correcting a high, just to be sure they are correcting on an accurate blood sugar number. Especially for those who are more insulin sensitive, they want to be sure they are not over correcting on an inaccurate number. Found that many people who start insulin pump therapy look forward to checking their blood sugar because they like seeing the results of having better control and having the ability to correct high blood glucose with the pump, instead of having to stick themselves again with a needle [31].
10. Do you think the pump is the best solution for the complications of diabetes and hypoglycemic control?	**Of course** Hypoglycemia can be one of the biggest concerns for people with diabetes, especially during the night, when it is more difficult to recognize low levels of blood glucose (lows). It can disrupt your day to day activity and can be an ongoing concern in the back of your mind. Achieving safe HbA1c levels while avoiding the risk of hypoglycemia (hypos) or extremely low glucose levels is a challenge that Insulin Pump Therapy can help user to achieve [32].

AUTHORS' CONTRIBUTIONS:

Eman A. Elmahjoubi: Contributed to writing—original draft, writing, editing, literature review and Writing – review the manuscript.

Ehdaa A. Hamam: Contributed to data collection.

Sanabel E. Atwieb: Contributed to data collection.

Mufida A.Yamane: Contributed to conceptulization, interpreting of the data, literature review and writing—review the manuscript and supervision.

All authors have read and agreed to the published version of the manuscript.

ACKNOWLEDGEMENTS

The authors would like to thank all health care providers who participated in this study.

Availability of data and materials

The raw data sets supporting this article and the validated questionnaire used in this study can be made available by emailing the corresponding author.

COMPETING INTERESTS

No potential conflict of interest relevant to this article was reported.

Source of funding: none.

EPISTEMIC VIGILANCE AS THE VANGUARD OF JUSTICE: EXAMINING THE RELATIONSHIP BETWEEN 'THING IN ITSELF' AND 'SOCIAL AS A CATEGORY'

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ABSTRACT

The social function of research is to instate and maintain epistemic vigilance while advocating the need of it in every walk of life, it is vital for the realization of one's freedom through freeing one's self from any form of epistemic oppression and injustice. It is realized in acknowledging that the quest for knowledge is not undertaken only for the utility that is derived from it but rather the search for "Truth", this paper asserts how the lack of epistemic vigilance has been at the heart of various forms of oppression and overcoming them is quintessential for instating justice through ascertaining the open-endedness and ensuring the dialogical deliberation between and across disciplines as well as within them (with respect to academia) but not just limited to that, infact 'upholding studentship' in all walks of life, wherein one can only rely on knowledge if they know 'how do they know what they know', this becomes all the more important in the era of hyperreality wherein various forms of control over the medium through which information is disseminated instigates the need for addressing and assessing how different modes of reasoning create different forms of authority. This paper advocates Epistemic Vigilance to be a pivotal interface in the sociology of knowledge because it unmasks the social construction of all assertions or seemingly axiomatic statements and reflects the progressive and perpetually dynamic nature of knowledge. Examining the relationship between 'thing in itself' (the object/world as it is) and 'thing as we know it' (the understanding of the object/world as we know it) unfolds the 'social construction of reality' and in the process it enables one to question the legitimation of the grounds on which such social construction stands and the epistemological and ontological assumptions it banks on. This paper engages with dialectics between the principles and problems of 'reason' by highlighting that the utility driven 'instrumental form of reason' holds the possibility of being exclusionary and oppressive when it is employed to claim that a certain assertion is a 'thing in itself' without acknowledging social construction of such assertions.

Keywords: Epistemic Vigilance; Epistemic Justice; fact-value dichotomy; episteme and techne; 'Social' as a category'; observation; domains of reality; Utility and Knowledge; Moral Realism; Monism; "Truth"

"Hence the ways of men part:
If you wish to strive for peace of soul and pleasure, then believe;
If you wish to be a devotee of truth, then inquire."

-Fredrich Nietzsche

"*Nullius in Verba*" is a Latin phrase which literally translates to "take no one's word for it", it is the motto of the Royal Society[116] which originated as an "invisible college" for natural philosophers and physicians. Over the centuries of its existence, it has been renowned as the stalwart for recognizing,

[116] The Royal Society, formally The Royal Society of London for Improving Natural Knowledge was established by a group of natural philosophers and physicians with the commitment to acquire knowledge through experimental investigation (Paz, n.d.).

promoting and supporting excellence in science, as well as to encourage the development and use of science for the benefit of humanity (Royal Society, n.d.). This motto is a great segue into the introduction of 'epistemic vigilance' as a concept, considering "to take no one's word" to be 'true', is amongst the first and foremost steps in undertaking the commitment towards "Truth"[117]. The quest for "Truth" entails 'inquiry' and promotes individuals to think independently, whereby one is supposed to question assertions and even seemingly axiomatic statements in the process of gauging their credibility. This process of questioning, gauging, reflecting and inferring "truth" while preventing it from the susceptibility towards falsehood is the basic premise for 'epistemic vigilance', although the profound wisdom in this concept is the acknowledgement of how perpetually continuous this process is.

Etymologically, 'epistemology' refers to the branch of philosophy concerned with 'how do we know what we know', i.e it inquires into the underlying inclinations and assumptions that are inherent in assertions and axiomatic statements about one's world view or the nature of reality through analyzing its method, validity and scope that is employed to make a distinction between justified belief and opinions, whereas 'vigilance' is defined by Merriam-Webster dictionary as 'the quality or state of being wakeful and alert'; thereby through extrapolating the aforementioned terms, "Epistemic Vigilance" can be understood as a 'constant check and evaluation of the methods, observations and assertions that encompass the process of knowledge production'. The process of knowledge production is far from static, but rather dialectical, wherein assertions and their negations further the cause of knowledge by bringing up new insights.

The process of knowledge production requires communication and dialogue between and across different disciplines which are concerned with different branches of knowledge, for instance, concepts from chemistry and mathematics such as 'atomism' and 'isomorphism' have been employed to explicate the relationship between 'individual and collective' as well as to address similarities, differences and relationship across different societies respectively[118]. Therefore, the quest of knowledge and ascertaining its progress acknowledges the nature of knowledge to be relational and referential wherenin concepts and debates in any branch or discipline flourish the body of knowledge as a whole. Epistemic Vigilance is vital for attaining 'Epistemic Justice' which advocates the cause of overcoming "exclusion and silencing; systematic distortion or misrepresentation of one's meanings or contributions; undervaluing of one's status or standing in communicative practices; unfair distinctions in authority; and unwarranted distrust (Fricker, 2007)." The pursuit towards epistemic justice demands 'epistemic fortitude'[119] which is the ability to employ emotional robustness and inclusively recognize and consider all fellow viewpoints (be it complimentary or contradictory with one's own opinion or the dominant understanding of a term, concept or phenomena) in the exercise of creating one's own knowledge and worldview.

[117] This paper makes an argument for "Truth" as a 'thing in itself' and holds it 'as a value which gives value to all other values' and regards it as the 'uncaused cause' (law of sufficient reason) which exists in itself as an inevitable feature of truth. This paper makes a distinction between 'truth' and 'Truth', wherein 'truth' with the lowercase 't' refers to 'truth' as we know it (as in, truth in the realm of phenomena which can be inferred through inquiry) and 'Truth' with an uppercase 'T" refers to "Truth" as it is, as a 'thing in itself'.

[118] Bertrand Russel and Ludwig Witgenstien established that the formal relationship between facts and true propositions as isomorphic (logical atomism), also, in Sociology, an isomorphism is a similarity of the processes or structure of one organization to that of another, which may be the result of imitation or independent development under similar constraints, it is typified as normative, coercive or mimetic.

[119] Epistemic Fortitude encapsulates "being sensitive to what everyone says but not losing one's own ground", wherein we need to be cautious against the fallacy of 'othering' (as in, creating and perpetuating a hallucinatory conception of the other on the basis of which one's observations are discredited) as well as being 'othered' through the means of rigorous understanding.

Although, "all knowledge is associational because knowledge is in terms of related objects and unless it is supposed that relations are a subjective intrusion, all ideas are associated and relation is the nerve of science that correlates with association among things (Dewey, 1928)" but herein, one's own knowledge refers to freedom from external 'oppression' and entails that the person who produces knowledge should progress towards self-reliance. This acknowledgment of associational and relational nature of knowledge is at the heart of epistemic vigilance.

Desideratum of Epistemic Vigilance

The progression of history moves towards freedom from 'external determinations', this complements the Hegelian notion which regards history as an intelligible process moving towards a specific condition—the realization of human freedom (Little, 2007), wherein "The question at issue is therefore the ultimate end of mankind, the end which the spirit sets itself in the world (Hegel, 1894)."[120] This process and progression can be understood with the history of the 'word' and how it's monopoly has been challenged over the course of history to assert that every human being is a thinking being and possess the ability to reason, the acknowledgement and establishment of this realization in ground reality is also a process which is social, economic and political. This socio-economic and political process is drastically influenced by the knowledge produced in each of these epochs as much as the knowledge production is shaped by the socio-economic and political realities of one's times, hence there is a dialectical relationship between knowledge produced in an epoch and the epoch that existing knowledge creates. Looking into this aforementioned process which is furthering the realization of human freedom, one encounters a plethora of challenges which center around the notions of 'what is truth and can it ever be defined', 'what is progress and how have the developments led to it or lack thereof', 'what is desirable from an individual or collective stand point and does giving too much importance to either have an inverse impact on the other', 'what is the actual meaning of liberty, equality and justice and how has the progression of history abetted our understanding as well as instated the means for actualizing these concepts in ground reality'. These challenges have inherent paradoxes which are moral, ontological and epistemological in nature because our response to such challenges and paradoxes inherent in them over the course of history has been overtly decided by our moral, ontological and epistemic worldview. Considering that our moral and ontological viewpoints are premised on 'what does one know and how does one know', though the question of 'how do we know what we know' (epistemology) is the real test of credibility as it interrogates the ground on which our knowledge really stands, due to a variety of reasons which can be lack of time and resources (amongst many others), one most often overlooks and undermines this inquiry into the epistemological foundations of one's knowledge.

Due to the tendency of undermining this vital inquiry, we are susceptible towards "gullibility", because in the conditions where one doesn't address the need to verify the information that is being disseminated and created, or is rather unable to gauge the epistemological assumptions that are subsumed behind any assertion,then one's ability to discern fact from fiction is limited. For instance, playing an active role in ascertaining the credibility of the information being disseminated averts the crisis of gullibility, whereby gauging the validity of knowledge is a manifestation of one's own "agency" in the face of existing body of knowledge (which is akin to "structure"). Hence, epistemic vigilance is crucial for the realization of an individual's relationship with the collective and establishing the role of individual's agency in the foundation and formation of the structure which is an open-ended as well as a perpetual process, through

[120] Hereby, the "end of mankind" refers to the teleological purpose of Humankind which according to Hegel is the realization of itself, the 'geist' is in a constant process of realizing itself wherein 'being' is perpetually 'becoming' until the being cease to exist and it only stops 'becoming' when it doesn't exist anymore.

this realization one can free one's self from external determination and impose limits on the oppression on individual liberty through promoting harmonious dialogue and deliberation as a principle for negotiation between contending expectation between the individuals and collective.

The need of epistemic vigilance also lies in distinguishing different modes of thinking which can be broadly classified as (i) tradition based thinking; (ii) charismatic based thinking; and (iii) reason based thinking. These aforementioned modes of thinking translate into different forms of authority which can be inferred and correlated with Weberian theory of bureaucracy which espouses the idea of authority that is based on tradition, charisma and rational-legal based sensibilities, wherein different societies and various forms of organizations as well as institutions can be categorized under this classification. Traditional authority is derived from wisdom, norms and practices which are exemplified in religion, culture and various practices that are undertaken over long span of time and across generations; charismatic authority is based on 'the cult of personality' where the authority of an individual on account of their reverence, status or power hold within certain groups or society; rational-legal authority is based on certain forms of standardization and establishing norms of minimal coordination through rules and laws which are universally applicable for all members of society who are under the purview of this legal set-up. All these forms of authorities are somewhat based on 'class, status and power', hence they employ different modes of reasoning, they are founded on the basis of knowledge.
All forms of authority are based on knowledge though the point of contention here is 'if authority is instituted through knowledge or knowledge has been construed to aid the legitimation of authority, hagiographies are an example of later', and that is common across these aforementioned types of authorities but what distinguishes them is the relationship between knowledge and power which is peculiar for each type. Different modes of reasoning can create legitimization for different ways of understanding which in turn can affect the 'social construction of reality'[121] [the assertion that our understanding of reality is socially constructed furthers on the notion that an individual's idea and imagination of 'reality' is drastically affected by the lingual, cultural, societal, political and overly influenced by the level of knowledge at any given time, which is just as true for the collective as well, for instance, language is not just a means for communication but also a way through which our understanding and thinking is shaped as well as how a culture associates certain sounds and symbols with certain meanings, across different cultures 'the sound that frog emits is perceived differently', as in, onomatopoeia which is the process of creating a word that phonetically imitates, resembles, or suggests the sound it describes, such as, the sound of a clock may be expressed as 'tick tock' in English, 'tic tac' in Spanish and Italian, 'di da' in Mandarin, 'kachi kachi' in Japanese, or 'tik-tik' in Hindi (Lichtenstein, n.d.); these slight variations of the same sound exemplify how various concepts can have different meaning and significance in different socio-cultural and linguistic contexts, hence, the 'thing in itself' and its conceptualization can have differences on account of how it is socially construed and perceived. Another example of how reality is socially constructed with regard to level of knowledge available and validated on a certain subject-matter, is how 'atom' was considered to be the smallest building block of all chemical structures until it was found that 'atoms' comprises of electrons, neutrons and protons which shed light on how the smallest unit of matter is made up of even smaller components

[121] Peter Berger and Thomas Luckman argue that 'reality' is socially constructed and the task of sociology of knowledge is to analyze the process in which it occurs. Reality in this regard can be understood as having a being independent of our volition. It exists independently of one's own free will and we cannot thereby wish them away. Knowledge on the other hand can be understood as the certainty that phenomena are real and incorporate certain characteristics. It is the accumulated and passed on understanding of reality for societies. Reality and knowledge "pertain to specific social contexts", instead of emphasizing on the erstwhile theories based on theoretical and scientific knowledge alone; one must rather focus on common sense knowledge to understand what reality is. Knowledge in this regard is rooted in everyday life (Luckmann & Berger, 2011).

(subatomic particles) which are made up of elementary particles called 'quarks', this progression of further splitting up atoms narrates how realities social construction is not static but rather dynamic.] The reason why is it necessary for us to distinguish between different forms of thinking lies in how different types of thinking are construed from different epistemological assumptions and in the process,they construe different ontological realities, one of the example of which is patriarchy (which is the result of traditional mode of thinking) as well as Nazism which led to Holocaust (as an outcome of the charismatic mode of thinking). Both traditional and charismatic mode of thinking require forms of external determination for them to be able to instate themselves, although 'reason based thinking' is transparent and free from the need of any external determination as it is independent of any legitimation because it is inherent in the thing in itself, this mode of thinking acknowledges the relational and associational nature of not just knowledge but also between human beings, nature and all animate as well as inanimate objects because nothing exists without reason (law of sufficient reason). Through this acknowledgement of knowledge being associational and our behavior being conjoint, reason actualizes itself. Hence, the commitment towards reason and realizing it's authority as a constitutive element of ontological reality is a crucial reason why 'Epistemic Vigilance' is important because it helps us identify the larger consequences of one's own belief and how they are enmeshed with a system of knowledge (which can be a product of different modes of thinking/reasoning).

Discrediting and disregarding certain forms of knowledge because they don't adhere to the supposed conventional status quo within academia and society at large is the gravest form of oppression where one's right to have a voice is violated, this happens at various levels which maybe in the form of institutional elitism, class, caste, creed, race or sexual identities etc., the history of 'reason' which can also be understood with the analogy of the history of 'academia' narrates various forms of exclusion where people pertaining to different identities were denied entry or one's knowledge was discredited on account of challenging or questioning the existing legitimacy of the existing order, for instance, Galileo heliocentric model of the solar system which allegedly questioned the authority of the Church's cosmological view and discredited, which led to his execution. The monopoly over "word" which is indicative of how hegemony over the production of knowledge was perpetuated through 'gatekeeping' and the use of 'instrumental mode of reason' which was at the heart of colonial expansion of empires and appropriation of planet's resources and people for certain section of the people where 'class, status and power' were the key determinants of what knowledge gains credibility as well as who gets the opportunity of knowledge creation is decided. This gatekeeping has gone through immense transformation over the course of history and became much more porous towards people from all walks of life but it prevails till date, epistemic vigilance is needed to acknowledge and address this sort of exclusionary practices and instate the primacy of reason to overcome the hegemony over knowledge and this hegemony that perpetuates through "othering" where certain forms of knowledge and certain sections of people institute hierarchies through advocating the primacy of certain disciplines of knowledge over other (where the whole is divided into parts 'vivisection' such that there is no interaction between parts of the whole)[122]. Reason democratizes the "word" by making it accessible to more and

[122] 'Whole' refers to the body of knowledge in totality and 'Parts' refer to branches of knowledge, i.e disciplines arguing how 'instrumental mode of reasoning' advocates and perpetuates this bifurcation between parts of knowledge but 'reason' futhers the cause of the unity between the parts and the whole of knowledge by engaging in the dialogical process as well as acknowledging the open-endedness of knowledge as a whole where the dichotomy between fact and value is bridged, this division between 'parts' and 'whole' is not just limited to across disciplines but prevails between disciplines as well, for instance, 'macro sociology' and 'individual sociology'. Each academic discipline has a vocabulary to make sense of the world as a 'whole' from the perspective of the 'part' that it engages with, the dialectical relationship between 'parts' and the 'whole' entails the undertaking of

more 'thinking beings' with every stage of its development, not having the access and agency of the 'word' is at the core of oppression and 'othering', the endeavor of reason is to enable one with the ability to make their own statements and not rely on statements made by others, in this process 'reason' facilitates 'freedom' through allowing one to determine their relationship with the world.

Quest for "Truth" in Knowledge: The Relationship between 'Thing in Itself' and 'Social as a Category'

Philosophy has riddled with the nature of "Truth" since time immemorial and struggled with the question of 'what sort of things can be true', whether if truth can be contained within 'sentences' (linguistic entities) or 'proposition' (nonlinguistic, abstract and timeless entities); even though there is certain consensus on 'truth being an objective feature of proposition, instead of subjective' and that truth-value of declarative (i.e indicative) statements should be assessed because these kinds of sentences are propositions (herein, certain exceptional cases where propositions are: (i) sentences containing non-referring expressions; (ii) predictions of future events; (iii) liar sentences; and (iv) sentences that state moral, ethical or aesthetical values) (*Truth*, n.d.). None of the theories of truth have been able to devise a unanimous definition of "Truth", for instance, corresponding theory of truth is criticized for not accounting for mind-independent statements; linguistic theory of truth is questioned on the lines of 'had there been no language, would there be no truth?'; semantic theory of truth has been limited by not accepting noncontingent propositions[123]; coherence theory faces an objection for being only concerned verifiability instead of truth; and the pragmatist theory of truth merely shows we have a problem with knowledge, but it doesn't show that the meaning of "true" doesn't now involve hindsight from the perspective of the future (*Truth*, n.d.). Although these aforementioned theories of 'truth' aid and abbett the process of unfolding 'what is truth' and present very valid arguments upon it but defining 'Truth' is a very difficult endeavor because it is rooted in the very nature of things, making it a 'thing in itself' but that doesn't make the pursuit of 'Truth' futile because of its open-endedness. In this line of argument wherein, "Truth" is a 'thing in itself' and a part of what Kant in his Groundwork for the Metaphysics of Morals calls 'noumena' (pertaining to world/thing as it is) instead of 'phenomena' (the world/thing as we know it).

Hence, "Truth" is analogically similar to the boulder in the "Myth of Sisyphus", the quest to find it is similar to pushing the boulder up the hill (the process of inquiry, discovery and inferences which entail the movement of thought towards transformation of 'noumena' into 'phenomena'), with every revelation of the facet of truth there are a new set of questions that arise which is same as the boulder rolling back down again (the transformation of 'noumena' to 'phenomena' is never-ending and an all encompassing, all pervading realization or revelation wherein the mystique of 'thing in itself' prevails through reflecting the limitations of knowledge about 'thing as we know it'). Every form of knowledge is the a quest to unveil "Truth' in its own capacity but just as Chemistry as a discipline bears witness that the search for smallest unit of matter is a perpetual and never ending quest because the the discovery of atom led to the discovery of its constituent parts namely protons, neutrons and electrons which led to the discovery

conceptual clarity wherein each discipline 'use concepts to refine concepts and make them more rigorous often through borrowing concepts across disciplines', this is the interface of 'interdisciplinarity'. The more numerous and varied the forms of association into which anything enters, the better basis we have for describing and understanding it, for more complex is an association the more fully are the potentialities released for observation (Dewey, 1928).

[123] Noncontingent truths are said to be true *by definition*, or as a matter of *conceptual relationships* between the concepts at play within the propositions, or – yet another (kindred) way – as a matter of the *meanings* of the sentences expressing the propositions (*Truth*, n.d.).

of ‘quarks’ which form ‘hadrons’ and fundamental forces namely weak and strong interaction, electromagnetism and gravitation which too would further be broken down and unveiled with further studies undertaken upon it but the nature of ultimate subject matter (i.e. reality) is such that the attempt to know it in entirety has never been realized but has rather always been a process where every new revelation opens up a pandora box of questions. Such is that case with "Truth" where it cannot be defined in its entirety and all the theories upon it describe certain facets of it which overlap and expand the idea of truth but don't ever quite define it in itself, common understanding of the features of "Truth" as something that is 'reliable and dependable'. Every being and every branch of knowledge is concerned with the “Truth” and its realization but each of them have different tools, methods and techniques which is why they engage with the ultimate subject matter (i.e. reality) differently, just as epistemic and technical knowledge are concerned with the the question of ‘why’ and ‘how’ respectively, similarly different disciplines are concerned with different aspects of ultimate subject matter that is reality, for instance geography is concerned with the study of the earth, physics studies the structure of matter and how the fundamental constituents of the universe interact, biology is regarded as the ‘study of life’ (engaging with structure, function, growth, origin, evolution and distribution of living organisms), sociology is regarded as the study of society (wherein, the relationship between human beings and the society that they live in) and all other disciplines (as well as subdisciplines of knowledge) are essentially dealing with the ‘epiphenomenon of nature’ and ‘nature’ as a ‘thing in itself’.

Considering that irrespective of separation and bifurcation of disciplines, their ultimate subject matter remains the same because they are dealing with independent occurrences and existence of objects {or ‘thing in itself’, herein it means that the object needn’t necessarily be tangible (i.e tree) but can very well be intangible (i.e. Truth)} upon which the meaning of perception and epistemic significance of perception lies, among such objects are mechanisms, events and activities which are categorically independent of experiences[124]. Bhaskar explicates the aspects transitive(dependent on antecedent knowledge and human activity) and intransitive (independent existence) within the process of knowledge production within the philosophy of science.[125] Science is not an epiphenomenon of nature, nor is nature a product of man (Bhaskar, 2013). As ideas are associated and relations (between ideas) are the nerve of science that correlate with the association among things, hence, we observe that qualities of associated things are displayed only in associations, since only through interactions can true potentialities be actualized. The more numerous and varied the forms of association into which anything enters, the better basis we have for describing and understanding it, for more complex is an association the more fully are potentialities released for observation (Dewey, 1928). Mechanisms, events and activities constitute 3 overlapping domains of reality: (i) real (as ‘thing in itself’ exists independent of how it is perceived); (ii) actual (as how real is actualized and internalized as understanding of the ‘what is real’); and (iii) empirical (the sense perception of reality, i.e real as it appears to our senses)[126]. For instance, “sun rises in the East and sets in the West” is an inference from the domain of empirical; “Earth rotates on its axis and revolves around the Sun” is an inference from the domain of real; and “Sun appears to be rising in the East and setting in the West because Earth is revolving upon its axis creating

[124] Empiricist ontology is constituted by category of experience, which normally depends upon experiential activity as well as sense-perception wherein humans play the role of causal agents as well as perceivers (Bhaskar, 2013).
[125] Three Traditions in the Philosophy of Science: (i) Classical Empiricism: automatic or behavioral response to stimulus of given facts and conjunctions; (ii) Transcendental Idealism: objects of scientific knowledge are models, ideas of natural order; (iii) Transcendental Realism: Objects (which operate independently of our knowledge, experience and conditions) of knowledge as structures and mechanisms that generate phenomena (Bhaskar, 2013).
[126] (Bhaskar, 2013)

the distinction of day and night with regard to which side of the Earth is facing the Sun as well as the difference of size between Sun and Earth" is an inference from the domain of actual. Thing present themselves to us in such a way that narrower and wider ranges, simple and complex aspects are readily distinguishable such that 'metaphysical description' and understanding is demarcated as the widest and fullest range of associated activities which are open to observation, creating 'degrees of reality' wherein associations and range of associations as determining 'degrees of reality' which becomes the point of acknowledgement of 'social' as a category[127] which plays a very important role in informing our understanding of the "Truth" as a 'thing in itself' while enabling us to make phenomenological inferences about "Truth" through inquiry, observation, reflection, inference, deduction or abduction.

'Thing in Itself' is a point of reference which is navigational to determine and discern between 'right and wrong' in regard to 'objective reality' of everything, the notion of how reality is independent of how does one observe it and the socio-cultural as well as epistemological frame of observation that is resorted to in the process of this discernment, it is the "Truth' that is not contextually derived but rather exists in its own right and is 'reliable and dependable'; from the vantage point of different disciplines of knowledge. Discerning the ontology and epistemology of what is 'reliable and dependable' which is in the very nature of 'thing in itself' is vital to ensure if any claim on something being 'reliable and dependable' is credible in the first place. As ideas are associational and human behavior is conjoint, the understanding of 'social' aspect in the very ontology and epistemology of what is 'real' and 'how do we understand it', process of knowledge making also entails associations across various forms of knowledge and vicissitudes within society itself which is perpetually transforming and even the conflicts and dissenting vantage points stimulate knowledge production and our understanding of the world, the category of social flourishes through acknowledging differences and open-endedness. All social order is based on one element that doesn't change, which is the idea of dependence, conjunction and associations which are at the root of everything because everything under the sun (and sun itself) has antecedents and doesn't exist entirely independently.

Operationalizing Epistemic Vigilance as a means to Justice

Epistemic vigilance lies in the acknowledgement of motion and dynamism in thought, reason and logic because the principles of Logic (also, thought and reason) namely: principle of identity, principle of noncontradiction, principle of excluded middle and principle of sufficient reason are to be assessed and gauged against the problems of logic which are namely: (i) problem of abstractions[128]; (ii) problem of dualism[129]; (iii) problem of incommensurability[130]; and (iv) problem of boundaries[131](Pratt, 2010). The principles are the positive conception of reason and the problems are its negative conception, which is

[127] (Dewey, 1928)

[128] The conceptual or formal order reflects the prejudices and hierarchies of those making the divisions, and also amounts to a means "with which to impose one's view on others" (Nye, 2019).

[129] Dualism is a complex multifaceted relation that begins with division but becomes "a relation of separation and domination inscribed and naturalized in culture and characterized by radical exclusion, distancing and opposition between orders construed as systematically higher and lower, as inferior and superior, ruler and ruled, center and periphery" (Plumwood, 2002).

[130] The idea that division is necessary leads to the problem of incommensurability. If there are divisions (but not dualistic relations) between cultures, genders, races, or even sciences, one wonders whether the differences make communication across (Schutte, 1998).

[131] The *boundary* is some *thing*, but its logical status is ambiguous. Despite its ambiguity, however, the boundary remains necessary if there are to be both black and white. The same logical relation seems to emerge in the concerns raised by the idea of personal identity and its implications for society (Pratt, 2010).

not to say that principles and problems are at odds with each other but rather have dialectical relationship because reason is progressive and any assertion or claim towards an axiomatic statement needs to assessed on the basis of its epistemic considerations and ontological semblance.

Epistemic vigilance is vital because 'reason' (thought or logic) can be used to instrument one's worldview and "instrumental reason" can be oppressive because it is exclusionary, as it is premised on the notion of establishing certain opinion or phenomena as a 'thing in itself' (as in, something that exists in the very nature of things), for instance, patriarchy (also, racism, casteism and elitism) which uses the instrumental form of reasoning to establish itself as the 'natural social order' by establishing the terms and conditions of 'relationship that one entity have with others', such an establishment is based on the notion of class, status and power or pertains to the status quo within any given society which is oppressive and exclusionary as it is based on impropriety, often perpetuated through violence and oppression because it doesn't stand on its own feet (as in, it needs external determination for its validation), the exclusion is regimented by monopoly over 'reason' which is practiced through "Othering" and suppressing different point of views (often undertaken by vilification of any form of dissent). This mode of reasoning violates 'freedom' (which doesn't mean 'isolation' or only 'absence of constraints' but rather the ability to determine one's relation with the world) which is the most important aspect of reason, because 'reason' enables one to make one's own statements and not rely on statements made by others. Hence, epistemic vigilance is concerned with gauging credibility of 'what is being said/written' independent of 'who is saying/writing it'.

जाति न पूछो साधु की, पूछ लीजिये ज्ञान, मोल करो तरवार का, पड़ा रहन दो म्यान।

(Don't ask a priest's caste, rather ask what they know, assess the sword, let the scabbard go.)

-Kabir

Epistemic Vigilance is a means to save one's self from impropriety which can be manifested in different forms in various walks of life, for instance in academica, one of the forms of impropriety is 'biased gatekeeping', it becomes a means through which we can uphold the mirror where one would see the "othering" of studentship. The objective of epistemic vigilance is "upholding studentship" in all walks of life because through questioning 'how do we know what we know' we are embarking on a journey of self-reflection as well attaining a better understanding of the external world (and reality, 'thing in itself' as it is independent of the violation and acknowledgement of different forms of violation like infringement, irreverence or desecration). "Upholding Studentship" is crucial for ensuring academic propriety, 'otherness' becomes a relationship premised on dominance, hegemony and violence but 'that what shows us the mirror' is worthy of respect and reverence. Hence, differences don't make us unequal but rather strengthen and flourish 'social as a category' because through engaging with different points of views, we become closer to the "Truth".

Epistemic Vigilance is operationalized by 'observation, discussion and contemplation', which is undertaken through and corresponds with 'reading, writing and reflexivity'. Observation is akin to reading the world as it is because our senses can be deceptive and the information obtained from only our sense perception is not always reliable because "Truth" is often masked such it cannot be noticed through our naked eyes but reading as an approach of observation enables us to magnify and study in great detail which aids in the process of sharpening and expanding our perspicacity. Discussion is closely related to writing wherein one is able to share their worldview and understanding with others through

which one is able to get responses regarding how it corresponds to or is distinguished from the other as within the act of writing one is able to get much more clarity regarding their thoughts and ascertain one's own relationship with the text, through the act of writing, one is also becoming more certain about what they think, perceive or feel and assess the role of 'other' in their own understanding. Contemplation is the aspect of 'reflexivity' wherein the one's own biases and inclinations towards one's epistemological and ontological assumptions which shape their worldview and this is the aspect where one acknowledges that one's understanding is based on these biases and assumptions play an active role in not just one's understanding of the world, but rather the world as it is (as in, as it appears and shapes ontologically for them).

Conclusion:

The social function of research is to instate and maintain epistemic vigilance while advocating the need of it in every walk of life, it is vital for the realization of one's freedom through freeing one's self from any form of epistemic oppression and injustice. It is realized in acknowledging that the quest for knowledge is not undertaken only for the utility that is derived from it but rather the search for "Truth", this paper asserts how the lack of epistemic vigilance has been at the heart of various forms of oppression and overcoming them is quintessential for instating justice through ascertaining the open-endedness and ensuring the dialogical deliberation between and across disciplines as well as within them (with respect to academia) but not just limited to that, infact 'upholding studentship' in all walks of life, wherein one can only rely on knowledge if they know 'how do they know what they know', this becomes all the more important in the era of hyperreality wherein various forms of control over the medium through which information is disseminated instigates the need for addressing and assessing how different modes of reasoning create different forms of authority. This paper advocates Epistemic Vigilance to be a pivotal interface in the sociology of knowledge because it unmasks the social construction of all assertions or seemingly axiomatic statements and reflects the progressive and perpetually dynamic nature of knowledge. Examining the relationship between 'thing in itself' (the object/world as it is) and 'thing as we know it' (the understanding of the object/world as we know it) unfolds the 'social construction of reality' and in the process it enables one to question the legitimation of the grounds on which such social construction stands and the epistemological and ontological assumptions it banks on. This paper engages with dialectics between the principles and problems of 'reason' by highlighting that the utility driven 'instrumental form of reason' holds the possibility of being exclusionary and oppressive when it is employed to claim that a certain assertion is a 'thing in itself' without acknowledging social construction of such assertions.

References

Bhaskar, R. (2013). *A Realist Theory of Science*. Taylor & Francis.
Dewey, J. (1928, April). SOCIAL AS A CATEGORY. *The Monist*, *28*(2), 161-177. https://www.jstor.org/stable/27901146
Fricker, M. (2007). *Epistemic Injustice: Power and the Ethics of Knowing*. Clarendon Press.
Hegel, G. W. F. (1894). *Lectures on the Philosophy of History*. Bell.
Kant, I. (2012). *Kant: Groundwork of the Metaphysics of Morals* (J. Timmermann & M. Gregor, Eds.; M. Gregor & J. Timmermann, Trans.). Cambridge University Press.
Lichtenstein, R. (n.d.). *Onomatopoeia*. Wikipedia. Retrieved February 28, 2022, from https://en.wikipedia.org/wiki/Onomatopoeia

Little, D. (2007, February 18). *Philosophy of History (Stanford Encyclopedia of Philosophy)*. Stanford Encyclopedia of Philosophy. Retrieved February 25, 2022, from https://plato.stanford.edu/entries/history/

Luckmann, T., & Berger, P. L. (2011). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Open Road Media.

Nye, A. (2019). *Words of Power: A Feminist Reading of the History of Logic*. Taylor & Francis.

Paz, O. (n.d.). *Royal Society*. Wikipedia. Retrieved February 24, 2022, from https://en.wikipedia.org/wiki/Royal_Society

Plumwood, V. (2002). *Feminism and the Mastery of Nature*. Taylor & Francis.

Pratt, S. L. (2010). *Logic: Inquiry, Argument, and Order*. Wiley.

Royal Society. (n.d.). *Mission and priorities - what the Royal Society does | Supporting excellence in science*. Royal Society. Retrieved February 23, 2022, from https://royalsociety.org/about-us/mission-priorities/

Schutte, O. (1998). Cultural Alterity: Cross-Cultural Communication and Feminist Theory in North-South Contexts. *Hypatia, 13*(2), 53-72. 10.1111/j.1527-2001.1998.tb01225.x

Truth. (n.d.). Internet Encyclopedia of Philosophy. Retrieved March 3, 2022, from https://iep.utm.edu/truth/#SH8a

ROLE OF ADVERTISEMENT IN CREATING EXAGGERATION ON YOUTH BEHAVIOR

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ABSTRACT

This study examines that role of advertising in creating the exaggeration in youth in Distinct Gujranwala. The aims of study to analyze that advertising content is creating the exaggeration among youth by using different tactics and strategies which are used by advertisers. Researcher used Elaboration likelihood model as theoretical frame to support the study. Researcher used Survey method to collect the data about exaggerated advertising contents are changing the perception and behavior toward products. Sample size is taken 200 from Distinct Gujranwala; 100 from urban and 100 from rural area. The result shows that exaggerated advertisements have the significantly impact on the behavior of youth. Also respondents pay attention on celebrity style and the theme of advertisements. Meanwhile, mostly, exaggerated advertisements are affecting on youth perception and are a tool of manipulation as well as creating an un-realistic environment among youth. Result reflects that exaggerated advertisements are overstated than reality.

Keywords: Depiction, Exaggerated advertisement, Tactics, University, Youth, Urban, Rural, Gujranwala

Introduction:

Normative structure of society is influence by manipulating the advertising content and by using the different tactics to present the advertising. The current study looks into to issue by examining the exaggeration of advertising by using the different techniques in the advertisements. In the very modern world advertisement content may attract the viewers by different techniques like dancing in advertisement, language also influence on the viewers and way of talking also a lot of influence on the viewers. Advertising may be present in more attractive way but in reality the advertisements may divert the attention of viewers. Their more focus on the different tactics which may have used in advertisement. For example if dance in advertisement has been seen then their more focus on the dancing. Viewers more focus on the advertising those techniques which have been divert the attention of viewers. So it can b say, Advertising content is manipulating by using different tactics in advertisements.

1.1 Advertising:

Advertising is defined as that it is the non-personal communication of information usually paid for and usually persuasive in nature about products, services or ideas by identified sponsors through the various media."(Bovey, 1992, p. 7) The primary motivation for this study is the desire to fill the gap in knowledge about the evolution of advertising and its practices in Pakistan. Traditional research has not been significantly successful in presenting a systematic data on advertising in Pakistan. The development and evolution of advertising have been extraordinary in Pakistan. Over the period of time

the industry shifted towards different modes and underwent different phases of evolution. These phases can be categorized over a period of time. First Era (1947 – 1964) characterized by small number of players in the newly formed advertising industry; very few businesses taking advantage of advertising techniques; advertising reach limiting to mainly urban geographic regions; advertising medium limited to print ads. Second Era (1964 – 1978) Arrival of television stations made a drastic change in the existing advertising practices. The new visual messaging services seemed more attractive and effective. Third Era (1978 – 1988) color TV broadcast and classical jingles made it a vintage era. Fourth Era (1988 – 1998). New graphic technologies were used to facilitate the limited time frame concepts. Fifth Era (1998 – 2008). The rise of golden age witnessed modern advertising and visual effects. Industry growth increased 500 times with talents and man power. Sixth Era (2008 – to date) Animations, Indian production and Indian celebrities highlighted the glamorous era. Global depression felt and low budgeted advertising industry-tier produced low-rate and below par advertisements. (Dr. Kamran Siddiqui).

1.2 Advertising and Media:

The scope of media and its contents has widen to a greater extant in this modern era of the society. Role of media in changing the public opinion and conduct of the people has become wider and now people take effect from media more. A significant portion of media content is TV advertisement. Media has become a very important source of transmitting cultural values and norms of the society to the next generation (Shafayat Ali& Dr. Zahid Yusaf, 2017). Use of media and TV has significantly altered the way communication is being taken place between the generations. In Pakistan the cultural values are greatly influenced by the ads (Vetrivel & Muthulakshmi, 2011). Similarly, the advertisement is also playing a vital role in changing the norms of the society. Advertisments have changed the normative structure of our society (Esmaeil & Yarer, 2011).Youth in our generation is greatly influenced by the advertisement and most of the current youth is directed by TV commercials (Ebad, 2010). According to Gupta, 2008 youth sub culture is changing due to advertisments not less than 70%. Youth style and living ideas are influenced by advertisments. In Pakistan the role of media and TV is three dimensional and covers the areas of education, information and entertainment and as it is established fact that youth is more exposed to the media contents than any other segment of the society hence in Pakistan they are mainly influence by the media and TV contents (Wassan, 2008). The role of advertisement is most widely accepted and its far reaching impact on the youth is true. Hence youth are influenced by the TV contents to the greater extent (Katke, 2007).
Advertising content influencing social life of youth by using the different tactics in the advertisements like culture, language and dressing style which may influence the viewers socially.

1.3 Exaggeration;

Exaggeration is defined as an advertising method used that superficially praised (Schmitt, and et al. 1997) a product or service; it is also a subjective claim or superiority over others (Gupta, and De.2007). According to Preston (1996), visually exaggerated advertisments trigger the emotional reaction of its audience over rational reaction. Visual exaggeration in print advertisements show the product to be over-appraised relatively to its actual merits (Richards, 1990), it is also used to mislead intentionally, is usually vivid, and memorable (Hoffman, 2006. Mostly consumers watch the advertisments; everything is advertised in the form of manipulation. Advertisments pressurized the consumers by using different tactics like use the fear and emotional appeals that highly influence the mindset of the consumer. Showcasing Bollywood celebrities in local Pakistani ads is yet another trend that has been all the rage for quite some time now which is certainly very degrading. . Advertising's role

in today's modern world is not just to make the consumer want the product or get hooked to it, but it also has a responsibility to position the brands in a way that it will change the consumers' perspective not just about the brand itself but also about his own lifestyle.(Maha Rais, 2016).

1.4 Advertising content and Exaggeration;

Poor taste in advertisments is often seen as a poor judgment and leads to misconception. Advertising become more offensive in the wrong context. Taste change over the time that what was offensive yesterday may not considered offensive today. The first exaggerated and unrealistic advertisement is about eating medicine to slim down the body. The advertisers often invite famous and beautiful superstars to introduce products. Those superstars show their slender bodies and emphasize the effects of the products, including promoting metabolism, burning fat, and losing weight quickly. Women see those advertisements and are convinced to spend money buying them. However, the constitution of one person is very different from that of another. The material of a product does not suit everyone. Therefore, products may lose their effects. (Emily Lin, 2009).

Cosmetics seem to be thriving these days. One brand, which doesn't know whether it wants to be a moisturizing soap, a shampoo or a skin cleanser, runs an ad where women are blindfolded and asked to feel the cheeks of their friends to detect what they used to wash their face. See how it reads when you write actually it down? And someone actually approved this.

Then there are the whitening soaps/creams/jellies/. A renowned TV personality Zubaida Apa tells women to be themselves, be confident, and the ideal bahu by knowing everything about cooking and cleaning. She demonstrated all this with her enormous range of totkas and now, suddenly, she has come up with her own brand of whitening cream, in sheer contradiction of roughly five centuries of her telling us that absolutely nothing can change our skin tone and we should be happy with who we are. (Talha Bin Hamid,2015).

Puffery is also a term which is used in advertisments which means that it is a legal way of promoting product through statements which cannot be objectively verifiable. Puffery does not create any express warranty for the customers. For example, A five year old might believe that man can became chocolate by using AXE as we know better.

Another example is that in the commercial Cadbury Dairy Milk Freddo Bubbles children are eating the chocolate and become bubbles which are not verifiable. In some Advertisments of cosmetics with slogans which leads the misconception to the people like "Less wrinkles in only minutes" these advertisments exaggerate the youth.

1.5 Advertising tactics:

Advertising tactics are the marketing techniques used to accomplish the strategic objective and are an effective way to increase the consumer base (Stan Mack). Advertisments are used different tactics to convince the consumers like everything is advertised in the form of singing and dancing. When did all this become the part of our culture? This is not about being broadminded or traditional, but is against the moral values and ethics. Another thing that advertisments are use different appeals through which these are exploiting their consumers and compel them to buy their products by making everything melodramatic (Maha Rais, 2016).

1.6 Normative Structure of Society:

1.6.1 Social Life;

Social life refers to an individual's interpersonal relationship with people within their immediate surroundings or general public by Koufax.

TV and its contents have become major part of our life and routing matters. Most of our Time passes by watching TV. Following are the major assumptions of TV keeping in view its importance with regard to mass communication and its impact on human life. According to (Shum, Burroughs, 2003) a person on average watches TV and its content 21 hour a weak which roundly becomes 9 years of total life span of an average person. Hence, TV has become a major part of our routing life.

The second thing is that how much TV and its contents affect the social life of a person. The impact of the TV is twofold either positive or negative. Our lives would have become very dull in the absence of TV. So in conclusion the that we are very much exposed to the TV and the impact of the TV contents is deep rooted in our lives. Same is the idea of the current study that how TV ads influence the norms and values of our society and in what ways TV ads hamper the overall normative structure of our society.

1.6.2 Norms and Values:

However, the use of TV commercials is not always in right direction and often challenges the social fabric of the society. Often advertisement contents are thought to be against the norms of the society (Moore, 2004). Use of dressing codes and specific beverages is not in accordance with the norms and values of the society. We take the example of cold drinks which is shown as a norm in the society however it does not fit in with the cultural fabric of our country in Pakistan (Hassan & Daniyal, 2013). In the same context the use of vulgar contents to persuade the audience is also quite prevalent in our society and most of the TV ads do not comply by the social structure and norms of the society. Owing to such commercial the youth in Pakistan tend to wear unacceptable clothes that are often considered prohibited in the society of Pakistan (Hassan & Daniyal, 2013).

1.6.3 Language:

Language is considered to be an essential human skill for information exchange, which helps people to express their inner thoughts and emotions in an understandable way for others (Tausczik & Pennebakker, 2010). Language reflects and shapes the ideas and thoughts in the society are a complex issue to explore. Language seems to play both roles in society mirrors and shape people's beliefs, their attitudes and needs or expectations of society. Language is laden with some socio-cultural senses and interpretations. Language viewed as a social phenomenon. According to the Fowler and kren "the form of language are the part of as well as a consequence of social process". Language playing very important role in influencing the social life.

1.6.4 Culture:

The second thing which matter a lot in advertisments that is culture. The most popular definition of culture that has been used in the recent times originates from Grete Hofstede's work. He defined culture as "collective programming of the mind which distinguished the members of one group or category of people from others, it manifests itself not only in values, but in more superficial ways: in symbols, heroes, and rituals." (Hosted et al., 2010, p.5). Culture was defined as "shared motives, values,

beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations" (House et al., 2004).

De Mooij (2010) noted that culture is learned, and it is derivative in a social environment and not necessarily genetically inherited since each culture contains different gender roles, dressing code, and different habits define a group of people.

Sir Edward Burnett Taylor, an English anthropologist in 1871 gave one of the earliest definitions of culture, which is used today as well. He defined cultures as "Complex whole which includes knowledge, beliefs, art, morals, law, Customs and any other capabilities and habits acquired by man as member of society". (Taylor & Samovar: 2009, p 9).

According to Ferraro (2010), "culture is learned" and not inborn which means that once a person is born, he or she learns already existing cultural content (i.e. material objects, thoughts and deeds) from the previous generation, in order to become part of the society and to survive".

1.7 Significance of study;

Television is considered one of the most popular channels used for promoting commercial message for various products and services (Clow & Back, 2014; Armstrong & Kotler, 2013). Developing commercials for this medium, however is a complex process and usually involves a great deal of research, planning and execution. As the current research will focus on the analysis of television commercial materials, of the following paragraphs more information will be presented on TV advertising and what are the elements included in such promotional message. The first step to understanding this process would be to define a television commercial. The two Resins and Stern (1977), this advertising material can be described as a tool that transmits some information by transmitting visual and audio stimuli that provide meaningful cues to at least some portion of the audience" (Resnik & Stern, 1977). Zandpour et all. So, the current study is conducted to examining the exaggeration of advertising content by using the different tactics in advisements. Tactics means which techniques which are use to present the advertising content. These tactics are influenced the social life of youth. Social life considered the culture, Norms and values, language, dressing. So advertising content is exaggerating the norms and values, dressing Styles and language. When people see the advertisements their more focus on the dressing Styles instead of message. These tactics are diverting the attention of viewers. Other thing is also that youth is adopting the other cultures by seeing the advertising. So, it could be say that in the modern era advertising content is manipulating by using the different tactics.

1.8 Statement of the Problem:

The current study is investigated the direct and gradual effects of advertising contents on Gujranwala youth. In present age advertisers are using various tactics, appeals and messages in advertising and these contents are influencing on the perception of Gujranwala youth. Therefore researcher determined the how advertising contents are influencing and exaggerating the youth.

1.9 Objectives

- To determine the Gujranwala's youth trend to advertising.
- To gauge out the advertising contents influence on Gujranwala's youth.
- To indicate the tactics used in advertisements in exaggeration the youth.
- To understand advertisements' contents manipulate the youth perception.
- To assess youth consider exaggerated advertisements as un-realistic.

1.10 Hypothesis

- Advertising contents are more exaggerating the Gujranwala's Youth.
- Advertising contents are less exaggerating the Gujranwala's Youth.

Literature Review

Shafayat Ali & Dr. Zahid Yusaf (2017) in title as "Impact of TV Advertisement on changing lifestyle of the youth how TV advertisements affect the norms and values of the society". This current study looks at the issue by examining the relationship between TV commercial and of the society and changing lifestyle trend of the youth. In this context the recent study is to find out how TV advertisement and media content violate the norms and values of society, how they impact our lifestyle and how it brings positive or negative change in youth.

To scrutinize the role of TV ads in changing the lifestyle of our youth, the modern study tries to explore how TV advertisements are changing the norms and values of the society. Another important point of the modern study addresses is the idea how TV convinces and changes the lifestyle of the youth. TV advertisement and norms/values of the society has played a significant role in the development of youth. As we live in the modern era of commercialism so the use of media and TV has significantly altered the way is being taken place between the generations. In Pakistan the cultural values are greatly prejudiced by the TV ads and TV dramas of the Indian media (Vetrivel & Muthulakshmi, 2011). As it is said by Indians that to change the culture of Pakistan - their media, dramas, movies etc are enough.

The study under analysis is purely based on cultivation theory presented by Professor Garbner in 1960s, to which we come to know how they impact our culture, ideas and beliefs (Harmon, 2001). According to Cohen 2006, this theory is based on the idea that people or audience cultivates the information. The perception of people is entirely different from what is presented by TV because the media is just like a fantasy land and due to this, people cannot capture in their real life.

Study on the Effectiveness of Television Advertisments Relation to their Lifestyle & Culture by Dr. Manoj A.S., Professor & Head, Rajadhani Business School, Trivandrum. This paper deals to judge the effectiveness of the advertising on youth in relation to their lifestyle and culture. The client or the company has some vision when they think of advertising for a new product or existing one or for brand promotion. That's why they bring exaggeration in ads to excite the mind of youth and create dreamy atmosphere through spectacle, for an instance, in the ad of **sting cold drink**, a boy is shown who drinks it, feeling a great energy and runs an electric stair. Now this is impossible in real life and in order to do so is dangerous for a person. At the same time, particular TV channels have also a plan to provide a support for that through wide spread.

Saleem & Jorma Larimo (2015) in title as "Hofsted Cultural Framework and Advertising Research: An Assessment of Literature". The Hofstede's cultural structure has been repeatedly used to inspect the influences of culture on advertising (Chang et al., 2009). For instance, the model has been used to explain the cross-cultural differences of advertising appeals (Albers-Miller and Gelb 1996) and the portrayal of gender roles in advertising (Paek et al., 2011). The advertisers hire foreigner models and the viewers impress very much, usually they appoint top models of such countries that become famous at that time. Salman Saleem, Jorma Antero Larimo, Kadi Ummik and Andres Kuusik in title as "Cultural and Paradoxical values in advertising in Eastern Europe evidence from Estonia". The purpose of this paper is to investigate whether Hofstede's (2001) cultural structure and the value paradox explain the use of appeals in advertising in Estonia.

The results show that Estonian advertising reflects absurd low values and femininity scope and culturally matching values related to high uncertainty avoidance and individualism. Conclusions suggest that cultural values (desired) alone are insufficient to predict the reflection of culture in advertising. Rather, contemplation of the discrepancies between the cultural values (desired) and practices (desirable) enables a better explanation of the relationship between society and its advertising. Advertising, fashion systems and a variety of rituals are thought to be accountable for focusing cultural meaning towards consumers (McCracken, 1986). In this phenomenon, advertiser assigns culturally related meaning to advertised goods in a way that supports the customers' preferences and requirements (Czarnecka and Evans, 2013).

Salman Saleem in title as "Cultural inconsistency in Advertising: Evidence from Finland." This study examines whether the use of fantasy in advertisements can be accepted to cultural practices or values. An expediency model and a survey method were used to collect data from professionals and students living in Finland. Results show that in Finland cultural practices are more hierarchical and masculine than Hofstede's cultural values.These results hint that due to the value contradictory cultural practices explain the reflection of culture in advertising.

Latest reviews of international advertising research show that Hofstede's cultural structure has regularly been used to observe how cultural messages are reflected in advertising (Taylor & Bowen, 2012; Zhang, 2014). However, research explores the influence of culture on advertising which is unconvincing because the answers are often conflicting and ambiguous (T. Chang et al., 2009; Koslow & Costley, 2010).

Vanishree Pabalkar & Vilas balgokar (2014) in title as "The Effects of Advertising on Youth" today youth have more equipped with all kind of information than the previous generation. The advancement of Technology has brought drastic change in the lifestyle of youth. They well aware of the print, electronic and other media. As we observe that one can inspire other culture than ours. That's why the electronic media shows the other culture more prominently through advertisments. New generation is much influenced by this commercialism, they get inspiration from it and attempts to apply themselves. Internet proves to be one of the best ways of influential communication. This is the place where the youth spend maximum of their time, surfing and downloading objects. The publicity that one gets from Internet, Television or any other media through advertisements depicts the knowledge of different cultures, lifestyles and advertisement. These advertisements directly or indirectly force youth to think on a scheme in which it is portrayed through the advertisements which may further lead to positive or negative outcomes.

Ang Siong Huat entitle as "The study of visual exaggeration in fast food print advertisments: An insight into McDonald's current practices in Malaysia". Advertising is a major part of selling, and is defined as an activity an organization engages to facilitate an exchange between the organization and its clients/customers (McCall, 2003). And also ensure that targeted consumer know and like a company product (Glowa, 2002). Advertising represents a point in which ideology and symbolic structures come together to from a structure where a symbolic value or image is given to commodity and results in a product going from representing an abstract quality or feeling to generating or being that feeling. Therefore, it further adds value and weight age to the importance of visual exaggeration in navigation how advertisments work. Dietzmann, (2008) analysis to the language of advertising, which builds on Williamson's work deals exclusively with advertising and his work, is that advertisments reflect the "current trends and value system of society". In setting off to demonstrate how advertising message is communicated Vestwergaard and Schroder (1987) took an ideological stand and claim that "advertising

diverts the reader's attention away from the need for radical changes in the socioeconomically structure. Instead it provides us with blinker which makes us focus on the capital interest and glorification of advertising: individualist consumption" (Bulmer, Oliver, 2006). However, Gao, and Zhang (2011) reported that visual exaggeration does not require any extrinsic evidence, as such, the glorification claims are unlimited. However these "freedom" often times are misused to created literally false, and materially damaging advertisments, and thus resulting in the ban of exaggerated advertisments in most of countries. Furthermore, the reception of visual exaggeration in advertisments was constantly being criticized for its deceiving misleading nature and should be prohibited (Preston, 1996). Manipulative intent or attention getting tactics by advertisers have been shown to create resistance to persuasion, an increase in counter arguing, and decreased confidence in a brand advertiser (Lindstrom, 2005).

Theoratical Framework

The purpose of researcher's study to find out the impact of advertising content is changing the culture and lifestyle of Gujranwala youth.

3.1 Rhetoric Theory

The rhetoric theory was to know how this element of persuasion works and how it can be effectively utilized. In simple words rhetorical theory developed from the thought how the language works for people. Rhetoric is best defined as the art or discipline that deals with the use of discourse, either spoken or written, to inform or persuade or move an audience, whether that audience is made up of a single person or a group of persons" [20:13]. First emerging with Aristotle as a subject of study, rhetoric has gained wide acceptance and use in modern societies, from advertising to political debates and so on. It is in this regard that rhetoric is more or less the strategies, man oeuvres, and the tactics one uses when engaging in persuasive communication, with the intent of influencing others towards a particular position. Further, rhetoric "is conventionally define as the study of persuasion"; Aristotle defined it as "the faculty of observing in any given case the available means of persuasion" [21:67]. Persuasive communication is established through language, whether verbal or visual. "Rhetoric is the technique of using speech and writing to maximize impact and aid memo ability" [22:184]. Thus, at its core, rhetoric is persuasive communication that encompasses all the technique humans use to influence the actions and attitudes of others. Rhetoric also refers as an artful use of language and purpose of rhetoric is to persuade the audience.

According to the Aristotle's theory of Rhetoric there are three elements of persuasion with are Ethos, Pathos and Logos. These elements are used to appeal the person's character, emotions and logics." Ethos refers to the truth worthiness or credibility of writers or speaker". Ethos is an effective technique because it makes a product more truth worthy. Ethos are building trust by establishing your credibility and authority (Writer).I t create a sense of faith in the Product and can help to get a message across through real testimonies that the audience can trust. Hearing the celebrity has faith in something can instill the same faith in their fans and audience.

Pathos refers to the persuading by appealing to the reader's emotion. Pathos are appealing to emotion by connecting with your audience through their values and interests (Audience).Pathos is a very effective technique because its appeal to the audience emotional side. This is a good technique to use in advertising because it helps lessen the insecurities about the purchase of the Product and lower the perceived risks of using the Product. Pathos is also effective at getting the message or point across the audience and making it stick. Pathos is most effective because the message or goal is best shown through actions not just words and images.

Logos refers to persuading by use of reasoning. Logos appeal to your audience's intelligence with well-constructed and clearly argued ideas (Context).Logos is an effective technique because it appeals the audience logical side. Logos allows the audience to understand the benefits of using the Product or supporting a cause or rationalize buying or using the Product. It's made the audience believe that they are making the smart choice.

Main assumption of rhetoric theory is;

- To designed and find the best form of influence or persuasion.
- Speaker MUST consider their audience.
- Rhetorical communication is intentional.
- Speakers intend to influence their audiences and develop strategies to accomplish goals.

3.2 Elaboration Likelihood Model

Richard E. Petty and John T. Cacioppo created the Elaboration Likelihood of Persuasion to explain, in detail, how a persuasive message worked to change model the attitude of the receiver. The model proposes that people are neither universally thoughtful in evaluating persuasive messages nor universally mindless. Instead, a variety of individual and situational factors will determine how much cognitive effort a person devotes to processing a message. The Elaboration Likelihood Model (ELM) explains how persuasion message works in changing the attitude of reader or viewer. It is very much important for corporations and advertisement agencies, in designing their market strategies and understanding the attitudes of peoples. ELM to apply to commercial for two reasons. First, a television commercial is strictly a persuasive communication, and ELM is strictly a persuasive theory. Second, the two routes to persuasion that this theory postulates (central and peripheral) closely parallel and expand a concept with which many communicators are already familiar: attention and attraction in advertisement They proposed that a message was transmitted and received through one of two routes of persuasion: the central route and the peripheral route.

The central route holds that a person is more likely to be persuaded if he is able to elaborate on a message extensively. That is, if he is motivated to think about the message, is able to think about it, and if the message is a strong one, he will be persuaded in accordance with the message. Under the central route, attitude changes result from a person's careful attempt to evaluate the true merits of the advocated position.

The peripheral route states that if a person is unable to elaborate on a message extensively, then she may still be persuaded by factors that have nothing do with the actual content of the message itself. That is that she would be drawn to the message by factors that she is already familiar with and has positive attitudes about and would associate those attitudes with the message. She would then be persuaded toward the message, albeit weakly and temporarily. Under the peripheral route, however, attitude changes occur because the person associates the attitude issue or object with positive or negative cues or makes a simple inference about the merits of the advocated position.
The present study is all about the advertising, how advertising contents and tactics are exaggerating the youth? Theory of Rhetoric addresses about advertising message and appeals/tactics such as patho and logo. While other one elaboration likelihood model theory explain about central and peripheral roots of persuasion which also use in advertising to attract the customers. These techniques use to present products features more realistic. Therefore research used both theories to support the study and build a theoretical frame for the study.

Methodology

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge.

4.1 Quantitative Approach;

Quantitative approach is a collection of numerical data to explain, predict and control the phenomena of interest **(L.R Gay 9th edition p. 08)**

Aliaga and Gunderson (2002) have described the quantitative research methods very well. According to them "Quantitative research is an inquiry into a social problem, explain phenomena by gathering numerical data that are analyzed using mathematically based methods e.g. in particular statistics".

According to the **Creswell (2003)** researcher primarily uses post-positivist approach to develop knowledge when quantitative research is selected (i.e. cause and effect thinking, use of measurement and observations, and test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data.

According to **Matthews & Ross (2010)** quantitative research methods are basically applied to the collection of data that is structured and which could be represented numerically. Researcher investigated the advertising exaggerated phenomena using quantitative approach. Researcher collected the respondents response in form of quantity and after that test in SPSS software.

4.2 Survey;

Herbert Mc. Closky (1969) defined survey "as any procedure in which data are systematically collected from a population or sample thereof through some form or direct solicitations such as face to face interviews, telephone interview or mail questionnaires".

Survey research is also defined as a method of descriptive research used for collecting primary data based on verbal or written communications or a representative sample of individuals or from the target population.

Kerlinger (1973) considered survey research as social scientific research and focuses on people, the vital facts of people, and their beliefs, opinions, attitude, motivations and behavior.

It has been further clarified by **Parten (1950)** that the social scientific nature of the survey research is revealed by the nature of its variables which can be classified as sociological facts, opinions and attitudes.

(Check & Schutt, 2012, p. 160) Survey research is defined as "the collection of information from a sample of individuals through their responses to questions"

(Babbie, 1990; Fowler, 1988) Survey research is a specific type of field study that involves the collection of data from a sample of elements (e.g., adult women) drawn from a well-defined Population (e.g., all adult women living in the United States) through the use of a questionnaire (Babbie, 1990; Fowler, 1988). Survey is most common type of data collection. There are different types of survey in which include the face to face survey, telephone survey, E mail survey, interviews etc. Moreover, it depends on the researcher choice that he or she which method in survey for data collection and depends

upon the study. In this study researcher choose face to face survey for the data collection from the sample population. In face to face survey researcher meet the respondents one by one and ask them questions.

4.3 Questionnaire:

Merriam Webster (1828) is defined as Questionnaire is a set of questions for obtaining statistically useful or personal information from individuals. For primary data collection purpose researcher well structured questionnaire developed and asked to respond the questions on five point Likert scale, ranging from strongly agree (1) to strongly disagree (2). Researcher used questionnaire as tool for data collection from the select respondents.

4.4 Variable:

Black and Champion (1976) define variable as 'rational units of analysis that can assume any one of a number of designated sets of values'.

Webster defined variable as "... an able to vary or alter, susceptible to change, having no fixed value…. ".

4.4.1 Independent variable;

(Shaughnessy, Zechmeister & Zechmeister, 2000) A true experiment consists of manipulating one or more factors and measuring the effect of this manipulation. The factors which are controlled or manipulated by the experimenter are called the independent variables. Advertisement is considered as independent variable in this study.

4.4.2 Dependent Variable;

(S**haughnessy, Zechmeister & Zechmeister, 2000)** The measures that are used to observe a possible effect are called dependent variables. Gujranwala Youth is considered as dependent variable in this study.

4.5 Universe;

A set that contains all elements relevant to a particular discussion or problem known as universe. The set of all elements under discussion for a given problem. The totality of known or supposed objects and phenomena throughout space; the cosmos; macrocosm. In this study all District Gujranwala youth (Male and Female) is universe of the study

4.6 Sample population:

Sample is a part or subgroup of population. The actual number of subjects chosen as a sample to represent the population characteristics. **(Sekaran, 2013).** Researcher took 200 Sample size, 100 from city and 100 from rural area of Gujranwala.

4.7 Sampling;

Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole Population (Never Mujere, 2016). Researcher used stratified Random sampling techniques. Probability sampling techniques use random selection (i.e., probabilistic methods) of units from your sampling frame (i.e., similar or exactly that same as your population) to be included in your sample. Researcher further used stratified sampling. Stratified random sampling is a type of probability sampling technique when one is

interested in particular strata (meaning groups) within the population (e.g., males vs. females; houses vs. apartments.). Stratified random sample involves dividing the population into two or more strata (groups). There would an equal chance (probability) that each stratum to be selected from the sample. The stratified random sample also improves the representation of particular strata (groups) within the population as well as ensuring that these strata are not over-represented. Together, this helps the researcher to compare strata, as well as make more valid inferences from the sample to the population. (Never Mujere, 2016).

In current study researcher used stratified sampling and sample population divided into stratum. In stratified sampling divide the target area into stratum into urban and rural area to study population researcher further categorize population into Male and Female gender vise. After the stratification researcher has taken the 200 sample size, 100 from urban and 100 from rural target population.

4.8 Data Analysis;

According to **Shamoo and Resnik (2003)** various analytic procedures "provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data.

After the data collection, it was reduced in the numeric form. For this purpose researcher prepared a coding sheet in SPSS software and fed all the numeric form to data into it. After coding the data next step was data analysis. Data Analysis for the quantitative study involves the critical analysis and interpretation of figure and numbers with the help of tables as well as SPSS.

4.9 Problems during survey:

- Respondents are not cooperated especially in urban area.
- Many respondents felt hesitation to answer the questions in rural area.
- Many respondents have lack of timing.

4.10 Conceptualization;

Conceptualization is the process of development and clarification of concepts. In other words, clarifying one's concepts with words and examples and arriving at precise verbal definitions.

Key words of study are Advertisement, Youth, Tactics, Exaggeration and Advertising Content.

Advertisement:

A notice or announcement in a public medium promoting a product, service, or event or publicizing a job vacancy.

A paid message, as of goods for sale, in newspapers or magazines, on radio or television, etc.

Marketing a picture, sign, etc. that is used to make a product or service known and persuade people to buy it.

Exaggeration:

Exaggeration is a representation of something in an excessive manner

Youth:

The period between childhood and maturity. The early period of existence, growth, or development. The stage between early ages to adult age. The period of your life when you are young, or the state of being young. Youth is best understood as a period of transition from the dependence of childhood to adulthood's independence.

Tactics:

Tactics are the methods that you choose to use in order to achieve what you want in a particular situation. A procedure or set of maneuvers engaged in to achieve an end, an aim, or a goal.

Advertising Content:

Content advertising is the process of producing content with the intention of promoting that content through paid distribution channels.

Advertising content is a marketing strategy to produce value-adding content with a primary function of distributing it through a paid channel.

4.11 Research Question

1. What is the Gujranwala's youth trend to advertising?

- Is the advertising contents influence on Gujranwala's youth?
- How the tactics of advertisements exaggerating the youth?
- Do advertisements' contents manipulate the youth perception?
- Do youth consider exaggerated advertisements as un-realistic?

In this study there are five main research questions that help researcher to make more questions for questionnaire as well as addressed the whole study findings. These research questions are mention above and now discuss one by one research question and how many questions come under the umbrella of one research question?

1. **What is the Gujranwala's youth trend to advertising?**

Do you like to watch advertisments? Which medium do you prefer to watch advertisements? How many commercials frequently do you watch in per day? What kind of advertisement do you like to watch?

2. **Is the advertising contents influence on Gujranwala's youth?**

Which type of factors attracts you in advertisements? Do you feel satisfaction when you buy product after watching the advertisement?

3. **How the tactics of advertisements exaggerating the youth?**

Do the advertising message appeals encourage you to adopt/buy product? Do you think advertisements appeals' are overstated than reality?

4. **Do advertisements' contents manipulate the youth perception?**

Do you think advertising is a tool of manipulation which influence on the youth perception? Do you think exaggerated advertisements are effect on your perception about product/service? Do you think advertising message is truthful? Do you think advertisements misrepresent massage?

5. **Do youth consider exaggerated advertisements as un-realistic?**

Do you think advertisements create an un-realistic environment among youth? Do you feel confusion when you compare advertisements message with actual reality? Do you think exaggerated advertisements are unethical?

Results

				Do you like to watch advertisments?			
				Yes		No	
				Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	50	25.0%	0	.0%
			Female	50	25.0%	0	.0%
	Rural	Gender	Male	50	25.0%	0	.0%
			Female	50	25.0%	0	.0%

Table 1 shows that in urban area there are 25% male like to watch advertisments and 25% female are like to watch advertisements. On the other hand in rural area there are 25% male like to watch advertisements and 25% female like to watch advertisments.

				Which medium do you prefer to watch advertisements?									
				Television		Radio		Newspaper		Magazine		Billboards/Outdoor advertising	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	34	17.0%	0	.0%	12	6.0%	2	1.0%	2	1.0%
			Female	34	17.0%	0	.0%	4	2.0%	6	3.0%	6	3.0%
	Rural	Gender	Male	36	18.0%	2	1.0%	2	1.0%	4	2.0%	6	3.0%
			Female	38	19.0%	0	.0%	6	3.0%	4	2.0%	2	1.0%

Table 2 shows that in urban area 17% male prefer television to watch advertisments and 6% male prefer newspaper to watch advertisments and 1% male prefer magazine to watch advertisments and 1% male prefer billboards/outdoor advertising to watch advertisments. However in urban area 17% female prefer television to watch advertisments and 2% female prefer newspaper to watch advertisments and 3% female prefer magazine to watch advertisments and 3% female prefer billboards / outdoor advertising to watch advertisments. On the other hand in rural area 18% male prefer television to watch advertisments and 1% male prefer radio to watch advertisments and 1% male prefer newspaper to watch advertisments and 2% male prefer magazine to watch advertisments and 3% male prefer billboards/ outdoor advertising to watch advertisments. While 19% female prefer television to watch advertisments and 3% female prefer newspaper to watch advertisments and 2% female prefer magazine to watch advertisments and 1% female prefer billboards/outdoor advertising to watch advertisments.

				How many commercials frequently do you watch in per day?							
				0-5		5-10		10-15		15-20	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	16	8.0%	16	8.0%	10	5.0%	8	4.0%
			Female	14	7.0%	20	10.0%	12	6.0%	4	2.0%
	Rural	Gender	Male	20	10.0%	12	6.0%	16	8.0%	2	1.0%
			Female	12	6.0%	18	9.0%	8	4.0%	12	6.0%

Table 3 shows that in urban area 8% male watch 0-5 commercials in per day and 8% male watch 5-10 commercials in per day and 5% watch 10-15 commercials in per day and 4% male watch 15-20 commercials in per day. While in urban area 7% female watch 0-5 commercials in per day and 10% female watch 5-10 commercials in per day and 6% female watch 10-15 commercials in per day and 2% female watch 15-20 commercials on per day. On the other hand in rural area 10% male watch 0-5 commercials in per day and 6% male watch 5-10 commercials in per day and 8% male watch 10-15 commercials in per day and 1% male watch 15-20 commercials in day. While in rural area 6% female watch 0-5 commercials in per day and 9% female watch 5-10 commercials in per day and 4% female watch 10-15 commercials in per day and 6% female watch 15-10 commercials in per day.

				Which type of factors attracts you in advertisements?							
				Celebrity Style		Language		Music		Main Idea/Theme	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	4	2.0%	0	.0%	8	4.0%	38	19.0%
			Female	18	9.0%	2	1.0%	8	4.0%	22	11.0%
	Rural	Gender	Male	16	8.0%	4	2.0%	12	6.0%	18	9.0%
			Female	12	6.0%	4	2.0%	12	6.0%	22	11.0%

Table 5 shows that in urban area 2% male attracts the celebrity style in advertisments and 4% male attracts the music in advertisments and 19% male attracts the main idea or theme in advertisments. While in urban area 9% female attracts the celebrity style in advertisments and 1% female attracts the language in advertisments and 4% female attract the music advertisments and 11% female attract the main idea or theme in advertisments. On the other hand in rural area 8% male attracts the celebrity style in advertisments and 2% male attracts the language in advertisments and 6% male attracts the music in advertisments and 9% male attracts the main idea or theme in advertisments. While in rural area 6% female attracts the celebrity style in advertisments and 2% female attracts the language in advertisments and 6% female attract the music advertisments and 11% female attract the main idea or theme in advertisments.

Do the advertising message appeals encourage you to adopt/buy product?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	4	2.0%	10	5.0%	28	14.0%	8	4.0%	0	.0%
			Female	6	3.0%	22	11.0%	18	9.0%	4	2.0%	0	.0%
	Rural	Gender	Male	6	3.0%	22	11.0%	18	9.0%	4	2.0%	0	.0%
			Female	10	5.0%	18	9.0%	18	9.0%	4	2.0%	0	.0%

Table 6 shows that in urban area 2% male strongly agree that advertising message encourage them to buy the product and 5% male agree that advertising message attracts them to buy the product and 14% male are neutral that advertising message encourage them to buy the product and 4% male are disagree that advertising message encourage them to buy the product. However, in urban area 3% female strongly agree that advertising message encourage them to buy the product and 11% female agree that advertising message attracts them to buy the product and 9%fe male are neutral that advertising message encourage them to buy the product and 2% male are disagree that advertising message encourage them to buy the product. On the other hand in rural area 3% male strongly agree that advertising message encourage them to buy the product and 11% male agree that advertising message attracts them to buy the product and 9% male are neutral that advertising message encourage them to buy the product and 2% male are disagree that advertising message encourage them to buy the product. However, in rural area 5% female strongly agree that advertising message encourage them to buy the product and 9% female agree that advertising message attracts them to buy the product and 9%fe male are neutral that advertising message encourage them to buy the product and 2% male are disagree that advertising message encourage them to buy the product.

Do you feel satisfaction when you buy product after watching the advertisement?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	2	1.0%	14	7.0%	24	12.0%	6	3.0%	4	2.0%
			Female	6	3.0%	24	12.0%	16	8.0%	2	1.0%	2	1.0%
	Rural	Gender	Male	6	3.0%	16	8.0%	16	8.0%	8	4.0%	4	2.0%
			Female	4	2.0%	12	6.0%	14	7.0%	18	9.0%	2	1.0%

Table 11 shows in urban area 1% male are strongly agree that they feel satisfaction when they buy product after watching the advertisement and 7% male are agree that they feel satisfaction when they buy product after watching the advertisement and 12% male are neutral that they feel satisfaction when they buy product after watching the advertisement and 3% male are disagree that they feel satisfaction when they buy product after watching the advertisement and 2% male are strongly disagree that they feel satisfaction when they buy product after watching the advertisement. Moreover, in urban area 3% female are strongly agree that they feel satisfaction when they buy product after watching the advertisement and 12% female are agree that they feel satisfaction when they buy product after watching the advertisement and 8% female are neutral that they feel satisfaction when they buy product after watching the advertisement and 1% female are disagree that they feel satisfaction when they buy product after watching the advertisement and 1% female are strongly disagree that they feel satisfaction when they buy product after watching the advertisement. On the other hand shows in rural area 3% male are strongly agree that they feel satisfaction when they buy product after watching the advertisement and 8% male are agree that they feel satisfaction when they buy product after watching the advertisement and 8% male are neutral that they feel satisfaction when they buy product after watching the advertisement and 4% male are disagree that they feel satisfaction when they buy product after watching the advertisement and 2% male are strongly disagree that they feel satisfaction when they buy product after watching the advertisement. Moreover, in rural area 2% female are strongly agree that they feel satisfaction when they buy product after watching the advertisement and 6% female are agree that they feel satisfaction when they buy product after watching the advertisement and 7% female are neutral that they feel satisfaction when they buy product after watching the advertisement and 9% female are disagree that they feel satisfaction when they buy product after watching the advertisement and 1% female are strongly disagree that they feel satisfaction when they buy product after watching the advertisement.

Do you think advertising is a tool of manipulation which influence on the youth perception?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	6	3.0%	28	14.0%	10	5.0%	6	3.0%	0	.0%
			Female	8	4.0%	26	13.0%	8	4.0%	6	3.0%	2	1.0%
	Rural	Gender	Male	12	6.0%	18	9.0%	10	5.0%	8	4.0%	2	1.0%
			Female	4	2.0%	34	17.0%	8	4.0%	2	1.0%	2	1.0%

Table 12 shows in urban area 3% male are strongly agree that advertising is a tool of manipulation which influence on youth perception and 14% male are agree that advertising is a tool of manipulation which influence on youth perception and 5% male are neutral that advertising is a tool of manipulation which influence on youth perception and 3% male are disagree that advertising is a tool of manipulation which influence on youth perception. However, in urban area 4% female are strongly agree that advertising is a tool of manipulation which influence on youth perception and 13% female

are agree that advertising is a tool of manipulation which influence on youth perception and 4% female are neutral that advertising is a tool of manipulation which influence on youth perception and 3% female are disagree that advertising is a tool of manipulation which influence on youth perception and 1% female are strongly agree that advertising is tool of manipulation which influence the youth perception. On the other hand in rural area 6% male are strongly agree that advertising is a tool of manipulation which influence on youth perception and 9% male are agree that advertising is a tool of manipulation which influence on youth perception and 5% male are neutral that advertising is a tool of manipulation which influence on youth perception and 4% male are disagree that advertising is a tool of manipulation which influence on youth perception and 1% male strongly disagree that advertising is a tool of manipulation which influence on youth perception. However, in rural area 2% female are strongly agree that advertising is a tool of manipulation which influence on youth perception and 17% female are agree that advertising is a tool of manipulation which influence on youth perception and 4% female are neutral that advertising is a tool of manipulation which influence on youth perception and 1% female are disagree that advertising is a tool of manipulation which influence on youth perception and 1% female are strongly agree that advertising is tool of manipulation which influence the youth perception.

Do think exaggerated advertisements are effect on your perception about product/service?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	2	1.0%	36	18.0%	8	4.0%	4	2.0%	0	.0%
			Female	4	2.0%	28	14.0%	10	5.0%	6	3.0%	2	1.0%
	Rural	Gender	Male	10	5.0%	16	8.0%	12	6.0%	10	5.0%	2	1.0%
			Female	2	1.0%	34	17.0%	8	4.0%	6	3.0%	0	.0%

Table 13

Table 13 shows that in urban area 1% male are strongly agree that exaggerated advertisments are effect on their perception about product and 18% male are agree that exaggerated advertisments are effect on their perception about product and 4% male are neutral that exaggerated advertisments are effect on their perception about product 2% male are disagree that exaggerated advertisments are effect on their perception about product. However, in urban area 2% female are strongly agree that exaggerated advertisments are effect on their perception about product and 14% female are agree that exaggerated advertisments are effect on their perception about product and 5% female are neutral that exaggerated advertisments are effect on their perception about product 3% female are disagree that exaggerated advertisments are effect on their perception about product and 1% female are strongly disagree that exaggerated advertisments are effect on their perception about product. On the other hand, that in rural area 5% male are strongly agree that exaggerated advertisments are effect on their perception about product and 8% male are agree that exaggerated advertisments are effect on their perception about product and 6% male are neutral that exaggerated advertisments are effect on their perception about

product 5% male are disagree that exaggerated advertisments are effect on their perception about product and 1% male are strongly disagree that exaggerated advertisments are effect on their perception about product. However, in rural area 1% female are strongly agree that exaggerated advertisments are effect on their perception about product and 17% female are agree that exaggerated advertisments are effect on their perception about product and 4% female are neutral that exaggerated advertisments are effect on their perception about product 3% female are disagree that exaggerated advertisments are effect on their perception about product.

Do you think advertisements create an un-realistic environment among youth?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	0	.0%	26	13.0%	12	6.0%	10	5.0%	2	1.0%
			Female	8	4.0%	14	7.0%	20	10.0%	8	4.0%	0	.0%
	Rural	Gender	Male	12	6.0%	18	9.0%	10	5.0%	10	5.0%	0	.0%
			Female	14	7.0%	12	6.0%	14	7.0%	10	5.0%	0	.0%

Table 14

Table 14 shows that in urban area 13% male are agree that advertisments create an un-realistic environment among youth and 6% male are neutral that advertisments create an un-realistic environment among youth and 5% male are disagree that advertisments create an un-realistic environment among youth and 1% male are strongly disagree that advertisments create an un-realistic environment among youth. More in urban area 4% female are strongly disagree that advertisments create an un-realistic environment among youth and 7% female are agree that advertisments create an un-realistic environment among youth and 10% female are neutral that advertisments create an un-realistic environment among youth and 4% female are disagree that advertisments create an un-realistic environment among youth. On the other hand in rural area 6% male are strongly agree that advertisments create an un-realistic environment among youth and9% male are agree that advertisments create an un-realistic environment among youth and 5% male are neutral that advertisments create an un-realistic environment among youth and 5% male are disagree that advertisments create an un-realistic environment among youth. Moreover, in rural area 7% female are strongly agree that advertisments create an un-realistic environment among youth and 6% female are agree that advertisments create an un-realistic environment among youth and 7% female are neutral that advertisments create an un-realistic environment among youth and 5% female are disagree that advertisments create an un-realistic environment among youth.

Do think exaggerated advertisements are unethical?

				Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
				Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Area	Urban	Gender	Male	8	4.0%	16	8.0%	10	5.0%	14	7.0%	2	1.0%
			Female	2	1.0%	14	7.0%	16	8.0%	18	9.0%	0	.0%
	Rural	Gender	Male	6	3.0%	14	7.0%	12	6.0%	12	6.0%	6	3.0%
			Female	10	5.0%	12	6.0%	16	8.0%	12	6.0%	0	.0%

Table 15

Table 15 shows that in urban area 4% male are strongly agree that exaggerated advertisments are un-ethical and 8% male are agree that exaggerated advertisments are un-ethical and 5% male are neutral that exaggerated advertisments are unethical and 7% male are disagree that exaggerated advertisements are unethical and 1% male are strongly disagree that exaggerated advertisments are unethical. Moreover, in urban area 1% female are strongly agree that exaggerated advertisments are un-ethical and 7% female are agree that exaggerated advertisments are un-ethical and 8% female are neutral that exaggerated advertisments are unethical and 9% female are disagree that exaggerated advertisements are unethical. On the other hand in rural area 3% male are strongly agree that exaggerated advertisments are un-ethical and 7% male are agree that exaggerated advertisments are un-ethical and 6% male are neutral that exaggerated advertisments are unethical and 6% male are disagree that exaggerated advertisements are unethical and 3% male are strongly disagree that exaggerated advertisments are unethical. Moreover, in rural area 5% female are strongly agree that exaggerated advertisments are un-ethical and 6% female are agree that exaggerated advertisments are un-ethical and 8% female are neutral that exaggerated advertisments are unethical and 6% female are disagree that exaggerated advertisements are unethical.

	Test Value = 0					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Area	42.320	199	.000	1.50000	1.4301	1.5699
Gender	42.320	199	.000	1.50000	1.4301	1.5699
Which medium do you prefer to watch advertisements?	18.855	199	.000	1.81000	1.6207	1.9993
How many commercials frequently do you watch in per day?	30.337	199	.000	2.18000	2.0383	2.3217
Which type of factors attracts you in advertisements?	33.453	199	.000	2.95000	2.7761	3.1239
What kind of advertisement do you like to watch?	25.367	199	.000	2.07000	1.9091	2.2309
Do the advertising message appeals encourage you to adopt/buy product?	41.531	199	.000	2.48000	2.3622	2.5978
Do think exaggerated advertisements are effect on your perception about product/service?	38.082	199	.000	2.42000	2.2947	2.5453
Do think exaggerated advertisements are unethical?	36.200	199	.000	2.82000	2.6664	2.9736
Do you feel confusion when you compare advertisements massage with actual reality?	33.100	199	.000	2.32000	2.1818	2.4582
Do you feel satisfaction when you buy product after watching the advertisement?	38.242	199	.000	2.78000	2.6367	2.9233
Do you think advertisements	38.567	199	.000	2.31000	2.1919	2.4281

appeals' are overstated than reality?						
Do you think advertisements create an un-realistic environment among youth?	35.034	199	.000	2.52000	2.3782	2.6618
Do you think advertisements misrepresent massage?	41.427	199	.000	2.91000	2.7715	3.0485
Do you think advertising is a tool of manipulation which influence on the youth perception?	34.333	199	.000	2.34000	2.2056	2.4744
Do you think advertising message is truthful?	44.344	199	.000	3.03000	2.8953	3.1647

Table 16: Sample Test

Table 16th shows that Chi-square test applied on all these categories, the results shows that the first category "Which medium do you prefer to watch advertisements?" P value is .000 which is below than .05 that show highly significant. Similarly the 2nd category "How many commercials do you prefer per day?" P value is .000 which is below than .05 that shows highly significant according to chi-square. Category 3rd "Which type of factors attracts you in advertisements?" P value is .000 which is also below than .05 that shows highly significant. In the same case "What kind of advertisments do you watch?" category fourth, the P value of this category is .000 which is below than .05 which shows highly significant. The 5th category "Do the advertising message appeals encourage you to adopt/buy product?" its P value is .000 that is below than the .05 value and highly significant according to chi-square test. The 6th category "Do you think exaggerated advertisements are effect on your perception about product/service?" P value is .000 which is also below than .05 that shows highly significant. In the same case "Do think exaggerated advertisements are unethical?" category seventh, the P value of this category is .000 which is below than .05 value and highly significant according to chi-square test. The 8th category" Do you feel confusion when you compare advertisements massage with actual reality?" P value is .000 which is below than .05 that shows highly significant. The 9th category "Do you feel satisfaction when you buy product after watching the advertisement?" p value is .000 which is below than .05 that show highly significant. Similarly the 10th category Do you think advertisments appeals are over stated than reality?" P value is .000 which is below than .05 that is highly significant. In the same case "Do you think advertisments create an un-realistic environment among youth?" category eleventh, P value is .000 which is below than .05 according to chi-square. The 12th category "Do you think advertisments misrepresent the message?" P value is .000 which is below than .05 and highly significant according to chi-square test. In similar case "Do you think advertising is a tool of manipulation which influence on the youth perception?" category 13th, p value is .000 which is below than .05 that is highly significant. The 14th category "Do you think advertising message is truthful?" P value is .000 which is below than .05 that is highly significant.

Analysis and Discussion

Results of study explain that hypothesis "Advertising contents are more exaggerating the Gujranwala's Youth Pakistan" on the basis of data results. While other one hypothesis of this study is rejected. Following hypothesis has been rejected during the data analysis.

- Advertising contents are less exaggerating the Gujranwala's Youth.

According to the results of study examine that respondents tend to watch advertisments in newspaper, Magazines, Billboards and on Television or watch advertisments on different media outlets. While consumption pattern shows that attractive medium is television for advertisments because most of Gujranwala's people consume television in different time for different purpose. The findings shows that Gujranwala's people watch the advertisments frequently almost 5-10 advertisments per day and these ads impact their mind forcefully. In fact these are the source of information and fun for the people now a day. Most of the respondents more like to watch advertisments which are based on information. Respondents think that information is the important aspect advertisments. Because information elaborate the product features in the best way.

The findings show that advertisments have impact on the social life of the respondents of Gujranwala. People watch advertisments on different media outlets. Their more focus on the celebrity style and the theme of advertisments. Researcher thinks that mostly respondents are more familiar with those advertisments which are related to the celebrity style and then main idea. Majority of respondents think that these factors in advertisments have impact on their life style which including the most important factor of dressing style of the celebrity. They think that celebrity style is more attract them rather than the language and music in advertisments. So it can be said that advertising has power to influence and add value of society at large now a days.

However, Results of study shows that advertising message encourage them to buy the product. Researcher thinks that advertising refreshing the brand identity, change the interest and style of people. They think that identity of product refresh in the minds of consumers as well persuade and encourage them towards the product. According to researcher majority of respondents attract to those product which are based on the catchy message and attractive slogans. Most of respondents pay attention on the attractive content and message in the advertisments then try to remember the attractive contents of advertisments and when they do this think they are persuaded and motivated towards the product. On the other hand most of respondents think that advertising appeals are over stated then reality. Researcher thinks that respondents' use different media outlets for advertisments and these advertisments do not carry appropriate meaning. Most of advertisements show irrelevant things instead of concentrating on the reality. Mostly the advertisments of detergent like Surf excel, Bonus, Arial Brite Total etc and cosmetic like Faiza Beauty Cream, Golden Pearl, Fair and Lovely etc are over stated then reality. These advertisments are based on truth but are over stated then reality.

The current study analyze that most of advertisments are misrepresent the message. Mostly advertisments are promoting those statements which can't be objectively verifiable and does not any express guaranty for the consumers. In the advertisments of cosmetics like Faiza Beauty cream and Golden pearl leads towards the wrong claim and misrepresent the message. Another example of fast food and weight lose ads which leads to the misconception. On the other hand Researcher thinks that most of respondents feel confusion when they compare the advertisments message then reality. In the advertisments of the same category like Surf Excel, Bonus, and other detergent, shampoo and cosmetics advertisments are based on the same quality and promoting the same features which represents the

misconception and motivate the consumer to buy the products. These things are confusing the consumer and they feel confusion when they compare the advertisments then reality.

Researcher thinks that most of respondents do not feel the satisfaction when they buy products after watching the advertisments. Because most of advertisments are based on meaningless message and leads to the misconception. So, that's why respondents do not feel pleasure when they buy the product after watching the advertisments. Advertising is the tool of manipulation which influences youth perception. A lot of people have complexity accepting the idea that advertisments are manipulative because consumers want to believe that they are in complete control of their choice. Most of advertisments use the different tactics which are based on different appeals. Mostly use the emotional appeals in the advertisments and encourage them to buy that product which is influencing the youth perception. Advertisments cannot change emotions but also give subliminal message now a day. Most of advertising are creating attention grabbing trick such as catchy and pleasing music, lyrics, jingles, humor and repeated messages which are influencing life style and perception youth.

Most of respondents think that advertisments are effect on their perception about products. Television is considered most preferred medium for watching the ads. Youth is spending more time in front of television and they try to trail the new things. Advertisments are creating the different tactics which are influencing lifestyle and youth perception regarding to buy the product. Because many of claims are made by advertisments are baseless and meaningless which have not the appropriate meaning. Advertising has not only impact on purchasing pattern but also changing the total lifestyle of young consumer. In the same case most of respondents think that advertisments are creating the un-realistic environment among youth. In the advertisments of cold drinks like String, Due and other cold drinks advertisments are creating the un-realistic environment among youth which could not be happen in reality. These advertisments are constantly irritating to the consumers. So, the exaggerated advertisments are un ethical because these ads are over stated than reality.

Conclusion

The current study is able to be helpful and valuable in determining the policies and other dynamics related to the life style of the youth and advertising contents. This study highlights or elaborates the fact that exaggerated advertisments are changing the mind-set, norms and values of youth as well as advertisements seems to be more influenced by different cultures. People think that most of advertisments are overstated than reality and misrepresent the message. Sometimes, they feel confusion when they compare advertising message with the actual reality. In the advertisments people mostly attract towards the un related things rather than the main idea. The current study is the depiction of advertising contents which are creating the exaggeration and exaggerated advertising advertisments are influencing the social life of people as well as advertising appeals are also influencing the perception of youth related to particular products. Mostly, exaggerated advertisments are affecting on their perception about product and is a tool of manipulation which influence on youth perception and creating an un-realistic environment among youth.

Limitations

- Due to lack of resources and budget the study is limited to area of Gujranwala and it does not represent the whole population of Pakistan.
- According to the rule of HEC BS (Hons) students should not take sample more than 100. So, sample size does not represent the whole District Gujranwala population.

References

Ali, S., & Yusaf, Z. (2017). Impact of TV Advertisement on changing lifestyle of the youth and how TV advertisements affect the norms and values of the society. *Global Media Journal: Pakistan Edition*, *10*(2)

MAJID, A. (2013). Cultural influence in Advertising.

Ogada, P. (2017). How does culture influence advertising: a content analysis of magazine advertisements (Master's thesis, Nord universities).

Saleem, S. (2016). Examining the reflection of culture in advertising: the role of cultural values and values-practices inconsistency.

Saleem, S., Larimo, J. A., Ummik, K., & Kuusik, A. (2015). Cultural and paradoxical values in advertising in Eastern Europe: Evidence from Estonia. Baltic Journal of Management, 10(3), 313-330.

Saleem, S., & Larimo, J. (2017). Hofstede cultural framework and advertising research: An assessment of the literature. In Advances in Advertising Research (Vol. VII) (pp. 247-263). Springer Gabler, Wiesbaden.

Saleem, S., & Larimo, J. (2017). Hofstede cultural framework and advertising research: An assessment of the literature. In Advances in Advertising Research (Vol. VII) (pp. 247-263). Springer Gabler, Wiesbaden.

Pabalkar, V., Pandey, A., Divekar, R., & Chitrao, P. (2004). The effects of advertising on youth. IEEE Transactions on Industrial Electronics, 51(3-51), 641-660.

Adiko, E. A., & Adjei, D. THE INFLUENCE OF TELEVISION ADVERTISEMENT ON THE YOUTH PURCHASING BEHAVIOUR.
Prelipceanu, C. M. Advertising and Language Manipulation. Diversité et identité culturelle en Europe.

Janusheva, V., & Dimovska, A. (2016). STANDARD MACEDONIAN LANGUAGE USED IN TELEVISION ADVERTISEMENTS. “Orbis Linguarum", 14(2), 45-52.

Barve, G., Sood, A., Nithya, S., & Virmani, T. (2015). Effects of advertising on youth (age group of 13-19 years age). J Mass Communication Journalism, 5(260), 2.

Ahmed, Q. M., Jabbar, Z., Buzdar, F., Ali, M., & Irshad, M. (2014). The Role of Mass Media Advertising in Shaping Attitudes: A Pakistani Context.

Gårdemyr, A., & Kiholm, M. (2017). The strategic use of rhetorical proofs in transformational advertising: A case study about SAS’‘We Are Travelers’.

Koshy, L., & Manohar, S. J. INFLUENCE OF TELEVISION ADVERTISEMENTS ON BUYING BEHAVIOUR OF YOUTH TOWARDS COSMETICS PRODUCTS.

Eid, M. (2012). The Canadian Culture, Rhetoric, and Magazine Advertising: Analysis of Persuasive Devices in Maclean’s. J Mass Communicat Journalism, 2(108), 2.

Usman, M., Ilyas, S., Hussain, M. F., & Qureshi, T. M. (2010). General attitude towards advertising: Cultural influence in Pakistan. International Journal of Marketing Studies, 2(2), 124.

Belk, R. W., & Pollay, R. W. (1985). Materialism and status appeals in Japanese and US print advertising. International Marketing Review, 2(4), 38-47.

Bisht, S. (2013). Impact of TV Advertisement On Youth Purchase Decision-Literature Review. Abhinav International Monthly Refereed Journal of Research In Management and Technology, 1-6.

Sinclair, J. (2012). Advertising, the media and globalization: a world in motion. Routledge.

Akbar, M. W., & Karim, W. (2011). THE INFLUENCE AND TECHNIQUES OF MODERN ADVERTISING: ETHICS AND RESPONSIBILITIES. Gomal University Journal of Research, 27, 2.

Kadry, A. (2015). The Creative Concept and its role in Advertising Design. International Design Journal, 5(3), 1085-1090.

Ang, S. H. (2017). The Study of Visual Exaggeration in Fast Food Print Advertisements: an Insight into McDonald‟ S Current Practices in Malaysia (Doctoral dissertation, UTAR).

Gellrich, M. (1990). Aristotle's Rhetoric: Theory, Truth, and Met rhetoric. Cabinet of the Muses: Essays on Classical and Comparative Literature in Honor of Thomas G. Rosenmeyer, ed. M. Griffith and DJ Mastronarde, 241, 56.

Leeson, P. T., & Coyne, C. J. (2005). Manipulating the media. Institutions and Economic Development, 1(2), 67-92.

Waller, D. S., & Shyan Fam, K. (2000). Cultural values and advertising in Malaysia: views from the industry. Asia Pacific Journal of Marketing and Logistics, 12(1), 3-16.

Shachar, R., & Anand, B. N. (1998). The effectiveness and targeting of television advertising. Journal of Economics & Management Strategy, 7(3), 363-396.

Allen, B., & Stevens, D. P. (2010, August). Truth in advertising? Visuals, sound, and the factual accuracy of political advertising. In Annual Meeting of the American Political Science Association, September (pp. 1-4).

Hall, J. R. (2005). The Meanings of Social Life: A Cultural Sociology.

Prelipceanu, C. M. Advertising and Language Manipulation. Diversity et identité culturelle en Europe.

Jalees, T., & de Run, E. C. (2014). Body image of Pakistani consumers. Journal of Management Science, 1(1), 16-34.

Akhter, W., Abassi, A. S., & Umar, S. (2011). Ethical issues in advertising in Pakistan: an Islamic perspective. World Applied Sciences Journal, 13(3), 444-452.

Anexure

Name_____
Age_____ Area: Urban/Rural

Gender: Male / Female Education: BS (Hons)/MA

1. Do you like to watch advertisements?

Yes No

2. Which medium do you prefer to watch advertisements?

Television Radio Newspaper Magazine Billboards/outdoor advertising

3. How many commercials frequently do you watch in per day?

0 -5 5-10 10-15 15-20

4. What kind of advertisement do you like to watch?

Informational Entertainment Emotional Funny
Straightforward

5. Which type of factors attracts you in advertisements?

Celebrity Style Language Music Main idea/Theme

6. Do the advertising message appeals encourage you to adopt/buy product?

Strongly Agree Agree Neutral Disagree Strongly Disagree

7. Do you think advertisements appeals' are overstated than reality?

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. Do you think advertising message is truthful?

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. Do you think advertisements misrepresent massage?

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. Do you feel confusion when you compare advertisements message with actual reality?

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. Do you feel satisfaction when you buy product after watching the advertisement?

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. Do you think advertising is a tool of manipulation which influence on the youth perception?

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. Do you think exaggerated advertisements are effect on your perception about product/service?

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. Do you think advertisements create an un-realistic environment among youth?

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. Do you think exaggerated advertisements are unethical?

Strongly Agree Agree Neutral Disagree Strongly Disagree

BATI AZERBAYCAN'DAKİ TÜRK KÜLTÜR MİRASININ MEVCUT DURUMU

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ABSTRAKT

Məqalədə bildirilir ki, Qərbi Azərbaycan (indiki Ermənistan) ərazisində türk-müsəlman xalqına aid yüzlərlə tarix və mədəniyyət abidələri mövcud olmuşdur. Bu abidələr əsrlər boyu zaman-zaman yaradılmış və qorunub saxlanmışdı. Son zamanlar ermənilər tərəfindən qədim dövrə, orta əsrlərə və sonrakı dövrlərə aid həmin abidələrin əksəriyyəti məhv edilmişdir. Belə ki, alban-xristian məbədlərinin xarici görünüşü dəyişdirilərək erməni-qriqorian kilsələrinə bənzədilmiş, müsəlmanlıq abidələri (məscidlər, türbələr, saraylar, karvansaralar, qəbiristanlıqlar, heykəllər və s.) isə dağıdılmış, yer üzündən silinmişdir.

Monoetnik Ermənistanda azərbaycanlı-türk irsinin məhv edildiyinin beynəlxalq təşkilatlar tərəfindən qeydə alınmasına, obyektiv şəkildə beynəlxalq ictimaiyyətə çatdırılmasına böyük ehtiyac vardır.

Açar sözlər: Qafqaz, Qərbi Azərbaycan, UNESCO, türk-müsəlman, mədəni irs

Giriş

Azərbaycan Respublikasının Prezidenti İlham Əliyevin, Fransanın Avropa İttifaqına sədrliyi qismində Prezident Emmanuel Makronun, Avropa İttifaqı Şurasının Prezidenti Şarl Mişelin və Ermənistan Respublikasının baş naziri Nikol Paşinyanın iştirakı ilə videoformatda keçirilən görüşdə UNESCO-nun Azərbaycana və Ermənistana missiya göndərməsi məsələsi müzakirə edilmiş və missiyanın hər iki ölkəyə göndərilməsinə dair razılıq əldə olunmuşdur. Bu, vacib bir addım hesab olunmalıdır [16].

UNESCO-nun Azərbaycan Respublikasına və Ermənistana missiya göndərməsi məsələsi böyük aktuallıq kəsb edir. Azərbaycan Respublikasının Prezidenti İlham Əliyevin qaldırdığı bu məsələ, Azərbaycan xalqına, onun tarixi mədəni irsini tanıtmaq baxımından mühüm əhəmiyyətə malikdir. Bu, Cənubi Qafqazda region dövlətlərinə və xalqlarına məxsus tarix və mədəniyyətinin obyektiv şəkildə öyrəniləcəyi halda buna ədalət prinsipinə əməl edilməsi kimi baxılacağına inamı artırar.

Məlumdur ki, indiki Ermənistan dövləti XX əsrin əvvəllərində Azərbaycanın tarixi torpaqlarında - Qərbi Azərbaycan ərazisində yaradılmışdır. Qərbi Azərbaycandan yerli türk-müsəlman xalqı dəfələrlə deportasiya edilmiş, tarixi irsinə də ağır zərbə vurulmuşdur. Bu ərazidə türk-müsəlman xalqına məxsus saysız-hesabsız abidələr vandalcasına dağıdılmış, məhv edilmiş, bir hissəsi isə saxtalaşdırılaraq, "ermənіyə məxsus" şəklə salınmışdır.

XX əsrin əvvəllərində başlanmış Ermənistanın Azərbaycana qarşı əsassız ərazi iddiaları həmin əsrin 90-cı illərində müharibəyə, Azərbaycan ərazisinin 20 %-nin işğalına səbəb olmuşdur.

Ona görə də AMEA Qafqazşünaslıq İnstitutunun profili olaraq Ermənistanın daxili və xarici siyasətinin mahiyyəti ilə bərabər Azərbaycan xalqına qarşı törətdiyi cinayətlərin, vandalizmin təhlil və şərh edilməsi vacibdir.

Cənubi Qafqazda "Ararat" adlı ilk Ermənistan dövlətinin yaradılması və onun anti-Azərbaycan siyasəti

XX əsrin əvvəllərində Naxçıvan və İrəvan xanlıqlarının torpaqları hesabına Cənubi Qafqazda "Ararat" adlı ilk Ermənistan dövləti yaradılmışdır. XIX əsrə qədər əhalisinin 90%-dən çoxu

azərbaycanlı-türklərdən ibarət olan İrəvan şəhərini ermənileşdirmək məqsədilə hər vasitəyə əl atılmışdır. Bununla da, İrəvan şəhərində ermənilərin sayı süni şəkildə çoxaldılmışdır. XX əsrin əvvəllərində (1918-ci il) İrəvan şəhəri ermənilərə verilmiş, Ermənistan adlı dövlət yaradılmışdır. Şübhəsiz ki, Ermənistan ərazisində olan mədəni irs də ermənilərə deyil, azərbaycanlı-türk xalqına məxsus olmuşdur. Təsadüfi deyil ki, Qərbi Azərbaycanın (indiki Ermənistan) hər yerində mövcud olan toponimlər də türk mənşəlidir. Son dövrlərədək minlərlə türk toponimləri arasında heç bir erməni mənşəli toponim olmamışdır. Keçən əsrin ortalarında tədqiq edimoş Qərbi Azərbaycanın epiqrafik abidələrinə dair materiallar həmin ərazilərin türk-müsəlman xalqına məxsus olması barədə fikirlərin şübhəsiz olduğunu bir daha təsdiq etmişdir [12].

Ermənistan ərazisində mövcud olan Azərbaycan abidələri ilə bağlı çoxlu sayda arxiv sənədləri, şəkillər, albom və d. materiallar var ki, bunları inkar etmək mümkün deyildir. Birmənalı şəkildə qeyd etmək olar ki, Qərbi Azərbaycandakı (indiki Ermənistan) istər milli, istərsə də dini abidələrin hamısı Azərbaycan xalqının mədəni irsidir. Ermənistan ərazisi qədim türk-müsəlman əraziləri olduğu, bu regionda xristianlığı ilk qəbul edən Albaniya dövləti olduğu üçün bu abidələr azərbaycan-türk xalqına məxsus xristian-alban abidələridir. Bu, uydurma və saxtalaşdırmadan uzaq reallıqdır.

Tarixi araşdırmalar göstərir ki, Ermənistanın apardığı anti-türk siyasəti Azərbaycan xalqına külli miqdarda ziyan vurmuşdur. İlk növbədə, İrəvan şəhəri də daxil olmaqla, Azərbaycanın qədim və tarixi torpaqlarına edilən qəsdlərdən biri Azərbaycan torpaqlarınının 9,8 min kv.km-də Ermənistan dövləti yaratmaq idisə, digəri Göyçənin və Zəngəzurun bir hissəsinin Ermənistana birləşdirilməsi idi. Bu azmış kimi, Azərbaycan dövlətinin bütöv Qarabağın coğrafi ərazisinin Yuxarı hissəsi "Dağlıq Qarabağ" kimi süni şəkildə "inzibati ərazi" kimi qələmə verilmiş, həmin ərazidə "Dağlıq Qarabağ Muxtar Vilayəti" yaradılmışdır. Həmin əraziləri ermənileşdirmək üçün azərbaycanlılara qarşı etnik təmizləmə aparılmış, kütləvi qırğın, terror aktları və soyqırımılar həyata keçirilmişdir. Hətta, indiki Ermənistanın yerləşdiyi Qərbi Azərbaycan ərazilərinin əhalisinin əksəriyyəti azərbaycanlı-türk olduğuna baxmayaraq, onlar doğma yurdlarından qovulmuş, azərbaycanlı kəndləri dağıdılmış, yandırılmış, məhv edilmişdir. İndiki Ermənistan ərazisində Azərbaycan türklərinə məxsus toponimlər dəyişdirilmiş, abidələrin üzərindən milli əlamətləri itirmək üçün tarixi izlər silinmişdir. Bu məqsədlə ermənilər həmin ərazilərdə qalaları, məscidləri, türbələri, qəbiristanlıqları, karvansaraları, kəhrizləri dağıtmışdılar. Bu siyasətdə məqsəd ərazilərdə yerli xalqa məxsus tarixi izləri məhv etmək olmuşdur. Bütün bunlar dövlət səviyyəsində, planlı şəkildə həyata keçirilmişdir. Vaxtilə, indiki Ermənistan ərazisində mövcud olan 300-dən artıq məscid dağıdılmışdır [1; 3; 6; 7]. Onlardan yalnız Göy Məscidi (İrəvan şəhərində) saxlamışlar ki, onu da "fars məscidi" kimi qələmə verirlər. Orada saysız-hesabsız qalalar var idi ki, onlar Azərbaycan hökmdarları, dövlət xadimləri, sərkərdələri tərəfindən yaradılmışdır. Bu qalalar sözügedən ərazilərdə hökmranlıq etmiş sülalələrin yadigarları idi. İndiki Ermənistan ərazisində saxlanmış abidələrdən biri isə "türkmən abidəsi" kimi qələmə verdikləri Əmir Səəd türbəsidir [5; 6].

XX əsrin əvvələrində rus alimləri, hərbçiləri tərəfindən çəkdirilən xəritələrdə Qərbi Azərbaycandakı toponimlər, oronimlər, oykonimlər haqqında faktiki məlumatlar vardır. Həmçinin, Türkiyədə, Rusiyada, Gürcüstanda kifayət qədər arxiv sənədi saxlanmışdır ki, həmin sənədləri bir daha tədqiqata cəlb etmək olar. Eləcə də, ermənilərin yerli azərbaycanlılara qarşı törətdikləri vəhşilikləri və vandalizmi göstərən faktları yaddaşında saxlayan insanlar arasında hələ də həyatda olanlar var ki, bunların köməkliyi ilə azərbaycanlı-türk xalqının qədim tarixi torpağı olan Qərbi Azərbaycanın tarixi irsini bərpa etmək və beynəlxalq aləmə tanıtmaq mümkündür.

Ermənilərin anti-türk fəaliyyəti vaxtilə onların kütləvi şəkildə köçürülərək məskunlaşdırıldıqdan əvvəl - XVIII əsrdən başlanmışdır. Belə ki, Azərbaycanın avtoxton (yerli) xristian əhalisinin yaşadığı ərazilərin tarix və mədəniyyət abidələri erməni abidələri kimi qələmə verilərək maraq yaradılmış, buraya XIX əsrdən etibarən çoxlu erməni ailəsi köçürülmüşdür. Yerləşdikdən sonra həmin ermənilər ərazinin tarixi irsinə sahib çıxmağa, onları özününküləşdirməyə başlamışlar. Ermənilər yerli

xristian albanları qriqorianlaşdıraraq, assimliyasiya etmiş, haylar (ermənilər) adlandırmış, ərazini isə "hayk ölkəsinin bir hissəsi" kimi tanıtmağa çalışmışlar. Azərbaycan torpaqlarını "Şərqi Ermənistan" adlandıraraq, uydurma "Böyük Ermənistan"ın tərkibinə daxil etmiş, "erməni əraziləri", "erməni mədəniyyət məskənləri" olması kimi uydurma tarix yaratmışlar.

Ermənilərin Cənubi Qafqazda "aftoxton" olmasını sübut etmək cəhdləri

Xristianlığın qəbul edilməsi və ölkədə rəsmi dövlət dininə çevrilməsi bir sıra tarixi proseslərin baş verməsi ilə nəticələnmişdir. Eranın əvvəlində Yaxın və Orta Şərqdə yayılmağa başlayan xristianlıq Avropada və digər yerlərdə hökmran din kimi möhkəmlənərək, yayılma prosesi keçirdiyi bir dövrdə Cənubi Qafqazda da özünə yer tutmuşdur.

Qeyd etmək lazımdır ki, erməni tədqiqatçılarının elmi ədəbiyyata daxil etdikləri bir fikir - Cənubi Qafqazda xristianlığın ilk dəfə ermənilər tərəfindən qəbul edilməsi və onların vasitəsilə yayılması fikri özünü doğrultmadığı da diqqətdən qaçmamalıdır. Guya xristianlığı Albaniyadan (Azərbaycan) əvvəl ermənilər qəbul etmiş, Albaniya və İberiyada da yaymaqda əsas vasitəçi rolu oynamışlar. Burada məqsəd ermənilərin Cənubi Qafqazda gedən proseslərin həmişə önündə olduğunu göstərməkdir. Bundan çıxış edərək Azərbaycan ərazisindəki alban-xristian abidələrinin ermənilərə məxsus olmasını təlğin edirlər. Onların bu fikri elmi ictimaiyyət tərəfindən qəbul edilmir. Ciddi alimlər bu fikrin yanlış, əsassız olduğunu dəfələrlə bəyan etmişlər. Əslində xristianlığın Cənubi Qafqazda rəsmi din kimi ilk dəfə Albaniyada qəbul edildiyi (IV əsrin əvvəlləri) məlumdur [9].

Tədqiqatlar sübut etmişdir ki, alban xaçları erməni xaçlarından əsaslı şəkildə fərqlənir. Azərbaycanda erkən xristianlıq incəsənətinin meydana çıxması və inkişafı tamamilə orjinal, özünəməxsus yolla getmişdir. Burada söhbət üzərində xristianlığa qədər mövcud olmuş dini-ayinlərin simvolikası əks olunmuş xristian və müsəlman qəbirləri və yazılı abidə daşlarından gedir. Alban xaç daşları üzərindəki obrazlar çoxlu yüzilliklər keçdiyinə görə əvvəlcə iki, sonralar üç din hakimiyyəti altında toplanmış, harmonik olaraq yüzlərlə mümkün yazılı daşların üzərində əks olunmuş ayin simvolikasıdır. Buradan aydın olur ki, bütün özünəməxsus, orjinal və köklü fərqi olan xaçdaş və nişandaş erməni xaçından fərqlidir [6;14].

Xaçobrazlı alban xaçdaşlarında dekarativ tərtibatlar qovuşur. Xaçdaşlarda başlıca cəhət odur ki, onlar təkcə xaç deyil, məqsədli bədii icra olunmuş yazılı daş obrazdır. Öz mənasına görə bu xaçlar xristianlığa qədərki dini ayinlərlə bağlıdır və həyat ağacının - xaçın təsvirinə yaxınlaşır. Bütpərəst qəbirüstü yazılı daşların qanunauyğun cəhətlərinin açılması Albaniyanın xristian xaçdaşı və müsəlman başdaşılarının xarakterini izləməklə müəyyənləşir.

Alban xaçdaşları bir sıra mühüm lokal cizgiləri, bütün alban yazılı daşlarının üzərində xristianlığa qədərki inamlar və kainat qüvvələrinin yerləşməsi ilə dini-bədii qanunlara tabe edilmiş özünəməxsus qrup təşkil edir. Alban xaçı xristianlığaqədərki inamların və kainatı dərketmənin əlamətlərini özündə cəmləşdirən işarələrə malikdir. Onun bütün kompazisiyaları göylə yerin əlaqəsi, günəş, işıq və məhsuldarlıq simvolu kimi əks olunmuşdur.

Mənbələrin verdiyi məlumata görə orta əsrlərdə bir sıra şəhərlərdə müsəlman məscidləri ilə yanaşı alban xristian məbədləri də görünürdü [2, 57]. Bunun səbəbi isə qədim tarixi, mədəniyyəti, yerli ənənəsi olan, əsasən türklərdən ibarət bir xalqın həyatında bu dinlərin hamısının azərbaycanlı əhalinin ulu babaları tərəfindən qəbul edilməsi ilə bağlı idi.

Elmi tədqiqatdan belə bir məntiqi nəticə çıxır ki, bütpərəstlikdən tanrıçılığa, onlardan da xristianlığa keçən xalqa bu dinlər heç vaxt zorla qəbul etdirilməmişdir. Eləcə də, xristianlıqdan müsəlmanlığa keçid zorla həyata keçirilməmişdir. Dövlət və xalq bu dinləri könüllü qəbul etmişdir. Ona görə də bu abidələr də qorunub saxlanmışdır. Bu proses arxeoloji qazıntılar zamanı aşkar edilmiş maddi

mədəniyyət nümunələri ilə də təsdiq olunur. Kurqan dəfn adətinin, küp və daş qutu qəbirlərin, dəfn edilmiş bütlərin, üzərində xaçobrazlı naxışları olan nişan daşların tədqiqi bunu deməyə əsas verir [14].

Qərbi Azərbaycan (indiki Ermənistan) ərazisində islam dini VII əsrdən etibarən yayılmışdır. Bu ərazidə yüzlərlə məscid və digər dini ibadət yerləri mövcud olmuşdur. Bu bölgədə mövcud olan dini abidələrə dair səyyahlar tərəfindən kifayət qədər məlumat verilmişdir. Ümumiyyətlə, XX əsrin əvvəllərinə qədər Qərbi Azərbaycan (indiki Ermənistan) ərazisində İrəvan qəzasında 42, Eçmiədzin qəzasında 33, Zəngəzur qəzasında 35 məscid olmuşdur [1;4;10].

Qərbi Azərbaycan (indiki Ermənistan) ərazisində azərbaycanlı-türk irsinin məqsədyönlü şəkildə məhv edilməsi, tarixi toponimlərinin dəyişdirilməsi sovetlər dövründə icra edilmişdir. Ermənilər azərbaycanlı-türk xalqına məxsus minlərlə toponimi Sovet dövründə, məqsədyönlü şəkildə dəyişdirmişlər. Burada məqsəd XX əsrin əvvəllərində ermənilərin başladığı etnik təmizləmənin davamı olaraq azərbaycanlı-türk xalqının izini itirmək olmuşdur. Hətta, Azərbaycan-türk xalqına məxsus 2 mindən çox toponim 5-10 il ərzində dəyişdirilmiş, qondarma erməni adları ilə əvəzlənmişdir. Qalanları da əvvəl qeyri-rəsmi, sonra isə Ermənistan dövləti tərəfindən rəsmi şəkildə dəyişdirilmiş, ermənileşdirilmişdir [7; 8;11].

Bu abidələr Göy məscid, Hacı Novruzəli bəy məscidi, Qala məscidi (Sərdar, yaxud Abbas Mirzə), Hacı Cəfər bəy məscidi, Abbas Mirzə məscidi, Xudabəndə məscidi, Hacı Cəfər bəy məscidi, Novruzəli bəy məscidi, Rəcəb Paşa məscidi, Sərdar məscidi, Dəmirbulaq məscidi, Ərgəz məscidi, Şah Abbas məscidi, Şükürbəyli məscidi, Təpəbaşı məscidi, Zalhan məscidi və Əxi Təvəkkül zaviyəsindən ibarət idi [11].

Eləcə də, İrəvan qalası, Oxçu qalası, Sərdar sarayı, Sərdarabad qalası, Şəki qalası, Pir Hüseyin türbəsi, Urud abidələr kompleksi, (qoç heykəllər dağıdılmış, digərlərini isə ermənilər öz adlarına çıxarmışlar), Aşıq Ələsgərin doğulduğu Ağkilsə kəndindəki qəbrüstü abidəsi, Ağudi abidəsi, Ağadədə qəbiristanlığı, Aşağı Şorca qəbiristanlığı, Güllübulaq qəbiristanlığı, Saral qəbiristanlığı mövcud olmuşdur [6; 7; 11].

Həmçinin, Gərnibasar abidələri - Gərni məbədi, Göy Mələkləri məbədi, Saqakat kilsəsi;Göyçə abidələri - Nərədüz; Qırxbulaq mahalı abidələri - Avan bazilikası; Loru mahalı abidələri - Ağtala monastır kompleksi, Uzunlar məbədi; Şörəyel abidələri- Maqasberd qalası, Şirvancıq məbədi, Yerəruyk bazilikası; Talin mahalı abidələri - Məsdərə məbədi; Vedibasar abidələri- Xorvirab monastırı; Zəngəzur abidələri - Abdalağalu, Tanaat məbədi, Tatev monastırı, Urud abidələr kompleksi; Zəngibasar abidələri - Pir Hüseyin türbəsi var idi ki, bunlar da erməni vandalizminin qurbanları olmuşdur [3;10; 15].

Beləliklə, Azərbaycanın bütövlükdə tarixi torpaqlarında, xüsusilə Qərbi Azərbaycanda mövcud olan maddi mədəniyyət abidələri azərbaycanlı-türk xalqı tərəfindən yaradılmışdır. Ermənilərin bu ərazilərə köçürülüb məskunlaşdırılmasından sonra həmin abidələrin çoxu etnik təmizləmə siyasətinin qurbanı olmuşdur. Bir qayda olaraq müsəlman abidələri iki nümunə istisna olmaqla, dağıdılmış, xristian abidələri isə saxtalaşdırılmış-ermənileşdirilmişdir.

İstifadə edilmiş ədəbiyyat

1. Alekperli A. - Monuments of West Azerbaijan, Baku, Nurlan, 2007
2. Əl-Kufi. Kitab əl-fütuh (Fəthlər kitabı). Tərcümə akademik Z.M. Bünyadovundur. Bakı, Azərbaycan Dövlət Nəşriyyatı, 1995, 80 s.
3. Erməni vandalizmi: əsirlikdə olan Azərbaycan abidələri https://armenianvandalism. preslib. az/az_armenia.html
4. Ermənistan ərazisindəki Azərbaycan mədəni irsinə aid abidələrin siyahısı https://az.wikipedia.org › 13
5. Əziz Ələkbərli. Qərbi Azərbaycan abidələri. Bakı, 2007.
6. Giyasi J., Bozyel I. Armenian cultural terror, Ankara, 1996.

7. İbrahim Bayramov. Qərbi Azərbaycan: tarixi həqiqətlər və Ermənistanın etnik təmizləmə siyasəti. Bakı, Çıraq, 2012.
8. Könül Səmədova. Qərbi Azərbaycan etnotoponimlərinin arealları. Bakı, 2008.
9. Moisey Kalankatuklu. Albaniya tarixi (tərcümə Z.M.Bünyadovundur). Bakı, Elm, 1993, 235 s.
10. Nazim Mustafa. İrəvan xanlığı: Erməni vandallarının yox etdiyi Xan sarayı. Bakı: 2016.
11. Nazim Mustafa. Vandalizm: tarixi adlara qarşı soyqırımı. (tərtibçi). Bakı: Turxan, 2014.
12. Nemətova M.S. Zaqafqaziyanın epiqrafik abidələri (XI-XIX əsrlər). Bakı, Elm, 1972, 320 s.
13. Nəzir Əhmədli. İrəvan əyalətinin komeral təsviri. Bakı, 2021
14. Qasım Hacıyev. Qarabağın maddi və mənəvi mədəniyyəti (Azərbaycan, ingilis və fransız dillərində). Bakı, Təknur, 2010, 152 s.
15. Qərbi Azərbaycan abidələri https://az.wikipedia.org ›
16. YUNESKO missiyası Ermənistanı yoxlamağa gedir - məhv edilmiş tarixi irsimizin siyahısı tərtib olunubmu... https://www.baki-xeber.com/siyaset/134939.html 7 Fev.

AZERBAYCAN'IN KARABAĞ SAVAŞINDA ZAFERİ: GÜRCİSTAN'DAN BAKIŞ

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ÖZET

Makale, Azarbaycanda Vatan Savaşı'nın başlangıcında Gürcistan hükümetinin tarafsızlık gösterdiğine işaret ediyor. Hükümet bunu hem Azerbaycan hem de Ermenistan'a özel dostane ilişkisi ile açıklıyor. Savaşın sona ermesinden sonra Gürcistan Cumhurbaşkanı Salome Zurabişvili, savaşın sona ermesinden bu yana Azerbaycan ve Ermenistan'ı kutladı ve aracılara şükranlarını ifade etti. Bu şükranın hem yurtiçinde hem yurtdışında belirsiz bir şekilde karşılandığına dikkat çekiliyor. Rusya'nın Güney Kafkasya'ya katılımı Batı'da Kafkasya'ya yönelik yeni istilasının güçlendirilmesi, Batı'ya karşı askeri bir blok oluşturulması olarak görülüyor. Gürcü siyaset bilimcilere göre Rusya, Azerbaycan ve Ermenistan arasındaki anlaşma yenilik yarattı, ancak çatışmayı kesin olarak çözmedi. Gürcistan Savunma ve Güvenlik Komitesinde "Dağlık Karabağ barış anlaşmasının Güney Kafkasya'daki güvenlik ortamına etkisi" konulu tartışmalar gerçekleşti. Görüşmede, Rusya'nın Güney Kafkasya'da askeri varlığının genişlemesinin Gürcistan'da endişe kaynağı olduğu kaydedildi. Azerbaycan'ın Karabağ savaşındaki zaferinden sonra Güney Kafkasya'da yeni bir jeopolitik gerçeklik ortaya çıktı. Savaş sonrası dönemde Azerbaycan daha da güçlendi, Güney Kafkasya'ya olan etkisi daha da arttı. Azerbaycan Gürcistan'ın stratejik ortağıdır. Savaştan sonra Gürcistan'ın transit potansiyeline tehdit oluşturduğuna dair çeşitli görüşler var. Bazı siyaset bilimciler, Zangezur Koridorunun Gürcistan'ın transit potansiyeline tehdit oluşturduğuna dikkat çekiyorlar. Aksine diğer siyaset bilimciler, yeni koridorun Gürcistan'ın transit potansiyelini tehlikeye atmadığını savunuyorlar. Azerbaycan Transhazar projeleri uygulamak niyetinde. Ermenistan ezici yenilgiden sonra Rusya'ya umut veremez. Ayrıca ne NATO'ya ne de AB'ye umut veremez. Rusya'nın Kafkasya'daki askeri varlığını genişletmesine rağmen, Batı'da olumlu bir şekilde karşılanmadı. Ermenistan, Batı, NATO, AB ile ilişkisinin Rusya'yla ilişkiden daha güçlü olmasını daha çok istiyor. Gürcistan, Türkiye ve Azerbaycan'la bağları güçlendirmelidir. Gürcistan'ın Türkiye'nin yardımıyla NATO'ya girmesi gerekiyor. Karabağ sorununun çözümünden sonra Gürcistan'da iki grup kuruldu. İlk grup, Abhazya ve Shinvali'nin meselesinin askeri yollarla çözülebileceğine inanan militaristlerdir. İkincisi, Rusya ile ilişkilerin geliştirilmesiyle sorunun çözülebileceğini iddia eden Rus yanlısı güçlerdir.

Anahtar Kelimeler: Karabağ, Gürcistan, Ermenistan, Azerbaycan, Rusya, Türkiye, çatışma, militarizm, Rus yanlısı güçler, transit potansiyel, ekonomi ve güvenlik sistemi

AZERBAIJAN'S VICTORY IN THE KARABAKH WAR: A VIEW FROM GEORGIA

ABSTRACT

The article shows that the Georgian government demonstrates neutrality in the beginning of the Patriotic war. This is explained by the government's special friendly neighborhood relations with both Azerbaijan and Armenia. For this reason, Georgia did not allow the transportation of weapons to Azerbaijan and Armenia as a transit route. After the end of the war, for the first time since the end of the 2008 Georgian-Russian war, the airspace was opened to carry Russian peacekeepers. Georgian President Salome Zurabishvili congratulated Azerbaijan and Armenia on the end of the war and thanked the mediators. It is noted that this gratitude was met by disputes in the country and abroad. Russia's participation in the South Caucasus is assessed in the West as strengthening its new occupation of the Caucasus and its blockade of the West.

According to Georgian political analysts, the agreement reached between Russia, Azerbaijan and Armenia created a new status quo, but it did not strictly regulate the conflict.

The Georgian defense and security committee discussed the “impact of the peace agreement on Nagorno-Karabakh on the security environment in the South Caucasus”. It was noted that the expansion of Russia's military presence in the South Caucasus caused concern in Georgia.

After the victory in Karabakh, a new geopolitical reality emerged in the South Caucasus. During the post-war period, Azerbaijan became stronger and its influence on the South Caucasus increased even more. Azerbaijan is a strategic partner of Georgia. After the war, there are various opinions about the threat to the transit potential of Georgia. Some political analysts note that the Zangazur corridor poses a threat to Georgia's transit potential. Other political scientists show that the new corridor does not pose a threat to Georgia's transit potential. Azerbaijan intends to transport Trans-Caspian projects, the construction of a gas pipeline through the Caspian Sea, the Shah Deniz gas pipeline through Georgia to Europe. Armenia can not hope for Russia as a defeated country. This country can not hope for NATO, nor the EU. Although Russia expanded its military presence in the Caucasus, it was not well received in the West. Armenia needs to strengthen its ties with the West, NATO and the EU more than Russia. Georgia should strengthen its relations with Turkey and Azerbaijan. Georgia should join NATO with the help of Turkey. After the settlement of the Karabakh conflict, two groups were formed in Georgia. The first are militarists. They want a military solution to the Abkhazia and Tskhinvali issue. The second is the pro-Russian forces. They want to resolve the issue by improving relations with Russia.

Keywords: Karabakh, Georgia, Armenia, Azerbaijan, Russia, Turkey, conflict, militarists, pro-Russian, transit potential, economic and security system

ПОБЕДА АЗЕРБАЙДЖАНА В КАРАБАХСКОЙ ВОЙНЕ: ВЗГЛЯД ИЗ ГРУЗИИ

Введение.

44-дневная Отечественная война (так в Азербайджане называют победу во второй Карабахской войне) изменила геополитические условия на Южном Кавказе. Впервые на всем постсоветском пространстве «замороженный» конфликт был разрешен.

В регионе было обеспечено совместное присутствие России и Турции. Армения, как побежденная страна, оказалась в состоянии политического и экономического кризиса. Возникли новые геоэкономические условия для стран региона, в том числе и для Грузии. Зангезурский коридор играет благоприятную роль для экономических связей между соседними государствами. Однако некоторые эксперты в Грузии считают Зангезурский коридор угрозой транзитному потенциалу страны. Решение карабахского конфликта вселяет в Грузию надежду на урегулирование абхазского и цхинвальского конфликтов.

Влияние новой реальности в Карабахе на Грузию

Поражение Армении, восстановление территориальной целостности Азербайджана создали новые реалии на Южном Кавказе. Кризис власти в Армении обострил соотношение сил. Между прозападными и пророссийскими политическими силами идет серьезная борьба. Азербайджан является близким стратегическим партнером Грузии. Произошло сближение Турции и России.

Создание мира в регионе отвечает интересам Грузии. Новые условия не угрожают транзитному потенциалу Грузии с экономической точки зрения. По мнению доктора международных отношений, профессора Т. Шарашенидзе «теперь у Азербайджана больше шансов реализовать свои проекты. Например, Транскаспийский проект, то есть строительство газопровода из Туркменистана через Каспийское море, который еще больше загрузит газопровод Шах-Дениз и усилит тем самым увеличит транспортировку большего количества газа по морю. Что касается российского присутствия на Кавказе, то это уже свершившийся факт влияния

Кремля в регионе, он имеет здесь военные базы... Разместив в Карабахе военный контингент, Россия, на мой взгляд, Россия не становится сильнее». [132]

Конфликтолог П.Закареишвили утверждает, что Азербайджан, завоевав Шушу, поставил Россию перед фактом. Россия заставила своего союзника Армению подписать мирный договор. Армянские войска были изгнаны со всех оккупированных азербайджанских территорий Карабаха и семи прилегающих к нему районов. «Естественно, за Азербайджаном стояла Турция, турецкий фактор вынудил Россию практически бросить Армению» .[133]

Россия разместила миротворческий контингент в Лачинском коридоре. Российские миротворцы также контролируют Ханкенди, Ходжалы, Аскаран и Агдара. В Агдаме действует Центр мониторинга, состоящий из российских и турецких военных.

Армения возлагает надежды на Россию, несмотря на то что, проявила себя как ненадежным союзником. Новая реальность позволяет Армении взаимодействовать с Западом, НАТО и ЕС.

Новые геополитические условия оказывают свое влияние на Грузию. В стране существуют две политические силы. Одна из них - милитаристская политическая сила. Данная сила считает что, вернуть потерянные территории можно военным путем. Вторая сила – пророссийская, утверждающая что вопрос может быть решен путем улучшения отношений с Россией. А также урегулировать ситуацию могут переговоры с абхазами и осетинами.

В Грузии желают иметь прозападную власть. «Теперь у нас есть уникальный шанс сотрудничать с Турцией. Турция явно желает выйти на Кавказ. Она делает это через Азербайджан. Одновременно это может произойти благодаря нам.

Мы должны сделать Турцию своим союзником, чтобы нейтрализовать российский фактор. Мы должны с помощью Турции вступить в НАТО. Нам необходимо найти общий язык и с Арменией, которая сейчас находится в сложной ситуации. Мы должны быть посредниками между Арменией и ЕС. Мы должны убедить Армению, что у нее нет перспектив с Россией» .[134]

После Московского соглашения Армения оказалась в очень тяжелом положении. На самом деле, Армения могла бы обсудить статус Карабаха, если бы приняла Мадридские принципы.

По мнению грузинского конфликтолога Г. Канашвили, «шаги, предпринятые Азербайджаном, и нынешние условия свидетельствуют о наличии соглашения между Стамбулом и Москвой. Это улучшило статус-кво для России. Стороны договорились о размещении российского военного контингента и там будет российская военная база.

Чем больше в регионе российских войск, тем больше у нас проблем. Эта динамика показывает, что баланс сил в регионе складывается не в наших интересах. В то же время рычаги влияния России усилились как в Азербайджане, так и в Армении. Россия показала всем, что обладает решающим влиянием на Кавказе.

Ходят разговоры о том, что в зону конфликта могут войти некоторые части турецкой армии, по крайней мере, об этом сказал Алиев, но пока нет договоренности по этому поводу». [135]

Россия укрепила свои позиции в регионе, как военные, так и политические.

Открытие системы транспортных коридоров после Карабахской войны горячо обсуждается не только в Турции, России, Иране, но и в Грузии. Одни считают, что открытие такого коридора может положить конец транзитной монополии Грузии, другие, наоборот, утверждают, что это даст положительные экономические результаты.

[132] Новая реальность в Карабахе. Что изменилось для Грузии? // https://jam-news.net/ru /30.11.2020/
[133] Новая реальность в Карабахе. Что изменилось для Грузии? // https://jam-news.net/ru /30.11.2020/
[134] Новая реальность в Карабахе. Что изменилось для Грузии? // https://jam-news.net/ru /30.11.2020/
[135] Новая реальность в Карабахе. Что изменилось для Грузии? // https://jam-news.net/ru /30.11.2020/

Т. Шарашенидзе считает, что самое большое преимущество Грузии в том, что у нее есть прямой выход к морю. Грузии выгодно иметь долгосрочную стабильность в регионе, мир на Южном Кавказе. С прагматической точки зрения Грузии стабильность на Кавказе необходима. «Потому что Грузия - это страна, которая в основном получает доходы от туризма, торговли и транзита... В Западной и Восточной Грузии необходимо улучшить инфраструктуру в целом, уделить большое внимание вопросу качества обслуживания. Морские порты должны быть расширены, а также должны быть построены новые порты. Чем больше конкуренции, чем больше вызовов». [136]

На Южном Кавказе образовались два треугольника: первый – это Россия-Армения-Иран, второй - Турция-Азербайджан-Грузия.

В Грузии транзит имеет не только как экономическую ценность, но и рассматривают как элемент безопасности. Еще во время строительства нефтепровода Баку-Тбилиси-Джейхан Грузия привлекла внимание США, ЕС, Запада. «Наш первый транзитный проект был не только экономическим, но и политическим. Прежде всего, транзит рассматривается у нас как элемент безопасности, а не экономики».[137]

Тем самым Грузия обрела важную международную экономическую роль.

Основной задачей российских миротворцев, согласно договору, было оказание гуманитарной помощи населению Азербайджана.

В регионе должны были быть открыты все экономические связи и транспортные коммуникации. Должны были открыться транспортные пути между западными районами Азербайджанской Республики и Нахчыванской Автономной Республикой. Контроль за транспортными путями должны были обеспечивать пограничные отряды ФСБ России.

Связь Азербайджанской Республики с Нахчываном осуществлялась самолетом, а также по суше через Иран и Турцию. Теперь же Зангезурский коридор должен соединить Азербайджан с Нахчываном, который является наиболее кратчайшим путем. «Азербайджанские и турецкие эксперты считают, что транспортный коридор простирается до южных границ Армении и мог использован для нового газопровода через Мехри (Зангезур). Кроме того, могут быть восстановлены железные дороги, соединяющие Россию, Турцию и Иран. Следует обратить внимание на то, что нет прямой железной дороги, соединяющий восток и центральную часть. Поэтому Юг не имел железнодорожного сообщения с крупнейшими портами (Джейхан, Мерсин, Искандерун). Для его строительства требовались большие капитальные вложения. Карсская железная дорога, соединившая его со столицей, была единственной транстюркской магистралью». [138]

В регионах, граничащих с Южным Кавказом, в Ираке, Сирии царит нестабильность, напряженность. Россия получает возможность установить прямое железнодорожное сообщение с Ираном и Турцией после 30 лет перерыва. «Этим объясняется геополитическое и геоэкономическое значение транзитного пути, проходящего в настоящее время через Грузию».[139]

Заинтересованные стороны создают межведомственные комиссии для оценки сложившихся условий. Очень вероятно, что в скором времени изменится психология противостояния азербайджанцев и армян. Россия хочет, чтобы Грузия предпочитала сбалансированную внешнюю политику, проводимой односторонней прозападной политике.

В Грузии считают, что после Карабахской войны Запад не допустит изменения инфраструктуры, и страна сможет сохранить свою транзитную монополию.

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[136] Дубнов В. *Что выиграла и что проиграла Грузия в Карабахской войне* // https://www.ekhokavkaza.com/a/31060308.html /21.01.2021/
[137] Дубнов В. *Что выиграла и что проиграла Грузия в Карабахской войне* // https://www.ekhokavkaza.com/a/31060308.html /21.01.2021/
[138] Тарасов С. *Грузия провисает после карабахской войны* // https://regnum.ru/news/polit/3178486.html /25.11.2020/
[139] Тарасов С. *Грузия провисает после карабахской войны* // https://regnum.ru/news/polit/3178486.html /25.11.2020/

Реалии на Южном Кавказе после Карабахской войны: взгляд из Грузии.

Соглашение от 10 ноября 2020 года Армения восприняла как поражение, в стране прошли протесты, митинги, беспорядки. А Азербайджан встретил победу парадом. Грузия с интересом встретила перемирие между Азербайджаном и Арменией. Президент Грузии Саломе Зурабишвили расценила это соглашение как новую эру между соседними странами: «на Кавказе начинается новая эра. Поздравляю Армению и Азербайджан с окончанием трагической войны и выражают благодарность всем посредникам. Выражаю соболезнования семьям погибших. Нет альтернативы миру и стабильности. Мы начинаем новый этап сотрудничества между Грузией, Арменией и Азербайджаном».[140]

В официальном заявлении Министерства иностранных дел Грузии говорится: «Грузия поддерживает диалог между двумя сторонами. При этом выражает готовность вместе с международным сообществом способствовать осуществлению мирного процесса. Уверены, что активные усилия международного сообщества и задействование многосторонних международных механизмов приведут к достижению долгосрочного мира, который откроет новые возможности для региона в целом».[141]

Подписанное соглашение положило конец войне в Карабахе. В Армении это соглашение расценивают как поражение и капитуляцию. Грузинская пресса считает это соглашение победой Азербайджана. По мнению политолога В. Кападзе, это соглашение можно оценить как победу президента Алиева. Потому что Алиев повел себя очень умно - он установил очень хорошие личные контакты с президентом Путиным. Кроме того, мы знаем, что Турция поддерживает Азербайджан по принципу «один народ, два государства».

Российские миротворцы в Карабахе не имеют прямого влияния на Грузию. Грузинские политики, дипломаты, политологи и вся общественность заинтересованы в установлении мира и стабильности в регионе – на Южном Кавказе.

А грузинский историк и политик Давид Бердзенешвили считает, что Пашинян избавил Армению от карабахского бремени, связанная с Карабахом Армения была обречена: «Никол Пашинян волей-неволей, по большей части, освободил Армению от карабахского бремени… Многие годы понадобятся армянам, чтобы осознать это… В Армении много людей, которые ориентируются на прошлое. Связанная Карабахом Армения была обречена..[142]

По мнению политика, сейчас не имеет значения, сохранит ли Пашинян власть или нет. «Он смог смотреть правде в глаза, он боролся и проиграл, как и ожидалось. В отличие от Тер-Петросяна он действовал мужественно, адекватно. Тер-Петросян не смог удержать власть в своих руках. Армения потеряла два десятилетия».

Грузинские политологи считают, что у России есть опора на Южном Кавказе. Общественность Армении на данном этапе настроена негативно по отношению к России. Россия надеется улучшить отношения с армянами, получив контроль над частью Карабаха и Лачинским коридором. Россия получила преимущество в решении этого вопроса, нивелировав роль Минской группы в регионе. С другой стороны, она столкнулась с планами Турции по созданию в Азербайджане военной базы. Очень вероятно, что такие планы существуют.

Итог. Таким образом, Южный Кавказ должен жить в условиях новых геополитических вызовов. В условиях таких геополитических тектонических трений грузинские политологи рекомендуют политической элите своей страны укреплять единство во внешней политике и

[140] Нагорный Карабах и новые реалии на Южном Кавказе: взгляд из Грузии // https://sputnik-georgia.ru/conflicts/20201110/249994389/Nagornyy-Karabakh-i-novye-realii-na-Yuzhnom-Kavkaze-vzglyad-iz-Gruzii.html /28.05.2021/

[141] Нагорный Карабах и новые реалии на Южном Кавказе: взгляд из Грузии // https://sputnik-georgia.ru/conflicts/20201110/249994389/Nagornyy-Karabakh-i-novye-realii-na-Yuzhnom-Kavkaze-vzglyad-iz-Gruzii.html /28.05.2021/

[142] Нагорный Карабах и новые реалии на Южном Кавказе: взгляд из Грузии // https://sputnik-georgia.ru/conflicts/20201110/249994389/Nagornyy-Karabakh-i-novye-realii-na-Yuzhnom-Kavkaze-vzglyad-iz-Gruzii.html /28.05.2021/

выстраивать отношения с соседями в новом формате. Отношения России с Западом также должны строиться в новом формате.

Список литературы:

1. Дубнов В. *Что выиграла и что проиграла Грузия в Карабахской войне* // https://www.ekhokavkaza.com/a/31060308.html /21.01.2021/
2. Нагорный Карабах и новые реалии на Южном Кавказе: взгляд из Грузии // https://sputnik-georgia.ru/conflicts/20201110/249994389/Nagornyy-Karabakh-i-novye-realii-na-Yuzhnom-Kavkaze-vzglyad-iz-Gruzii.html /28.05.2021/
3. Новая реальность в Карабахе. Что изменилось для Грузии? // https://jam-news.net/ru /30.11.2020/
4. Тарасов С. *Грузия провисает после карабахской войны* // https://regnum.ru/news/polit/3178486.html /25.11.2020/

MANAGERIAL FUNCTIONS IN THIRUKKURAL

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ABSTRACT

Management is the heart of all activities. Management has gained importance everywhere - in business, at home, government offices and institutions. According to George R Terry “Management is a distinct process consisting of planning, organising, actuating and controlling; utilising in each both science and art, and followed in order to accomplish pre-determined objectives." The five important functions of management are planning, organizing, staffing, directing and controlling. The main objective of this paper is to identify the expression of managerial functions in Thirukkural. Review of literature is the source of information for this paper. The Tirukkural which means "sacred verses" is shortly referred to as "the Kural" is a classic Tamil language text consisting of 1,330 short couplets, or kurals, of seven words each. The work remains the most translated, the most cited, and the most citable of Tamil literary works. The text has been translated into at least 40 Indian and non-Indian languages, making it one of the most translated ancient works. The Kural is considered a masterpiece and one of the most important texts of the Tamil Literature. Thirukkural which is said to be dated variously from 300 BCE to 5th century CE has dealt all these managerial functions.

Introduction

Management is the heart of all activities. Management has gained importance everywhere - in business, at home, government offices and institutions. Management plays an important role in economic development of a country. The four important factors of production are man, money, material and machine. Management brings together these four factors of production and enables a country to experience substantial level of economic growth. As said earlier management is an essential component in all organised efforts whether it is business activity or any other activity. Management is said to be the dynamic and life-giving element of every organisation.

According to Mary Parker Follett, “Management is the art of getting things done through people”. This definition clarifies the fundamental difference between manager and other personnel in an organisation. Manager contributes indirectly to the achievement of organisational goals by directing the efforts of others whereas the other personnel perform the task and thereby contribute directly to the achievement of organisational goals.

Frederick Winslow Taylor defined management as “the art of knowing what you want to do and then seeing that they do it in the best and the cheapest may. George R Terry defined management in a different perspective. According to him, “Management is a distinct process consisting of planning, organising, actuating and controlling; utilising in each both science and art, and followed in order to accomplish pre-determined objectives."

The five important functions of management are planning, organizing, staffing, directing and controlling. Planning can be defined as the determination of future course of action. It answers all questions related to an action like what action, why it must be taken, how it must be taken and who will take the action. Organizing is the process of dividing the work into convenient tasks or duties and grouping them to form positions which further forms divisions / departments / sections and assigning duties as well as delegating authority. Staffing involves manning the various positions by assigning the right person for the right job. Directing is the function through which managers communicate the subordinates about the expected behaviour. Controlling involves identifying the deviation between the

actual and expected results and taking a corrective action, if needed. All these managerial functions and how they should be performed has been dealt in thirukkural, a great tamil literature.

The Tirukkural which means "sacred verses" is shortly referred to as "the Kural" is a classic Tamil language text consisting of 1,330 short couplets, or kurals, of seven words each. The text is divided into three categories with teachings on virtue (aram), wealth (porul) and love (inbam), respectively. Thirukkural was written by Valluvar, also known in full as Thiruvalluvar. Thirukkural is considered one of the greatest works ever written on ethics and morality. It is known for its universality and secular nature. it is said that there are no topics uncovered or undealt in Thirukkural.

It highlights truthfulness, self-restraint, gratitude, hospitality, kindness, goodness of wife, duty, giving, and so forth, besides covering a wide range of social and political topics. The Kural has been widely admired by scholars and influential leaders across the ethical, social, political, economic, religious, philosophical, and spiritual spheres over its history. The work remains the most translated, the most cited, and the most citable of Tamil literary works. The text has been translated into at least 40 Indian and non-Indian languages, making it one of the most translated ancient works. The Kural is considered a masterpiece and one of the most important texts of the Tamil Literature. Its author is praised for his innate nature of selecting the best virtues found in the known literature and presenting them in a manner that is common and acceptable to all. Thirukkural is the pride of Tamilians, the people of Tamilnadu.

Method

The main objective of this paper is to identify the expression of managerial functions in Thirukkural. Review of literature is the source of information for this paper.

Analysis and Interpretation

There are Thirukkural couplets that deal with the managerial functions namely Planning, Organizing, Staffing, Directing and Controlling. The Tamil and English version and their explanation are given below.

Planning

Planning is the action that determines in advance what should be done. It is looking ahead and preparing for the future. These ideas were expressed in Thirukkural couplets 461 and 465.

Thirukkural in Tamil	Thirukkural in English
அழிவதூஉம் ஆவதூஉம் ஆகி வழிபயக்கும் ஊதியமும் சூழ்ந்து செயல் (குறள் 461).	Let a man reflect on what will be lost, what will be acquired and (from these) what will be his ultimate gain, and (then, let him) act (Thirukkural couplet 461).

The couplet 461 clearly states that before doing something, one has to assess the gain, loss and what would be the ultimate gain, which is nothing but planning.

Thirukkural in Tamil	Thirukkural in English
வகையறச் சூழா தெழுதல் பகைவரைப் பாத்திப் படுப்பதோ ராறு (குறள் 465)**.**	One way to promote the prosperity of an enemy, is (for a king) to set out (to war) without having thoroughly weighed his ability (to cope with its chances) (Thirukkural couplet 465).

The couplet 465 teaches that the one who takes an action without thoroughly weighing his abilities will promote his competitor to success.

Organizing

Organizing refers to providing everything useful for the business. It also refers to the designing and developing the organization that will carry out the plans successfully. Couplet 466 and 472 support this function.

Thirukkural in Tamil	Thirukkural in English
செய்தக்க அல்ல செயக்கெடும் செய்தக்க செய்யாமை யானுங் கெடும் (குறள் 466)	Doing unfit action ruins; Failing fit-act also ruins. (Thirukkural couplet 466)

He will perish who does not what is not fit to do; and he also will perish who does not do what it is fit to do.

Couplet 466 mentions that one should do what is to be done and should avoid doing what should not be done.

Thirukkural in Tamil	Thirukkural in English
ஒல்வ தறிவது அறிந்ததன் கண்தங்கிச் செல்வார்க்குச் செல்லாதது இல் (குறள் 472)	Who know what can be wrought, with knowledge of the means, on this, Their mind firm set, go forth, nought goes with them amiss (Thirukkural couplet 472)

There is nothing impossible for those who, before they attack (an enemy), make themselves acquainted with their own ability, and with whatever else is (needful) to be known, and apply themselves wholly to their object. Similar to this, an organization should also do the needful and mobilize things and organize everything properly in order to achieve its goals.

Staffing

Staffing refers to selecting and training people so that right person is placed in the right job.

Thirukkural in Tamil	Thirukkural in English
அறம்பொருள் இன்பம் உயிரச்சம் நான்கின் திறந்தெரிந்து தேறப் படும். (குறள் 501)	How treats he virtue, wealth and pleasure? How, when life's at stake, Comports himself? This four-fold test of man will full assurance make (Thirukkural couplet 501).

Let (a minister) be chosen, after he has been tried by means of these four things, viz,-his virtue, (love of) money, (love of) sexual pleasure, and tear of (losing) life.

Thirukkural in Tamil	Thirukkural in English
தேரான் பிறனைத் தெளிந்தான் வழிமுறை தீரா இடும்பை தரும் (குறள் 508)	Who trusts an untried stranger, brings disgrace, Remediless, on all his race (Thirukkural couplet 508)

Sorrow that will not leave even his posterity will come upon him chooses a stranger whose character he has not known. Couplets 501 and 508 explain that a person should be chosen for job after testing him thoroughly. If it not done so, it will end in failure.

Directing

It is important for the manager to influence people to direct their efforts towards the achievement of organizational objectives.

Thirukkural in Tamil	Thirukkural in English
தெரிதலும் தேர்ந்து செயலும் ஒருதலையாச் சொல்லலும் வல்லது அமைச்சு. (குறள் 634)	A minister has power to see the methods help afford, To ponder long, then utter calm conclusive word. (Thirukkural couplet 634)

The minister is one who is able to comprehend (the whole nature of an undertaking), execute it in the best manner possible, and offer assuring advice (in time of necessity).

Couplet 634 supports leadership by explaining that a leader knows to analyse and to execute as well as communicate effectively so that others can follow and work towards achieveing organizational objectives.

Controlling

Controlling ensures that performance occurs in conformity with the plans, instructions issued and principles are followed.

Thirukkural in Tamil	Thirukkural in English
எல்லார்க்கும் எல்லாம் நிகழ்பவை எஞ்ஞான்றும் வல்லறிதல் வேந்தன் தொழில். (குறள் 582)	Each day, of every subject every deed, 'Tis duty of the king to learn with speed. (Thirukkural couplet 582)

It is the duty of a king to know quickly (by a spy) what all happens, daily, amongst all men.

Thirukkural in Tamil	Thirukkural in English
ஒற்றெற் றுணராமை ஆள்க உடன்மூவர் சொற்றொக்க தேறப் படும். . (குறள் 589)	One spy must not another see: contrive it so; And things by three confirmed as truth you know. (Thirukkural couplet 589)

Let a king employ spies so that one may have no knowledge of the other; and when the information of three agrees together, let him receive it. Couplet 589 states that a leader should get information from many sources so as to establish controlling function.

Findings and Suggestions

The functions of management or managerial functions are the concepts developed in the nineteenth century. But the ancient classic tamil language text thirukkural which is said to be dated variously from 300 BCE to 5th century CE has dealt all these managerial functions. It is evident that these managerial

functions should be considered and performed effectively in order to achieve the organizational objectives.

Conclusion

Managerial functions Planning, Organizing, Staffing, Directing and Controlling are important for the success of any activity performed by the organization. These managerial functions are not only important for organizational activities but also for personal activities. Hence it is important for individuals as well as organizations to follow the steps in the management process to achieve goals in personal and organizational life.

References

1. https://en.wikipedia.org/wiki/Kural
2. https://www.whatishumanresource.com/management-definitions-by-great-management-scholars
3. Acharya P.S , “Thirukkural”, Narmadha publishers, Chennai

A REVIEW ON THE STUDY OF INTERNET OF THINGS (IOT)

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ABSTRACT

Internet has become basic necessity of life in modern era. People need to be connected to internet all time. Therefore concept “internet of things" is introduced which provides communication between machines and everything together with people. Internet of things (IoT) is a network of physical objects with smart sensors which interact with environment and provide real time data to users. IoT is a framework for integrating computer devices, a network of physical objects, things, or humans with a unique systems and without the capacity to communicate data across a human-to-human or computer-to-human relationship. IoT items are connected to humans and computers via internet protocol addresses and can transmit data via networking. In this paper we have discussed trends of IoT, its technologies with applications and security. We also provide information on IoT architecture for design and development with sensors. Wireless technologies used to connect IoT devices are also discussed in our paper. There is also a section showing daily life IoT applications. In the end paper describes challenges faced in IoT technology and conclusion.

Keywords: Internet of Thing, IoT applications, IoT architecture, Sensors, Trend of IoT, Wireless technology, Industry automation, Five layer architecture. Three layer architecture, Bluetooth, ZigBee, Z wave, Lora WAN.

INTRODUCTION

Internet of things are the devices and objects that can uniquely recognize in a structure of interconnected appliances in a network. The first IOTs representation was proposed in 1998 (Mazher, 2018). The ambition of the IoT is to develop an intelligent ecosystem by leveraging smart aspects with sensory and networking technologies to acquire information spontaneously and send it via the Internet for judgment. Energy consumption, climate variability, mobility, healthcare, corporate operations, smart buildings, and other concerns affecting humanity are addressed by certain initiatives (M. Chernyshev, 2018). On October 21st, 2016, a distributed denial of service (DDoS) attack using a network of consumer devices from the IoT rendered numerous web pages isolated to consumers. Services offered by IoT applications offer excellent value for humankind yet they can lead to a high cost in terms of confidentiality safeguard. As a result of the failure of IoT vendors to deploy a robust (Y. Yang, 2017). The elimination of a human aspect distinguishes IoTs from the traditional Internet. IoT devices gather data concerning people's circumstances, evaluate them, and intervene based on them (Perinkolam, 2020). Over 75% of demand will be generated by IoT devices. 90% of automobiles will be Internet-connected. Biometrics, sensors, and built-in spatially technologies will be used in the gadgets. The internet gateway must manage the majority of Machine to Machine (M2M) transmission efficiently, which necessitates vast connection, incredibly high bandwidth, competence, cross-domain integration, and many Radio Access Technologies (Pande, 2016).

IoT is defined as a network of interconnected, globally identifiable items that use standard communication protocols. Conversely, "object" is a fairly broad phrase that could refer to anything from a sensor to the main server. (Hassan, 2018).Now in technological world we can make everything talk to each other through concept of IoT. The "things" , the communication networks which integrate them, and the computer networks that use information pouring from and to gadgets make up the IoTs (Stergiou, 2018). Sensors plays important part in IoTs, they can be easily integrated into smart devices. Microcontroller-based boards and Single Board Computer are the two types of IoT hardware development tools (Qusay, 2018).

This paper addresses the trend, basic architecture of IoT, wireless technologies used for IoT devices and its daily life applications. IoT is beginning of new era. We can easily invent, build, optimize and innovate by using concept of internet of things by interconnecting millions of devices.Paper is organized in following Sections. Section shows trend of IoT. Section II presents basic IoT architecture. Section III explains wireless technologies used to connect IoT devices. Section IV shows daily life IoT applications. Section V briefly describes challenges faced in IoT technology. Last Section VI conclude paper.

TREND OF INTERNET OF THINGS

Internet is used by people worldwide which enables many useful devices to work on IoT. There are already 9 billion IoT devices with the proportion predicted to rise to 24 billion by 2020.(Gubbi, 2013). Figure (1a, 1b) shows its trend in the last five years and interest by regions. A rapid increase in IoT can be seen clearly over five years. IoT connects the virtual and physical domains by combining many notions and operational systems such as perceptual maps, gadget downsizing, cellular technologies and innovative ecosystems.(S. Chen, 2014). Digital technology has revolutionized an environment that allows numerous users to interact with one another (Arasteh, 2016). Infrastructure and services are necessary to meet the needs of inhabitants due to the rapid development of urbanization in urban areas. On this foundation, there is a considerable increase in the number of smart devices, such as sensors, actuators, and smartphones, which leads to massive economic opportunities for the IoT as all gadgets can connect and interact with one another over the network (M. M. Rathore, 2016).

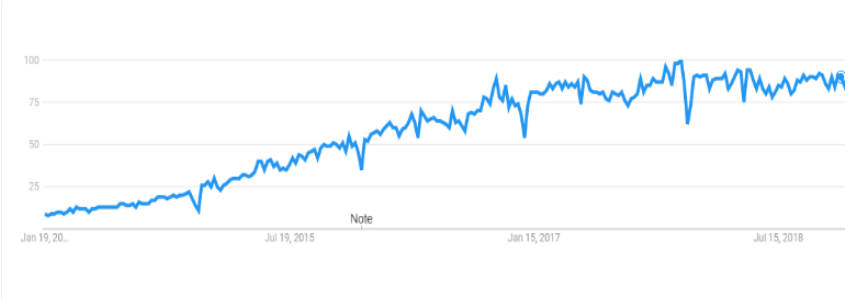

Figure 1a: Trend of IoT over last five years



Figure 1b: Interest of IoT by region

GENERAL ARCHITECTURE

A considerable number of IoTs have been built and inquiry on IoT frameworks can help regulate and direct the establishment of these critical elements. (Meng, 2017) . The IoT architecture is composed of three layers: a perception/hardware layer, a network/communication layer and an interfaces/services layer. Hardware/devices, communication/messaging protocols and interfaces/services are the components of an IoT system (Mohamad Noor, 2018). The fundamental IoT architecture is depicted in **Figure 2**.

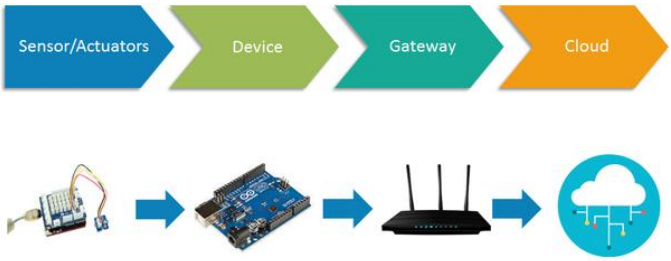

Figure 2: Basic IoT architecture

The 3-layer design was the standard architecture at the commencement of the IoT. It is divided into three layers: perception, network, and application (Masud, 2013). First layer is physical layer, it consists of sensors which collect information about surroundings. Second is network layer which provides connectivity to smart things and responsible for transmitting sensor data. The application layer is the third and final layer so it is accountable for supplying specialized services to the user. The three-layer design encapsulates the core concept of the IoTs although it is insufficient for IoT exploration as it frequently concentrates on smaller details. As a result, multiple additional layered structures have been reported in the literature (Sarangi, 2017). Due to the obvious predicted IoT rapid expansion, the 3-layer architecture was no longer suitable. As a consequence, a five-layer architecture is presented (Muntjir, 2017).

Perception Layer

This layer is occupied with physical objects and sensor devices which gives it second name “device layer”. Sensors include RFID, Infrared sensor, Ultrasonic sensor etc. This layer collects sensor data which includes accurate information needed for users. This data then passed to network layer which provides its transmission securely to processing system.

Network Layer

This layer is known to be transmission layer. The layer which transfers information in the form of data from perception layer to middleware layer is called network layer. It helps in communication between sensor devices and information processing system by transferring data safely. The network layer includes 3G, Wi-Fi, and Bluetooth etc.

Middleware layer

The middleware layer receives data from network layer. The middleware layer processes this information and performs on this data and takes decisions. The middleware layer is the decision unit. The middleware layer also stores data in database.

Application Layer

The application layer includes implementation of IoT in daily life such as smart cities, smart parking, wearables etc.

Business Layer

The business layer receives data from application layer. The business layer includes graphs, flowcharts etc and it helps in computation of success of IoT technology and it also helps in forming business strategies for future.

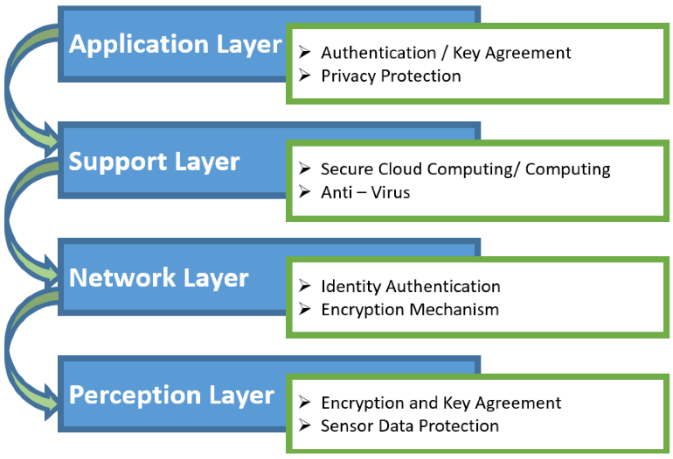

Figure 3: Layers of IoT Architecture

WIRELESS TECHNOLOGIES FOR IOT CONNECT

Different options for wireless connectivity for IoT devices are available. Different factors should be kept in mind while choosing better technology e.g., battery life, range of coverage, power requirements and bitrate.

WiFi

WiFi is one of the technology that we widely use in our daily lives and every human being in this world is aware of it. IEEE assigned it the 802.11 specification and it runs mostly at 2.45 GHz / 2.4 GHz. The majority of gateways have a range of 100 meters. Mostly computing gadgets are connected by WiFi. It is one of the best technology which provides connectivity easily and cheaply to IoT based devices. **Figure 4** shows IEEE 8n2.11 physical layer standards (Stallings, 2004).

Standard	Date issued	Available bandwidth (MHz)	Unlicensed frequency of operation (MHz)	No. of nonoverlapping channels *	Data rate per channel (Mbps)	Compatibility
802.11	1997	83.5	2.4 to 2.4835 DSSS, FHSS	3 indoor or outdoor	1, 2	802.11
802.11a	1999	300	5.15 to 5.35 OFDM (orthogonal frequency division multiplexing) 5.725 to 5.825 OFDM	4 indoor 4 indoor or outdoor 4 outdoor	6, 9, 12, 18, 24, 36, 48, and 54	Wi-Fi5
802.11b	1999	83.5	2.4 to 2.4835 DSSS	3 indoor or outdoor	1, 2, 5.5, and 11	Wi-Fi
802.11g	2003	83.5	2. 4 to 2.4835 DSSS, OFDM	3 indoor or outdoor	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54	Wi-Fi at 11 Mbps and below

*Nonoverlapping channels have frequency bands that do not overlap. Their operation can take place in the same area simultaneously.

Figure 4: IEEE 8n2.11 physical layer standards

Bluetooth

Bluetooth (IEEE standard 802.15.1) operates at 2.4 GHz within short range (0-10 m) now used in different fields. It has some key advantages which makes it use more in embedding electronic devices. Standards of Bluetooth were issued in 2002 and 2005.

Bluetooth Low Energy

BLE is much better in transmission of small data. It is mostly embedded with devices of low power consumption. **Figure 5** shows BLE chipset power usage patterns with flexible deployment configurations, as described by Aisle labs (Aislelabs, 2014) .

Chipset	Advertising Interval	Est. Battery Life CR2032	Est. Battery Life CR2045	Est. Battery Life CR2477
Gimbal	100ms	n/a	n/a	n/a
Gimbal	645ms	1 month	2.5 months	4.1 months
Gimbal	900ms	n/a	n/a	n/a
Nordic Semiconductors	100ms	1.2 months	3.1 months	5.1 months
Nordic Semiconductors	645ms	7.0 months	18.19 month	29.3 months
Nordic Semiconductors	900ms	11.1 months	28.7 months	46.29 months
Bluegiga	100ms	0.9 months	2.4 months	3.8 months
Bluegiga	645ms	5.9 months	15.4 months	24.8 months
Bluegiga	900ms	9.3 months	23.9 months	38.5 months
Texas Instruments	100ms	0.7 months	1.8 months	2.9 months
Texas Instruments	645ms	4.1 months	10.6 months	17.1 months
Texas Instruments	900ms	5.6 months	14.4 months	23.1 months

Aislelabs

Figure 5: BLE chipset power consumption profiles

Z wave

Z wave is a new name considered to be emerging in wireless technology for IoT. The Z-Wave interface is a portable, RF-based communications framework created primarily for automation, surveillance, and state reporting operations in domestic and moderate business settings. It can be considered one of the best choice for building smart homes. It has a capacity of 100 meters about 328 feet in the atmosphere yet structural components restrict that range. For best efficiency, it is intended to have a Z-Wave module per 30 feet about nearer. **Figure 6** presents the reliable functioning of the Z wave. **Figure 7** shows used of frequencies in various parts of the world.



Figure 6. Working of Z wave

Frequency in MHz	Used in
921.4 ; 919.8	Australia, New Zealand, Malaysia
919.8; 921.4	Brazil
868.40 ; 868.42 ; 869.85	CEPT Countries (Europe and other countries in region), French Guiana
919.8 ; 921.4	Chile, El Salvador, Peru
868.4	China, Singapore, South Africa
919.8	Hong Kong
865.2	India
869	Russia
916	Israel
920 - 925	Taiwan
922 - 926	Japan, Taiwan
920 - 923	Thailand
919 - 923	South Korea
908.4 ; 908.42 ; 916	USA, Canada, Argentina, Guatemala, The Bahamas, Jamaica, Barbados, Mexico, Bermuda, Nicaragua, Bolivia, Panama, British Virgin Islands, Suriname, Cayman Islands, Trinidad & Tobago, Colombia, Turks & Caicos, Ecuador, Uruguay

Figure 7. Frequencies use in various parts of the world

ZigBee

ZigBee is a wireless transmission protocol that allows for low-cost, narrow connectivity (Malaric, 2006).It is considered to be most suitable technology as it provides secure data, cheap and easily available. Technical specifications are shown in **Figure 8**.

Solution	Description
Network Protocol	Zigbee PRO 2015 (or newer)
Network Topology	Self-Forming, Self-Healing MESH
Network Device Types	Coordinator (routing capable), Router, End Device, Zigbee Green Power Device
Network Size (# of nodes)	Up to 65,000
Radio Technology	IEEE 802.15.4-2011
Frequency Band / Channels	2.4 GHz (ISM band) 16-channels (2 MHz wide)
Data Rate	250 Kbits/sec
Security Models	Centralized (with Install Codes support) Distributed
Encryption Support	AES-128 at Network Layer AES-128 available at Application Layer
Communication Range (Average)	Up to 300+ meters (line of sight) Up to 75-100 meters indoor
Low Power Support	Sleeping End Devices Zigbee Green Power Devices (energy harvesting)
Legacy profile support	Zigbee 3 devices can join legacy Zigbee profile networks. Legacy devices may join Zigbee 3 networks (based on network's security policy)
Logical device support	Each physical device may support up to 240 end-points (logical devices)

Figure 8: Technical specifications of ZigBee

LoRaWAN

The LoRaWAN configuration is a low-power and wide-area networking protocol for remotely connecting battery-powered 'objects' to the internet in global networks. It addresses key IoT criteria including bi-directional communication, end-to-end security, mobility and clustering assistance **(Figure 9)**. It is making its name in popular technology as it provides data at different frequencies and bitrates. It provides long range connectivity for IoT devices. LoRa can be used over a wide range of frequencies from 137 MHz to 1020 MHz



Figure 9: LoRaWAN certified product

DAILY LIFE APPLICATIONS

IoT is causing upheaval in a variety of industries including consumer electronics, enterprise solutions, healthcare, construction, and logistics. Diverse wearables and sensors will let consumers engage with other gadgets and physical items surrounding them.74% of smartphone users and 1 in 3 smartphone users expects they will employ at least 5 wearables by 2020.

Wearable Smart Watch

One of the best-known Wearable devices are **smart watches**. Smart watches are watches that **can be linked to our smartphone**, and allow you to synchronize data between them. The LooK smartwatch created by LAIPAC Technology aims to be the one smartwatch to govern them all. It includes expected features like a stainless steel design, an AMOLED display and a heart rate sensor along with Wi-Fi, Bluetooth, and GPS but the Look smartwatch goes well beyond.

Smart Home

The use of IoT in residences is intended to monitor and save energy simultaneously accomplishing and ensuring a particular degree of stability (Benammar, 2018) . The use of technological advances, automation, visual display technology and communications technology in a smart home **(Figure 10)** will be interconnected of diverse facilities to fulfill the operational demands of the global platform, allowing for more accessible coordination and monitoring (Fang, 2012). The residential attribute is the most crucial IoT area of investigation apart from smartphones, home smart devices are projected to account for roughly 40% of all connected devices (Kim, 2015).

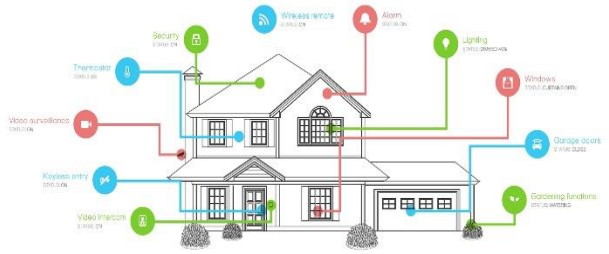

Figure 10. Smart Home

Smart Cities

The Smart Cities Council defines the smart city as "one that has digital technology embedded across all city functions" **(Figure 11)**. IoTs in smart cities originates with smart public infrastructure that provides potable water, consistent power, secure gas, and energy-efficient municipal lighting.



Figure 11. Design of Smart City

Industry Automation

The concept of IoT can be widely used in automation of industries. Many useful applications can be implemented by using industry automation e.g., we can efficiently manage cars of employees which results in smart parking. Energy can be saved efficiently. Modern technological progress has spanned centuries, and now the period of Industry 4.0 has arrived (Lu, 2017) . Around 2011, the concept of Industry 4.0 was first advocated for the development of the German economy (Roblek, 2016).

KEY CHALLENGES

The biggest challenge that a researcher faces while implementing IoT is the security and safety of information. Sensor devices transfer data over long distances so that data must be encrypted properly to ensure security of information and to avoid unauthorized access. The networking system which is used for communication between sensor devices must be able to manage data from a number of devices and transfer it without any loss of information. The network security should be given priority while using IoT and external access should be prevented in order to promote efficient working of devices and safety of user data.

CONCLUSION

This paper describes the importance of IoT which will make the world a global village by connecting everything. IoT promotes intelligence in sensor devices so they can communicate with each other by exchanging data. This paper concluded increasing trend of IoT, basic architecture and its daily life application. The implementation of IoT requires large research efforts and researchers from every field. IoT will definitely benefit the society personally as well as economically. IoT is becoming an increasing trend as the world is moving towards automation. Nowadays as it can been seen not only homes are automated but also industries. Industry 4.0 is based on modern technological process and this era of industry is totally automated. All in all, IoT is a beginning of a new technological era as it has shifted the trend from traditional to automation.

REFERENCES

Aislelabs. (2014). The Hitchhikers Guide to iBeacon Hardware: A comprehensive report.

Arasteh, H. L.-k. (2016). Iot-based smart cities: A survey. *IEEE 16th International Conference on Environment and Electrical Engineering*.

Benammar, G. &. (2018). Smart using IoT-based sensing and monitoring platform. *12th International Conference on Compatibility, Power Electronics and Power Engineering*.

Fang, M. Y. (2012). Smart grid the new and improved power grid: a survey. *Communications Surveys & Tutorials*, 944-980.

Gubbi, J. B. (2013). Internet of Things (IoT): A vision, architectural . *elements, and future directions*, 1645–1660.

Hassan, Q. F. (2018). On Standardizing the Internet of Things and Its Applications. *Internet of Things A to Z: Technologies and Applications*.

Kim, L. S. (2015). Smart home web of objects based IoT management model and methods for home data mining. *Operations and Management Symposium*, 327-331.

Lu. (2017). Industry 4.0: A survey on technologies,applications and open research issues. *Journal of Industrial Information Integration*, 1-10.

M. Chernyshev, Z. B. (2018). "Internet of Things (IoT): Research, Simulators, and Testbeds". *IEEE Internet of Things Journal*, 1637-1647.

M. M. Rathore, A. A. (2016). Urban planning and building smart cities based on the internet of things using big data analytics. *Computer Network*.

Malaric, S. a. (2006). ZigBee wireless standard . *Proceedings ELMAR*, 259-262.

Masud, M. (2013). Towards Internet of things: Survey and future vision. *Int. J. Comput. Network*, 1-17.

Mazher, N. (2018). A Review on security of Internet of Thing.

Meng, C. Z. (2017). A General Architecture of IoT System. *IEEE International Conference on Computational Science and Engineering (CSE) and IEEE International Conference on Embedded and Ubiquitous Computing (EUC)*, 659-664.

Mohamad Noor, M. &. (2018). Current research on Internet of Things (IoT) security: A survey. *Computer Networks*.

Muntjir, M. &. (2017). An Analysis of Internet of Things(IoT): Novel Architectures, Modern Applications,Security Aspects and Future Scope with Latest Case Studies. *Building Services Engineering Research and Technology*.

Networks, I. S.-2.–P. (2011). IEEE Standards Association.

Pande, S. B. (2016). Application of 5G next generation network to Internet of Things. *International Conference on Internet of Things and Applications (IOTA) Pune*.

Perinkolam, I. S. (2020). "Safeguarding the internet of things: Being secure, vigilant, and resilient in the connected age.

Qusay, H. a. (2018). A Tutorial Introduction to IoT Design and Prototyping with Examples. *Internet of Things A to Z: Technologies and Applications*.

Roblek, M. (2016). A Complex View of Industry 4.0. *SAGE Open*.

S. Chen, H. X. (2014). A Vision of IoT: Applications, Challenges, and Opportunities With China Perspective. *IEEE Internet of Things Journal*, 349-359.

Sarangi, P. S. (2017). Internet of Things: Architectures, Protocols and Applications. *Journal of Electrical and Computer Engineering*, 25.

Stallings. (2004). IEEE 8O2.11: wireless LANs from a to n. *IT Professional*, 32-37.

Stergiou, C. P.-G. (2018). Secure integration of IoT and Cloud Computing. *Future Generation Computer Systems*.

Y. Yang, L. W. (2017). A Survey on Security and Privacy Issues in Internet-of-Things. *IEEE Internet of Things Journal*, 1250-1258.

THE THREAT OF THE PRESENCE OF THE ARMENIAN FACTOR IN THE REPUBLIC OF NORTH OSSETIA - ALANIA

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ABSTRACT

The presented study "The threat of the presence of the Armenian factor in the Republic of North Ossetia - Alania" is presented in the aspect of global political upheavals and events in the post-Soviet space, in particular, Russia's military actions in Ukraine (February-March 2022). The method of comparative analysis of the Armenian factor, which introduces destruction into the regional world of the South and North Caucasus, is applied in the work. During the period of mankind's struggle for survival and humanism, the factor of aggression, fascism, separatism, is a dangerous phenomenon. The purpose of the study is to prevent danger to the world and eradicate such phenomena. The structure of the work consists of three parts and a conclusion: the first part describes the Russian invasion of Ukraine and the war unleashed there, which in fact is the beginning of the third world war; the second part is the destructive activity of the aggressor states and the threat of the Armenian factor in the Caucasus region on the example of Armenian separatism in the territory of Azerbaijan; the third part is the accumulation of Armenians in Alania; the conclusion presents the threat of the presence of the Armenian factor in Alania and the emergence of a new wave of hostilities in the Caucasus as a chain reaction.

Keywords: split, integration, aggressors, separatism, threat, a warning.

As events taking place in the eastern part of the post-Soviet space show, the global world has split into two camps: on the one hand, the states of a new, humanistic civilization; on the other hand, terrorist regimes aimed at the destruction of the former fraternal peoples and the transformation of their own population into an impoverished, uncomplaining class of slaves. In this fight, each international subject chooses a certain side in the barricade building. Despite the fact that Russia and Ukraine have been in a relationship of crisis for eight years, no one could imagine that Russia is capable of such a treacherous step. Moreover, in one of his speeches, President of the Russian Federation Vladimir Putin made a statement that there would be no war. In parallel with this, there was a secret accumulation of Russian armed forces near the borders with Ukraine. And on February 24, 2022, from the side of Crimea and Belarus, Russia carried out a full-scale invasion of Ukraine. V. Putin called this invasion "the demilitarization and denazification of Ukraine."(6),(4) However, this interpretation was rejected by the OSCE and the UN Higher Office for Human Rights. But, the fact remains, Russia unleashed the third world war. Russian pilots are shelling Ukrainian military infrastructure facilities, a maternity hospital in Mariupol, and residential buildings. Along with the military (on both sides), the civilian population of Ukraine is dying. In Chernihiv, Russian invaders shot civilians in line for bread. (2) In Mariupol, the Russians dropped bombs on the drama theater: hundreds of people were hiding there.(5) But Russia itself bears the most losses, because the Ukrainian army is more prepared and equipped. The entire Ukrainian people rallied because this war is Patriotic for them. V. Putin threatens with a nuclear strike. The international community, the OSCE, the UN, most of the countries of the world opposed Russian aggression, but Armenia took the side of Russia, which is not surprising. Armenia itself is an aggressor country. Having organized the genocide of Azerbaijanis, with the help of Russia, she expelled the local Azerbaijani population and for thirty years occupied Azerbaijani lands, destroyed, robbed and traded Azerbaijani resources. The Patriotic War between Azerbaijan and Armenia ended 1.5 years ago, but the Armenian separatists are still conducting revanchist propaganda with the Armenians. They cannot calm down. Leaving, the Armenian occupiers burned the houses of the Azerbaijanis, in which they moved in

after the expulsion of the autochthonous population. They scattered mines, burned forests, poisoned water, destroyed shrines.

At present, instead of adjusting life in historically given realities, not destabilizing the regional world, the Armenians continue to pursue a policy of aggression and revenge. So, on January 11, 2021, at a meeting of the leaders of Russia, Azerbaijan and Armenia in Moscow, a tripartite statement was adopted, providing for the opening of all communications between Azerbaijan and Armenia. One of the main points in this project was the Zangezur corridor, which was supposed to connect the main part of Azerbaijan with Nakhchivan, and also serve as a transport line for rail and road communication between Armenia and Russia. This corridor was also considered as one of the ways of direct communication between Turkey and the countries of the region. (1) However, Armenia delayed the implementation of the Zangezur Corridor Agreement, which led to an alternative project between Azerbaijan and Iran. Azerbaijan was visited by an official delegation from Iran headed by Minister of Roads and Urban Development Rustem Gasimi. (5) During the visit, a memorandum was signed between the two countries on the construction of a transport corridor between the main part of Azerbaijan and its exclave - the Nakhchivan Autonomous Republic - through the territory of the Islamic Republic of Iran. The transport corridor, which will consist of railways, roads and power lines, will run just five kilometers from the southern border of Armenia. During the visit, a memorandum was signed between the two countries on the construction of a transport corridor between the main part of Azerbaijan and its exclave - the Nakhchivan Autonomous Republic - through the territory of the Islamic Republic of Iran. The transport corridor, which will consist of railways, roads and power lines, will run just five kilometers from the southern border of Armenia.

As history shows, the opportunity to produce is not for Armenia, it is much easier for Armenian history makers to invent myths about their ancient origin, and then promote separatist politics and terrorize the local population. After a crushing defeat in the forty-four-day war with Azerbaijan for the liberation of Azerbaijani lands from Armenian invaders, the outflow of the Armenian population to the republics of the North Caucasus, including North Ossetia-Alania, began.

Their claim and demand for the creation of an independent Krasnodar Armenian Republic is no longer surprising and is not news, the news lies in a new Armenian adventure - their integration with the autochthonous people of Alania.

Since for the peoples of the North Caucasus, in particular, for the Ingush, Chechens, Ossetians, Balkars, Karachays, the theme of the heritage of ancient Alanya, to this day does not lose its relevance and controversy, separatist conflicts occur in this territory. They bring political disorder into the state of the civil societies of these peoples.

Let us present a brief historical digression into the medieval period of the region.

The territory of ancient Alanya was 450 km long from west to east and about 120 km wide from north to south. The state existed in the Khazar Khaganate until the 1230s, until it fell under the Tatar-Mongol invasion. In the spring of 1238, the hordes of the Mongol Khan Batu (Batu), in order to complete the conquest of the region of the Central Pre-Caucasus, besieged the capital of the Alan state. For a month and a half, the residents held a siege. Then the Tatar-Mongols built battering guns and broke through the Alan gate; they stormed Ma'as and, turning it into ruins, burned it to ashes.

Interestingly, eight centuries have passed, and still the dispute over the Alan heritage does not subside between the mountain peoples. First, for any region, this issue means involvement in the great history in which the Alans were one of the most powerful peoples in the North Caucasus, and being called "Alans" is a sign of prestige. Secondly, and no less important, this is the issue of territorial inheritance of Alanya. To be converted to a foreign history and culture is the task of the Armenians. And, if it doesn't work out, they can destroy a foreign culture, as they did in Azerbaijan.

Conclusions

1. The delicate balance of power in the North Caucasus can be easily upset by political agreements steeped in culture and history. When separatism threatens, it is accompanied by destabilization and conflict.

2. At a time when the whole world has united against Russia's barbaric invasion of Ukraine, fascist Armenia again acts as a Russian puppet. The threat of the Armenian factor has spread throughout the Caucasus and is currently actively present in North Ossetia. The Armenians, in fact, managed to integrate into the population of the republic in order to become involved in the ancient population of

Alania. However, as the experience of their stay in Azerbaijan showed, this carries a territorial threat with the encroachment and plunder of valuable resources, the barbaric destruction of cultural monuments and destruction of the most valuable factor - representatives of the autochthonous people.

Discussion

The main provisions of the presented work were reported at the 8th International Scientific Congress in Istanbul.

The following postulate is put forward for discussion: despite the fact that such an important topic was considered in a compressed framework, without external factors - the participation of third parties or more, summing up the events taking place in the countries of the former USSR in the period from 2020 to the present, we come to conclusion that the threat to world security, both global and regional, has increased as never before. Therefore, every international subject and individual must come to the understanding that humanity is at the point of no return. If the terrorist countries are not able to stop before the abyss, then the civilized world, which is much larger than them, must take global measures against the criminals.

References

1. Azerbaijan to build road to Nakhichevan bypassing Armenia. JAMnews, Baku/ https://jam-news.net/azerbaijan-to-build-road-to-nakhichevan-bypassing-armenia (2022)
2. Bondar G. In Chernigov, the invaders shot civilians in line for bread - there are dead https://www.unian.net/war/v-chernigove-okkupanty-rasstrelyali-mirnyh-lyudey-v-ocheredi-za-hlebom-est-pogibshie-novosti-vtorzheniya-rossii-na-ukrainu-11746210.html (2022)
3. Iranian Minister of Roads and Urban Development visits Azerbaijan /https://apa.az/ru/vneshnyaya-politika/ministr-dorog-i-gradostroeniya-irana-naxoditsya-v-azerbaidzane-473953 (2022)
4. “We will strive for demilitarization and denazification”: Putin announced the start of a special operation in Ukraine / Novaya Gazeta /https://novayagazeta.ru/articles (2022)
5. Orlova V. The Russians dropped bombs on the drama theater: hundreds of people were hiding there / https://www.unian.net/war/rossiyane-sbrosili-bombu-na-dramteatr-v-mariupole-tam-pryatalis-sotni-lyudey-novosti-vtorzheniya-rossii-na-ukrainu-11746711.html (2022)
6. Putin made an emergency appeal to the citizens of Russia / RBC /https://www.rbc.ru (2022)

Gratitude

I express my gratitude to the organizers of the congress for their assistance and sponsorship.

ECONOMIC SITUATION IN THE REPUBLIC OF NORTH OSSETIA-ALANIA

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ABSTRACT

The development strategy of the Republic of North Ossetia-Alania until 2030 is to achieve the socio-economic development of the region and improve the living standards of the population. A strategy is a document that sets long-term goals. The development strategy will create conditions for security and stability in the region by achieving economic progress.

The article covers industry, tourism, housing and communal services, transport, logistics, etc. of the Republic of North Ossetia-Alania. The development and further prospects of such complexes are studied. It is expected that the implementation of all strategic initiatives will eliminate imbalances in the labor market, which is one of the main problems in the country, and reduce unemployment.

Thus, today the country is working on the development of all national economic complexes, as well as the implementation of new economic projects. It should be noted that certain types of natural resources, non-metallic minerals and water resources of North Ossetia-Alania are mainly located on the territory of Russia. The industrial complex is the backbone of the region's economy. This favorably distinguishes it from neighboring agrarian republics.

Keywords: North Ossetia-Alania, economic development, strategy.

Introduction

An important competitive advantage of the Republic of North Ossetia-Alania is its geo-economic position. The Republic has a developed infrastructure. Significant hydropower resources make it possible to produce a significant amount of cheap electricity for the domestic and foreign markets.[4] Sections of the Georgian Military Highway, connecting Russia with the Caucasus and the Middle East, and the tunnel of the Transcaucasian Highway pass through the Caucasus Range. The North Ossetian nature reserve and the resorts of Tamisk, Karmadon and others are located in the republic. The complexes that make up the economy of the Republic of North Ossetia-Alania developed in different directions. The natural and climatic conditions of the republic make it possible to successfully develop many sectors of the economy, and its richness in various minerals creates the necessary prerequisites for this. The Republic also ranks 4th among the regions of Russia in terms of the length of paved public roads. Thus, the main industries in the country are non-ferrous metallurgy, mechanical engineering, metalworking, food, light industry, woodworking industry, production of building materials. In 2017, the share of certain types of products in the all-Russian industrial output of the republic was zinc - 40%, lead - 35%, hard alloys - 10%, sulfuric acid - 3.5%, fabrics - 48.8%, low-molecular equipment under voltage - thirty%. The share of the manufacturing industry in the total volume of exported industrial products is 65.8%. The share of the metallurgical industry in the structure of the manufacturing industry is 65.0%. [5]

Minerals are polymetallic ores (containing zinc, lead, copper, silver), building materials, mineral water sources, proven oil reserves, etc. [3]

The main directions of development of the agro-industrial complex of the republic are: the cultivation and processing of grain crops and the production of corn starch, molasses, glucose, corn oil, the processing and preservation of vegetables and fruits, livestock, poultry farming, milk processing and the production of a wide range of dairy products, mineral-sweet extraction and water packaging. The main goal is to provide the population with high-quality organic food products of its own production through the use of advanced technologies at existing enterprises and the creation of modern agricultural holdings.

If we consider promising investment projects, then these are poultry farming, complex processing of wheat grain, fishing, construction of greenhouses, organization of processing and storage of grain, fruits and vegetables. The existing production capacities of existing enterprises, as well as new food and processing enterprises that are planned to be created, make it possible to form a highly efficient territorial cluster that provides the population with high-quality environmentally friendly products. In order to improve the housing and communal services of the republic, the Program for Sustainable Economic Development of the Housing and Communal Services was approved. As a result, an increase in the collection of payments for utilities and a reduction in the financial deficit is expected, which will ensure the economic balance of companies operating in the field of housing and communal services.

In 2021, a total of 17 projects are planned in the agro-industrial complex of North Ossetia. The amount of these projects amounted to 32 billion rubles, and it is planned to create 2.7 thousand new jobs. The development of industry in the country is one of the main tasks ahead. In total, it includes 6 industrial projects worth 4.5 billion rubles, creating 400 new jobs. Among them are the organization of overhaul of electric trains and carriages operating on alternating current, the restoration of ultra-pure copper production, the establishment of an enterprise for the production of organic fertilizers, the production of construction materials, etc. [2] If we look at other developed economic complexes, we see that there are many tourist centers in the mountains, as well as mountaineering camps for year-round use. The country has significant potential for the development of ski tourism, as well as the resort sector. There are more than 300 healing mineral and fresh water sources in the country. 9 promising investment objects have been identified for systematic development in the field of tourism and recreation in the territory of the republic. [5] One of them is the “Mamison” project, which includes 5 additional projects. These projects are expected to bring the country to a new level of development. This includes the construction of a greenhouse complex, the construction of an orchard, the construction of an apple orchard and the development of agriculture and trout farming. Such large-scale projects to be implemented in the country will create more than 3,500 jobs. It is also expected to build a greenhouse complex for the production of tomatoes with a total area of more than 80 hectares by the autumn of 2024 in the Prigorodny region of the country. This project is one of the first five priority areas included in the economic development model of the republic until 2030. The initiator of the project is Alania Greenhouse Complex LLC. After the greenhouse production reaches the project capacity, it is expected to produce about 34,000 tons of agricultural products a year. The new greenhouse complex will supply the republic and other regions of the Russian Federation. The total cost of the project is about 15 billion rubles. In addition, 860 new jobs are expected to be created over the years. [6]

The transport and logistics complex of the Republic of North Ossetia-Alania has a favorable strategic position on the southern borders of the Russian Federation, envisages the formation of modern vehicles, being the center of land transport links between Europe, the Middle East.

It should be noted that there are economic relations between the Republic of North Ossetia-Alania and the Republic of Azerbaijan. In 2015, an agreement on trade-economic, scientific-technical and cultural cooperation between the republics was signed. This agreement reflects the development of various sectors of the economy, including education, health, tourism, youth policy, culture, sports and others. Such agreements also cover issues such as the development of relations between enterprises, organizations and institutions of Azerbaijan and the Republic of North Ossetia-Alania, mutual investment in the economy and social infrastructure. [1]

In general, the favorable soil and climatic conditions of the North Caucasus, valuable mineral resources, economic and geographical position have led to the economic development of the area. The socio-economic development of the North Caucasus republics of Adygea, Dagestan, Chechnya, Ingushetia, Kabardino-Balkar, Karachay-Cherkessia, North Ossetia-Alania and 2 Krasnodar and Stavropol regions also attracts the attention of various investors. Various clashes are also taking place in the North Caucasus. To reduce these conflicts, both socio-economic development and the cultural development of the population, the orientation of young people to higher education can be achieved by raising living standards. For this, it is necessary to focus on socio-economic development, using the favorable potential of the region.

Result

The favorable geopolitical location and rich nature of the North Caucasus make it attractive to other countries. Thus, an important competitive advantage of the Republic of North Ossetia-Alania is its geoeconomic position. All the projects to be implemented will create conditions for economic development and strengthening the region's position. Full use of the transit potential of the republic will allow to develop trade, financial system, transport and logistics activities. The development of transport corridors through the territory of the republic will open wide opportunities for the economy and trade. Also, all these processes will make investors more interested in the country.

Bibliography

1. Azərbaycan - Rusiya iqtisadi əlaqələri müzakirə edilmişdir, 03.02.2015 https://www.economy.gov.az/article/az-rus-iq-03-02-2015/27029
2. Экономическая модель Северной Осетии включает пять эффективных проектов https://tass.ru/ekonomika/12757595
3. Н.В. Скоркина, Республика Северная Осетия – Алания в цифрах, г. Владикавказ 2020, https://stavstat.gks.ru/storage/mediabank/AHpBsvvl/OSET_2020_1.pdf
4. Основные проблемы, тенденции и прогнозы социально-экономического развития Республики Северная Осетия – Алания http://www.consultant.ru/document/cons_doc_LAW_139451/34a3a46002b05518f2a9de2c5f9feead0c048eeb/
5. Республика Северная Осетия - Алания / Республика / Экономика / Промышленность http://alania.gov.ru/republic/economy/industry
6. Республика Северная Осетия – Алания https://tass.ru/regions/respublika-severnaya-osetiya---alaniya?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com

II. MECLİSTE DENİZLİ MİLLETVEKİLLERİ VE FAALİYETLERİ

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ÖZET

Milli Mücadelenin ağır sorumluluğunu başarıyla yerine getiren I.Meclis, zaferden sonra zaferin siyasi akıbeti konusunda mutabakattan uzaktı. Ağırlığını İttihatçıların oluşturduğu ve 2.Grup diye adlandırılan, ortak yönleri M. Kemal karşıtlığı olan bazı vekillerin sebep olduğu kavga ve tartışmalarla I. Meclis oldukça yıpranmıştı.1 Nisan 1923'te yenilenmesine karar verilen seçimlerin tamamlanma süreci 2 Ağustos 1923'te sona ermiş ve aynı gün İkinci Meclis toplanmıştır. İkinci Büyük Millet Meclisine çoğu Mustafa Kemal Paşa'ya bağlı 287 vekil seçilmiştir. Yeni Meclise Denizli adına 5 vekil iştirak etmiştir. I. Mecliste yer alan Denizli vekillerinden Yusuf Bey (Başkaya) dışındakiler yeni seçilmiş milletvekillerinden oluşmuştur. Bir nevi Türkiye Büyük Millet meclisi kendini yenilerken, Denizli de buna ayak uydurmuştur.

Bu araştırmamızda 1923-1927 yıllarını kapsayan II. Meclis döneminde Dr. Kazım Bey (Mustafa Kazım SAMANLI), Haydar Rüştü Bey (Ali Haydar ÖKTEN), Necip Ali Bey (Ahmet Necip Ali KÜÇÜKA), Mazhar Müfit Bey (Ahmet Mazhar KANSU) ve Yusuf Bey (Yusuf BAŞKAYA)'dan oluşan Denizli milletvekillerinin TBMM'deki faaliyetlerini inceledik.

Anahtar Kelimeler: Mustafa Kemal Paşa, Millî Mücadele, Ulusal Egemenlik, Büyük Millet Meclisi, Denizli, II. Meclis

II. DENIZLI MEPs IN THE PARLIAMENT AND THEIR ACTIVITIES

ABSTRACT

The First Assembly, which successfully fulfilled the heavy responsibility of the National Struggle, was far from agreeing on the political outcome of the victory after the victory. The First Assembly was quite worn out due to the fights and arguments caused by some deputies, who were mainly opposed to M. Kemal and called the 2nd Group, which was mainly formed by the Unionists. The Second Assembly convened the next day. 287 deputies, most of whom were affiliated to M. Kemal, were elected to the Second Grand National Assembly. 5 deputies on behalf of Denizli participated in the New Assembly. Except for Yusuf Bey (Başkaya), one of the Denizli deputies in the I. Assembly, they were newly elected deputies. In a way, while the Turkish Grand National Assembly was renewing itself, Denizli followed suit.

In this research, II. During the parliamentary term, Dr. Denizli deputies consisting of Kazım Bey (Mustafa Kazım SAMANLI), Haydar Rüştü Bey (Ali Haydar ÖKTEN), Necip Ali Bey (Ahmet Necip Ali KÜÇÜKA), Mazhar Müfit Bey (Ahmet Mazhar KANSU) and Yusuf Bey (Yusuf BAŞKAYA) tried to examine the parliamentary activities. we will try

Keywords: Mustafa Kemal Pasha, National Struggle, National Sovereignty, Grand National Assembly, Denizli, 2nd Assembly.

GİRİŞ

1920-1923 arasında faaliyet yürüten I. Meclis, İstiklal Mücadelesinde büyük bir askeri ve siyasi başarıya imza atmasına karşın, savaş sonrasında oluşan yeni devletin yönü ve işleyişi konusunda bir programa ve ortak bir kanaate sahip değildi. İsmi sanı belli siyasi partiler olmamasına karşın Mustafa Kemalciler ile diğerleri arasında fikir ayrılıklarının körüklediği sert tartışmalar yaşanmıştır. Mustafa Kemal Nutuk'ta 1923'e gelindiğinde "*bütün ulusta, Meclisin görev yapamayacak bir duruma geldiği kaygısı sezilmeye başladı. Meclis'te, durumu soğukkanlılık ve sağgörü ile usa vurup inceleyenler bile üzüntülerini açığa vurmaktan kendilerini alamıyorlardı. Artık Meclis yenilenmedikçe Ulus'un ve yurdun*

ağır ve sorumluluk gerektiren işlerinin yürütülemeyeceğinde kuşku kalmamıştı. Bunun zorunlu olduğuna ben de inandım. Bir gece Başbakan Rauf Bey'e, Bakanlar Kurulu'nu toplantıya çağırmasını, benim de geleceğimi, istasyondaki konutumdan telefonla bildirdim."[143]

Mustafa Kemal, yeni mecliste Birinci Meclis'teki İkinci Grup gibi çetin bir muhalefetin oluşmaması için, tüm tedbirleri almıştır. İkinci Grup'un seçimlere grup olarak katılamama kararı alması seçimde Birinci Grup'u yalnız başına bırakmış, beklenileceği gibi, bu iki dereceli güdümlü seçimler, merkezden belirlenen Birinci Grup adaylarının mutlak başarısıyla sonuçlanmıştır.[144]

II. Türkiye Büyük Millet Meclisi 2 Ağustos 1923 Perşembe günü açılmıştır. Fakat çoğunluk bulunmadığı için, toplantı tatil edilmiştir. 11 Ağustos 1923 Cumartesi günü saat 13.36'da İkinci Dönem T.B.M.M ilk toplantısını yapmıştır.[145]

Mustafa Kemal'in hem Ankara hem de İzmir'den seçildiği 1923 yılı seçimlerinden sonra oluşan II. Meclis, 11Ağustos 1923 tarihinde 192 vekilin yemin etmesiyle açılmıştır. İşte bu yeni meclis yani II. Meclis, Cumhuriyeti ilan eden ve Cumhuriyet rejiminin var olması için lüzumlu görülen inkılâpları yapan Meclis olmuştur. Nitekim II. Meclisin ivedilikle görüşüp karara bağladığı kanunlar, 2 Mart 1924 günü toplanan Fırka grubunda Mustafa Kemal'in altını çizdiği üç konu ortaya konulup görüşülmüş ve genel ilkeler üzerinde anlaşılmıştı.[146] Ertesi gün 3 Mart 1924 tarihinde yeni rejimin temeli sayılabilecek 3 önemli devrim kanunu mecliste kabul edildi. Bunlar; Hilafetin kaldırılması, Tevhid-i Tedrisat Kanunu'nun Kabulü ve Şeriye ve Evkaf ve Erkân-ı Harbiye Vekaletlerinin ilgası kanunlarının kabulüdür.

II. Meclis, başta mübadiller konusu olmak üzere ülkenin doğusunda cereyan eden Şeyh Sait Hadisesi, Çok Partili Rejim denemelerinin ilk muhalefet partisi Terakkiperver Cumhuriyet Fırkası ile iktidar partisi Cumhuriyet Halk Fırkası arasındaki gerilim, Takrir-i Sükun Kanunu'nun gölgesinde yeniden faaliyete geçen İstiklal Mahkemeleri ve daha da vahimi; Cumhurbaşkanı Mustafa Kemal Paşa'ya 14 Haziran 1926 tarihinde, İzmir'de yapılması planlanan suikast girişimi nedeniyle oldukça hararetli bir dönem geçirmiştir. Bu atmosferde Denizli milletvekilleri de gündeme dair çeşitli konularda meclis çalışmalarında yer almışlardır.

II. TBMM'de Denizli Vilayetini temsilen Dr. Kazım Bey (Mustafa Kazım SAMANLI), Haydar Rüştü Bey (Ali Haydar ÖKTEN), Necip Ali Bey (Ahmet Necip Ali KÜÇÜKA), Mazhar Müfit Bey (Ahmet Mazhar KANSU) ve Yusuf Bey (Yusuf BAŞKAYA) II: Meclis çalışmalarına iştirak etmişlerdir. II. Yasama Döneminde Gümüşhane doğumlu Haydar Rüştü Bey dışında, Denizli Vilayeti II. Meclis'te tamamen Denizli doğumlu vekillerle temsil edilmiştir.

Birinci Meclis'te Denizli ile ilgili üzerinde en çok durulan konular; Denizli Sancağının müstakil liva haline getirilmesi ve Denizli Olayı'ndan zarar gören Denizli halkının çeşitli alanlarda ödediği vergilerin ertelenmesi ve ayrıca Denizli'de güvenliğin sağlanabilmesi için, İstiklal Mahkemesi ve adliye memurları gönderilmesidir. Bu konularda en çok Yusuf Bey (Başkaya) ve Hasan Efendi (Tokcan) görüş bildirmişlerdir. [147]

İkinci Mecliste de yeniden yer alan Yusuf Başkaya yine aktif bir vekalet dönemi geçirmiştir.

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[143] Gazi M.Kemal Atatürk, *Söylev*, C. I-II, Bas. Haz. Hıfzı Veldet Velidedeoğlu, Çağdaş Yay., İstanbul 1981, s. 406.
[144] Ahmet Demirel, *Birinci Meclis'te Muhalefet İkinci Grup*, İletişim Yay., I. Baskı, Ocak 1994, s. 571.
[145] Türkiye Cumhuriyeti Tarihi I, Atatürk Araştırma Merkezi Yay., Ankara 2006, s. 420.
[146] Işıl ÇAKAN, Türk Parlamento Tarihinde II. Meclis, Çağdaş Yayıncılık, Haziran 1999. S.168
[147] Sezen Karabulut, *"Birinci Meclis'te Denizli Milletvekilleri ve Çalışmaları",* Prof. Dr. Önder Göçgün'e Armağan Denizli 2013, *s.621-631*

MİLLETVEKİLLERİNİN ÖZGEÇMİŞİ VE FAALİYETLERİ

1.AHMET MAZHAR MÜFİT KANSU



Denizli- 1872, (Süleyman) Müfit – Ayşe – Mülkiye Mektebi – Fransızca – Mülki İdare Amiri ve Maliyeci – Gelibolu İdadisi Öğretmeni, Edirne İdadisi Tarih Öğretmeni ve Müdür Yardımcısı, Edirne İl Maiyet Memuru, Havsa, Çorlu, Uzunköprü ve İskeçe Kaymakamı, Gümülcine Sancağı, Lazistan (Rize), Mersin, İzmit, Balıkesir Mutasarrıfı, Bitlis ve Mamüratü'l-Aziz (Elaziz) Valisi, Erzurum Kongresi Bitlis Delegesi, Sivas Kongresi Hakkâri Temsilcisi, Hey'et-i Temsîliye Üyesi– Osmanlı Meclis-i Meb'ûsân IV. Dönem Hakkâri Mebusu – I. Dönem Hakkâri ve II. Dönem Denizli Milletvekili – I. Dönem Dâhiliye Encümeni Reisi, Nâfıa Encümeni Reisi, Yozgat İstiklâl Mahkemesi

Üyesi – II. Dönem 1. Şube Başkanı, Tetkik-i Hesâbât Encümeni Başkanı, Divân-ı Muhâsebât Encümeni Reisi,

Şark İstiklâl Mahkemesi Başkanı, Ziraat Bankası Yönetim Kurulu Üyesi – Evli, 2 Çocuk.

Ölüm Tarihi: 12.11.1948 [148]

AHMET MAZHAR MÜFİT KANSU'NUN MECLİS İÇİ FAALİYETİ

II. Dönem Denizli vekilleri içerisinde nicel olarak en çok faaliyetini tespit ettiğimiz vekil Mazhar Müfit Kansu'dur. 120 faaliyette bulunan Mazhar Bey, 103 Söz Alma, 1 Teklif, 5 Takrir/Önerge, 8 Şifai Sualler ve Bunlara Verilen Cevaplar ve 3 Sual İstizah ve Bunlara Verilen Cevaplar eylemi gerçekleştirmiştir.

Yaptığımız araştırmada Mazhar Müfid Bey'in Denizli'ye özel, Meclis içi bir talebi, bir duyurusuna rastlanılmadı. Sadece "*Asayişin muhtel bir şekil aldığı Aydın, Ödemiş, Denizli, Burdur, Dinar, Çivril, Sandıklı, Eğridir ve Uluborlu'da İdare-i Örfiye ilan edilmesine dair icra Vekilleri Heyeti Riyaseti tezkeresi münasebetiyle" [149]* bir Söz Alma faaliyetinde Denizli ve Çivril ismi geçiyor. Ancak Meclis Gündemindeki her konuyla ilgili çalışkan bir vekil portresi çizmiştir. Mazhar Müfid Bey'in özellikle Dış politik konular[150] başta olmak üzere, Öğretmenlerin maaş alamama mevzusu[151], İstanbul'daki Yetimhanelerin durumu hakkında oldukça etkili konuşmalar yapıyor.[152] Yine Tarım-Ziraat, hayvancılık

[148] https://www.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf (Erişim Tarihi: 30.07.2021)
[149] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=MAZHAR%20M%20F%20D%20BEY%20(MAZHAR%20M%20F%20D%20KANSU)&v_sb=DEN%20ZL%20&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=120&v_gelecek_sayfa=1&v_kullanici_id=17381263 (Erişim Tarihi: 07.10.2021)
[150] https://www5.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=323:324&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=3&v_birlesim=051 (Erişim tarih: 07.10.2021)
[151] https://www5.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=349:351&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=3&v_birlesim=052 (Erişim Tarihi: 07.10.2021)
[152] https://www5.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=462:464&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=1&v_birlesim=015 (Erişim Tarihi: 07.10.2021)

ve yerli kumaş üretimi ve kullanımı konularında enteresan çıkışları var.[153] Mazhar Müfid Bey'in dikkate değer diğer faaliyetleri ise şunlardır: 42. Birleşimde Teşkilat-ı Esasiye Kanunu hakkındaki görüşü, 51. Birleşimde Batı Trakya ve Makedonya'daki Müslüman ahalinin feci durumuna dikkat çekmesi, 26-27-28. Birleşimlerde Yunanistan'ın Lozan Antlaşması hükümleri hilafına Türk-Müslüman mübadillerin mallarına el koyduğunu bizim de misliyle karşılık vermemiz gerektiğini ifade ederken Dışişleri Bakanı Şükrü Kaya bu mevzuda hükümetin gereğini yaptığını ifade etmiştir. [154] 76. Birleşimde Petrol Kanunu'yla ilgili, *"Binaenaleyh zannederim ki, bu maddede münakaşaya bir şey yoktur. Hükümet taharrim ruhsatnamesini kimseye vermiyor. Çünkü petrol siyaseti mühim bir rol oynuyor bu zamana. Onun için hükümet diyor ki: Bunu ben deruhte ediyorum. Şu şerait altında icap ederse başkasına vereceğini. Bunu uzun uzadıya yok arazi-i memluke midir, devletin midir, şunun mudur, bunun mudur? Diye münakaşaya mahal yoktur. Ruhsatname hakkını kaldırıyor. Mesele bundan İbarettir. Hükümet kendisi iştigal edecektir. Çünkü mesele mühimdir."*[155] Fikrini beyan ediyor. 1340 Rumi/1924 Miladi 95. Birleşimde**, Rize vilâyeti ile Borçka kazasında fındık, portakal, limon, mandalina ve çay yetiştirilmesi hakkında Lâzistan Mebusu Esat Beyin, teklifi kanunisi münasebetiyle**[156] verilen kanun teklifine destek vermiştir. Bu faaliyet nedeniyle Doğu Karadeniz'de Çay ve narenciye üretimi tarihçesi hakkında bilgilenmiş olduk.

2. DR. KAZIM BEY (MUSTAFA KAZIM SAMANLI)



Denizli- 1890, Ali – Emine – Mektebi Tıbbiye-i Mülkiye – Fransızca – Operatör Doktor – Denizli Merkez Tabibi ve Sıhhiye Müdürü – II. Dönem Denizli Milletvekili – Evli. Ölüm Tarihi: 05.02.1941[157]

MUSTAFA KÂZIM SAMANLI'NIN MECLİS İÇİ FAALİYETİ

TBMM II. Dönemde 6 faaliyeti tespit edildi. Bunlar: 1 Söz Alma, 1 Teklif, 1 Takrir/Önerge, 2 Sualler-İstizahlar ve Bunlara Verilen Cevaplar, 1 Şifai Sualler ve Bunlara Verilen Cevaplardır.

[153] Bu konularda 18,21,95,98,110,112,113 vd. birleşimlere bakılabilir. https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=MAZHAR%20M%20F%20D%20BEY%20(MAZHAR%20M%20F%20D%20KANSU)&v_sb=DEN%20ZL%20&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=120&v_gelecek_sayfa=1&v_kullanici_id=17381263 (Erişim Tarihi: 07.10.2021)

[154] https://www5.tbmm.gov.tr/develop/owa/td_v2.goruntule?sayfa_no_ilk=283&sayfa_no_son=284&sayfa_no=284&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=11&v_birlesim=028 (Erişim Tarihi: 07.10.2021)

[155] https://www5.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=327&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=23&v_birlesim=076 (Erişim Tarihi: 07.10.2021)

[156] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=MAZHAR%20M%20F%20D%20BEY%20(MAZHAR%20M%20F%20D%20KANSU)&v_sb=DEN%20ZL%20&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=120&v_gelecek_sayfa=1&v_kullanici_id=17381263 (Erişim Tarihi: 07.10.2021)

[157] https://www5.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf (Erişim Tarihi: 08.10.2021)

“Etibbanın hizmeti mecburesi hakkındaki Kanun münasebetiyle” Söz Alma:

Dr. KAZIM B. (Denizli) — Arkadaşlar etibbaya tahmil edilmek istenilen şu mecburiyet hiç olmazsa mektepten çıktıktan sonra tatbik edilmesin. Bir müddet ihtisasa ait olan mesailerinde çalışsınlar, ihtisas peydah etsinler. Bunu elde ettikten sonra tefrik edilsin, yoksa bu suretle mütehassıs yetiştirmenin önünü alıyoruz, kökünü kesiyoruz. Herhangi bir kazaya giden bir doktor bir daha mütehassıs olamaz. Bendeniz bilhassa en ziyade Meclisi Âlinizin bu cihetten nazarı dikkatini celp ederim.[158]

İkincisi, **“Ve Rüfekası Tavas su yollarına muavenet edilmek üzere 1341 senesi Bütçesine otuz iki bin lira vaz'ıne dair” Takrir/Önerge:**

3. — Denizli Mebusu Kâzım Bey ve rüfekasının;

Tavas su yollarına muavenet edilmek üzere 1341 senesi bütçesine otuz iki bin lira va’zına dair temenni takriri (4/120)

REİS — Başvekâlete havale edilmiştir. [159]

Üçüncüsü; **Darülfünun müdavimlerinin, haysiyeti milliyeyi lekedar edecek hareketlerde bulundukları hakkındaki neşriyata dair suali.** [160]

6. — Denizli Mebusu Musa Kâzım Beyin; Darülfünun müdavimlerinin haysiyeti milliyeyi lekedar edecek hareketlerde bulundukları hakkındaki neşriyata dair Maarif Vekâletinden suali

REİS — Sahibi sual burada olmadığı için bunu da talik ediyoruz.

Dördüncüsü, **Ruhsatsız tütün zer edenlerden alınmakta bulunan cezayı nakdiler hakkında suali.** Sualler İstizahlar Ve Bunlara Verilen Cevaplar [161]

Maliye Bakanı bu soruya cevap vermemiştir.

Beşincisi; **Denizli-Alaşehir yolunun Devlet yolları meyanına ithali hakkında**. Teklif. [162]

1. — Denizli Mebusu Doktor Kâzım Beyin; Denizli- Alaşehir yolunun Devlet yolları meyanma ithali hakkında teklifi kanunisi. (2/522)

REİS — Lâyiha Encümenine havale edilmiştir.

Altıncısı; **Denizli Mebusu Doktor Kâzım Beyin, mensucatı dahiliyenin ıslahı maksadıyla Meclisi Ali’ce kabul olunan tahsisat üzerine şimdiye kadar ne yapıldığına dair suali ve Ticaret Vekili Ali Cenani Beyin şifahi cevabı**. Şifahi Sualler Ve Bunlara Verilen Cevaplar. [163]

Buldan’da bulunan mensucat tezgahlarının feci durumda olduğunu ve bunların yerine otomatik tezgahların kurulması gerektiğini kabul eden Ticaret Bakanı; *“tetkikat yaptırıyorum. Tetkikat henüz*

[158] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=86&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=3&v_birlesim=043 (Erişim Tarihi: 25.07.2021)
[159] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=129&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=12&v_birlesim=036 (Erişim Tarihi: 25.07.2021)
[160] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=361&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=12&v_birlesim=042 (Erişim Tarihi: 25.07.2021)
[161] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=3:4&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=18&v_birlesim=102 (Erişim tarihi: 25.07. 2021)
[162] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=292&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=20&v_birlesim=033 (Erişim Tarihi: 25.07.2021)
[163] https://www.tbmm.gov.tr/develop/owa/td_v2.sayfa_getir?sayfa=321&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=23&v_birlesim=076 (Erişim Tarihi: 25.27.2021)

hitam bulmamıştır. Merkezini tayin için bir komisyon teşkil ettim, orada, merkez nerede olacaktır, onu tespit edecek. Fabrikalarla da sanayive maadin bankası muabere etmektedir. Bu tetkikat neticesinde gerek fabrikanın alat ve edevatı ve gerekse mensucatı itibariyle mahallî tespit ve itmam edildikten sonra tabiatiyle orada bir fabrika vücuda getirilecektir. Sanayi ve maadin bankası ferafmdan bir şirket teşkil edilerek yapılacaktır. Mesele bu merkezdedir".

DOKTOR KÂZIM BEY (Denizli) — Efendim, evvelce Meclîs-i Âli zannediyorum kırk beşinci içtimaında 135 bin lira tahsisat kabul etmiş idi. Bu tahsisatla İzmir'de merkezî bir vaziyette bazı tesisat vücuda getirilecekti. İntizar ediyorduk. Fakat bu kadar zaman geçtiği halde elan bir şey j yapılmadığı görüldüğü için daire-i intihabiyem bulunan Kadıköy tezgâhlarının feci vaziyette bulunduklarını anladığım için vekil beyefendiden bu sual ile anlaşıldığından kendilerine teşekkür ederim. [164]

Yukarıda da görüldüğü üzere; Dr. Kâzım Bey'in farklı konularda 6 faaliyeti tespit edilmekle birlikte, 4 yıllık zaman zarfında II. Meclis'in pasif vekillerden birisi olduğu göze çarpmaktadır.

3.NECİP ALİ KÜÇÜKA



Denizli- 1892, Ali – Fatma Huriye – İstanbul Hukuk Mektebi – Fransızca – Hukukçu – Eşme Müddeî-i Umûmîsi (Savcı), Sivas Kongresi Denizli Üyesi, Denizli Mahkemesi Üyesi, Sarayköy Müddeî-i Umûmîsi – II. Dönem Denizli Milletvekili – Ankara İstiklâl Mahkemesi Savcısı – Evli, 2 Çocuk. Ölüm Tarihi: 27.09.19417 [165] TBMM II..Dönemde Necip Ali KÜÇÜKA'nın 6 adet faaliyeti tespit edildi. Bunlar: 4 Söz Alma, 1 Teklif, 1 Şifai Sualler ve Bunlara Verilen Cevaplar

NECİP ALİ KÜÇÜHA'NIN MECLİS İÇİ FAALİYETİ

6 faaliyetini tespit ettik. Bunlar: 1 Şifai Sualler ve bunlara Verilen cevaplar, 1 Teklif ve 4 adet Söz Alma şeklindedir.[166] Bu faaliyetlerin Denizli yerel sorunlarıyla bir ilgisi tespit edilmedi.

NECİP ALİ BEY (NECİP ALİ KÜÇÜKA) (DENİZLİ): Denizli Mebusu Necib Ali Bey'in, Muzır hayvanların itlafı hakkındaki Kanunun tatbik edilmemesi esbabına dair sualine İktisat Vekili Hasan Hüsnü Beyin şifahi cevabı.

Örneğin 1 tanesi muzır hayvanları itlafı üzerine şifai bir sual, 2 faaliyeti bütçe, 1 tanesi bir mebusun ailesine yardım yapılması üzerine, 2 faaliyet de kanun teklifleri üzerine olmuştur.[167]

[164] https://www.tbmm.gov.tr/develop/owa/td_v2.goruntule?sayfa_no_ilk=410&sayfa_no_son=411&sayfa_no=411&v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=23&v_birlesim=080 (Erişim Tarihi: 25.27.2021)
[165] https://www5.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf (Erişim Tarihi: 08.10.2021)
[166] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=NEC%20P%20AL%20%20BEY%20(NEC%20P%20AL%20%20K%20%20%20KA)&v_sb=&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=6&v_kullanici_id=17381504&v_gelecek_sayfa=1 (Erişim Tarihi: 08.10.2021)
[167] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=NEC%20P%20AL%20%20BEY%20(NEC%20P%20AL%20%20K%20%20%20KA)&v_sb=&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=6&v_kullanici_id=17381504&v_gelecek_sayfa=1 (Erişim Tarihi: 08.10.2021)

4.YUSUF BEY (BAŞKAYA)



Yelovası Köyü/Denizli – 1879, Mustafa – Elife – Denizli Medresesi,

Hukuk Diploması – Ziraatçı, Hukukçu – Garbi Karaağaç (Acıpayam) ve Çal Bidâyet Mahkemeleri 2. Kâtibi, Tavas Bidâyet Mahkemesi Müstantik (Sorgu Hâkimi) Yardımcısı, Denizli Liva Bidâyet Mahkemesi Zabıt Kâtibi, Nazilli Bidâyet Mahkemesi Müstantikliği, İttihâd ve Terakkî Fırkası Üyesi ve Denizli Sorumlu Kâtibi, İzmir İl Genel Meclisi ve Daimî Encümen Üyesi, Redd-i İlhak ve Müdâfaa-i Hukuk Cemiyetleri Üyesi, Sivas Kongresi Denizli Delegesi ve Hey'et-i Temsîliye Üyesi- I. ve II. Dönem Denizli Milletvekili – Eskişehir ve Konya İstiklâl Mahkemeleri Başkanı – Evli, 5 Çocuk. Ölüm Tarihi: 11.06.1945 [168]

YUSUF BAŞKAYA'NIN MECLİS İÇİ FAALİYETİ

TBMM II..Dönemde 72 adet faaliyeti tespit edildi. Bunlar:

5 Söz Alma, 16 Teklif, 43 Takrir/Önergeler, 2 Tahriri Sualler ve Bunlara Verilen cevaplar, Şifai Sualler ve Bunlara Verilen cevaplar, 1 Sualler- İstizahlar ve Cevaplar

Daha önce I. Meclis'te de bulunmuş olan Yusuf Başkaya tecrübeli bir vekil olarak İkinci Dönemde de çalışkan bir vekil olarak göze çarpmıştır. Araştırmamızda bu dönem vekilleri içinde Seçim Bölgesi Denizli'yle alakalı en çok faaliyette bulunan vekil Yusuf Başkaya'nın olduğunu tespit ettik. Denizli ve civar kasaba ve köylerini alakadar eden 20 kadar faaliyetinin yanı sıra dolaylı olarak Denizli'yi de ilgilendiren pek çok konuda Meclis'te söz alıp teklif ve takrirler sunmuştur. Yunan işgalinden kurtarılan Çal-Buldan halkının Aşar vergilerinin ertelenmesi, Honaz Nahiyesine bir Posta-Telgraf Merkezinin yapılması, Çal'da kuraklık medeniyle hububatı noksan kalan halka yardım,, Garbikaraağaç/Acıpayam şose yolu için tahsisat ayrılması, Çal kazası dahilindeki Baklan ovasının irva ve iskası temenniyatına dair takrir/önerge, Denizli'de Dakik fabrikasına dair Maliye ve Müdafaa-i milliye vekaletlerine takrir/önerge, Denizli vilâyetinde bir Darülhilâfe Medresesinin küşadı temenniyatına dairtakrir/önerge, Denizli vilâyetine tâbi Çal kazasında tütün zer'i memnuniyetinin ref'i temenniyatına dair takrir/önerge, Tavas kazasına merbut Kızılcabölük ve Garbî Karaağaç kazasının Kızılhisar ve Çal kazasının Tatlık köylerinin yeniden ihdas olunacak yüzelli nahiye meyanına ithaline dair takrir/önerge, Tavas'ın, Kerenesi mıntıkasındaki hareketi arz felaketzadelerine muavenet edilmesi temenniyatına dair takrir/önerge. [169]

[168] https://www.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf (Erişim Tarihi: 30.07.2021)
[169] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=YUSUF%20BEY%20(YUSUF%20BA%20KAYA)&v_sb=&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=72&v_kullanici_id=17381545&v_gelecek_sayfa=1 (Erişim Tarihi: 08.10.2021)

5.HAYDAR RÜŞTÜ BEY (ALİ HAYDAR ÖKTEM)



Gümüşhane- 1885, Hüseyin Rüştü – Nâfıa – Hukuk Mektebi Son Sınıf – Muharrir ve Matbaacı, Anadolu ve Duygu Gazeteleri sahibi, Manisa, Denizli, İzmir İl Genel Meclis Üyesi, İzmir Kordon Tramvayları Direktörü – II. Dönem Denizli Milletvekili – Divân-ı Riyâset Kâtibi

– Evli, 3 Çocuk. Ölüm Tarihi: 11.08.1951[170]

HAYDAR RÜŞTÜ BEY'İN MECLİS İÇİ FAALİYETİ

TBMM II. Dönemde, Haydar Rüştü Bey'in 24 faaliyetini tespit ettik. Bunlar:

16 Söz Alma, 2 Teklif, 5 Takrir, 1 Şifai Sualler ve Bunlara Verilen Cevaplar

Ali Haydar Bey, asayiş, mübadillerin durumu, af konuları, Harp mağdurları ve muhacirlerin durumu, teşkilatı Esasiye Kanunu vs. konuların yanı sıra Denizli'ye özel 3 faaliyetini tespit ettik. Buldan ve Sarayköy'de mensucat işletmelerinin yeniden üretime geçmesi ve Kadıköy nahiyesiyle Denizli merkez kazası halkının Harp Kazançları Vergisinden istisnalarına dair temenni takriri dikkate değer faaliyetlerindendir.[171]

SONUÇ

Cumhuriyet'in ilanı başta olmak üzere, Halifeliğin kaldırılması, Tevhid-i Tedrisat Kanunu, Batı Hukuk Sisteminin yerleştirilmesi, Osmanlının çok başlı, parçalı, cemaatçi toplumsal modelinin aksine homojen, görece laik-modern bir ulus inşası sürecinin yanı sıra, Lozan'da çözülemeyen birçok mesele de 1923-1927 arası II. Meclis döneminde çözüme kavuşturulmuştur.[172]

Bildirimizin konusunu teşkil eden Denizli Milletvekillerinin tümü Cumhuriyet Halk Partisi'ne mensuptu. Faaliyetlerini incelediğimiz II. Dönem Denizli vekillerinin tamamının yüksek tahsil gördüğü tespit edildi. 3 Hukukçu, 1 Öğretmen ve 1 doktor olan Denizli vekilleri Denizli'yi II. Meclisin entelektüel düzeyi yüksek olan vilayetlerinden birisi yapmışlardır. Hukuk son sınıf terk olan Ali Haydar Öktem aynı zamanda matbaacılık ve gazetecilik yapmıştır. Dönemin siyasal atmosferi gereği; Devletin üst yapısına ilişkin anayasal düzenlemeler, dış politik yönelişler gibi temel konularda öneri ve

[170] https://www5.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf
[171] https://www5.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=HAYDAR%20R%20%20T%20%20BEY%20(AL%20%20HAYDAR%20%20KTEM)&v_sb=&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=24&v_kullanici_id=17381511&v_gelecek_sayfa=1 (Erişim Tarihi. 08.10.2021)
[172] İzzettin Beştaş, "II. Meclis'te Mardin Milletvekilleri Ve Faaliyetleri" (2018), İlk Çağlardan Modern Döneme T a r i h t e n İ z l e r, Editör: KARACOŞKUN M. Doğan, KÖSE Osman, Basım sayısı:1, Sayfa Sayısı 845, ISBN:978-605-7501-36-3, Türkçe (Bilimsel Kitap), (Yayın No: 5060290), Berikan Yayınevi 2018

eleştirilerine nadiren rastladığımız vekiller, daha çok yerel ve genel alt yapı sorunları, bütçe çalışmaları, af konuları ve üyelerinin sosyal yaşamını iyileştirmeye dönük faaliyetlerde bulunmuşlardır. Demokratik kültürün yerleşmediği Türkiye'de milletvekilleri günümüzde de kendilerinden beklenilen çağdaş, evrensel tutumları sergilemekten uzak bir tavır sergilemektedirler. Bunda geleneksel siyasi kültürün uzamı olarak 21.yüzyıl dünyasına uygun bir seçim ve siyasi partiler kanununun yapılmaması kadar, tabandan yani seçmen kitlesinden bu yönde bir baskının gelmeyişi de etkili olmaktadır. Hal böyle olunca Siyasi parti liderlerinin belirlediği Milletvekilleri, liderin patronajındaki parti misyonunun dışına çıkamamaktadırlar.

İkinci Meclis'te yer alan vekillerin tamamı tam kadro, III. Dönemde de Denizli'yi temsilen TBMM'de yer almışlardır.

KAYNAKÇA:

1.Resmî Belgeler:

TBMM II. Dönem Tutanak Dergisi,
https://www.tbmm.gov.tr/develop/owa/td_v2.tutanak_sonuc?v_meclis=1&v_donem=2&v_yasama_yili=&v_cilt=&v_birlesim=&v_sayfa=&v_anabaslik=&v_altbaslik=&v_mv=&v_sb=MARD%C3%9DN&v_ozet=&v_bastarih=&v_bittarih=&v_kayit_sayisi=39&v_kullanici_id=12474505&v_gelecek_sayfa=1

https://www5.tbmm.gov.tr/TBMM_Album/Cilt1/Cilt1.pdf

2. Kitaplar:

DEMİREL, Ahmet, Birinci Meclis'te Muhalefet İkinci Grup, İletişim Yayınları, I. Baskı, Ocak 1994.

VELİDEDEOĞLU, Hıfzı Veldet, Gazi M. Kemal Atatürk, Söylev, C. I-II, Bas. Haz. , Çağdaş Yayıncılık, İstanbul 1981.

Türkiye Cumhuriyeti Tarihi I, Atatürk Araştırma Merkezi Yayınları, Ankara 2006.

ÇAKAN, Işıl, Türk Parlamento Tarihinde II. Meclis, Çağdaş Yayıncılık, Haziran 1999.

KARABULUT, Sezen, "Birinci Meclis'te Denizli Milletvekilleri ve Çalışmaları", Prof. Dr. Önder Göçgün'e Armağan Denizli 2013, s.621-631

BEŞTAŞ İzzettin, "II. Meclis'te Mardin Milletvekilleri Ve Faaliyetleri" (2018), İlk Çağlardan Modern Döneme T a r i h t e n İ z l e r, Editör: KARACOŞKUN M. Doğan, KÖSE Osman, Basım sayısı:1, Sayfa Sayısı 845, ISBN:978-605-7501-36-3, Türkçe (Bilimsel Kitap), (Yayın No: 5060290), Berikan Yayınevi 2018

COMPARISON OF SOME BIOMOTORICAL CHARACTERISTICS OF TENNIS AND BADMINTON ATHLETES IN ADOLESCENT

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ABSTRACT

This study was conducted to compare the selected basic biomotanical characteristics of athletes performing in racquet sports. Research training at least 3 days per week and regularly engaged in the 10-12 age range undergone a serious injury in the last 6 months, the tennis branch (N=30) and badmititon branch (N=30), a total of 60 male athlete voluntarily participated. The scope of the research to the athletes demographic characteristics of age, height and body weight values of the basic motoric features of the main scope of the study with flexibility, hand grip strength, standing long jump, arm movement speed, vertical jump, and the plank of the measurements were taken in accordance with the test protocol. The obtained measurement values were analyzed using the SPPS 22 package program. The normality analysis of the data was performed using the Shapiro-Wilk test, and the t test was used in independent groups to determine the difference dec the groups. The obtained values were accepted as mean and standard deviation (x±ss), and the significance level was $p<0.05$. The obtained values were accepted as mean and standard deviation (x±ss), and the significance level was $p<0.05$. The flexibility of athletes as a result of the research, the arm movement speed, vertical jump, and the measurement value of the parameter plank detected in a statistically significant difference ($p>0.05$), a statistically significant difference in the values of hand grip strength and standing long jump were detected ($p>0.05$). As a result, it was reflected in our research results that some motoric characteristics of athletes performing in Tennis and Badminton branches are similar and some characteristics differ. The differences can be explained by the result that the field dimensions of the tennis and badminton branches, the materials used and the impact levels in the training programs applied are different.

Keywords: Adolescent, Tennis, Badminton, Biomotorical

ADOLESAN DÖNEM TENİS VE BADMİNTON SPORCULARININ BAZI BİYOMOTORİK ÖZELLİKLERİNİN KARŞILAŞTIRILMASI

ÖZET

Bu çalışma, raket sporlarında performans sergileyen sporcuların seçilmiş temel biyomotorik özelliklerinin karşılaştınlması amacı ile yapılmıştır. Araştırmaya haftada en az 3 gün düzenli olarak antrenman yapan ve son 6 ay içerisinde ciddi olarak sakatlık geçirmemiş 10-12 yaş aralığında, tenis branşında (N=30) ve badmitıton branşında (N=30) olmak üzere toplam 60 erkek sporcu gönüllü olarak katılım sağlamıştır. Araştırma kapsamında sporcuların demografik özelliklerden yaş, boy uzunluğu ve vücut ağırlığı değerleri ile çalışmanın ana kapsamını oluşturan temel motorik özelliklerden esneklik, el kavrama kuvveti, durarak uzun atlama, kol hareket hızı, dikey sıçrama ve plank ölçümleri, test protokollerine uygun şekilde alınmıştır. Elde edilen ölçüm değerleri SPPS 22 paket programı kullanılarak analiz edilmiştir. Verilerin normallik analizi Shapiro-Wilk testi ile yapılarak, gruplar

arasındaki farkın belirlenmesinde ise bağımsız gruplarda t testi kullanılmıştır. Elde edilen değerler ortalama ve standart sapma (x̄±ss), anlamlılık düzeyi ise p<0.05 olarak kabul edilmiştir. Yapılan araştırma sonucunda sporcuların esneklik, kol hareket hızı, dikey sıçrama ve plank parametrelerine ait ölçüm degerlerinde istatistiksel olarak anlamlı bir farklılık tespit edilirken (p>0.05), el kavrama kuvveti ve durarak uzun atlama değerlerinde ise istatistiksel olarak anlamlı bir farklılık tespit edilmemiştir (p>0.05). Sonuç olarak, Tenis ve Badminton branşlarında performans sergileyen sporcuların bazı motorik özelliklerinin benzerlik, bazı özelliklerin ise farklılık gösterdiği araştırma sonuçlarımıza yansımıştır. Farklılık göstren özelliklerin tenis ve badminton branşlarına ait saha ölçülerinin, kullanılan materyallerin ve uygulanan antrenman programlarındaki etki düzeylerinin farklı olmasından kaynaklandığı sonucu ile açıklanabilir.

Anahtar Kelimeler: Adolesan, Tenis, Badminton, Biyomotorik

GİRİŞ

Dünya Sağlık Örgütü tarafından (DSÖ) 10-19 yaş aralığı olarak tanımlanan adölesan dönem, büyüme ve gelişmenin devam ettiği fiziksel, sosyal, bilişsel ve psikolojik değişikliklerin yaşandığı bir zaman dilimi olarak nitelendirilmektedir (Parlaz ve ark., 2012: Malina, 2007). Bu dönemde meydana gelen değişimlerden birisi hızlı fiziksel büyümedir (Gündüz, 2017). Özellikle antropometrik ve bazı vücut kompozisyon değerlerinin kısa bir zaman diliminde erişkin hayattaki değerlere ulaştığıda gözlenmektedir (Kınık, 2000). Bu dönemde meydana gelen değişimler sportif etkinliklerle desteklenerek daha sağlıklı bir yapının ortaya çıkması sağlanabilir (Yurt ve ark., 2012). Bu bakımdan çocukların bu çağda bireysel ve takım sporlarına yönlendirilmesi gelişimlerinde olumlu sonuçlar yaratabilir. Bireysel olarak, bugün dünyada miyonlarca taraftarı ve uygulayıcı olan tenis, ortalama 75 milyondan fazla kişi tarafından kitle ve zirve sporu olarak oynanan (Pluim ve ark., 2007) ve dünyada milyonlarca kitleye ulaşmış bir rekabet sporudur (Fernandez-Fernandez, ve ark., 2013). Farklı bir raket sporu ise badmintondur. Badminton, iki ya da dört kişinin karşılıklı topu düşürmeden raket ile vuruş esasına dayanan olimpiyatlarda da oynanan bir spor branşıdır (Gülmez, 2007). Raket sporları doğru bir teknikle uygulandığında, başarıda biyomotorik özelliklerin etkisi oldukça büyüktür. Tenis ve badminton branşlarında denge, esneklik, reaksiyon zamanı, statik kuvvet, çeviklik, patlayıcı kuvvet, kol hareket hızı ve sürat gibi parametreler tekniğin verimli bir şekilde uygulanmasında en önemli unsurlardır (Cheng ve ark.,2006: Pişkin, 2018). Bu açıdan sunulan bu çalışma adolesan dönem tenis ve badminton sporcularının bazı biyomotorik özelliklerinin karşılaştırılması amacı ile yapılmıştır.

MATERYAL VE METOT

Araştırmaya haftada en az 3 gün düzenli olarak antrenman yapan ve son 6 ay içerisinde ciddi bir alt ve üst ekstremite sakatlığı geçirmemiş 10-12 yaş aralığında, tenis branşında (N=30) ve badmitıton branşında (N=30) olmak üzere toplam 60 erkek sporcu gönüllü olarak katılım sağlamıştır. Araştırma kapsamında sporcuların demografik özelliklerden yaş, boy uzunluğu ve vücut ağırlığı değerleri ile çalışmanın ana kapsamını oluşturan temel motorik özelliklerden esneklik, el kavrama kuvveti, durarak uzun atlama, kol hareket hızı, dikey sıçrama ve plank ölçümleri, test protokollerine uygun şekilde alınarak kaydedilmiştir. Elde edilen ölçüm değerleri SPPS 22 paket programı kullanılarak analiz edilmiştir. Verilerin normallik analizi Shapiro-Wilk testi ile yapılarak, gruplar arasındaki farkın belirlenmesinde ise bağımsız gruplarda t testi kullanılmıştır. Elde edilen değerler ortalama ve standart sapma (x̄±ss), anlamlılık düzeyi ise p<0.05 olarak kabul edilmiştir.

BULGULAR

Tablo 1. Araştırmaya katılan sporculara ait demografik özellikler.

Değişken	Grup	N	Min	Maks	x̄ ±ss
Yaş (Yıl)	Tenis	30	10	12	11,50±,797
	Badminton	30	10	12	11,43±,899
Boy Uzunluğu (cm)	Tenis	30	154,00	165,00	160,00±3,43
	Badminton	30	140,00	170,00	159,80±7,20
Vücut Ağırlığı (kg)	Tenis	30	52,00	59,00	54,66±2,60
	Badminton	30	49,00	60,00	55,56±3,63

Tablo 1 incelendiğinde incelendiğinde teniscilerin yaş, boy uzunluğe ve vücut ağırlığı ortalamaları sırasıyla 11,50±797 yaş/yıl, 160,00±899 cm, 54,66±2,60 kg olarak tespit edilirken, badmintoncuların ise 11,43±899 yaş/yıl, 159±7,20 cm ve 55,56±3,63 kg'dır.

Tablo 2. Araştırmaya katılan sporcuların biyomotorik özelliklerine değerlerine ait dağılım

Değişkenler (N=60)	Grup	N	Mean	SS	t	p
Esneklik (cm)	Tenis	30	21,58	3,26	2,294	**,030**
	Badminton	30	19,12	2,41		
El Kavrama Kuvveti (kg)	Tenis	30	41,50	5,21	-,278	,774
	Badminton	30	40,83	6,94		
Durarak Uzun Atlama (cm)	Tenis	30	155,66	9,21	-,047	,963
	Badminton	30	155,87	13,12		
Kol Hareket Hızı (sn)	Tenis	30	13,74	1,35	3,028	**,006**
	Badminton	30	12,14	1,39		
Dikey Sıçrama (cm)	Tenis	30	37,50	3,28	4,134	**,000**
	Badminton	30	43,31	3,94		
Plank (sn)	Tenis	30	76,86	8,96	2,975	**,013**
	Badminton	30	63,66	14,48		

p<.0.05

Tablo incelendiğinde tenis ve badminton branşlarında performans sergileyen sporcuların esneklik, kol hareket hızı, dikey sıçrama ve plank değerlerinde istatistiksel olarak anlamlı farklılık tespit edilmişken ($p<0,05$), el kavrama kuvveti ve durarak uzun atlama parametrelerinde istatistiksel olarak anlamlı bir farklılık tespit edilmemiştir.

TARTIŞMA VE SONUÇ

Adolesan dönem tenis ve badminton sporcularının bazı biyomotorik özelliklerinin karşılaştırılması amacı ile yapılan bu çalışmada motorik özellikler bakımında benzerliklerin ve farklılıkların olduğu araştırma sonuçlarımıza yansımıştır. Farklılık gösteren özelliklerin tenis ve badminton branşlarına ait saha ölçülerinin, kullanılan materyallerin ve uygulanan antrenman programlarındaki etki düzeylerinin farklı olmasından kaynaklandığı sonucu ile açıklanabilir. Bulgularımız ile alanda yapılan çalışmalar karşılaştırıldığında temel motorik özellikler bakımından benzerliklerin ve farklılıkların olduğu görülmektedir. Bulgularımızı genel olarak destekleyen bir araştırmada Özden (2019) raket sporlarında

reaksiyon ve çeviklik arasındaki ilişkiyi incelemek amacı ile yapmış olduğu çalışmada masa tenisi ve tenis branşında performans sergileyen sporcuların badminton branşındaki sporculara göre daha iyi olduğunu ve bazı temel motorik özellikler yönünden de teniscilerin daha iyi sonuçlar elde ettiğini bildirmiştir. Yapılan farklı bir çalışmada ise Ağaoğlu ve Ergin (2017) 9-14 yaş grubu kadın badminton sporcularının bazı temel motorik özellikleri bakımından farklılıklar tespit ettiğini açıklamıştır. Can (2007) 10–12 yaş grubundaki erkek tenisçiler, masa tenisçiler ve aynı yaş grubundaki sedanterlerin reaksiyon zamanlarının karşılaştırılması amacı ile yapmış olduğu çalışmada tenis ve masa tenisi sporcularının temel motorik özelliklerden biri olan reaksiyon zamanları arasında da istatistiksel açıdan anlamlı fark sonuçlarına yansımıştır. Literatür incelendiğinde bulgularımızı destekleyen farklı araştırmalar mevcuttur. Sonuç olarak, tenis ve badminton branşlarında performans sergileyen sporcuların bazı motorik özelliklerinin benzerlik, bazı özelliklerin ise farklılık gösterdiği araştırma sonuçlarımıza yansımıştır. Farklılık gösteren özelliklerin tenis ve badminton branşlarına ait saha ölçülerinin, kullanılan materyallerin ve uygulanan antrenman programlarındaki etki düzeylerinin farklı olmasından kaynaklandığı sonucu ile açıklanabilir.

KAYNAKÇA

Ağaoğlu S.A, Ergin R. (2017). 9-14 Yaş badmintoncularda çeviklik, reaksiyon zamanı ve denge parametrelerinin incelenmesi. Internatıonal Journal of Sports Exercıse & Traınıng Scıences, 3(4), 109–119.

Akçan-Parlaz, E. Tekgül, N. Karademirci, E. ve Öngel, K. (2012). Ergenlik dönemi: fiziksel büyüme, psikolojik ve sosyal gelişim süreci. Turkish Family Physician, 3(4), 10-16.

Can, S. (2007). 10–12 Yaş Grubundaki Erkek Tenisçiler, Masa Tenisçiler ve Aynı Yaş Grubundaki Sedanterlerin Reaksiyon Zamanlarının Karşılaştırılması. Yüksek Lisans Tezi, Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Ankara

Cheng, Y. Whang, Y., & Liang C. (2006). 'Reaction time and competitive ability of badminton players' Zhejiang Sport Sci.28: 60–63.

Fernandez-Fernandez, J., Ellenbecker, T., Sanz-Rivas, D., Ulbricht, A., ve Ferrauti, A. (2013). Effects of a 6-week junior tennis conditioning program on service velocity. Journal of Sports Science and Medicine, 12(2), 232-239.

Gülmez, İ. (2007). Badminton öğretimi, Ankara: Badminton Federasyonu Yayınları, s. 1-3-5-16-17.

Gündüz, E., 'Ergenlik Döneminde Futbol Oynayan Sporcuların Sportif Performans Düzeylerinin İncelenmesi.' İstanbul Gelişim Üniversitesi Sağlık Bilimleri Enstitüsü, Yüksek Lisans Tezi, İstanbul, (2017).

Kınık E. Adolesan Dönemde Fiziksel Büyüme ve Cinsel Gelişme. Katkı Pediatri Dergisi Adolesan Sayısı 2000;21(6):720-740.

Malina, R.M. (2007). ''Physical Fitness of Children and Adolescents in The United States: Status and Secular Change''. Med Sport Sci, 50, 67-90.

Özden, A. (2019). Raket Sporlarında Reaksiyon ve Çeviklik Arasındaki İlişkinin İncelenmesi, Ordu Üniversitesi, Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı, Yüksek Lisans Tezi, Ordu.

Parlaz, E. A., Tekgül, N., Karademirci, E., & Öngel, K. (2012). Ergenlik dönemi: fiziksel büyüme, psikolojik ve sosyal gelişim süreci. Turkish Family Physician, 3(2), 10-16.

Pişkin, N. E. (2018). 8 haftalık kort tenis antrenmanının 10-12 yaş aralığındaki çocuklarda bazı motorik özellikler ile dikkat gelişimleri üzerine etkisi. Yüksek Lisans Tezi, Niğde Ömer Halisdemir Üniversitesi, Sosyal Bilimler Enstitüsü, Niğde.

Pluim, B.M., Miller, S., Dines, D., Renstrom, P.A., Windler, G., Norris, B., Stroia, K., Donaldson, A., ve Martin, K. (2007). Sport science and medicine in tennis. British Journal of Sports Medicine, 41(11), 703-704.

Yurt S, Bulduk S, Gür K, Özel L, Ardıç E. Adölesanların Beslenme ve Egzersiz Davranışlarının Belirlenmesi. 15. Ulusal Halk Sağlığı Kongresi, Bursa, 2012.

COMPARISON OF RELATIVE AGE AVERAGES WITH SOME BODY COMPOSITION VALUES IN ADOLESCENT CHILDREN

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ABSTRACT

The aim of this study is to compare the relative age averages (BDI) of adolescent children with some body composition values. The study group consists of a total of 50 female students in the age group of 10 who have been educated in Çanakkale and have not been involved in any sporting activities before. The children who participated in the study of the physical properties of age, height, body weight, body mass index, body composition values with values of lean body mass, body fat ratio, and body fat percentage values has been determined by bioelectrical impedance analysis method. In the analysis of the obtained data, SPSS 22 package program was used.

The Shapiro-Wilk test was used for the normal distribution of the data. In order to determine the difference between the groups, t-test dec used in independent groups. The Shapiro-Wilk test was used for the normal distribution of the data. In order to determine the difference between the groups, t-test dec used in independent groups. The measurement results were presented as mean and standard deviation. The significance level was accepted as $p<0.05$. As a result of the dec, no significant differences were found in the body composition values between the groups. When the results were examined, the body composition values of the children born in the first quarter were numerically higher than the values of the individuals born in the other quarter.

As a result, it was reflected in our research results that there are similarities in some body composition values of children in different birth quarters. In particular, the fact that children born in the first quarter are faster in terms of development than children born in the second quarter is considered to be the result of the numerical difference that has arisen.

Keywords: Adolescent, Relative Age, Body Composition

ADOLESAN DÖNEM ÇOCUKLARDA BAĞIL YAŞ ORTALAMALARININ BAZI VÜCUT KOMPOZİSYON DEĞERLERİ İLE KARŞILAŞTIRILMASI

ÖZET

Bu çalışmanın amacı adolesan dönem çocuklarda bağıl yaş ortalamalarinin (BYO) bazı vücut kompozisyon değerleri ile karşılaştırılmasıdır. Çalışma grubunu Çanakkale İl Milli Eğitim Müdürlüğü'ne bağlı okullarda eğitim gören ve daha önce herhangi bir sportif faaliyet içerisinde yer almamış 10 yaş grubunda toplam 50 kız öğrenci oluşturmaktadır. Çalışmaya katılan çocukların fiziksel özelliklerinden yaş, boy uzunluğu, vücut ağırlığı, vücut kitle indeksi değerleri ile vücut kompozisyon değerlerinden yağsiz vücut kütlesi, vücut yağ orani ve vücut yağ yüzdesi değerleri biyoelektriksel impedans analiz yöntemi ile tespit edilerek kaydedilmiştir. Elde edilen verilerin çözümlenmesinde SPSS 22 paket programı kullanılmıştır. Verilerin normal dağılım için Shapiro-Wilk testi kullanılmıştır. Gruplar arasındaki farkın belirlenmesinde, bağımsız gruplarda t testi kullanıldı. Verilerin normal dağılım için Shapiro-Wilk testi kullanılmıştır. Gruplar arasındaki farkın belirlenmesinde, bağımsız gruplarda t testi kullanıldı. Ölçüm sonuçları, ortalama ve standart sapma olarak sunuldu. Anlamlılık düzeyi $p<0.05$ olarak kabul edildi. Yapılan araştırma sonucunda gruplar arası vücut komposizyon

değerlerinde anlamlı bir farklılık tespit edilmemiştir. Sonuçlar incelendiğinde ilk çeyrekte doğan çocukların vücut kompozisyon değerleri numerik olarak diğer çeyrekte dünyaya gelen bireylerin değerlerinden daya yüksektir.
Sonuç olarak farklı doğum çeyreklerinde yer alan çocukların bazı vücut kompozisyon değerlerinde benzerliklerin olduğu arştırma sonuçlarımıza yansımıştır. Özellikle ilk çeyrekte doğan çocukların, ikinci çeyrekte doğan çocuklara göre gelişim bakımından hızlı olması ortaya çıkan numeriksel farkın sonucu olarak açıklanabilir.

Anahtar Kelimeler: Adolesan, Bağıl Yaş, Vücut Kompozisyonu.

GİRİŞ

Çocukluk ile yetişkinlik dönemi arasındaki fiziksel, psikolojik veya sosyolojik alanlarda değişim yaşayan kişiye adolesan denir. Adolesan dönem fiziksel ve duygusal olarak başlayan süreçler sonunda psikososyal olgunlaşma gösteren bu duruma bağlı olarak bireyin bağımsızlığını ve gerçek kimliğini kazandığı, yetişkinliğe adım attığı bir dönem olarak ifade edilmektedir (Derman, 2008). Gelişime ve büyümeye bağlı olarak, bu dönemde gözlenen bazı değişiklikler aynı yaş grubu içerisinde anlamlı farklılıklar gösterebiliyor. Bu durum son zamanlarda bilim insanları tarafından incelenen önemli bir konu olmuştur (Erdoğan ve ark., 2020). Eğitim alanında ve sportif faaliyetlerde gelişime bağlı değişikliklerin etki düzeyinin kontrol edilebilmesi için çocuklar yaş gruplarına kategorize edilerek sınıflandırılır (Roberts ve Fairclough, 2012: Şahin, 2017). Bu gruplar zihinsel, fiziksel ve psikolojik bakımdan önemli çeşitlilikten kaynaklı olarak bir yaş skalasına göre ayarlanır. Yine de aynı yıl içerisinde ocak ayında doğmuş bir çocuk ile aralık ayında doğmuş bir bireyin ortalama bir yaş daha büyük olma durumu eğitim, bilişsel alan, fiziksel gelişim, beden eğitimi ve sportif performans konularında farklıkların yaşınmasına neden olmuştur (Bedard ve Dhuey, 2006: Gledhill ve ark.,2022: Wienen ve ark., 2018: Andronikos ve ark., 2016: Brazo-Sayavera ve ark., 2017: Baker ve ark., 2009). Bu durum ise bireyin hangi ayda dünyaya geldiğinin önem ve etkisine göre, Bağıl Yaş Etkisi (BYE) olarak nitelendirilmiştir. Aynı yılda erken doğmanın avantajı "Bağıl Yaş Etkisi'' olarak ifade edilmektedir.

Bu bakımdan literatür incelendiğinde bağıl yaş faktörünün genellikle sporcu gruplar üzerinde yoğunlaştığı görülmektedir. Sunulan bu araştırma ise daha önce herhangi bir sportif anlamda geçmişi olmayan bireylerin bağıl yaş ortalamalarinin (BYO) bazı vücut kompozisyon değerleri ile karşılaştırılması amacı ile yapılmıştır.

MATERYAL VE METOD

Çalışma grubunu Çanakkale İl Milli Eğitim Müdürlüğü'ne bağlı okullarda eğitim gören ve daha önce herhangi bir sportif faaliyet içerisinde yer almamış 10 yaş grubunda toplam 50 kız öğrenci oluşturmaktadır. Çalışmaya katılan çocukların demografik özelliklerinden yaş, boy uzunluğu, vücut ağırlığı, vücut kütle indeksi değerleri ile vücut kompozisyon değerlerinden yağsiz vücut kütlesi, vücut yağ orani ve vücut yağ yüzdesi değerleri biyoelektriksel impedans analiz yöntemi ile tespit edilerek kaydedilmiştir. Cihazın kullanım kılavuzundaki yönergeler takip edilerek, kişisel bilgiler (yaş, cinsiyet, boy) yüklendi. Gönüllünün hafif kıyafetlerle, vücuttaki metal nesneler, ayakkabı ve çoraplar çıkararak cihaza çıkması sağlandı ve ölçümler gerçekleştirildi. Elde edilen verilerin çözümlenmesinde SPSS 22 paket programı kullanılmıştır. Verilerin normal dağılım için Shapiro-Wilk testi kullanılmıştır. Gruplar arasındaki farkın belirlenmesinde, bağımsız gruplarda t testi kullanıldı. Ölçüm sonuçları, ortalama ve standart sapma ($\bar{x}\pm ss$) olarak sunuldu. Anlamlılık düzeyi $p<0.05$ olarak kabul edildi.

BULGULAR

Tablo 1. Araştırmaya katılan çocukların demografik özelliklerine ait dağılım.

Değişken	Doğum Ayı	N	$\bar{x}\pm ss$
Boy Uzunluğu (cm)	1.Yarıyıl	25	138,56±5,40
	2.Yarılıl	25	135,25±7,35

Vücut Ağırlığı (kg)	1.Yarıyıl	25	43,35±8,40
	2.Yarılıl	25	40,44±9,50
Beden Kütle İndeksi (kg/m^2)	1.Yarıyıl	25	23,16±5,72
	2.Yarılıl	25	20,41±7,56

Not: *1.Yarıyıl: İlk altı ay (Ocak- Haziran) / 2.Yarıyıl: İkinci altı ay (Temmuz-Aralık)*

Tablo 2. Araştırmaya katılan çocukların vücut komposizyon değerlerine ait dağılım

Değişkenler	Doğum Ayı	N	x̄±ss	t	p
Yağsız Vücut Kütlesi	1.Yarıyıl	25	29,02±3,31	,-1,853	,064
	2.Yarılıl	25	28,71±3,79		
Vücut Yağ Oranı	1.Yarıyıl	25	2,50±12,28	,-1,469	,142
	2.Yarılıl	25	2,08±13,55		
Vücut Yağ Kütlesi	1.Yarıyıl	25	13,55±6,35	-1,561	,153
	2.Yarılıl	25	12,61±8,55		

Not: *1.Yarıyıl: İlk altı ay (Ocak- Haziran) / 2.Yarıyıl: İkinci altı ay (Temmuz-Aralık)*

Tablo 2 incelendiğinde katılımcıların yağsız vücut kütlesi, vücut yağ oranı ve vücut yağ kütlesi değerlerinde istatistiksel olarak anlamlı bir farklılık tespit edilemeiştir.

TARTIŞMA VE SONUÇ

Adolesan dönem çocuklarda bağıl yaş ortalamalarinin bazı vücut kompozisyon değerlerinin, biyoelektrik impedans analizi yöntemi ile belirlenerek, bağıl yaş durumları ile karşılaştırılması amaçlanmıştır. Çocuklarda klinik uygulamalarda ve bilimsel çalışmalarda sıklıkla kullanılan Biyoelektrik İmpedans Analizi (BİA) yöntemleri vücudun farklı bileşenlerini ve segmentlerini ayrı ayrı ölçme ve değerlendirmeye olanak sağlamaktadır (Brantlov ve ark.,2017: Vermeiren ve ark 2021). Araştırma sonuçlarımız incelendiğinde vücut kompozisyon değerleri arasında anlamlı düzeyde farklılık olmadığı görülmektedir. Ancak ilk altı ayda doğan çocukların vücut kompozisyon değerleri numerik olarak ikinci yarıyılda dünyaya gelen çocukların değerlerinden daya yüksek olduğu sonucu alanda yapılan farklı araştırma sonuçlarını destekler niteliktedir. Wattie ve ark (2008) ve Sierra-Diaz ve ark, (2017). yılın ilk iki çeyreğinde doğan çocukların, yılın son iki çeyreğinde doğan çocuklara göre aynı tür çalışmada daha avantajlı oldukları gözlenmiştir. Delorme ve ark (2019) aynı yıl içerisinde daha geç doğan çocuklardaki gelişim de daha geç gerçekleştiğini açıklarken, farklı bir çalışmada Erduğan ve ark (2020) 11-12 yaş erkek çocukların bağıl yaş özellikleri ile ilgili yapmış oldukları çalışmada bazı vücut kompozisyon değerlerinin yılın ilk altı ayında doğan çocuklarda daha yüksek olduğunu tespit etmiştir. Sonuçlarımız destekler nitelikte olan diğer bir çalışmada ise, Wattie ve ark (2008) özellikle gelişim dönemlerinde ortaya çıkan fiziksel farklılıkların kızlarda 12-14 yaş olduğunu bildirmiştir. Bulgularımızda vücut kompozisyon değerlerinde anlamlı bir farklılığın çıkmaması çocukların henüz 10 yaşında olmasından kaynaklı olduğu durumu ile açıklanabilir. Vücut yoğunluğu, yağ yüzdesi ve yağsız vücut yüzdesinde meydana gelen oransal değişimler birçok bilimsel çalışmada rapor edilmiştir. "Altın standart" olarak kabul edilen hidrostatik tartım metodu ile boylamsal takip edilen normal çocuklarda vücut yağ yüzdesi 14 yaşından sonra istatistiksel olarak azalırken 15 yaşından sonra yağsız vücut kütlesinde artma rapor edilmiştir (Maynard ve ark., 2001; Meleleo ve ark., 2017; Van Eyck ve ark., 2021). Alanda yapılan çalışmalar sonuçlarımızı destekler niteliktedir.

Sonuç olarak farklı doğum zamanlarında yer alan çocukların bazı vücut kompozisyon değerlerinde benzerliklerin olduğu arştırma sonuçlarımıza yansımıştır. Özellikle aynı yılın ilk yarısında doğan çocukların, ikinci yarıyılda doğan çocuklara göre gelişim bakımından hızlı olması ortaya çıkan numeriksel farkın sonucu olarak açıklanabilir.

KAYNAKLAR

Andronikos, G., Elumaro, A. I., Westbury, T., & Martindale, R. J. J. J. (2016). Relative age effect: Implications for effective practice. Journal of Sports Sciences, 34(12), 1124–1131.

Baker, J., Schorer, J., Cobley, S., Schimmer, G., & Wattie, N. (2009). Circumstantial development and athletic excellence: The role of date of birth and birthplace. European Journal of Sport Science, 9(6), 329–339.

Bedard, K., & Dhuey, E. (2006). The persistence of early childhood maturity: International evidence of long-run age effects. The Quarterly Journal of Economics, 121(4), 1437–1472.

Brantlov, S., Ward, L. C., Jødal, L., Rittig, S., & Lange, A. (2017). Critical factors and their impact on bioelectrical impedance analysis in children: a review. Journal of Medical Engineering & Technology, 41(1), 22-35.

Brazo-Sayavera, J., Martínez-Valencia, M. A., Müller, L., Andronikos, G., & Martindale, R. J. J. (2017). Identifying talented track and field athletes: The impact of relative age effect on selection to the Spanish National Athletics Federation training camps. Journal of Sports Sciences, 35(22), 2172–2178.

Derman O. (2008). Ergenlerde Psikososyal Gelişim. "Adolesan Sağlığı, II. İ.Ü. Cerrahpaşa Tıp Fakültesi Sürekli Tıp Eğitimi Etkinlikleri" Sempozyum Dizisi No: 63. 9-21.

Erdoğan, Y., Pekel, H. A., & Bağcı, E. (2020). 11-12 Yaşındaki Erkek Çocukların Bazı Fiziksel ve Motorik Özelliklerinin Bağıl Yaş Etkisi Açısından İncelenmesi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 25(4), 331-347.

Erdoğan, Y., Pekel, H. A., & Bağcı, E. (2020). 11-12 Yaşındaki Erkek Çocukların Bazı Fiziksel ve Motorik Özelliklerinin Bağıl Yaş Etkisi Açısından İncelenmesi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 25(4), 331-347.

Gledhill, J., Ford, T., & Goodman, R. (2002). Does season of birth matter? The relationship between age within the school year (Season of Birth) and educational difficulties among a representative general population sample of children and adolescents (aged 5–15) in Great Britain. Research in Education, 68(1), 41–47.

Maynard, L.M., Wisemandle, W., Roche, A.F, Chumlea, W.C., Guo, S.S. & Siervogel, R.M. (2001). Childhood body composition in relation to body mass index. Pediatrics, 207(2), 344-350.

Meleleo, D., Bartolomeo, N., Cassano, L., Nitti, A., Susca, G., Mastrototaro, G., ... & Ciccone, M. M. (2017). Evaluation of body composition with bioimpedence. A comparison between athletic and non-athletic children. European Journal of Sport Science, 17(6), 710-719.

Roberts, S. J., & Fairclough, S. J. (2012). The influence of relative age effect in the assessment of high school students in physical education in the United Kingdom. Journal of Teaching in Physical Education, 31(1), 56–70.

Şahin, L., & Okan, İ. (2017). Futbol milli takım seçmelerinde bağıl yaş etkisi ve fiziksel performans. Yayınlanmış Doktora tezi, Gazi Üniversitesi Beden Eğitimi ve Spor Anabilim Dalı, Ankara.

Sierra-Diaz, J. M., Villora, G. S., Vicedo, P. J. C., Olivares, S. J. (2017). Soccer and relative age effect: A walk among elite players and young players. Sports, 5(1), 5.

Van Eyck, A., Eerens, S., Trouet, D., Lauwers, E., Wouters, K., De Winter, B. Y., and Ledeganck, K. J. (2021). Body composition monitoring in children and adolescents: reproducibility and reference values. European Journal of Pediatrics, 1-12.

Vermeiren, E., Ysebaert, M., Van Hoorenbeeck, K., Bruyndonckx, L., Van Dessel, K., Van Helvoirt, M., ... & Van Eyck, A. (2021). Comparison of bioimpedance spectroscopy and dual energy X-ray absorptiometry for assessing body composition changes in obese children during weight loss. European Journal of Clinical Nutrition, 75(1), 73-84.

Wattie, N., Cobley, S.,and Baker, J. (2008). Towards a unified understanding of relative age effects. Journal of Sports Sciences, 26(3), 1403-1409

Wienen, A. W., Batstra, L., Thoutenhoofd, E., de Jonge, P., Bos, E. H., & Neuenschwander, R. (2018). Teachers' perceptions of behavioral problems in Dutch primary education pupils: The role of relative age. (R Neuenschwander, Ed.). PLoS One, 13(10), e0204718.

THE EDUCATIONAL REQUIREMENT OF ESTABLISHING A SCHOOL SEED BANK IN THE CONTEXT OF THE IMPORTANCE OF SEEDS IN A SUSTAINABLE ECOLOGICAL CYCLE

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ABSTRACT

The study covers the protection of agriculture by protecting the seeds of a sustainable ecological cycle and the responsibilities of schools for this. Thus, within the scope of the study, the necessity of school seed banks, which should be established in schools, in a sustainable ecological cycle and at the same time their contribution to education are evaluated.

It is foreseen to carry out the necessary conservation studies to transfer the existing agricultural characteristics and products to future generations. In addition, it is aimed to protect the ancestral seeds as a legacy from past to present, so that agricultural products can be included in a sustainable ecological cycle from today to tomorrow. Therefore, in the study, the benefit of establishing a bank in schools is mentioned to collect, protect and transfer seeds in a sustainable ecological cycle.

Each school can create its library, as well as a seed bank. Thus, with the contributions of the students, the diversity and number of seeds of the bank will increase day by day, and at the same time, information will be provided to the students in terms of nature, ecological cycle, and sustainability.

Keywords: Ecological Cycle, Seed Bank, Nature Education.

SÜRDÜRÜLEBİLİR EKOLOJİK DÖNGÜ İÇERİSİNDE TOHUMLARIN ÖNEMİ BAĞLAMINDA OKUL TOHUM BANKASI KURULMASININ EĞİTİMDEKİ GEREKLİLİĞİ

ABSTRACT

Çalışma, sürdürülebilir ekolojik döngünün tohumları koruyarak tarımın korunmasını ve bunun için okulların sorumluluklarını kapsamaktadır. Böylece çalışma kapsamında okul içlerinde kurulması gereken okul tohum bankalarının sürdürülebilir ekolojik döngü içerisinde gerekliliği ve aynı zamanda eğitime katkısı değerlendirilmektedir.

Gelecek nesillere var olan tarım özelliklerinin ve ürünlerinin aktarılması için gerekli olan koruma çalışmalarının yapılması ön görülmektedir. Ayrıca ata tohumlarının dünden bugüne miras olarak kaldığı gibi, bugünden yarına da tarım ürünlerinin sürdürülebilir ekolojik döngü içerisinde yer alabilmesi için korunması amaçlanmaktadır. Bu nedenle, çalışmada sürdürülebilir ekolojik döngü içerisinde tohumların biriktirilmesi, korunması ve gelecek nesillere aktarılması için bir bankanın okullarda kurulmasının faydasına değinilmektedir.

Her okul kendi kütüphanesini oluşturduğu gibi, tohum bankasını da oluşturabilmektedir. Böylece, öğrencilerin de katkılarıyla bankanın gün geçtikçe tohum çeşitliliği ve adeti artacak aynı zamanda doğaya, ekolojik döngüye ve sürdürülebilirlik açısından öğrencilere de bilgi aktarımı sağlanacaktır.

Anahtar Kelimeler: Sürdürülebilirlik, Ekolojik Döngü, Tarım, Tohum Bankası, Ata Tohumu, Doğa Eğitimi.

GİRİŞ

Sürdürülebilir ekolojik döngünün sağlıklı bir şekilde korunması için doğanın korunması ve bu anlamda önemli çalışmaların yapılması gereklidir. Tarımın gelişmesi kadar, var olanın korunması ise öncelikli olmalıdır. Bu konular bağlamında yeni neslin bilgilendirilmesi, eğitilmesi ve deneyim sahibi olmalarını sağlamak çalışmanın ana unsurudur.

Tohumların sağlıklı ortamlarda korunmasını kapsayan çalışma için yapılan literatür taramasında çalışmaların çoğunun ata tohumları ile ilgili olduğu görülmektedir. Literatürde bulunan çalışmaların bu noktada yetersiz kaldığı gözlemlenmektedir.

Bu çalışma, öğrencilerin doğal ve organik ayrımı ile günümüz tohumların toplayarak biriktirilmesi ve sağlıklı ortamlarda korunması için gerekli çalışmaların yapılmasını kapsamaktadır. Tarımda yaşanan çeşitli sorunların beraberinde, gelecek nesillere var olan tohumların yetersiz kalışı, ithal edilen ve genleri ile oynanan tohumların sağlıksız oluşu gibi pek çok önemli detay ile sağlıklı ve gerekli tohumların ne şekilde toplanarak korunacağı öğrencilere öğretilmektedir.

Tarımsal sağlıklı ürünlerin nesilden nesile aktarılması için okullarda "Tohum Bankası" "Gen Bankası" kurulması, büyük bir ihtiyaç olarak son yıllarda karşımıza çıkmaktadır (Resmi Gazete, 1992, 21316). Böylece, okullarda tohum bankası kurulmasının ve bu girişimin öğrencilerin doğal hayatı tanımaları, korumaları için deneyimleyerek öğrenmeleri açısından gerekli bir adımdır.

Bu alanda tasarlanan çalışmaların ve eğitim içeriklerinin önemi, doğa eğitiminin okullarda verilmesi gereği gündeme gelmekte ve okul çağında alınan eğitimlerin hayat boyu kazanılmış bir yaklaşım olarak öğrencilerin hayatlarını şekillendirdiği düşünülmektedir. Nihayetinde öğrenciler, kazandıkları bakış açısı, bilgi ve yaklaşımlar doğrultusunda kazanımlarını hayat boyu yansıtabileceklerdir. Böylece sürdürülebilirlik bağlamında bu girişim, sadece tohumların biriktirilmesi değil ayrıca doğa, tarım ve ürünlerinin korunup, kollanması, saklanması, çoğaltılması ve yetiştirilmesi süreçlerinde de olumlu etkisini gösterecektir.

2. YÖNTEM

Okul içlerinde kurulması önerilen okul tohum bankalarının öğrencilerin doğa eğitimine katkı sağlayacağı ve deneysel bir yöntem olarak konu kapsamında etkili olacağı düşünülmektedir. Bu eğitimle düşünülen girişim, ekolojik döngü içerisinde bilgilendirici ve etkileyici donanımın sağlanması için gerekli çalışmaların yapılmasını kapsamaktadır.

Nicel araştırma yöntemi kullanılarak çalışma hazırlanmakta ve konu ile ilgili detaylı bir değerlendirme yapılmaktadır. Bu doğrultuda pilot okul olan Çamlıca Vakfı Özel Eğitim ve Uygulama Okulunda tohum bankası kurulmuş olup, ilköğretim öğrencileri ile yapılan anketlerde bu çalışmanın etkinliği ölçülmektedir.

100 öğrenci ile yapılan anketler doğrultusunda ve gözleme dayalı uygulamalı araştırmalar kapsamında öğrencilerin konuya ilgisi ve merakı dikkat çekmektedir. Ayrıca öğrencilerin öğrendikleri bilgiyi işleyebildikleri, daha fazla ilgi duymaya başladıkları gözlemlenmektedir.





3. BULGULAR

Realist modele dayandırılarak, konunun tüm unsurları bağlamında çalışma değerlendirilerek etkisi ve sürdürülebilirliği irdelenmektedir. Bu doğrultuda, Çamlıca Özel Eğitim ve Uygulama Okulundaki 100

öğrenci üzerinde yapılan anketlerde öğrencilerin çalışma önce ve sonrasında konuya ilgileri pozitif anlamda artış göstermektedir.

Çalışma öncesi yapılan anketlerde 111 öğrenciden 34'ü kız, 77' si Erkektir. Bu öğrencilerden 95 öğrenci doğaya ilgili, 16 öğrenci doğaya karşı ilgisizdi. Ancak prototip olarak kurulan okul tohum bankası sonrasında yapılan anketlerde bu oranda olumlu bir değişim görülmektedir. Öğrencilerin birinci sınıf 15, ikinci sınıf 36, Üçüncü sınıf 23, dördüncü sınıf 37 Özel Eğitim Uygulama Okulu Öğrencileridir.

Kurulan okul tohum bankası kurulduktan ve konu hakkında branş öğretmenlerinin verdiği eğitimlerden sonra ilgisiz öğrencilerin sayısı son derece düşmüştür. Böylece yapılan anketlerde 12 öğrenci doğaya ilgisiz iken, çalışmalardan sonra 2 öğrenci olarak kayıt edilmiştir.

"Tohumlar fizyolojik olarak su kaybederek dinlenmeye (…) programlanmış olduklarından, bunları derin dondurucuda -20°C'de, hatta sıvı azotta -156°C'de uzun süre muhafaza etmek mümkündür". Görülmektedir ki, "bir tohumun canlılığını muhafaza süresi 10-50 yıl, az sayıda bazı türler için daha uzundur" ve "Bakanlık yetkililerinin beyanına göre 250 bin örneğin muhafaza edileceği Tohum Gen Bankası'nda her yıl 10 bin örneğin tarlaya ekilip tohumlarının hasat edilerek tekrar korumaya" alması gerekmektedir (Çetiner, 2010, s.67). Bu nedenle ülke çapında yapılacak tüm girişimler, iklimsel değişiklik, doğal kaynakların tükenmeye yaklaşması ve ithal edilen tohumların oranını yüksek olmasına bir çözüm olarak düşünülmektedir.

Ürünler	İthalat											
	Miktarı (Ton)						Parasal Değeri (000 $)					
	2002	2012	2016	2017	2018	2019	2002	2012	2016	2017	2018	2019
Buğday	129	612	1.193	619	371	449	46	726	981	640	373	397
Arpa	0	93	106	317	455	175	0	114	175	239	423	198
Mısır	784	2.667	3.535	3.179	3.288	4.861	2.442	18.165	17.787	18.663	16.749	23.003
Çeltik	0	1	47	205	302	90	0	1	69	233	248	86
Pamuk	166	60	8	38	114	34	241	190	40	145	399	185
Ayçiçeği	177	157	1.292	752	555	536	2.190	5.299	13.260	12.032	10.814	10.046
Kanola	50	152	130	52	163	156	0	1.109	1.102	406	863	905
Soya	6	0	0	0,2	4	0	4	2,3	3,9	2,1	6,9	0,9
Yerfıstığı	0	0	0	0,02	0	0	0	0	0	10	0	0
Patates	14.147	18.997	26.386	16.255	18.746	16.564	6.826	14.822	19.286	10.857	14.087	12.250
Şeker pancarı	86	159	772	409	466	506	0	5.146	9.451	8.445	8.362	9.406
Yem bitkileri	403	2.763	6.387	9.028	7.809	2.265	426	9.880	11.111	13.474	16.045	6.971
Çim ve çayırotu	2.131	3.848	4.765	5.608	5.622	7.089	3.047	8.464	9.572	10.674	12.321	9.000
Sebze bitkileri	1.148	1.223	1.057	972	1.145	1.598	40.070	128.217	111.380	108.730	89.715	93.845
Diğerleri	0	2.429	3.813	1.854	1.130	2.881	0	5.513	7.911	4.452	8.448	11.040
Genel Toplam	**19.227**	**33.161**	**49.491**	**39.288**	**40.170**	**37.204**	**55.292**	**197.648**	**202.127**	**189.002**	**178.854**	**177.333**

Tablo 1: Türkiye'nin İthal Ettiği Tohum Miktarı (ton) ve Değerleri (1.000USD)

(Aktaran: TİGEM, 2019, 7. TOB)

Ülke genelinde son yıllarda çeşitli tohum buluşmalarının yapıldığı etkinliklerle konuya dikkat çekilmektedir. Yerel tohum olduğu beyan edilen çeşitli tohumlar, "Tarım ve Orman Bakanlığına teslim edilen tohumların sayısı 2019 sonu itibariyle 1.103 adede ulaşmıştır" bu çalışmanın küçük bir modeli olarak düşünülen okullarda kurulacak olan tohum bankaları aslında öğrencileri bilinçlendirmek ve bu

konuda daha fazla bilgi sahibi olmalarına vesile olmaktır. Bununla birlikte "yarısı devletin kontrolünde saklanmak ve muhafaza edilmek amacıyla Gen Bankasında koruma altına alınmış, diğer yarısı ise çoğaltılması, tanımlarının yapılması ve tescil işlemlerinin tamamlanması amacıyla TİGEM ve TAGEM'e verilmiş" olan tohumların biriktirilmesine küçük de olsa katkıda bulunulmak hedeflenmektedir (TİGEM, 2019, s.31).





Bu örnek çalışmada olduğu gibi velilerin okullar ile etkin bir ilişki içerisinde çalışmalarının da faydası görülmektedir. 'Sürdürülebilir Biyolojik Çeşitlilik İçin her öğrencimizin ve velimizin kendi yörelerinden ata tohumlarını okul tohum bankasına getirip, kendi çabalarımızla yaptığımız kompostla verimli hale getirdiğimiz topraklarımıza ekerek sürdürülebilir biyolojik çeşitliliği korumak ve ileriki nesillere aktarmayı hedeflemiş bulunmaktayız. Projenin hedeflendiği yaş grubu Özel Eğitim Uygulama Okulu (3 kademe) öğrencileridir.

3.1 RİSK

Okullarda kurulması planlanan tohum bankaları için hazırlanan prototip örnekte görülmektedir ki, tohumların saklanma koşulları dikkatli ve standart bir şekilde aynı derecede ve ortamda sabit tutulmalıdır. Aksi takdirde çalışmalar olumsuz etkilenecektir. Bu noktada, minimal bir "tohum gen bankası"nın düzenli bir şekilde okul içinde işlemesi zor ve maliyetli olacaktır.

Ayrıca her okulun diğer okul bankalarıyla ve mümkünse yurtdışındaki tohum bankalarıyla temas kurması beklenmektedir. Bilgi akışının daha verimli hale gelmesinin amaçlandığı kardeş okul tohum bankaları ile iletişimin yeterli düzeyde sağlanamaması ve bunun için gerekenlerin yerine getirilememesi risk teşkil etmektedir. Bunların başında yabancı dil yetersizliği, online toplantı yapabilmek için zoom bağlantıları için ödenecek aidatların pahalı olması, konuya yetkin öğretmenlerin her okulda görevli olmama, projede görevli olacak öğretmenlerin gerekli kurumlardan eğitim alması gereği ve bunun için okullar tarafından bir bütçe ayırlamama olasılığı başlıca risklerdendir.

3.2. MALİYET

Ülke çapında tohum bankalarının oluşturulmasının maliyetli olması, okullarda kurulması öngörülen tohum bankalarının ülke çapındaki bankaların küçük birer modeli olarak planlanmaktadır. Bu nedenden dolayı "işgücü ve maliyetin yanında, toplanan bu tohumların kendi aralarında tozlaşarak veya kendiliğinden genetiklerinde açılım olması ya da tohumların karıştırılma olasılıkları tüm gen bankaları için büyük bir risk oluşturmaktadır. Dolayısı ile bunların gerek morfolojik gerekse moleküler düzeyde çok iyi bir şekilde karakterize edilerek kayıt altına alınmaları ve tohum yenileme sırasında yinelenmeleri gerekir" (Çetiner, 2010, s.67).

Bu nedenle, bitkilerin ve tarım ürünlerinin korunması için gerekli olan noktaların, "Uluslararası Bitki Genetik Kaynakları Kurulu (IBPGR)'nun önderliğinde gözlem, kaynak toplama, muhafaza ve bilgi depolama konusunda ayrı ayrı standartlar hazırlanmıştır. Böylece bugün dünyada mevcut gen bankalarında uluslararası standartlara uyulmakta ve gen bankaları arasındaki uyum sağlanabilmektedir" (Balkaya & Yanmaz, s.25). Bu proje kapsamında çalışması uygun öğretmenlerin gerekli ön eğitimi almaları beklenmektedir.

4. SONUÇ

Görülmektedir ki tohumların biriktirilmesi ve gelecek nesillere aktarılması günümüzde son derece gerekli bir çalışmadır. Öğrencilerin bilgilendirilmesi kadar öğretmenlerin de bu konuda eğitim almaları gerekmektedir. Sadece ilkokul öğrencilerine odaklanan çalışma, kapsamlı ve detaylı bir şekilde her bölgede en az bir okul bünyesinde gerçekleştirilmesi öngörülen projenin detaylı bir değerlendirmesini sunmaktadır. Bu bağlamda sürdürülebilir ekolojik döngüsüne olumlu katkı sağlaması açısından okul tohum bankası kurulmasının ve bu kurulumun öğrenciler açısından eğitimdeki gerekliliği büyük bir boşluğu tamamlayacağı beklenmektedir.

Bu çalışma, bilgi akışını, bilgi yönetimini ve okullar arası iletişimini kuvvetlendiği gibi, yurtdışında bulunan dengi okullar ile de ilgili yeni bağlantıların kurulmasını sağlayacaktır. Böylece, çalışma kapsamında pek çok farklı açılardan öğrenciler için faydacı bir model olacağı düşünülmektedir.



KAYNAKÇA

- Balkaya, A., & Yanmaz, R. (2001). Bitki genetik kaynaklarının muhafaza imkanları ve tohum gen bankalarının çalışma sistemleri. *Ekoloji Çevre Dergisi*, *10*(39), 25-30.
- Çetiner, S. (2010). Tohum gen bankası üzerine düşünceler. *Tarla Sera Dergisi*, 64-67.
- TİGEM (Tarım İşletmeleri Genel Müdürlüğü), 2019, 2019 Yılı Tohumculuk Sektör Raporu,
- Biyolojik çeşitliliği okulda oluşturulan 'tohum bankası'nda öğreniyorlar. Erişim tarihi: 11.02.2022 Erişim adresi: https://www.aa.com.tr/tr/bilim-teknoloji/biyolojik-cesitliligi-okulda-olusturulan-tohum-bankasinda-ogreniyorlar/1694690

EVALUATION OF THE EFFECT OF DIGITAL DEVELOPMENT ON STUDENTS IN A DISTANCE EDUCATION DURING AND AFTER THE PANDEMIC PROCESS

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ABSTRACT

The study, which is about the impact of the developments in the field of education after the pandemic period on students and the developments in education, the inadequacy of digital development in distance education during the pandemic process, and the methods developed for solution in a short time are also discussed. In addition, the projects carried out on this subject and the duties of the teachers for the students to adapt to this process quickly are also mentioned. In the context of evaluating the impact of digital development on students in distance education during and after the pandemic process, the need for education to continue under all conditions and the positive effects of adapting to this process, which was caught unprepared in Turkey, and supporting education with technology are included.
It is undeniable that teachers and families, as well as students, undertake important duties in this period. The study also includes examining the current situation of the Turkish education system, which has been able to overcome this process by making significant progress under difficult conditions, its predictions, and technological innovations in education.

Keywords: Technology in Education, Education in Pandemic, Distance Education.

PANDEMİ SÜRECİNDE VE SONRASINDA UZAKTAN EĞİTİMDE DİJİTAL GELİŞİMİN ÖĞRENCİLER ÜZERİNDEKİ ETKİSİNİN DEĞERLENDİRİLMESİ

ÖZET

Pandemi sonrası eğitim alanında olan gelişmelerin öğrenciler üzerindeki etkisi ve eğitimde yaşanan gelişmeler ile ilgili olan çalışmada, pandemi süreci boyunca uzaktan eğitimde dijital gelişimin yetersizliği ve kısa zaman içerisinde çözüm amaçlı geliştirilen yöntemleri de ele alınmaktadır. Ayrıca bu konuda yapılan projelerin ve öğrencilerin bu sürece hızlı adapte olmaları için öğretmenlere düşen görevlere de değinilmektedir. Pandemi sürecinde ve sonrasında uzaktan eğitimde dijital gelişimin öğrenciler üzerindeki etkisinin değerlendirilmesi bağlamında eğitimin her şart altında devam etmesi gereği ve Türkiye'de hazırlıksız yakalanılan bu sürece en iyi şekilde uyum sağlanması ve eğitimin teknoloji ile desteklenmesinin olumlu etkilerine yer verilmektedir.
Öğrencilerin olduğu kadar öğretmenlerin ve ailelerin de bu dönemde önemli görevler üstlendiği yadsınamaz. Çalışma, bu süreci zorlu şartlarla önemli bir aşama kaydederek atlatabilen Türk eğitim sisteminin günümüzdeki durumu, gelecek ile ilgili öngörüleri ve eğitimdeki teknolojik yenilikleri çerçevesinde incelemeyi de içermektedir.

Anahtar Kelimeler: Eğitimde Teknoloji, Pandemide Eğitim, Uzaktan Eğitim**.**

GİRİŞ

Çalışmada özellikle teknolojik gelişim, pandemi sürecinde yaşananlar çerçevesinde ele alınmakta olup, diğer yandan öğrencilerin bu durumdaki yaklaşımlarına da yer verilmektedir.

Pandemi sürecinde Milli Eğitim Bakanlığı ve okulların hazırlıksız yakalanması öğrenciler üzerinde psikolojik bir baskı yaratmış ancak bu durum hızlı bir şekilde bertaraf edilerek, eğitime kalındığı noktadan devam edilmişti. Böylece, görülmektedir ki, eğitimde yapılan yenilikler, Z kuşağına uygun

gelişmeler, eğitimde evrilen yöntemler, pandemi süresi boyunca ve sonrasında eğitimde olumluya doğru yükselen bir grafiği ortaya çıkarmaktadır.

Uzaktan eğitimin ilk günlerde yaşanılan teknik sorunlar haricinde, öğrenciler kadar öğretmenler ve aileler de bu durumdan etkilendi. Ancak dijital gelişim sayesinde Milli Eğitim Bakanlığı'nın hayata geçirdiği EBA sistem ile Türk eğitim sistemi hazırlıksız yakalanılan bu süreci fırsata çevirdi.

Eğitim alanında hızla ilerleme gösteren Türk eğitim sistemi, yeni yöntemleri ve eğitim araçları ile bu dönüşüme devam etmektedir. Çalışma, yaşanan süreci en etkin şekilde değerlendiren Türk eğitim sisteminin günümüzdeki durumu, geleceği ve teknolojinin eğitimdeki yeri hakkında genel bir değerlendirme olarak hazırlanmaktadır.

2. YÖNTEM

Bu çalışma, nitel araştırma yöntemleri ile desteklenmekte ve Türk eğitim sisteminin pandemi sürecini ne şekilde atlattığını, yaşananlar doğrultusunda en etkin eğitim tekniklerini ne şekilde uyguladığına genel bir bakış niteliğindedir. Ayrıca çalışmada yapılan literatür taramasına da yer verilerek, konu kapsamında yapılan değerlendirme detaylandırılmaktadır.

3. BULGULAR

EBA TV ile yapılan eğitimlerde, "EBA'nın 1.3 milyar kez tıklandığını, bunun yüzde 69'sının mobil cihazlar, yüzde 25'unun bilgisayar, yüzde 6'inin tablet üzerinden gerçekleştirildiğini, EBA'yı aktif kullanan öğrenci sayısı 6 milyon 90 bin 383, öğretmen sayısı ise 900 bin 188" olduğunu belirtmiştir (Hürriyet, 2020).

Türkiye İstatistik Kurumu'nun 2020 verilerine göre, yıllık nüfus artış hızı 2018 yılında binde 14,5 iken, 2019 yılında 0,9 puan daha gerileyerek binde 13,8 (TÜİK, 2020) olmuştur. Ekonomik altyapılarını nüfus artışına göre düzenleyen devletler eğitim alanında değişim ve dönüşüme gitmek durumundadır. Dolayısıyla eğitim alanında dijital dönüşme gitmek şart gözükmektedir. Mevcut koşullarda pandemi döneminin hızlandırıcı bir etkisi olmuştur. Bundan sonra oluşan yeni ortamda dijital dönüşümün hız kesmeden tamamlanması gereklidir.

Bundan sonra uzaktan eğitimin hayatımızın bir parçası olacağı öngörüldüğü gibi, gelişim hızının katlanarak artacağı beklenmektedir. Böylece yetersiz olunan noktaların ivedilikle tamamlanması önerilmekte ve bu konuda ailelerin de öğrencilere destek olması beklenmektedir. "Türkiye'de gün geçtikçe nüfus yoğunluğun artması ve buna bağlı olarak ta öğrenci sayısındaki artış uzaktan eğitimi gerekli kılmaktadır. Bununla birlikte hizmet verilecek kişi sayının fazla olması hizmetlerin istenen seviyede ve kalitede olmasını zorlaştırabilmektedir" (Kuzu, 2020, 524).

3.1 OKUL SÜRECİNDE ÖĞRENCİLER HAKKINDA DEĞERLENDİRME

Pandemi sürecinin ilk aylarında önce Türkiye'de "eğitime bir hafta ara verilmiş, sonrasında ise bir süre uzaktan eğitime geçilmesine" karar verilmişti. Ardından Milli Eğitim Bakanlığı tarafından "Türkiye'de aktif olarak uygulamaya geçirilen EBA çevrimiçi sosyal eğitim platformu üzerinden ilkokul, ortaokul ve lise öğrencileri için dersler verilmeye" başlanmıştı. "Yüz yüze eğitimde olduğu gibi uzaktan eğitim sürecinde de okul- aile iş birliği çocuklarımızın eğitim sürecinde büyük önem arz etmektedir" (Kuzu, 2020, 508).

Pandemi sürecinde ve sonrasında uzaktan eğitimde dijital gelişimin öğrenciler üzerindeki etkisi, bu süreci bölümlere ayırarak değerlendirilmelidir. Okul öncesi, ortaöğretim ve ilköğretimin birbirinden farklı yönleri olduğu gibi, birbirinden oldukça zıt özellikleri de bulunmaktadır. Bu nedenle her bölümün

öğrencilerine ulaşabilmek ve eğitimlerine olumlu katkıda bulunmak için yaş aralıklarına uygun etkinlikler, ödevler ve iletişim dili geliştirmek gereklidir.

3.1.1.OKUL ÖNCESİ

Özellikle okuma ve yazmaya yeni başlayan okul öncesi öğrenciler için pandemi sürecinde yaşanan uzaktan eğitim son derece zor ilerlemiştir. Bu nedenle, öğrencilerin dikkatlerini çekebilmek ve en etkin şekilde eğitimin sağlanması için görsel etkinlikler tercih edilmektedir.

Uzaktan eğitim, okul öncesi dönem çocukları için özel bir zorluk teşkil etmekte; daha üst kademelerde eğitim gören öğrenciler için etkin bir şekilde kullanılabilen uzaktan eğitim yöntemleri, dikkat süreleri oldukça kısa olan okul öncesi dönem çocukları için çeşitli sınırlılıklar barındırmaktadır" bu da eğitimde sınırların beraberinde getirdiği noksanlığı gözler önüne sermektedir (Aktaran: Yürek, 2021, 2. McNeill, 2020).

"Uzaktan eğitim modeli ile uygulanan okul öncesi eğitimde, öğretmenin çocuk ile aynı ortamı paylaşamaması ve öğretmenin ekran karşısında çocuğu çok kısa bir süre görme sınırlılığı olması sebebiyle sağlıklı bir değerlendirme yapmanın güç olduğu görüşü öne çıkmaktadır" (Yürek, 2021, 108).

Akıllı tahtalarla pandemi öncesi başlayan teknolojinin eğitimdeki etkisi, zaman içerisinde güncellenerek varlığını etkin bir şekilde gösterdi. Okul öncesi eğitimde teknolojik aletlerin öğrencilerin kullanımına ebeveyinlerinin gözetiminde kullandırılması ve bu kullanımın eğitim odaklı olması önerilmektedir.

3.1.2. İLKÖĞRETİM

Yapılan veli görüşmelerinde yabancı dil öğreniminde uzaktan öğrenmenin zorluk yarattığı belirtilmektedir. Haznedar Abdi İpekçi İlkokulu 1050 öğrenciden 100 tane öğrencinin ailesi ile yapılan görüşmelerde görülmektedir ki bu oran oldukça yüksektir. 100 ailede 75 aile yabancı dil öğreniminde çocuklarının zorlandığını düşünmektedir.

Özellikle "uzaktan eğitim yoluyla yabancı dil öğretiminin özel öğretim yöntemleri gerektirdiği" belirtilmektedir (Adıyaman, 2001, 96). Diğer yandan ilköğretim öğrencilerinin, "yalnızlık duygusu, yapaylık ve sosyalleşme temaları" orataya çıkmakta ve "ebeveynlerin bu süreçteki rollerinin önemi ve daha fazla sorumluluk alma gereksinimleri ortaya çıkmaktadır. Diğer yandan "sosyal eşitsizlik" bu sürecin öğrenciler arasında bilgi eşitsizliğine neden olduğu görülmektedir. Ayrıca "anındalık ve duyuşsal yakınlık teması ise yine uzaktan eğitimin kuramsal deneyimlerinin mevcut uygulamalara yansıtılmasının" var olan güncel sorunlara bir çözüm önerisi olarak düşünülmektedir (Bozkurt, 2020, 15).

3.1.3. ORTAÖĞRETİM

EBA sisteminin geliştirilmesi, zenginleştirilmesi ve çeşitlendirilmesi gerektiği görülmektedir. Ortaöğretim öğrencilerinin yaşlarından dolayı ilgilerini çekmek ve odaklanlamalarını sağlamak ve bunu uzun süreli olarak stabil tutmak son derece zordur.

Yapılan çeşitli araştırmalar da bu bilginin doğruluğu teğit edilmektedir. Diğer yandan da ailelerin özellikle öğrencileri sisteme adapte edebilmek adına sistemin kullanımı ile ilgili çeşitli yayınların yani "EBA ile alakalı tanıtım ve eğitim videolarının eksik olduğu" belirtilmektedir. Diğer yandan bu videoların, eğitime etkin bir şekilde öğrencinin katılmasını belirtmesi açısından, "sistemin önemli noktaları ve bunların nasıl kullanılacağı ile ilgili gerekli detayların paylaşılmasının etkin ve verimli kullanıma katkı sağlayacağını düşünmektedir" (Türker & Dündar, 2020, 339).

3.2. MALİYET

"Mevcut koşullarda pandemi döneminin hızlandırıcı bir etkisi olmuştur. Bundan sonra oluşan yeni ortamda dijital dönüşümün hız kesmeden tamamlanması gereklidir" (Sirer, 2020, 2012).

Elbette ülke olarak altyapının iyileştirilmesi, talebe karşılık verecek bir kapasitenin kusursuz çalışmasının sağlanması beklenmektedir. Diğer yandan "bu teknolojiyi kullanma kabiliyetine sahip nitelikli öğretmen adaylarının yetiştirilmesi için eğitim fakültelerinde uzaktan eğitimle ilgili seçmeli derslerin açılması planlanabilir" (Kuzu, 2020, 524).

Diğer yandan eğitim materyallerinin geliştirilmesi, teknoloji odaklı materyallerin üretilmesi ve eşitlik gözeterek tüm okullara kullandırılması önerilmektedir. Milli Eğitim Bakanlığı'nın öngörülen çalışmalarının da bu yönde olması umutlandırıcıdır.

4. SONUÇ

Pandemi süreci ve sonrasında yaşananlar, uzaktan eğitimde dijital gelişimin öğrenciler üzerindeki etkisi gelecek için önemli birer referanstır. Bu nedenle alanda yaşananlar doğrultusunda değişim ve gelişim şarttır.

Nüfusla orantılı olarak etkilenen eğitim sisteminde dönemin gerekleri öngörülerek değişim gerekmektedir. Bu nedenle değişime açık olan devletler, eğitim alanında da başarı sağlamaktadır. Ancak eğitimdeki dönüşüm maddi sorunları da beraberinde getirmektedir. Bu nedenle devletler, eğitime önemli bir miktarda bütçe ayırmalıdır.

Uzaktan eğitimin gelecekte de sıkça kullanılacağı, gün geçtikçe gelişen eğitim yöntemleri ve teknolojinin sunduğu imkanlarla daha etkin bir eğitimin sağlanacağı düşünülmektedir. Pandemi ile birlikte hayatımıza hızla bir giriş yapan uzaktan eğitim ve beraberinde getirdiği yöntemler ile eğitim alanında önemli değişimler yaşanmakta ve gelecekte yaşanacak etkin öğretim yöntemleri için önemli birer referans sağlanmaktadır.

KAYNAKÇA

- Adıyaman, Z. (2001). "Uzaktan eğitim yoluyla yabancı dil öğretimi", The Turkish Online Journal of Educational Technology TOJET, 1, (11), ss. 92-97.
- BOZKURT, A. (2020). Koronavirüs (Covid-19) pandemisi sırasında ilköğretim öğrencilerinin uzaktan eğitime yönelik imge ve algıları: Bir metafor analizi. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi*, *6*(2), 1-23.
- Sirer, E. (2020). Eğitimin ekran üzerinden teknolojik dönüşümünde pandemi dönemi'nin etkisi. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, *16*(29), 1987-2018.
- Türker, A., & Dündar, E. (2020). COVID-19 Pandemi Sürecinde Eğitim Bilişim Ağı (Eba) Üzerinden Yürütülen Uzaktan Eğitimlerle İlgili Lise Öğretmenlerinin Görüşleri. *Milli Eğitim Dergisi*, *49*(1), 323-342.
- Yürek, E. (2021). *Okul Öncesi Eğitimde Uzaktan Eğitimin Uygulanabilirliğine Yönelik Okul Öncesi Öğretmenlerinin ve Alandaki Akademisyenlerin Görüşlerinin İncelenmesi* (Master's thesis, Fatih Sultan Mehmet Vakıf Üniversitesi, Lisansüstü Eğitim Enstitüsü).

DİĞER KAYNAKLAR

- Hürriyet (2020). EBA Rekor Tazeledi: 1.2 Milyon tık. Erişim Tarihi: 10.02.2022. https://www.hurriyet.com.tr/egitim/eba-rekor-tazeledi-1-2-milyon-tik-41512059

- TÜİK (2020). Temel İstatistikler. Erişim Tarihi: 10.02.2022. http://www.tuik.gov.tr/UstMenu.do?metod=temelist adresinden erişilmiştir.
- McNeill, J. (23 Nisan 2020). 4 tips for delivering distance learning to Pre-K students. 18.03.2021 tarihinde https://eab.com/insights/expert-insight/independentschool/tips-for-delivering-distance-learning-to-pre-k-students/ adresinden erişildi.

TÜRK MÛSİKÎSİ SES İCRÂCILIĞINDA BİR KADIN SOLİST: SABİTE TUR GÜLERMAN

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ÖZET

Türk mûsikîsinde ses icrâcısı (hânende), saz icrâcısı (sâzende) ve bestekâr olarak adından söz ettiren pek çok kadın sanatkâr bulunmaktadır. Osmanlı sarayında Harem'de yetişen kadın sanatkârlardan, cumhuriyet döneminde yetişen kadın solistlere kadar çok sayıda kadın sanatkâr mûsikî târihimizde iz bırakmışlardır. Kadın sanatkârların icrâları ve eserleri her zaman takdir edilmiştir. Bunun yanı sıra önemli bir repertuvar ve icrâ kaydını da miras olarak devretmişlerdir. Türk mûsikîsinde iz bırakan, kendisine ayrı bir değer atfedilen ve üst düzey icrâcılardan kabul edilen Sabite Tur Gülerman (1927-1989) bu sanatkârlardan biridir. Gülerman'ın sanat hayatı ya da icrâları yeterince araştırılmamış, üzerinde akademik çalışmalar yapılmamıştır. Klasik eserleri icrâ etmede gösterdiği tavır özellikleri ile geleneği, şarkı, türkü, kanto ve diğer formlarda ortaya koyduğu icrâlarında, gelenekle birlikte şan tekniklerini birleştirmesi kendisine ayrı bir tavır özelliği sağlamıştır.

Bu çalışma, Sabite Tur Gülerman'ın ses icrâlarından faydalanılarak tavır özelliğini ortaya koymak amacıyla yapılmıştır. Bu konuda yapılan ilk çalışma olması bakımından önemlidir. Ses kayıtları tarafımızdan tahlil edilerek seslendirme ve yorumlama özellikleriyle ortaya konulmuştur. Söyleme teknikleri, hançere kullanımı, süsleme teknikleri, nefes kullanımları gibi konular Gülçin Yahya İcrâ Tahlîli Yöntemi kapsamında irdelenmiştir. Çalışma, nitel araştırma olup, betimsel tarama modeliyle yapılmıştır. Çalışmanın evrenini, Sâbite Tur Gülerman'ın ses icrâları, örneklemini ulaşılabilen tüm icrâ kayıtları oluşturmaktadır. Çalışma ayrıca görev yaptığı Ankara ve İstanbul Radyosu ses kayıtlarıyla sınırlandırılmıştır.

Sabite Tur Gülerman'ın yüksek ses gürlüğü, kuvvetli rezonansı, geniş ses alanı, düzgün telaffuzu, seri hançere kullanımı, yorumlama özellikleri ve geniş repertuvarıyla XX.Yüzyılda Türk mûsikîsinin zirve kadın sanatkârlarından biri olduğu sonucuna varılmıştır. Sabite Tur Gülerman'ın özellikle taş plak ve radyo kayıtları dinlenilmesi ve taklit edilerek öğrenilmesi gereken kayıtlardır. Bu kayıtların kadın icrâcıların yetişmesinde kullanılması önerilmiştir.

Anahtar Kelimeler: Sabite Tur Gülerman, Selahattin Pınar, Kadın Hânende, Tavır, Gelenek, Sadettin Kaynak.

A WOMAN SOLOIST IN TURKISH MUSIC VOICE PERFORMANCE: SABİTE TUR GÜLERMAN

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ABSTRACT

There are many woman artists who have made a name for themselves as vocal performers (hânende), instrumentalists (sâzende) and composers in Turkish music. Many woman artists, from woman artists who grew up in the Harem in the Ottoman palace to woman soloists who grew up in the Republican era, have left their mark on our musical history. In addition to this, they handed over an important repertoire and record of performance as a legacy. One of these artists is Sabite Tur Gülerman (1927-1989), who left a mark in Turkish music, was given a special value and is considered one of the top performers. Combining singing techniques with tradition in her performances in songs, folk songs, cantos and other

forms, with the characteristics of her attitude in performing classical works, provided her with a distinctive demeanour (Tavır).
This study was carried out in order to reveal the demeanour (Tavır) feature by benefiting from the vocal performances of Sabite Tur Gülerman. It is important as it is the first study on this subject. The sound recordings were analyzed by us and revealed with their vocalization and interpretation features. Subjects such as singing techniques, use of daggers, ornamentation techniques, and use of breathing were examined within the scope of Gülçin Yahya Performance Analysis Method. The study is a qualitative research and was conducted with a descriptive survey model. The universe of the study consists of the vocal performances of Sâbite Tur Gülerman, and the sample is all the performance records that can be accessed. The study was also limited to the sound recordings of Ankara and Istanbul Radio, where she worked. It has been concluded that Sabite Tur Gülerman is one of the top woman artists of Turkish music in the 20th century with her loud voice, strong resonance, wide sound field, smooth pronunciation, use of serial daggers, interpretation features and wide repertoire. Hard record and radio recordings of Sabite Tur Gülerman are the ones that should be listened to and learned by imitating for vocal performers. The recordings of Sabite Tur Gülerman, especially the stone record and radio records, are the records that should be listened to and learned by imitating. It has been suggested that these records be used in the training of woman performers.

Keywords: Sabite Tur Gülerman, Selahattin Pınar, Woman Singer, Demeanour, Tradition, Sadettin Kaynak.

1.GİRİŞ

Türk mûsikîsinde ses icrâcısı (hânende), saz icrâcısı (sâzende) ve bestekâr olarak adından söz ettiren pek çok kadın sanatkâr bulunmaktadır. Osmanlı sarayında Harem'de yetişen kadın sanatkârlardan, cumhuriyet döneminde yetişen kadın solistlere kadar çok sayıda kadın sanatkâr mûsikî târihimizde iz bırakmışlardır. Diğer mûsikî kültürleriyle karşılaştırıldığında sayıları küçümsenmeyecek kadar fazladır. Kadın sanatkârların icrâları ve eserleri her zaman takdir edilmiştir. Bunun yanı sıra önemli bir repertuvar ve icrâ kaydını da miras olarak devretmişlerdir. Türk mûsikîsinde iz bırakan, kendisine ayrı bir değer atfedilen ve üst düzey icrâcılardan kabul edilen Sabite Tur Gülerman (1927-1989) bu sanatkârlardan biridir. Sabite Tur Gülernan (1927-1989) 4 Ocak 1927'de babası Hasan Tur'un görevli olarak bulunduğu Çorum'un Kargı ilçesinde doğdu. Ailesi çok kısa bir süre sonra İstanbul'a yerleşti. Sabite Tur Beyoğlu Ortaokulu'nu bitirdi. İlk mûsikî hocası klarnetçi Salih Orak'tır. Daha sonra Eyyübî Ali Rıza Şengel'le çalıştı; ondan uzun yıllar dersler aldı. Klasik mûsikî üslûbunu ve repertuvarını öğrendi. Ayrıca Selahattin Pınar ve Sadettin Kaynak'tan yararlandı. Sabite Tur, mûsikî icrâsına radyoda başladı. 1948'de Ankara Radyosu'na girdi. İki buçuk yıl Ankara Radyosu'nda çalıştıktan sonra İstanbul'a geldi. Tepebaşı gazinosunda da okumaya başladı; bu gazinoda Selahattin Pınar'la birlikte sahneye çıktı. Bir yandan da İstanbul Radyosu'nda okuyordu. Radyo ve sahne çalışmalarının dışında 78 ve 45 devirli plaklar doldurdu. 1970'li yıllarda televizyonda da solo konserler verdi. 27 Mayıs 1989'da İstanbul'da öldü. Mezarı Küçükyalı'dadır. Sabite Tur Ses Tiyatrosu'nun kurucularından, tiyatro oyuncusu Rafet Gülerman (1919-) ile evliydi (Aksoy, 1999:1-3). Rafet Gülerman 10 Ocak 2001 tarihinde vefât etmiştir. 25 yaşında Rafet Bey'le evlenmiş. 27 yaşında oğlu Cengiz dünyaya gelmiştir. Çok titiz, mükemmelliyetçi, şefkatli, yardımsever, mert ve açık sözlü bir sanatkâr olarak bilinen Sabite Tur Gülerman, Sadun Aksüt'le yapmış olduğu bir sohbetinde kendisinin "bu kadar titiz ve mükemmelliyetçi olmasının sağlığını bozduğunu" ifâde etmektedir. Sanatı sanat için yapan bir sanatkâr olmuş, halkın sanat ve mûsikî zevkini yüceltmeye çalışmıştır. Hocası Selahattin Pınar bu konuda son derece hassastır. Sadun Aksüt tarafından hazırlanan Taş plaktan bugüne" programında Sadun Aksüt bir anısından şöyle bahsetmektedir: Selahattin Pınar'a Sabite Tur Gülerman'ın gazinolara çıktığını, çok güzel bir ses olduğunu, klasik eserler, neo klasik eserler okuduğunu ama halka inmediğini ifâde eder. Bunun üzerine Selahattin Pınar "Hayır katiyyen olmaz. Sanat aristokrattır. Halka inmek diye bir şey olmaz. Halkı

yukarıya çekmek lâzımdır" diye cevap verir. Erişim tarihi: 10.02.2022, Erişim adresi: https://www.youtube.com/watch?v=rU584W0KCBk

Sabite Tur Gülerman maddi kazanç sağlamak üzere gazinolarda sahneye çıkmış olsa da hiçbir zaman oralarda mânen mutlu olamamıştır. Kendisini her zaman radyoya ait hissetmiştir. Çok sayıda da plak doldurmuştur. "1950'li yılların önde gelen iki sanatçısı Sabite Tur ve Mualla Mukadder'dir. Sabite Tur 14, Mualla Mukadder ise 23 plak kaydı yapmıştır" (Ünlü:2016: 431) 1981 yılında 54 yaşında İstanbul Radyosu'ndan emekli olmuştur. Radyo kayıtlarından oluşturularak vefâtından sonra hazırlanmış iki adet cd'si bulunmaktadır. Bunlardan biri TRT arşiv serisinden, diğeri de Kalan Müzik tarafından yayınlanmıştır. Gerek sevenleri, gerekse çeşitli arşivciler tarafından pek çok radyo kayıtları bugün internet ortamında yayınlanmaktadır. Bu kayıtlar paha biçilmez değerde olup çok sayıdaki radyo programlarını kapsamaktadır. Görüntülü kayıtları azdır. TRT arşivlerinde yer almaktadır. Henüz dijital ortamda bulunmamaktadır.

Amaç

Bu çalışma, Sabite Tur Gülerman'ın Türk mûsikîsinin farklı dönemlerine, makam ve türlerine âit eserleri icrâ ederken yapmış olduğu söyleme ve süsleme tekniklerini, seslendirme ve yorumlama özelliklerini tespit etmek ve tavır özelliklerini ortaya koymak amacını taşımaktadır. Ayrıca kadın solistler arasında zirve olarak kabul edilen sanatçılardan biri olması nedeniyle icrâsına dikkat çekmek ve sesi kullanma ve tavır oluşturabilme konularında bilinç uyandırabilmek diğer amaçlarımızdandır.

Önem

Sabite Tur Gülerman'ın gerek hayatı gerekse icracılığının tahlîli hakkında akademik bir çalışma yapılmamıştır. Bu nedenle icrâcılığına ait ilk tahlil çalışması olacağı için önem arz etmektedir. Sanatçının repertuvarıyla sanata bakış açısını ve mûsikî anlayışını ortaya koyması, kişisel tavır özelliğinin tesbîti bakımından da önemlidir.

Problem Cümlesi

Çalışmada, Türk mûsikîsinin kadın solisti Sabite Tur Gülerman'ın icrâ özellikleri nasıldır? sorusuna cevap aranmıştır. Bu problem cümlesinden hareketle aşağıda belirtilen alt problemler cevaplandırılmıştır.

Alt Problemler

1. Sabite Tur Gülerman'ın ses özellikleri nasıldır?
2. Sabite Tur Gülerman'ın seslendirme ve yorumlama özellikleri nasıldır?
3. Sabite Tur Gülerman'ın icrâlarında kullandığı teknik özellikler nelerdir ve nasıl uygulamıştır ?

Evren ve Örneklem

Çalışmanın evrenini Sabite Tur Gülerman'ın icrâları, örneklemini ise ulaşılabilen Ankara ile İstanbul Radyosu kayıtları ve çeşitli taş plak kayıtları oluşturmaktadır. Bu kayıtlar arasında klasik formda Beste, Ağır Semâî, Yürük Semâî, Şarkı, Fantezi, Dîvan, Türkü, Kanto formunda eserler bulunmaktadır. Yaklaşık 100 adet eserin icrâsı üzerinden tavır değerlendirilmesi yapılmıştır.

2. YÖNTEM

Çalışma nitel araştırma olup betimsel tarama ve kaynak tarama modelleri kullanılmıştır. Verilerin analizi çalışmanın da temelini oluşturan "Gülçin Yahya İcrâ Tahlîli" yöntemiyle yapılmıştır. Bu yöntemde hânende ve sâzendelerin üslûp ve tavır özellikleri farklı açılardan tahlil edilebilmektedir. Güftelerin telaffuzu ve anlamına göre uygun söylemeleri, eserleri yorumlama biçimleri, hançere kullanımları ve süsleme tekniklerinin nasıl kullanıldığının tespiti tahlîlin kapsamına giren konular arasındadır.

3. BULGULAR ve YORUMLAR

Hânende ve sazendeye âit tavır özelliklerinin belirlenmesi farklılıklar göstermektedir. Çünkü: Hânendelerin çalgısı hançereleridir. Hançerelerin işlevselliğinin yanı sıra diyafram, dil, burun, yüz boşlukları, ağız içi boşlukları, damak yapısı gibi uzuvlar da sesin kullanımında rol oynamaktadır. Tavır özelliklerinin tesbîtinde hanendenin fiziki yapısına ait bu uzuvların nasıl kullanıldığı ve tavır oluşturmadaki katkısının ne olduğu da önem arz etmektedir. Bütün bu uzuvların mükemmel yaratılmış olması güzel bir tavrın oluşması için elbette yeterli değildir. Bilgi, yetenek, çalışma disiplini, mûsikîye bakış açısı, mûsikîyi nasıl algıladığı da tavır sahibi olmada önemli kriterlerdir (Yahya Kaçar, 2020:158).

3.1. Sabite Tur Gülerman'ın Ses Özelliği

Ses alanı: Sabite Tur Gülerman'ın oldukça geniş ses alanı vardır. Bir koloratur soprano kadar tizlere sahip olmasının yanı sıra kontralto kadar da pest perdelere inebilen bir *ses türüne* sâhiptir. Bu yaklaşık iki buçuk oktavlık bir alanı kapsamaktadır. Kız Neyi akordundan Pestlerde Kaba Çargâh perdelerine inebilen, tizlerde Tiz Gerdaniye perdesine kadar rahatlıkla çıkabilen geniş bir ses alanıdır. Kız neyi akordundan Ferahfeza, Şedaraban gibi makamların karar sesi ve yeden seslerini çok nitelikli olarak verebilmektedir. Nihavend, Kürdîlîhicazkâr, Mâhûr, Şehnaz, Evcârâ gibi tiz seyreden makamlarda Kız Neyi akordundan okuyarak tizde karar etmekte hatta makāmın perdelerini tiz karar üzerinden göstererek Tiz Acem ve Tiz Gerdâniye perdelerine kadar net, çok parlak, temiz ses vererek son derece rahat icrâ edebilmektedir. Pestlerde dolgun ve gür, tizlerde güçlü ve temiz icrâ özelliğine sâhiptir. Kalan müziğin çıkarmış olduğu Sabite Tur Gülerman CD'sinin 20. Eseri olan "*Erişti nev-bahar eyyâmı açıldı gül-i gülşen*" mısrâı ile başlayan Nihavend şarkının finalinde son nakaratı bir oktav tizden söyleyerek icrâ etmesi buna güzel bir örnektir. İncelenen icrâlarda Kız Neyi akordunu kullanmıştır. Son 20-30 yıldan bu yana özellikle kadın seslerinde, nispeten erkek seslerinde de gittikçe pestleşen icrâlar, Türk mûsikîsinin üslûp ve tavır anlayışını değiştirmiştir. Erkek seslerde: Bolahenk, Sipürde, Müstahsen, Kadın seslerinde: Kız Neyi akortlarından daha pestte icrâlar makbul sayılmamaktadır. Gereğinden fazla pest akortlardan icrâlar Türk mûsikîsindeki üslûp ve tavır özelliklerinin bozulmasına da neden olmaktadır.

Sabite Tur Gülerman'nın *sesinin volümü (gürlüğü)* oldukça yüksektir. Sanki bir opera sanatkârının çıkardığı yüksek volüme sâhip bir ses gürlüğü vardır. Ancak bu bir opera okuyuş tekniği değildir. Tamamen geleneğin tavır özelliklerine bağlı kalarak yaptığı bir icrâdır. Volümlü söylemek istediği yerlerin dışında da güçlü bir sesinin olduğu görülmektedir. Bir esere başlarken volümündeki güç, rezonans, vibrato ve açık ağız duruşu, vücûdun postür duruşuyla bütünleşen bir beden kullanımı vardır ki Sabite Tur Gülerman, söylerken enstrümanının vücûdu olduğunu hissettirmekte ve tüm ağzalarıyla eseri seslendirmektedir.

Ses rengi: Dolgun, net, parlak, hacimli, rezonanslı bir sese sahiptir. Laranjit, faranjit, kısıklık, çatallaşma gibi herhangi bir ses rahatsızlığı da görülmemektedir.

3.2. Seslendirme Yorumlama Özellikleri

Telaffuzu

Hânendeler için kelimeleri doğru ve anlaşılır biçimde telaffuz edebilmek önemli özelliklerden biridir. Pek çok icrâcının söylediği güftenin anlaşılamamasının nedenlerinden biri telaffuz hatalarıdır. Hatalı veya güzel telaffuz edilemeyen kelimeler nedeniyle hânendelerin hangi gûfteyi okuduklarının anlaşılması zorlaşmaktadır. Bu nedenle kelimenin anlamlı okunmasından önce, anlaşılır olması daha da önem kazanmaktadır. Taş plâk kayıtlarına göre günümüz teknolojik imkânlarıyla yapılan ses kayıtlarının daha nitelikli olması gerekirken söylenen güftelerin anlaşılamaması telaffuzun iyice bozulduğunun, bunun da tavır ve üslûbu olumsuz etkilediğinin bir göstergesidir (Yahya Kaçar, 2021:582).

Sabite Tur Gülerman, telaffuzu çok düzgün, şarkı söylerken anlaşılır, harfleri, kelimeleri dilde ve ağız içinde doğru yerlerde seslendirerek konuşan bir sanatkârdır. Şarkı söylerken ne dediği anlaşılmayan pek çok icrâcı bulunmaktadır. Oysa ki şarkı: Bir ezgiye söz giydirme sanatıdır" diyebiliriz. Bu nedenle sözün ne olduğunun iyi anlaşılması gerekmektedir. Özellikle klasik formdaki eserlerde ve dîvan edebiyatının güfteleriyle bestelenmiş eserlerde telaffuz daha da önem kazanmaktadır. Osmanlı Türkçesinin unutulmuş kelime ve terkiplerinin dinleyici tarafından iyi anlaşılabilmesi hem dilin gelişimi hem de dilin unutulmaması ve doğru öğrenilmesi için önemlidir. Gülerman'ın "*Gelince hatt-ı muanber o meh cemâlimize*" mısrâı ile başlayan Evcârâ Hâvî Beste'sindeki anlaşılır, düzgün konuşması buna güzel bir örnektir. Bu eserdeki kelimelerin başında ve sonunda bulunan "m" harflerine gereğinden fazla vurgu yapmadığı görülmektedir. Gülerman, dudakları kıpırdatmadan konuşma, kelimeyi boğarak söyleme gibi yanlış telaffuzlara sâhip değildir. "a", "e" gibi telaffuzu farklı harflere dönüşebilen ya da "p","ş","ç" gibi şarkı söylerken patlayan harflerde herhangi bir sorun olmadığı görülmektedir. Bilakis bu harflerin telaffuzunda son derece güzel bir konuşmaya sahiptir.

İfâde unsurlarına ait kullanımları

Sabite Tur Gülerman, sanatıyla bütünleşmiş bir solisttir. Bu nedenle, tüm icrâlarında özgüvenli, kendinden emin, repertuvara hâkim, bilgiyle donanmış bir solist olmanın özelliklerini taşımaktadır. Bu durumu icrâsına da yansımaktadır. Hissederek okumakta ve hissettirmektedir. Eserin anlamını hem ezgi hem de güfte olarak ortaya çıkarır. Eserin anlattıklarını sadece sesiyle değil beden dilini kullanarak da ifâde etmektedir. Bu anlamlandırmayı yaparken özellikle vibrato, vakfe, puandorg ve nüanslar (cressendo ve decressendo) kullanır. Bunları oldukça belirgin yapmaktadır. Selahattin Pınar'ın Hicaz Şarkısı "*Bir bahar akşamı rastladım size*" mısrâı ile başlayan eserde bunu görmek mümkündür. Hatta bazı icrâlarda saz heyetinin Gülerman'ın yorumculuk anlayışına ulaşamadığı da görülmektedir. Okuyuşlarında Gülerman'ın ağız ve dudak hareketlerinin çok esnek olduğu, farklı şekillere girdiği (aynı Kanî Karaca'da olduğu gibi) de gözlemlenmiştir. Bu da sesini istediği türde kullanabilmek, makāmın perdelerini istediği gibi çıkarabilmek içindir. Harflerde ve kelimelerde, ezginin yapısına göre ağız açıklığını değiştirdiği görülmektedir. Geniş bir klasik repertuvara sâhip olan Gülerman özellikle hocası Selahattin Pınar'ın eserlerine de son derece vâkıftır. Bu eserleri ayrı bir ihtimamla ve özgüvenle okumaktadır. O özgüvenin vermiş olduğu icrâsında yorumlama ve seslendirme kudretini çok üst seviyelere taşımaktadır. Güftenin anlamını ortaya çıkararak, güftenin anlatmak istediğini ifâde ederek, âdeta hikayesini anlatmakta ve hissettirmektedir. "*Çubuğum yok aman yol üstüne uzatam*" mısrâı ile başlayan Rumeli Türküsü'nde ve pek çok eserde bu ifâdeleri, seslendirme ve yorumlama özelliklerini hissetmek mümkündür.

Anlamlandırarak okumada nüans kullanımının yanı sıra cümle ve motif yapılarını öne çıkartan bir vurgulama söz konusudur. Söz, ezgi ve usûlden oluşan mûsikî eserlerinde önemli hususlardan biri de bu üç özelliğin birlikteliğini ustalıkla koordineli bir şekilde yürütebilmektir. Ezgi, içinde ritmik unsurları barındırarak devam ederken bu ezgileri daha da anlamlandıracak güfte unsuru devreye girmektedir. Hânende güfteye olan hâkimiyetini anlamlandırarak okur. Güftenin ifâde ettiği anlam, hânende tarafından kimi zaman konuşur gibi kimi zaman güftenin anlatmak istediğini motifle, cümleyle anlatır gibi seslendirir; cümle ve motifleri hissettirir. Günümüzde birkaç sanatkârın hissederek seslendirmeleri dışında bu icrâ anlayışı neredeyse kaybolmuştur (Yahya Kaçar, 2021: 583)

Perde Baskıları

Sabite Tur Gülerman, öncelikle makamların asıl perdelerindeki hâkimiyeti, sonrasında da makam geçkilerindeki perde hâkimiyetiyle dikkat çekmektedir. Geçkilerde eşlik sazlarının kimi zaman çalmadığı Gülerman'ın perdeleri birbirine üstün bir legato tekniğini kullanarak bağladığı ve kaynaştırdığı görülmektedir. Adeta perdesiz bir çalgıyla çalınan bir eserde olduğu gibi. Hüzzam,

Şevkefzâ, Segâh, Sabâ, Evcâra, Uşşak, Kürdîlihicazkâr gibi daha fazla perde hassasiyeti gerektiren makamlarda geleneğin perde anlayışını ortaya koyan, eserdeki perde hâkimiyeti ve makam geçkilerindeki ustalığını da üst düzeyde gösteren bir icrâsı bulunmaktadır. Bu perdeleri icrâ ederken bol glissando ve legato teknikleri kullandığı tesbit edilmiştir. Cevdet Çağla'nın *"Gönlüm kuru bir gül gibi titrer adından"* mısrâı ile başlayan Sûzinâk şarkısı sürekli değişen geçkilerin olması ve perde baskılarının zorluğu bakımından önemli bir eserdir. Gülerman'ın bu eserde perde baskılarını nasıl ustalıkla glissando ve legato kullanarak bağladığını duyurması ve makamdaki hakimiyetini göstermesi açısından önemli bir örnektir.

Üslûp ve tavır özelliği

Yukarıda bahsedilen seslendirme-yorumlama özelliklerine âit alt başlıkların tümü tavır özelliklerinin oluşumunda pay sâhibidir. "Tavır: Sanatkârı diğer icrâcılardan farklı kılan bireysel icrâ özellikleridir. Nevres Bey'in ud tavrı, Yorgo Bacanos tavrı, Şerif Muhittin Targan tavrı, Necdet Yaşar'ın tanbur tavrı, Tanbûrî Cemil Bey'in kemençe tavrı gibi. Bu kavram Batı mûsikîsinde de "still" adını almaktadır (Yahya Kaçar, 2020:62).

Sabite Tur Gülerman'ın gür bir sese sahip olması akla şan teknikniği eğitimi almış olabileceğini getirse de kaynaklarda ve kendi söyleşisinde böyle bir bilgi mevcut değildir. Ancak söyleme teknikleri, diyafram kullanımı, sesi kullanma bölgeleri düşünüldüğünde bir opera san'atcısının teknik özelliklerini barındırmaktadır. Eşi Rafet Gülerman'ın tiyatro ve operet san'atkârı olmasının etkileri veya birlikte çalışma dönemi geçirmiş olabileceklerini düşündürmektedir. Önce geleneğin üslûp ve tavır özelliklerini oturttuktan sonra ses kullanma tekniklerinin de icrâ anlayışına dahil edilmiş olabileceği akla gelmektedir. Ancak böyle olsa bile bu durum Gülerman'ı geleneksel icrâ anlayışından uzaklaştırmamış, aksine icrâsını güçlendirmiştir.

Gülerman, Türk mûsikîsinin beste, ağır semâî, yürük semâî, şarkı, türkü, divan gibi farklı formlarında eserler icrâ etmiştir. Değişen formlara rağmen değişmeyen seslendirme ve yorumlamadaki kişisel icrâ anlayışıdır. İfâdeli okuması, vücudunu bir enstrüman gibi kullanması, nota dışı ilaveler yerine bol vibratolu, hançere kullanarak icrâ etmesi, bol nüans kullanması, ifâdelendirerek söylemesi kişisel tavır özelliklerinin en başında gelmektedir. Hiçbir icrâsında mübalağalı süsleme, nota dışı ilave gibi bir icrâ anlayışı yoktur. Özellikle şarkı, türkü ve divan formlarında tizde karar vermeyi sevmektedir. Tizde karar verme sadece son birkaç notayla değil bir nakarat bölümünün tamamının tekrarı olarak da görülmektedir. Nihavend Şarkı: *Erişti nev-bahar eyyâmı açıldı gül-i gülşen, Evcârâ Şarkı: "Söndü yağdımda akisler gibi" Kürdîlihicazkâr Şarkı: "Ne demiştin niçin caydın sözünden"* Ferahfeza Şarkı: *"Dinlendi başım dün gece bir parça dizinde"* gibi eserlerin icrâlarında bu finalleri görmek mümkündür. Gülerman, TRT1'de Sadun Aksüt'ün sunduğu "taş plaktan bugüne" programında şunları söylemektedir: "Hatır için hiçbir zaman eser okumadım. Karakterim müsâit değil çünkü yağcı değilim". Eserde aradığı nitelikler sorusuna ise şu cevabı vermiştir: "Eserin herkes tarafından bilinmesini istemezdim, çok zor olmasını isterdim ki yalnız ben okuyabileyim bunu. Benden duyulsun ki öyle alem olsun". Erişim tarihi: 10.02.2022, Erişim adresi: https://www.youtube.com/watch?v=rU584W0KCBk
Buradan da repertuvar belirlemedeki hassasiyetinin yanı sıra azimli, mükemmelliyetçi, ilkeli bir sanatçı olduğu sonucuna varabiliriz.

3.3. Sabite Tur Gülerman'ın İcrâsına Âit Teknik Özellikler

Nefes Kullanımı

Gülerman'ın farklı formlardaki icrâlarında nefes desteği tahlil edilmiştir. Buna göre gerek ağır ve uzun cümle yapılarına sâhip klasik eserlerde gerekse tiz perdelere sâhip şarkı ve serbest bölümlü eserlerde güçlü bir diyafram nefesi kullandığı görülmüştür. Yüksek volüme rağmen nefes desteğini

kaybetmemektedir. Ani ve kısa nefes alımlarıyla uzun soluklu icrâlarda bulunmaktadır. Selahattin Pınar'ın *"Akşam yine gölgenle sabah etti bu gönlüm"* mısrâı ile başlayan Kürdîlihicazkâr şarkısında Gülerman'ın kullandığı bol çarpma, vibrato ve trillerden oluşan icrâsı için güçlü bir diyafram desteğini kullandığı görülmektedir. Diğer tüm icrâlarında da bu özelliği görmek mümkündür.

Hançere Kullanımı

Türk mûsikîsi ses icrâcılığı geleneğinde hançere kullanımı ayrı bir önem taşımaktadır. Türk mûsikîsinde hançere kullanımı ve süsleme tekniklerinin yerli yerince kullanılması ile oluşmuş olan üslûp ve tavır özellikleri Sabite Tur Gülerman'ın icrâsında da önemli bir özellik olarak görülmektedir. Kimi zaman çarpma, kimi zaman da tril olarak hız kazanan hançeresi oldukça kuvvetli bir san'atkârdır. Gülerman'ın kıvrak ve hızlı nağmelerde bolca kullandığı hançeresi tavır özelliğinin önemli bir özelliğidir. Görüntülü video kayıtlarında hançeresinin ne kadar kuvvetli hareket ettiği boynun iki yanından dahi belli olmaktadır. Boynun iki yanındaki titreşimlerin dışarıdan görülmesi, farkedilmesi hançerenin ne kadar kuvvetli kullanıldığının göstergesidir. Bazı ses icrâcılarının video görüntülerinde çenenin aşağı yukarı oynatılarak çarpma ve tril yapılmaya çalışmaları, hançere kullanımını bilmediklerinden ya da yapamadıklarından kaynaklanmaktadır. Oysa ki çarpma ve triller hançerenin titreştirilmesi ile elde edilen süslemelerdir. Bestesi Şakir Ağa'ya âit olan "*Efsûn okur uşşâkına ol gamze-i câdû"mısrâı ile başlayan Evcârâ şarkı,* Güftesi ve bestesi Yesârî Asım Arsoy'a ait olan "Sazlar çalınır çamlıcanın bahçelerinde" mısrâı ile başlayan Hicaz şarkı, Lemi Atlı'nın *"Dinlendi başım dün gece bir parça dizinde"*mısrâı ile başlayan eserlerinde kullandığı hançereler örnek olarak verilebilir. Gülerman, büyük formların aksine şarkı formunda hançeresini çok daha fazla kullanmaktadır.

Register Geçişleri

Sabite Tur Gülerman çok geniş bir ses alanına sâhiptir. Oktav veya atlamalı aralıkların bulunduğu geçişlerde legato tekniğini kullanarak register geçişlerini sağlamaktadır. Bu geçişlerde ton değişikliği, detone ya da surtone gibi ses kayıpları olmamaktadır. Aksine son derece yumuşak ve sanki farklı oktavlarda değilmiş gibi birbirleriyle uyumlu bir ses rengi dikkati çekmektedir. Legato tekniğine verilen örnekler aynı zamanda register geçişlerine de örnektir.

Süsleme teknikleri

Sabite Tur Gülerman, Türk mûsikîsi geleneğinde var olan süsleme tekniklerinden çarpma, vurkaç, tril, legato, vibrato ve glisando tekniklerini kullanarak icrâda bulunmuştur. Bu tekniklerin tamamını her eserde görmek mümkündür. Aşağıda bu teknikleri nasıl uyguladı örneklerle anlatılmıştır. Örneğin:

Çarpma

Örneklem olarak tahlil edilen eserlerin tamamında bulunmaktadır. Klasik eserlerde daha sâde ve tek çarpma olarak, şarkılarda seri halinde bazen vurkaç bazen de çarpmanın peşpeşe hızlandırılmışı olarak yaptığı trilleri görülmektedir. *"Bir nev-civane dil müpteladır*" mısrâı ile başlayan III. Selim Han'ın Şehnaz eserindeki *"Ayağına giymiş sadef nalini"* mısrâlı Rumeli türküsündeki sıkça kullandığı çarpmalar ile Rıfat Bey'in *"Hayâl-i yâre değme girye dursun"* mısrâı ile başlayan Sabâzemzeme şarkısındaki çarpmaları çok yumuşak yaptığı ve klasik üslûbun tüm özelliklerini barındırdığı görülmektedir. Hocaları Selahattin Pınar'ın ve Sadettin Kaynak'ın eserlerinde bolca çarpma kullandığı da tesbit edilmiştir. Şarkı ve türkü formlarında bolca, klasik formdaki eserlerde daha sâde çarpma kullanmaktadır. Nadiren kullandığı mordan ve gruppettolarda bulunmaktadır. *"Vardım ki yurdundan ayağı göçüşmüş"* Nevres Paşa'nın Şahnaz Divanı'nda olduğu gibi.

Glissando

Selahattin Pınar'ın *"Söndü yâdımda akisler gibi" ve* Bayatî şarkısı *"Kalbim yine üzgün seni andım da derinden",* Servet Yesâri Bey'in *"Bir hâdise var can ile cânân arasında"* mısrâlarıyla başlayan eserlerde glissandonun en belirgin örneklerini görmek mümkündür.

Tril

Hançerenin hızlıca kullanılmasıyla yapılan tril süslemesi Sabite Tur Gülerman'ın özellikle şarkı meyanlarında sıkça kullandığı ve çok hızlı yaptığı bir süslemedir. Kürdîlihicazkâr, Nihavend, Hicaz eserlerde sıklıkla görülmektedir. Uzun ve kısa triller kullanmıştır. Selahattin Pınar'ın "*Anladım sevmeyeceksin beni sen nazlı çiçek*" eserinde hem pest perdelerde hem de tiz perdelerde küçük nota değerlerinde yaptığı triller dikkat çekicidir. Selahattin Pınar'ın "*Gecenin mâtemini aşkıma örtüp sarayım"* mısrâlarıyla başlayan Hüzzam şarkısı, Manyasî Refik Bey'in *"Zevkin ne ise söyle, hicâb eyleme benden"* mısrâlarıyla başlayan Sûznak şarkısındaki tril kullanımları örnek olarak verilebilir.

Legato

Özellikle atlamalı aralıklarda sesleri birbirine legato tekniğiyle bağlamasından dolayı da olsa gerek, sesini keman gibi kullanan icrâcı benzetmesinde bulunulmuştur. Sesleri adeta bir yaylı veya üflemeli çalgıda olduğu gibi birbirine bağlayarak, legato tekniğini sıkça kullanmaktadır. Bu tür kullanım Lale ve Nergis Hanımlar'ın icrâlarında da mevcuttur. Zekâî Dede'nin Hicazkâr makāmındaki bestesi *"Hicr-i lebinde yârin bir dil ki oldu nâ-hoş"* ile Hacı Arif Bey'in Kürdîlihicazkâr şarkısı *"İftirâkındır sebep bu nâle vü feryâdıma"* Selahattin Pınar'ın Muhayyerkürdî Şarkısı*"Bakışı çağırır beni uzaktan"* mısrâlarıyla başlayan eserde atlamalı aralıklar ve register geçişlerinde legato kullanımları örnek olarak verilebilir.

Vibrato

Sabite Tur'un icrâlarında vibrato kullanımı öylesine güçlüdür ki kimi zaman çarpma, tril duyumu verebilmektedir. Özellikle olgunluk döneminde yaptığı vibratolar, ses kayıt teknolojilerinin nitelikli olmasıyla birlikte daha da belirgin anlaşılmaktadır. Vibratosuz bir perde neredeyse basmamaktadır. Vibrato kullanımı "sesinin doğuştan gelen bir özelliği mi?" sorusunu düşündürecek kadar güçlüdür. Adeta sesinin doğal özelliği gibidir. Tek bir perdede, kısa veya uzun süreli perdelerde sürekli vibrato yapmaktadır. Vibratosundaki doğallık ve yumuşaklık eserlerin meyan bölümlerinde hiç kaybolmamaktadır. Kuvvetli bir rezonans oluşmaktadır.

4. SONUÇ, TARTIŞMA ve ÖNERİLER

Sabite Tur Gülerman incelenen tüm icrâ özellikleriyle gerçek ve üst düzeyde bir solisttir. Çünkü Kendisine eşlik eden saz üstadları ki bunlar arasında Hakkı Derman, Emin Ongan, Hüsnü Coşar, Yorgo Bacanos, Necdet Yaşar, Niyazi Sayın gibi dönemin en büyük saz virtüozları bulunmaktadır. Bu virtüöz sâzendeler eşliklerinde tamamıyle Sabite Tur Gülerman'ı takip etmekte ve tüm yorumculuğu kendisine bırakarak, Gülerman'ın önderliğinde icrâyı tamamlamaktadırlar. Bu önemli bir göstergedir. Eşlik eden büyük saz üstadları solist Gülerman'ı takip ederek onun yorumlamasına müdahalede bulunmayan üstadlardır. Perde geçişleri, makam geçkileri tamamıyle Gülerman'ın kontrolündedir. Sazlar refakatçi konumundadır. Bu o döneme ait icrâ anlayışının ortaya konulması bakımından da önemlidir.

Gülerman'ın icrâlarında çarpma, mordan, grupetto, tril, legato, glissando ve en fazla da vibrato tekniklerini kullandığı görülmüştür. Güçlü bir diyafram desteği ile kuvvetli bir hançere kullanımı ve anlamlı okumayı birleştirerek kendi tavrını oluşturmuştur. Anlamlı okumada vücûdunun tüm ağzalarını kontrollü bir biçimde mûsikî icrâsına katmaktadır. Ağız açıklığı, dudak pozisyonları ve ağızdaki esneklik dikkat çekici bir özelliktedir. Zirâ ağızdaki esnek yapının çıkan perde baskılarını ve nüansları

da fazlasıyla etkilediği gözlemlenmiştir. Kullandığı beden dili, özgüvenli ve çok severek okuduğunu hissettirmektedir. Gülerman'ın pestlerde ve tizlerdeki ses alanı genişliği güçlü volümüyle birleşince ayrı bir ton yakalamıştır. Bu ses tonu pestlerde dolgun ve güçlü, tizlerde gür, parlak ve net bir sestir. Sesini istediği tona sokabilen, istediği teknikleri rahatça istediği yerlerde kullanabilen virtüöz bir solisttir. Gençliğinin ilk yıllarındaki radyo sanatkâtlığı dönemi, gazino dönemi ve tekrar radyo sanatkârlığı yılları arasında icrâ anlayışında fazla bir değişiklik olmamış; icrâ tecrübesi ve gücü değişmiştir. Çünkü İlk gençlik yıllarındaki ses kayıtları ile sonraki dönem kayıtları arasında sürekli güçlenen bir icrâ görülmektedir. Klasik eserlerdeki üslûp hakimiyeti ve kendi tavır özellikleri arasındaki uyum süsleme tekniklerinde daha belirgin bir hâl almaktadır. Şarkı, türkü ve divan formlarındaki eser icrâlarıyla, klasik eser icrâları arasındaki yorumlama farkını icrâ örnekleriyle ortaya koymuştur. Eserin türüne, formuna göre seslendirme ve yorumlama özelliklerine dâir önemli örnekler vermiştir.

Sabite Tur Gülerman'ın özellikle taş plak ve radyo kayıtları ses icrâcıları için dinlenilmesi ve taklit edilerek öğrenilmesi gereken kayıtlardır. Bu kayıtların kadın icrâcıların yetişmesinde kullanılması önerilmektedir. Örnek solist olarak Gülerman'ın televizyon programları TRT arşivlerinden çıkarılarak dijital ortamda paylaşılmalıdır. Yeni icrâcıların istifadesi için tekrar yayınlanmalıdır. Sanatkârın icrâsında kullandığı beden dili ve seslendirmede kullandığı ağzalarının (ağız, dudak, hançere, diyafram) daha belirgin gözlemlenebilmesi sağlanmalıdır.

KAYNAKÇA

Aksoy, B. (1999), Sabite Tur Gülerman CD Kitapçığı, Kalan Müzik, İstanbul.

Kalan Müzik (1999), Sabite Tur Gülerman Cd'si, İstanbul.

Gülerman, S.T. (1950-1980), Ankara ve İstanbul Radyosu arşiv kayıtları.

Sadun A. (Hazırlayan), Taş Plaktan Bugüne, Arşiv Programı TRT1, Erişim tarihi: 10.02.2022, Erişim adresi: https://www.youtube.com/watch?v=rU584W0KCBk

Ünlü, C. (2016), Git Zaman Gel Zaman, 2. Baskı, Pan Yayıncılık, İstanbul.

Yahya Kaçar, G. (2020), Türk Mûsikîsinde Eser ve İcrâ Tahlîli Yöntemleri-Kavramlar-Semboller ve Örnekleriyle, Gece Kitaplığı, Ankara.

Yahya Kaçar, G. (2021), "Türk Mûsikîsinin Öncü Kadın Hânendelerinden Lale ve Nergis Hanımların Tavır Özelliklerinin Tahlîli", I. Uluslararası Kadın Çalışmaları Kongresi Bildiriler Kitabı, Ankara.

TÜRK MÛSİKÎSİNİN KADIN BESTEKÂRI DİLHAYAT KALFA VE PEŞREVLERİNDEKİ BİÇİM ANLAYIŞI

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ÖZET

Dilhayat Kalfa (d:?- ö:1737), 18.yüzyılda İstanbul'da yaşamış Osmanlı Devleti'nin Müslüman kadın bestekârlarındandır. Osmanlı Devleti'nin üst düzey kademelerinde görev almıştır. Dilhayat Kalfa'nın yaşadığı dönemin mûsikî anlayışını ortaya koyabilecek önemli besteleri bulunmaktadır. Yazılı kaynaklarda yüz civarında bestesinin olduğu ifâde edilse de bu bilgiler tam olarak kanıtlanamamış, henüz bestelere ulaşılamamıştır. Günümüze ulaşabilen on üç adet bestesi vardır. Peşrev, Sazsemâîsi, Beste ve Yürük Semâî formlarından oluşan bu besteler dönemin mûsikî zevk-i selîmini yansıtmakta ve makam-usûl-güfte anlayışı hakkında da bilgiler vermektedir.

Bu çalışma, Dilhayat Kalfa'nın bestelerindeki biçim özelliklerini tespit etmek amacıyla yapılmıştır. Dilhayat Kalfa'nın saz eserlerindeki biçim özelliklerinin ve döneminin bestekârlık anlayışının ortaya konulması bakımından önemlidir. Çalışma, nitel araştırma olup, betimsel tarama modeliyle yapılmıştır. Ayrıca biçim tahlîline ait alt problemlere cevap verebilmek için Gülçin Yahya Biçim Tahlîli Yöntemi kullanılmıştır. Bu yöntem kullanılarak yapılan ilk çalışmadır. Çalışmanın evrenini Dilhayat Kalfa'nın bütün eserleri, örneklemini ise sözsüz formlardan seçilen Evcârâ, Sipirh, Müselles, Büzürk makamlarındaki dört adet peşrevi oluşturmaktadır. Peşrev formunda kullanmış olduğu biçim özellikleri nasıldır?, Bestelerindeki cümle, bölüm yapıları nasıldır? Peşrevlerinde nasıl bir eser kurgusu ve icrâ akışı vardır? Sorularına cevap verilmiştir. Dilhayat Kalfa'nın eserlerinde klasik üslûba bağlı kalarak gelenekten gelen bestekârlık anlayışının hüküm sürdüğü, bunun yanı sıra kendine özgü ezgilerinin ve cümlelerinin olduğu sonucuna varılmıştır. Dilhayat Kalfa'nın diğer eserlerine ulaşabilmek için arşivlere dayalı, kapsamlı bir proje çalışmasının yapılması önerilmiştir.

Anahtar Kelimeler: Dilhayat Kalfa, Müselles, III. Selim, Form, Biçim, Bestekâr, Evcâra.

THE WOMAN COMPOSER OF TURKISH MUSIC DİLHAYAT KALFA AND THE SHAPE MENTALITY IN HER "PEŞREVS"

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ABSTRACT

Dilhayat Kalfa (b:?- d:1737) is one of the muslim women composers of the Ottoman Empire who lived in Istanbul in the 18th century. She served in the high-level positions of the Ottoman Empire. Although it is stated in the written sources that she has around a hundred compositions, this information has not been fully proven and the compositions have not been reached yet. She has thirteen compositions that have survived to the present day. These compositions, which are composed of Peşrev, Sazsemâîsi, Beste and Yürük Semâî forms, reflect the musical pleasure of the period and also provide information about the maqam-usûl-lyrics understanding.

This study was carried out in order to determine the style features of Dilhayat Kalfa's compositions. It is important in terms of revealing the stylistic features of Dilhayat Kalfa's instrumental works and the compositional understanding of the period. The study is a qualitative research and was conducted with

a descriptive survey model. In addition, Gülçin Yahya form Analysis Method was used to answer the sub-problems of shape analysis. This is the first study using this method. The universe of the study consists of all the works of Dilhayat Kalfa, and the sample consists of four peşrevis in the makams Evcârâ, Sipirh, Müselles and Büzürk, selected from nonverbal forms. What are the stylistic features she used in the pesrev form?, What are the sentence and section structures in her compositions? What kind of Composition Structure and Performing Flow are there in their peşrevs? Their questions have been answered. It was concluded that Dilhayat Kalfa's works, adhering to the classical style, dominated by the understanding of composition coming from the tradition, and that she had her own unique melodies and sentences. In order to reach Dilhayat Kalfa's other works, it is suggested to carry out a comprehensive project study based on archives.

Keywords: Dilhayat Kalfa, Müselles, III. Selim, Form, Shape, Composer, Evcâra.

1.GİRİŞ

Dilhayat Kalfa (d:?- ö:1737), 18.yüzyılda İstanbul'da yaşamış Osmanlı Devleti'nin müslüman kadın bestekârlarındandır. Osmanlı Devleti'nin üst düzey kademelerinde görev almıştır. Dilhayat Kalfa'nın yaşadığı dönemin mûsikî anlayışını ortaya koyabilecek önemli besteleri bulunmaktadır. Yazılı kaynaklarda yüz civarında bestesinin olduğu ifâde edilse de bu bilgiler tam olarak kanıtlanamamış, henüz bestelere ulaşılamamıştır. Günümüze ulaşabilen on üç adet bestesi vardır. Peşrev, Sazsemâîsi, Beste ve Yürük Semâî formlarından oluşan bu besteler dönemin mûsikî zevk-i selimini yansıtmakta ve makam-usûl-güfte anlayışı hakkında da bilgiler vermektedir. Çalışmanın amacı, Dilhayat Kalfa'nın hayatına yeni kaynaklar ışığında tekrar bakmak ve Dilhayat Kalfa'nın bestelediği peşrevlerindeki biçim özelliğini tesbit ederek, bestekârlık anlayışını ortaya koymaktır. Peşrevlerdeki biçimsel yapıları mukâyese yapmak ve Dilhayat Kalfa'nın bestekârlık anlayışını ortaya koymaktır. Biçim tahlîli yapılan peşrevlerdeki bestekârlık anlayışının ortaya konulması açısından önemlidir. Özellikle şâibeli olan Evcârâ Peşrevi'nin biçim yapısının tesbîti ve diğer peşrevlerdeki biçim yapısıyla kıyaslanması bu eserin bestekârının tesbîtinde önemli olacaktır. Çalışmanın evrenini: Dilhayat Kalfa'nın besteleri, örneklemini: Dilhayat Kalfa'nın Peşrev formunda bestelediği eserleri oluşturmaktadır. Buna göre:

Problem Cümlesi

Türk mûsikîsinin kadın bestekârı Dilhayat Kalfa'ya ait bilgiler nelerdir ve peşrevlerindeki biçim anlayışı nasıldır?

Alt Problemler

1.Dilhayat Kalfa'nın hayatına ait bilgiler nelerdir?
2. Dilhayat Kalfa'nın peşrevlerindeki biçim özellikleri nasıldır?

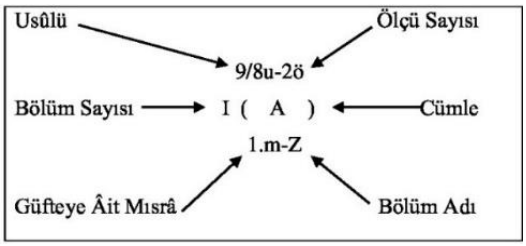
2.YÖNTEM

Bu çalışma nitel araştırma olup, betimsel tarama ve kaynak tarama modelleri kullanılmıştır. Betimlemede "araştırmada toplanan verilerin, araştırma problemine ilişkin olarak neleri söylediği ya da hangi sonuçları ortaya koyduğu ön plana çıkmaktadır. Örneğin, gözlenen bir ortamda nelerin olup bittiği, çalışılan dökümanların hangi bilgileri ortaya koyduğu, betimleme yaklaşımına uygun sorulardır" (Yıldırım, Şimşek, 2018, s.238) İlk olarak kaynak taraması yapılmış ulaşılabilen peşrevlerin genel biçim özelliklerini ortaya koyabilecek Evcârâ, Büzürk, Sipirh ve Müselles makamlarında dört adet peşrev belirlenmiştir. Peşrevlerin biçim özellikleri cümle, bölüm, usûl ve ölçü yapıları açısından nota üzerinden icrâ edilerek tespit edilmiştir.

Bu doğrultuda elde edilen veriler çalışmanın da temelini oluşturan "Gülçin Yahya Biçim Tahlîli" yöntemiyle tahlil edilmiştir. *Gülçin Yahya Biçim Tahlîli Yöntemi:* Bir eseri Türk alfabesinde kullanılan tüm harflerin yanı sıra, Latin harf ve rakamları, semboller ile Romen rakamlarının farklı tertip ve gösterimlerle anlatma şeklidir (Yahya Kaçar, 2020, s. 4). Bu gösterimde esere ait ezgi, usûl ve güfte özellikleri iç ve dış çerçevesiyle birlikte gösterilmektedir (Tablo 2.1). Sözsüz eserlerde güfteye ait unsurlar bulunmamaktadır. "Eser Kurgusu" ve "İcrâ Akış"ı alt başlıkları *Gülçin Yahya Biçim Tahlîli Yöntemi*'ni oluşturan en önemli unsurlardır. Çalışmada yer alan semboller ise şu şekildedir; Peşrev

Bölümleri: Büyük romen rakamlarıyla (I, II, III,IV) vs. / Cümleler: Büyük harflerle (A,B,C,Ç,D,E,F) vs. / Usûl: küçük u, ölçü: küçük "ö" harfleriyle, / Bölüm Adları: Rakam ve harf ile 1.H, 2.H, 3.H vb./ Mülâzime Bölümü: Büyük ve küçük "Mz" harfleriyle,/ Teslim Motifi : Küçük "t" harfiyle, / Sonuç: "Sn" harfleriyle gösterilmektedir.

Tablo 2. 1. Gülçin Yahya Biçim Tahlîli Gösterimi



3. BULGULAR VE YORUMLAR

3.1. Dilhayat Kalfa'nın Hayatı

Türk mûsikîsi târihinde Dilhayat Kalfa, Dilhayat Hanım, Dilhayat Usta, Dilhayat Kadın olarak anılan ve 18. yüzyılda yaşadığı bilinen müslüman kadın bestekârdır. Osmanlı devletinde kayıtlara geçmiş ilk kadın bestekâr olarak bilinen Reftar Kalfa'dan sonra bilinen ikinci kadın bestekâr olarak doğum ve ölüm tarihleriyle ilgili pek çok kaynakta farklı tarihler verilmektedir. Günümüzde de bu tarihler netlik kazanmamıştır. Tarihçi Yılmaz Öztuna doğum ve ölüm târihleri için 1760?-1829? (Öztuna, 1990: 226), kemençevî, müzikolog Dr.Nazmi Özalp "Dilhayat Kalfa'nın pek çok araştırmacının kanaati Sultan IV. Mehmet'in saltanatının son yılları, III. Süleyman, II. Ahmed, II.Mustafa, III. Ahmet dönemlerini yaşadıktan sonra 1740 yıllarına yakın bir tarihte İstanbul'da öldüğü sanılıyor"(Özalp, 2000:448) demektedir. Araştırmacı Talip Mert ise Mûsikî Mecmâsı'ndaki "Ortaçağ'ın en büyük kadın bestekârı Dilhayat Kalfa'nın Mirası" başlıklı yazısında 1737 ile 1740 tarihleri arasında vefât ettiğinden bahsetmektedir (Mert, 1999:70) Talip Mert yine aynı yazısında Dilhayat Usta'nın terekesini vermiştir. Ölen bir kimseden kalan eşyâ, mal mülk vb. (Kubbealtı Lügati:1240) anlamına gelen bu terekede: Dilhayat Usta'ya ait kitaplar, saatler, mücevheratlar, seccadeler, kürkler, işlemeler, mutfak eşyası, saksonya cam eşyası, giyim eşyası, tombak eşya, çeşitli ev eşyası listesi bulunmaktadır (Mert, 1999:68-69). İlginç olan bu terekede mûsikîye âit hiç bir eşya, kitap, çalgı, nota gibi bir mülkün bulunmayışıdır. Bu da "Acaba bu tereke bestekâr Dilhayat Kalfa'ya mı âittir"? isim benzerliği midir? Gibi soruları akla getirmektedir.

Kalfa ünvânına sâhip olması onun Osmanlı Sarayında üst düzey bir görevde olduğu anlamına gelmektedir. Kalfa: Saraylarda ve büyük konaklarda câriyelerin başı olan kadınlara verilen ünvandır. Padişah tarafından tâyin edilir, sarayda kendilerine ayrılan yerlerde otururlar ve sarayın iç hizmetlerinde çalışan câriyelerden sorumludurlar. Çok iyi eğitim almış kişilerden seçilmektedirler. Bazı kaynaklarda da Dilhayat Kalfa'nın kalfalıktan ustalığa terfi ettiği yazmaktadır. Mûsikî eğitimini Osmanlı sarayında Harem'de almıştır. Sultan III. Selim döneminin bestekârı olarak bilinmektedir. En yetkin hocaların ders verdiği Harem'de yetişmiştir. Ancak hocalarının kim olduğu henüz tespit edilememiştir. Bestekâr olmasının yanı sıra iyi bir tanbûr icrâcısı olduğu da söylenmektedir. Kendisine atfedilen saz eserlerine bakıldığında tanbûrî olabileceği de düşünülmektedir.

Harem ustalarının maaşları zamanına göre oldukça yüksek ve harcama yapacak yerleri de pek olmadığından maddi durumları bir hayli iyi idi. Ama Dilhayat Usta'nın, iyiliksever, eli açık ve gönlü bol bir insan tipi çizdiğinden lüks ve gösterişe düşmeden alçak gönüllü bir hayat seçtiği anlaşılıyor. Yine eşyası arasında yer alan dört adet kanarya kafesinden de kuş merakı bulunduğu anlaşılıyor. Terike içinde yer alan kitaplar Dilhayat Usta'nın okur-yazar, bestelerinin haiz olduğu vakar, ciddiyet ve sanatkârâne üslûb ise onun okur-yazarlıktan da öte, devrine göre ciddi bir kültüre mâlik belki de o vaktin en kültürlü hanımı olduğunu isbat ediyor. Dolayısıyle O'nun dünyanın en büyük kadın bestecisi olduğu görüşünü de kuvvetlendiriyor (Mert, 1999:70)

Suphi Ezgi'nin Ameli, Nazarî Türk Mûsikîsi adlı eserinde Dilhayat Hanım Efendi yazısında Dilhayat Hanımın 1139'dan (milâdi 1726) epeyce evvel ve sonra yaşamış olduğu ifâde etmektedir. "Hanımın

hem hânende hem de sâzende olup üstadlığa yükseldiği bugün elimizde mevcut saz ve söz eserlerinden anlaşılmaktadır. Kendisinin yüzü mütecâviz kâr, beste ve semâîler bestelemiş olduğunu mecmualarda gördük" (Ezgi:1940:95) demektedir.

Eski yazma mecmualarda 100'e yakın eserinin sözlerine rastlandığı halde (Özalp, 2000:449) Öztuna 16 adet eserinin listesini vermiştir. Devlet korosu arşivinde ve günümüzde ulaşılabilen ve kendisine atfedilen on üç bestesi bulunmaktadır. Bu besteler şunlardır:

A)- Saz Eserleri: Büzürk Peşrevi/ Hafif, Evcârâ Peşrevi / Çifte Düyek ve Sazsemâîsi /Aksak Semâ, Hüseynî Peşrevi / Berefşen / ve Sazsemâîsi, Mâhûr Sazsemâîsi, Müselles Peşrevi / Sakiyl ve Sazsemâîsi Nevresin Peşrevi ve Sazsemâîsi (notaları tesbit edilememiştir), Sipirh Peşrevi / Muhammes.
B)-Sözlü Eserleri: Evç Beste /Ağır Remel/ *Çok mu fîgânım ol gül-i zîbâ hirâm için, Mahur Beste / Devr-i Kebîr / Ta be key sînemde ca etmek cefâ vü kîneye, Rast Beste / Ağır Hafif / Nev hirâmın sana meyl eyledi can bir dil ki,* Saba Beste / Ağır Hafif / *Yek be yek gerçi merâmı dîli takrir ettim.*
Dilhayat Kalfa'nın besteleri, *Darülelhan Tasnif Heyeti* tarafından tesbit edilerek neşredilmiştir. Aynı eserler Suphi Ezgi'nin Nazarî Amelî Türk Mûsikîsi'nde de mevcuttur. Ayrıca 18. yüzyıl güfte mecmualarından olan Hekimbaşı Mecmuası'nda Dilhayat Kalfa adına kayıtlı Rast ve Eviç makamlarında Murabba Beste ve Segâh makāmında bir Semâî olmak üzere on üç eserine de yer verilmiştir. 18. yüzyıl ortalarından itibâren tertip edilmiş, klasik mûsikînin beste türleri olan Kâr, Nakış, Beste, Semâî gibi farklı beste türlerinde eserler ihtiva eden fasıl mecmualarının hemen hepsinde onun adı da yer alır. İsminin geçmediği fasıl mecmuası bulmak güçtür (Korkmaz, 2020: 271).

Dilhayat Kalfa'nın III. Selim'in (1761-1808) yaşadığı dönemde yaşadığı görüşleri vardır. Buna göre Dilhayat Kalfa'nın Tanbûrî İsak Efendi'nin (1745-1814) öğrencisi olabileceği düşünülmektedir. Ancak Alaaddin Yavaşça Evcâra makāmının III. Selime ait olmayabileceğini ve Nasır Dede'yi de sağlam bir kaynak olarak görmediğini ifâde ederek "bu kaynaklar hep bir nev'i rivâyet üzerine kurulmuştur" (Ergen:1994:81) demektedir. Dilhayat Kalfa'nın 1740 yılı vefât ettiği görüşüne göre yaşadığı dönemin önemli bestekâr ve nazariyatçıları arasında Itrî (1640-1771), Seyyid Nuh (?-1714), Kantemiroğlu (1673-1727), Enfi Hasan Ağa(1670-1729), Kutbünnâyi Osman Dede (1652-1730), Zaharya (?- 1740), Tanbûrî Mustafa Çavuş (? -1745), Şeyhülislam Esad Efendi (1685-1753), Ebu Bekir Ağa (1685-1759), Tab'i Mustafa Efendi (1700-1786) (Yahya Kaçar, 2012:326) gibi şahsiyetler bulunmaktadır. Dilhayat Kalfa'nın 1829 yılında vefât ettiği düşüncesine göre ise Tanburî İsak (1745-1814), Emin Ağa (1750-1814), Abdülbâkî Nâsır Dede (1765-1821), Hacı Sadullah Ağa (1760-1825), Numan Ağa (1750-1834), Hamparsum (1768-1839), III. Selim (1761-1808), (Yahya Kaçar, 2012:327) gibi bestekâr ve nazariyatçıların yaşadığı bir dönem olmuştur.

3.2. Dilhayat Kalfa'nın Peşrevlerinde Biçim Özelliği

Aşağıda Peşrevlere âit Eser Kurgusu ve İcrâ Akışı Tabloları verilmiştir. Bu tablolarda Bölüm, Cümle, Usûl ve Ölçü birliktelikleri gösterilmiştir. Ayrıca cümlelerin makamları da belirtilmiştir. Sayfa sınırlaması nedeniyle Evcârâ Peşrevi'nin Eser Kurgusu Tablosu verilememiş makam bilgileri metin olarak anlatılmıştır.

Büzürk Peşrevi

Hafif usûlünde bestelenmiştir. 5 farklı bölümden oluşmaktadır. Eser Kurgusu I.,II.,III.,II.,IV.,II.,V.,II. bölümleri olarak kurgulanmıştır. 7'si farklı toplam 10 cümleden oluşmaktadır. Bunlardan B cümlesi Mülâzime Bölümü olup 1 ölçü uzunluğundadır. Her hâneden sonra tekrarlamıştır. 1. ve 3.Hâneler;1 cümleden, 2. ve 4. Hâneler: 2'şer cümleden, oluşmaktadır. Tüm Hâneler küsuratlı ölçü uzunluklarından oluşmuştur. Nevâ ve Hüseynî perdelerinden oluşan 2 adet *teslim perdeleri* mevcuttur. Aşağıda Eser Kurgusu ve İcrâ Akışı Tabloları verilerek makam ve geçkileri belirtilmiştir (Tablo 3.2.1) (Tablo 3.2.2).

Tablo 3.2.1. Büzürk Peşrevi Eser Kurgusu.

I (A) 1.H	**1.Hâne Bölümü /** Yerinde Uşşak, Büselik.
1.t _____ 1.H	**Teslim Motifi** / Hüseynî'de kalış.
II (B) Mz	**Mülâzime Bölümü /** Hüseynî perdesinde Uşşak, yerinde Büselik ve Hüseyniaşîran'da Büselik'le Rast'ta Kalış.
III (C) 2.H	**2.Hâne Bölümü/** Büselik makâmı.
(Ç) 2.H	**2.Hâne Bölümü/** Büselik makâmı.
2.t _____ 2.H	**Teslim Motifi** / Hüseynî'de kalış.
II (B) Mz	**Mülâzime Bölümü/** Hüseynî perdesinde Uşşak, yerinde Büselik ve Hüseyniaşîran'da Büselik'le Rast'ta Kalış.
IV (D) 3.H	**3.Hâne Bölümü /** Hüseynî'de Uşşak, Gerdâniye, Tahir Çeşnileri, Hüseynî'de Hüseynî.
1.t _____ 3.H	**Teslim Motifi** / Hüseynî'de kalış.
II (B) Mz	**Mülâzime Bölümü /** Hüseynî perdesinde Uşşak, yerinde Büselik ve Hüseyniaşîran'da Büselik'le Rast'ta Kalış.
V (E) 4.H	**4.Hâne Bölümü /** Yerinde Büselik, Hüseynî'de Uşşak.
(F) 4.H	**4.Hâne Bölümü /** Hüseynî, Büselik çeşnileri.
1.t _____ 4.H	**Teslim Motifi** / Hüseynî'de kalış.
II (B) Mz-Sn	**Mülâzime /Sonuç Bölümü /** Hüseynî perdesinde Uşşak, yerinde Büselik, Hüseyniaşîran'da Büselik'le Rast'ta kalış.

Tablo 3.2.2. Büzürk Peşrevi İcrâ Akışı.

I (A) 1.H	1.t _____ 1.H	+ II (B) Mz	+ III (C) 2.H	+ (Ç) 2.H	2.t _____ 2.H	II (B) Mz	+				
IV (D) 3.H	1.t _____ 3.H	+ II (B) Mz	+ V (E) 4.H	+ (F) 4.H	1.t _____ 4.H	+ II (B) Mz-Sn					

Müselles Peşrevi

Sakil usûlünde bestelenmiştir. 5 farklı bölümden oluşmaktadır. Eser Kurgusu I.,II.,III.,II.,IV.,II,V.II. bölümleri olarak kurgulanmıştır. 8'i farklı toplam 11 cümleden oluşmuştur. 3 farklı teslim motifi kullanılmıştır. Bu peşrevlerde pek görülmeyen bir durumdur. 1. ve 2. Hâneler 1 cümleden, 3.Hâne 2 cümleden, 4. Hâne 3 cümleden oluşmaktadır. Aşağıda Eser Kurgusu ve İcrâ Akışı Tabloları verilerek makam ve geçkileri belirtilmiştir.

Tablo 3.2.3. Müselles Peşrevi Eser Kurgusu.

I (A) 1.H	**1.Hâne Bölümü /** Yerinde Uşşak Makâmı,
1.t _____ 1.H	**Teslim Motifi** / Irak'ta kalış.
II (B) Mz	**Mülâzime Bölümü /** Yerinde Sabâ, Zirgüleli Hicaz ve Hicaz makamları.
III (C) 2.H	**2.Hâne Bölümü/** Yerinde Uşşak Makâmı.
1.t _____ 2.H	**Teslim Motifi** / Irak'ta kalış.
II (B) Mz	**Mülâzime Bölümü /** Yerinde Sabâ, Zirgüleli Hicaz ve Hicaz makamları.
IV (Ç) 3.H	**3.Hâne Bölümü/** Isfahan, Büselik, Kürdî çeşnileri .
(D) 3.H	**3.Hâne Bölümü/** Yerinde Sabâ.
1.t _____ 3.H	**Teslim Motifi** / Irak'ta kalış.
II (B) Mz	**Mülâzime Bölümü /** Yerinde Sabâ, Zirgüleli Hicaz ve Hicaz makamları.
V (E) 4.H	**4.Hâne Bölümü/** Yerinde Uşşak, Yegâh'ta Rast beşlisi.
(F) 4.H	**4.Hâne Bölümü /** Yerinde Uşşak makâmı.
(G) 4.H	**4.Hâne Bölümü /** Yerinde Uşşak makâmı.
1.t _____ 4.H	**Teslim Motifi** / Irak'ta kalış.
II (B) Mz	**Mülâzime Bölümü /** Yerinde Sabâ, Zirgüleli Hicaz ve Hicaz makamları.

Tablo 3.2.4. Müselles Peşrevi İcrâ Akışı.

I (A) 1.H	1.t _____ 1.H	+ II (B) Mz	+ III (C) 2.H	1.t _____ 2.H	+ II (B) Mz	+ IV (Ç) 3.H	+ (D) 3.H				
2.t _____ 3.H	+ II (B) Mz	V (E) 4.H	+ (F) 4.H	+ (G) 4.H	3.t _____ 4.H	+ II (B) Mz-Sn					

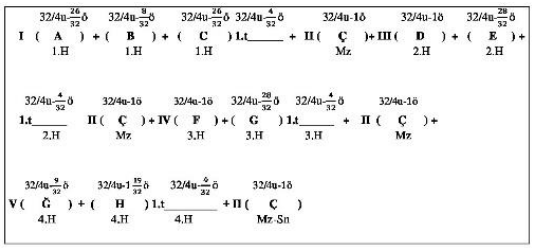
Sipihr Peşrevi

Muhammes usûlünde bestelenmiştir. 5 farklı bölümden oluşmaktadır. Eser Kurgusu I.,II.,III.,II.,IV.,II.,V.,II. bölümleri olarak kurgulanmıştır. 10'u farklı 13 cümleden oluşmaktadır. Bunlardan Ç cümlesi Mülâzime Bölümü olup 1 ölçü uzunluğundadır. Her Hâneden sonra tekrarlamıştır. 1. Hâne:3 cümleden, 2., 3. ve 4. Hâneler: 2'şer cümleden, oluşmaktadır. Hâne sonlarında son Te-Ke,Te-Ke darplarına denk gelecek şekilde dört vuruşluk *teslim motifi* kullanılmıştır. Aşağıda Eser Kurgusu ve İcrâ Akışı Tabloları verilerek makam ve geçkileri belirtilmiştir (Tablo 3.2.5) (Tablo 3.2.6).

Tablo 3.2.5. Sipihr Peşrevi Eser Kurgusu.

I (A) 1.H **1.Hâne Bölümü /** Şehnâz ve Hisar makāmı
(B) 1.H **1.Hâne Bölümü /** Hisar makāmı.
(C) 1.H **1.Hâne Bölümü/** Hisar makāmı ve Küçek makāmı.
1.t 1.H **Teslim Motifi** / Çargâh'ta Kalış.
II (Ç) Mz **Mülâzime Bölümü/** Küçek makāmı seyri ve Sabâ makāmıyla tam karar.
III (D) 2.H **2.Hâne Bölümü/** Muhayyersünbüle makāmı seyri.
(E) 2,H **2.Hâne Bölümü /** Muhayyersümbüle seyriyle Sabâ makāmına geçiş.
1.t 2.H **Teslim Motifi** / Çargâh'ta Kalış.
II (Ç) Mz **Mülâzime Bölümü /** Küçek makāmı seyri ve Sabâ makāmıyla tam karar.
IV (F) 3.H **3. Hâne Bölümü /** Muhayyersünbüle makāmı seyri.
(G) 3.H **3. Hâne Bölümü /** Muhayyersümbüle seyriyle Sabâ makāmına geçiş.
1.t 3.H **Teslim Motifi** / Çargâh'ta Kalış.
II (Ç) Mz **Mülâzime Bölümü /** Küçek makāmı seyri ve Sabâ makāmıyla tam karar.
V (Ğ) 4,H **4.Hâne Bölümü/** Hüseynî'de Kürdî çeşnisi.
(H) 4,H **4.Hâne Bölümü/** .Nevâ'da Bûselik,
1.t 4.H **Teslim Motifi** / Çargâh'ta Kalış.
II (Ç) Mz-Sn **Mülâzime /Sonuç Bölümü/** Küçek makāmı seyri ve Saba makāmıyla tam karar.

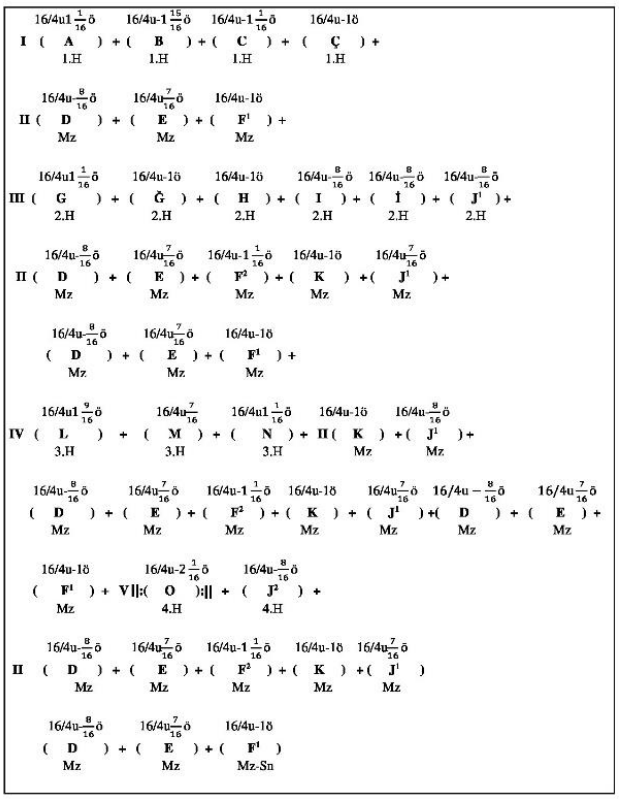
Tablo 3.2.6. Sipihr Peşrevi İcrâ Akışı.



Evcârâ Peşrevi

Çifte Düyek usûlünde bestelenmiştir. 5 farklı bölümden oluşmaktadır. Eser Kurgusu I.,II.,III.,II.,IV.,II.,V.,II. bölümleri olarak kurgulanmıştır. 20'si farklı toplam 44 cümleden oluşmaktadır. F^1 ve F^2cümleleri ile j^1 ve j^2 benzer cümlelerdir. D, E, F^1, K, L cümleleri eserin Mülâzime bölümünü oluşturmaktadır. Uzunca bir Mülâzime bölümü bulunmaktadır. Çalışmamızda tahlilini yaptığımız diğer üç peşrevden çok farklı bir biçim özelliği göstermektedir. 1.Hâne 4, 2. Hâne 6, 3.Hâne 3, 4. Hâne tekrarlı 1 cümleden oluşmaktadır. 2.Hâneden sonra eserin Mülâzime bölümü D, E, F^2, K, L, D, E, F^1 olarak kurgulanmıştır. Uzun Mülâzime bölümü her Hâneden sonra tekrarlamıştır. Mülâzime bölümündeki cümle uzunlukları kısa olmakla birlikte cümle sayısı fazladır. Bu nedenle Hânelere göre daha uzun bir bölüm olmuştur. Oysaki peşrevlerde genel olarak hanelerin uzun, Mülâzimenin kısa olduğu görülmekredir. Evcâra Peşrevi'nde tam tersi Hâneler kısa, Mülâzime uzun tutulmuştur. Mülâzimeler bestekârların en güzel nağmelerini sergiledikleri bölümdür. Evcârâ Peşrevi'nde bestekâr bu bölümü uzun tutarak makāmı ve bestekârlıktaki kişisel motiflerini sergileyerek ustalığını ve hünerini ortaya koymuştur. I.Hâne ve Mülâzime'de Evcârâ makāmı seyri gösterilmiştir. 2.Hânede Irak perdesinde Zirgüleli Hicaz gösterilip, Eviç perdesinde Müstear gösterilerek Evcârâ'ya geçilmiştir. 3. Hânede Tiz Segâh perdesinde Zirgüleli Hicaz, 4. Hânede ise Irak perdesinde Zirgüleli Hicaz ve Eviç perdesi üzerinden tekrar Evcârâ'ya bağlanmıştır.
İcrâ Akışı Tablosu aşağıda verilmiştir (Tablo 3.2.7)

Tablo 3.2.7. Evcârâ Peşrevi İcrâ Akışı.



4.SONUÇ VE ÖNERİLER

Dilhayat Kalfa'ya atfedilen peşrevler biçim özelliği yönüyle değerlendirilmiştir. Günümüz Peşrev anlayışına uymakla birlikte yapısal olarak farklılıklar da içermektedir. Aynı peşrevde hâne uzunluklarında farklılıklar vardır. Bazen bir cümle bazen iki cümleden oluştuğu görülmüştür. Büyük usûllerle bestelenmiştir bu nedenle de cümleler uzundur. Büzürk, Sipihr ve Müselles makamlarındaki peşrevler, cümle yapıları, bölüm bağlantıları, teslim motifi, teslim cümlesi gibi gerek ezgisel yapıları gerekse eser kurgusu itibâriyle tamamen birbirinden farklıdır.

Evcârâ peşrevinde biçim özelliklerinde daha farklı bir eser kurgusu gözlemlenmiştir. Bu kurguda, cümle ve bölüm bağlantılarının yanı sıra ezgi mükemmelliği kendini göstermektedir. Türk mûsikîsinde bir eserin kalıcı olabilmesi ve beğenilmesi bestekârın yaratıcı nağmelerine bağlıdır. Güzel nağme yakalayabilen, yaratabilen bestekârların adları eserleriyle birlikte yüzyıllarca yaşayabilmektedir. Merâgi, Itrî, Dede Efendi, Zekâî Dede yüzyıllar öncesinden gelen eserlerindeki makam kullanımları ve nağme güzelliğiyle günümüzde de sadâları devam etmektedir. Evcârâ peşrevi de sadâsı günümüze kadar devam etmiş eserlerden biridir. Bestekârı kesin olarak tesbit edilememiş olsa da makam kullanımı, nağme güzelliği ve eser kurgusundaki güçlü biçimsel yapısıyla Evcârâ takımların vazgeçilmez peşrevi olmuştur. Mülâzime bölümündeki cümle uzunlukları kısa olmakla birlikte cümle sayısı fazladır. Bu nedenle Mülâzime bölümü Hânelere göre daha uzun olmuştur. Oysa ki peşrevlerde genel olarak Hânelerin uzun, Mülâzimenin kısa olduğu görülmektedir. Evcâra Peşrevi'nde tam tersi Hâneler kısa, Mülâzime uzun tutulmuştur. Mülâzimeler bestekârların en güzel nağmelerini sergiledikleri bölümdür. Evcârâ Peşrevi'nde bestekâr bu bölümü uzun tutarak makāmı ve bestekârlıktaki kişisel motiflerini sergileyerek ustalığını ve hünerini ortaya koymuştur. Dilhayat Kalfa'nın olmayabileceği üzerine var olan görüşlere biz de katılmaktayız. Hatta bu eserin Tanbûrî İsak'a (1745-1814) ait olabileceğini de düşünmekteyiz. Çünkü: Tanbûrî İsak'ın diğer peşrevlerindeki cümle yapıları ve kişisel motifleri göz önünde bulundurulduğunda benzerlikler göstermektedir. Ayrıca yüksek bir sanat anlayışının olduğu da görülmektedir. Evcârâ makāmını terkib eden III. Selim'in de hocası olan Tanbûrî İsak'ın bu makamda bir peşrev ve sazsemâîsi besteleyebileceğini de düşünmekteyiz. Elbette bu düşünce belgelerle teyide muhtaçtır. Tanbûrî İsak'ın saz eserlerindeki güçlü bestekârlığı da göz önünde bulundurulmalıdır.

Dilhayat Kalfa'ya âit olduğu düşünülen eserlerin teyîdi ve gerçek bestekârlarının tesbîti için, arşivlere dayalı, kapsamlı bir proje çalışmasının yapılması önerilmektedir.

KAYNAKÇA

Ayverdi, İ. (2011), Kubbealtı Lügati-Misalli Büyük Türkçe Sözlük, Kubbealtı Yayınları, İstanbul.
Ergen, G. (1994), Dilhayat Kalfa'nın Hayatı, Eserleri ve Türk Mûsikîsindeki Yeri, İTÜ Sosyal Bilimler Enstitüsü, BasılmamışYüksek Lisans Tezi, İstanbul.
Ezgi, S. (1940), Nazarî Amelî Türk Mûsikîsi, C:IV, İstanbul Üniversitesi Konservatuvarı Neşriyatı, Akkaya matbaası, İstanbul.
Devlet Korosu, http://www.sanatmuziginotalari.com/default.asp, Erişim Tarihi: 03.02.2022.
Korkmaz, H. (2020), *"I.Mahmut'un Câriyesi Dilhayat'ın Ölümsüz Eserleri"*, Z Dergisi, İstanbul.
Kutluğ, Y. F. (2000), Türk Mûsikîsinde Makamlar, Yapı Kredi Yayınları, İstanbul.
Mert, T. (1999), "*Ortaçağ'ın En Büyük Kadın Bestekârı Dilhayat Kalfa'nın Mirası"*, Mûsikî Mecmuası, Yıl:52, S:466, Güz/Ekim,
Özalp, N. (2000), Türk Mûsikîsi Tarihi, C:I, MEB Yayınları, İstanbul.
Yahya Kaçar, G. (2012), Türk Mûsikîsi Rehberi, Maya Akademi, Ankara.
Yahya Kaçar, G. (2020), Türk Mûsikîsinde Eser ve İcrâ Tahlîli Yöntemleri-Kavramlar-Semboller ve Örnekleriyle, Gece Kitaplığı, Ankara.
Yıldırım, A. ve Şimşek, H. (2018). Sosyal Bilimlerde Nitel Araştırma Yöntemleri, Seçkin Yayıncılık, Ankara.
http://www.istanbulkadinmuzesi.org/dilhayat-kalfa/?tur=Alfabetik

KORONA VİRÜS SÜRECİNDE SPOR BİLİMLERİ FAKÜLTESİ ÖĞRENCİLERİNDE ÖLÜM ALGISININ ARAŞTIRILMASI

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ÖZET

Bu çalışmanın amacı Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm algısının araştırılmasıdır.Ondokuz Mayıs Üniversitesi Yaşar Doğu spor bilimleri fakültesi öğrencilerinden 143 kadın ve 254 erkek öğrenciye ölüm algısı ölçeği uygulanmıştır. İstatistiksel işlemlerde t- testi kullanılmıştır.Cinsiyete göre ölüm algısı puanlarının karşılaştırılmasında istatistiksel olarak anlamlı farklılık bulunmuştur ($p<0,05$ ve $p<0,001$).Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm algısı puanları karşılaştırılmasında istatistiksel olarak anlamlı bir farklılık bulunmamıştır ($p>0,05$).Müsabık olarak yarışmalara katılıp katılmama durumuna göre ölüm algısı puanlarının karşılaştırılmasında ödüllendirme ve terk etme alt boyutlarında anlamlı farklılık tespit edilmiştir ($p<0,05$).

Sonuç: Bu çalışmada erkeklerin kadınlardan daha yüksek ölüm algısına sahip oldukları belirlenmiştir. Yine müsabık olarak yarışmalara katılan öğrencilerin müsabakalara katılmayanlara göre ölüm algısı puanlarının ödüllendirme ve terk etme alt boyutlarında farklı olduğu tespit edilmiştir. Korona virüs salgınına yakalananlar ile yakalanmayanların ölüm algısının ise değişmediği görülmüştür. Ölüm algısının korona virüsten yakını ölen ve ölmeyenlere göre araştırılması da önerilir.

Anahtar Kelimeler: Ölüm Algısı, Korona virüs, Üniversite Öğrencisi, Müsabakalara katılma

INVESTIGATION OF PERCEPTION OF DEATH IN SPORTS SCIENCES FACULTY STUDENTS IN THE CORONA VIRUS PROCESS

ABSTRACT

The aim of this study is to investigate the perception of death in Sports Sciences Faculty Students during the Corona virus process. Death perception scale was applied to 143 female and 254 male students of the Faculty of Sports Sciences of OndokuzMayıs University. The t-test was used for statistical operations. A statistically significant difference was found in the comparison of death perception scores by gender ($p<0.05$ and $p<0.001$). No statistically significant difference was found in the comparison of death perception scores according to whether or not they have had a corona virus disease ($p>0.05$). A significant difference was found in the sub-dimensions of rewarding and abandonment in the comparison of death perception scores according to whether or not to participate in the competition as a competitor ($p<0.05$).

Conclusion: In this study, it was determined that men have a higher perception of death than women. Again, it was determined that the death perception scores of the students who participated in the competitions as competitors were different in the sub-dimensions of rewarding and abandonment compared to those who did not participate in the competitions. It was observed that the perception of death of those who were caught and those who were not caught in the corona virus epidemic did not change. It is also recommended to investigate the perception of death according to those whose relatives died and did not die from the corona virus.

Keywords: Perception of Death, Corona virus, University Student, Competitions, participation

Giriş ve amaç:

Ölüm, hayatın yadsınamaz bir gerçeğidir (Yalom, 2014: 52). Geçmişteki eski kültürler ve halklar araştırıldığında, ölümün insan için her zaman tatsız olduğu ve muhtemelen hep de öyle olacağı görülür (Kübler-Ross, 2010: 12). İnsan hayatında kesin olan tek şey ölümün kendisidir ve buna rağmen insanda en çok endişe uyandıran şey ölümdür. Bunun en büyük nedeni ise ölümün bir gizem olarak devam ediyor olmasıdır (Nyatanga, 2005). Ölüm olgusu varoluşun çözemediği fakat yaşamak zorunda olduğu, belki de hayatın anlamının içinde saklı bulunduğu en büyük gizemdir (Türkmen ve ark. 2018: 15). İnsan, kendisinin ölümüyle ilgili düşüncelerini bastırıp bilinçaltına itmektedir (Hökelekli, 2008, s. 9-78). Ayrıca toplumlarda genellikle yaşlı insanların ölüme daha yakın kişiler olduğu düşünülmektedir. Günümüz modern insanı, ölümü hatırlamak istememekte, hatta onunla ilgili konuşmaktan kaçınmaktadır. Konuşmak zorunda kaldığında da çoğunluklaölüm hakkındaki olgulardan bahsetmekte, ölümün insanda yarattığı duygulardanve düşüncelerden bahsedilmemektedir (Yalom, 1989, s. 5).

İnsanlık tarihinin başlangıcından bugüne insanoğlu birçok felaket ve salgın hastalıklarla karşı karşıya kalmıştır. Bu hastalıklar ve felaketler karşısında binlerce hatta milyonlarca insan hayatını kaybetmiştir. Son olarak 2019 yılının aralık ayında Çin'in Wuhan kentinde ortaya çıkan koronavirüs (Covid-19) salgını yeni bir salgın türü olarak ortaya çıkmış ve kısa sürede diğer ülkelere de yayılmaya başlamıştır. 11 Mart 2020'de ise Dünya Sağlık Örgütü, Covid-19'u 'küresel bir salgın' olarak tanımlamıştır. Dünyada olduğu gibi ülkemizde de hastalık hızla yayılım göstermiştir. Covid-19 salgınının ortaya çıkardığı korku ve psikolojik çöküntü kişileri olduğu gibi birçok sektörü de olumsuz yönde etkilemektedir. Ortaya çıkan psikolojik sorunların yanında insanların sağlıklarını ve işlerini kaybetmelerinin yanı sıra hastalığı yayma korkusu eklenerek toplumlar üzerinde büyük boyutlarda bir kaygı oluşmuştur (Barua, 2020).Ayrıca koronavirüs salgını binlerce kişinin ölümüne neden olmuş ve günümüzde de olmaya devam etmektedir. Bu ölümlerdeki artış bireylerde ölüm kaygısının ortaya çıkmasına ya da var olan kaygının daha çok artmasına sebep olmuştur. Pozitif vaka sayılarında ve can kaybında önlenemeyen artışlar Kovid-19 salgınının psikolojik bir yönü olan korkuya yol açmaktadır (Pakpour ve Griffiths, 2020).İnsanlar ölüm karşısında korku, keder, öfke, kırgınlık, umutsuzluk, katlanma, karşı koyma, hırs, başarı, acıma, umarsızlık gibi hareketlerde bulunurlar (Durmuşoğlu ve Ataman,2018).

Bu çalışmanın amacı Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm algısının araştırılmasıdır.

Yöntem

Katılımcılar: Ondokuz Mayıs Üniversitesi Yaşar Doğu spor bilimleri fakültesi öğrencilerinden seçilmiştir. Çalışmaya 143 kadın ve 254 erkek öğrenci dahil edilmiştir.

Kullanılan ölçek: Ölüm Algısı Ölçeği kullanılmıştır. Acı Çekme, Bilinmeyen, Başarısızlık, (Ahirette) Ödüllendirilme, Cesaret ve Bakmakla yükümlü olduklarını terk etme olmak üzere 6 boyut ve toplam 24 maddedir. Ölçeği beşli likert tipi bir ölçektir. Her madde için, "Kesinlikle Katılıyorum", "Katılıyorum", "Karasızım", "Katılmıyorum", "Kesinlikle Katılmıyorum" şeklinde beş seçenek kullanılmıştır. Puanlama: Kesinlikle Katılıyorum= 5, Katılıyorum= 4, Kararsızım= 3, Katılmıyorum= 2, Hiç Katılmıyorum= 1. Ölçek alt boyutları: Ahirette Ödüllendirilme (İlk 5 madde): Bu boyutta ölüm, Allah'a kavuşma, ahiret hayatında ödüllendirilme, ebedi mutluluğa, sonsuz iyiliklere ve ölen sevdiklerimize kavuşma olarak görülmektedir. Bakmakla yükümlü olduklarını terk etme (6,7,8,9,10. maddeler): Bu boyutta, bakmakla yükümlü olduklarımızın terkinden doğan duygu ve düşünceler vurgulanmaktadır. Başarısızlık (11,12,13,14. maddeler): Bu boyutta ölüm kişisel bir başarısızlık, yenilgi, sonsuz bir hayal kırıklığı ve çaresizlik olarak görülmektedir. Cesaret (15,16,17,18. maddeler): Bu boyutta ölüm, kişinin

ölüm karşısındaki gücünü ve cesaretini gösterme fırsatı olarak değerlendirilmektedir. Bilinmeyen (19,20,21. maddeler): Bu boyutta ölüm, hayatın gizemli, akıl ermez ve belirsiz bir şekilde sona ermesi olarak görülmektedir. Acı Çekme (22,23,24. maddeler): Bu boyuta göre ölüm, bilincin ve üstün olmanın kaybedildiği acı verici bir olay olarak görülmektedir (Topuz,2013).

İstatistiksel analiz:

Verilerin analizinde 25.00 SPSS paket programı kullanılmıştır. Veriler değerlendirilirken "KolmogorovSmirnov Testi" ile normal dağılıma uygunluğu araştırılmış ve tüm verilerin normal dağılıma uyduğu tespit edilmiştir. Karşılaştırmalarda t- testi kullanılmıştır.

Bulgular

Tablo 1. Cinsiyete göre yaş, Boy uzunluğu ve vücut ağırlıkları dağılımı

	Cinsiyet	N	Ortalama	St. sapma	T -test	p
Yaş (yıl)	Erkek	254	21,83	2,78	1,74	0,081
	Kadın	143	21,31	2,99		
Boy uzunluğu (cm)	Erkek	254	178,04	12,02	12,32	0,000**
	Kadın	143	164,76	6,15		
Vücut ağırlığı (kg)	Erkek	254	76,31	8,12	18,21	0,000**
	Kadın	143	56,14	9,67		

**p<0,001

Bu çalışmada Öğrencilerin cinsiyete göre yaşları benzer iken, boy uzunluğu ve vücut ağırlıkları birbirinden anlamlı şekilde farklıdır (p<0,001).

Tablo 2. Cinsiyete göre ölüm algısı puanlarının karşılaştırılması

Ölçek boyutlar	Cinsiyet	N	Ortalama	St. sapma	t-test	p
Ödüllendirme	Erkek	254	19,51	4,53	3,22	0,001**
	Kadın	143	17,99	4,45		
Terk etme	Erkek	254	17,01	4,39	1,98	0,048*
	Kadın	143	16,13	4,07		
Başarısızlık	Erkek	254	10,92	3,72	-1,81	0,071
	Kadın	143	11,63	3,78		
Cesaret	Erkek	254	13,17	3,16	0,926	0,355
	Kadın	143	12,85	3,64		
Bilinmeyen	Erkek	254	9,69	3,24	-1,15	0,252
	Kadın	143	10,07	3,16		
Açı çekme	Erkek	254	7,66	3,14	-0,82	0,411
	Kadın	143	7,92	2,98		
Toplam puan	Erkek	254	77,96	13,63	0,91	0,364
	Kadın	143	76,59	15,68		

*p<0,05 ve **p<0,001

Bu çalışmada cinsiyete göre ölüm algısı puanlarının karşılaştırılmasında istatistiksel olarak anlamlı farklılık bulunmuştur (p<0,05 ve p<0,001).

Tablo 3. Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm algısı puanları karşılaştırılması

Ölçek boyutlar	Korona	N	Ortalama	St. sapma	t-test	p
Ödüllendirme	Geçirmedim	296	18,98	4,50	0,087	0,931
	Geçirdim	101	18,93	4,73		
Terk etme	Geçirmedim	296	16,72	4,26	0,187	0,852
	Geçirdim	101	16,62	4,40		
Başarısızlık	Geçirmedim	296	11,23	3,65	0,454	0,650
	Geçirdim	101	11,03	4,05		
Cesaret	Geçirmedim	296	12,94	3,22	-1,12	0,260
	Geçirdim	101	13,38	3,64		
Bilinmeyen	Geçirmedim	296	9,83	3,18	0,79	0,937
	Geçirdim	101	9,80	3,33		
Açı çekme	Geçirmedim	296	7,71	3,06	-0,52	0,603
	Geçirdim	101	7,89	3,16		
Toplam puan	Geçirmedim	296	77,40	14,29	-0,53	0,878
	Geçirdim	101	77,65	14,79		

Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm algısı puanları karşılaştırılmasında istatistiksel olarak anlamlı bir farklılık bulunmamıştır (p>0,05).

Tablo 4. Müsabık olarak yarışmalara katılıp katılmama durumuna göre ölüm algısı puanlarının karşılaştırılması

		N	Ort.	St.sapma	t	p
Ödüllendirme	Yarışmıyor	214	18,40	4,71	-2,70	0,007*
	Müsabık sporcu	183	19,63	4,28		
Terk etme	Yarışmıyor	214	16,21	4,09	-2,43	0,015*
	Müsabık sporcu	183	17,26	4,47		
Başarısızlık	Yarışmıyor	214	11,12	3,72	-0,31	0,753
	Müsabık sporcu	183	11,24	3,80		
Cesaret	Yarışmıyor	214	12,79	3,40	-1,67	0,095
	Müsabık sporcu	183	13,36	3,24		
Bilinmeyen	Yarışmıyor	214	9,85	3,34	0,15	0,882
	Müsabık sporcu	183	9,80	3,06		
Açı çekme	Yarışmıyor	214	7,90	3,11	1,04	0,299
	Müsabık sporcu	183	7,58	3,05		
Toplam puan	Yarışmıyor	214	76,27	14,95	1,79	0,074
	Müsabık sporcu	183	78,86	13,63		

*p<0,05

Müsabık olarak yarışmalara katılıp katılmama durumuna göre ölüm algısı puanlarının karşılaştırılmasında ödüllendirme ve terk etme alt boyutlarında anlamlı farklılık tespit edilmiştir ($p<0,05$).

Tartışma ve Sonuç

Bu çalışmada Öğrencilerin cinsiyete göre yaşları benzer iken, boy uzunluğu ve vücut ağırlıkları birbirinden anlamlı şekilde farklıdır ($p<0,001$).

Bu çalışmada erkeklerin kadınlara göre istatistiksel olarak anlamlı olmasa da ölüm algısı puanları daha yüksektir ($p>0,05$). Erkeklerin ölüm algı puanı yüksekliği ödüllendirme ve terk etme boyutunda kadınlardan farklı olması anlamlıdır ($p<0,05$ ve $p<0,001$).Fettahoğlu (2019) çalışmasında kadınların erkeklere göre ölümü soru işaretleriyle dolu ve acı verici olarak algılama düzeylerinin daha yüksek olduğu görülmüştür. Ancak yine erkeklerin ölümü başarısızlık olarak atfetme eğilimlerinin daha yüksek olduğu tespit edilmiştir. Şahin (2018) çalışmasında ölüm algısının yaşam doyumunun artmasında etkili olduğunu belirtmiştir. Bir çalışmada kadınların koronavirüs korkusu düzeyleri erkeklerin korkusuna nazaran daha yüksek bulunmuştur (Gencer,2020). Bir çalışmada sağlık profesyonellerinin cinsiyetlerine göre toplam ölüme karşı tutum ölçeği ve alt ölçeklerde anlamlı bir farklılık bulunmamıştır (Tülay,2018).

Bir çalışmada sağlık çalışanlarının algılanan Korona virüs-19 tehdidi düzeylerinin çalışmayan gruptan daha düşük olduğu tespit edilmiştir (Kavaklı ve ark.,2020:15-23).Başka bir araştırmada da kronik hastalık geçmişi olanların salgının psikolojik etkisini ve stres, kaygı ve depresyonu daha yüksek seviyelerde yaşadıkları ortaya konulmuştur (Wang ve ark., 2020).Bu çalışmada korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm algısı puanları karşılaştırılmasında istatistiksel olarak anlamlı bir farklılık olmadığı görülmüştür ($p>0,05$).

Bu çalışmada müsabık olarak yarışmalara katılanların ölüm algısı puanlarının ödüllendirme ve terk etme alt boyutlarındayarışmayanlara göre daha yüksek olması anlamlı bulunmuştur ($p<0,05$).

Sonuç Bu çalışmada erkeklerin kadınlardan daha yüksek ölüm algısına sahip oldukları belirlenmiştir. Yine müsabık olarak yarışmalara katılan öğrencilerin müsabakalara katılmayanlara göre ölüm algısı puanlarının ödüllendirme ve terk etme alt boyutlarında farklı olduğu tespit edilmiştir. Korona virüs salgınına yakalananlar ile yakalanmayanların ölüm algısının ise değişmediği görülmüştür. Ölüm algısının korona virüsten yakını ölen ve ölmeyenlere göre araştırılması da önerilir.

Kaynakça

Barua, S. (2020). Understandingcoronanomics: Theeconomicimplications of theCoronavirus (COVID-19) pandemic. *SSRN Electronic Journal*, 10.

Durmuşoğlu K, Ataman K. (2018).Kutsaldan Sekülere: Değişen Ölüm Algısı Üzerine Sosyolojik Bir Değerlendirme,Bülent Ecevit Üniversitesi İlahiyat Fakültesi Dergisi,5 (1): 123-149.

Fettahoğlu, Rabia. Bireylerin Yaşlılık Ve Ölüm Algısının Sağlık Hizmeti Kullanımına Etkisi, Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Sağlık Yönetimi Anabilim Dalı Yüksek Lisans Tezi, Isparta,2019.

Gencer N.(2020). Andemi Sürecinde Bireylerin Koronavirüs (Kovid19) Korkusu: Çorum Örneği,USBAD Uluslararası Sosyal Bilimler Akademi Dergisi,2 (4):2687-2641

Hökelekli, Hayati. Ölüm, ölüm ötesi psikolojisi ve din. 1. Baskı. İstanbul: DEM Yayınları.2008.

Kavaklı,Mehmet; Ak, Mehmet; Uğuz, Faruk; Türkmen, Osman Oğulcan. Themediating role of self-compassion in therelationshipbetweenperceived COVID-19 threatanddeathanxiety (eng). J ClinPsy, 23(1), (2020): 15-23

Kübler-Ross, Elisabeth, ***Ölüm ve Ölmek Üzerine***, Çev. Ekin Uşşaklı, April Yayıncılık, Ankara, 2010.

Nyatanga, Brian, "Is Fear of DeathItself a RationalPreoccupation?", ***International Journal of PalliativeNursing***, Cilt 11, Sayı 12, 2005, s. 643-645.

Özdemir Z. Cerrahi yoğun bakım ünitesinde çalışan hemşirelerin ölüm sürecinde olan hastaların bakımına yönelik uygulamaları. Yayınlanmamış Yüksek lisans tezi, Ankara,Hacettepe Üniversitesi, 2007.

Pakpour, A. &Griffiths, M. D. Thefear of COVID-19 andits Role in PreventiveBehaviors. Journal of ConcurrentDisorders, Advance Online Publication. (2020).Erişim Adresi: https://concurrentdisorders.ca/2020/04/03/the-fear-ofcovid-19- and-its-role-in-preventive-behaviors/

Şahin,Zenep. Ölüm Algısının " Yaşam Doyumu " Üzerindeki Etkisi: Üniversite Örneği, Bitlis Eren Üniversitesi Akademik İzdüşüm Dergisi,3(3),(2018): 1-8.

Topuz, İlhan. Ölüm Algısı Ölçeği (ÖAÖ) Türkçe Versiyonunun Geliştirilmesi: Geçerlik ve Güvenirlik Çalışması, Değerler Eğitimi Dergisi, Cilt 11, No. 26(2013): 279-300.

Tülay B. (2018). Sağlık Profesyonellerinin ve Bakım Vericilerin Ölüm Algıları Ve Saygın Ölüme İlişkin Tutumları,Gazi Üniversitesi Sağlık Bilimleri Enstitüsü Hemşirelik ProgramıYüksek Lisans Tezi, Ankara

Türkmen, Osman Oğulcan, Büyüksekil, Mukadder, Ak, Mehmet, Kesici, Şahin, ***Ölüm-Yas Travması***, MEB, Ankara, 2018.

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S. &Ho, R. C. ImmediatePsychologicalResponsesandAssociatedFactorsDuringtheInitialStage of the 2019 CoronavirusDisease (COVID-19) EpidemicAmongthe General Population in China. International Journal of EnvironmentalResearchandPublicHealth 17(1729)(2020): 1-25.

Yalom, I. (1989). *Love'sexecutioner*. New York: Basic Books.

Yalom, Irvin, ***Varoluşçu Psikoterapi***, Çev. Zeliha İyidoğan-Babayiğit, Kabalcı Yayınları, İstanbul, 2014.

KORONA VİRÜS SÜRECİNDE SPOR BİLİMLERİ FAKÜLTESİ ÖĞRENCİLERİNDE ÖLÜM KAYGISININ ARAŞTIRILMASI

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ÖZET

Bu çalışmanın amacı Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm kaygısının araştırılmasıdır. Ondokuz Mayıs Üniversitesi Yaşar Doğu spor bilimleri fakültesi öğrencilerin 143 kadın ve 254 erkek öğrenciye ölüm kaygısı ölçeği uygulanmıştır. İstatistiksel işlemlerde t- testi kullanılmıştır. Cinsiyete göre ölüm kaygısı puanlarında anlamlı farklılık bulunmuştur ($p<0,001$). Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm kaygısı puanları arasında istatistiksel olarak anlamlı farklılık bulunmamıştır ($p>0,05$). Öğrencilerin müsabık olarak yarışıp yarışmamasına göre ölüm kaygısı puanlarının karşılaştırılmasında ölümü düşünme alt boyutunda anlamlı farklılık bulunmuştur ($p<0,05$).

Sonuç: Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm kaygısının cinsiyete ve müsabık olarak yarışmalara katılıp katılmamaya göre değiştiği tespit edilmiştir. Ayrıca korona virüs salgınına yakalanıp yakalanmama durumuna göre ise farklılık olmadığı görülmüştür. Bu çalışmanın yakınları korona virüsten ölen ve ölmeyenlere veya aşılı olan ve aşı yaptırmayanlara göre yapılması önerilir.

Anahtar Kelimeler: Korona Virüs, Ölüm Algısı, Üniversite Öğrencisi, Müsabakalarda Yarışma

INVESTIGATION OF DEATH ANXIETY IN SPORTS SCIENCES FACULTY STUDENTS IN THE CORONA VIRUS PROCESS

ABSTRACT

The aim of this study is to investigate death anxiety in Sports Sciences Faculty Students during the Corona virus process. Death anxiety scale was applied to 143 female and 254 male students of OndokuzMayıs University YaşarDoğu Faculty of Sports Sciences. The t-test was used for statistical operations. A significant difference was found in death anxiety scores according to gender ($p<0.001$). There was no statistically significant difference between death anxiety scores according to whether or not they have had a corona virus disease ($p>0.05$). A significant difference was found in the sub-dimension of thinking about death in the comparison of death anxiety scores according to whether the students competed as a contestant or not ($p<0.05$).

Conclusion: It has been determined that death anxiety in the Faculty of Sports Sciences changes according to gender and whether or not to participate in competitions as a competitor during the corona virus process. In addition, it has been observed that there is no difference according to whether I have been caught in the corona virus epidemic or not. It is recommended that this study be conducted according to those whose relatives died and did not die from the corona virus, or those who were vaccinated and did not get vaccinated.

Keywords: Corona Virus, Perception of death, University student, Competition in competitions

Giriş ve amaç

Ölüm kavramı, pek çok dilde farklı kelimelerle telaffuz edilmiş olsa da bütün toplumlarda ve kültürlerde ölüm olgusu aynı şeyi ifade etmektedir.Ölümü düşünmek bazı insanlar açısından stresli bir durumken

bazıları açısından da stresten kurtulmak için bir kurtuluş yoludur (Geçtan,2016). Ölümü düşünmenin veya ölümün insanların hayatında çok önemli bir yeri vardır. Bu yüzden ölümün insan yaşamına olan etkisi hafife alınamaz. Ancak ölüm düşüncesinin aşırıya kaçması ya da kişinin günlük yaşamını kuşatması durumunda ölüm düşüncesi patolojik bir hal alarak bireyin psikolojisini olumsuz olarak etkileyebilmektedir (Karaca, 2000). Bu yüzden insanların ruh sağlıklarını koruyabilmeleri açısından ölüm düşüncesinin sınırlarını belirlemesi önemlidir (Alkan,1999). İnsanın kendi ölümünü düşünmesi farklı duygular ve korkular yaşamasına sebep olabilmektedir. Bunlar; acı duyma, bedenini kaybetme, ölüm anında yalnız kalma ve ölüm korkusu gibi duygulardan oluşmaktadır. Bütün bu duygular kişide ölümü kabullenme ya da tam tersi olarak ölüme meydan okuma gibi davranışlar oluşturabilmektedir (Hökelekli,1996).İnsan hayatının önemli ve gerçek bir kısmıolan ölüm, kimi insanlarda oldukça baskın bir şekilde kaygı yaratır. Ölümle ilgili endişe duymak bazı fertler için kendi ölümlerini veya ölme sürecini düşünmek, yoğun bir korku ve kaygıya sebep olabilir (Turhan,2021).

İlk kez Aralık 2019'da Çin'in Wuhan kentinde ortaya çıkan koronavirüs salgını Ocak ayında Çinli yetkililer tarafından yeni bir virüs çeşidi olarak tanımlanmıştır. Çin hükümeti koronavirüs salgınının yayılmasını önlemek için birtakım önlemler almış olsa da hastalık kısa süre içinde salgın haline gelmiş ve Çin'in diğer kentleri de başta olmak üzere diğer ülkelerde de yayılmaya başlamıştır. 11 Mart 2020'de ise Dünya Sağlık Örgütü, Covid-19'u 'küresel bir salgın' olarak tanımlamıştır. Birçok ülkeyi etkisi altına alan virüs, bireylerin yaşam şekillerini de değiştirmiştir. Türkiye'de yapılanlar da dahil olmak üzere virüsün bireylerin yaşam şekilleri üzerine olan etkisini ortaya koyan çalışmalar artmıştır. Koronavirüs toplumsal düzenin değişmesine bağlı olarak bireylerin yaşam şekillerine de etki edip değiştirmiştir.Genel bir ifadeyle salgın öncesi ve sonrası sürecin tamamen birbirinden farklılaştığı ve algıları, anlayış ve günlük yaşantıyı tamamen farklılaştırdığı söylenebilir (Karakaş 2020; Çebi 2020; Nar 2020). Ayrıca koronavirüs salgını binlerce kişinin ölümüne neden olmuş ve günümüzde de olmaya devam etmektedir. Bu ölümlerdeki artış bireylerde ölüm kaygısını ortaya çıkarabilmekte ya da var olan kaygıyı daha da şiddetlendirebilmektedir.Ölüm kaygısı üzerine cinsiyet, medeni durum, yaş, inanç, ölüm ile karşılaşma sıklığı, ölüme yakın yaşantılar etkili olabilmektedir (Ceylan,2018). Günce olan korona virüs salgınının da ölüm kaygısına neden olabileceği düşünülmektedir. Bu çalışmanın amacı Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm kaygısının araştırılmasıdır.

Yöntem

Katılımcılar: Ondokuz Mayıs Üniversitesi Yaşar Doğu spor bilimleri fakültesi öğrencilerinden seçilmiştir. Çalışmaya 143 kadın ve 254 erkek öğrenci dahil edilmiştir.

Kullanılan ölçek: Ölüm Kaygısı ölçeği kullanılmıştır. Bu ölçekte 1, 2, 5, 6, 7, 9, 10, 11, 17 ve 20 numaralı maddeler 'ölümün belirsizliği'; 4, 8, 12, 13, 14, 16 ve 19 numaralı maddeler 'ölümü düşünme ve tanıklık'; 3, 15 ve 18 numaralı maddeler ise 'acı çekme' faktörü altında yer almaktadır. Her bir maddeye verilen 'hiçbir zaman' cevabı için sıfır puan, 'nadiren' cevabı için bir puan, 'ara sıra' cevabı için iki puan, 'sık sık' cevabı için üç puan ve 'her zaman' cevabı için dört puan verilmektedir. Ölçek 0-80 arasında puanlanırken yüksek puanlar yüksek ölüm kaygısına işaret etmektedir. 0-29 arası puanların düşük seviyede ölüm kaygısına, 30-59 arası puanların orta seviyede ölüm kaygısına ve 60-80 arası puanların yüksek seviyede ölüm kaygısına işaret edebileceği değerlendirilmiştir (Sarıkaya,2013).

İstatistiksel analiz:

Verilerin analizinde 25.00 SPSS paket programı kullanılmıştır. Veriler değerlendirilirken "KolmogorovSmirnov Testi" ile normal dağılıma uygunluğu araştırılmış ve tüm verilerin normal dağılıma uyduğu tespit edilmiştir. Karşılaştırmalarda t- testi kullanılmıştır.

Bulgular

Tablo 1. Cinsiyete göre bazıantropometrik özelliklerin karşılaştırılması

	Cinsiyet	N	Ortalama	St. sapma	t -test	p
Yaş (yıl)	Erkek	254	21,83	2,78	1,74	0,081
	Kadın	143	21,31	2,99		
Boy uzunluğu (cm)	Erkek	254	178,04	12,02	12,32	0,000
	Kadın	143	164,76	6,15		
Vücut ağırlığı (kg)	Erkek	254	76,31	8,12	18,21	0,000
	Kadın	143	56,14	9,67		

Bu çalışmada Öğrencilerin cinsiyete göre yaşları benzer iken, boy uzunluğu ve vücut ağırlıkları birbirinden anlamlı şekilde farklıdır (p<0,001).

Tablo 2. Cinsiyete göre ölüm kaygısı puanlarının karşılaştırılması

	Cinsiyet	N	Ortalama	St. sapma	T -test	p
Ölüm belirsizliği	Erkek	254	12,70	9,30	-4,74	0,000
	Kadın	143	17,55	10,66		
Ölümü düşünme	Erkek	254	7,66	6,31	-5,96	0,000
	Kadın	143	11,89	7,55		
Açı çekme	Erkek	254	4,74	2,94	-3,69	0,000
	Kadın	143	5,90	3,10		
Toplam ölüm kaygısı puanı	Erkek	254	25,10	16,57	-5,52	0,000
	Kadın	143	35,34	19,66		

**p<0,001

Cinsiyete göre ölüm kaygısı puanlarında anlamlı farklılık bulunmuştur (p<0,001).

Tablo 3. Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm kaygısı

	Korona durumu	N	Ortalama	St. sapma	T -test	p
Ölüm belirsizliği	Geçirmedim	296	14,66	10,26	0,73	0,467
	Geçirdim	101	13,81	9,51		
Ölümü düşünme	Geçirmedim	296	9,24	7,09	0,27	0,787
	Geçirdim	101	9,02	7,06		
Açı çekme	Geçirmedim	296	5,21	3,08	0,50	0,616
	Geçirdim	101	5,03	2,97		
Toplam ölüm kaygısı puanı	Geçirmedim	296	29,11	18,61	0,58	0,557
	Geçirdim	101	27,86	17,78		

p>0,05

Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm kaygısı puanları arasında istatistiksel olarak anlamlı farklılık bulunmamıştır (p>0,05).

Tablo 4. Öğrencilerin müsabık olarak yarışıp yarışmamasına göre ölüm kaygısı puanlarının karşılaştırılması

		n	Ort.	St.sapma	t	p
Ölümbelirsizliği	Yarışmıyor	214	14,75	10,72	0,65	0,519
	Müsabık sporcu	183	14,09	9,26		
Ölümüdüşünme	Yarışmıyor	214	9,85	7,34	2,04	0,042*
	Müsabık sporcu	183	8,40	6,67		
Açıçekme	Yarışmıyor	214	5,29	3,11	0,94	0,347
	Müsabık sporcu	183	5,01	2,97		
Toplamölçek	Yarışmıyor	214	29,89	19,34	1,29	0,197
	Müsabık sporcu	183	27,50	17,18		

*p<0,05

Öğrencilerin müsabık olarak yarışıp yarışmamasına göre ölüm kaygısı puanlarının karşılaştırılmasında ölümü düşünme alt boyutunda anlamlı farklılık bulunmuştur (p<0,05).

Tartışma ve Sonuç

Bu çalışmada Öğrencilerin cinsiyete göre yaşları benzer iken, boy uzunluğu ve vücut ağırlıkları birbirinden anlamlı şekilde farklıdır (p<0,001).

Ölüm kaygısı üzerine yapılan çalışmaların çoğunda kadınların erkeklere göre daha fazla ölüm kaygısı taşıdıkları belirtilmiştir (Erdoğdu ve Özkan, 2007; Ayten, 2009; Özdemir, 2007). Bunun yanında kadınların ölüm kaygısının erkelere göre daha yüksek olduğunu belirten çalışmalarda mevcuttur (Ayten,2009; Bilge ve ark.,2013; Gencer,2020:Şiraz ve ark.,2020; Yıldız,2002).Bu çalışmada kadınların ölüm kaygısı puanları alt boyutlarda ve toplam ölçekte erkeklerden daha yüksektir (p<0,001).

Yapılan bir araştırmada sağlık çalışanlarının algılanan Korona virüs-19 tehdidi düzeylerinin çalışmayan gruptan daha düşük olduğu belirtilmiştir (Kavaklı ve ark.,2020). Yine Yiğit ve Açıkgöz (2021) çalışmalarında hemşirelerin anksiyete ve ölüm kaygısı düzeylerinin yüksek olduğunu belirlemişlerdir. Başka bir araştırmada da kronik hastalık geçmişi olanların salgının psikolojik etkisini ve stres, kaygı ve depresyonu daha yüksek seviyelerde yaşadıkları ortaya konulmuştur (Wang ve ark., 2020). Korona virüs hastalığı geçirip geçirmeme durumuna göre ölüm kaygısı puanları arasında istatistiksel olarak anlamlı farklılık olmadığı görülmüştür (p>0,05).

Müsabık olmayanların toplam ölüm kaygısı puanı istatistiksel olarak anlamlı olmasa da daha düşük bulunmuştur. Müsabık olarak yarışanların ölümü düşünme alt boyutunda daha düşük puan almaları istatistiksel olarak anlamlıdır (p<0,05). Bunun nedenleri arasında müsabık olarak yarışan öğrencilerin zamanlarının daha fazla dolu olmasının da etkisi olabilir.

Sonuç: Korona virüs sürecinde Spor Bilimleri Fakültesi Öğrencilerinde Ölüm kaygısının cinsiyete ve müsabık olarak yarışmalara katılıp katılmamaya göre değiştiği tespit edilmiştir. Ayrıca korona virüs salgınına yakalanıp yakalanmama durumuna göre ise farklılık olmadığı görülmüştür. Bu çalışmanın yakınları korona virüsten ölen ve ölmeyenlere veya aşılı olan ve aşı yaptırmayanlara göre yapılması önerilir.

KAYNAKÇA

Alkan, Ahmet Turan, Bir Düğün Gecesi Denemesi, Esin Sanat Felsefe Yayıncılık, Ankara, 1999.

Ayten, Ali. Üniversite Öğrencilerinde Ölüm Kaygısı: Türk Ve Ürdünlü Öğrenciler Üzerine Karşılaştırmalı Bir Araştırma, Din bilimleri Akademik Araştırma Dergisi, IX, sayı. 4; (2009): 85-108.

Bilge Ayşegül, Embel Nadide, Kaya Fatma Gül. Sağlık Profesyoneli Olacak Öğrencilerin Ölüme Karşı Tutumları, Ölüm Kaygıları Arasındaki İlişki ve Bunları Etkileyen Değişkenler. Psikiyatri Hemşireliği Dergisi -Journal of PsychiatricNursing, 4(3), (2013): 119-124.

Ceylan, U. E. (2018). Dehşet Yönetimi Perspektifiyle Terör Saldırılarından Doğrudan Etkilenmede Ölüm Kaygısı ve Dini Tutum, Uluslararası Sosyal Araştırmalar Dergisi, 11 (57), 279-288.

Çebi, E. (2020). Covid-19 Salgını Döneminde "Normal" ve "Yeni Normal" Yaşam Üzerine Bir Araştırma. Uluslararası Sosyal Araştırmalar Dergisi, 13 (73), 583-593.

Erdoğdu, M. Yüksel; Özkan, Mustafa. Farklı dini inanışlardaki bireylerin ölüm kaygıları ile ruhsal belirtiler ve sosyo-demografik değişkenler arasındaki ilişkiler. İnönü Üniversitesi Tıp Fakültesi Dergisi, 14(3), (2007): 171-179.

Geçtan, Engin, Varoluş ve Psikiyatri, Metis Yayınları, İstanbul, 2016.

Gencer, Nevzat. Coronavirus (Covid-19) Fear of IndividualsDuringThePandemia: Çorum Sample, International Journal of SocialSciences Academy, 4 (4),11(2020):53-1172

Hökelekli, Din Psikolojisi, TDV Yayınları, Ankara, 1996.

Karaca, Faruk, Ölüm Psikolojisi, Beyan Yayınları, İstanbul, 2000.

Karakaş, M. (2020). Covid-19 Salgınının Çok Boyutlu Sosyolojisi ve Yeni Normal Meselesi. IstanbulUniversityJournal of Sociology, 40 (1), 541-573.

Kavaklı, Mehmet; Ak, Mehmet; Uğuz, Faruk; Türkmen, Osman Oğulcan. Themediating role of self-compassion in therelationshipbetweenperceived COVID-19 threatanddeathanxiety (eng). J ClinPsy, 23(1), (2020): 15-23

Nar, M. Ş. (2020). Covid-19 Salgını ve Dönüşümünün Etkisi: Şimdi ve Sonrası. İmgelem, 4(7), 363-382.

Özdemir Z. Cerrahi yoğun bakım ünitesinde çalışan hemşirelerin ölüm sürecinde olan hastaların bakımına yönelik uygulamaları. Yayınlanmamış Yüksek lisans tezi, Ankara, Hacettepe Üniversitesi, 2007.

Sarıkaya, Yusuf. Ölüm Kaygısı Ölçeği Geliştirilmesi: Geçerlik Ve Güvenirlik Çalışması, Gaziosmanpaşa Üniversitesi Eğitim Bilimleri Enstitüsü Eğitim Bilimleri Ana Bilim Dalı Rehberlik ve Psikolojik Danışmanlık Bilim Dalı Yüksek Lisans Tezi, Tokat,2013.

Şiraz, Mehmet Fatih;Değirmenci,Adalet; Boztaş, Mehmet Sabri. TheRelationshipBetweenDeathAnxietyAndEmotionalSelfefficacyAndPositiveReligiousAttitudes Of IndividualsDuringthe Covid-19, Mersin Üniversitesi Sosyal Bilimler Enstitüsü e-Dergisi, 4 (1) (2020):77-88.

Turhan, E. H. (2021). Ölüm Sosyolojisi Ekseninde Ölüm Kaygısı ve Koronavirüs, HABITUS Toplumbilim Dergisi, (2), 85-101.

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S. &Ho, R. C. ImmediatePsychologicalResponsesandAssociatedFactorsDuringtheInitialStage of the 2019 CoronavirusDisease (COVID-19) EpidemicAmongthe General Population in China. International Journal of EnvironmentalResearchandPublicHealth 17(1729) (2020): 1-25.

Yiğit, Deniz; Açıkgöz, Ayfer. AnxietyandDeathAnxietyLevels of Nurses in the COVID-19 PandemicandAffectingFactors. J EducResNurs. J EducRes Nurs;18(Supp. 1) (2021): 85-92.

Yıldız, Murat. İlahiyat Fakültesi Öğrencilerinin Dindarlık ve Ölüm Kaygıları Üzerine Boylamsal Bir Çalışma. Akademik Araştırmalar Dergisi. 14, (2002): 161-174.

Zafer, C. (2019). Ölüm Olgusu ve Ölümün Sosyolojik Etkileri, Munzur Üniversitesi Sosyal Bilimler Dergisi, 8 (15), 64-82.

AZERBAIJAN IMMIGRANT LITERATURE IN TURKEY

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ABSTRACT

Until the independence of the state of Azerbaijan, the subject of Azerbaijani immigrant literature in Turkey was not well known and could not be sufficiently researched. However, although we can say that many researches have started to be done in this field after 1992, we should also mention that there are many difficulties in these studies. Because the publications are in a scattered state and some of them cannot be reached, which has increased these difficulties.

While a significant part of Azerbaijani immigrant artists resided in Turkey, they wrote many works on the subject of "Azerbaijan". Our aim in this study is to examine the works written by these artists on the subject of "Azerbaijan". In order to examine these works well, it is necessary to evaluate the general situation of the geography of Azerbaijan well, and accordingly, the concept of immigration and its classification should be emphasized. Publishing activities during the immigration period and their view of the country are another important point. Elmas Yıldırım, Emin Abid Gültekin, Hamid Dönmez, Mirza Bala Mehmetzade, M. Sadık Aran, Mustafa Teymur Ateşli, Müseyip Zeğer, Alazan Baycan, Ramiz Özler, Abay Dağlı, Ali Volkan and Turan Atasever are important in the literature created by those who immigrated to Turkey from Azerbaijan. On the other hand, in the literature created by Azerbaijanis born in Turkey, artists such as Kerim Yaycılı, Ahmet Karaca, Ahmet Tekin, Müslüm Oğuz and Yahya Azeroğlu come to the fore.

Keywords: Immigration, Azerbaijan, Turkey

TÜRKİYEDEKİ AZERBAYCAN MUHACERET EDEBİYATI

ÖZET

Azerbaycan'ın devletinin bağımsızlığına kadar Türkiye'deki Azerbaycan muhacir edebiyatı mevzusu çok iyi bilinmediği gibi yeteri kadar araştırmaya da tabi tutulamamıştır. Fakat 1992'den sonra bu alanda birçok araştırma yapılmaya başlandığını söylemekle beraber, bu araştırmalarda oldukça güçlükler çekildiğini de belirtmemiz gerekir. Çünkü yayınların dağınık bir durumda olmasının yanı sıra bazılarına da ulaşılamaması bu güçlükleri daha da artırmıştır.

Azerbaycan muhaceret sanatçılarının önemli bir kısmı Türkiye'de ikamet ederken ''Azerbaycan'' mevzusunda birçok eser kaleme almışlardır. Bizlerin bu çalışmadaki amacı bu sanatçıların ''Azerbaycan'' mevzusunda yazmış olduğu eserleri incelemektir. Bu eserleri iyi inceleyebilmek için Azerbaycan coğrafyasının genel durumunu iyi değerlendirmek, buna bağlı olarak da muhaceret kavramı ve onun tasnifi üzerinde durulması gerekmektedir. Muhaceret dönemindeki yayıncılık faaliyetleri ve onların vatana bakışları diğer önemli bir noktadır. Azerbaycan'dan Türkiye'ye gelenlerin oluşturduğu edebiyatta Elmas Yıldırım, Emin Abid Gültekin, Hamid Dönmez, Mirza Bala Mehmetzade, , M. Sad ık Aran, Mustafa Teymur Ateşli, Müseyip Zeğem, Alazan Baycan, Ramiz Özler, Abay Dağlı, Ali Volkan, ve Turan Atasever önemli yer tutmakla beraber Türkiye'de doğan Azerilerin oluşturduğu edebiyatta ise Kerim Yaycılı, Ahmet Karaca,Ahmet Tekin, Müslüm Oğuz, Yahya Azeroğlu…gibi sanatçılar ön plana çıkmaktadır..

Anahtar Kelimeler: Muhaceret, Azerbaycan, Türkiye.

Giriş

Azerbaycan'ın devletinin bağımsızlığına kavuştuğu 1992 yılına kadar Türkiye'deki Azerbaycan muhacir edebiyatı mevzusu çok iyi bilinmediği gibi yeteri kadar araştırmaya da tabi tutulamamıştır. Çünkü Sovyet Rusya döneminde böyle bir iletişim imkanı mümkün değildi. Ancak 1992 yılından

Azerbaycan'ın bağımsızlığını kazandıktan sonra bu alana oldukça ilgi gösterilmiş ve çeşitli araştırmalar yapılmaya başlanmıştır. Bu durumda karşımıza kaynaklara ve verilere ulaşma noktasında sorunlar çıktığını görmekteyiz. Çünkü Türkiye'deki Azerbaycan muhaceret edebiyatını oluşturan yazar ve şairlerin farklı coğrafi mekanlara dağılması onların eserlerine ulaşma noktasında sorunları da beraberinde getirmiştir. Çünkü muhaceret sanatçılarının Türkiye'de İstanbul,İzmir,Ankara, Iğdır, Kars gibi birçok şehre dağılmaları araştırmacıların kaynaklara ulaşma noktasında zorluk yaşamalarına sebep olmuştur. Bu durum özellikle yerel basında çıkan eserlerin bir kısmını kaybolmasına da sebep olmuştur. Bununla beraber özellikle dergiler etrafında ortaya konan eserlerin tamamına ulaşılmasa bile bir kısmına ulaşılması önemli bir durumdur. Aynı zamanda yer yer karanlıkta kalan bu eserlerin ortaya çıkarılması ve bazılarına da ulaşılması çalışılması araştırmacılar için bir yenilik olarak karşımıza çıkmaktadır. Eserlere ulaşıldıktan sonra bu eserlerin incelenmesi yine bir alanın kapısını da araştırmacılara açmıştır. Muhaceretteki yazar ve şairlerden Elmas Yıldırım, Emin Abid Gültekin, Hamid Dönmez, Mirza Bala Mehmetzade, , M. Sad ık Aran, Mustafa Teymur Ateşli, Müseyip Zeğem, Alazan Baycan, Ramiz Özler, Abay Dağlı, Ali Volkan, ve Turan Atasever önemli yer tutmakla beraber bunların dışında kalanların eserlerinin de ortaya çıkarılıp incelenmesi çok önemlidir. Çünkü bu eserler vasıtasıyla muhaceret neslin başka bir ülkede yaşarken Azerbaycan'la alakalı fikir ve his dünyasını da aydınlatmış olacağız.

Muhaceret Edebiyat Kavramı

Muhaceret sözcüğü mana itibariyle Türk Dil Kurumu'nun Türkçe Sözlüğünde: ''Yaşamakta olduğu ülkeden yabancı bir ülkeye uzun veya kısa süreli yerleşmek için gitmek.'' şeklinde açıklanırken (TDK,1998,s.1039), Azerbaycan Dilinin İzahlı Lügati'nde ''Siyasi, iktisadi veya dini sebeple vatanını terk edip yeni yerlere, topraklara göçen, göçmek zorunda kalan insanlar anlamında kullanılır (Cabbarlı, 2011, s11). İnsanların zorla yer değiştirmesiyle alakalı muhacir sözcüğü aynı zamanda ''didergin'', ''gaçkın'' gibi sözcüklerle de ifade edilmektedir. Bunun yanı sıra Türkiye'de muhacir sözcüğü kullanılmakla beraber daha yaygın olarak ''göçmen'' sözcüğü kullanılmaktadır. Sovyetler döneminde ''vatan satgınları'' diye de itham edilmişlerdir. Görüldüğü gibi "muhaceret " kavramı farklı şekillerde ele alınmıştır.

Azerbaycan Muhaceret Edebiyatının Tasnifi

Azerbaycan Muhaceret edebiyatını tasnifi konusunda farklı görüşler ortaya çıkmıştır. Prof. Dr. Vakıf Sultanlı XX. yüzyılın Azerbaycan muhaceret edebiyatını dört bölüme ayırırken(Sultanlı, 2007, s.32) Nikbur Cabbarlı muhaciret nesrini beş bölüme ayırmıştır (Cabbarlı, 2011-a, s.10). Elçin ise Azerbaycan muhaceretini üç bölüme ayırır(Elçin, 1991). Abit Tahirli ise Azerbaycan muhaceret edebiyatını xx. asırdan başlatarak dört bölüme ayırır(Tahirli, 1996). Ayrıca kimi Azerbaycanlı akademisyenler Azerbaycan muhaceret edebiyatını 1909 (Sultanlı, 2007, s.32) veya 1915'ten (Tahirli, 1996) sonra başlatılması gerektiğini söylemekteler. İrfan Murat Yıldırım ise Türkiye'deki Azerbaycan muhaceret edebiyatının Azerbaycan'dan Türkiye'ye gelenlerin oluşturduğu edebiyat ve Türkiye'de doğan Azerilerin oluşturduğu edebiyat olmak üzere ikiye ayrılması gerektiğini söyler.[173](Yıldırım) Bizlerin görüşüne göre de 1800'lü yıllardan başlanarak Azerbaycan Türkleri şu anki Türkiye'de varlık göstermeye başlamışlardı. Ancak bu dönemde basın yayın faaliyetleri olmadığından bu döneme dair yeteri kadar araştırma imkânı da olmamıştır. Bütün bu zorluklar nedeniyle biz de Türkiye'deki Azerbaycan muhaceret edebiyatını yakın dönemden başlatmakla beraber İrfan Murat Yıldırım'ın yaptığı tasnifin muhaceret neslin devamı açısından incelediğimizde daha doğru yaklaşım olduğu kanaatindeyiz.

[173] Yıldırım Yard. Doc. Dr İrfan, 2015'te kendisiyle yapılan röportaj

Muhaceret Döneminde Türkiye'deki Yayıncılık Faaliyetleri

Azerbaycan'da 19.yüzyılın sonlarında yaygınlık kazanan yayıncılık faaliyetleri bir bakıma Rus rejiminin karşı verilen istiklal mücadelesinin en önemli aracıdır. 1920'de Ruslar Azerbaycan'ı işgal edince gizli bir şekilde yürütülmeye çalışılan yayıncılık faaliyetleri de kısa bir süre sonra son bulur. Sonraki dönemlerde muhacir aydınlar bu faaliyetlerini yurtdışında özellikle Türkiye'de sürdürmeye başlarlar. Çünkü silahlı mücadelede başarılı olunamayınca yayıncılık faaliyetleri önemi bir kat daha artar.

Türkiye'de Azerbaycan Türklerinin yayınladıkları ilk dergi 1923 ile 1927 yılları arasında 94 sayı çıkan ''Yeni Kafkasya'' dergisidir. Bu dergi muhaceret hayatında Azerbaycanlıların sesi olmuştur. Yeni Kafkasya dergisi üç mühim meseleyi ele alır: Azerbaycan Türklerinin İstiklal Fikri, Rusya Türklerinin bağımsızlık hareketleri ve Anadolu Türklerinin milli mücadelesinden doğan Cumhuriyetin yerleşmesine katkıdır (Şimşir, 2002, s.42). Daha sonra 1928-1931 yılları arasında 32 sayı çıkan ''Azer-Türk'' dergisi gelir. Bu derginin de amacı hem Azerbaycan İstiklali davası hem de Kafkas Müslümanlarının Rus esaretinden kurtarmaktı(Şimşir, 2002, s.55). 1929 ile 1931 arasında çıkan ''Odlu Yurd'' dergisi de diğer dergiler gibi aynı amaçtadır. 1930-1931 yılları arasında çıkan ''Bildiriş'' gazetesi(Şimşir, 2002, s.66), 1931-1934 yılları arasında Ahmet Caferoğlu yönetiminde çıkan 1954'te de tekrar yayımlanan ''Azerbaycan Yurt Bilgisi'' (Şimşir, 2002, s.87) dergisi de diğer dergiler gibi muhaceret neslin sesi olmuşlardır. Ankara'da Resulzade'nin başkanlığında faaliyete başlayan Azerbaycan Kültür Derneği bünyesinde Azerbaycan Dergisi'ni 1 Nisan 1952'de çıkarmaya başlamıştır(Şimşir, 2002, s.147-148). 1955 tarihinde Cengiz Gökgöl yönetiminde yayın hayatına başlayan ''Mücahit'' dergisi başta Azerbaycan Türkü olmak üzere bütün Türklerin sesi olmaya çalışırken özellikle Azerbaycanlılar arasında ortaya çıkan kırgınlıkları da ortadan kaldırmayı amaçlamıştır. Azerbaycan'ın istiklali için yayın yapan diğer bir dergi de 1966'da çıkmaya başlayan ''Türk Birliği'' adlı dergidir. Bu dönemde ''Hazer ve Kardeş Kalemler'' adlı iki derginin ön plana çıktığını görmekteyiz. Bu dergilerin çok iyi tetkik edilmesi Azerbaycan muhaceret edebiyatının anlaşılması açısında çok önemlidir.

Türkiye'deki Muhaceret Sanatçılarının Azerbaycan'a Bakışları

Azerbaycan'dan ayrılıp başka ülkelere göç etmek zorunda kalan Azerbaycanlıların oluşturduğu muhaceret nesil; Sibirya sürgünlerinde, hapishanelerinde ve ölüm yolculuklarının en şiddetlisini arkalarında bırakarak farklı ülkelere giderken bu ayrılığın ölümden daha beter olduğunu eserlerinde şöyle dile getirmektedirler: Ahmet Ağaoğlu " Altmış Yedi Yıl sonra" adlı eserini tamamlayamaz. Oğlu Samet Ağaoğlu bu hakkında şunları anlatır: "Babamın kendi elyazmasıyla yazdığı bu kadardır. Bundan sonrasını devam ettiremedi. Ölümünden iki yıl önce bana bu son satırları okuduktan sonra, artık bırakacağım, dedi. Hatıralar içinde çırpınmak beni sonsuz derecede müteessir ediyor. Benden sonra sizler defterimden takip ederek yazarsınız (Sultanlı,2007, s.17)." Bu kısa anı bile muhaceret neslin ruh ıstıraplarının ne kadar da acılarla dolu olduğunu göstermesi bakımından önemlidir. Elmas Yıldırım da aynı acıların dayanılmaz ağırlığı altında ezilerek bir bakıma ıstırap nöbetleri geçirir, kendinden geçer. Azerbaycan'ın büyük önderi Mehmet Emin Resulzade'nin, ölüm anında üç defa "Azerbaycan" diyerek gözlerini dünyaya kapatması muhaceret neslin vatandan uzakta geçen her anlarının ne büyük acılara sebep olduğunu göstermesi bakımından önemlidir (Sultanlı,2007, s.17). Mirza Bala, Kerim Yaycılı, Müseyip Zeğem'in de bu acılar içinde kıvrandığına şahit oluruz.

Azerbaycan'la ilgili Muhacerette görülen en önemli mevzulardan biri de vatanın "İstiklal"dir. Emin Abit Gültekin'den Teymur Ateşli'ye kadar hemen hemen bütün sanatçılarda Azerbaycan'ın istiklali ana mevzudur. Hatta buna bir bakıma muhacereteki insanların yaşama tutunmasını sağlayan en önemli

sığınaktır da diyebiliriz. Çünkü Azerbaycan'ın hür ve bağısız olduğu eski güzel günlerin geri geleceği inancı onların mücadele azmin kat kat artırmıştır.

Sonuç

Azerbaycan muhaceret sanatçıları Türkiye'de önemli eserler vermişlerdir. Bu eserlerin ortaya çıkarılması veya araştırılması 1992'de Azerbaycan devletini kurulmasından sonra önem kazanmıştır. Özellikle Elmas Yıldırım, Emin Abid Gültekin, Mirza Bala Mehmetzade, Alazan Baycan hakkında bazı araştırmalar yapılmakla beraber Mustafa Teymur Ateşli, Müseyip Zeğem, , Ramiz Özler, Hamid Dönmez, M. Sad ık Aran, Abay Dağlı, Ali Volkan, ve Turan Atasever gibi birçok önemli sima hakkında araştırma yapıldığı söylenemez. Çalışmada Türkiye'deki Azerbaycan muhaceret edebiyatının karanlıkta kalan ve araştırılması gereken yönüne dikkat çekilmeye çalışılmıştır. Çünkü bu dönem aydınlatılırsa siyasi, sosyal ve edebi birçok alan aydınlatılmış olacaktır.

Bir diğer dikkat çekici nokta da muhaceret yazar ve şairlerin Azerbaycan'a bakışıdır. Bu noktanın yeteri kadar ortaya çıkarılması Azerbaycan'dan Türkiye'ye göç etmek zorunda kalan muhaceret nesillerin siyasi, sosyal, psikolojik durumlarının açıklanması bakımından önemlidir.

Kaynakça

Cabbarlı, Nikpur, Azərbaycan Mühacirət Nəsri, , Elm ve təhsil, Bakı- 2011(a).

Cabbarlı Nikpur, Azerbaycan Siyasi Nesri, Elm ve Tehsil, Bakı-2011,

Elçin, Azərbaycan Mühacirəti Haqqında, ‘‘Odlar Yurdu’’, Noyabr, 1991

Sultanlı, Prof.Dr. Vaqif, Azerbaycan Muhaceret Edebiyatı, Avrupa Yakası Yay., İstanbul-2007,

Şimşir, Sebahattin, Azerbaycan'ın İstiklal Mücadelesi,IQ Kültür Sanat Yay., 2002-İst.,

Tahirli, Abid, Susmaq Olmaz, ‘‘adalət’’qazeti, 25 Fevral 1996-cı il

TDK,Türkçe Sözlük,Türk Dil Kurumu,TDK Yayınları,Ankara, 1998,cilt 2,

ÇOKDİLLİLİK BAĞLAMINDA DÜZENEK DEĞİŞTİRME: DİLDE YETERSİZLİK Mİ HİBRİT KİMLİĞİN BİR GÖSTERGESİ Mİ?

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ÖZET

Almanya'da Türk toplumunun en temel sorunlarından biri anadili sorunudur. Gelinen noktada sürecin dil değiştirimine doğru evrildiği gözlenmektedir. Zira Alman Eğitim kurumlarının *Tek Dillik Habitusu*, farklı kökenlerden gelen çocukların doğal iki dilliliğini dikkate almamaktadır. Bunun sonucunda çok dilli göçmenler tek dilleştirilmektedir. Ancak bu gerçeğe rağmen Alman Dil Enstitüsü'nün yaptırdığı araştırmalar, sürecin dil değiştirimine doğru değil, dilsel zenginliğe ve canlılığa doğru işlediğini ileri sürebilmektedir. Bununla birlikte göç geçmişi bulunan genç kuşakları hibrit kimlikler olarak karşımıza çıkarmak istemektedir. Bu kimliğe sahip olmak ya da çok dilli sayılabilmek için bir dilden az bir şey bilmek yeterli bulunmaktadır. Kuramsal bir çerçeveye dayalı olan bu çalışma, konuyu Türk kökenli genç kuşaklar üzerinden ele almaktadır. Düzenek değiştirme pratiğinin hibrit kimliğinin bir göstergesi mi yoksa dilde yetersizliğin bir sonucu mu olduğunu ilgili literatürü irdeleyerek ortaya koymayı amaçlamaktadır. Elde edilen bulgular, düzenek değiştirme pratiğinin ikinci ve üçüncü kuşaklarda ortaya çıktığını ancak dördüncü kuşakta neredeyse gözlenmediğini göstermektedir. Bu durum düzenek değiştirmenin geçici bir fenomen olduğuna işaret etmektedir. Dördüncü kuşağın büyük kısmının anadilinin Almanca olması da bunu göstermektedir. Sonuç olarak düzenek değiştirme pratiğinin hibrit kimliğin bir göstergesi olmasından çok, Alman dil politikalarının asimilasyon eğilimini gizleyen giydirilmiş bir kimlik olduğu anlaşılmaktadır.

Anahtar Kelimeler: Hibrit Kimlik, Almanya, Düzenek Değiştirme, Çokdillilik, Dil Değiştirimi

CODE SWITCHING IN THE CONTEXT OF MULTILINGUALITY: LANGUAGE DEFICIENCY OR AN INDICATOR OF HYBRID IDENTITY?

ABSTRACT

One of the most fundamental problems of Turkish society in Germany is the problem of mother tongue. At this point, it is observed that the process has evolved towards language change. Because the *Monolingual Habitus* of German Educational Institutions, ignores the natural bilingualism of children from different backgrounds. As a result, multilingual immigrants are becoming monolingual. However, despite this fact, the researches commissioned by the German Language Institute can argue that the process does not work towards language change, but towards linguistic richness and vitality. Also, it wants to present the younger generations with a migration background as hybrid identities. In order to have this identity or to be considered multilingual, it is sufficient to know less than one language. Based on a theoretical framework, this study deals with the subject through young generations of Turkish origin. By examining the relevant literature it aims to reveal whether the practice of code switching is an indicator of hybrid identity or a result of language inadequacy. The findings show that the practice of code switching occurs in the second and third generations, but it is almost not observed in the fourth generation. This indicates that code switching is a temporary phenomenon. The fact that the mother tongue of most of the fourth generation is German documents this fact. As a result, it is understood that the practice of code switching is a clothed identity that hides the assimilation tendency of German language policies rather than being an indicator of hybrid identity.

Keywords: Hybrid Identity, Germany, Code Switching, Multilingualism, Language Change

Giriş

Bireysel çok dillilik yaşadığımız çağda önemli bir ihtiyaç haline gelmiş bulunmaktadır. Öyle ki, bir kişinin tek bir dili konuşuyor olması, artık bir eksiklik olarak kabul edilmektedir. Diğer taraftan birey

açısından çok dillilik; özgüveni artıran, iletişim ve meslek olanaklarını genişleten ve hareketlilik sağlayan önemli bir sosyal sermayeyi oluşturmaktadır. Bu sosyal sermayeye sahip olmak için uluslararası göç önemli bir potansiyele sahiptir. Göç eden bireyler, göç ettikleri ülkelerin dilini, doğal seyrinde, o dili konuşanlarla birebir etkileşime girerek, kalıcı bir biçimde öğrenebilmektedirler. Ancak diğer taraftan uluslararası göç, diller açısından bir tehlikeyi de içinde barındırmaktadır. Bu tehlike göçmenlerin kendi ülkelerinden getirdikleri anadillerine yöneliktir. Nitekim günümüz politik sistemlerinde, çoğunluk toplum ve göçmenler arasındaki güç dengeleri asimetriktir ve genel olarak azınlıklar bu ilişkide zayıf ve taviz vermek zorunda kalan tarafı temsil etmektedirler. Ulus devletler tarafından uygulanan resmi-gayri resmi dil ayrımı ve buna eşlik eden uyum politikaları, eğitim kurumlarında işletilen tek dillilik normu göçmenlerin ülkelerinden getirdikleri anadillerini geçersiz kılarak değersizleştirmektedir. Bu durum karşısında azınlıklar bir refleks gösterebilse de uzun vadede (kuşakların ilerlemesiyle) kendileri de kendi anadillerini değersiz bulmaya başlamaktadırlar. Bu da kademeli bir şekilde gerçekleşen dil kaybına neden olmaktadır. Nitekim çalışmamızın konusu olan Almanya'daki ikinci, üçüncü ve dördüncü kuşak Türk gençlerine baktığımızda tam da bu durum gözlenmektedir. Bu gerçeğe rağmen Alman Dil Enstitüsü'nün yaptırdığı araştırmalar ve alan yazında yapılan bazı yenilikçi çalışmalar, sürecin göçmenler açısından dil kaybına ya da değiştirimine doğru değil, dilde olanakların genişlemesi ve zenginleşmesine doğru işlediğini ileri sürmektedir (Sirim, 2009). Ancak bu, nesnel bir değerlendirme midir? Değilse, böyle bir değerlendirme neden yapılmaktadır?

Amaç ve Yöntem

Çalışmamız yukarıda son olarak kurula soruların peşine düşerek, Almanya'da yaşayan genç kuşakların çok dilliliklerini ilgili literatürü irdeleyerek değerlendirmek istemektedir. Bu değerlendirme yapılmadan, göçmenler açısından anadilleri için bir mücadele alanının açılmasına imkân bulunamayacağı düşünülmektedir. Bu bağlamda çok dilli olabilmek için anadilinin muhafaza edilmesinin gerekliliği de hatırlanmalıdır.
Çalışmamız Almanya'da yaşayan ikinci, üçüncü ve dördüncü kuşak Türk kökenli gençlerin düzenek değiştirme *(Code switching)* pratiklerinden hareketle bu değerlendirmeyi yapmak amacındadır. Zira düzenek değiştirme pratiği bu kuşakların hem dil durumları hem de kimlik durumları için bir referans noktasını oluşturmaktadır. Nitekim yenilikçi çalışmalar düzenek değiştirmeyi çok dilliliğin ve hibrit kimliğin bir göstergesi olarak sunmaktadırlar. İlgili literatür incelenerek bu olgunun hibrit kimliğin bir göstergesi mi yoksa dilde yetersizliğin bir belirtisi mi olduğu ortaya konacaktır.

Çok Dilliliğin Tanımı

Çok dilliliğin tanımını çok dilli bireylere sorduğumuzda, genelde iki üç dil bildiklerini söyleyerek hemen cevap verebilmektedirler. Ancak ilgili literatürü irdelediğimizde, bunun o kadar kolay olmadığı anlaşılmaktadır. Zira verilecek cevap, muhatabın hangi teorik yaklaşımdan baktığına göre değişecektir. Çağdaş dilbiliminde, çok dilliliğin maksimalist ve minimalist yaklaşımları birbiriyle rekabet etmektedir (Keim, 2012: 22). Klasik çalışmalar daha çok maksimalist yaklaşımda ısrar ederken, postmodern çizgide yer alan araştırmalar minimalist yaklaşıma göre çok dilliliği tanımlamaktadırlar. Aşağıda bu iki yaklaşımın temel görüşleri ele alınmıştır.

Maximalist ve Minimalis Yaklaşıma Göre Çok Dillilik

Maksimalist yaklaşımın en önemli isimlerinden olan Blocher (1909) ve Bloomfeld (1933) ideal bir çok dilli konuşmacıyı esas alır. Bu durumda, bir kişinin konuştuğu ikinci ya da üçüncü dil, anadili düzeyinde olmalıdır (Bloomfield, 1933: 56). Bunun için konuşmacı, çocukluğundan beri iki veya daha fazla dili öğrenmesi ve o dilleri konuşma ve yazmada eşit düzeyde bilmesi gerekmektedir (Keim, 2012: 22).
Yukarıda söylenenleri biraz daha açacak olursak, göç koşullarında ikinci dil edinimi üzerine çalışmaları bulunan Wallace Lambert (1977), Skutnab-Kangas ve Toukomaa (1976) gibi isimlerin, artırıcı iki dillilik ve eksiltici iki dillik ayrımına gittiklerini görmekteyiz. Artırıcı iki dillilik, tam iki dilliliği ifade etmektedir. Buna göre hem menşe hem de gelinen ülkenin ulusal dilinin kullanımı sözlü ve yazılı olarak

yüksek düzeydedir. Böyle bir durum söz konusu değilse, yani konuşmacı bir dile diğeri kadar hâkim değilse, bu durumda konuşmacının genelde ana dilini ikinci dil lehine ihmal ettiği ya da eksilttiği söz konusudur.

Eksiltici iki dilliliğin özel bir durumunu "çift taraflı yarım dillik" *(semilingulism)* oluşturmaktadır. Bu fenomen ilk olarak Fin dilbilimci Hånsegard (1968) tarafından literatüre kazandırılmış ve Skutnab-Kangas gibi yazarlardan da destek bulmuştur. Çift taraflı yarım dillilik terimi, bir yandan, birinci dilin kaybında ve ikinci dilin gelişmesinde bir geçiş aşamasını tanımlamaktadır. Aynı zamanda bir kişinin herhangi bir dile yeterli düzeyde hâkim olmadığı sabit bir durumu ifade etmektedir (Skutnabb-Knagas, 1984:250). Çift taraflı yarım dillilik, öncelikle düzenek değiştirme (*code switching*) pratikleriyle kendini göstermektedir. Düzenek değiştirme, "diller arasındaki etkileşimden doğan etkilerle, ikinci dil edinimi sırasında ve geç/kazanılmış iki dillilik bağlamında, dilleri öğrenme süreçleri açısından" karşımıza çıkan en önemli olgulardan biridir (Demiray Akbulut, 2015:27). Genel olarak, cümleler arasında ya da bir cümle içinde bir dilden diğerine atlamayı ve belirli ifadeleri veya kelime eklerini, işaretleri diğer dille ifade etmeyi anlatmaktadır (Kaya, 2001:148-149; Oksaar, 2003:139). Hatta farklı etnik grupların ve dolayısıyla dillerin belli merkezlerde yerleşik bulunduğu göç toplumunda, düzenek değiştirme pratiği birçok dilin alakasız ve karmaşık yollarla karıştırılması şeklinde de görülmektedir (Yıldız, 2004:331).

Dilsel yetersizliğin bir ifade biçimi olarak görülen düzenek değiştirme pratiği, sadece dilsel bir sapmayı ifade etmemektedir. Aynı zamanda konuşanların kimlikleri üzerinde de olumsuz bir etki yaptığı ve kimlik krizlerine neden olduğu da varsayılmaktadır (Fthenakis vd. 1985).

Her ne kadar çift taraflı yarım dillilik kavramı göçmen çocukların dil becerilerine dair önemli ipuçları verse de kavram aynı zamanda onlara yönelik bir etiket *(stereotip)* olarak da kullanılmaktadır. Bu durum onların dilsel olarak damgalanmalarına ve ötekileştirilmelerine yaramaktadır. Bu bağlamda gözler özellikle de resmi ve geçerli olan dildeki yetersizliklere odaklanmaktadır. Dil eksiklikleri, patolojik bir anlayışla göçmenlerin ciddi öğrenme bozukluklarına yorulabilmektedir. Bunun sonucunda çoğunluk toplum dışlayıcı ve okul sürelerini uzatıcı stratejiler uygulamak için kendinde bir hak görmektedir. Böylelikle dil, "yabancı"ya karşı bir silah haline getirilmektedir (Gomolla ve Radtke, 2009: 230) .

Tüm bu nedenlerle iki taraflı yarım dillilik kavramı yukarıda zikrettiğimiz yazarlar tarafından artık kullanılmamaktadır. Örneğin Skutnabb-Kangas, başta savunduğu iki taraflı yarım dillilik terimini, aşağılayıcı bir çağrışım içermesi nedeniyle "kirli sözcük" olarak nitelemektedir (Skutnab-Kangas, 1984:248). Ancak bu durum göçmenlerin dil becerilerinde eksikliklerinin bulunduğu gerçeğini ortadan kaldırmamaktadır. Zira önde gelen dilbilimcilerden Cummins'in eşik kuramı, birinci ve ikinci dil edinimi arasındaki ilişkide, birinci dildeki erişilen düzeyin ikinci ve üçüncü dilin gelişimini de etkilediğini ortaya koymaktadır. Birinci dilde beceriler ne düzeydeyse, ikinci dil edinimi de o kadar umut verici olacaktır (Cummins, 1982). Skutnab-Kangas'ın çalışmaları da temel eğitim öğretimini anadillerinde tamamlayan öğrencilerin, anadili eğitimi yarıda kalmış olanlara oranla her iki dilde daha yüksek düzeyde bir yeterliliğe sahip olduklarını göstermektedir (Skutnab-Kangas, 1984).

Minimalist yaklaşımın çok dilliliğe bakışına geçecek olursak; bu yaklaşım rakibi olduğu maksimalist yaklaşımın çok dillilik anlayışını dar bulmaktadır ve onun yerine geniş bir çok dillilik tanımını koymak istemektedir. Buna göre birey, yaşamı boyunca düzenli olarak iki veya daha fazla dil veya o dillerin varyasyonunu kullandığında çok dilli sayılmaktadır. Diğer bir deyişle; iki dilli sayılmak için, dili anlama, konuşma, okuma veya yazma konusunda asgari bilgiye sahip olmak çok dilli sayılmak için yeterli bulunmaktadır (Keim, 2012: 22). Minimalist yaklaşım, düzenek değiştirme pratiğini de dilde eksiklik olarak değerlendirmeyerek, tüm biçimleriyle dilsel iletişim olanaklarını genişleten ve zenginleştiren bir durum olarak değerlendirmektedir (Kaya, 2001: 148). Hatta konuşanların düzenek değiştirmeye zorunlu olarak değil, istemli ve bilinçli olarak başvurduklarını ileri sürmektedir (Banaz, 2002; Dirim ve Auer, 2004).

Minimalist yaklaşımı benimseyen postmodernist yazarlar, düzenek değiştirme pratiğini aynı zamanda hibrit kimliğin bir göstergesi olarak da değerlendirilmektedirler (Hinnekamp, 2005: 90). Bu bağlamda hibrit kavramı, bir sentezi, farklı ve birbiriyle çelişen parçaları kullanan melez bir kimliği ifade etmektedir (Bernhard ve Schmid, 2018:22). Felsefi olarak burada melezlik; bir halkta bir kültürel kodun, bir kişide bir kimlik kodunun veya bir ülkedeki ulusal kodun kalıcı olarak yerleşmesine veya içsel olarak

benimsenmesine meydan okumaktadır. Diğer bir deyişle melezlik, özcü kültür ve kimlik görüşlerinin yapısöküme *(deconstruction)* uğraması anlamına gelmektedir (Fourtan, 2018: 56).

Maksimalist ve Minimalist Yaklaşımın Değerlendirilmesi

Yukarıda söylenenlerden de anlaşılacağı üzere, Almanya'da yaşayan genç kuşakların dil becerilerinin değerlendirilmesi, hangi çok dillilik tanımının esas alındığına göre değişmektedir. Göçmen kuşakların dil becerilerini maksimalist yaklaşıma göre değerlendirdiğimizde, göçmen kökenli gençlerin artırıcı iki dillilik düzeyine erişebilmelerine, yani iki dile eşit düzeyde hâkim olabilmelerine Federal Almanya Cumhuriyeti koşullarının olanak tanımadığını söyleyebiliriz (Keim, 2012: 22). Zira Almanya sahip olduğu tek dillilik habitusu'yla eğitim-öğretimde sıkı bir şekilde tek dillilik normunu işletmektedir. Böylelikle farklı kökenlerden gelen çocukların doğal iki dilliliğini kabul etmek yerine tarihten gelen ideolojisinden hareketle, ders modellerinden asimilasyon modelini tercih ederek çok dillileri tek dilleştirme yoluna gitmektedir (Gogolin,1994:14). Dolayısıyla Alman uyum teorisyeni Esser'le birlikte, ikinci bir dil edinimini teşvik eden koşulların genellikle ana dilin kalıcılığına ve yetkin bir şekilde kullanılabilmesine izin vermediğini söyleyebiliriz (Esser, 2006: 5). Haliyle göçmen kuşakların dil seviyesi, eksiltici iki dillilik ile tanımlanmalıdır. Diğer bir deyişle, bu kişilerin Almancadaki dil becerileri giderek artarken, ana dillerinde önemli derecede beceri kayıpları söz konusudur. Bu kayıplar ikinci kuşakta daha düşük düzeyde, dili sürdürme eğilimi ise yine bu kuşakta daha yüksek düzeydedir. Üçüncü kuşakta ise, dil becerilerinin kaybı özellikle "Türk mahallelerinin" dışındaki bölgelerde ikâmet eden kesimlerde oldukça fazladır ve hatta Türkçeden vazgeçilme noktasına gelmiş durumdadır. Üçüncü kuşakta Alman tek dilliliğine genel bir geçiş söz konusu olmasa da, bu kuşağın dil becerileri göç toplumuyla ilgili sözlü iletişim biçimleriyle sınırlıdır (Dirim ve Auer, 2004: 24). Ünsal ve Wendlandt, bu sınırlılığı iki dil arasında ayrım yapamama, konuşma akışındaki bozukluklar, ifade güçlükleri ve özellikle ihmal edilen ana dilinde ciddi kelime dağarcığı eksikliği başlıkları altında toplamaktadır. (Ünsal ve Wendlandt, 1991). Dördüncü kuşakta ise çoğunluk toplumun diline geçişin daha yaygın olduğu ve bu nedenle düzenek değiştirme pratiklerinin azaldığı gözlenmektedir. Böyle olmasının nedeni, bu kuşağı temsil eden çocukların birçoğunun evde Almancadan başka bir dille karşılaşmamalarıdır. Alman dili onların yeni anadilidir.

Almanya'da yaşayan göçmen çocuklarının dil becerilerini değerlendirmek için minimalist yaklaşımın penceresinden bakacak olursak, göreceğimiz şey, anadili sorunun ve kuşaklar arasındaki farklılıkların tamamen ortadan kalktığıdır. Bunun nedeni, çok dilli olarak kabul edilebilmek için ikinci, üçüncü dili anlama, konuşma, okuma ve yazma konusunda asgari düzeyde bilgiye sahip olmanın yeterli olmasıdır. Zira göçmenlerin birazcık Türkçe bilmeleri, onların çok dilli sayılmalarına yetecektir. Kaldı ki melez bireyleri Türk olarak tanımlamanın da bir anlamı olmayacaktır. Onlar ulus devletlerdeki etnik, dini, dilsel sınırları aşmış bulunan ve hiçbir ulusla ilişkilendirilemeyen melez kişiliklerdir sadece.

Görüldüğü üzere Almanya'daki Türk çocuklarının çok dilliliğinin değerlendirilmesinde, birbirine kafa kafaya zıt iki sonuç ortaya çıkmaktadır. Bu durumda bakılması gereken yer, hangi yaklaşımın göçmen çocukların yaşam gerçeklerinden hareket ettiğidir. Öyle yaptığımızda göçmen çocukların uyumlarının ve sosyalleşmelerinin gerçekleştiği çerçevenin ulus devlet ve onun eğitim kurumları olduğu görülecektir. Bu çerçevede elbette ki çocuklardan standart bir dil konuşmaları beklenecektir. Standart dil ise öncelikle bulunulan ülkenin resmi (yazı) dilidir. Dahası:

> "Standart dil, konuşanların büyük bölümü tarafından en saygın biçim kabul edilir. Devlet idaresi, eğitim, hukuk, medya, yabancılara ana dili öğretimi, standart dilin kullanıldığı önemli alanları oluşturur (...) Dili "doğru" ve "güzel" kullanmak isteyenlerin ulaşmaya çalıştıkları ideal biçimi bu varyant temsil eder. Bunu konuşanlar, daha bilgili, daha eğitimli, daha aydın vs. olmak gibi gerçekte dille ilgisi olmayan bir yığın pozitif değere, diğer varyantları konuşanlara oranla daha layık görülürler" (Demir, 2011:97).

Dolayısıyla iki dili birbirine karıştırarak konuşmanın, yani düzenek değiştirmenin ifade olanaklarını genişlettiği varsayımı sınırlı ölçüde geçerlidir diyebiliriz. Hatta bu varyant, toplumun neredeyse tüm alanlarında geçersizdir. Hatta örneğin okulda, sınavda ya da bir iş görüşmesinde bu dili kullanmak, kişiyi hayattan koparacaktır. Düzenek değiştirme pratiği olsa olsa göçmen çocukların kendi mahallelerinde ya

da kendi aralarındaki sohbetlerde ifade olanaklarını genişletebilecektir. Ancak aynı zamanda onları bu alana hapsedecektir de.

Konuşmacıların kendi istekleriyle bilinçli olarak düzenek değiştirdikleri varsayımı da yine aynı şekilde tutarsızdır. Zira konuşmacıların tek dilde konuşmalarının gerektiği bağlamlarda, kendilerini ifade edemedikleri toplumun her alanında gözlenebilmektedir. Bu noktada Pilancı'nın bir görüşmeden aktardığı izlenim ne demek istediğimizi tam olarak ortaya koymaktadır:

> "Araştırmalarımız sırasında, 3. kuşak Türk genç ve çocuklarının hiçbir cümleyi Türkçe başlayıp Türkçe bitirdiği görülememiştir. Konuşmanın daha başında anne babalarından, bulundukları ülkenin dilinde yardım isteyen veya konuşmaya İngilizce devam etmek isteyen örneklere rastlanmıştır" (Pilancı, 2006).

Sonuç olarak düzenek değiştirme pratiğinin hibrit kimliğin bir göstergesi olmasından çok, Alman dil politikalarının asimilasyon eğilimini gizleyen bir giydirilmiş kimlik olduğu anlaşılmaktadır. Buna göre, göçmen çocukların çok dilliliğini değerlendirmede, maksimalist yaklaşımın daha tutarlı ve gerçekçi olduğunu söyleyebilmekteyiz: her kuşak bir önceki kuşağın Türkçesinden yararlanarak daha az Türkçe konuşmaktadır.

Sonuç

Almanya'da yaşayan ikinci, üçüncü ve dördüncü kuşak Türk gençlerinin dil becerilerinin değerlendirilmesi, hangi yaklaşımı benimsediğimize göre değişmektedir. Ancak toplumsal yaşamın beklentileri esas alındığında minimalist yaklaşımın bu değerlendirmeyi göçmen çocukların yaşam gerçeklerini dikkate almayarak yaptığı ve dolayısıyla dayanağı zayıf olduğu görülmektedir. Ulusal bağlamın Almanya'daki Türk göçmenlerin uyumları üzerinde en belirleyici etken olduğu gerçeğinden hareket eden maksimalist yaklaşım ise, daha gerçekçi bir şekilde, göçmen çocukların dillerini uzun vadede koruyamayacaklarını ve bir tek dillilikten diğerine geçiş yapmakta olduklarını savunmaktadır. Düzenek değiştirme de bu yolda tipik olarak karşılaşılan bir dil değiştirimi fenomenidir. Nitekim çalışmanın nesnesi olan göçmen çocuklarına baktığımızda tam da bunu görmekteyiz. Süreç, kuşaklar ilerledikçe dil değiştirimine doğru ilerlerken, yeni kuşaklar daha az düzenek değiştirme pratiğine başvurmak zorunda kalmaktadır. Düzenek değiştirmeyi hibrit kimliğin bir göstergesi olarak savunmak, bu durumun fark edilmemesine neden olmaktadır. Bu olgunun geçici bir fenomen olduğu düşünüldüğünde günün sonunda paradoks bir şekilde Almanca (tek dil) konuşan melezler ortaya çıkacaktır, velev ki bu bireyler kendilerini hibrit ya da melez olarak tanımlasınlar. Dolayısıyla çalışmanın vardığı en önemli sonuç, hibrit yakıştırmasının en çok Alman ulus devletinin kendi dil politikalarının dışlayıcı ve asimilasyonist eğilimini gizlemeye yarayan giydirilmiş bir kimliği ifade ettiğidir.

Kaynakça

Banaz, H 2002. Bilingualismus und Code-switching bei der zweiten türkischen Generation in der BRD Sprachverhalten und Identitätsentwicklung.

Eberhart E, Schmid, J 2018. „Es ist so ein Mischmasch": Facetten deutsch-türkischer Identitäten.

Blocher, E 1982. Zweisprachigkeit. Vorteile und Nachteile. In: Pädagogisches Magazin 385, Langensalza 1909. In: Swift, J.(Hrsg.). Bilinguale und multikulturelle Erziehung. Würzburg: Könighausen und Neumann S.17-25

Bloomfield, L 1933. Language. New York: Holt, Rinehart & Winston.

Demir, N 2010. Türkçede Varyasyon Üzerine. Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Türkoloji Dergisi 17, 2 (2010) 93-106.

Demiray Akbulut F 2015. İkidillilik bağlamında düzenek değiştirme olgusunun temel dil çerçeve modeline göre incelenmesi Ankara Üniversitesi Sosyal Bilimler Dergisi 6(2):26-39

Dirim, I, Auer, P 2004. Türkisch sprechen nicht nur die Türken. Über die Unschärfebeziehung zwischen Sprache und Ethnie in Deutschland. Berlin/New York: de Gruyter.

Esser, H 2006. Sprache und Integration. Die sozialen Bedingungen und Folgen des Spracherwerbs von Migranten. Frankfurt / Main, New York: Campus.

Fourutan, N 2018. Hybride Identitaeten in der Postmigrantischen Gesellschaft. Edit. W Machleidt, U Kluge, M Sieberer, A Heinz, S Dangl Praxis der interkulturellen Psychiatrie und Psychotherapie: Migration und psychische Gesundheit. S. 55-67

Gogolin, I 2008. Der Monolinguale habitus der Multilingualen Schule. 2. unveränderte Auflage. Münster: Waxmann Verlag GmbH. Gogolin, I./Neumann, U. und /Roth, H.J. (2003): Förderung von Jugendlichen mit Migrationshintergrund. Gutachten im Auftrag der Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung. Bonn.

Gomolla, M, Radtke, FO 2009. Institutionelle Diskriminierung. Die Herstellung ethnischer Differenz in der Schule. 3. Auflage. Wiesbaden: VS Verlag für Sozialwissenschaften.

Hinnekamp, V 2005. „Zwei zu bir miydi?"- Mehrsprachliche Varietäten von Migrantenjugendlichen im Hybriditätsdiskurs. In: Hinnekamp, V. und Meng, K.(Hrsg.). Sprachgrenzen überspringen. Sprachliche Hybridität und püolykulturelles Selbstverständnis. Tübingen: Narr. S.51-104.

Kaya, A 2001. „Sicher in Kreuzberg". Contructing Diasporas: Turkish Hip-Hop Youth in Berlin. Bielefeld: Transcript Verlag.

Keim, I 2012. Mehrsprachige Lebenswelten: Sprechen und Schreiben der türkischstämmigen Kinder und Jugendlichen. Tübingen : Narr Verlag.

Oksaar, E 2003. Zweitspracherwerb. Wege zur Mehrsprachigkeit und zur interkulturellen Verständigung. Stuttgart: Verlag W. Kohlhammer

Pilancı, H 2009. Avrupa Ülkelerindeki Türklerin Türkçeyi Kullanma Ortamları, Sürdürebilme İmkânlar ve Koruma Bilinçleri. Bilig, Bahar (49). S. 127-160.

Skutnabb-Kangas, T 1984. Bilingualism or Not: The Education of Minorities. Clevdon, Avon: Multilingual Matters 7.

Skutnabb-Kangas, T, Toukomaa, P 1976. Teaching Migrant Children's Mother Tongue and Learning the Language of the Host Country in the Context of the Sociocultural Situation of the Migrant Family. Helsinki: The Finnish National Commission for UNESCO.

Ünsal, F, Wendlandt, W 1991. Doppelte Halbsprachigkeit bei türkischen Migrantenkindern. In: Deutsche Gesellschaft für Sprachheilpädagogik e.V., LV Hessen (Hrsg.). Behinderung-Pädagogik-Sprache. Giesse: Giessen-Druck. S. 326-333.

Yıldız, C 2012. Yurt Dışında Yaşayan Türk Çocuklarına Türkçe Öğretimi (Almanya Örneği). In:Yurtdışı Türkler ve Akraba Topluluklar Başkanlığı. Ankara.

COGNITIVE, NEUROLOGICAL, AND AFFECTIVE CONSIDERATIONS IN LANGUAGE ACQUISITION

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ABSTRACT

Success in foreign language learning is shaped by numerous factors which may be both external and internal. The sources of the external factors are teachers/educators, course materials, educational policies, educational settings, while the sources of the internal factors are the individual's inner states which are shaped by cognitive, neurological, and affective considerations. Human cognition develops rapidly throughout the life; and some cognitive changes are critical, while others are more gradual and difficult to detect. In addition to the cognitive considerations, the scholars in the field have questioned how language is lateralized in the brain, when lateralization takes place, and how lateralization process affects language acquisition or learning. Another important internal factor is interrelated with the learner's affective domains. Therefore, in an attempt to contribute to the relevant literature in this area, the present study discusses the internal factors that shape foreign language learning process.

Keywords: foreign language learning, human cognition, neurological factors, affective domains

Introduction

In the field of foreign language education, considerably amount of effort has been devoted to encourage students to receive the given input and to produce in a fruitful way. The main input source in the foreign language classroom is the language typically used by teachers in the (Ellis, 2012). The other input sources are peers' talk, the learner's own productions as well. In foreign language classrooms, language education is planned for supporting students to produce comprehensible output (Celce-Murcia, et al. 2013; Ellis, 2012; Mackey, 2007). For producing in the foreign language interaction is the essential component of education process. Long (1996) claims that through interaction, learners' internal capacities and selective attention are shaped between input and output chain. Gass (2013) states that through interaction learners can be exposed to processes of repetition, segmentation, and rewording. Thus, learners' attention increases for distinguishing form-meaning relationships. In this respect, learning a foreign language means recognizing two ways of speaking, writing, listening, and reading.

There are some dispelling some myths about language learning (Brown, 2007).

1. In language teaching, we must practice and practice, again and again. Just watch a small child learning his mother tongue. He repeats things over and over again. During the language learning stage he practices all the time. This is what we must also do when we learn a foreign language.

2. Language learning is mainly a matter of imitation. You must be a mimic. Just like a small child. He imitates everything.

3. First, we practice the separate sounds, then words, then sentences. That is the natural order and is therefore right for learning a foreign language.

4. Watch a small child's speech development. First he listens, then he speaks, Understanding always precedes speaking. Therefore, this must be the right order of presenting the skills in a foreign language.

5. A small child listens and speaks and no one would dream of making him read or write, Reading and writing are advanced stages of language development. The natural order for first and second language learning is listening, speaking, reading, writing.

6. You did not have to translate when you were small. If you were able to learn your own language without translation, you should be able to learn a foreign language in the same way.

7. A small child simply uses language. He does not learn formal grammar. You don't tell him about verbs and nouns. Yet he learns the language perfectly. It is equally unnecessary to use grammatical conceptualization in teaching a foreign language.

Various paradigms have been recommended to explain the workings of foreign language learning process. The common paradigms have been shaped by filling the gaps of the previous one.

- Behaviorism: Imitation, stimuli-response, habit formation, reinforcement are the key features described to explain language learning process
- Cognitivism: Innateness, creative construction hypothesis (guided by universal innate mechanism), poverty of stimulus, Language Acquisition Device –LAD, Universal Grammar – UG, the critical period hypothesis are the main paradigms suggested by cognitivists to explain the learning process. In this regard, for cognitivists, children are biologically programmed for language, and everything is in their minds. In addition, most discussions center on the question of whether there is a critical period for language acquisitions biologically. The Critical Period Hypothesis (CPH) claims that there is such a biological timetable and it is claimed that before and after critical period, certain abilities do not develop.
- Constructivism: Interactionist/Developmental perspectives; connectionist views

Vygotsky's contributions:

- Language develops primarily from social interaction.
- Zone of proximal development (ZPD): a level that a child is able to do when there is support from interaction with a more advanced interlocutor.
- Scaffolding: language acquisition is realized through assisted learning

Connectionists claim that the role of the environment is more important than any innate knowledge (Brown, 2007). The role of the learner is also more important than any other entity, and the function of the human brain shapes language learning process

The function of the brain and hemispheric lateralization

One of the most important of statements interrelated with age and acquisition has been put forward about the function of the brain in the process of language acquisition. As the human brain matures, certain functions are assigned, or lateralized, to the left hemisphere of the brain, and certain other functions to the right hemisphere (Brown, 2007). In this regard, intellectual, logical, and analytic functions appear to be largely located in the left hemisphere, while the right hemisphere controls functions related to emotional and social needs. Language functions appear to be controlled mainly in the left hemisphere; lateralization is a slow process that begins around the age of two and is completed around puberty. The plasticity of the brain prior to puberty enables children to acquire not only their first language but also a second language (Brown, 2007).

Cognitive considerations

In addition to the neurological considerations which center on how language is lateralized in the brain, the scholars in the field have questioned the impacts of cognitive considerations. Human cognition develops rapidly throughout the life; and some cognitive changes are critical, while others are more gradual and difficult to detect. Jean Piaget (1972) outlined the course of intellectual development in a child through various stages:

- Sensorimotor stage (birth to 2)
- Preoperational stage (ages 2 to 7)
- Operational stage (ages 7 to 16)
- Concrete operational stage (ages 7 to 11)
- Formal operational stage (ages 11 to 16)

Affective considerations

Another important internal factor is interrelated with the learner's affective domains: Empathy, Sympathy, Self-esteem: belief in your ability (I believe I can do this), Self-efficacy: being capable of doing tasks (I can do this), Self-confidence: belief in yourself (I know I can do this), Ego, Egocentricity, Inhibition, Attitude, Peer pressure, Willingness to communicate, Tolerance of ambiguity, Attribution, Anxiety.

Considering the abovementioned internal sources, teachers or researchers could verify the effectiveness of the sources on gaining linguistic knowledge. Knowing the reasons of higher or lower success or failure in getting linguistic knowledge is important, since this will help teachers design courses regarding the factors that influence learners' learning behaviors.

References

Brown, H.D. (2007). *Principles of language learning and teaching.* Pearson Education.

Celce-Murcia, M., Brinton, D.M., & Snow, M.A. (2013). *Teaching English as a second or foreign language.* Boston: Heinle & Heinle.

Ellis, R.R. (2012). *Language Teaching Research and Language Pedagogy.* UK: Wiley- Blackwell.

Gass S. M. & Selinker, L. (2008). *Second language acquisition.* Routledge.

Gass, S. M. (2013). *Second language acquisition. An introductory course.* New York: Routledge.

Long, M.H. (1996). The role of the linguistic environment in second language acquisition. In *Handbook of Second Language Acquisition*, W.C. Ritchie and T.K. Bathia (eds), 413- 468. San Diego: Academic Press.

Piaget, J. (1972). Intellectual Evolution from Adolescence to Adulthood. *Human Development, 15*, 1-12.

Swan, M. (2012). *Thinking about language teaching.* China: Oxford University Press.

Williams, M. & Burden, R. L. (1997). *Psychology for language teachers. A Constructivist approach.* Cambridge: Cambridge University Press.

YAPIM İŞİ İHALELERİNDE TEKNİK ELEMANLAR ARASI YETKİ FARKLILIKLARININ ANALİZİ

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ÖZET

Mühendis, Mimar, Tekniker, Teknisyen ünvanlı teknik elemanlar hem kamu kurumlarında hem de özel sektörde çalışabilmektedir. Bunlardan mühendis ve mimarların, mezuniyet belgelerini 4734 sayılı Kamu İhale Kanunu'na göre ihale edilen yapım işlerinde iş deneyim belgesi olarak kullanabilme hakları varken tekniker ve teknisyenlere aynı Kanun'da bu hak verilmemiştir. Oysa, Tekniker ve Teknisyenlerin geçmişte 1981 tarihli Yapı, Tesis ve Onarım İşleri İhalelerine Katılma Yönetmeliği uyarınca sınırlı da olsa müteahhit karnesine sahip olma hakları bulunmakta idi. Yine, Kamu kurumlarında ihalesi yapılan yapım işlerinde mühendis, mimar, tekniker ve teknisyen ünvanlı personel tarafından yaklaşık maliyetin hazırlanması, yapı denetim görevlisi, geçici ve kesin kabullerde komisyon üyeliği gibi görevler de yürütülmektedir. Tamamlanmış yapım işlerinde ortaya çıkabilecek kusur ya da eksiklerde komisyonlarda görev alanların da sorumluluğu bulunmaktadır. Bu görevler bir çok kurumda kadrosu teknik hizmetler sınıfında olmayan sözleşmeli memur ya da genel idari hizmetler sınıfındaki memurlar aracılığıyla yürütülmesi, her ne kadar mezuniyet belgeleri teknik eleman olduklarını gösterse de bulundukları kadronun üzerinde sorumluluk almalarına ve özellikle sözleşmeliler için sözleşme süresinin uzatılmaması gibi ast-üst ilişkisinden doğan görev zafiyetine neden olabilecek uygulamaların önünü açabilmektedir. Bir başka husus da, özellikle büyükşehir belediye sınırları içinde doğrudan temin usulü ile yapım işlerinde iş deneyim belgesinin aranmaması, daha önce yüklenicilik yapmamış kişi ya da tüzel kişiliklere iş deneyim belgesi sahibi olmalarına neden olmaktadır. Tekniker, Teknisyen gibi teknik öğrenim görmüş kişilere, mühendis ya da mimar kadar olmasa da sınırlı bir miktarda iş deneyim belgelerine sahip olmalarının önü açılarak yüklenicilik mesleğinde niteliğin iyileşmesine sebep olacağı düşünülmektedir.

Anahtar Kelimeler: İş deneyim, Teknik eleman, ihale

ANALYSIS OF DECENCY DIFFERENCES BETWEEN TECHNICAL PERSONNEL IN CONSTRUCTION WORK TENDERS

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ABSTRACT

Engineers, Architects, Technicians, technical personnel with the title of Technician can work both in public institutions and in the private sector. Of these, engineers and architects have the right to use their graduation certificates as a work experience certificate in construction works tendered in accordance with the Public Procurement Law No. 4734, while technicians and technicians have not been granted this right in the same Law. However, in the past, Technicians and Technicians had the right to have a contractor's report card, albeit limited, in accordance with the 1981 Building, Plant and Repair Works Procurement Regulations. In addition, duties such as preparation of approximate cost, construction supervision officer, commission membership for temporary and final admissions are also performed by engineers, architects, technicians and technicians in construction works tendered in public institutions. Those who work on commissions are also responsible for any defects or deficiencies that may occur in completed construction work. Many of these tasks and Technical Services staff in institutions in the class of non-contract Administrative Services officer or general officers in the class through the execution of the documents, although they are each graduation on their staff to take responsibility for the technical elements and especially do not extend to contractors as the duration of the contract arising

from the task of the supervisory relationship may pave the way for that may be the cause of the weakness in the application. Jul, in particular, the lack of a work experience certificate in construction works by direct procurement procedure within the boundaries of the metropolitan municipality leads to the fact that people or legal entities who have not previously been contractors have a work experience certificate. It is believed that it will open the way for people with technical education, such as a Technician, Technician, to have work experience certificates in a limited amount, if not as much as an engineer or architect, which will lead to an improvement in qualifications in the contractor profession.

Keywords: Work experience, Technical staff, tender

GİRİŞ

Kamu kurumları yapım ve büyük bakım onarım ihtiyaçlarını daha çok ihaleye çıkmak suretiyle gidermektedir. Ülkemizde 2886 sayılı Devlet İhale Kanunu ile 4734 sayılı Kamu İhale Kanunu yürürlüktedir. Bunlardan 2886 sayılı Devlet İhale Kanunu, 4734 sayılı Kamu İhale Kanunu'nun 01.01.2003 tarihinden itibaren uygulanmaya başlamasıyla yürürlükten kalkmamakla birlikte kapsamı daraltılmıştır. Başta Belediyeler olmak üzere; alım (4734 sayılı Kanun kapsamına girmeyen), satım, hizmet, yapım, kira, trampa, mülkiyetin gayri ayni hak tesisi ve taşıma işleri ihtiyaçları amacıyla kullanılmaktadır. 4734 sayılı Kamu İhale Kanunu ise; yapım, mal ve hizmet alımlarını doğrudan piyasada ilgili konuda iştigal eden firmalardan tedarik etme sürecinde tercih edilmektedir. Yani genel ifadeyle 4734 sayılı Kanun hizmeti doğrudan kaynaktan karşılamada, 2886 sayılı Kanun ise satış, kiralama, takas vb. karşılıklı alış-verişe dayalı ve taşımalı eğitimde uygulandığı gibi hizmet işlerinde tercih edilmektedir.

MATERYAL VE YÖNTEM

Teknik elemanların görev yaptığı özel firmalar, tüzel kişilikler ya da kamu kurumlarında; kamu kurumlarınca gerçekleştirilen yapım işi ihalelerine katılmalarının yanı sıra, ihalelerin yaklaşık maliyet ve tüm süreçlerinde yer almaktadırlar. Kamu ihalelerindeki aşamalar başta 4734 sayılı Kamu İhale Kanunu ile 2886 sayılı Devlet İhale Kanunu olmak üzere, ihalelerin uygulama yönetmelikleri, muayene ve kabul yönetmelikleri olmak üzere detaylı olarak açıklanmıştır. Bunların yanı sıra denetim hizmetleri ve şantiye şefliği konularında da yine düzenlenmiş yönetmeliklerden yararlanılmıştır.

Yapım İşlerinde Teknik Personel Görev ve Sorumlulukları

Başta mühendis ve mimarlar olmak üzere, teknik elemanlar kamu kurumları tarafından gerçekleştirilen yapım işi ihalelerinde; yaklaşık maliyetin hazırlanması, ihale komisyon üyeliği, kontrol teşkilatında yapı denetim görevlisi, işin bitiminde geçici ve kesin kabullerde üye olarak yer alabilmektedirler. Bunun yanı sıra yapım işi ihalelerine katılma konusunda mühendis ve mimarların kamu personeli olsun veya olmasın mezuniyet belgelerini iş deneyim belgesi olarak kullanabilme hakları da vardır.

İhale Komisyonu Teşkili

Yapım işlerinde ihale komisyonunun tek sayı olmak üzere en az beş kişiden ve bunların en az ikisinin işin uzmanı, birinin muhasebe veya mali işlerden olması gerektiği ilgili yönetmelikte açıklanmıştır (Y.İ.U.Yön. Madde 20, 2009). Yedek üyelerin de benzer şekilde belirlenmesinin ifade edildiği maddede ihaleyi yapan idarenin yeterli sayı veya nitelikte personeli olmaması durumunda aynı kanun kapsamındaki idarelerden görevlendirme suretiyle komisyona üye alabilecekleri açıklanmıştır.

Burada komisyon oluşturulurken tek sayı olmak üzere asgari beş kişiden üçü tarif edilmiştir. En az ikisi işin uzmanı olması koşuluna göre diğer iki kişinin de en az biri yine işin uzmanı olarak görevlendirilebileceği yönünde idarelere takdir hakkı da sağlamaktadır. İhaleyi yapan kurumlara yeterli sayı veya nitelikte elemanı olmaması durumunda başka idarelerden personel talep etme tercihinde

bulunabilecekleri de ifade edilmiştir. Bir çok kamu kurumunu memur sınıfı "teknik hizmetler" olmayan genel idari hizmetler sınıfında yer alan kadrolu ya da sözleşmeli personelini ihale komisyonlarında "işin uzmanı" değerlendirerek üye olarak görevlendirebilmektedir. Yapım işi ihaleleri ile ilgili yönetmeliklerde bu konuda açık bir ifade bulunmamakta "teknik personel" olması yeterli görünmektedir. Teknik elemanın bulunduğu hizmet sınıfının belirtilmemiş olması, o kurumda ast-üst ilişkisinden kaynaklı olarak denetim elemanı ya da komisyon üyeliklerinde görev zafiyetine neden olabilecek uygulamaların önünü açabilmektedir.

İş Deneyim Belgesi

Yapım işi ihalelerinde isteklilerde bulunması gereken katılım şartlarından biri de, iş tecrübesini ya da nitelikli olduğunu gösteren deneyim belgesine sahip olmasıdır. Bu belge, isteklinin daha önce tamamlamış ya da en azından %80'ini bitirmiş olduğu işe ait olarak ilgili kamu kurumundan düzenlenebileceği gibi kamu kurumlarında denetim görevlerinde bulunan mühendis, mimarlara ve ayrıca 4734 sayılı Kanun'un 62(h) maddesi gereğince serbest çalışan dahi olsa daha önce yapım işi tamamlamamış mühendis ve mimarlara mezuniyetlerinden sonra geçen her bir yıl için belirli bir rakamın iş deneyim belgesi olarak kullanılabilmesi hakkı verilmiştir. Benzer bir durum, 28/3/1981 tarihli ve 17293 sayılı Resmî Gazete'de yayımlanan Yapı, Tesis ve Onarım İşleri İhalelerine Katılma Yönetmeliği uyarınca teknik öğrenim gören mühendis ve mimarlar dışında miktarları sınırlı olmak kaydıyla tekniker, fen memuru ve hatta teknisyenlere de müteahhitlik karnesi yerine geçebilen iş deneyim belgesine sahip olma hakkı verilmiştir. Hatta sözü edilen müteahhitlik karnesinden yararlanarak yapım işi yapanların geçerliliği sona ermemiş karneleri her yıl Resmi Gazete'de Mart ayında yayınlanan tebliğ ile güncellenmektedir. Ancak; tekniker, fen memuru ve teknisyenlerin bu hakları 4734 sayılı Kanun'a göre yapılan ihalelerde geçerli değildir. 4734 sayılı Kanunda iş deneyim yerine geçen belgelerin kimlerin adına ve hangi şartlarda düzenlenebileceği açıklanırken ön lisans ve mesleki teknik lise mezunlarına bu imkanı tanımamıştır. Teknik elemanlara verilen ve "imtiyaz" gibi görünen bu ayrıcalıktan amaç elbette yüklenicilik mesleğinde niteliği artırmaktır.

İş Deneyim Belgesi Kullanım Hakkı

Yapım işi tamamlamamış ya da denetim görevinde bulunmamış özellikle serbest çalışan mühendis ve mimarlar, Kanun'un 62. maddesi (h) bendi gereğince on beş yıl ile sınırlı kalmak üzere her bir yılı belirlenmiş bir rakama karşılık gelen iş bitirme belgesine sahip olduğu kabul edilir. Bu rakam her yıl Kamu İhale Kurumu tarafından yayınlanan eşik değerler ile ilgili tebliğ içerisinde yazılır ve 1 Şubat itibariyle bir yıl geçerlidir. Son olarak 20.01.2022 tarihinde Resmi Gazete'nin 31725 sayılı baskısında 2022/1 no'lu tebliğ olarak yayınlanmış ve mühendis ile mimarların diplomaları, her yıl için 808.172,00 Türk Lirasına tekabül eden iş bitirme belgesi yerine geçmektedir. On beş yıldan fazlası kullanılmak istenirse mühendis ve mimarların bu süre içerisinde bitirmiş oldukları yapım işi olmalı ya da kamuda görev yaptıkları süre içerisinde denetleme veya yönetme görevinde tamamlanan yapım işi olmalıdır. Örnek verilecek olursa, yapım işi tamamlamamış 15 yıllık bir mühendis veya mimarın mezuniyet belgesi, 12.122.580,00 Türk Lirası değerinde iş bitirme belgesi yerine geçmektedir.

Bu arada yüklenici sıfatına sahip olmayan daha önce yapım işi tamamlamamış kişi ya da tüzel kişilikler özellikle büyükşehirlerdeki kamu kurumlarında doğrudan temin yolu ile 22/d maddesine istinaden, teklifleri uygun olması halinde yapım işlerini üstlenmektedir. Tamamlanmasını müteakip o işe ait iş bitirme belgesi düzenlenerek başka kurumların yapım işi ihalelerine katılabilmektedirler. Doğrudan temin usulü, ihale olmayıp idarelerin belirli bir bedele kadar ihtiyaçlarını karşılamak için kanun ile verilmiş bir hak olup, bu tür alımlarda da iş deneyim belgesi aranmamaktadır. Bu durumda da daha önce yapım işi tamamlamamış kişilere "yüklenici olabilme" imkanı tanımaktadır (Tablo 1).

Tablo 1. Kamu İhale Kanunundaki bazı parasal limitler (KDV hariç)

4734 Sayılı Kanun'da geçen bazı parasal limitler		
4734 Sayılı Kanun 22/d maddesi	Büyükşehir Belediyesi sınırları içindeki idareler	218.395 TL*
	Diğer illerdeki idareler	72.752 TL*
4734 Sayılı Kanun 62 (h) maddesi	Mühendis ve Mimarlar için iş deneyim belgesi hesabında	808.172 TL*

*Bu yazı içeriğinde sözü edilen konulara ait limitler

Yine, tüzel kişiliklere en az %51 hissedarı mühendis ve mimarlar olmak kaydıyla, teknik eleman mezuniyet belgelerinin iş deneyim belgesi olarak kullanılması hakkı Kanun ile verilmiştir. Bundan yararlanarak çok sayıda deneyimi olmayan firmalar yapım işi ihalelerine iştirak edip, ihaleyi kazanıp işi bitirdikten sonra yeni iş bitirme belgesine sahip olabilmektedirler. Kanun'da bu tür tüzel kişiliklerde teknik elemanın hissesinin **en az 5 yıl korunması** şartı da vardır. Oysa, 4734 sayılı Kanun öncesinde düzenlenen iş deneyim yerine geçen müteahhitlik belgelerinde teknik eleman karnesini tüzel kişiliğe devretse bile o firmada çalışması zorunludur ve iş akdi sona ererse müteahhit karnesinin geçerliliği ortadan kalkmaktadır.

Yapı Denetim Görevliliği (Kontrolluk)

5 Eylül 1979 tarih ve 16745 sayılı Resmi Gazete'de yayımlanan Bayındırlık İşleri Kontrol Yönetmeliğinin "kontrol örgütü" başlıklı 4.4. maddesinde kontrol görevlisi tanımı yapılırken mühendis, mimar ve zorunlu hallerde teknikerlere de bu görevin verilebileceğinden bahsetmektedir. Bu yönetmelik 2018 yılına kadar yürürlükte kalmıştır.

5 Mart 2018 tarih ve 30442 sayılı Resmi Gazete'de yayınlanan Çevre ve Şehircilik Bakanlığı tarafından düzenlenen yönetmeliğin denetim hizmeti başlıklı 4. Maddenin (ç) bendinde denetim mühendisine bağlı olarak teknikerlerin denetim mühendisi yardımcısı olarak, (d) bendinde ise işin niteliği ve özelliğine bağlı olarak denetim mühendisinin sorumluluğu altında birden fazla tekniker, teknisyen, laborant görevlendirilebileceği belirtilmiştir.

Çevre ve Şehircilik Bakanlığı tarafından Resmi Gazete'de yayımlanan Yönetmeliğin 4. Maddesi (e) bendinde " Şantiye şefi: Konusuna ve niteliğine göre yapım işlerini yapı müteahhidi adına yöneterek uygulayan, mühendis, mimar veya bunlara ilişkin teknik öğretmen veya tekniker diplomasına sahip teknik personeli" ifadesi yer almaktadır. Aynı yönetmeliğin 6. maddesi 2/c bendinde de şantiye şefinin "inşaat, makine, elektrik, yapı denetim teknikeri veya bunlara ilişkin teknik öğretmen olması şarttır" denilmektedir .

Yapı Denetimi Uygulama Yönetmeliğinde 29.12.2018 tarih ve 30640 sayılı Resmi Gazete'de yayımlanan düzenleme ile yardımcı kontrol elemanı olarak teknikerlerin de görevlendirilebileceği ifadesi bulunmaktadır.

Tablo 2. Yapı denetim firmalarındaki teknik eleman yetki sınırları

Teknik eleman	Denetim yetki sınırı (m^2)
İnşaat Mühendisi veya Mimar	30.000
Makine Mühendisi	60.000
Elektrik Mühendisi	120.000
Teknik Öğretmen (İnşaat, Makine, Elektrik)	13.500

Tekniker (İnşaat, Makine, Elektrik, Yapı Denetimi)	8.500
Teknisyen (İnşaat, Makine, Elektrik)	3.500

Buna göre, her yıl Çevre ve Şehircilik Bakanlığınca yayınlanan Mimarlık ve Mühendislik Hizmet Bedellerinin Hesabında Kullanılacak Yapı Yaklaşık Birim Maliyetleri Hakkında Tebliğe göre III. Sınıf B Grubuna dahil olan yani yüksekliği 21,50 metreyi geçmeyen konutlar, pansiyonlar, misafirhaneler, karakollar, entegre tarım endüstri yapıları vb. ve inşaat alanı 13.500 m^2'yi geçmeyen bir yapının denetiminde görev alabilecekleri ifade edilerek denetim yetki sınırları üstteki Tablo 2'de gösterilmiştir.

Muayene ve Kabul Komisyon Üyeliği

Yapım işleri tamamlandığında muayene ve kabul işlemlerinde görev alacak personelin tamamının teknik eleman olması ifade edilmektedir. Mühendis veya Mimar tabiri kullanılmadığından tekniker ve hatta teknisyenler de geçici ve kesin kabuller için teşkil edilen komisyonlarda görev alabilmektedirler. Birçok kamu kurumunda da uygulama bu yöndedir. Yapım İşleri Muayene ve Kabul Yönetmeliğinin 3. Maddesinde de kabul komisyonunda görev alabilecekler tarif edilirken "işin özelliğine uygun teknik eleman" tabiri kullanılmaktadır. Denetim elemanı kabul komisyonu üyesi olamamakta ancak kabul sırasında hazır bulunması gerekmektedir. Bir başka ifadeyle, mühendis ya da mimarın denetim elemanı yani kontrollük yaptığı yapım işinin muayene ve kabul zamanı geldiğinde geçici ve kesin kabul komisyonlarında, yapılan işin fen ve sanat kurallarına uygun tamamlandığının belirlenmesi aşamasında tekniker ve hatta teknisyenler de görev alabilmektedir.

Sorumluluklar, Hak Mahrumiyetleri

Yapım işi tamamlanmasını müteakip kesin kabul sonrası yükleniciden kaynaklanan kusurlar için ilgili tüzel kişiliğe, hatalı ve/veya kusurlu işleri tamamlaması için süre verilir, Yine giderilmemesi halinde o yüklenicinin namına hata ve kusurlar giderilerek yurt içindeki tüm ticari faaliyetleri üzerinden cezai işlem yapılabilir. Burada, kontrol teşkilatının da sorumluluğu bulunmaktadır. Yönetmeliğin 16. Maddesinde de ifade edildiği üzere muayene ve kabul komisyonu üyeleri ile yapı denetim görevlilerinin taraflardan birinin zararına yol açacak ihmalde bulundukları tespit edilmesi durumunda disiplin soruşturmasına maruz kalacağı, mevzuatlarına uygun ceza kovuşturması ile ayrıca maddi zarar ve ziyanın da tazmin ettirileceği ifade edilmektedir.(Yapım İşl. Muayene ve Kabul Yönetmeliği, 2009)

Kamu İhale Kanunu'nun 60. Maddesinde ihale sürecinde; sözleşme imzalanana kadar ki aşamalarda görev alanların 17. Maddede belirtilen fiil ve davranışlarda bulunmaları halinde disiplin cezası uygulanacağı belirtilmiştir. Ayrıca fiil ve davranışların özelliğine göre ceza kovuşturmasının yanı sıra, yargı organlarınca da ceza verilmesi halinde kamu kurumlarında ihale kanunun uygulanması ile ilgili görev ve unvanlara atanamayacağına varıncaya kadar müeyyideler bulunmaktadır.

SONUÇLAR

1) Yapım işlerinde kamuda denetim görevinde bulunan mühendis ve mimarlar gibi teknikerlere de 62(h) maddesinde belirtilen rakamlar kadar olmasa da mezuniyet belgelerinin her bir yılını iş bitirme belgesi olarak kullanabilme hakkı verilmelidir.
2) Özellikle büyükşehir belediye sınırları içindeki kamu kurumları 22/d maddesine istinaden doğrudan temin ile yapım işi ihtiyaçlarını karşılarken, ihale dokümanında olduğu gibi daha önce yapım işi tamamlamış olanlara teklif mektubu verilmelidir. Hiçbir şekilde yapım işi tamamlamamış kişi ya da tüzel kişiliklere "yüklenici olabilme yolu" açılmamalıdır.
3) Kamuda teknik hizmetler sınıfında yer almayıp genel idari hizmetler ya da sözleşmeli personel kadrosunda bulunan ancak mezuniyetleri teknik eleman olan kişilerin komisyonlarda görev alabilmeleri ast-üst ilişkisi de dikkate alınarak engellenmelidir. Bu konuda yönetmeliklerde açık ifade kullanılmalıdır.

KAYNAKLAR

Devlet İhale Kanunu. (1983, 8 Eylül). Resmi Gazete (Sayı:18161). Erişim adresi : https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2886.pdf

Kamu Yapıları Denetim Hizmetleri Yönetmeliği. (2018, 5 Haziran). Çevre ve Şehircilik Bakanlığı. Resmi Gazete (Sayı:30442). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2018/06/20180605-8.htm

K.İ.K., Kamu İhale Kanunu. (2002, 22 Ocak). Resmi Gazete (sayı:24648). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2002/01/20020122.htm#1

Şantiye Şefleri Hakkında Yönetmelik. (2019, 2 Mart). Çevre ve Şehircilik Bakanlığı. Resmi Gazete (Sayı:30702). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2019/03/20190302-2.htm

Yapı Denetimi Uygulama Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik. (2018, 29 Aralık). Resmi Gazete (Sayı: 30640). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2018/12/20181229-2.htm

Yapım İşleri İhaleleri Uygulama Yönetmeliği. (2009, 4 Mart). Resmî Gazete (Sayı: 27159 (Mükerrer)). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2009/03/20090304M1-2.htm

Yapım İşleri Muayene ve Kabul Yönetmeliği. (2009, 4 Mart). Resmî Gazete (Sayı: 27159 (Mükerrer)). Erişim adresi: https://www.resmigazete.gov.tr/eskiler/2009/03/20090304M1-2.htm

Yapı, Tesis ve Onarım İşleri İhalelerine Katılma Yönetmeliği (1981, 28 Mart) Resmi Gazete (Sayı: 17293) Erişim adresi: https://www.resmigazete.gov.tr/arsiv/17293.pdf

Yapım İşleri Uygulama Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik. (2018, 13Ağustos). Resmi Gazete (Sayı: 30508). Erişim adresi : https://www.resmigazete.gov.tr/eskiler/2018/08/20180813-12.htm

ÜSTÜN YETENEKLİLER ALANINA YÖNELİK YAPILAN LİSANSÜSTÜ TEZLERİN ÖZETLERİNDE KULLANILAN ANAHTAR KELİMELERİN İNCELENMESİ (2018-2021)

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ÖZET

Bu çalışmada Türkiye'de üstün yetenekliler alanına yönelik 2018-2021 yılları arasında YÖK-Ulusal Tez Merkezi veri tabanında yayınlanan ve erişime açık lisansüstü tezlerin özetlerinde çalışma konularına yönelik kullandıkları anahtar kelimelerin incelenmesi amaçlanmaktadır. Araştırma sonuçlarına göre Türkiye'de belirtilen tarihler arasında üstün yetenekliler üzerine 218 yüksek lisans ve 56 doktora tezi; toplamda 274 lisansüstü teze ulaşılmıştır. Araştırma nitel araştırma yöntemlerinden durum çalışması olan doküman incelemesine göre desenlenmiştir. Elde edilen veriler içerik analizi kullanılarak çözümlenecektir. Söz konusu tezler yıllara göre dağılım ve anahtar kelime sıklığına göre analiz edilecektir.

Anahtar Kelimeler: üstün yetenek, yüksek lisans tezi, doktora tezi, lisansüstü, anahtar kelime.

INVESTIGATION OF THE POST GRADUATE THESES ON THE FIELD OF GIFTEDNESS IN TERMS OF THE KEY WORDS USED IN THE ABSTRACTS (2018-2021)

ABSTRACT

This study aims to investigate the postgraduate theses on the field of giftedness in terms of the key words used in the abstracts. Data for the current study includes the postgraduate theses on the field of giftedness between 2018-2021 in Turkey and open to access at the Council of Higher Education Thesis Center. 274 postgraduate theses in total were retrieved according to the criteria; 218 of them are MA theses and 56 are doctorate theses. We employed a case study method in the research design and content analysis for analyzing data. Systematic analysis of qualitative theses research over a 4-year- period and the frequency of the key words will be determined.

Keywords: giftedness, master thesis, doctorate thesis, postgraduate, keyword

GİRİŞ

İçinde yaşadığımız bilgi çağında teknolojik gelişmelere bağlı olarak bilgiye erişmek oldukça kolay hale gelmiştir. Elektronik ortamda bilgiye erişmek kolay olduğu kadar aranan konuya erişmek oldukça zaman alabilmektedir. Bu nedenle Bilimsel alanda araştırmacıların kullandığı Googlescholar, Yahoo, Bing, Copernic gibi çevrimiçi ağlardaki bilgi yığınları içerisinde en doğru yolu izlemeleri gerekmektedir. Araştırmacılara bu alanda en faydalı yöntem arama motoruna yazacakları anahtar sözcüklerdir (Dener ve Yıldızeli, 2006). Anahtar sözcükler ilgili alandaki gelişmelerin yönünü, hangi konuların daha fazla hangilerinin daha az çalışıldığını, alana yönelik eğilimleri belirleme hususunda oldukça önemlidir (Sevim ve İşcan, 2012). Bu çalışmada özel yetenekliler alanına yönelik 2018-2021 yılları arasında yapılan yüksek lisans ve doktora tezleri temele alınarak, söz konusu alanda gerçekleştirilen güncel çalışmalara odaklanılarak, alana ilişkin gelişmeler, sıklıkla üzerinde

yoğunlaşılan konuları belirlenmek ve sonrasında alanda çalışılmaya açık olduğu görülen konulara yönelik önerilerde bulunmak amaçlanmıştır.

Lisansüstü tezlerin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin belirlenmesi amaçlanmaktadır. Bu amaca yönelik alt problemler;

1. 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin yıllara göre dağılımı nedir?
2. 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan yüksek lisans tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı nedir?
3. 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan doktora tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı nedir?
4. 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin dağılımı nedir?

YÖNTEM

Araştırma modeli

Yapılan çalışmada verilerin derinlemesine incelendiği, veriler arasındaki ilişkileri ortaya koymayı amaçlayan nitel araştırma yöntemi olan doküman incelemesi kullanılmıştır. Doküman incelemesi araştırma amaçlarına yönelik olay ve olgular hakkında bilgi veren yazılı materyallerin analizini içermektedir (Yıldırım ve Şimşek, 2016). Doğrudan görüşme ve gözlem yapılamayan durumlarda tek başına bir araştırma yöntemi olarak kullanılabilir. Araştırmada amaçsal örnekleme stratejilerinden ölçüt örnekleme kullanılmıştır. Bu araştırmada ölçüt; çalışmaların Türkiye' de gerçekleştirilmiş olması, YÖK veri tabanından erişilebilir lisansüstü tezler olması ve 2018-2021 yılları arasında yayınlanmış olmasıdır.

Verilerin toplanması ve analizi

Bu araştırma yapılırken öncelikle Yükseköğretim Kurumu Tez Merkezi'nde, "üstün yetenek, özel yetenek, üstün zeka, üstün zekâ, BİLSEM, Bilim ve Sanat Merkezi, enderun" anahtar sözcükleri ile arama tezler 2018-2021 dâhil olmak üzere yüksek lisans ve doktora programları olarak iki kategoride tek tek kaydedilmiştir. Erişilen 274 lisansüstü tezin özetlerinin sonunda kullanılan anahtar sözcükler yıllara göre Excel dosyasında depolanmıştır.

Tablo 1. Anahtar kelime belirtilmeyen tez

	Adet	Basım yılı	Türü
Anahtar kelime belirtilmeyen tez	2	2018	YL
	1	2019	DR

Her yıla yönelik anahtar kelimeler alfabetik sıraya dizilmiş ve sonrasında en sık tekrar edilen kelimeler içinden üç ve daha fazla tekrar edilen kelimeler seçilerek ayrı bir liste oluşturulmuştur. Bu liste her yıl için en sık kullanılan kelime listesini belirtmektedir. Toplam 1212 kelime elde edilmiştir ancak bu kelime ve kelime gruplarından ortak kategoriye girenler olduğundan analiz edildiğinde Toplam 1239 anahtar kelime/grubuna ulaşılmıştır. Elde edilen verileri içerik analizi ile incelenmiştir. Bu süreç, araştırmacının tezlerin içeriğinde belirli örüntü ve temaları aramasını ve bunların kodlamasını içermektedir. Kodlara göre verilerin analiz işlemi yapılmış yüzde ve frekansları alınmıştır. İçerik analizi metin kümelerindeki belli kelimelerin veya kavramların varlığını tespit etmeye yönelik kullanılır. Araştırmacılar bu kelime ve kavramların varlığını, ne anlam ifade ettiklerini ve aralarındaki ilişkileri belirleyerek metinlerdeki mesaja ilişkin çıkarımlarda bulunurlar (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz ve Demirel, 2012).

BULGULAR

Tablo 2. 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin yıllara göre dağılımı

Yayın yılı	Yüksek lisans tez (f)	Doktora tez (f)	*f*	Toplam %
2018	52	12	64	23,36
2019	97	17	114	41,61
2020	21	12	33	12,04
2021	48	15	63	22,99
Toplam	218	56	274	100%

Tablo 2'de 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin yıllara göre 2018 yılında 64, 2019 yılında 114, 2020 yılında 33, 2021 yılında 63 lisansüstü tez tamamlanmıştır.

Tablo 3'de 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan yüksek lisans tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı belirtilmektedir.

Tablo 3. Yüksek lisans tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı

YIL	TEMA	f	%
2018	Üstün yetenek (32) Üstün zeka (19) Özel yetenek (15) Zeka (6) Üstün zeka ve yeteneklilik (2)	74	19,73
	BİLSEM(6) Bilim ve Sanat Merkezi(3)	9	2,4
	Sosyal	6	1,6
		89	**23,73**
2019	Özel Yetenek (45) Üstün yetenek (38) Üstün zeka (17) Üstün yetenek ve zeka (6) Zeka (6) Yetenek (3) Zeka ve yetenek/yaratıcılık (2)	117	31,2
	Bilim ve Sanat Merkezi (17) BİLSEM(11)	28	7,47
	Fen	11	2,93
	Sosyal	11	2,93
	STEM (8) STEAM (2) STEMM (1)	11	2,93
		178	**46,47**
2020	Özel yetenek(15) Üstün yetenek (4) Üstün zeka (4) Üstün zeka ve yetenek (2) Zeka (1)	26	6,93
	Bilim ve Sanat Merkezi (3)	6	1,6

	BİLSEM (3) STEAM (2) STEM (1) E-STEM (1)	4	1,07
		36	**9,6**
2021	Özel yetenek (23) Üstün yetenek (13) Üstün zeka (11) Üstün /özel yetenek (3) Zeka (2) Yetenek (1) Üstün ve özel yetenek (1)	54	14,4
	BİLSEM (9) Bilim ve Sanat Merkezi (2)	11	2,93
	Bilimsel	7	1,87
		72	**19,2**
Total		**375**	**100%**

Tablo 3 de Yüksek lisans tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımına göre 2018 yılında 89 (23,73), 2019 yılında 178 (46,47), 2020 yılında 36 (9,6), 2021 yılında 72 (19,2) frekansla her yıl içinde özellikle kavram farklılıklarındaki frekanslar ön plana çıkmaktadır.

Tablo 4'de 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan doktora tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı gösterilmektedir.

Tablo 4. Doktora tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımı

Yıl	Tema	*f*	%
2018	Üstün yetenek (8) Özel yetenek (2) Üstün zeka/yetenek (2) Üstün zeka (1)	13	13,27
	Bilimsel	4	4,08
	Fen	3	3,06
		20	**20,41**
2019	Özel yetenek (5), Üstün yetenek (5) Üstün zeka/yetenek (2) Üstün zeka (1) Üstün/özel yetenek (1)	14	14,29
	Bilim ve Sanat Merkezi (4) BİLSEM (2)	6	6,12
	Yaratıcı/lık	4	4,08
	Fen	4	4,08
		28	**28,57**
2020	Özel yetenek (11) Üstün yetenek (2) Üstün zeka (1) Üstünlük (1)	15	15,31

	Bilim ve Sanat Merkezi (3) BİLSEM (1)	4	4,08
	Fen	3	3,06
		22	**22,45**
2021	Özel yetenek (10) Üstün yetenek (4) Üstün zeka (2) Yetenek/ler (2)	18	18,37
	Bilim ve Sanat Merkezi (4) BİLSEM (1)	5	5,10
	Eğitim	5	5,10
		28	**28,57**
Total		**98**	**100%**

Tablo 4'de doktora tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin yıllara göre dağılımında göre 2018 yılında 20 (20,41), 2019 yılında 28 (28,57), 2020 yılında 22 (22,45), 2021 yılında 28 (28,57) frekansla her yıl içinde özellikle kavram farklılıklarındaki frekanslar ön plana çıkmaktadır.

Tablo 5'de 2018- 2021 yılları arasında özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin dağılımı verilmiştir.

Tablo 5. Özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin dağılımı

Tema	Kategori	Kod	*f*	%
Bilişsel Beceriler	Zihin alışkanlıkları	Problem çözme (20)	43	3,47
		Kendi kendine öğrenme (17)		
		Matematik (4)		
		Fen (2)		
	Düşünme becerileri	Yaratıcı (8)	32	2,58
		Üstbiliş (7)		
		Eleştirel (7)		
		İşlemsel (5)		
		Strateji (3)		
		Analitik (2)		
	Öğrenme	Öğrenme davranışı (10)	19	1,53
		Psikolojik sağlamlık (5)		
		Başarı (2)		
		Mindfulness		
		Bilgelik		
	Dil Gelişimi	Okuma (8)	18	1,45
		Yazma (6)		
		Dil etkinlikleri 3		
		İlk okuma ve yazma		
			112	**9,04**
Zihinsel Beceriler	Zeka (16)	Duygusal zeka (6)	30	2,42
		Sosyal zeka (4)		
		Sosyal-duygusal zeka (4)		
	Yaratıcılık		19	1,53
	Bellek		7	0,56
	Merak		2	0,61

	Fen yeteneği		1	0,08
	Oyun tasarımı		1	0,08
	Sürdürülebilirlik		1	0,08
			61	**4,92**
Sosyal – Duygusal durum	Sosyal	Sosyal Beceri (18)	32	2,58
		Sosyal Uyum (5)		
		Yaşam doyumu (4)		
		Sosyal destek (2)		
		Sosyal Medya (2)		
		Sosyal sermaye		
	Duygu	Kaygı 5	17	1.37
		Yalnızlık (3)		
		Umut (3)		
		Mutluluk (2)		
		Okul tükenmişliği (2)		
		İlgi		
		Yetersizlik		
	Sosyo-duygusal	Farklılıklar	3	0,24
		Gelişim		
		Öğrenme		
			52	**4,20**
Gelişimsel dönem	İlkokul		7	0,56
	Ergenlik		6	0,48
	Erken çocukluk		5	0,40
			18	**1,45**
Kişilik	Kişilik yapısı	Liderlik (10)	**14**	**1,13**
		Duygu düzenleme (2)		
		Bağlanma (2)		
Sağlık	Tıbbi	Androjen Reseptör	**8**	**0,65**
		Genetik		
		idiyosentrisizm-allosentrisizm		
		Klinik Görev Temelli Görüşmeler		
		MOXO d-CBT		
		NRG1		
		Polimorfizm		
		rs6994992		
Tutum	Derse/okula yönelik	Okumaya (3)	9	0,73
		Matematik tutumu (2)		
		Fen tutumu (2)		
		Teknolojiye yönelik		
		Okul başarı tutumu		
	Kişilerin tutumu	Ebeveyn tutumu (6)	8	0,65
		Öğretmen tutumu		
		Üstün yeteneklilere karşı tutum		
	Genel Tutum		7	0,56
			24	**1,94**
Algı	Öz yeterlik (16)		**66**	**5,33**
	Akademik benlik (10)			
	Mükemmeliyetçilik (10)			
	Genel Algı (9)			
	Motivasyon (8)			

	Olumsuz duygu (7)			
	Metafor (4)			
	Anne baba /davranış biçimleri (2)			
Kurum	Bilim ve Sanat Merkezi (37)		**72**	**5,81**
	BİLSEM (28)			
	Çocuk Üniversitesi (2)			
	Enderun Mektebi 2			
	Genel Eğitim Okulu			
	Okul			
	TÜZDER			
Dersler /Etkinlikler	Sayısal	Fen (27)	52	4,20
		Matematik (25)		
	Sözel	Sosyal bilgiler (6)	15	1,21
		İngilizce (3)		
		Türkçe (3)		
		Coğrafya		
		Hayat bilgisi		
		Din		
	Sanat ve spor	Görsel sanat (15)	33	2,66
		Müzik (13)		
		Beden Eğitimi (4)		
		Teknoloji ve tasarım		
	Etkinlik	STEM (20)	34	2,74
		STEAM (4)		
		Bibliyoterapi (4)		
		Stufflebeam (2)		
		FeteMM (2)		
		SCAMPER		
		Özgün etkinler		
	Araç gereç	Aparat (5)	9	0,73
		Atık malzeme (3)		
		Öğretici metinler		
	Akademik	Ölçme değerlendirme (4)	8	0,65
		Başarı (2)		
		Katılım/engelleme (2)		
			151	**12,19**
Araştırma	Yöntem ve desenler	Nitel (12)	26	2,10
		Bilimsel araştırma (8)		
		Karma Yöntem (4)		
		Nicel (2)		
	Süreç	Bilimsel muhakeme (7)	13	1,05
		Bilimsel beceriler (6)		
	Envanter	Ölçek (13)	22	1,78
		Test (8)		
		Anket		
			61	**4,92**
Katılımcılar	Öğrenciler		82	6,62
	Öğretmen (11)	Fen bilimleri (4)	28	2,26
		BİLSEM (3)		
		Matematik (3)		

		Okul öncesi (3)		
		Sınıf (2)		
		Müzik		
		PDR		
	Aile	Ebeveyn (8)	16	1,29
		Ebeveyn görüşleri (3)		
		Ebeveyn stresi (2)		
		Otorite stilleri		
		Ebeveynlik uygulamaları		
		Dijital ebeveynlik		
	Yönetici		5	0,40
	Öğretmen adayları	Fen bilgisi (2)	3	0,24
		Okul öncesi		
	Sosyal çalışmacı		1	1,08
			135	**10,90**
Tanılama	Ön tanı	Kriterler (7)	12	0,97
		Aday gösterme (2)		
		Psiko-sosyol özellikler		
		Psikolojik belirtileri		
		Erken müdahale		
	Kesin Tanı	Özel yetenek (119)	308	24,86
		Üstün yetenek (102)		
		Üstün zeka (52)		
		Üstün zeka ve yetenek (12)		
		Yetenek (4)		
		DEHB (4)		
		Üstün/özel yetenek (3)		
		Olağan/normal gelişim (3)		
		BİLSEM öğrencileri		
		Dahi		
		OSB		
		İki kere farklılık		
		Zihinsel engelli		
		Üstün zekâlı olmayan öğrenciler		
		Üstün zekâlı OSB olan çocuklar		
		Üstün ve özel yetenek		
		Özel gereksinimli birey		
			320	**25,83**
Öğretim İlke ve Yöntemleri	Eğitim	Özel yetenekliler eğitimi (10)	46	3,71
		Farklılaştırılmış eğitim (8)		
		Öğretmen eğitimi/yeterlikleri (5)		
		Özel eğitim (4)		
		Eğitim yönetimi (4)		
		Atölye eğitimi (3)		
		Bireyselleştirme (2)		
		Çevre eğitimi (2)		
		Karakter eğitimi (2)		
		Aile destek eğitimi		
		Uzaktan eğitim		
		Bilişsel bağlantı kurma eğitimi		
		Ontolojik kategori değiştirme eğitimi		

		Bütünleşik STEM eğitimi		
		Sorgulama Temelli Bilim Eğitimi		
	Program	Eğitim programları/faaliyetleri (14)	24	1,94
		Özel yetenekleri geliştirici program (2)		
		Okul sosyal hizmeti (2)		
		Psiko eğitim programı		
		Sosyal Beceri Eğitim Programı		
		Zenginleştirilmiş eğitim programı		
		MEB matematik dersi programı		
		ÜYÜKEP		
		ÜYEP		
	Yaklaşım	System yaklaşımı	4	0,32
		Kullanımlar ve doyumlar yaklaşımı		
		Sorgulama temelli yaklaşım		
		Yapılandırmacı Yaklaşım,		
	Model	Ürün değerlendirme modeli	5	0,40
		Yetenekler Sınırsız Modeli		
		Bütünleştirilmiş Müfredat Modeli		
		Yapısal Eşitlik Modeli		
		ASSURE model		
	Kuram	Zeka kuramı (7)	9	0,73
		Temellendirilmiş teori		
		Konsensüs tekniği		
	Öğretim Yöntemi	Proje çalışması	5	0,40
		Ters yüz öğrenme		
		Sokratik seminer		
		Materyal geliştirme		
		Öğretim uygulamaları		
			93	**7,51**
Teknoloji	Avantaj	Yazılım (13)	28	2,26
		Eğitim teknolojisi (5)		
		Dijital hikaye (4)		
		Teknoloji (4)		
		Dijital yerliler		
		Deneyim		
	Dezavantaj	Bilgisayar bağımlılığı	3	0,24
		Dijital bağımlılığı		
		Oyun bağımlılığı		
			31	**2,50**
Sorunlar	Davranışsal	Otantik (4)	9	0,73
		Eğitsel (3)		
		Saldırganlık		
		Güçlükler		
	Psiko-sosyal	Sosyal duygusal (7)	12	0,97
		Depresyon (3)		
		Psikolojik (2)		

		21	**1,69**
Total		**1239**	**100%**

Tablo 5'de bilişsel beceriler 112 (9,04), zihinsel beceriler 61(4,92), sosyo-duygusal durum 52 (4,20), gelişimsel dönem 18 (1,45), kişilik 14 (1,13), sağlık 8 (0,65), tutum 24 (1,94), algı 66 (5,33), kurum 72 (5,81), dersler/etkinlikler 151 (12,19), araştırma 61 (4,92), katılımcılar 135 (10,90), tanılama 320 (25,83), öğretim ilke ve yöntemleri 93 (7,51), teknoloji 31 (2,50) ve sorunlar 21 (1,69) frekansla olmak üzere toplam 16 tema sunulmaktadır.

SONUÇ VE TARTIŞMA

Araştırma bulgularına göre, lisansüstü tezlerin özetlerinde kullanılan anahtar kelimelerde özel yetenek alanına dair kavram çeşitliliği dikkat çekmektedir (Tablo 3 ve Tablo 4). Üstün zeka ve özel yetenekli bireyler tarih boyunca bulunmuş ancak onlara yönelik eğitim öğretim çalışmaları tam kuramsal ve uygulama boyutuyla tam bir netlik kazanmamıştır. Bu kapsamda eğitim programları geliştirme, özel eğitimli personel yetiştirme, eğitim ortamları hazırlama, özel kurumlar açılması ve alana yönelik özel araç – gereçler geliştirme çalışmaları teknolojinin de gelişmesiyle hız kazanmıştır. Alana yönelik çalışmalar yapılırken tanımlama ve sınıflandırma konusu üzerinde durulmuş olup terim kargaşası halen devam etmektedir. MEGEP (2009) temel kavramlar olarak "Zekâ, üstün zekâ, özel yetenek" kavramlarını el almış; Thorndike'nin zekayı soyut somut ve sosyal zeka olarak üçe ayırdığın,ı Garner'ın ise çoklu zeka kuramından ele alarak her bireyde farklı zeka gruplarının bulunduğunu ve bunlardan bir ya da bir kaçında üstün olabileceğini belirtmektedir.

Zeka terimine tek boyutluluktan değil çok boyuttan bakış açısı (Anderson, 2000) zamanla Milli Eğitim Bakanlığı'nın üstün zekayı nasıl tanımladığına da etki etmiştir. Milli Eğitim Bakakanlığı, üstün yetenekli çocuklar ve eğitimleri komisyonu raporunda, "üstün zekâ" kavramı kullanmaktansa "üstün yetenek" kavramını kullanmıştır (Sak ve diğ, 2015). Üstün yetenekliler kavramı "genel ve/veya özel yetenekleri açısından yaşıtlarına göre yüksek düzeyde performans gösterdiği alanın uzmanları tarafından belirlenmiş kişiler" olarak tanımlanmıştır (MEB, 1991). Bu tanımda üstün yeteneğin performans alanları belirtilmediğinden ilerleyen yıllarda 2006 Özel Eğitim Hizmetleri Yönetmeliğinde üstün yetenekli birey "zekâ, yaratıcılık, sanat, spor, liderlik kapasitesi veya özel akademik alanlarda akranlarına göre yüksek düzeyde performans gösteren birey" olarak tanımlanmıştır (MEB, 2006). Sak ve diğ (2015) ise bu tanımın çelişki içerdiğini; tanıma göre bireylerin hem performans alanlarında (spor, sanat, akademik alanlar ve liderlik) hem de bilişsel süreçlerde (zeka ve yaratıcılık) üstün yetenekli olabileceğini vurguladığını belirtmişlerdir. üstün zekâ ve üstün yetenek kavramları en son kullanımıyla Özel Yetenekli Bireyler Strateji ve Uygulama Planı'nda özel yetenek kavramı olarak belirtilmiş ve bu haliyle üstün ve zeka kavramlarının kullanımı tamamen bırakılmıştır (MEB, 2013).

Araştırmanın bir diğer bulgusunda, özel yetenekliler alanına yönelik yapılan lisansüstü tezlerinin özetlerinde sıklıkla kullanılan anahtar kelime ve kelime öbeklerinin dağılımına bakıldığında en çok tanılama frekansının yüksek olduğunu, bunu dersler/etkinlikler, bilişsel becerileri ve kurumların izlediği bulunmuştur. Tanılama frekansının yüksek olması tanım ve kavram çeşitliliğiyle de örtüşmektedir. Dersler ve etkinlikler temasında ise en yüksek frekans sayısal dersler kategorisinde bulunmaktadır.

KAYNAKÇA

Anderson, K. (2000). Gifted and talented students: Meeting their needs in New Zealand Schools. Wellington: New Zealand.

Büyüköztürk, Ş., Çakmak Kılıç, E., Akgün, Ö., E., Karadeniz, Ş. & Demirel, F. (2008). Bilimsel araştırma yöntemleri. İstanbul: Pegem.

Dener, H. I. ve Yıldızeli, A. (2006). Öz Yazma: Süreç ve İlkeleri. Sağlık Bilimlerinde Süreli Yayıncılık 4.Ulusal Sempozyumu (17 Kasım 2006 - Ankara), Erişim Tarihi: 03.03.2022, Erişim Adresi: http://uvt.ulakbim.gov.tr/tip/sempozyum4/page37-48.pdf

MEB. (1991). Üstün yetenekli çocukların eğitimi raporu [The report of education of gifted children]. Ankara: Milli Eğitim Bakanlığı.
MEB. (2006b). Özel eğitim hizmetleri yönetmeliği [The policy of special education] Ankara: Milli Eğitim Bakanlığı.
MEGEP (2009. Çocuk gelişimi ve eğitimi üstün zekâ ve özel yetenekli çocuklar. Mesleki eğitim ve öğretim sisteminin güçlendirilmesi projesi. Ankara
MEB. (2013). Özel yetenekli bireyler strateji ve uygulama planı (2013-2017) [Strategic Plan on Gifted Education 2013-2017]. Ankara: Milli Eğitim Bakanlığı.
Sak, U., Ayas, B. Sezerel, B. B., Öpengin, N.N., Demirel Gürbüz, Ş., (2015) Türk Üstün Zekâ ve Eğitim Dergisi, Cilt 5, Sayı 2, 110-132
Sevim, O. ve İşcan, A. (2012). Türkçenin Eğitimi ve Öğretimi Alanında Yapılan Yüksek Lisans Tezlerinde Geçen Anahtar Kelimelere Dönük Bir İçerik Analizi. Turkish Studies, 7(1), 1863-1873

YAPISAL KIRILMA ETKİSİ ALTINDA TÜKETİCİ GÜVENİNDEKİ DEĞİŞİMLER

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ÖZET

Tüketici Güven Endeksi, ülke ekonomisinin hem mevcut durumunu ortaya çıkaran hem de geleceğine yön veren bir göstergedir. Bu çalışmanın amacı yapısal kırılmaları da göz önüne alarak tüketici güveninin döviz kuru ve borsa endeksi ile ilişkisini eşbütünleşme ve nedensellik analizleri ile tespit etmektir. Güveni etkileyebilecek unsurlardan borsa göstergesi olarak BİST 100 Endeksi ve döviz şoklarını da gözlemleyebilmek için "0,5 Dolar + 0,5 Euro" şeklinde hesaplanan döviz sepeti kur değeri kullanılmıştır. Ocak 2012-Aralık 2021 döneminde gerçekleştirilen analizlerde değişkenlere öncelikle durağanlık tespiti için birim kök testleri (Augmented Dickey Fuller ve Zivot-Andrews) uygulanmıştır. Veri seti kendi düzeyinde değil birinci farkında ve yapısal kırılma altında durağan çıkmıştır. Bilgi kriterleri (Akaike, Schwarz ve Hannan-Quinn) aracılığıyla en uygun gecikme değeri de bir olarak tespit edilmiştir. Tüketici güveni, borsa endeksi ve döviz sepeti arasındaki uzun dönemli etkileşim için yapısal kırılmalı eşbütünleşme analizi (Gregory-Hansen) gerçekleştirilmiş ve Temmuz 2018'de bir yapısal kırılma yakalanmıştır. Seriler arasında yapısal kırılma eşliğinde uzun dönemli bir eşbütünleşik ilişki vardır. Yapısal kırılmanın Covid-19 Pandemisi döneminde olmasını beklerken farklı bir sonuç ile karşılaşılmıştır. Bulgular, Aksoy (2021)'i destekler niteliktedir. 2018 yılının ikinci yarısı itibariyle özellikle döviz kurları ve tüketici güveni değişkenlerinin oynaklığı oldukça yüksektir. Değişkenler arasındaki nedensellik ilişkisine (Toda Yamamoto) göre de her iki değişken de tüketici güveninin Granger nedenidir. Gelecek çalışmalarda aynı değişkenler için çoklu yapısal kırılma analizleri ile bulgular genişletilebilir veya rejim değişimine izin veren modeller de tercih edilebilir.

Anahtar Kelimeler: Tüketici Güveni, Döviz Sepeti, BİST100, Yapısal Kırılma, Toda Yamamoto Nedensellik Analizi.

CHANGES IN CONSUMER CONFIDENCE UNDER THE EFFECT OF STRUCTURAL BREAK

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ABSTRACT

The Consumer Confidence Index is an indicator that both reveals the current state of the country's economy and directs its future. The aim of this study is to determine the relationship between consumer confidence and exchange rate and stock market index by taking into account the structural breaks with cointegration and causality analysis. The BIST 100 Index, which is one of the factors that may affect confidence, is used as an indicator of the stock market, and the currency basket exchange rate calculated as "0.5 Dollars + 0.5 Euros" is used to observe foreign exchange shocks. In the analyzes carried out between January 2012 and December 2021, unit root tests (Augmented Dickey Fuller and Zivot-Andrews) were applied to the variables primarily to determine the stationarity. The data set is not at its own level, but is stationary under the first difference and structural break. The most appropriate lag value was determined as one by means of the information criteria (Akaike, Schwarz, and Hannan-Quinn). A structural break cointegration analysis (Gregory-Hansen) was conducted for the long-term interaction between consumer confidence, stock market index and currency basket, and a structural

break was found in July 2018. There is a long-term cointegrating relationship between the series, accompanied by a structural break. While waiting for the structural break to occur during the Covid-19 Pandemic period, a different result was encountered. The findings support Aksoy (2021). As of the second half of 2018, the volatility of exchange rates and consumer confidence variables is quite volatile. According to the causality relationship between the variables (Toda Yamamoto), both variables are the Granger cause of consumer confidence. In future studies, the findings can be expanded with multiple structural break analyzes for the same variables or models that allow regime switching may be preferred.

Keywords: Consumer Confidence, Currency Basket, BIST100, Structural Break, Toda Yamamoto Causality Analysis.

1. GİRİŞ

Tüketici Güven Endeksi tüketicilerin mevcut ekonomik durum algıları ile gelecek beklentilerini sorgulayan tüketici eğilim anketleri aracılığıyla oluşturulmaktadır. Ekonomiye öncü gösterge niteliğindeki endeks her ay Türkiye İstatistik Kurumu ve Türkiye Cumhuriyet Merkez Bankası işbirliği sonucu açıklanmaktadır. Endeks 0 ile 200 arasında değer almakta olup 100'ün altındaki değerler tüketicinin kötümser olduğuna ve 100'ün üstündeki değerler de tüketicinin iyimser olduğuna işaret etmektedir. Açıklanan değerin önceki aylarla da kıyaslanması gerekmektedir. 100'ün altında bile olsa diğer aylara göre düşüş/yükseliş durumu da ekonomide geleceğe ilişkin beklentilere öncülük edebileceğinden önem arz etmektedir (Çolak ve Aktaş, 2010: 130-131). Örneğin 2021 yılı Aralık değeri 68,9 olan endeks, 2022 yılı Ocak ayında 73,2 olarak açıklanmıştır. Kötümser beklentileri ifade eden değerler olmasına rağmen Ocak ayında %6,2 oranında artış gözlenmesi olumlu bir durumdur (TÜİK, 2022). Bu güven unsuru ekonominin temel taşı, ayrılmaz bir parçasıdır. Temelin sağlamlığı ana yapıyı da etkilemektedir. Sarsıntı ve çatlaklar ise o yapının artık eskisi gibi olmadığını ve yeni duruma göre hareket edilmesi gerektiğini vurgular. İki farklı dönem arasında kırılma olarak adlandırılan bir dönüm noktası vardır. O nokta yakalanmalı ve gelecek adımlar planlanırken yeni koşullara göre yön çizilmelidir. Kırılmalar bazen ekonomik faktörlerden bazen finansal piyasalardan bazen de politik değişikliklerden kaynaklanabilir. Bu çalışmada kırılma eşliğinde borsa endeksi ve döviz sepetinin güvene etkileri sorgulanmaktadır.

Pay piyasalarında işlem gören şirketler bazen sektörel bazen işlem hacimlerine göre gruplandırılmaktadır. Grup bazında ele alınan şirketlerin fiyat ve getiri performansları endeksler aracılığıyla bir bütün olarak hesaplanmaktadır. Borsa İstanbul için temel gösterge BİST 100 Endeksi olup hem piyasa değeri hem de işlem hacmi en yüksek hisse senetlerinden oluşmaktadır. Şirketlerin ve borsanın genel ekonomik durumu bu endeksle ortaya çıkarılmaktadır (KAP, 2022).

Bir ülkeye ait para biriminin yabancı ülkelerin para birimlerine olan karşılığını hesaplayabilmek için döviz sepeti/kur sepeti oluşturulmaktadır. Yakından ilişkili olunan birden fazla yabancı ülke para birimi kullanılarak bunların ortalama değeri alınmaktadır. Örneğin Türkiye'nin ithalatının ve dış borçlanmasının ağırlığı Dolar ile, buna karşılık ihracatının ve bazı hizmet gelirlerinin ağırlığı Euro iledir. Bu durumda TL'nin Dolar ve Euro'dan oluşan bir sepete karşı değerinin değişimini ölçmek önem kazanır (Eğilmez, 2017: 142-143):

Döviz sepeti değeri = "(1 USD + 1 Euro) / 2" veya "0.5 USD + 0.5 Euro" olacak şekilde hesaplanabilir. Dolar ve Euronun TL karşısında 28 Şubat 2022 değerleri aşağıdaki gibidir:

1 USD = 13,87 TL ve 1 Euro = 15,55 TL Bu durumda döviz sepeti değeri şöyle hesaplanmaktadır:

Döviz sepeti değeri = (13,87 + 15,55) / 2 = 14,71 TL olmaktadır.

Bu çalışmanın amacı Türkiye' deki ekonomik yapının rejim değişimlerini göz önünde bulundurarak tüketici güveninin, döviz sepeti/sepet kur ve sermaye piyasaları temel göstergesi BİST 100 Endeksi ile

uzun vadede etkileşimini ortaya çıkarmaktır. Tüketici güveninin, ekonomik göstergelerin ve finansal piyasaların etkisi altında olduğu bilinse de yapısal kırılmaları gerçekleştiren faktörün ne olduğu ve gerçekleşme tarihi analizler sonrasında daha net görülebilmektedir.

Ekonomik göstergeler için geçişleri yakalayan ve kırılmalara izin veren bir model üzerinden analizleri gerçekleştirmek büyük önem arz eder. Bu nedenle farklı rejimlere izin veren modeller tercih edilmektedir. Birim kök testi için Zivot-Andrews Modeli ve eşbütünleşme için Gregory-Hansen Modeli kullanılmaktadır. Ayrıca değişkenler arasındaki nedensellik ilişkisi için de Toda-Yamamoto Modeli ile analiz gerçekleştirilmektedir. Çalışma planı literatür özetleri, veri seti bilgilendirmesi, analiz yöntemi ve program çıktıları ile devam etmektedir. Sonuç, değerlendirme ve öneriler ile de sonlandırılmaktadır.

2. LİTERATÜR

Geçmiş çalışmalar incelendiğinde tüketici güveni ve makroekonomik faktörlerin etkileşimi ile ilgili yapılmış çalışma sayısı oldukça fazladır. Analizlere borsa endekslerini dahil eden çalışmalar da mevcuttur. Metot olarak yapısal kırılmayı dikkate alan model kullanımı ise literatürde eksik kalan noktalardandır. Çalışmanın yöntemi bu yönüyle ön plana çıkmaktadır. Tablo 1.'de literatürden benzer değişkenleri ya da benzer yöntemi kullanan çalışmalara yer verilmektedir:

Tablo 1: Literatür Özetleri

YIL	YAZAR	VERİ SETİ (TGEne ek)	VERİ DÖNEMİ	YÖNTEM	SONUÇ
2010	Görmüş ve Güneş	Makro ekonomik göstergeler	2002:01 2008:12	Granger Nedensellik Analizi GARCH-M OLS	Döviz kuru ve borsa oynaklığı etkileşimi mevcut.
2013	İbicioğlu vd.	Dolar Kuru	2003:12 2011:12	Johansen Eşbütünleşme Granger Nedensellik Etki Tepki Analizi	Hem uzun vadede hem kısa vadede ilişki mevcut.
2015	Gürgür ve Kılınç	Finansal ve makroekonomik değişkenler	2004:01 2015:04	ARDL Modeli	Döviz Kuru değişkeni ile hem uzun hem kısa vadede etkileşim var.
2016	Beşel ve Yardımcıoğlu	Döviz Kuru, Petrol Fiyatları, İşsizlik	2005:01 2014:10	Gregory Hansen Eşbütünleşme Testi, Toda Yamamoto Nedensellik Analizi	Tek yönlü ilişki gösteren nedenselliklerden biri de döviz kurundan güven endeksine doğrudur.
2016	Tunalı ve Özkan	TÜFE	2004:01 2015:12	Johansen Eşbütünleşme-VECM Nedensellik Analizi	Eşbütünleşik ilişki, TÜFE den TGE ne doğru tek yönlü nedensellik mevcut.
2018	Canöz	BİST 100 Endeksi	2004:01 2017:12	Toda Yamamato Nedensellik Analizi	Pay endeksi getirileri oynak olduğundan güveni etkilemektedir.
2019	Durgun Kaygısız	TÜFE Döviz Kuru BİST 100	2010:01 2018:12	Granger Nedensellik Etki Tepki Analizi Varyans Ayrıştırması	Döviz kuru, tüketici güveninin Granger nedenidir.

2020	Kaya	Döviz Kuru	2004:01 2020:05	Fourier ADL FMOLS,CCR,DOLS	Kurdan güven endeksine doğru tek yönlü nedensellik mevcuttur.
2021	Aksoy	Dolar Kuru	2012:01 2020:04	Gregory Hansen Eşbütünleşme Testi, Toda Yamamoto ve Hacker Hatemi J Nedensellik Analizi	Dolar kuru, tüketici güvenini etkilemektedir.
2021	Özakarlı ve Küçüksille	Döviz Sepeti	2006:07 2019:06	ARDL Sınır Testi	Güveni uzun vadede BIST 100 pozitif, Döviz Sepeti ise negatif olarak etkilemektedir.
2021	Kılcı	Finansal Hizmetler ve Reel Sektör Güven Endeksleri	2012:05 2020:09	Carrion-I Silvestre Birim Kök Testi	Tüketici güvenindeki yapısal kırılmalar vurgulanmaktadır.
2022	Önem	BİST Sektörel Endeksler	2012:01 2021:08	Eşbütünleşme ARDL Sınır Testi ve Granger Nedensellik Testi	Eşbütünleşme mevcut değil. Tüketici Güven Endeksinden BIST bankacılık sektörüne doğru tek yönlü nedensellik ilişkisi mevcut.

3. METODOLOJİ / VERİ VE YÖNTEM

3.1. Veri Seti Özellikleri

Analizde kullanılan değişkenler, analiz dönemi ve verilerin elde edildiği kaynaklar Tablo 2.' de gösterilmektedir. Veriler aylık frekanstadır. Analiz dönemi 2012 yılı ile başlamakta 2021 yılında sona ermektedir:

Tablo 2: Veri Seti

Veri Seti	Analiz Dönemi	Veri Kaynağı
Tüketici Güven Endeksi (TGE)	Ocak 2012 - Aralık 2021	TÜİK
Döviz Sepeti (DS)	Ocak 2012 - Aralık 2021	FİNNET
BİST 100 Endeksi (XU100)	Ocak 2012 - Aralık 2021	FİNNET

3.2. Gregory Hansen Modeli

Yapılan birim kök testi sonucunda elde edilen bulgulardan sonra tek yapısal kırılmaya izin veren Gregory ve Hansen (1996) Eşbütünleşme Testi uygulanmaktadır. Değişkenler arasındaki uzun dönemli ilişkiyi araştıran bu test kırılma tarihini içsel olarak tahminlemektedir. Testte Model C, Model C/T ve Model C/S olmak üzere üç ayrı denklemden yararlanılmaktadır (Denklem 1,2,3). Denklem 1, sabit terim üzerindeki bir kırılmayı hesaplayan düzeyde değişimi gösteren modeldir:

$$Model\ C: y_{1t} = \mu_1 + \mu_2 DU_t + \alpha_1 y_{2t} + e_t \qquad t = 1, \ldots, n \tag{1}$$

Denklem 2, sabit terim ve eğimdeki kırılmayı hesaplayan trendli bir modeldir:

$$Model\ C/T: y_{1t} = \mu_1 + \mu_2 DU_t + \mu_3 t + \alpha_1 y_{2t} + e_t \qquad t = 1,\ldots, n \tag{2}$$

Denklem 3 ise tam kırılmayı gösteren model olup; sabit terimdeki ve yapısal kırılmadan önceki ve sonraki eğim katsayısındaki değişimi eşitliğe dahil etmektedir:

$$Model\ C/S: y_{1t} = \mu_1 + \mu_2 DU_t + \alpha_1 y_{2t} + \alpha_2 y_{2t} DU_t + e_t \qquad t = 1,\ldots, n \tag{3}$$

Her bir model için, Gregory ve Hansen tarafından önerilen ADF, Z_α ve Z_t testleri kullanılarak ε_t artık serileri üzerinde birim kök testleri yapılarak kırılmalar tespit edilir:

$$ADF^* = \inf_{\tau \epsilon T} ADF(\tau)$$

$$Z_\alpha{}^* = \inf_{\tau \epsilon T} Z_\alpha(\tau)$$

$$Z_t{}^* = \inf_{\tau \epsilon T} Z_t(\tau)$$

3.3. Toda Yamamoto Modeli

Toda Yamamoto (1995) Modelini diğer nedensellik analizlerinden ayıran önemli noktalar mevcuttur. Öncelikle durağanlığı önemsemeyen bu model için analize dahil edilen serilerin farklı seviyelerde durağan çıkması sorun teşkil etmemektedir. İkinci olarak da nedensellik ilişkisini gözlemleyebilmek için değişkenlerin eşbütünleşik çıkması zorunlu değildir. En yüksek eşbütünleşme derecesi (d_{max}), birim kök testleri ile belirlenmektedir. Bu derece 1 veya 2 olabilmektedir. Optimum gecikme uzunluğu (k), bilgi kriterleri aracılığıyla bulunmaktadır. Böylece kurulan VAR modeline ($k+d_{max}$) gecikmesi arttırılmış testler uygulanmaktadır. Modelin denklemleri 4 ve 5 numaralı denklemler ile gösterilmektedir. Eşitliğin soluna önce y değişkeni sonra x değişkeni alınarak ikili denklemler kurulur. İkili denklemler ve parametrelerin anlamlı çıkması için MWald Testi ile Granger Nedensellik Analizi yapılarak süreç tamamlanmaktadır:

$$Y_t = \varphi + \sum_{i=1}^{k+d_{max}} a_{1i} Y_{t-1} + \sum_{i=1}^{k+d_{max}} a_{2i} X_{t-1} + \mu_{1t} \tag{4}$$

$$X_t = \varphi + \sum_{i=1}^{k+d_{max}} \beta_{1i} X_{t-1} + \sum_{i=1}^{k+d_{max}} \beta_{2i} Y_{t-1} + \mu_{2t} \tag{5}$$

4. BULGULAR

4.1. Birim Kök Testleri Çıktıları

Geleneksel birim kök testlerinden ADF Testi ile durağanlık tespiti yapılmaktadır. Analiz sonuçlarına Tablo 3.' de yer verilmektedir:

Tablo 3: ADF Birim Kök Test Sonuçları

Değişkenler, Düzey ve Birinci Fark (D)	% 5 Kritik Değeri	ADF Test İstatistiği	Olasılık Değeri (Prob.)
TGE	-2.885863	-1.453653	0.5536
TGE (D)	-2.886509	-8.827897	0.0000

DS	-2.885863	3.130025	1.0000
DS (D)	-2.886074	-8.910160	0.0000
XU100	-2.885863	0.567966	0.9883
XU100 (D)	-2.886074	-10.13290	0.0000

Tablo 3.' e bakıldığında serilerin ADF Birim Kök Testi sonuçlarına göre; üç değişken de düzey değerlerinde ADF Test İstatistiği, kritik değerden büyük olduğu için durağan değildir. Serilerin olasılık değerleri de birim kök içerdiklerini göstermektedir $(p>0.05)$. Birinci farklar incelendiğinde ise üç değişken de durağan çıkmaktadır $(p<0.05)$. Bir sonraki adımda serilerdeki birim kök, yapısal kırılmalı test ile tekrar araştırılmaktadır.

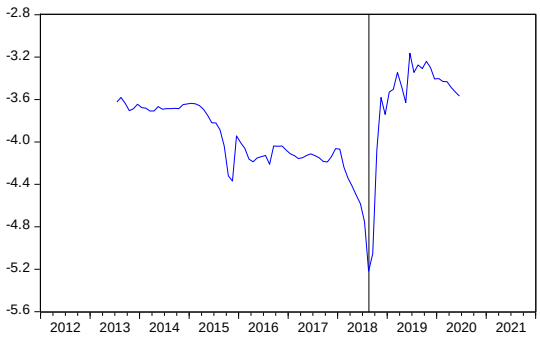
Tek yapısal kırılmaya izin veren bir test olan Zivot-Andrews Birim Kök Testi, her seriye ayrı ayrı uygulanmaktadır. Grafikler eklenerek kırılma noktaları da gösterilmektedir. Zivot-Andrews Birim Kök Testi sonuçlarına bakıldığında değişkenler yapısal kırılma eşliğinde durağandır.

Tablo 4: Zivot-Andrews Birim Kök Test Sonuçları

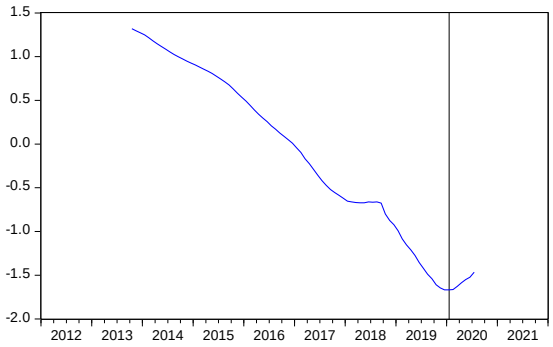
Değişkenler	**Z-A İstatistiği**	**Olasılık Değeri (Prob.)**	**Kırılma Noktası**	**Kritik Değerler (%5)**
TGE	-4.246395	0.001240	08/2018	-5.08
DS	-1.668081	0.003319	01/2020	-5.08
XU100	-3.876553	0.032157	02/2020	-5.08

Tablo 4. ve Şekil 1-2-3' e bakıldığında; Tüketici Güven Endeksinin Ağustos 2018'de, döviz sepetinin Ocak 2020'de ve BİST 100 Endeksinin Şubat 2020'de yapısal kırılmaların etkisinde olduğu gözlemlenmektedir:

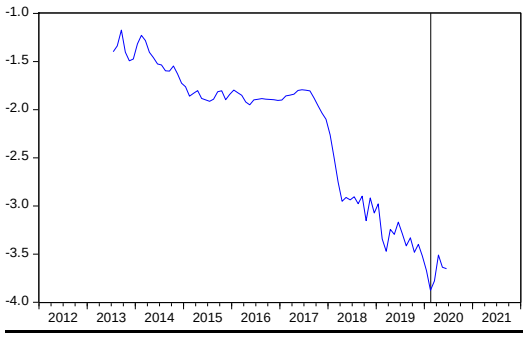
Şekil 1: Tüketici Güven Endeksi Yapısal Kırılma Dönemi



Şekil 2: Döviz Sepeti Yapısal Kırılma Dönemi



Şekil 3: BİST 100 Endeksi Yapısal Kırılma Dönemi



4.2. Eşbütünleşme Analizi Çıktıları

Seriler aynı düzeyde durağan [I(1)] çıktıkları için aralarında uzun dönemli bir ilişki olup olmadığı Gregory-Hansen Eşbütünleşme Testi ile araştırılmaktadır. Bulunan kırılma dönemleri Tablo 5.'de verilmektedir. Hipotezler aşağıdaki şekilde kurulur:

H_0: Yapısal kırılmalar altında değişkenler arasında eşbütünleşme yoktur.
H_1: Yapısal kırılmalar altında değişkenler arasında eşbütünleşme vardır.

Tablo 5: Gregory Hansen Modeli Çıktıları

Test	t- istatistiği	Kırılma Noktası	%1	%5	%10
ADF	-12.05031	07/2018	-6.05	-5.57	-5.33
Z_t	-12.10170	07/2018	-6.05	-5.57	-5.33
Z_α	-132.0482	07/2018	-70.27	-59.76	-54.94

Kaynak: Gregory ve Hansen,1996:109

Elde edilen t istatistik değeri, kritik değerlerden mutlak olarak büyük ise seriler arasında uzun dönemde eşbütünleşik ilişki olmadığı hipotezi reddedilmektedir. Yapısal kırılmalar altında değişkenler arasında eşbütünleşik ilişki mevcuttur. Türkiye'nin bir seçim dönemi sonrasına denk gelen ve kur oynaklıklarını içeren bir dönemde rejim geçişi bulunmaktadır.

4.3. Nedensellik Analizi Çıktıları

İki ayrı bağımsız değişkenli iki ayrı model olarak Toda Yamamoto Nedensellik Analizi için hipotezler aşağıdaki gibi oluşturulmaktadır:

H_0^1: Döviz Sepeti, Tüketici Güven Endeksinin Granger Nedeni Değildir.
H_1^1: Döviz Sepeti, Tüketici Güven Endeksinin Granger Nedenidir.
H_0^2: BİST 100 Endeksi, Tüketici Güven Endeksinin Granger Nedeni Değildir.
H_1^2: BİST 100 Endeksi, Tüketici Güven Endeksinin Granger Nedenidir.

Tablo 6: Toda Yamamoto Nedensellik Analizi Çıktıları

Bağımlı Değişken	Bağımsız Değişkenler	Test İstatistiği	Olasılık Değeri (prob.)	İlişki ve Yönü
TGE	DS	26.69708	0.0000*	DS → TGE
	XU100	7.998174	0.0047*	XU100 → TGE

Tablo 6.'da verilen nedensellik analizi çıktılarına göre; olasılık değerleri %5'ten küçük çıkmıştır. Bu durumda her iki yokluk hipotezi de reddedilmektedir. Alternatif hipotezler geçerlidir. Toda Yamamoto nedensellik analizi tek yönlü nedensellik ilişkisi göstermektedir. Döviz sepeti ve BİST 100 Endeksi, tüketici güven endeksinin Granger nedenidir.

5. SONUÇ

Bu çalışmanın amacı Türkiye' deki ekonomik yapının rejim değişimlerini göz önünde bulundurarak tüketici güveninin, döviz sepeti/sepet kur ve sermaye piyasaları temel göstergesi BİST 100 Endeksi ile uzun vadede etkileşimini ortaya çıkarmaktır. Tüketici güveninin, ekonomik göstergelerin ve finansal piyasaların etkisi altında olduğu bilinse de yapısal kırılmaları gerçekleştiren faktörün ne olduğu ve gerçekleşme tarihi analizler sonrasında daha net görülebilmektedir. Bu amaçla TÜİK-TCMB Tüketici Güven Endeksi verileri Ocak 2012 ve Aralık 2021 dönemi için aylık bazda ele alınarak Euro ve Dolar ile oluşturulan sepet kur ve BİST 100 Endeksi ile ilişkilendirilmektedir.

Uzun vadede birlikte hareketi gözlemlemeye yardımcı olan eşbütünleşme analizi için veri setinin birim kök içermemesi ve aynı seviyede durağan çıkması gerekmektedir. Durağanlık tespiti için geleneksel birim kök testlerinden ADF Testi ve yapısal kırılmaya izin veren Z-A Testi uygulanmaktadır. Tüm değişkenler birinci farklarında ve yapısal kırılma eşliğinde durağandır. Tüketici güveni Ağustos 2018'de, döviz sepeti Ocak 2020'de ve BİST 100 Endeksi de Şubat 2020'de yapısal kırılmalı rejim değişimi göstermektedir. Eşbütünleşik ilişki Gregory Hnasen Modeli ile araştırıldığında yapısal değişkenler arasında kırılma ile birlikte uzun vadede ortak hareket edildiği sonucuna ulaşılmaktadır. Ortak kırılma tarihi Temmuz 2018 çıkmaktadır. Bu tarih güven unsurunun siyasi faktörlere duyarlılığının yüksek olmasına bir kanıt niteliğindedir. Türkiye'de döviz kurunun aşırı oynak izlendiği ve seçim dönemine denk gelen kırılmanın, Covid -19 Pandemi döneminden bile daha çok öne çıktığı görülmektedir. Değişkenlerin durağanlık durumuna veya eşbütünleşik olup olmamasına bakılmaksızın aralarındaki nedensellik ilişkisini veren Toda Yamamoto Modeli de her iki bağımsız değişkenden tüketici güvenine doğru tek yönlü Granger nedensellik ilişkisinin varlığını ortaya çıkarmaktadır. Bu durumda; tüketici güveninin belirlenmesinde sepet döviz kurunun ve sermaye piyasaları temel göstergesi BİST 100'ün etkili olduğu sonucu çıkmaktadır.

Literatürle kıyaslandığında benzer yöntemler uygulayan çalışmalar olan Beşel ve Yardımcıoğlu (2016), Canöz (2018) ve Aksoy (2021) ile dönemler farklı da olsa benzer sonuçlara ulaşılmaktadır. Değikenler uzun vadede eşbütünleşiktir ve döviz kurundan / borsa endeksinden tüketici güvenine doğru nedensellik mevcuttur. Ayrıca Kılcı (2021) de çalışmasında tüketici güvenindeki yapısal kırılmalara işaret etmektedir.

Gelecek çalışmalar için tek yapısal kırılma yerine çoklu geçişlere izin veren veya rejim değişimleri ile doğrusal olmayan modelleme kullanılabilen yöntemlerin kullanılması önerilebilir. Bu durumda birden çok ve farklı tarihlerdeki kırılmalar yakalanabilecektir. Ayrıca farklı göstergeleri de ele alarak

çalışmanın kapsamı genişletilebilir. Örneğin sektörel endekslere duyarlılık veya enflasyon, faiz gibi değişkenler tercih edilebilir.

KAYNAKÇA

Aksoy, E. E. (2021). Yapısal Kırılma Durumunda Tüketici Güveniyle Döviz Kuru Arasındaki Eşbütünleşme Ve Nedensellik İlişkisinin Analizi: Türkiye Uygulaması. *Uluslararası Muhasebe ve Finans Araştırmaları Dergisi*, 3(1), 18-38.

Beşel, F. ve Yardımcıoğlu, F. (2016). Tüketici Güven Endeksi ile Makro Değişkenler Arasındaki İlişki. In ICPESS (*International Congress on Politic, Economic and Social Studies*), 1, 475-487.

Canöz İ. (2018), Borsa İstanbul 100 Endeksi ile Tüketici Güven Endeksleri Arasındaki Nedensellik İlişkisi: Türkiye Örneği. *Fiscaoeconomia*, 2(1), 136-153.

Çolak, Ö. F. ve Aktaş, A. (2010). *Makro Ekonomik Göstergelerin Yorumlanması*. Efil Yayınevi.

Durgun Kaygısız, A. (2019). Türkiye'de Tüketici Ve Reel Kesim Güven Endeksi İle Seçilmiş Makro Değişkenler Arasındaki İlişkiler: 2010-2018. *Journal of Management and Economics Research*, 17 (1) , 314-332.

Eğilmez, M. (2017). *Örneklerle Kolay Ekonomi.* Remzi Kitabevi.

FİNNET (2022, Şubat): https://www.finnet.com.tr/

Görmüş, Ş. ve Güneş, S.(2010). Consumer Confidence, Stock Prices and Exchange Rates: The Case of Turkey. *Applied Econometrics and International Development*, 10(2), 103-114.

Gregory, A. W. ve Hansen, B. E. (1996), "Residual-Based Tests for Cointegration in Models With Regime Shifts", *Journal of Econometrics*, 70 (1), 99-126.

Gürgür, T. ve Kılınç, Z. (2015). What Drives the Consumer Confidence in Turkey?. Research and Monetary Policy Department, Central Bank of the Republic of Turkey, 17, 1-13.

İbicioğlu, M. ve Kapusuzoğlu, A. & Karan, M. B. (2013). Türkiye'deki Tüketici Güven Endeksi İle Döviz Kuru Arasındaki İlişkinin Ampirik Analizi. *İşletme Araştırmaları Dergisi*, 5(1), 5-16.

KAP (Kamuyu Aydınlatma Platformu), (2022, Şubat): https://www.kap.org.tr/tr/

Kaya, F.(2020). Türkiye'de Tüketici Güven Endeksi İle Döviz Kuru Arasındaki İlişki: Fourıer Fonksiyonları Yaklaşımı. *Finans Ekonomi ve Sosyal Araştırmalar Dergisi*, 5(4), 598-608.

Kılcı, E. N. (2021). A study on confidence indexes in Turkey under structural breaks for the period covering the COVID-19 pandemic. *Ömer Halisdemir Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 14(3), 948–960.

Önem, H. B. (2022). Tüketici Güven Endeksi Ve Bazı Bist Endeksleri Arasındaki Eşbütünleşme Ve Nedensellik İlişkisi. *Finans Ekonomi ve Sosyal Araştırmalar Dergisi,* 7 (1) , 12-22.

Özakarlı, H. ve Küçüksille, E. (2020). Çeşitli Finansal Değişkenler İle Tüketici Güven Endeksi Arasındaki İlişkinin İncelenmesi: Türkiye Örneği. *Muhasebe ve Finans İncelemeleri Dergisi*, 3(1) , 46-54.

TCMB EVDS, (2022, Şubat): https://evds2.tcmb.gov.tr/index.php?/evds/dashboard/4985

Toda, H. Y. ve Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, 66, 225-250.

Tunalı, H. ve Özkan, İ. (2016). Türkiye' de Tüketici Güven Endeksi Ve Tüketici Fiyat Endeksi Arasındaki İlişkinin Ampirik Analizi. *Journal of Economic Policy Researches*, 3 (2), 54-67.

TÜİK İstatistik Veri Portalı, (2022, Şubat): https://data.tuik.gov.tr/

Zivot, E. ve Andrews, Donald W. K. (1992), "Further Evidence on The Great Crash, The Oil-Price Shock,and The Unit-Root Hypothesis", *Journal of Business and Economic Statistics*, 10(3), 251-270.

NÖROPAZARLAMA VE UYGULAMALARI ÜZERİNE BİR ARAŞTIRMA

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ÖZET

Dijital dönüşümün yaşandığı günümüz dünyasında, değişen tüketici profili ve davranışları pazarlama alanında yeni yaklaşımların kullanımını beraberinde getirmiştir. Bu değişim ve artan rekabet koşulları, işletmeler için tüketici odaklı bir yaklaşımı zorunlu hale getirmektedir. Sadece rasyonel yapıda olmadığı bilinen tüketici karar sürecinin ve satın alma davranışının nasıl şekillendiğini analiz edilmesi, pazarlama araştırmalarının öncelikli konuları arasında yer almaktadır. Bu durum geleneksel araştırma yöntemlerinin yeterli olmadığı durumlarda nöropazarlama tekniklerinin kullanım alanı bulamasına neden olmuştur. Nöropazarlama, yüksek tekenolojili görüntüleme araçlarıyla tüketicilerin, bilinç ve bilinçaltı düzeyde gerçek duygu ve düşüncelerini ortaya çıkarmaya çalışan yeni bir disiplin olarak kabul edilmektedir. Bir uyaran eşliğinde gerçekleştirilen nöropazarlama tekniğinde, tüketicilerin beyinlerinin hangi bölümlerinin aktif hale geldiği incelenmektedir Nöropazralama teknikleri tüketicilerin reklam, yeni ürün, logo ve müzik gibi pazarlama uyarıcılarına verdikleri tepkileri ölçebilmekte ve tüketici davranışlarının altında yatan psikolojik ve nörolojik unsurlar hakkında güvenilir ve doğru bilgilere ulaşabilmektedir. Böylelikle pazarlamacılar, elde edilen bilgiler ışığında, tüketici istek ve ihtiyaçlarını tespit ederek, uygun pazarlama stratejilerini geliştirebilmektedir.. Tüketici davranışlarının anlaşılmasında önemli bir yere sahip olan ve olacağı öngörülen nöropazarlama ülkemizde henüz yeni gelişmekte olan bir alandır. Bu çalışmada, nöropazarlama, nöropazaralama araçları ve uygulamalarına yönelik kavramsal bir çerçeve oluşturulması amaçlanmıştır. Bu amaç doğrultusunda çalışmada, nöropazarlama, nöropazarlama araçları, nöropazarlama uygulamalarına yer verilmiş olup, alan yazında yer alan çalışmalar incelenmiştir.

Anahtar Kelimeler: Nöropazarlama, Nöropazarlama uygulamaları, tüketici davranışı

A RESEARCH ON NEUROMARKETING AND ITS APPLICATIONS

ABSTRACT

In today's world where digital transformation is experienced, changing consumer profiles and behaviors have brought about the use of new approaches in the field of marketing. This change and increasing competition conditions necessitate a consumer-oriented approach for businesses. Analyzing how the consumer decision processes and purchasing behavior, which is known to be not only rational but also subjective at times, are shaped is among the priority issues of marketing research.. This situation has led to the use of neuromarketing techniques in cases where traditional research methods are not sufficient. . Neuromarketing is accepted as a new discipline that tries to reveal the real feelings and thoughts of consumers at the conscious and subconscious level with high-tech imaging tools. In the neuromarketing technique, which is carried out in the presence of a stimulus, it is examined which parts of the consumers' brains are activated. Neuromarketing techniques can measure consumers' reactions to marketing stimuli such as advertisements, new products, logos and music, and reach reliable and accurate information about the psychological and neurological factors underlying consumer behavior. Thus, marketers can develop appropriate marketing strategies by identifying consumer demands and needs in the light of the information obtained. Neuromarketing is a newly developing field in our country and has an important place in the understanding of consumer behavior, also it is predicted to be developing faster, This study aim's to create a conceptual framework for neuromarketing, neuromarketing tools and applications. For this purpose, neuromarketing, neuromarketing tools, neuromarketing applications were included in the study, and the studies in the literature were examined.

Keywords: Neuromarketing, Neuromarketing applications, consumer behavior

1.Giriş

Tüketici davranışları geçmişten günümüze değin pazarlama alanında öncelikli araştırma konuları arasında yer almaktadır. Gelişen teknolojinin ve artan internet kullanımının, tüketici davranış ve alışkanlıklarında değişime neden olduğu görülmektedir. Her geçen gün yaygınlaşan e-ticaret ve sosyal medya pazarlama uygulamaları, tüketicilerin istedikleri her an dünyanın her yerinden kolayca alıveriş yapmasına imkan tanımaktadır. Tüketiciler artık, alışveriş maliyetlerine (yol maliyeti, zaman maliyeti, taşıma maliyeti) katlanmadan çok geniş ürün yelpazesine ulaşabilmektedir. Tüm bu gelişmeler, tüketici satın alma ve karar alma sürecini etkilemekte ve rekabet yoğun bir pazar ortamının oluşmasına yol açmaktadır.

Nöropazarlama, reklamlar, ürün tasarımı, paketleme, fiyatlandırma, mağaza tasarımı vb. gibi pazarlamanın ana alanlarında başarılı bir şekilde uygulanmaktadır. Bu teknik, pazarlama uyaranlarının etkisini anlamamıza ve ayrıca karar verme sürecini hızlandırmak için izleyici tepkilerini ölçmemize yardımcı olan beyin dalgasını ölçmektedir (Premnath ve Nateson, 2021). Tüketici davranışlarının anlaşılmasında önemli bir yere sahip olan ve olacağı öngörülen nöropazarlama ülkemizde henüz yeni gelişmekte olan bir alandır. Bu çalışmada, nöropazarlama, nöropazaralama araçları ve uygulamalarına yönelik kavramsal bir çerçeve oluşturulması amaçlanmıştır. Bu amaç doğrultusunda çalışmada, nöropazarlama, nöropazarlama araçları, nöropazarlama uygulamalarına yer verilmiş olup, alan yazında yer alan çalışmalar incelenmiştir.

2.Kavramsal Çerçeve

2.1. Nöropazarlama

Nöropazarlama, tüketici davranışlarının analiz edilmesi için insan beyninin nasıl çalıştığı ve nasıl etkilendiğini inceleyen nörobilim ile pazarlamanın disiplinler arası bir ürünüdür (Bercea, 2011). Nörobilimin, pazarlama araştırmalarında kullanılması esasına dayanan nöropazarlama, tüketicilerin ürün, marka ve reklamlara verdiği tepkileri anlamak için beyin dalga hareketlerini ölçmeye dayalı bir yöntemdir (Lee vd., 2017). Tüketici ihtiyaçlarını tespit etmek için kullanılan anket, mülakat ve odak grup gibi geleneksel araştırma yöntemlerinin ötesinde, insan beyninin işleyişini inceleyen nöropazarlama analiz teknikleri, pazarlama araştırmacılarının ilgi odağı olmuştur (Ariely ve Berns, 2010). Zurawicki (2010) nöropazarlamanın araştırma alanlarını; davranışsal araştırma, bilinçaltı etkisi, tüketici tercihini anlamak ve satın al düğmesini (buy button) tespit etme olarak sıralamaktadır.

İnsan beyninin aktivitelerinin araştırılması ve pazarlama alanında tüketici davranışları üzerindeki etkisinin incelenmesi fikri 1970'lere dayansa da, ilk uygulama 1990' lı yıllarda Harvard Üniversitesinde gerçekleşmiştir (Van Der Sar, 2009). 1999 yılında Harvard Üniversitesinde fonksiyonel manyetik rezonans görüntüleme (fMRI) cihazı ile pazarlama araştırmalarında beyin görüntüleme teknolojisini ilk kullanan kişi olan Profesör Gerry, bu teknolojinin tüketici davranışlarının analiz edilmesinde kullanılmasının önünü açmıştır. Daha sonra 2002 yılında Almanya'da Ulm Üniversitesinde Chrysel arabalarının görsellerine ilişkin araştırmalar, nörobilim ve pazarlamanın birlikte kullanılması konusunda öncü olmuştur. Aynı yıl Profesör Ale Smidts'in "Nöropazarlama"adlı eseri ile Nobel İktisadi Bilimler Ödülü'nü alması ile nöropazarlama kavramı resmiyet kazanarak alan yazında yer edinmiştir (Okay, 2021).

İnsan düşüncesinin ve kararlarının %95'nin bilinçaltı düzeyde gerçekleşmesi verisine dayanan nöropazarlama, tüketici karar verme sürecinde bilinçaltı sürecin incelenmesi gerekliliğini vurgulamaktadır (Maughan vd., 2007; Genco vd., 2013). Pazarlamacılar, nöropazarlama analiz verileri ile tüketicinin farkında olmadıkları ya da dile getirmedikleri; algı, ihtiyaç, dürtü ve arzularını açığa çıkarabilmektedir (Mudok, 2013). Böylelikle, işletmeler ürünlerin daha fazla tercih edilmesi, tüketici zihninde kalıcı olarak yer edinmek ve reklam stratejilerinde nöropazarlama yöntemlerinden faydalanmaktadır (Yücel ve Çubuk, 2014). Benzer şekilde Plassmann vd., (2015) nöropazarlamanın,

tüketicilere ulaşmada etkili ve verimli stratejilerin belirlenmesi için nöropazarlamanın, gerçek bilgilere ulaşmada önemli bir araç olduğunu belirtmektedir.

2.2. Nöropazarlama Araçları

Tüketicinin kara kutusunu anlamak için kullanılan nöropazarlama araştırmalarında farlı teknik ve araçlardan faydalanılmaktadır. Nörobilimsel yöntemlerde uyarıcı karşısında meydana gelen değişimler, beyin görüntüleme ve beyin aktivitelerini ölçen cihazlar ile tespit edilerek, tüketici davranışının bilinçdışı kısmı tespit edilmektedir. Farklı zamansal ve mekânsal özelliklere göre belirlenen bu tekniklerden (Daugherty ve Hoffman, 2017) yaygın olarak kullanılanlar kısaca şu şekilde açıklanabilir (Garczarek-Bąk, 2021; Klincekova, 2016; Beyaz vd., 2015; Ustaahmetoğlu, 2015);

Fonksiyonel Manyetik Rezonans Görüntüleme (fMRI): fMRI beyindeki kanın oksijen seviyesini tespit eden ve bu şekilde veriler elde eden bir görüntüleme tekniği olup, nöropazarlamacılar tarafından en çok kullanılan uygulamalar arasında yer almaktadır.

Manyetik Beyin Grafisi (MEG): Beyin görüntüleme cihazları ile beynin, uyarana karşı hangi bölgelerinin aktif olduğunu tespit etmekte kullanılmaktadır.

Eloktro Beyin Grafisi (EEG): Beynin biyolojik süreçlerinde, ritmik elektriksel dalgalarındaki değişimleri ölçmek için kullanılan tekniktir. fMRI'dan sonra cihazın taşınabilir ve uygun fiyatlı olması nedeniyle en çok kullanılan teknikler arasında yer almaktadır. Bu teknikte taşınabilir elektrotlar, kullanıcıların kafa dersi üzerine yerleştirilerek elektriksel potansiyeldeki değişmiler ölçülür.

Yüz Kodlama: Katılımcının istemsizce yaptığı jest ve mimiklerin, yüz kas hareketlerini analiz eden bir bilgisayar programı ile incelenmesidir. Bu teknik nöropazarlamada, tüketicinin ürün, tanıtım ve paketleme gibi durumlarda ilgisini çeken etkenleri ve tepkilerini tespit etmek için kullanılmaktadır.

Göz İzleme: Bu teknikte bir uyaranla kullanıcının, göz hareketleri, freakans ve hızı takip edilmektedir. Burada amaç reklam, broşür, ürün ambalajı veya web sitesine bakan kullanıcının dikkatinin nereye yoğunlaştığının tespit edilmesidir. Göz izleme tekniği ile nöropazralamcılar, kullanıcının göz hareketlerini izleyerek, ürün ile ilgili hisleri tepkilerini belirleyebilmektedir.

Galvanik Eldiven: Bu teknikte kullanıcının duygu durum değişimine bağlı olarak terlemesi sonucu oluşan fizyolojik değişimler ölçülmektedir.

3. Türkiye'de ve Dünyada Nöropazarlama Uygulamaları

Nöropazarlama araştırmalarının son yıllarda akademik ve ticari açıdan hızlı bir ilerleme eğiliminde olduğu görülmektedir (Alsharif vd., 2021). Gelişmiş nörogörüntüleme teknolojisi sayesinde kişinin beyninden nöral sinyaller ve görüntüler şeklinde verileri almak mümkün hale gelmiş olup pazarlama araştırmaları için önemli bir araç haline gelmiştir. Bu araştırmalara yönelik farkındalığın artması ile beraber birçok firmanın nöropazarlama araştırmalarına yatırım yaptığı görülmektedir.

2002 yılında Amerika'da fenomen haline gelen ilk uygulama ise Pepsi ve Coca-Cola' markalarına yönelik gerçekleştirilen kör tat testidir. Yapılan tadım testinde içeceklerin markalarını görmeyen tüketicilerin, içeceklerin tadından markayı tahmin etmeleri istenmiştir. İçeceklerin, teste katılan 67 katılımcının beyninde ödül sistemini aydınlattığı tespit edilmiştir. Ayrıca Pepsi'yi tercih eden tüketicilerin beyinlerinde dopamin kullanan bir alan olan ventral putamende de Coca-Cola'ya oranla beş kat daha fazla tepkiye yol açtığı belirlenmiştir (Blakeslee, 2004). Aynı test, katılımcılara gözleri açık şekilde, marka ismi söylenerek tekrarlandığında, çoğunluk Coca-Cola'yı tercih etmiştir. Coca-Cola'yı içen katılımcıların beyinlerinde; ventral putamende bölümün yanında keişinin benlik duygusuyla ilişkilendirilen medial prefrontral korteks'inde aydınlandığı belirlenmiştir. Elde edilen bu sonuç, tüketicilerin içeceği sadece tadı ile değil, markaya yönelik özdeşlik ve duygusal tepkilerle seçim yaptığını göstermektedir (Reid, 2005; Blakeslee, 2004).

Bir diğer nöropazarlama araştırması Crayola isimli pastel boya firması tarafından gerçekleştirilmiştir. Boya satışlarındaki azalma nedenlerini tespit etmek için yapılan araştırmalarda, koku faktörünün etkili olduğu sonucuna ulaşılmıştır. Buna göre fMRI cihazı ile yapılan ölçümlerde, tüketicilerin pastel boyanın kokusunu duyduklarında, boyaya karşı ilgileri yüksek oranda artış göstermiştir. Bu durum, tüketicilerin, bilinçli olarak pastel boyayı koklayarak, kokusuna göre seçmemesine karşın, bilinçaltında kokunun boya tercihinde etkili bir faktör olduğunu açığa çıkarmıştır (Aytekin ve Kahraman, 2014).
Dünyada markaların nöropazarlamaya yönelik uygulamaları Tablo 1'de yer almaktadır.

Tablo 1. Dünya'da Nöropazarlama Uygulamaları
GMTV televizyon firması, reklamcılara yönelik olarak, tüketicilerin sabah saatlerinde nasıl davrandığının anlaşılması için araştırma yapmıştır.
Yahoo, Televizyon reklamlarına yönelik olarak tüketici tepkilerini araştırmıştır.
Hyundai, tüketiclerin spor otomobile yönelik tepkilerini analiz etmiştir.
Ebay, reklam araştırmalarında tüketici davranışları incelemiştir.
PayPal, hız ve rahatlığı öne çıkaran reklamlara yönelik tüketici tepkilerini incelemiştir.
Volvo, araba tasarımına yönelik araştırmalar gerçekleştirerek, tasarımlarını belirlemiştir.
Microsoft, web tasarımı, içerik ve görsel içeriklere karşı, beynin tepkisini incelemiştir. Aynı zamanda memnuniyet, hayal kırıklığı gibi duyguları ve tüketicinin bilgisayar ile etkileşimini araştırmıştır.
Frito-Lay, nöropazarlama araştırma sonuçlarına göre, reklam, ambalaj ve ürün geliştirme çalışmaları yapmıştır.

Kaynak: Solomon, 2014.

Tablo 1'de yer aldığı gibi birçok firmanın dünya genelinde reklam, tanıtım, ambalaj ve tasarıma yönelik olarak tüketici bilinçaltı tepkilerini belirlemek için nöropazarlamadan faydalandığı görülmektedir.
Türkiye'de özellikle son yıllarda nöropazarlama araştırmalarına olan ilginin arttığı görülmektedir. Fırat Üniversitesi, EEG yöntemini kullanarak 30 öğrencinin kahve satın alma davranışını incelemiştir. Katılımcıların marka unsuru olmadan kahve tercihlerinin belirlenmesine dayanan bu araştırmada, öncelikle tüketicilerin en beğendiği kahve markası alınmıştır. Daha sonra üzerinde marka yazmayan 5 kahveyi deneyen tüketicilerden beğendikleri markaları bulmaları istenilmiştir. Test sonucunda katılımcıların büyük kısmının, beğendiğini söylediği kahveyi tercih etmediği belirlenmiştir. Bu durum, tüketicinin satın alma davranışında, marka ile olan ilişkisinin önemini vurgulamaktadır (Bayır, 2019). Ülkemizde aynı zamanda, Coca-Cola'nın ramazan ayı temalı reklam filmi tüketici tepkileri, Akbank "İkizler "reklamı da nöropazarlama tekniği kullanılarak analiz edilmiştir (Yeşilot ve Dal, 2018).

4. Sonuç

Tüketici odaklı pazarlama yaklaşımı, tüketici beklenti ve ihtiyaçlarının tespit edilmesi için geleneksel araştırma yöntemlerinin ötesinde, farklı yaklaşımların benimsenmesini gerekli kılmaktadır. Tüketici davranışların anlamak için gerçekleştirilen anket ve odak grup gibi yöntemlerde tüketiciler, araştırmanın yapıldığı ortam, araştırmanın tavırları ve sosyal kabul kaygıları ile gerçek duygu ve düşüncelerini ifade etmemektedir. Aynı zamanda tüketicilerin gerçek duygu ve düşüncelerinin çoğu zaman da satın alma davranışına yansımadığı görülmektedir (Ford, 2019). İşletmeler, hedef pazarlarını anlamaya yönelik olarak, pazarlama uyaranlarının tüketici üzerindeki gerçek etkisini, tüketicilerin markalardan nasıl etkilediğini öğrenmeyi hedeflemiş ve davranışların kaynağı olarak kabule dilen beyne yönelmiştir (Yücel ve Çubuk, 2013). Beyin görüntüleme teknikleri ile tüketicinin pazarlama uyaranlarına nasıl tepki verildiğinin analizine dayanan nöropazarlama, satın alma ve sonrası davranışları tespit etmek için kullanılmaya başlamıştır.

Nöropazarlamanın, gelecekte daha yaygın olarak kullanılmaya başlanacağı öngörülmektedir. Ancak uygulama araştırmaları için gereken yüksek maliyetler, araştırmaya gerekli katılımcı bulma zorluğu alana yönelik kısıtlar arasında yer almaktadır. Aynı zamanda bilinçdışı olarak tüketiciyi satın almaya yönlendirmesi ve tüketimi teşvik etmesi beraberinde etik sorunları da gündeme getirmektedir. Tüketicinin özerkliğinin dışında, beyin işleyişine göre davranışlarının yönlendirilmesi etik kaygılar arasında yer almaktadır. Burada önemli olan mevcut nöropazarlama teknolojilerinin, tüketici tercihlerinde gizli kalmış unsurların açığa çıkarılarak, pazarlamacılara rehber olan araştırma yöntemi olarak kullanılmasıdır. Nöropazarlama uygulamaları tüketicileri manipüle etmekten ziyade onların beklentilerini ve ihtiyaçlarını belirlemede kullanılan, geleneksel pazarlama araştırma metotlarını destekleyen ve gelişmekte olan bir alandır.

Kaynakça

Alsharıf, A. H., Salleh, N. Z. M., Baharun, R., ve Yusoff, M. E. (2021). Consumer behaviour through neuromarketing approach. *Journal of Contemporary Issues in Business and Government| Vol*, *27*(3), 345.

Ariely, D. & Berns, G. S. (2010). Neuromarketing: the hope and hype of neuroimaging in business. *Nature Reviews. Neuroscience*. 11 (4), 284-292.

Aytekin, P., ve Kahraman, A. (2014). Pazarlamada yeni bir araştırma yaklaşımı: Nöropazarlama. *Journal of Management, Marketing and Logistics*, *1*(1), 48-62.

Bayır, T. (2021). Tüketicinin kara kutusunu anlamak: Geleneksele karşı nöropazarlama araştırma yöntemleri. *Tarih Okulu Dergisi*, 14(51), 1401-1422.

Beyaz, A., Beyaz, R., ve Gerdan, D. (2015). Farklı model traktör kullanımının verdiği güven düzeyinin galvanik deri tepkisi sensörü kullanılarak belirlenmesi. *Süleyman Demirel Üniversitesi Mühendislik Bilimleri ve Tasarım Dergisi, 3*(3), 133-139.

Bercea, M.D., 2011. Anatomy of methodologies for measuring consumer behavior in neuromarketing research. Thesis for PhD. Romenia: University of Iaşi SCE.

Blakeslee, S. (2004). If you have a'buy button'in your brain, what pushes it. *New York Times*, *19*(2004), 154-155.

Daugherty, T., ve Hoffman, E. (2017). Neuromarketing: understanding the application of neuroscientific methods within marketing research. In *Ethics and Neuromarketing* ,pp. 5-30). Springer, Cham.

Ford, J. B. (2019). What do we know about neuromarketing?. *Journal of Advertising Research*, *59*(3), 257-258.

Garczarek-Bąk, U., Szymkowiak, A., Gaczek, P., ve Disterheft, A. (2021). A comparative analysis of neuromarketing methods for brand purchasing predictions among young adults. *Journal of Brand Management*, *28*(2), 171-185.

Genco, S. J., Andrew P. Pohlmann ve Peter STeidl (2013), Neuromarketing for Dummies, [electronic version] Canada: John Wiley & Sons Ltd.

Klinčeková, S. (2016). Neuromarketing – research and prediction of the future. *International Journal of Management Science and Business Administration, 2*(2), 53-57.

Lee, N., Brandes, L., Chamberlain, L. ve Senior, C. (2017). This is Your Brain on Neuromarketing: Reflections on a Decade of Research, *Journal of Marketing Management*. 33 (11-12), 878-892.

Maughan, L., Gutnikov, S., ve Stevens, R. (2007). Like more, look more. Look more, like more: The evidence from eye-tracking. *Journal of Brand management*, *14*(4), 335- 342.

Plassmann, H., Venkatraman, V., Huettel, S., ve Yoon, C. (2015). Consumer neuroscience: applications, challenges, and possible solutions. *Journal of Marketing Research*. 52(4), 427-435.

Premnath, D. (2021). Applications of neuromarketing sciences on digital marketing models-a theoretical frame work. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(7), 3127-3132.

Solomon, M., Bamossy, G., Askegaard, S. ve Hogg, M. (2014). *Consumer Behaviour: A European Perspective*. (5. Baskı). Harlow: Pearson Higher Education.

Reid, A. (2005), Neuromarketing, *Campaign (UK)*, 49 (2), 10- 12.

Ustaahmetoğlu, E. (2015). Nöropazarlama Üzerine Bir Değerlendirme. *Business & Managment Studies: An International Journal*, *2*(3), 154-168.

Van der Sar, M., (2009). *Neuromarketing, A Contribution To Buzz A New Product*. Rotterdam: Rotterdam University for Applied Science.

Yeşilot, F., ve Dal, N. E. (2018). Duyuların ötesinde: bilinçaltı etkiler ve nöropazarlama. *Göller Bölgesi Aylık Hakemli Ekonomi ve Kültür Dergisi Ayrıntı*, *5*(62), 37-45.

Yücel, A., ve Çubuk, F. (2013). Nöropazarlama ve bilinçaltı reklamcılık yaklaşımlarının karşılaştırılması. *Academic Review of Economics & Administrative Sciences*, *6*(2).

Yücel, A.,ve Çubuk, F. (2014). Bir nöropazarlama araştırmasının deneysel yolculuğu ve araştırmanın ilk ipuçları. *Fırat Üniversitesi Sosyal Bilimler Dergisi*, *24*(2), 133-150.

Zurawicki, L. (2010). *Neuromarketing: Exploring the Brain of the Consumer*. Berlin: Springer Science & Business Media.

BİLİMSEL ARAŞTIRMADA ETİK YANLIŞLIK TÜRLERİ

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ÖZET

Araştırma ve yayın etiği, yapılan araştırma ve çalışma süresince araştırılan konu hakkında tarafsız davranmayı, sonuçların toplanması ve rapor edilmesi sırasında doğru veriler kullanılması, verilerde çarpıtma yapılmamasını, sahte veri üretilmemesini ve çalışmaya katılan tüm araştırmacıların uygun şekilde ve sırada görünür kılınmasını gerektirmektedir. Yapılması gerekli olan uygulamaların yapılmaması çeşitli etik ihlal türleri ile karşılaşmak olasılığını arttırmaktadır.

Araştırma ve yayın sürecinde birçok etik ihlal ile karşılaşmaktayız. Çarpıtma, Saptırma ve "falsification" olarak da adlandırılan bu örnekte bilimsel araştırma sonunda elde edilen veriler kasıtlı olarak değiştirilmiştir. Fabrication (Uydurmacılık), en ciddi bilimsel yanıltma türlerinden birisi olan uydurmacılık gerçekte olmayan verileri ve sonuçları yayınlamak olarak tanımlanabilir. Salamizasyon (Bölerek Yayınlama), geniş çaplı bir araştırmanın sonuçlarını parça parça bölerek birden fazla yayın yapılması dilimleme veya salamlama olarak adlandırılır. Aşırma, araştırmacının bir başkasının fikir veya eserini kaynak göstermeden tamamen veya kısmen kendisininmiş gibi gösterdiği durumdur. Duplikasyon (Çoklu yayın), daha önce yayınlanmış bir eserin kaynak göstermeksizin birden fazla mecrada yayınlanması çoklu yayın, tekrar yayın veya "duplication" olarak adlandırılmaktadır. Yazarlık kavramı ve etik ihlaller daha da farklı boyutlar kazanabilmektedir. Birçok eserde yazarlık kriterlerini karşılamayan veya daha az olarak da karşıladığı halde eserlerde yer almayan bireylere rastlamak mümkündür. Herhangi bir yazar ortaya çıkan eserin tüm haklarına sahip olacağı gibi eser ile ilgili de tüm sorumluluğu üstlenmek durumundadır. Eserde adı geçen ve yazar olma onuruna erişmiş her birey yazının veya eserin tamamından sorumludur.

İhlallerin önüne geçilebilmesi akademisyenlerin yazarlık kavramı konusunda sürekli bilgilendirilmeleri, akademik hiyerarşinin üst basamaklarındaki bireylerin daha yakın kontrolü, sadece yazım aşamasında değil daha araştırmaya başlanırken araştırmada görev alacak bireylerin ve yapılabilirse yazar sıralamasının yazılı ve imzalı bir protokol ile belirlenmesi ile mümkün olacaktır.

Anahtar Kelimeler: Araştırma, Etik ihlal, Uydurma, Yayın

TYPES OF ETHICAL ERRORS IN SCIENTIFIC RESEARCH

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ABSTRACT

Research and publication ethics requires to be impartial about the research and the researched subject during the study, to use correct data during the collection and reporting of the results, not to make any distortions in the data, not to produce fake data, and to make all researchers participating in the study visible in an appropriate and orderly manner. Failure to implement the necessary practices increases the possibility of encountering various types of ethical violations.

We encounter many ethical violations during the research and publication process. In this example, which is also called distortion, diversion and "falsification", the data obtained as a result of scientific research has been deliberately changed. Fabrication, one of the most serious types of scientific deception, can be defined as publishing data and results that do not exist in reality.Salamization (Segmented Publishing), dividing the results of a large-scale research piece by piece and making more than one publication is called slicing. Plagiarism is the situation in which the researcher presents

another's idea or work as their own, in whole or in part, without citing the source. Duplication (Multi-publishing), the publication of a previously published work in more than one medium without citing the source is called multi-publishing, re-publishing or "duplication".The concept of authorship and ethical violations can gain even more different dimensions. In many works, it is possible to come across individuals who do not meet the criteria for authorship, or who do not take part in the works, although they meet the requirements. Any author will have all the rights of the work and must take all responsibility for the work. Every individual who is mentioned in the work and has the honor of being an author is responsible for the entire article or work.

Preventing violations will be possible by constantly informing the academicians about the concept of authorship, closer control of individuals at the top of the academic hierarchy, determining not only the individuals who will take part in the writing the research but also at the beginning of the research, and, if possible, the order of authors, with a written and signed protocol.

Keywords: Research, Ethical violation, Fabrication, Publication

BİLİMSEL ARAŞTIRMA DİKKATE ALINMASI GEREKLİ ETİK İHLAL TÜRLERİ

Araştırma ve yayın etiği, yapılan araştırma ve çalışma süresince araştırılan konu hakkında tarafsız davranmayı, sonuçların toplanması ve rapor edilmesi sırasında doğru veriler kullanılması, verilerde çarpıtma yapılmamasını, sahte veri üretilmemesini ve çalışmaya katılan tüm araştırmacıların uygun şekilde ve sırada görünür kılınmasını gerektirmektedir. Yapılması gerekli olan uygulamaların yapılmaması çeşitli etik ihlal türleri ile karşılaşmak olasılığını arttırmaktadır. İstemeden yapılan hatalar etik hatalar değildir. Etik ihlalleri, istemeden yapılan hatalardan ayıran en önemli unsur kötü niyet ya da kasıt olup olmamasıdır. Bunun ayırt edilmesinde etik ihlalleri yapanların bu davranışlarını genellikle tekrarlamaları, verilerin daima hipotezi destekleyecek şekilde değiştirilmiş olması ve bu kişilerin genellikle birden fazla etik ihlal türünü denemeleri gibi ölçütler yardımcı olmaktadır(Günal 2010).

Araştırma ve yayın sürecinde en çok karşılaştığımız etik ilke ihlallerine baktığımızda;

Çarpıtma

Saptırma ve "falsification" olarak da adlandırılan bilimsel çalışma sonunda elde edilen veriler isteyerek ve kötü amaçla değiştirilmiştir yani verilerle oynanmıştır. Bu değişiklikler hoşa gitmeyen sonuçların yokmuş gibi davranılması şeklinde olabileceği gibi direk sonuçları değiştirme olarak ta yapılabilmektedir. Bu etik ihlal türünde uydurmacılıktan farklı olarak bilimsel bir araştırma yapılmıştır ancak veriler bilerek ve isteyerek çarpıtılmıştır (Jennings 2004).

Fabrication (Uydurmacılık)

En önem arzeden bilimsel yanlışlık çeşitlerinden biri olan uydurmacılık aslında olmayan verileri ve çıktıları yayınlamak veya sunmak olarak tanımlanabilir. Bu önemli sahtekarlık türüyle en dikkatli olunması gerekli önemli merkezlerde ve yayın bölümlerinde karşılaşılabilmektedir.

Kişileri uydurulmuş yayınlar çıkarmaya zorlayan şartların kısmi olarak akademik ortamdaki "yayın yapma baskısı" olduğu söylenebilir.

Yeterli araştırma olanakları bulamayan, akademik yarış içinde arkada kalmak istemeyen ve amirlerince yeterli çalışma eğitimi verilerek denetlenmeyen bazı kişilerin bu yöntemleri kullanma olasılığı artmaktadır. Ancak uyduruk yayınlar sadece bilimsel çevreleri değil tüm insanları yanıltabilirler ve bilimin tüm insanlığın refahını amaçlayan yüzyıllar boyunca gelişmiş "doğruyu bulma" geleneğini zedeleyebilirler(Ruacan 2005).

Salamizasyon (Bölerek Yayınlama)

Geniş çaplı bir araştırmanın sonuçlarını parça parça bölerek birden fazla yayın yapılması dilimleme veya salamlama olarak adlandırılmaktadır. Kısa bir zaman peryodu içerisinde çok sayıda yayın elde etmek için başvurulan bir yöntemdir.

Etik bir davranış olmadığı düşünülse de yazarlar arasında bu konuda fikir birliğine varılamamış bir konudur. Yine de dilimleme şeklinde yapılmış yayınlar editör veya jüri üyelerinin gözünden kaçmamalı ve yayınlama ya da puanlama aşamasında bu durum gözetilerek değerlendirme yapılmalıdır.

Aşırma

Sağlık bilimlerinde en çok görünebilen etik hatalardan biri olan aşırma intihal veya "plagiarism" olarak da adlandırılmaktadır. Çalışmada kaynak göstermeden direk olarak yazının alınması olarak tanımlanadabilir (Gross 2016).

Duplikasyon(Çoklu yayın)

Daha önce yayınlanmış yayının kaynak olarak belirtilmeksizin başka yerlerde de yayınlanması çoklu yayın veya "duplication" olarak tanımlanmaktadır (Günal 2010).

Yayınların duplikasyon tanımına girmemesi için:

a) "Bir makalenin ikinci kez yayınlanması ancak yeni bir okuyucu kitlesine hitap etmek için farklı bir dilde veya özet olarak sunulması koşuluyla uygun görülebilir".

b) "Her durumda ilk yayının çıktığı dergi veya kitabın editörü ve yayıncısından yazılı olarak izin alınmalıdır".

c) "Sonradan yayınlanan makalede ilk yayına ait kaynak gösterilmeli ve yayınevinden izin alındığı açıkça belirtilmelidir".

d) "Bir çalışmanın sonuçlarının bir kongrede sözel veya başka bir biçimde sunulmuş olması daha sonra tam bir makale olarak yayınlanmasını engellemez".

Aynı şekilde farklı dinleyici gruplarına hitap eden farklı kongre ve toplantılarda da sonuçların sunulmuş olması çoklu yayın sayılmaz(Ruacan 2005).

Yazarlık Kavramı ve Etik İhlaller

Birçok eserde yazarlık kriterlerini karşılamayan veya daha az olarak da karşıladığı halde eserlerde yer almayan bireylere rastlamak mümkündür. Uluslararası Tıp Dergileri Editörleri Birliği yazarlık kavramını netleştirmek amacıyla bir çalışma yapmıştır. Araştırmanın belirttiği şekilde bilimsel eserlerde yazar olabilmek için çalışmanın ortaya konmasında önemli ölçüde katkıda bulunmak gerekmektedir(Günal 2010).

Herhangi bir yazar ortaya çıkan eserin tüm haklarına sahip olacağı gibi eser ile ilgili de tüm sorumluluğu üstlenmek durumundadır. Yazarların eserin ortaya çıkmasında anlamlı ölçüde ve gözle görülebilir şekilde bu aşamalardan tümüne katkıda bulunmuş olmaları beklenmektedir. Yayında adı geçenler yayının her durumundan sorumludur. Alınan ödül veya ceza herkese aittir (Flanagin ve ark 1998).

Ancak ülkemizin de içinde olduğu gelişmekte olan ülkelerde en kıdemi en yüksekte olan katkısı olmadan eklenmek istemektedirler.

Yazarlık kavramı ile ilgili etik ihlaller en sık karşılaşılan etik dışı davranışlardandır (Yazıcı 2011). Armağan yazarlık (Gift-Guest authorship): çalışmayı yürüten sorumlu olan araştırıcının, sorumluluğunu kullanarak, desteği olmayan bireyi yazarlar kısmına eklemesi şeklinde açıklanabilir.

Gölge yazarlık durumu ise yazar olma hakkına sahip olanların yayına eklenmemesi durumudur (Yazıcı 2011).

Verilerin yayınlanmasını önleme

Çalışmada istenilen sonucun yayınlanıp istenmeyen kısmının yayınlanması durumudur. Bu durumda yukarıda sayılan çevrelerce sonuçların yayınlanmasının engellenmesi de etik ihlallere örnektir.

Etik ihlalin gizlenmesi

Bilimsel bir etik ihlalin mevcut olduğu bir eserin akademik yükseltme ve atamalarda dosyaya konmaması ve jüri üyelerinin değerlendirmesinden kaçırılması da başka bir etik olmayan davranıştır(Günal 2010).

Taraflı yayın

Genellikle araştırmaya maddi sponsorluk sağlayan kurumlarla araştırmacıların tümü veya en az biri arasında çıkar ilişkisi olması sonucunda bilimsel tarafsızlık ilkesinin yitirilmesi durumudur. İlaç şirketlerince oluşturulan klinik çalışmalarda bilimsel kanıtlarda hile ve verilerin bağımsız olmama riskleri ortaya çıkmaktadır(Yağcı Küpeli ve Kiper 2016).

Tüm kaynakların verilmemesi

Araştırma ve yayın sürecinde faydalanılan tüm kaynakların eksiksiz olarak verilmesi ve uygun şekilde atıfta bulunulması bilimsel pratiğin en önemli ilkelerindendir. İncelenen tüm kaynakların yayında gösterilmesi, çalışmanın sonuçlarıyla farklı olan yayınların göz ardı edilmesi veya konu ile alakasız olduğunda bile yazarların çalışmalarına atıfta bulunmaları etik dışı davranış türleri olarak açıklanabilir.

Kaynaklar:

Günal İ. Yayın etiği ve sorunları. Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi. 2010;3:54-6

Yazıcı H. Bilim etiği. 2011. İstanbul Üniversitesi Yayın No: 5048 I S B N :978-975-404-906-0. Erişim: https://cdn.istanbul.edu.tr/FileHandler2.ashx?f=istanbul-universitesi-bilim-etigi_636939554523863736.pdf

Jennings R. Data selection and responsible conduct: Was Millikan a fraud? Sci Eng Ethics 2004;10:639-53

Ruacan Ş.Bilimsel Araştırma Ve Yayınlarda Etik İlkeler Gazi Tıp Dergisi 2005: Cilt 16: Sayı 4: 147-149

Gross C. Scientific misconduct. Annu Rev Psychol. 2016;67:693-711

Flanagin A, Carey LA, Fontanarosa PB, Phillips SG, Pace BP, Lundberg GD et al. Prevalence of articles with honorary authors and ghost authors in peerreviewed medical journals. JAMA. 1998;280:222-4
Yağcı-Küpeli B, Kiper N. Hekimler ve ilaç endüstrisi. Cukurova Med J. 2016;41:777-81.

ARAŞTIRMA VE YAYINDA İHLALLERİN ALT YAPISI

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ÖZET

Bilim adamlarının gerçeği nesnel olarak arayışındaki imajı, büyük bir bilimsel sahteciliğin keşfiyle tehlikeye girebilmektedir. Bilimsel araştırma yapma ve bunu etik kurallar çerçevesine uygun yapma zor bir süreci beraberinde getirdiğinden yapılan nesnel gerçeklik daha kısa pek çok yol ve metod geliştirme ve uygulama ile zarar görebilme olasılığına sahiptir. Tarihe bakıldığında araştırma ve yayın etiği tarihten günümüze kadar varlığını sürdürmektedir.

Etik kuralların ve bilimsel araştırma etiği gözardı edilerek kandırma, sahtecilik olarak tarihte de birçok vaka olmuştur. 237 akademisyenin dahil edildiği etik dışı davranma üzerine yapılan bir araştırmada çarpıtma oranı %9.3, aşırma oranı %3.8, uydurmacılık oranı %3.8, yazarlık konusunda etik dışı davranma oranı ise % 25.3 olarak bildirilmiştir. Bilimde sahtecilik olarak söylenebilecek yöntemlerin birçok nedeninin olduğu söylenebilir. Bilimde sahtecilik yöntemlerin birçok nedeni incelendiğinde görülenlerden biri daha fazla araştırma ve bunun bağlı olarak daha fazla makale biçimindeki akademik baskıdır. Araştırma ve yayın aşamalarında yapılan etik ihlallerin önemli bir çoğunluğunun daha fazla yayın yapma baskısı veya arzusundan kaynaklandığını söylemek mümkündür. Akademisyenler bu baskıyı daha çok terfi aşamasında yönetmeliklerde belirtilen asgari puanı elde etme zorunluluğu nedeniyle hissetmektedir. Ülkemizde öğretim üyesi atamalarında ve sınavlarında istenilen asgari puan yükseltilmiştir. Bunula beraber akademik teşvikten yayın yaparak faydalanma, daha fazla yayın yaparak prestij elde etme, eser bırakma arzusu da etkileyebilmektedir. Bir görüşe göre tüm bu etkenlerin baskısı veya yönlendirmesi sonucunda yayın sayısı artsa bile etik ihlal oranı aynı kalmaktadır

Akademisyenlerin yayın yaparak ilerleme zorunluğu birçok ihlali de beraberinde getirmektedir. Bu ihlallerin alt yapısı daha çok araştırılmalı, ortaya konulup tartışılmalı ve çözümler üretilmelidir.

Anahtar Kelimeler: Etik, İhlal, Araştırma

BACKGROUND OF VIOLATIONS IN RESEARCH AND PUBLICATION

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ABSTRACT

The image of scientists as objectively seeking truth may be compromised by the discovery of a major scientific fraud. Since conducting scientific research and doing it in accordance with the ethical rules brings along a difficult process, the objective reality made has the possibility of being damaged by developing and applying many shorter ways and methods. Looking at history, research and publication ethics have existed from past time to the present.

There have been many cases in history as deception and fraud by ignoring ethical rules and scientific research ethics. In a study on unethical behavior involving 237 academicians, the rate of distortion was 9.3%, the rate of plagiarism was 3.8%, the rate of fabrication was 3.8%, and the rate of unethical behavior in authorship was 25.3%. It can be said that there are many reasons for the methods that can be considered as forgery in science. Examining the many causes of fraudulent methods in science, one of them is more research and the consequent academic pressure in the form of more articles. It is possible to say that a significant majority of ethical violations during the research and publication stages are due to the pressure or desire to publish more. Academicians feel this pressure mostly because

of the obligation to obtain the minimum score specified in the regulations during the promotion phase. In our country, the minimum score required in the appointments and examinations of faculty members has been increased. In addition, the desire to benefit from academic incentives by publishing, to gain prestige by publishing more, and to leave a work can also affect. According to one view, even if the number of publications increases as a result of the pressure or guidance of all these factors, the rate of ethical violation remains the same.

The obligation of academicians to progress by publishing brings along many violations. The background of these violations should be investigated more, put forward and discussed and solutions should be produced.

Keywords: Ethics, Violation, Research

ARAŞTIRMA VE YAYIN ETİĞİ İHLALİNİN ALT YAPISI

"Etik" kelimesi "töre bilimi" anlamını içeren Yunanca "ethos-ethikos" kelimesinden üretildiği belirtilmektedir. Yunan dilinde bu kelime "ahlâk sistemi, ilke, insan davranışı, gelenek" anlamlarını karşılamaktadır. Etik, bir çalışma işlevinde bulunan bireylerin ahlaki ilkelerini, davranış biçimlerini, görevlerini ve yapması gerekenleri belirleyen kurallar olarak açıklanabilir (Özkalp ve Kırel 2011).

Bilimin insanlarının gerçeği nesnel olarak bulma çabasındaki görüntüsü, büyük bir bilimsel hilelerin yapılmasıyla zaman zaman tehlikeye girme olasılığı ile karşı karşıya kalabilmektedir. Bilimsel çalışma yapma ve bunu etik ilkeler kapsamına uygun olarak yapma meşakkatli bir sürece yol açtığından yapılan durum daha hızlı birçok metot ve yöntem geliştirme ve uygulamayla yanlış yapılabilme olasılığına sahiptir(Saunders R ve Savulescu J 2008).

Bilimsel araştırma ve yayın yapma alanlarında etik ihlallerin varlığının sadece günümüzdeki artan yayın baskısı ve araştırma destek ve teşvikleri konusundaki yarışma ile ilgili olduğu ve son zamanlarda ortaya çıktığı düşünülmemelidir. Bu durumun çok eski zamanlardan günümüze kadar gelen bir süreç olduğu, modern teknoloji, bilgiye ve haberlere hızlı ulaşım ve bilim dalları ve araştırmacı sayısındaki artış nedeniyle daha belirlenebilen bir durum haline geldiği söylenebilir. Yani tarihe bakıldığında araştırma ve yayın etiği tarihten günümüze kadar varlığını sürdürmektedir.

Etik kurallar ve bilimsel çalışma etiği gözardı edilerek kandırma, sahtecilik olarak tarihte de birçok vaka olmuştur. Tarihte yaşanan bu vakalardan biri "Piltdown adamı" olayıdır. Piltdown adamına ait olduğu öne sürülen, bulunmuş bir fosil 1912 yılında insan evriminde kayıp halkalardan biri olarak Dawson (1864-1916) tarafından öne sürülmüştür. Fakat zamanla geçmesi ve incelemelerle, bilimsel yöntemler kullanılarak bu fosilin maymun ve insana ait iki kafatasının birleştirilmesi suretiyle oluşturulan düzmece yani sahte örneklerinden biri olduğu ortaya çıkarılmıştır. Bunun gibi pek çok olay tarihte yaşanmıştır.

Aslında tarihten şuana kadar bütün olay ve durumlar aktarılamamaktadır. Çünkü çözümlemesi ve ortaya çıkarması güç olan olayları kapsamaktadır (Farrant JH 2013).

Bir çalışmanın herhangi bir aşamasında etik dışı müdahaleler olabilmektedir. Ya araştırma ve ya yazım sırasında hile yapılmaktadır.

Hile iki olasılıkla olabilmektedir;

- Birinci olasılıkta, yani hileli çalışma yapılması durumunda, eğer yapılanlar dürüstçe yazılırsa doğal olarak yayınlanma olasılığı yoktur. O zaman makale hileleri gizleyecek şekilde yazılır yani yazımda da hileye başvurulur.

- İkinci olasılıkta düzgün yapılan bir çalışmanın sonuçları yazılırken hile yapılmaktadır. Görüldüğü gibi her iki durumda da yazım aşamasında hile, yolsuzluk, etik dışı davranış vardır!

Sağlık alanında araştırma ve yayın aşamasındaki etik ihlaller konusunda yapılan 18 araştırmanın dahil edildiği bir meta-analizde çalışmaya katılanların % 1.97'sinin en az bir kez böyle bir davranışta bulunduğu, % 14.12'sinin ise bir meslektaşının yaptığı etik davranışa şahit olduğu belirtilmiştir. Yine bu çalışmada katılımcılara sorulan sorular içerisinde uydurmacılık ya da çarpıtma gibi ifadeler bulunmadığında itiraf oranlarında bir artış olduğu gözlenmiştir (Fanelli 2009).

Etik dışı davranma üzerine yapılan 237 akademisyenin dahil edildiği bir diğer çalışmada ise çarpıtma oranı %9.3, aşırma oranı %3.8, uydurmacılık oranı %3.8, yazarlık konusunda etik dışı davranma oranı ise % 25.3 olarak bildirilmiştir (Pupovac V ve ark).

Bilimde hile yapma veya düzenbazlık yapma olarak belirtilebilecek metodların birçok nedeninin olduğu söylenebilir. Bilimde sahtecilik yöntemlerin birçok nedeni incelendiğinde görülenlerden biri daha fazla araştırma ve bunun bağlı olarak daha fazla makale biçimindeki akademik baskıdır.

Araştırma ve yayın aşamalarında yapılan etik ihlallerin önemli bir çoğunluğunun daha fazla yayın yapma baskısı veya arzusundan kaynaklandığını söylemek mümkündür.

Akademisyenler bu baskıyı daha çok terfi aşamasında yönetmeliklerde belirtilen gerekli puanı geçme mecburiyeti sebebiyle hissetmektedir.

Çok fazla miktarda yayın yapılırsa adayın zorunlu olduğu barajı, alt sınırı geçmesi çok daha kolay olmakta ve buna ilaveten başvuru dosyasında daha fazla yayın bulunacağından araştırmacıyı değerlendirici jüri veya üst kurumu olumlu yönde etkilemenin olanaklı olacağı düşünülmektedir ve maalesef ki doğrudur.

Bizim ülkemizde de özellikle son dönemlerde değiştirilen yönetmeliklerle doktor öğretim üyesi, doçentlik ve profesörlük atamalarında ve doçentlik sınavı için yapılacak başvurularda istenilen taban puan ve eser kriterleri büyük ölçüde yükseltilmiştir (Küpeli 2019).

Yine 2016 yılından beri uygulanmaya başlanmış olan "akademik teşvik" uygulamasına göre akademisyen olanlara yayınladıkları eserler ve katıldıkları bilimsel işlerle orantılı olarak aylık ek ödeme verilmektedir. Bu ödeme miktarı aylık olarak en fazla en yüksek devlet memurunun aylık brüt maaşı kadar olabilmektedir. Bu teşvikten yararlanabilmek için bilimsel yayın üretimi baz alınmaktadır yani ne kadar yayın ve eser yaparsan o oranda akademik teşvik parası alınabilmektedir.

Akademik teşvik yaparak para kazanma akademisyenlerin bazılarını olumlu yönde destekleyebilirken bazılarının da hırsları ve daha fazla para kazanma isteği dolayısı ile daha da fazla yayın yapma, eser verme gibi normal dışı çalışma gerektiren araştırmalara itmektedir. Ve bu yüzden çalışmalarını daha hızlı ve kolay metodlar üretme durumunu düşünmeleri kendilerine ve eserlerinin gerçekliğine zarar vermeleri olasılığı karşımıza çıkmaktadır.

Buna paralel olarak akademisyenlerin yayın yapma arzusu önceki yıllara oranla önemli ölçüde artmış, ulusal ve uluslararası dergilere gönderilen makale sayılarında önceki yıllara kıyasla önemli ölçüde artış gözlenmiştir.

Bu söylenilen etkenlere ek olarak veya bu etkenler haricinde:

- Daha fazla yayın yaparak ünvanını arttırma,

- Görevde yükselme,
- Bireysel tatmin,
- araştırma fonlarından daha çok yararlanma,
- eser bırakma arzusu (ölüm korkusu ile ilişkilendirilebilir) ve
- ilaç firmaları başta olmak üzere özel sektörün destek veya yönlendirmesi de akademisyenleri daha fazla araştırma ve yayın için güdülemektedir.

Bir görüşe göre tüm bu etkenlerin baskısı veya yönlendirmesi sonucunda yayın sayısı artsa bile etik ihlal oranı aynı kalmaktadır(Günal 2010)

Kaynaklar

Özkalp, Enver ve Kırel, Çiğdem (2011), Örgütsel Davranış, Anadolu Üniversitesi Yayınları, Eskişehir, s.232.

Saunders R, Savulescu J. Research ethics and lessons from Hwanggate: what can we learn from the Korean cloning fraud? *Journal of Medical Ethics.* 2008;34:214–221.

Farrant JH. Prelude to piltdown: Charles Dawson's origins, career and antiquarian pursuits, 1864– 1911, and their repercussions. Sussex Archaeol Collect. 2013;151:145-186

Fanelli D. How many scientists fabricate and falsify research? A systematic review and meta-analysis of survey data. PLoS One. 2009;4:5738

Pupovac V, Prijić-Samaržija S, Petrovečki M. Research misconduct in the Croatian scientific community: a survey assessing the forms and characteristics of research misconduct. Sci Eng Ethics. 2017;23:165-81.

Küpeli S.(2019) Sağlık bilimlerinde araştırma ve yayın etiği Cukurova Med J 2019;44(1):232-240 DOI: 10.17826/cumj.461293

Günal İ. Yayın etiği ve sorunları. Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi. 2010;3:54-6

COCHLEAR IMPLANT PROCESS AND FACTORS AFFECTING ADAPTATION

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ÖZET

İşitme sistemi, ses dalgaları tarafından oluşturan basınç değişikliklerini beyine iletmek ve beyinde anlamlandırmaktan sorumlu bir sistemdir. Çocuklarda işitme kaybı yaygındır ve 18 yaşına kadar her 5 çocuktan yaklaşık 1'ini etkiler. Çocuklarda işitme kaybı konuşma, dil, eğitim, sosyal, bilişsel yetenekler ve yaşam kalitesinde olumsuzlukları beraberinde getirir. İşitme kaybı konjenital, geç başlangıçlı, enfeksiyonlar, sendromik ve nonsendromik etiyolojiler dahil genetik nedenler ve travma gibi olası etiyolojilerle oluşabilir. İşitme kaybının derecesi ve tipine göre rehabilitasyon seçenekleri değişmektedir. İleri veya çok ileri derecede işitme kayıplarında, koklear implant bugüne kadar geliştirilmiş en başarılı nöroprostetik cihazlardan biridir. Bu derlemede koklear implant aday değerlendirme süreci ve adaptasyon sürecini etkileyen faktörler ele alınarak açıklanmıştır.

Anahtar Kelimeler: Koklear İmplant, Adaptasyon, İşitme Kaybı

ABSTRACT

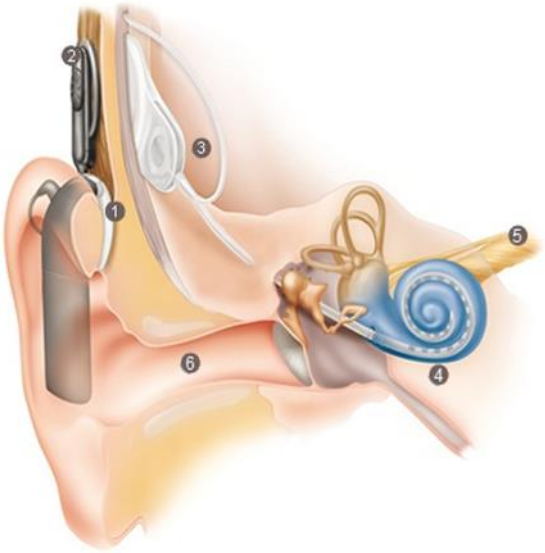
The auditory system is a system responsible for transmitting and interpreting the pressure changes created by sound waves to the brain. Hearing loss in children is common and affects about 1 in 5 children by the age of 18. Hearing loss in children creates negative effects on speech, language, education, social, cognitive abilities and quality of life. Hearing loss can occur with congenital, late onset, infections, genetic causes including syndromic and nonsyndromic etiologies, and possible etiologies such as trauma. Rehabilitation options vary according to the degree and type of hearing loss. For severe or profound hearing loss, the cochlear implant is one of the most successful neuroprosthetic devices ever developed. In this review, the cochlear implant candidate evaluation process and the factors affecting the adaptation process are discussed and explained.

Keywords: Cochlear Implant, Adaptation, Hearing Loss

GİRİŞ

İşitme kaybı olan çocuklar için işitme rehabilitasyonu, işitme cihazları, koklear implantlar (Kİ), kemiğe takılan cihazlar veya frekans modülasyon (FM) sistemleri gibi yardımcı cihazların kullanımını içerebilir. Kİ, bilateral ileri veya çok ileri derecede sensörinöral işitme kaybı olan ve işitme cihazından yeterince fayda sağlayamayan çocuk ve yetişkinlere, sesleri daha iyi algılama ve konuşmaları daha iyi anlaması için tasarlanmış bir cihazdır. Kİ, hasarlı iç kulağı atlayarak doğrudan işitme sinirini uyarmaktadır. İşitme sinirini uyarmak için elektriksel akım kullanılmaktadır.

Kulak arkasında veya vücutta taşınabilen dış parçanın üzerinde mikrofon yardımıyla akustik uyaran elektrik sinyallere dönüştürülerek konuşma işlemcisine gönderilir. Konuşma işlemcisi programlama sayesinde her elektrot için farklı bir şekilde kodlanmış uyaranı iletici bobine iletir. İletici bobin ve alıcı-uyarıcı arasındaki bağlantı noktasında, FM dalgaları yoluyla konuşma işlemcisinde kodlanan sinyal elektrot dizinine iletilir. Kokleaya yerleştirilen elektrot dizini işitme sinirini uyararak sesin merkezi işitme sistemine iletilmesini sağlar (Cankuvvet, Doğan, & Gürgür, 2015).



Şekil 1. Koklear implant iç ve dış parçaları (Hearing, 2019)

İç ve dış parçalardan oluşur. İç parçalar alıcı ve elektrot dizisi, dış parçalar ise ses işlemcisini ve iletici bölümü içerir. Ses işlemcisi kulağın arkasına takılır, dijital bilgi bobine (2) sonra derinin hemen altındaki implanta (3) aktarılır. İmplant (3), dijital bilgileri elektrik sinyallerine dönüştürür ve kokleaya (iç kulak) aktarılır. Koklea içinde, elektrot (5) aracılığıyla ses, işitsel sinire (5) ve beyne iletilir. Bazı yeni implantlarda, hem işlemci hem de iletici tek bir ünitedir ve ileticinin normalde kafa derisi üzerinde bulunduğu yere oturur (gösterilmemiştir) (Şekil 1) (Cohen, 2004).

Koklear İmplant Aday Değerlendirmesi

Kİ, yetişkinlerde ve çocuklarda ileri veya çok ileri derecede sensörinöral işitme kaybı için köklü bir tedavidir. Endikasyonları gelişmelere bağlı olarak yavaş ama tutarlı bir şekilde genişlemiştir. Tek kanallı implantlardan çok kanallı implantlara, kablolu sistemlerden kablosuz implantlara ve konuşma stratejilerindeki gelişmeler nedeniyle endikasyonlarda güncellenmektedir (Varadarajan, Sydlowski, Li, Anne, & Adunka, 2021).

Kİ aday değerlendirme ve uygulama süreci Kulak Burun Boğaz (KBB) uzmanı, Radyolog, Odyolog, Psikolog, Dil ve konuşma Terapisti ve gerekli durumlarda diğer uzmanlarında dahil olduğu bir ekip tarafından yapılmaktadır. Aile desteği Kİ başarısında büyük önem taşımaktadır (Sennaroğlu, Batuk, & Şule, 2019)

Ülkemizde Kİ başarısının artması, hastalardan beklenen faydanın sağlanması nedeniyle *26 Kasım 2016* Tarihli ve *29900* Sayılı *Resmî Gazete' de Sağlık Uygulama Tebliği (SUT), Kİ kriterlerini güncellemiştir ("Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ," 2016).*

Kİ aday değerlendirmesinde 3 temel soruya cevap aranmalıdır.

1. Hastanın tıbbi durumu göz önüne alındığında, cihazın fiziksel implantasyonu mümkün mü ve/veya tavsiye ediliyor mu?
2. Hastanın Kİ' den, işitme cihazından veya alternatif olarak, başka işitme protezinden daha fazla iletişim avantajı elde etmesi muhtemel midir?
3. Kİ'yi çalışır durumda tutmak ve hastanın yaşamına entegre etmek için bireyin psikolojik, aile, eğitim ve rehabilitasyon durumunda gerekli destekler var mı? Eğer yoksa geliştirilebilirler mi?

Bu soruların cevapları adaya göre ekip olarak değerlendirilmeli ve karar verilmelidir ("Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ," 2016). Ülkemizde Kİ adaylığı SUT tarafından yayınlanan kriterlere göre belirlenmektedir.

En az 3 ay binaural işitme cihazından fayda görmeyen, bilateral ileri-çok ileri derecede sensörinöral işitme kaybı olan ve işitme cihazından yarar görmeyen veya Sağlık Bakanlığı İşitsel

İmplantlar Bilimsel Danışma Komisyonu tarafından Kİ yerleştirilmesi uygun görülen bireylere Kİ ameliyatı yapılabilmektedir. Alıcı ve/veya ifade edici dil yaşı ile kronolojik yaş arasında 4 (dört) yıldan daha az fark olan veya kronolojik yaştan bağımsız olarak alıcı ve/veya ifade edici dili 4 (dört) yaş ve üstü olan bireylere, Post-lingual işitme kaybı olan bireylere implant ameliyatı yapılabilmektedir.

Menenjit sonrası oluşan işitme kayıplarında, Kİ kriterlerine uygun olması halinde, 3 aylık süre ile binaural işitme cihazı kullanmasına gerek olmadan, Kİ ameliyatı yapılabilmektedir.

İşitsel nöropati tanısı alan çocuklarda en az 6 ay işitme rehabilitasyonu ve eğitiminden yarar sağlamazsa Kİ ameliyatı yapılabilmektedir ("Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ," 2016).

Bilateral Koklear İmplant Kriterleri

Kİ kriterlerine uyan 12-48 ay arası çocuklarda eş zamanlı veya ardışık olarak bilateral Kİ ameliyatı yapılabilmektedir. Yaş sınırı aranmaksızın post-lingual dönemde gelişen menenjit sonrası odyolojik kriterleri uygun olan ileri derecede sensörinöral işitme kayıpları, 48 ayın üzerindeki hastalarda (48 aylık olanlar hariç) ileri derecede sensörinöral işitme kaybına eşlik eden bilateral körlük durumlarında bilateral Kİ ameliyatı yapılabilmektedir ("Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ," 2016).

Medikal Değerlendirme

Tıbbi değerlendirme, bireyin genel sağlık durumunu, işitme kaybı öyküsü ve etyolojisi, kulak ve kokleanın fiziksel durumunu içerir. Bireyin genel sağlığı, genel anestezi ve ameliyat için uygunluğu ve cihazın ameliyat sonrası programlama sürecini etkiler. Genel sağlık durumu implantasyon için nadiren bir kontrendikasyon olmasına rağmen, implantasyon için zamanlama ve hazırlığı etkileyebilir. Menenjite bağlı gelişebilen koklear ossifikasyonun derecesi implant performansını etkileyebilir ve fasiyal sinir stimülasyonu olasılığını artırabilir. Elektrot dizisi kısmi yerleştirilen kişiler, cihazı programlamak için yeterli sayıda elektrot etkinleştirilebildiği sürece tam yerleştirmeye benzer şekilde cihazdan fayda görürler. Tam ossifikasyon vakalarında ortalamanın altında performans ve daha yüksek stimülasyon komplikasyonları olasılığı hastayla açık bir şekilde anlatılmalıdır. Hastanın implantasyona devam etme kararını etkileyebilir. Yetişkinlerde işitme kaybının progresif veya aniden olması implant başarını artırır. Prelingual veya postlingual işitme kayıplı çocuklar işitme cihazından fayda görmedikleri takdirde implant için iyi bir adaydırlar.

Radyolojik değerlendirme, yüksek çözünürlüklü görüntüleme (Bilgisayarlı Tomografi, BT veya Manyetik Rezonans Görüntüleme, MRI), kokleanın açıklığını tahmin etmek ve elektrotun yerleştirilmesini etkileyebilecek anormal anatomik oluşum varlığını belirlemek için kullanılır (Balkany et al., 2002; İncesulu, 2006; Lo, 1998).

Odyolojik değerlendirme

Odyolojik değerlendirmenin amacı, adayın ameliyat öncesi işitmesini, iletişim durumunu ve işitme cihaz kullanımını değerlendirmektedir. Mevcut iletişim durumu ile Kİ' den beklenen sonuç karşılaştırılmaktadır. İmplantasyondan sonra Kİ' nin faydasını ölçmek için ön bilgi sağlar. Bu amaçla, odyolojik değerlendirme, hava ve kemik yolu işitme eşikleri, kelime ve cümle tanıma gibi konuşma algılama testleri, mevcut amplifikasyonun değerlendirmesini kapsar (ASHA, 2004). Odyometrik inceleme, timpanometri, stapes refleks eşiği testi, klinik otoakustik emisyon testi, ABR testleri ile yapılır. 2 yaş üstü çocuklarda ve erişkinlerde bilateral 500, 1000, 2000 ve 4000 Hz'lerdeki işitme eşikleri ortalamasının 80 dB'den daha kötü olması veya bir kulakta 70 dB ve daha kötü, karşı kulakta 90 dB ve daha kötü, konuşmayı ayırt etme testi yapılabilen hastalarda konuşmayı ayırt etme skorunun %30'un altında olması gereklidir. 2 yaş ve altı çocuklarda, bilateral 90 dB HL'den daha fazla sensörinöral işitme kaybı varsa Kİ için uygun hasta olarak değerlendirilmektedir ("Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ," 2016).

Psikolojik/Rehabilitasyon Değerlendirmesi

Bireyin genel yaşamına Kİ'yi adapte edip edemeyeceği, sürekli kullanıp kullanamayacağının değerlendirilmesidir. Kİ ameliyatı ve sonrasındaki beklentiler birey ve ailesinde stres oluşturur. Bireyin implantasyondan sonraki yaşam beklentilerinin değerlendirilmesi, gerçekçi olmayan beklentilerin ifade edilmesi ve implant sonrası performansın beklendiği gibi olmaması durumunda alternatif yolları belirlemede faydalı olabilir.

Çocuklarda psikososyal değerlendirme çok daha önemlidir. Aile değerlendirmelerinin yanında gelişimsel ve eğitimsel değerlendirmeleri içermektedir. Pediyatrik popülasyonda, Kİ seçimi genellikle işitme engelli çocuk ve ailesinin birincil iletişim modu olarak konuşulan dilin seçimi ile ilişkilidir. İmplantasyondan önce bir rehabilitasyon ve eğitim planı oluşturmak, implantın entegrasyonunu daha sorunsuz hale getirir ve yetersiz takip veya rehabilitasyon hizmetlerindeki aksaklıklar nedeniyle ilerlemenin engellenme olasılığını azaltır.

Hasta Danışmanlığı ve Beklentiler

Kİ adayları, Kİ hakkında her düzeyde bilgi sahibi almak için değerlendirmeye gelirler. Kİ potansiyel riskleri, yararları ve yaşamları üzerindeki etkileri hakkında bilgilendirilmeleri gerekir. Cerrahi prosedür ve riskleri tercihen cihazın iç ve dış kısımlarının gösterimi ile birlikte tanımlanmalıdır. Merkezde bulunan çeşitli Kİ sistemleri de adaya gösterilmeli ve anlatılmalıdır. Ameliyat sonrası programlama zamanı planlanmalıdır. Kİ adaylarının cihazla günlük yaşamın neler gerektirdiğinin farkında olmaları gerekir. Bunu en iyi diğer Kİ kullanıcıları ve aileleri ile iletişime geçmek, tanıştırmak yoluyla yapabiliriz.

Hasta danışmanlığının en önemli, ancak bazen en zor yönü, implantın performansına ilişkin gerçekçi beklentiler oluşturmaktır. Hemen hemen tüm adaylar (veya aileleri) konuşmayı duyma ve anlama yeteneklerini geliştirmek istedikleri için ameliyat olmak isterler. Adaylık değerlendirmesi sırasında hastalara ve ailelerine gerçekçi beklentiler oluşturmak ve bunun bir süreç olduğunu belirtmek gerekir (ASHA, 2004).

Koklear İmplant Uygulamasının Önemi

Plastisite, sinir hücrelerinin anlık çevresel etkilere daha iyi uyum sağlamak için değişmesidir. Değişiklik genellikle davranış değişikliği ile ilişkilidir. İşitsel plastisite, işitsel sistemdeki plastisiteyi ifade eder. İnsan iç kulağında hasar meydana geldiğinde, kalıcıdır. Beyinde plastisitenin bir sonucu olarak böyle olmayabilir. İnsan beyninde plastisitenin kritik dönemleri olduğuna ve olgunlaştıkça değişime karşı dirençli olduğuna inanılıyordu (Rauschecker, 1999). Duyusal deneyim ve işitsel korteks plastisitesi yakından ilişkilidir. Duyusal girdideki değişiklikler gelişmekte olan korteksin işlevsel organizasyonu üzerinde özellikle bebeklik döneminde ciddi etkilere sahiptir (Dahmen & King, 2007). Yetişkin beyninin bile kortikal düzeyde temel bir yeniden yapılanma yeteneğine sahip olduğu bilinmektedir (Rauschecker, 1999). Olgunlaşma ve plastisite birbiriyle yakından ilişkili fakat farklıdır. Beyin, gelişimin erken evrelerinde ve ergenlik boyunca çok daha esnektir. İşitsel alanda üç tip plastisite görülür. Bunlar gelişimsel plastisite, merkezi sinir sisteminde lezyondan kaynaklanan kompansatuar plastisite ve öğrenmeyle ilgili plastisitedir. Son ikisi, yetişkin işitsel kortekste işitsel plastisitenin varlığını göstermektedir (Musiek, 2002).

İşitme kaybı görünmez bir engelliliktir ve oldukça yaygındır. Erken tespit edilmezse çocuklarda dil, sosyalleşme, akademik başarı gibi pek çok alanda gerilik ile sonuçlanabilir. Çocuğun işitme değerlendirmesini sağlayan ölçüm araçları mevcuttur. Doğumdan sonra test edilip, işitme kaybı teşhisi konulursa çocuk dil gelişimi ve kişilerarası ilişkiler, akademik başarı, kendini gerçekleştirme gibi insani alanlarda yaşıtlarını yakalaması mümkündür. Erken müdahale yalnızca işitme kaybının erken tanısı olarak düşünülmemeli; uygun işitme cihazı adaptasyonu, uygun kriterler mevcutsa Kİ kararı, işitsel algı ve rehabilitasyon süreci en erken dönemde gerçekleşmelidir. Dil, bilişin temelidir veya biliş, dilin temelidir. Hiç şüphesiz biliş ve dil arasında bir etkileşim vardır. Çocuğa fırsat ve özerklik verilirse erken yaşta hem bilişlerini hem de dillerini geliştirebilirler. İşitme kaybının erken dönemde tanılanması ve erken müdahale ile erken çocukluk dönemindeki aksaklıklar engellenebilir. İşitme engelli bütün çocuklar kendini gerçekleştirebilir (Glennon, Svirsky, & Froemke, 2020; Rauschecker, 1999).

İleri veya çok ileri derecede işitme kayıplı bireylerde, duyusal girdinin tamamen kaybından sonra Kİ aracılığıyla konuşma algısı elde edebilirler. Birçok hastanın deneyimlediği gelişmelere rağmen, hala sonuçlar arasında farklılıklar vardır (Glennon et al., 2020).

Koklear İmplantasyon Adaptasyonunu Etkileyen Faktörler

Kİ, tıbbi bir müdahale kullanarak insan duyusunun restorasyonundan sorumlu olağanüstü cihazlardır. Bununla birlikte, tüm kullanıcılar yüksek performans seviyelerine sahip değildir ve en iyi performans gösterenler bile tam işitme deneyimi yaşamazlar. Daha fazla iyileştirme mümkün ve dünya çapında sürekli gelişmeler gözlenmektedir. Konuşma işlemcisi program ayarlarının belirlenmesi, işitsel sistemin elektrik sinyaline adaptasyonu ve çocuğun yeteneğinden etkilenen dinamik bir süreçtir (Young & Kirk, 2016).

Kİ kullanan çocukların dil gelişimi, konuşma anlaşılırlığı ve konuşmayı ayırt etme becerilerinde önemli bireysel farklılıkları olduğu gözlenmektedir. Kİ' ler aracılığıyla sağlanan işitsel bilgileri kullanabilmek için merkezi işitsel işleme gereklidir. Kİ' de deneyime bağlı adaptasyon, olumlu sonuçlar için önemlidir. Maksimum algısal performansa ulaşmak aylar hatta yıllar alır ve hedeflenen eğitim bireylerde hem konuşma hem de müzik algısını geliştirir, bu da nöral plastisitenin bireyin sonuçlarının ana belirleyicisi olduğunu düşündürür (Glennon et al., 2020).

Kİ sürecinde, adayların değerlendirme süreci, ailenin kapsamlı olarak bilgilendirilmesi ve karar verme süreci, ameliyat esnasında oluşabilecek komplikasyonlar, cihazın doğru ve etkin programlanması, özel eğitim süreci, eğitime ailenin dahil olması, cihazda meydana gelebilecek arızalar, devlet tarafından yapılan maddi desteğin yetersiz olması adaptasyon süreci ve sonrasını etkileyen faktörlerdir (Zaidman-Zait, 2008).

Adaptasyon süreci, işitme kaybı tanılandıktan sonra başlamaktadır. Adaptasyon süreci ve sonraki aşamalarda aile ile görüşme, otoskopik muayene ve Kİ yerinin değerlendirilmesi, ses işlemcisinin değerlendirilmesi, mikrofon kontrolü, bağlantıların, kabloların kontrolü, diğer kulakta varsa işitme cihazının değerlendirilmesi, serbest alanda işitme eşiklerinin değerlendirilmesi, sessiz ortamda ve gürültülü ortamda kelime ve cümle tanıma testlerinin unilateral ve bilateral değerlendirilmesi, sağlanan fayda ve yaşam kalitesinin ölçeklerle değerlendirilmesi gerekir. Kİ açılışından sonra ertesi gün, bir hafta ve bir ay sonra kontrol yapılmalıdır. Sonra sırasıyla 3. ay, 6. ay, 1. yıl ve düzenli yıllık cihaz ayarlanmalı, serbest alan eşikleri ile programlama kontrolü yapılmalıdır. Başlangıçta birtakım zorluklar yaşanabilir. Deneyimli klinik odyologlar tarafından gerekli ayarlamaların yapılması ile çoğunlukla sıkıntılar giderilebilir.

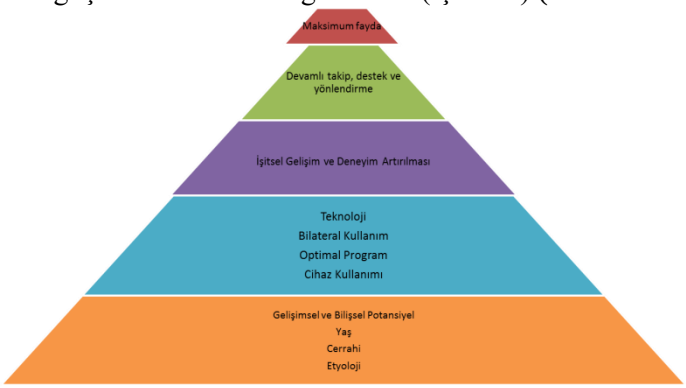
Kİ' li çocukların aileleriyle deneyim paylaşımı, durumlara uyum sağlamayı, stratejileri paylaşmayı ve yeni koşullarla karşılaşıldığında tepki vermeyi öğrenmenin bir yoludur. Kİ merkezlerine yapılan takip ziyaretleri sırasında grup psikolojisi seansları düzenlenmesi ve katılım sağlanması, daha deneyimli ve farklı yaşlardaki implantlı diğer insanlarla etkileşim olasılığı nedeniyle en zengin öğrenme kaynaklarından biridir. Uyum sağlamak, her aşamayı deneyimlemeyi öğrenmektir; kişinin zorluklar yaşayacağını bilmesi ve onlarla yüzleşmesi gerekmektedir (Vieira, Dupas, & Chiari, 2018).

Kulak ve beyin, zor dinleme koşullarında bile doğru anlamayı sağlayan karşılıklı nöral bağlantılar ve beyin ağlarıyla bağlantılıdır. Bireysel farklılıklar ve sonuçlardaki farklılıklar ve bazı hastalardaki adaptasyon zorluklarının altında yatan duyusal ve nörobilişsel faktörlerin sorumlu olduğunu bilmeden, koklear implantasyondan sonra habilitasyon ve terapiye özel bir yaklaşım seçmek, çok zordur. İmplantasyonu takiben konuşma ve dil gelişimi sonuçlarında gözlemlenen muazzam değişkenliğin yalnızca işitme ve konuşmanın erken duyusal kodlamasından kaynaklanmaz. Duyusal bilginin nasıl kodlandığı, saklandığı ve bellekten geri alındığı ile ilgili nörobilişsel faktörler (tanıma, tanımlama, işitsel sinyallerin sınıflandırılması), yani Kİ ile iletilen duyusal bilgilerin işitme kaybı olan yetişkin veya çocuk tarafından nasıl işlendiği ile ilgilidir. Bilgi işleme, algı, biliş ve düşünce gibi karmaşık üst düzey psikolojik süreçlerin çalışmasını tanımlamak için kullanılan bir terimdir. Bilgi işleme teorileri, görsel nesne tanıma, algısal öğrenme ve hafıza, konuşma algısı ve anlama veya konuşma üretimi gibi dil işlemenin çeşitli yönlerinde kullanılan büyük karmaşık sistemlerin (insan bilişi gibi) analizi ile ilgilidir. Bilişsel beceriler, konuşma algısının ve konuşma anlaşılırlığının en güçlü yordayıcısıdır. İmplant uygulanan çocuklarda da sonucun önemli bir bölümünü bilişsel yetenekleri oluşturmaktadır.

Kİ SUT kriterlerini karşılayan çocuk ve yetişkinlerde genellikle çok iyi sonuç vermektedir. Sonuçları etkileyen çok sayıda faktör nedeniyle, Kİ' li çocuklar için sonuçlar bireysel farklılık gösterebilmektedir. Koklear implantlı bireyler yetersiz fayda sağladığında bazı sorulara yanıt vermek

gerekir. Bireyin cihazında sorun ne? Sorun neden kaynaklanmaktadır? Cerrahi prosedür ve elektrot dizisinin yerleştirilmesiyle ilgili sorun var mı? En önemlisi, az fayda sağlayan implant kullanıcılarının sonuçlarını iyileştirmek için ne tür müdahaleler, tedaviler ve işitsel rehabilitasyon protokolleri mevcuttur? Bu sorular implantasyondan sonra yeterli ilerleme kaydedilemediğinde nörotologlar, odyologlar ve diğer sağlık personelinin karşılaştığı sorulardan bazılarıdır. Kİ başarısında merkezi işitsel sistemdeki sınırlılıklar, nörobilişsel ve dilsel bilgi işleme becerileri önemli rol oynamaktadır. Aile ve psiko-sosyal faktörlerde süreçte önemlidir. Davranış testlerinden elde edilen nicel ölçümlerle birlikte bu faktörlerin dikkatle değerlendirilmesi gerekir (Bornstein, 2018).

Çocuğun, işiten akran grubuyla uyumlu, konuşulan dili ve anlaşılır konuşmayı başarma potansiyeline sahip olması için, erken implantasyonun yanı sıra normal gelişimsel ve bilişsel potansiyel çok önemlidir. Amaç, her çocuğun potansiyelini en üst seviyeye çıkarmak ve yaşam kalitesini iyileştirmektir. Bu amaca ulaşabilmek için çocuk, ailesi, implant ekibi, rehabilitasyon merkezleri ve implant firmaları arasında ekip çalışması olması gerekir. En son teknolojiyi sağlamak, tutarlı cihaz kullanımını desteklemek ve çocuğun duymayı öğrenebileceği ve yaşam kalitelerini ve ailelerine katılımını iyileştirecek şekilde sesleri hayatlarına anlamlı bir şekilde entegre edebileceği teşvik edici ve ilgi çekici bir ortam sağlamaktır (Şekil 2) (Driver & Jiang, 2017).



Şekil 2. Koklear İmplant Öncesi ve Sonrası Prognozu Etkileyen Faktörler

Kİ kullanım süresi, aile eğitimi ve ek engellerin olmaması implant adaptasyonunu etkileyen faktörlerdendir. (Marnane & Ching, 2015). Sensörinöral işitme kaybı ile başvuran çocukların %30'dan fazlasında ek gelişimsel engeller vardır. - Bu engeller erken doğum, CMV, menenjit gibi doğum öncesi, sonrası hastalıklar, çocuğun gelişimini etkileme potansiyeline sahip sendrom ve genetik hastalıklar olabilir. Dispraksi gibi iletişim bozukluklarını da içerebilir. Ek engeller Kİ endikasyonunu dışlamaz , ancak öngörülen sonuçlar farklı olabilir.

İmplant adaptasyonunu etkileyen diğer önemli faktör, ebeveyn-çocuk etkileşiminin kalitesi ile çocuğun günlük yaşamında maruz kaldığı dinleme ve dil deneyimleridir. Özel ihtiyaçları olan çocukların ebeveynleri genellikle aşırı stres yaşarlar ve ebeveyn stresi, çocuklar için zayıf bağlanma, davranış sorunları, daha az olumlu ebeveyn çocuk etkileşimleri ve evlilik memnuniyetsizliği gibi olumsuz sonuçlarla ilişkilendirilmiştir (Åsberg, Vogel, & Bowers, 2008).

Ebeveynin sosyal ekonomik durumu ve ebeveyn dil girdisinin kalitesi çocuğun dil gelişimini dolayısıyla koklear implant adaptasyonunu etkiler. Annenin ortalama sözce uzunluğu ve dil etkileşimleri, çocuğun dil gelişimi üzerinde olumlu bir etkiye sahiptir (DesJardin & Eisenberg, 2007; Luterman, 2002). Kİ takmak ve çalışıp çalışmadığını kontrol etmenin yanı sıra aileye, çocukları ile uygun ve teşvik edici şekillerde etkileşim kurmalarına yardımcı olmak için tavsiye ve destek sunulmalıdır. Dilin ve müzik deneyimlerinin yönlendirilmiş ve odaklanmış kullanımının yanı sıra, günlük çevrelerinde doğal konuşmalar ve oyun yoluyla doğal dil öğrenme fırsatları sunulmalıdır. Anne çocuğa yönelik konuşarak dikkatini çekmelidir. Annenin şarkı söylemesi bebeğin uyarılmasını sağlar. Çocuğa müzikal deneyim, ninni, şarkı söylemek, çocuk ile eğlenceli, ilgi çekici etkileşimlerin temelini oluşturur. Kİ kullanan çocuklar için müzik sadece anne - çocuk etkileşimini değil çocuğun beyin gelişimini de destekler. Müzik deneyimi, hem müzikal hem de dilsel yapıların örtük olarak

öğrenilmesini artırır. Dinleme, etkileşim, sıra alma ve dil gelişimini destekler ve çocuğun müzikal deneyimlerini geliştirmek için kullanılır (Driver & Jiang, 2017).

Çocuğun öğrenme ortamında implant tarafından sağlanan işitme desteği, rehabilitasyon desteği ve eğitim programları da implant sonrası adaptasyonu etkileyen faktörlerdendir. Rehabilitasyon aşamasında adaptasyon için, sözel iletişime verilen önem, sınıf ortamı, alınan özel eğitim ve dil ve konuşma terapisi desteğinin niteliği, sayısı ve aile katılımı çok önemlidir (Geers et al., 2002).

SONUÇ

İşitme kaybı sadece bir kulak sorunu değil, aynı zamanda algı ve davranışları yöneten beyin sorunudur. Beyin, implantasyondan sonra konuşulanları anlama, ifade etme ve konuşulan dili işlemeyi desteklemek için entegre bir bilgi işleme sistemi olarak çalışır. İşitme engelli çocuklar, normal işiten çocuklara göre bilişsel bozukluklar geliştirmeye daha yatkın görünmektedir. Biliş bozukluğuna ek olarak, aile ortamı, işitme kaybının başladığı yaş, işitme kaybının süresi ve iletişim modu gibi konuşma algısı ve konuşma anlaşılırlığı üzerinde etkisi olan diğer koşullar da dikkate alınmalıdır (Udholm, Aaberg, Bloch, Sandahl, & Ovesen, 2017). İmplantasyon yaşı, iletişim modeli, aile, adaptasyon süresi, rezidual işitme, sosyo- ekonomik durum gibi değişkenler implant başarısını etkilemektedir. Bununla birlikte, öğrenme, hafıza, dikkat, çalışma belleği gibi bilişsel kontrol süreçleri de sonuçları etkilemektedir. (Pisoni, Kronenberger, Chandramouli, & Conway, 2016). Adaptasyon sürecinde bireysel farklılıkları en aza indirmek ve koklear implant başarısını en üst düzeye çıkarmak için bütün faktörlerin değerlendirilmesi ve ekip çalışması önemlidir.

KAYNAKLAR

Åsberg, K. K., Vogel, J. J., & Bowers, C. A. (2008). Exploring correlates and predictors of stress in parents of children who are deaf: Implications of perceived social support and mode of communication. *Journal of Child and Family Studies, 17*(4), 486-499.

ASHA. Cochlear Implants. Retrieved from https://www.asha.org/policy/tr2004-00041/

Balkany, T. J., Hodges, A. V., Eshraghi, A. A., Butts, S., Bricker, K., Lingvai, J., . . . King, J. (2002). Cochlear implants in children--a review. *Acta oto-laryngologica, 122*(4), 356-362.

Bornstein, S. (2018). The importance of early identification and intervention for children with hearing loss. Part 1: human Development. *ARCHIVOS DE MEDICINA, 3*(1), 8.

Cankuvvet, N., Doğan, M., & Gürgür, H. (2015). Ebeveynlerin Koklear İmplanta İlişkin Beklentilerinin İncelenmesi. *Eğitimde Nitel Araştırmalar Dergisi, 3*(1), 54-73.

Cohen, N. L. (2004). Cochlear implant candidacy and surgical considerations. *Audiology and Neurotology, 9*(4), 197-202.

Dahmen, J. C., & King, A. J. (2007). Learning to hear: plasticity of auditory cortical processing. *Current opinion in neurobiology, 17*(4), 456-464.

DesJardin, J. L., & Eisenberg, L. S. (2007). Maternal contributions: Supporting language development in young children with cochlear implants. *Ear and Hearing, 28*(4), 456-469.

Driver, S., & Jiang, D. (2017). Paediatric cochlear implantation factors that affect outcomes. *European Journal of Paediatric Neurology, 21*(1), 104-108.

Geers, A., Uchanski, R., Brenner, C., Tye-Murray, N., Nicholas, J., & Tobey, E. (2002). Rehabilitation factors contributing to implant benefit in children. *Annals of Otology, Rhinology & Laryngology, 111*(5_suppl), 127-130.

Glennon, E., Svirsky, M. A., & Froemke, R. C. (2020). Auditory cortical plasticity in cochlear implant users. *Current opinion in neurobiology, 60*, 108-114.

Hearing, M. (2019). Retrieved from https://mackayhearing.com.au/wp-content/uploads/2019/01/Mackay-Hearing-Cochlear-implant-diagram.jpg

İncesulu, A. (2006). Koklear implant adaylarının medical değerlendirmesi ve hasta seçimi. *Turkiye Klinikleri J Surg Med Sci, 2*, 24-30.

Lo, W. (1998). Imaging of cochlear and auditory brain stem implantation. *AJNR: American Journal of Neuroradiology, 19*(6), 1147.

Luterman, D. (2002). When your child is deaf: A parent. In: Austin, Tx: Pro-Ed.

Marnane, V., & Ching, T. Y. (2015). Hearing aid and cochlear implant use in children with hearing loss at three years of age: Predictors of use and predictors of changes in use. *International journal of audiology, 54*(8), 544-551.

Musiek, F. E. (2002). Auditory plasticity: What is it, and why do clinicians need to know? *The Hearing Journal, 55*(4), 70.

Pisoni, D. B., Kronenberger, W. G., Chandramouli, S. H., & Conway, C. M. (2016). Learning and memory processes following cochlear implantation: The missing piece of the puzzle. *Frontiers in psychology, 7*, 493.

Rauschecker, J. P. (1999). Auditory cortical plasticity: a comparison with other sensory systems. *Trends in neurosciences, 22*(2), 74-80.

Sennaroğlu, G., Batuk, M., & Şule, K. (2019). Koklear İmplantasyon: Odyolojik Değerlendirme, Preoperatif, İntraoperatif ve Postoperatif Takip. *Türk Odyoloji ve İşitme Araştırmaları Dergisi, 2*(2), 24-29.

Sosyal Güvenlik Kurumu Sağlık Uygulama tebliğinde Değişiklik Yapılmasına Dair Tebliğ. (2016). Retrieved from https://www.resmigazete.gov.tr/eskiler/2016/11/20161126-13.htm

Udholm, N., Aaberg, K., Bloch, C., Sandahl, M., & Ovesen, T. (2017). Cognitive and outcome measures seem suboptimal in children with cochlear implants–a cross-sectional study. *Clinical Otolaryngology, 42*(2), 315-321.

Varadarajan, V. V., Sydlowski, S. A., Li, M. M., Anne, S., & Adunka, O. F. (2021). Evolving criteria for adult and pediatric cochlear implantation. In (Vol. 100, pp. 31-37): SAGE Publications Sage CA: Los Angeles, CA.

Vieira, S. d. S., Dupas, G., & Chiari, B. M. (2018). Cochlear implant: the family's perspective. *Cochlear Implants International, 19*(4), 216-224.

Young, N. M., & Kirk, K. I. (2016). *Pediatric cochlear implantation: Learning and the brain*: Springer.

Zaidman-Zait, A. (2008). Everyday problems and stress faced by parents of children with cochlear implants. *Rehabilitation Psychology, 53*(2), 139.

CALCULATION OF THE ACCURACY OF CARRYING CORONAVIRUS WITH THE HELP OF MACHINE LEARNING DEPENDING ON AGE AND MEDICAL EXAMINATION RESULTS

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ABSTRACT

Coronavirus disease is the most common contagious disease of recent times. The disease turned into a pandemic and spread throughout the world. and the accuracy of the diagnosis of such a dangerous and contagious disease is of vital importance. In this study, a coronavirus diagnosis was made using artificial intelligence and machine learning, and the accuracy of the data obtained indicates how accurate the diagnosis is. The reason why the diagnosis of coronavirus was made based on the numerical results of other diseases in this study is to investigate the relationship of coronavirus disease with the findings of 15 different blood tests and to observe the positive and negative effects of this relationship on age. This study is important in this respect. 15 medical examinations were applied to 510 patients. The ages of the patients and the results of 15 examinations were recorded numerically. In addition, the coronavirus result of each patient was recorded. According to the patient's analysis results, the probability of being sick with coronavirus was obtained by comparing the real results with machine learning. As a result of the study, an accuracy rate of 89.6% was obtained.

Keywords: coronavirus, machine learning, artificial intelligence, deep learning, illness diagnosis.

INTRODUCTION

Machine Learning is the general name of computer algorithms that model a given problem according to the data obtained from the problem environment.[1] There are many proposed approaches and algorithms because it is a heavily studied subject. Some of these approaches are capable of prediction and estimation, and some of them are capable of classification. There are many recommended machine learning methods available. These may differ in approaches to the problem and therefore may have different successes in different problems.

Machine learning is a subset of artificial intelligence.[2] An “intelligent” computer thinks like a human and performs tasks on its own. One way to train a computer to mimic human thinking is to use a neural network, a set of algorithms modeled on the human brain. Machine learning is a type of predictive analysis. But it is much easier to implement machine learning, which is updated in real time as we receive more data.

Machine learning, unlike other artificial intelligence applications, is a set of algorithms that do not need rules that we can interpret and enter manually, while imitating human intelligence on the one hand. Just as a person learns concepts by himself/herself with what he/she sees and hears and does not need someone to process these rules in his/her brain, machine learning applications similarly learn the desired task by assimilating the datasets presented to him/her.

We can explain the difference between artificial intelligence algorithms that do not contain machine learning, which we can call "classical" or "traditional" algorithms, and machine learning algorithms with the following simple example: Imagine a human baby who has no knowledge of animals. This baby will not be able to distinguish between cats and dogs.

In classical artificial intelligence applications, instead of teaching the baby the difference between cat and dog, we give him a full set of instructions that will enable him to distinguish between cat and dog. These instructions should be prepared in such a way that this ignorant baby should be able to both follow those directions and distinguish between cat and dog mostly correctly. It is obvious how difficult this is for both the baby and the teacher.

On the other hand, as you may have noticed, we don't really need to do this to increase baby's success: If we give baby lots of pictures of cats and dogs and repeatedly tell which is which, after a point the baby will begin to distinguish the two with high accuracy. This is exactly how machine learning algorithms work, as the name suggests. Of course, computers unfortunately do not come with a learning algorithm in them when they are built. Computer scientists themselves design and adapt the most suitable machine learning algorithm for each problem.

Machine learning is essentially built around this logic. Many artificial intelligence applications that we have seen recently are actually machine learning applications. Machine learning is indispensable in real life for most artificial intelligence applications that we are used to seeing in science fiction movies; Therefore, the concepts of "machine learning" and "artificial intelligence" are getting more confused. At this point, although we have largely avoided the conceptual confusion by revealing the difference between the concepts of machine learning and artificial intelligence, there is one more step we need to take: Although machine learning is a narrower concept than artificial intelligence, it still includes many different algorithms and algorithms. It is a method field. That's why the concept of "machine learning" still doesn't adequately describe the products of popularization we're talking about.

Types of Machine Learning Algorithms

Machine learning algorithms are divided into 4 categories, each designed for a different purpose. For example, supervised learning is for scaling the scope of data and making predictions based on it. On the other hand, unsupervised algorithms are used to organize and filter data so that it makes sense.
Supervised Machine Learning

Algorithms that require some supervision of the developer during the process are known as supervised machine learning. The developer tags the training data and sets the strict rules and limits that the algorithm will follow. Supervised machine learning algorithms can apply what has been learned in the past to new data, using labeled examples to predict future events.[3] In supervised machine learning, the goal is to predict the target variable using a function defined over a set of arguments.

Audited algorithms work by identifying a set of input data and expected results. An algorithm is considered successful when its matches and predictions are found to be correct. The learning algorithm can also compare its output with the correct output and find errors in order to modify the model accordingly.[4] One of the most famous examples of supervised machine learning is the Boston housing prices dataset. This dataset, which includes houses sold, their properties, and their selling prices, aimed to create a machine learning model that can predict the selling price of any house.

Unsupervised Machine Learning

Unsupervised learning is the approach we use when we have little or no idea what the output we want from our data will look like. We can create the model from the data that we do not know the effect of the variables.

In “unsupervised learning” there are only data, no information is given about them. Attempts are made to draw conclusions from these data. Since no information is given about the data from the beginning, it cannot be said that the conclusions drawn are absolutely correct.

Semi-Supervised Machine Learning

Algorithms that combine features of both supervised and unsupervised algorithms are defined as semi-supervised machine learning. Not all of the training data is labeled and not all rules are provided when starting the algorithm.

Semi-supervised machine learning algorithms use both labeled and unlabeled data for training. Systems that typically use small amounts of labeled data and large amounts of unlabeled data can significantly improve learning accuracy.

MATERIALS AND METHODS

15 medical examinations were applied to 510 patients. The ages of the patients and the results of 15 examinations were recorded numerically. In addition, the coronavirus result of each patient was recorded. According to the patient's analysis results, the probability of being sick with coronavirus was obtained by comparing the real results with machine learning. As a result of the study, an accuracy rate of 89.6% was obtained.

Table 1. Title of the Table

'Hematocrit'
'Hemoglobin'
'Platelets'
'Mean platelet volume '
'Red blood Cells'
'Lymphocytes'
'Mean corpuscular hemoglobin concentration (MCHC)'
'Leukocytes'
'Basophils'
'Mean corpuscular hemoglobin (MCH)'
'Eosinophils'
'Mean corpuscular volume (MCV)'
'Monocytes'
'Red blood cell distribution width (RDW)'
'Neutrophils'

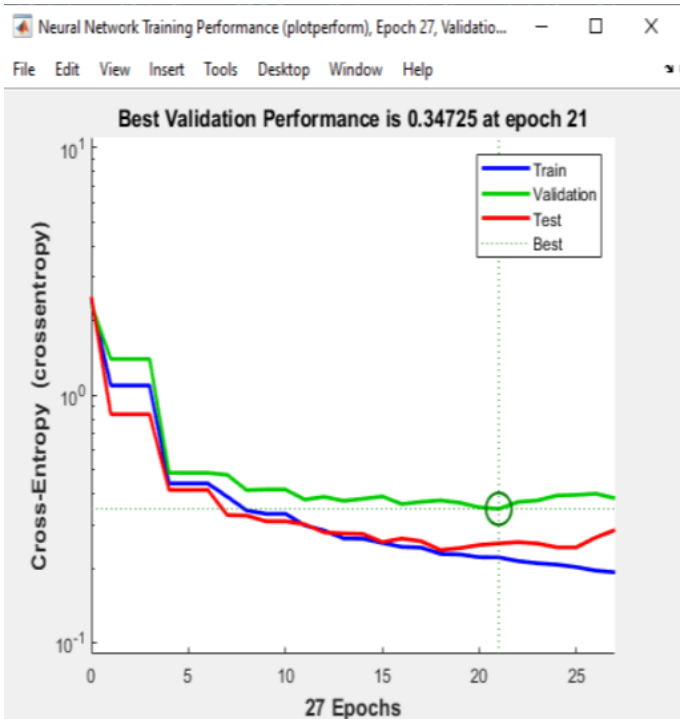

Figure 1. Cross-Entropy

The data set was reviewed 21 times, and as a result of this process, the learning process was completed, and as a result, the iteration stopped. As a result of all iterations, the mean square error was obtained as 0.34725. The smaller this value, the better the system performs.

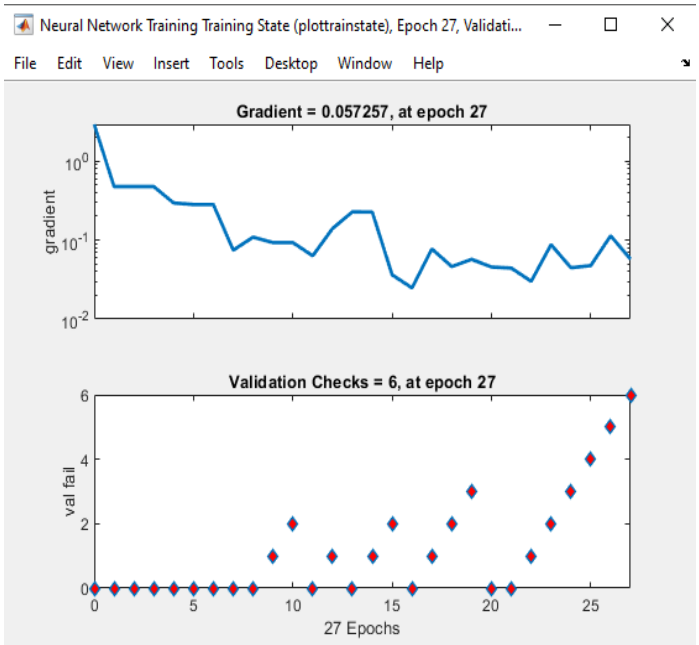

Figure 2. Training State

The learning process continues until 6 validation checks are completed. average gradient value is 0.057257.

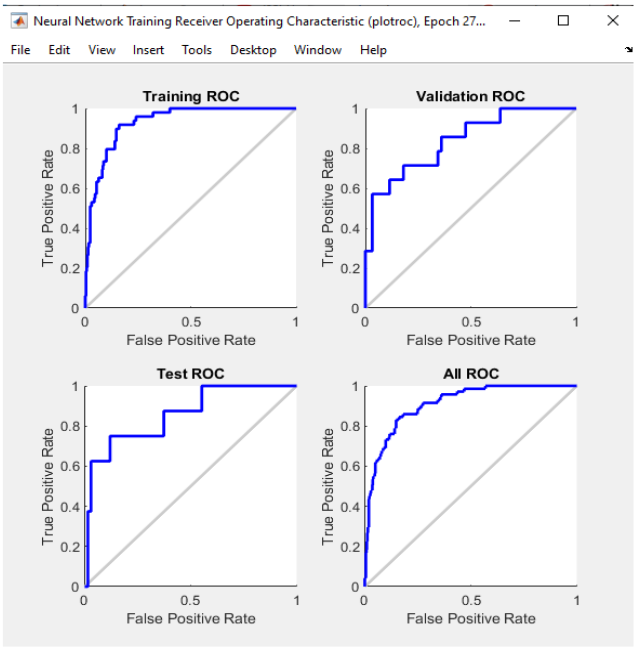

Figure 3. Receiver Operating Characteristic

Figure 3 shows ROC graphs. The 1st graph shows the training. The closer this graph is to a value of 1, the better. If it goes to the side drawn in red on the upper left side of the other 3 graphs, it is said that the learning was so successful. The average of all forecasts is plotted on the All ROC graph.

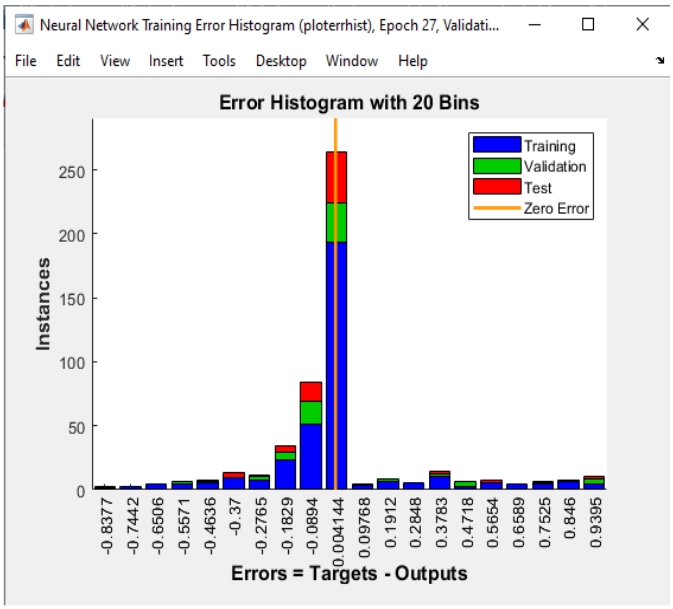

Figure 4. Error Histogram

It is seen that the highest error is between 0.004144 and -0.0694. This is also a very small value.

RESULTS

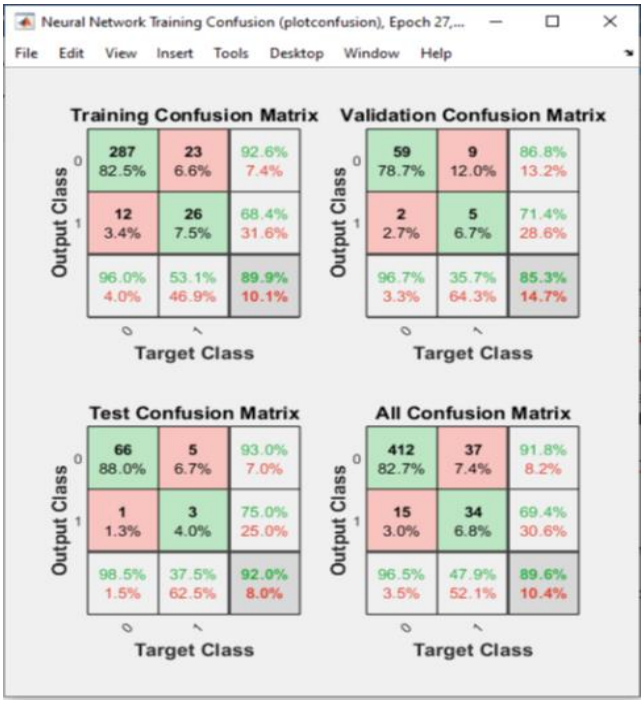

Figure 5. Confusion Matrix

In the 1st matrix, it is seen that the education is successful at the rate of 89.9%. Against a total of 510 inputs, the results were predicted and highly accurate predictions were made. An accuracy of 85.3% was achieved in the validation confusion matrix. With this matrix, the accuracy of the test data was determined. An accuracy of 92% is seen in the test matrix against the training done. It's a pretty good rate. The average accuracy of all confusion matrices was 89.6%.

DISCUSSION

It was aimed to investigate the relationship between coronavirus disease and the imbalance in blood cells, and it was aimed to reveal the harmony between respiratory tract syndrome and blood values. And the accuracy of the diagnosis of such a dangerous and contagious disease is of vital importance. The numerical result obtained shows that a significant degree of accuracy has been achieved. This shows that in the future, it will be investigated not only as a respiratory tract infection, but also as a disease that will be associated with different diseases.

CONCLUSION

In this study, the possibility of carrying the coronavirus was examined based on the data obtained with 15 different blood tests performed on 510 patients and the age of the patients. The accuracy rate for carrying the disease is 89.6%. An association has been observed between coronavirus and other chronic diseases.

REFERENCES

Özen, I. A., & Ilhan, I., 2020, Opinion Mining in Tourism: A Study on “Cappadocia Home Cooking” Restaurant. In E. Çeltek (Ed.), Handbook of Research on Smart Technology Applications in the Tourism Industry (pp. 43-64). IGI Global.

Maisha Farzana, Md. Jahid Hossain Any, 2020, "Semantic Segmentation of Tumor from 3D Structural MRI using U-Net Autoencoder", Department of Computer Science and Engineering in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering.

Liu W.K., Gan Z., Fleming M.,2021, Deep Learning for Regression and Classification. In: Mechanistic Data Science for STEM Education and Applications. Springer, Cham.

2019, Available: https://www.bestsoftpro.com/2019/01/a-definition-of-machine-learning-ml.html

DENETİMLİ SERBESTLİK MÜDÜRLÜĞÜ ÇALIŞANLARININ İŞ MEMNUNİYETLERİNİN İSTATİSTİKSEL YÖNTEMLERLE DEĞERLENDİRİLMESİ

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ÖZET

Etkin bir insan kaynağının en önemli faktörü iş memnuniyetidir. Kurumlar etkin bir insan kaynağı için her ne kadar etkin bir ilk istihdam sağlasa da mevcut personelin nitelikli iş gücü için iş memnuniyetlerinin önemini de bilinmektedir. Bu çalışmada Minnesota İş Memnuniyet Ölçeğinin denetimli serbestlik müdürlüklerinde görev yapan personele çevrimiçi uygulanması ile elde edilen verilerin istatistiksel yöntemlerle analizi amaçlanmıştır. Anket çalışması öncesi T.C. Adalet Bakanlığı, Ceza ve Tevkifevleri Genel Müdürlüğü, Denetimli Serbestlik Daire Başkanlığından ve Kırıkkale Üniversitesi Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulundan gerekli izinler alınmıştır. 5 farklı ilden ankete gönüllü olarak katılan 217 katılımcının 58'inin kadın, 159'unun erkek olduğu görülmüştür. Ölçeğin iç tutarlılığı için Cronbach's alfası hesaplanmıştır. Uygulanan Minnesota İş Memnuniyet Ölçeği toplam puanının güvenilirlik katsayısı 0.953, içsel faktör puanının güvenilirlik katsayısı 0.930 ve dışsal faktör puanının güvenilirlik katsayısı 0.887 bulunmuştur. Ölçeğin yüksek güvenilirlikte olduğu görülmüştür. Verilere uygulanan doğrulayıcı faktör analizi sonucunda personelin yaptığı iş karşılığında takdir edilmesinin dışsal memnuniyeti en çok etkileyen durum olduğu, yöneticinin karar verme yeteneğinin ise dışsal memnuniyeti en az etkileyen durum olduğu görülmüştür. Personele mesleğini yaparken kendi yöntemlerini kullanabilme imkânının verilmesinin içsel memnuniyeti en çok etkileyen durum olduğu, kişileri yönlendirmek için fırsat verilmesinin ise içsel memnuniyeti en az etkileyen durum olduğu tespit edilmiştir. Personelin meslekten ayrılmayı düşünme durumu ile toplam çalışma süresi ve işe kendi isteği ile girme durumu değişkenleri arasında anlamlı bir ilişki olduğu tespit edilmiştir. Toplam çalışma süresi daha uzun olan personelin işten ayrılma düşüncesinin daha az olduğu ve işe kendi isteği ile giren personelin işten ayrılma düşüncesinin daha az olduğu görülmüştür. Denetimli serbestlik müdürlüklerinde görev yapan personelin memnuniyet kavramının olumlu artış sağlamasında içsel faktörlerin dışsal faktörlerden daha etkili olduğu tespit edilmiştir.

Anahtar Kelimeler: denetimli serbestlik sistemi, doğrulayıcı faktör analizi, iş memnuniyeti, Minnesota İş Tatmini ölçeği.

EVALUATION BY STATISTICAL METHODS OF BUSINESS SATISFACTIONS OF PROBATION DIRECTORATE EMPLOYEES

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ABSTRACT

The most important factor of an active human resource is business satisfaction. Although institutions have an effective first employment for an effective human resource, it is also known for the importance of business satisfactions for qualified labor force. In this study, the "Minnesota business satisfaction scale" is intended to be analyzed by statistical methods of data obtained by the online implementation of the personnel in the Probation Directory. Before the survey study, the all permitions were taken from

" Directorate General of Prisons and Detention Housesof the Ministry of Turkish Republic" and "Kırıkkale University Social and Humanities Studies Ethics Committee". 217 people from 5 different provinces participated in the survey voluntarily. 58 of these participants are women and 159 mens. Cronbach's alpha is calculated for the internal consistency of the scale. The reliability coefficient of the "Minnesota Business Satisfaction Scale" is the reliability coefficient of the reliability coefficient of the total score of 0.953 and the reliability coefficient of the internal factor score was 0.930 and the reliability coefficient of the external factor score was 0.887. The scale was found to be in high reliability. As a result of the confirmatory factor analysis applied to the data, it was seen that the excessive satisfaction of the appreciation of the staff in exchange for the employment is the most affecting the external satisfaction and the ability to decide the manager is the least affecting the external satisfaction. It has been determined that it is the situation that the opportunity to use their own methods to use their own methods, which most affects the internal satisfaction and the opportunity to direct people is the inherent satisfaction. It was determined that the staff was a significant relationship between the status of the study period and the total working time and the status variables in the entry. Of staff serving In Probation Directorate, intrinsic factors in the positive increase of the satisfaction are found to be more effective than external factors.

Anahtar Kelimeler: Probation system, confirmatory factor analysis, business satisfaction, Minnesota satisfaction scale.

1. GİRİŞ

Etkin bir insan kaynağının en önemli faktörü iş memnuniyetidir. Kurumlar etkin bir insan kaynağı için her ne kadar etkin bir ilk istihdam sağlasa da mevcut personelin nitelikli iş gücü için iş memnuniyetlerinin önemi de bilinmektedir. Bu çalışmada denetimli serbestlik müdürlüklerinde görev yapan personele çevrimiçi anket uygulanarak elde edilen verilerin istatistiksel yöntemlerle analizi ve iş memnuniyetleri açıklanmaya çalışılmıştır.

Örgüt verimliliğinin en üst seviyede tutulması için iş memnuniyeti oldukça önemlidir. Öte yandan, Oshagbemi (1996)'ye göre, iş memnuniyeti sosyal bilimlerde araştırılmak istenen çok faktörlü bir yapı olması sebebiyle araştırmacıların ilgisini çekmiştir. Izgar (2003)'a göre, iş yerinin amaçlarına ulaşabilmesi için çalışanların iş memnuniyetinin sağlanması ve çalışanların yaşam standardının arttırılması gereklidir. Bu durumun mümkün olması ise iş yerinde memnuniyet teriminin temel alınarak görev yapan personelin gereksinimlerinin giderilmesi ve varsa olumsuz durumların asgari seviyeye indirilmesi ile sağlanır.

Denetimli serbestlik, şüpheli, sanık veya hükümlünün toplum içinde denetim ve takibinin yapıldığı, iyileştirilmesi ve topluma kazandırılması için ihtiyaç duyulan her türlü hizmet, program ve kaynakların sağlandığı bir infaz sistemidir. (Denetimli Serbestlik Hizmetleri Yönetmeliği Madde:4)

Bu çalışmada, denetimli serbestlik müdürlüklerinde çalışan personelin iş memnuniyetini etkileyen değişkenler araştırılıp verimliliği artırmak amacıyla öneriler sunularak benzer kitlelerin iş memnuniyetinin belli aralıklarla ölçülmesinin önemi vurgulanmıştır.

Bu çalışma için önce etik kurul onayı Kırıkkale Üniversitesi Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulundan alındı. Daha sonra T.C. Adalet Bakanlığı, Ceza ve Tevkifevleri Genel Müdürlüğü, Denetimli Serbestlik Daire Başkanlığından çalışmaya başlamak ve sonuçlarını yayınlamak için gerekli izinler alındı.

Literatürde iş memnuniyeti üzerine pek çok çalışma olsa dahi, denetimli serbestlik müdürlüklerinde iş memnuniyetinin istatistiksel yöntemlerle araştırılması hakkında bir çalışmaya rastlanmamıştır. Araştırmamız, Minnesota İş Memnuniyet Ölçeğinin denetimli serbestlik müdürlüklerinde görev yapan

personele uygulanması ile elde edilecek verilerin istatistiksel yöntemlerle analizini amaçlayan betimsel bir çalışmadır. Araştırmamız bu yapısı ile özgün bir çalışmadır.

Denetimli serbestlik sistemi ile ilgili yapılan çalışmalar genellikle sanık, şüpheli, hükümlü veya suçları üzerine yapılan araştırmalardır.

Ceza ve Tevkifeveleri Genel Müdürlüğüne bağlı olarak taşra teşkilatında yer alan ceza infaz kurumlarında ise görev yapan personelin iş motivesi gibi duygu durumları üzerine yapılan çalışma sayısı literatürde oldukça azdır.

Ceza infaz kurumlarında yapılan çalışmalardan; Kurt (2007)'un çalışmasına göre İzmir'de bulunan ceza infaz kurumunda görev yapan 401 katılımcıya Maslach Tükenmişlik Ölçeği ve Duygusal Emek Ölçeği uygulayarak katılımcıların eğitim ve medeni durumu, çalıştıkları kurum tipi, cinsiyet ve yaş durumlarına demografik özelliklerini betimlemiştir. Gerçekleştirilen çalışma ceza infaz kurumlarında tükenmişlik ve duygusal emek düzeylerinin araştırıldığı ilk çalışmadır. Duygusal emeğin kişisel değişkenler ile farklılık göstermediğini sadece tükenmişlik düzeyi ile medeni durum ve iş deneyimi arasında farklılaşma tespit etmiştir. Ayrıca çalışma süresi arttıkça tükenmişliğin arttığı tespit edilmiştir. Çalışma sonunda öneri olarak iyileştirme çalışmalarına esas olmak üzere çalışanları olumsuz etkileyen faktörlerin tespitinin önemi vurgulanmıştır.

Gedik (2011)'in çalışmasına göre ise 99 infaz ve koruma memuru ile yaptığı yüz yüze anket sonucu katılımcıların tükenmişlik düzeylerinin demografik özelliklerine göre farklılık gösterip göstermediğini araştırarak tüm değişkenler için anlamlı bir farklılık göstermediğini tespit etmiştir. Çalışmanın sonucunda cinsiyete göre kadınların, yaş grubuna göre 23-27 yaş arasının, medeni duruma göre bekârların, eğitim durumuna göre lise mezunlarının daha çok tükendiği tespit edilmiştir. Öneri olarak ise infaz ve koruma memurlarının toplumda övünülecek meslek haline gelmesi için çalışmalar yapılması, hükümlü ve tutuklularla yaşanılan infaz ve koruma memurları için kurum avukatının gerekliliği, sosyal hayatlarının genişletilmesi için kurum etkinliklerinin yapılması gibi öneriler yer almıştır.

Tuncer (2011)'in çalışmasında denetimli serbestlik personeli ile iş doyumu arasındaki istatistiksel ilişkiler araştırılmıştır. Örneklem için 6 ilde (İstanbul, Ankara, İzmir, Mersin, Antalya, Balıkesir) bulunan denetim serbestlik müdürlüğü personelinin pozisyon, yaş, cinsiyet, medeni durum, eğitim düzeyi, meslek, çalışma süresi, denetimli serbestlik şubesinde çalışma süresi, işine olan sevginin düzeyi, çalışan sayısını yeterli/yetersiz algılaması, görev yaptığı il, pozisyon, çalıştığı işyeri sayısı açısından iş doyumu arasında farklılaşma olup olmadığını incelemiştir. Sonuç olarak denetimli serbestlik personelinin pozisyon, eğitim düzeyi, işine olan sevginin düzeyi, çalışan sayısını yeterli/yetersiz algılaması ile iş doyumu üzerinde anlamlı farklılar olduğu tespit edilmiştir.

Telman ve Ünsal (2004)'a göre, iş tatminini etkileyen pek çok faktör vardır. Bunları içsel ve dışsal faktör olarak gruplandırabiliriz. İçsel faktörler işle kaynaşma, işin ehemmiyeti, çalışmak için kişide olması gereken özellikler, işin bağımsız yapılabilme durumu, işin başarılması sonucu alınan geri bildirimler ve genel olarak yapılan işin özü ile ilgili özelliklerdir. Dışsal faktörler ise idare yapısı, terfi olanakları, maddi imkânlar, iş yeri ortamı ve iş arkadaşlıkları gibi özelliklerdir. İş memnuniyetinde incelenen demografik özellikleri ise bireysel faktörler olarak adlandırarak medeni durum, eğitim durumu, yaş, cinsiyet, unvan, ücret, çalışma süreleri başlıkları ile örneklendirmiştir.

1.1 Minnesota İş Memnuniyet Ölçeği

Bu araştırmada, Weiss, Dawis, England ve Lofquist (1967)'in çalışmasında yer alan ve Baycan (1985) tarafından Türkçe'ye uyarlanarak yapı geçerliliği ve güvenilirliği sağlanan Minnesota İş Memnuniyet Ölçeği kullanılmıştır.

Özsoy, Uslu, Karakiraz ve Aras (2021), araştırmalarda en çok kullanılan memnuniyet ölçeğinin Minnesota İş Memnuniyet Ölçeği olduğunu ifade etmektedir. Bu sebeple, bu çalışmada uluslararası alanda geçerliliği ve güvenilirliği test edilmiş en çok kullanılan iş tatmini ölçeklerinden Minnesota İş Memnuniyet Ölçeği kullanılmıştır.

Minnesota İş Memnuniyet Ölçeğinin uzun formu 100 ifadeden oluşmaktadır. Kısa formu ise genel memnuniyeti, içsel memnuniyeti ve dışsal iş memnuniyetini ölçen, 20 maddeden oluşmaktadır. Bu bakımdan söz konusu kısa formlu ölçekten genel memnuniyet puanı, içsel memnuniyet puanı ve dışsal memnuniyet puanı elde edilmektedir.

Minnesota İş Memnuniyet Ölçeğinin kısa halinden çalışanların genel memnuniyet puanı, içsel memnuniyet puanı ve dışsal memnuniyet puanı hesaplanmaktadır. Genel memnuniyet puanı, maddelerden elde edilen puanların toplamının 20'ye bölünmesiyle elde edilir.

İçsel faktörü meydana getiren içsel memnuniyet puanını belirleyen maddeler sırasıyla 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16, 20 maddeleridir. Bu maddelere verilen puanların toplamının madde sayısı olan 12'ye bölünür. Elde edilen puanın yüksek olması içsel memnuniyetin yüksek olduğunu, puanın düşük olması ise içsel memnuniyetin düşük olduğunu gösterir.

Dışsal faktörü meydana getiren dışsal memnuniyet puanını belirleyen maddeler sırasıyla 5, 6, 12, 13, 14, 17, 18, 19 maddeleridir. Bu maddelere verilen puanların toplamının madde sayısı olan 8'e bölünür. Elde edilen puanın yüksek olması dışsal memnuniyetin yüksek olduğunu, puanın düşük olması ise dışsal memnuniyetin düşük olduğunu gösterir.

Memnuniyet dereceleri 5'li Likert tipi ölçeğe göre ölçülmüştür. (1) puan en düşük, (5) puan en yüksek memnuniyet ölçütünü temsil etmektedir. (1) Hiç Memnun Değilim, (2) Memnun Değilim, (3) Ne Memnunum Ne Memnun Değilim, (4) Memnunum ve (5) Çok Memnunum şeklinde anlam ifade etmektedir. Katılımcıların ölçek maddelerine cevap vermeden ilerlemesi önlenmiştir. Diğer bir ifadeyle katılımcının boş cevap bırakarak ankete devam etmesini önlemek için çevrimiçi ankete kısıt konulmuştur. Dolayısıyla ölçek maddelerine cevap verilmeme durumu, kayıp veri olması söz konusu değildir.

Araştırmamızda kullanılan Minnesota İş Memnuniyet Ölçeğinde iş memnuniyetini etkileyen 20 madde yer almaktadır. Ölçekte önceden belli olan iki faktör bulunmaktadır: İçsel faktör, dışsal faktör. İçsel memnuniyeti ifade eden içsel faktör, çalışanın kabiliyetleri, sorumluluk alma bilinci gibi işle ilgili durumları içeren değişkenlerden oluşmaktayken, dışsal memnuniyet ifade eden dışsal faktör ise çalışanın işyeri ortamı, idare yönetimi, mesai arkadaşları ve maddi kazancı gibi dışsal durumlardan etmenlerden oluşmaktadır. İki faktörlü bu ölçekte hangi maddenin hangi faktörü temsil ettiği önceden bellidir.

Daha önce uluslararası alanda güvenilirlik ve geçerliliği kanıtlanmış ayrıca Türkçe 'ye uyarlanan ve modeli belli olan Minnesota İş Memnuniyet Ölçeği kullanılarak memnuniyet puanlarını hesaplanmıştır. Ölçek maddeleri ve temsil ettiği faktörler Çizelge 1.1'de gösterilmiştir.

Çizelge 1.1 Ölçek Faktörlerinin Temsil Ettiği Maddeler

Faktör	Ölçek Maddeleri
İçsel Faktör	1. Beni her zaman meşgul etmesi bakımından
	2. Bağımsız çalışma imkânının olması bakımından
	3. Ara sıra değişik şeyler yapabilme imkânı bakımından
	4. Toplumda "saygın bir kişi" olma şansını bana vermesi bakımından
	7. Vicdani bir sorumluluk taşıma şansını bana vermesi yönünden
	8. Bana garantili bir gelecek sağlaması yönünden
	9. Başkaları için bir şeyler yapabildiğimi hissetmem yönünden
	10. Kişileri yönlendirmek için fırsat vermesi yönünden
	11. Kendi yeteneklerimle bir şeyler yapabilme şansı vermesi yönünden
	15. Kendi fikir-kanaatlerimi rahatça kullanma imkânı vermesi yönünden
	16. Çalışma şartları yönünden
	20. Mesleğimi yaparken kendi yöntemlerimi kullanabilme imkânı vermesi açısından
Dışsal Faktör	5. Yöneticinin emrindeki kişileri iyi yönetmesi bakımından
	6. Yöneticinin karar verme yeteneği bakımından
	12. İşimle ilgili alınan kararların uygulamaya konması yönünden
	13. Yaptığım iş karşılığında aldığım ücret yönünden
	14. Terfi imkânının olması yönünden
	17. Çalışma arkadaşlarının birbirleriyle anlaşmaları yönünden
	18. Yaptığım iş karşılığında takdir edilmem yönünden
	19. Yaptığım iş karşılığında duyduğum başarı hissi yönünden

2. İSTATİSTİKSEL VERİ ANALİZİ

Anketimiz Ankara, Adana, Eskişehir, İstanbul ve İzmir illerinde bulunan denetimli serbestlik müdürlüklerinde görev yapan 18 yaş üstü ve gönüllü olan katılımcılara uygulandı ve 224 kişi tarafından ankete çevrim içi katılım sağlandı. Araştırmaya katılan 224 katılımcıdan 7'si araştırmaya gönüllü olarak katılma durumunu hayır olarak işaretlediği için örneklem dışı bırakılmıştır. Araştırmaya 217 katılımcının cevabı ile devam edilmiştir.

Araştırmada elde edilen eriler Microsoft Office- Excel ve IBM SPSS-v20.0 (lisanslı) paket programında analiz edildi. Kurulan tüm hipotezlerde testin anlam düzeyi 0,05 olarak alınmıştır.

Katılımcıların 13 soruluk kişisel bilgi formunda sırasıyla cinsiyet, medeni durum, yaş, eğitim durumu, çalışma süresi, toplam çalışma süresi, çalıştığı kurum sayısı, mesleği seçmelerindeki en önemli sebep, meslekten ayrılmayı düşünme durumu, şu anda çalışmakta olduğu işe kendi isteği ile girme durumları hakkında sorular yer almaktadır. Katılımcıların işten ayrılmayı düşünüp düşünmemelerine göre toplam çalışma süresi ve işe kendi isteği ile girme durumu hakkında verdikleri cevaplar frekans ve yüzde değeri olarak Çizelge 2.1'de verilmiştir.

Çizelge 2.1 Katılımcıların işten ayrılmayı düşünüp düşünmemelerine göre bazı değişkenlere verdikleri cevapların frekans tablosu

Değişkenler		İşten Ayrılmayı Düşünen Katılımcılar		İşten Ayrılmayı Düşünmeyen Katılımcılar	
		N	(%)	N	(%)
toplam çalışma süresi (yıl olarak)	1-8	7	14,60%	40	23,70%
	9-11	21	43,80%	41	24,30%
	12 ve üzeri	20	41,70%	88	52,10%
işe kendi isteği ile girme durumu	Ever	42	85,72%	163	96,32%
	Hayır	6	14,28%	6	3,68%

Analiz sonucunda "meslekten ayrılmayı düşünme" değişkeni ile "toplam çalışma süresi" değişkeninin birbirinden bağımsız olmadığı görüldü (p-değeri=0,027, Ki-kare-hesap=7,208). Toplam çalışma süresi arttıkça meslekten ayrılma düşüncesi azalmaktadır. Meslekten ayrılma düşüncesi mesleğin ilk yıllarında daha fazladır.

"Meslekten ayrılmayı düşünme" değişkeni ile "çalışılmakta olan işe kendi isteği ile girme" değişkenlerinin birbirinden bağımsız olmadığı görüldü (p-değeri=0,017, Ki-kare-hesap=5,732). Şu anda çalışmakta olduğu işe kendi isteği ile giren katılımcıların meslekten ayrılma düşüncesi diğerlerine göre daha azdır.

Şu anda çalışmakta olduğu işi kendi isteği ile seçme durumuna göre katılımcıların memnuniyet puanları arasında anlamlı bir farklılığın olup olmadığı bağımsız iki örneklem t-testi ile araştırıldı. Ölçek puanının normal dağılım varsayımı Kolmogorov-Smirnov testi ile araştırıldı. Şu anda çalışmakta olduğu işi kendi isteği ile seçme durumuna sırasıyla evet ve hayır diye cevap verenlerin ölçek ortalaması dağılımının normal dağılım varsayımını sağladığı görülmüştür (sırasıyla, p-değeri=0,058, p-değeri=0,2).

İki grubun memnuniyet puanlarının varyanslarının eşit olduğu varsayımının yapılabileceği Levene testi ile görüldü (F-hesap=0,012, p-değeri=0,915). Memnuniyet puanları arasında önemli derecede farklılık olduğu görüldü (t-hesap=3,795, p-değeri=0,0001). "şu anda çalışmakta olduğu işe kendi isteğiniz ile mi girdiniz?" sorusuna "evet" cevabı veren 205 katılımcının ölçek ortalaması= 3,2239, "hayır" cevabı veren 12 katılımcının ölçek ortalaması= 2,2500 hesaplandı. Şu anda çalıştıkları işe kendi isteği ile giren katılımcıların daha çok olduğu ve işinden daha memnun çalıştığı görüldü.

Katılımcıların Çizelge 1.1'de yer alan maddelere verdikleri cevaplara göre oluşturulan içsel memnuniyet değerlerinin ortalaması ve dışsal memnuniyet değerlerinin ortalaması eşleştirilmiş t-test ile araştırılmıştır. Katılımcıların içsel memnuniyet puanı ve dışsal memnuniyet puanı ortalamaları arasında istatistiksel olarak anlamlı bir farklılık bulunmuştur (t-hesap=7,636, p-değeri=0,00001). İçsel faktör ortalaması=3,269, dışsal faktör ortalaması=3,024olarak hesaplanan çalışmamızda, katılımcıların içsel memnuniyet puanlarının, dışsal memnuniyet puanlarından fazla olduğu tespit edilmiştir.

Ölçeğin iç tutarlılığı için Cronbach alfası hesaplanmıştır. Uygulanan Minnesota İş Memnuniyet Ölçeği toplam puanının güvenilirlik katsayısı 0.953, içsel faktör puanının güvenilirlik katsayısı 0.930 ve dışsal faktör puanının güvenilirlik katsayısı 0.887 bulunmuştur. Ölçeğin yüksek güvenilirlikte olduğu görülmüştür (Özdamar, 2002).

3. SONUÇLAR VE ÖNERİLER

Bu çalışmada istatistiksel veri analizi ile denetimli serbestlik müdürlüklerinde görev yapan personelin memnuniyeti araştırılmıştır. Ankete katılan personelin meslekten ayrılmayı düşünme durumunun, kişisel bilgi formunda yer alan diğer değişkenlerle ilişkisi incelenmiştir. Personelin meslekten ayrılmayı düşünme durumu ile toplam çalışma süresi ve işe kendi isteği ile girme durumu değişkenleri arasında ilişki olduğu tespit edildi. Toplam çalışma süresi daha çok olan personelin işten ayrılma düşüncesinin daha az olduğu ve işe kendi isteği ile giren personelin işten ayrılma düşüncesinin daha az olduğu görüldü. Ayrıca personelin memnuniyet kavramının olumlu artış sağlamasında içsel faktörlerin dışsal faktörlerden daha etkili olduğu tespit edildi.

Örneklem hacmi büyüdükçe yapılan istatistiksel analizlerden elde edilen sonuçların geçerliliği artacağı (daha evrensel olacağı) için diğer denetimli serbestlik müdürlüklerine de ilgili anketin yapılması ve katılım için personelin teşvik edilmesi önerilir.

Denetimli serbestlik müdürlüklerinde görev yapan personelin memnuniyet kavramının olumlu artış sağlamasında içsel faktörlerin dışsal faktörlerden daha etkili olduğu tespit edilmiştir. Bu çalışmanın devamında veriler doğrulayıcı faktör analizi ile modellenecektir.

Bu sayede merkezde ve teşkilatta denetimli serbestlik hizmetlerinin yürütülmesinde iş memnuniyetini açıklayan değişkenler tespit edilerek görevlerinin ifasında yüksek motivasyon için öneriler geliştirilecektir.

KAYNAKÇA

1- Baycan, A. (1985). Analysis of Several Aspects of Job Satisfaction Between Different Occupational Groups, Yayımlanmamış Yüksek Lisans Tezi, Boğaziçi Üniversitesi Sosyal Bilimler Enstitüsü: İstanbul.
2- Denetimli Serbestlik Hizmetleri Yönetmeliği (2021). Resmi Gazete Sayı:31655. https://www.resmigazete.gov.tr/eskiler/2021/11/20211110-1.htm Erişim Tarihi: 10.11.2021.
3- Gedik, C. (2011). Ceza ve İnfaz Kurumlarında Görev Yapan İnfaz ve Koruma Memurlarının İnsan Haklarına Bakışı, Yayınlanmamış Yüksek Lisans Tezi, Maltepe Üniversitesi, İstanbul.
4- Izgar, H. (2003). İş Doyumu, Endüstri ve örgüt psikolojisi, Eğitim Kitabevi Yayınları, Konya.
5- Kurt, M. (2007). Cezaların İnfazı ve Ceza İnfaz Kurumlarının Sorunları, Ankara:Adalet Yayınevi.
6- Minnesota İş Tatmini Ölçeği (1985). Türkiye Ölçme Araçları Dizini. https://toad.halileksi.net/olcek/minnesota-is-tatmini-olcegi / Erişim Tarihi: 12.10.2021.
7- Oshagbemi, T. (1996). Job Satisfaction of Uk Academicans. Educational Management and Administration.
8- Özdamar, K. (2002). Paket Programlarla İstatistiksel Veri Analizi-1, 4. Baskı. Eskişehir: Kaan Kitabevi.
9- Özsoy, E., Uslu, O., Karakiraz, A. ve Aras, M. (2021). İş Tatmininin Ölçümünde Ölçek Kullanımı: Lisansüstü Tezleri Üzerinden Bir İnceleme. İşletme Araştırmaları Dergisi.
10- Telman, N., Ünsal, P. (2004). Çalışan Memnuniyeti, Epsilon, İstanbul.
11- Tuncer, G. (2011). Denetimli Serbestlik ve Yardım Merkezleri ile Koruma Kurulları Şube Müdürlüğünde Görev Yapan Personelin İş Doyumunun Ölçümlenmesi, Yüksek Lisans Tezi, İstanbul Aydın Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.
12- Weiss, D. J., Dawis, R. V. England, G. W. and Lofquist, L. H. (1967). Manual For The Minnesota Satisfaction Questionnaire, No.22, Minnesota Studies In Vocational Rehabilition, Minneapolis: University Of Minnesota, Industrial Relations Center.

PERFORMANCE ANALYSIS OF PSO BASED PI CONTROLLER OF DC MOTOR

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ABSTRACT

In this paper we analyze the performance of two methods for PI controller parameter tuning namely Ziegler-Nichols (ZN) and Particle Swarm Optimization (PSO). As a performance metric, we use total absolute error calculated by subtracting real value from reference value. As a test bed, DC motor speed control framework is used to test and evaluate the performance results. Simulations are done using Python programming language. Mathematical model of DC motor and realistic parameters are given in corresponding section. Underlying theory of ZN and PSO is explained in corresponding section. ZN is the primary method used in tuning PI controllers known for a long time. PSO is relatively new but promising algorithm to be used in controller design. The performance metric is plotted against parameters of PI parameters, namely Kp and Ki using a performance graph. High performance regions of both methods are compared and comments are made to support the results. Further study on real systems are planned and given in the concluding section.

Keywords: Particle swarm optimization, Ziegler-Nichols, DC motor control, performance analysis.

INTRODUCTION

DC motor is a widely used electrical machine in industry, consumer electronics, robotics, etc. Speed control of DC motor is essential for various applications demanding smooth and precise control. Ziegler-Nichols (ZN) is an old and well studied technique to tune parameters of PID controllers. On the other hand Particle Swarm Optimization (PSO) is a relatively new technique giving promising results on various control applications (B. Gökçe et. al., 2021), (G. Sonugür et. al., 2021), (C. O. Gökçe et. al., 2022).

In this study PI controller is used to control speed of a DC motor with realistic parameters. The mathematical model of DC model is obtained using Kirchhoff's Laws for electrical part and Newton's Second Law of Motion for mechanical part.

Mathematical model of electrical part is:

$$V_a = R_a i_a + L_a \frac{di_a}{dt} + e_b \tag{1}$$

Wire moving in a magnetic field will have reverse inductive voltage:

$$e_b = K_b w \tag{2}$$

Wire with current in a magnetic field will feel force on it:

$$T_m = K_m i_a \tag{3}$$

Mechanical part can be modeled using Newton's second law:

$$T_m - T_d = J\frac{dw}{dt} + bw \quad (4)$$

PI controller is used as controller. Error signal is shown as e and the output of the controller will be:

$$V_a = K_p e + K_i \int e dt + K_d \frac{de}{dt} \quad (5)$$

where Kd parameter is set to zero.

MATERIALS AND METHODS

For optimization problems that are hard or impossible to be solved with analytical methods, PSO is a promising alternative. PSO is based on searching the parameter space by incorporating information among searching particles. At each iteration, particle's new position is updated by information fusion of three different sources, namely current momentum of the particle, best position of the particle and best position of all particles. PSO is used in this study to find optimal parameters of PI controller, namely Kp and Ki.

Also, performance analysis of a broad parameter subspace is done using standard search methods. Performance metric is calculated using total of absolute error which is difference between reference and measured speeds.

RESULTS

Results for various disturbance amplitudes are given in figures below:

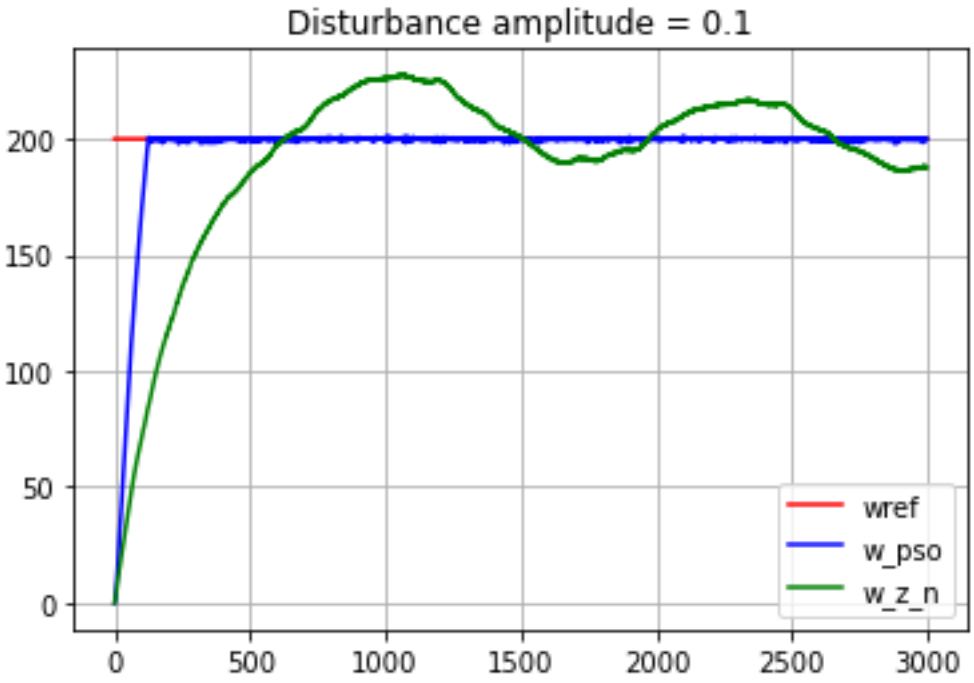

Figure 1 Step response under sinusoidal disturbance of amplitude 0.1

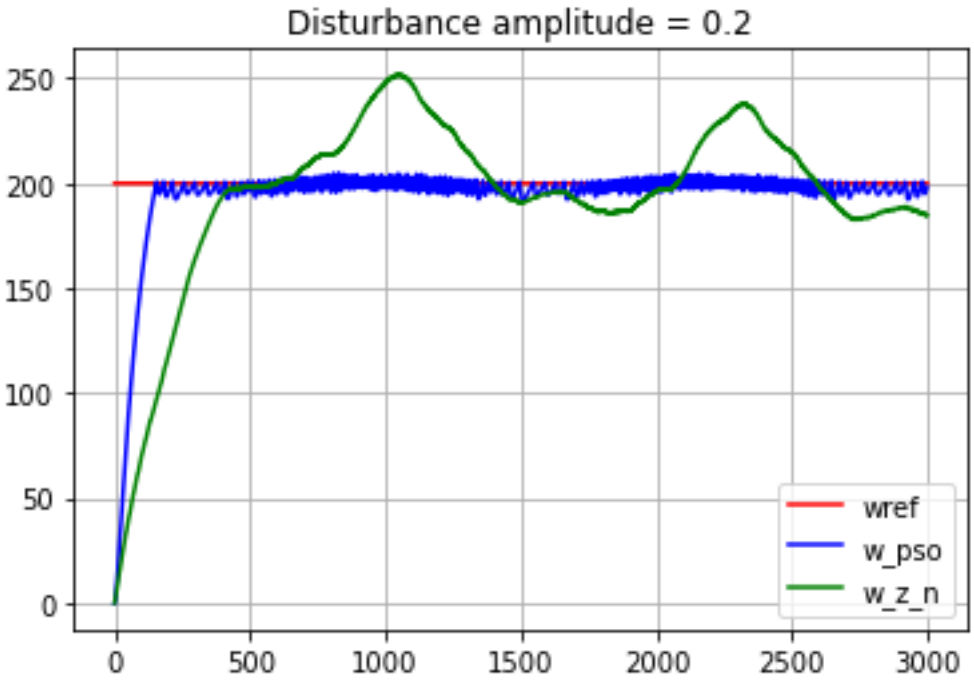

Figure 2 Step response under sinusoidal disturbance of amplitude 0.2

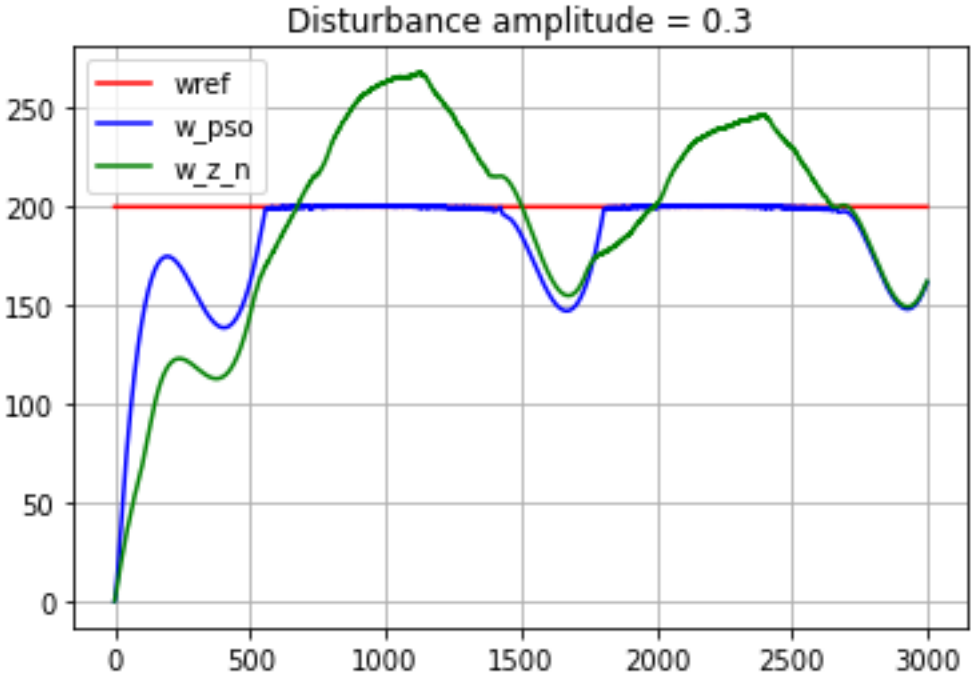

Figure 3 Step response under sinusoidal disturbance of amplitude 0.3

Performance regions for wide parameter subspace is given in the figure below:

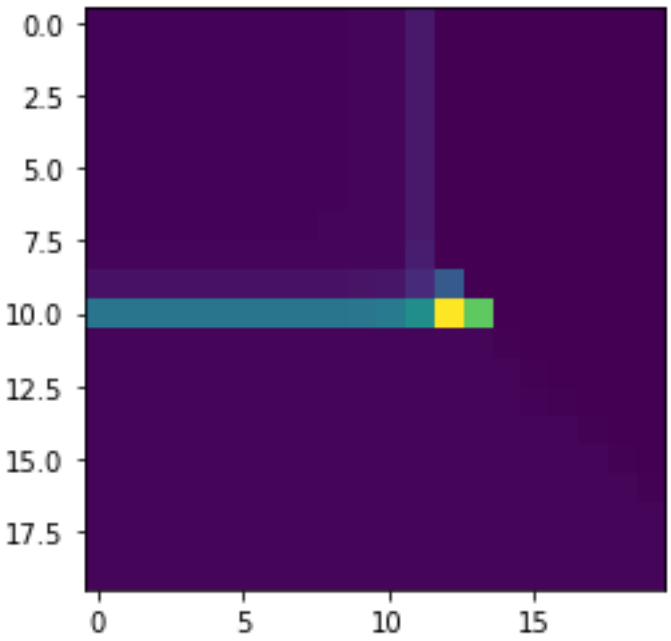

Figure 4 Performance regions for relatively broad parameter subspace

DISCUSSION

Performance analysis shows that high performance region is quite restricted. While PSO found parameters fall within high performance region, ZN found parameters show clearly lower performance and are outside this high performance region. Results can be extended to PID controller parameters but performance graph is harder to show in 3D space. Compared with previous work on PID controllers, PI controller still gives acceptable performance despite lack of derivative term.

CONCLUSION

Performance analysis in a broad parameter space is done and a relatively narrow region of high performance is found for PI controller of DC motor speed control. Similar analysis can be done for 3D space of PID controller but it is harder to visualize the results. PSO tuned controller clearly has higher performance than ZN tuned one and it is promising to use PSO tuned controllers in other platforms.

REFERENCES

B. Gökçe, Y. B. Koca, Y. Aslan, C. O. Gökçe, (2021). Particle Swarm Optimization-Based Optimal PID Control Of An Agricultural Mobile Robot, Comptes rendus de l'Acad´emie bulgare des Sciences.

C. O. Gökçe, V. Durusu, R. Ünal, (2022). Farklı Yük Çeşitleri İçin Parçacık Sürü Optimizasyonu ve Ziegler-Nichols Metodunun DC Motor Hız Kontrolü Probleminde Karşılaştırılması, European Journal of Science and Technology.

G. Sonugür, C. O. Gökçe, Y. B. Koca, Ş. S. İnci, Z. Keleş, (2021). Particle Swarm Optimization Based Optimal PID Controller for Quadcopters, Comptes rendus de l'Acad´emie bulgare des Sciences.

DENİZ HUKUKU ÖZELİNDE KITA SAHANLIĞI SORUNU: YUNANİSTAN - TÜRKİYE ÖRNEĞİ

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ÖZET

Yunanistan – Türkiye kadim iki komşu olmasına rağmen, özellikle son 20 yıldır ilişkiler sorunlu ilerlemiş ve Ege Denizi meselesi bir türlü çözüme kavuşmamıştır. Bu konuda uzun süre mesai harcandığından Literatürde geniş bir araştırma yer almaktadır. Ancak iki ülke arasında ki anlaşmazlık ve sorunlu ilişkiler sürekli olarak gündemde bulunmaktadır.

Bu çalışma; Deniz hukuku özelinde kıta sahanlığı sorunu üzerine yoğunlaşacak, Türkiye ve Yunanistan arasında Ege Denizi'nde gerçekleşen bu sorunun sebebini ve ilerleyişini ayrıntılı olarak aktarmaya çalışacaktır. İki ülke arasında gerçekleşen söz konusu sorun henüz bir çözüme kavuşamamıştır. Aksine gündemde yerini her zaman korumaktadır. Her iki ülke de kendi haklarını korumak için elinden geleni yapmaktadır ve gerginlik her geçen gün artmaktadır. Bu bağlamda; Deniz hukukunun meseleye bakışı ve çözüm argümanları incelenecektir. Çalışma, yakın tarihte gerçekleşen örnek kıta sahanlığı sorunlarına üretilen çözüm yöntemleri ile desteklenecektir.

Bunun öncesinde kıta sahanlığı teriminin ne anlama geldiği belirtilmelidir. Elbette ki kıta sahanlığı kavramını incelerken söz konusu kavramın gelişimi, hukuksal rejimi ve sınırlandırılması ele alınmalıdır. Doğru bir analiz yapmak ve konuyu anlamlandırmak için böyle bir gidişat önemli rol oynamaktadır.

Anahtar Kelimeler: Deniz Hukuku, Kıta Sahanlığı, Ege Denizi, Türkiye, Yunanistan.

THE CONTINENTAL SHELF PROBLEM IN THE LAW OF THE MARITIME: THE CASE OF GREECE- TURKEY

ABSTRACT

Although Greece and Turkey are two ancient neighbors, relations have been problematic, especially in the last 20 years and the Aegean Sea issue has not been resolved. There is a large amount of research in the literature since long hours are spent on this subject. However, the conflict and problematic relations between the two countries are constantly on the agenda.

This work; will focus on the continental shelf issue, in particular on maritime law, and will try to convey in detail the cause and progress of this problem in the Aegean Sea between Turkey and Greece. The problem between the two countries has not yet been resolved. On the contrary, it always maintains its place on the agenda. Both countries are doing their best to protect their rights and tensions are increasing day by day. In this context; The view of the maritime law to the issue and the solution arguments will be examined. The study will be supported by the solution methods produced for the exemplary continental shelf problems that took place in the recent past.

Before this, it should be stated what the term continental shelf means. Of course, when examining the concept of the continental shelf, the development, legal regime, and limitation of the concept in question should be discussed. Such a trend plays an important role in making a correct analysis and making sense of the subject.

Keywords: Law of the Sea, Continental Shelf, Aegean Sea, Turkey, Greece.

1.GİRİŞ:

1.1 Kavram

Kıta sahanlığı terimi ilk kez 1945 tarihli Truman Bildirisinde kullanılmıştır. Kıta sahanlığı, kıyı devletinin kara ülkesinin deniz altında süren uzantısıdır. Kıta sahanlığı, deniz yatağının 200 m. derinliğine kadar olan bölgeyi kapsamaktadır. (Yaycı, 2019)

Kıta sahanlığı hakkında ikinci aşama 1958 Cenevre Deniz Hukuku Konferansı ile gerçekleşmiştir. (Gündüz, 2000) Bu konferans ışığında bazı andlaşmalar vücut bulmuş ve bu andlaşmalardan birisi ise Kıta Sahanlığı Sözleşmesi olmuştur. Söz konusu sözleşmede, adaların da kıta sahanlığının olacağı, bir kıyı devletinin kıta sahanlığının dış sınırının farklı iki ayrı ölçüte göre saptanabileceği belirtilmiştir. Bu iki ölçüt şunlardır;

a. 200 metre derinlik ölçütü
b. 200 metre derinlikten sonra bu bölge işletilebiliyorsa, işletebilme ölçütü

Kıta sahanlığı kavramının bir diğer aşamasına gelecek olursak bu aşamayı Uluslararası Adalet Divanı'nın 20.02.1969 tarihli Kuzey Denizi Kıta Sahanlığı Davaları kararı oluşturur. Dava konusunu oluşturan olay, Danimarka, Hollanda ve Federal Almanya Cumhuriyeti arasındaki Kuzey Denizi kıta sahanlığının sınırlandırılmasıdır. (www.uluslararasihukukcalismalari.com, 2017) Taraflar kendi aralarında bu sınırı gerçekleştirememiş ve sorunu Adalet Divanı'na taşımışlardır. Adalet Divanı verdiği kararda kıyı devletinin ülkesinin deniz altındaki doğal uzantısının kıta sahanlığı kavramının temel ilkesi olduğunu belirtmiştir ve kıta sahanlığının sınırlandırılmasında uygulanması gereken teamül kuralının hakça ilkeler olduğunu bildirmiştir.

Kıta Sahanlığı kavramının en son düzenleme aşaması ise 1982 tarihli Birleşmiş Milletler Deniz Hukuku Sözleşmesi'nde (BMDH) yapılmıştır.

1.2 Hukuksal Rejim

Kıta sahanlığı kavramının hukuki anlamda ilk tanımı 1958 Cenevre Kıta Sahanlığı Sözleşmesinde yapılmıştır. Fakat bu tanım zamanla yetersiz gelmeye başlamış, 1982 Birleşmiş Milletler Deniz Hukuku Sözleşmesinde tekrar tartışma konusu olmuştur. (Gündüz, 2000) Özellikle Kıta Sahanlığı ve Münhasır Ekonomik Bölge (MEB) kavramlarının birbirinden ayrı iki farklı kavram olmasının yanı sıra hukuki gereksinimlerinin iç içe karışmış olması da sorunların çözülmesinin önünde durmaktadır.

1958 Cenevre Kıta Sahanlığı Sözleşmesi ve 1982 Deniz Hukuku Sözleşmesi arasındaki farklılıklar önemli olmakla birlikte, her ikisi de deniz yetki alanlarının sınırlandırması faaliyetinin temel taşı olan "sınırlandırmanın 'anlaşma' ile olması" yönündeki kurala dayanmaktadır. (Gündüz, 1958 Cenevre Kıta Sahanlığı Sözleşmesi Md. 6, 1994)

Diğer yandan "hakkaniyet" ilkesi doğrultusunda asıl istenilen taraflar arasında çözüm ve sonuç olduğundan Uluslararası mahkemeler hakkaniyete uygun çözüm yöntemi olarak bir takım prensipler belirlemiştir.

Söz konusu sözleşmeler kıta sahanlığı üzerinde kıyı devletlerinin egemenlik hakları olduğunu bildirmektedir. Kıyı devletinin kıta sahanlığı üzerindeki bir diğer özelliği ise bu hakların münhasır olarak bu kıyı devletine ait olmasıdır. Elbet de kıyı devletinin sahip olduğu bu haklar yalnızca doğal kaynaklardan yararlanılması amacını kapsar. Bunlar: Madenler ve öteki cansız kaynaklar ve deniz yatağı ve toprak altı ile sürekli fiziksel dokunma durumunda bulunan canlılardır.

1.3 Sınırlandırılması

Kıta sahanlığının sınırlandırılması sorunu üzerinde çok tartışılan bir sorun haline gelmiştir. Kıyı devletlerinin su altı teknolojilerinin gelişmesine bağlı olarak doğal kaynakların zenginliklerini keşfetmesi daha geniş denizalanı talep etmelerine ve kıta sahanlığı üzerinde haklar iddia etmelerine sebep olmuştur. Bu durum devletlerin ve deniz hukukçularının ayrılmalar yaşamasına ve zaman zaman krizler ortaya çıkmasına neden olmuştur.

Deniz alanlarının sınırlandırılması meselesinin öncesinde deniz yetki alanı ilanı ve deniz yetki alanı sınırlandırılması kavramları arasındaki farkı belirtmek gerekmektedir. "Deniz yetki alanı ilanı" ifadesi, diğer bir komşu devletle bağlantısı olmayan bir deniz alanında kıyı devletinin karasuları, bitişik bölge veya münhasır ekonomik bölgesinin dış sınırını tek taraflı olarak ilan etmesi anlamına gelmektedir. (DOĞRU)

Buna karşın, "deniz yetki alanı sınırlandırılması" ise, iki veya daha fazla devletin, sahip oldukları ya da ilan ettikleri deniz yetki alanlarının çakıştığı bölgedeki deniz alanının bir anlaşma ile sınırlandırılmasıdır. (Caflisch, 1991)

Deniz alanlarının sınırlandırılması, kodifikasyon (yayımlanan mevzuatın derlenip toplanması) süreci kapsamında uluslararası sözleşme hükümlerine yansıyan hukuk kuralları ile UAD ve diğer hakem mahkemelerinin kararları doğrultusunda gelişen örf ve adet hukuku kuralları çerçevesinde yapılmaktadır. Deniz sınır uyuşmazlıklarının devletlerarasında gerçekleştirilen görüşmeler sonucunda imzalanan anlaşmalarla yapıldığı dikkate alındığında, devlet uygulamalarının da bu hukukun gelişimine büyük katkısı olduğu belirtilmektedir. Bu çerçevede, "Denizlerin Anayasası" olarak adlandırılan 1958 Cenevre Sözleşmeleri ile 1982 Deniz Hukuku Sözleşmesi deniz alanlarının sınırlandırılmasına ilişkin genel prensipleri belirleyen sözleşmelerdir. (CHURCHİLL, 1999)

Bir denizalanı sınırlandırırken üç tür sınır saptanmalıdır. Bu sınırlar: iç sınır, dış ön sınır ve yan sınırdır. Kıta sahanlığının iç sınırı devletin karasularının bittiği çizgidir. Komşu kıyıdaş devletlerinin olduğu durumlarda ise kıta sahanlığının dış ön sınırı ve yan sınırının saptanması gerekmektedir.

Kıyıdaş devletlerin kıta sahanlığının sınırlandırılmasını anlaşma yoluyla, uluslararası hukuka uygun olarak ve hakça bir sonuca varılacak şekilde gerçekleştirme zorunluluğu vardır.

2. Türkiye ile Yunanistan Sorunu

Türk – Yunan ilişkileri tarihin her döneminde iki devlet içinde oldukça zaruri ve önemli olmuştur. Bu iki komşu ülke yaklaşık on yüzyıldan beri komşudur. Fakat bağımsızlık mücadelesinde birbirine karşı böylesi sorunlu ilişkilerde olan başka iki ülke yoktur. Ege'nin ve Doğu Akdeniz'in jeopolitik ve jeostratejik öneminin yanı sıra, sahip olduğu düşünülen yüksek enerji potansiyeli; doğal olarak kaynakların ve dolayısıyla denizlerin paylaşımı mücadelesini de beraberinde getirmiştir.

Ege denizi sorunu ise iki ülkeyi pek çok defa sıcak çatışma sınırına getiren bir sorun olmuştur. 1973 yılında müzakereleri başlamış olup 1982 yılında imzalanan Birleşmiş Milletler Deniz Hukuku Sözleşmesi'ni Yunanistan kendi çıkarları üzerine yorumlamış ve tamamen her şeyi kendi lehine çevirme yoluna girmiştir. Özellikle Güney Kıbrıs Rum Yönetimi (GKRY) ile birlikte Yunanistan, bölgede "oldu bittiler" yaratarak uluslararası hukuk kurallarına aykırı deniz yetki alanları belirlemekte, diğer kıyı devletleri ile sınırlandırma anlaşmaları yapmaktadır. Yunanistan Ege'deki karasularını 6 milden 12 mile çıkartmak istemiş ve Türkiye'nin aleyhine bir durum ortaya koymuştur. Bu istek ciddi sorunları ortaya çıkarmıştır. Türkiye, Ege Denizi'nin büyük bir kısmını Yunan karasuları haline getirecek olan 12 mil isteğini asla kabul etmeyeceğini ve bunu savaş sebebi (casus belli) sayacağını söylemiştir.

Türkiye ve Yunanistan, bu anlaşmazlıkla birlikte kıta sahanlığını nasıl paylaşacakları konusunda da birbirleri ile çelişmişlerdir. Yunanistan, adaların da kıta sahanlığının bulunması gerektiğini dile getirmekte bu tezini savunmakta olup, Türkiye ise Ege kıta sahanlığını Anadolu kıtasının denizdeki devamı olduğu görüşünden yola çıkarak 'doğal uzantı' tezini savunmaktadır. Ayrıca kıta sahanlığının iki ülke kıtaları arasında ortay çizgi ile paylaşılması gerektiğini söylemektedir.

2.1. Örnek Kıta Sahanlığı Çözümleri

Kıta sahanlığı ve münhasır ekonomik bölge kavramlarının asıl varlık sebebinin bu doğal kaynaklar üzerinde kıyı devletine münhasır haklar sağlamak olduğundan, ilgili durumlardan biri de ekonomik faktörler ve bu bağlamda doğal kaynaklardır. Bu doğrultuda doğal kaynaklar taraf ülkeler açısından son derece önemlidir.

-Grönland - Jan Mayen davasında, balıkçılık bölgesinin sınırlandırılmasında mahkeme 'ortay hattı' ekonomik faktörü dikkate alarak düzeltmiştir. (DOĞRU, DENIZ ALANLARININ)

- 1958 Bahreyn- Suudi Arabistan Anlaşması ile belirlenen sınır çizgisi petrol alanını ile çakışacak şekilde çizilmiştir. (DOĞRU, DENIZ ALANLARININ)

- 1988 İsveç-eski SSCB Anlaşması balıkçılık alanı konusuna tipik bir örnek teşkil etmektedir. (DOĞRU, DENIZ ALANLARININ)

Bölgedeki mevcut doğal kaynakları ağır bir biçimde orantısız paylaştıran bir sınırlandırma çizgisi hakkaniyete uygun bir sınır olarak kabul edilemeyecektir. Dolayısıyla tarafların hakkaniyetli olması ilkesi uluslararası hukuk kurallarının tamamlayıcısı niteliğindedir.

3. Türkiye - Yunanistan Kıta Sahanlığı Tartışmasına Çözüm

İki komşu ülke arasında asla çözüme kavuşamayan söz konusu sorun tekrar gündemde bulunmaktadır. 2022'de görev süresi devam etmekte olan Yunanistan Dışişleri Bakanı Dendias, Türkiye'nin görevi devam etmekte olan Oslo Büyükelçisi Fazlı Çorman ile katılmış olduğu konferansta 1976 yılında Ankara'nın almış olduğu 'casus belli' kararını hukuk dışı bulduğunu dile getirdi. Türk Büyükelçi Çorman ise, "TBMM'nin bu 'casus belli' ilanının nedeni Yunanistan'ın tek taraflı olarak karasularını 12 mile çıkaracağını açıklamasıydı. Bunun yapılması Türk sularını ve Türkiye'nin uluslararası sulara ulaşma imkanını fiilen kilitleyecek ve Türkiye, kendi karasularına sıkıştırılacaktı. Dayatmaya çalıştığınız şey bu." İfadelerini kullandı. Dendias cevap olarak, güç kullanma tehdidinin BM kararlarına aykırı olduğunu söyleyerek, "Gerçek şu ki Yunanistan ile Türkiye arasındaki farklılık çözülebilir. Tek bir ön şartla: Türkiye'nin 21. yüzyıla gelmesi. Türkiye 19. yüzyılda kalırsa, Kanuni Sultan Süleyman'ın Akdeniz'de armada bulundurarak ilişki yürüttüğü dönemde kalmayı sürdürürse ilerleyemeyiz" söyleminde bulundu. Bu durum bize gösteriyor ki iki ülke arasında 1973'den beridir süregelen söz konusu sorun halen devam etmekte ve uzun bir süre de devam edecek gibi gözükmektedir. Her iki ülkenin de kendi çıkarları dahilinde olaya bakması sorunun çözülmesinin önündeki engel olarak ön plana çıkmaktadır.

GKRY ile Yunanistan'ın deniz yetki alanlarının paylaşımına dair birlikteliği ve 27 Kasım 2019 tarihinde Türkiye ve Libya Ulusal Mutabakat Hükümeti (UMH) arasında, iki devletin Akdeniz'deki deniz yetki alanları arasındaki sınırı belirlemek amacıyla bir Mutabakat Muhtırası imzalanmış olması bu sürecin bölgesel ittifaklar ile şekillenmeye devam edeceğini göstermektedir. Genel kapsamda incelendiğinde Uluslararası Hukuk sistemi bu tür sorunların çözülmesinde tam anlamıyla yeterli olamamaktadır. Uluslararası örgütler ise çatışmaların genel kapsamda taraflar tarafından çözülmesi için fırsat verdiğini iddia etmekte ve müdahalelerinde yetersiz kalmaktadır.

Yunanistan ve GKRY halen Doğu Akdeniz'de İsrail ve Mısır ile de işbirliği içinde girişimlerine devam etmektedir. Yunanistan'ın bölgede Türkiye'yi saf dışı bırakmak üzere İsrail, GKRY ve Mısır ile birlikte oluşturdukları "EASTMED" projesinin başarısız olmasıyla birlikte Mart 2022'de İsrail Cumhurbaşkanı Isaac Herzog ve akabinde Yunanistan Başbakanı Kiryakos Miçotakis Türkiye'ye gelmişlerdir. Bölgesel bir sorun söz konusu olduğundan sorunun çözümü ancak bölge aktörlerinin sağduyulu, hakkaniyetli beklentiler ile diyalog kurmasıyla mümkündür. Yunanistan Başbakanı Miçotakis'in ziyareti yeni bir iyileşme sürecini başlatabilme ihtimali olan önemli bir girişimdir. Doğu Akdeniz'in diğer bir aktörü İsrail'in de Türkiye ile ilişkileri düzeltme girişimleri doğrultusunda bölgede oluşabilecek olası bir ittifak Ege'de ve Doğu Akdeniz'de birçok sorunun ortadan kalkmasını sağlayacaktır. Türkiye'nin öncelikle tüm kıyıdaş devletler ile uluslararası hukuk kuralları çerçevesinde ikili ve çoklu anlaşmalar imzalaması gerektiği çok açıktır. Libya ile yapılan söz konusu anlaşma İsrail, Mısır, Yunanistan ile de yapılabilir ise bölgede istikrar sağlanacaktır. Diğer yandan, egemen bir devlet olan KKTC'nin de aynı şekilde gerek münhasır ekonomik bölge ilan etme ve gerekse sınırlandırma antlaşmaları akdetme yönünde girişimler başlatarak, Suriye, Lübnan, İsrail ve Mısır ile deniz yetki alanları sınırlandırması anlaşması yapması gerekmektedir.

KAYNAKÇA

-Caflisch, L. (1991). The Delimitation of Maritime Spaces between States with Opposite and. L. Caflisch içinde, *A Handbook on the Law of the Sea* (s. 426-427). Dodrecht.

-CHURCHİLL, R. L. (1999). *The Law of the Sea.* England: Manchester University Press.

-DOĞRU, S. (tarih yok). DENIZ ALANLARININ. S. DOĞRU içinde, *Yeni Deniz Güvenliği Ekosistemi ve Doğu Akdeniz* (s. 251).

-DOĞRU, S. (tarih yok). DENIZ ALANLARININ. S. DOĞRU içinde, *Yeni Deniz Güvenliği Ekosistemi ve Doğu Akdeniz* (s. 272-273).

-Gündüz, A. (1994). 1958 Cenevre Kıta Sahanlığı Sözleşmesi Md. 6. A. Gündüz içinde, *Milletlerarası Hukuk ve Milletlerarası Teşkilatlar Hakkında Temel Belgeler* (s. 256). İstanbul: 2.Baskı.

Gündüz, A. (2000). Temel Belgeler Örnek Kararlar. A. Gündüz içinde, *Milletlerarası Hukuk.* İstanbul: Betaş Yayınları.

-www.uluslararasihukukcalismalari.com. (2017). Kuzey Denizi Kıta Sahanlığı Davaları . *ULUSLARARASI HUKUK ÇALIŞMALARI.*

-Yaycı, C. (2019). Sorular ve Cevaplar ile Münhasır Ekonomik Bölge (MEB) Kavramı. C. Yaycı içinde, *Sorular ve Cevaplar ile Münhasır Ekonomik Bölge (MEB) Kavramı* (s. 6). Deniz Basımevi Müdürlüğü.

DETERMINATION OF THE OPTIMUM FLUID CHARGE RATE ACCORDING TO THE USE OF DIFFERENT WORKING FLUIDS IN MAXIMUM EFFICIENCY CONDITIONS FOR THERMOSYPHON HEAT PIPES

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ABSTRACT

Today, thermosyphon type heat pipes are used in many industry applications and the studies found in literature concerning the utilization of nanofluids in thermosyphons and several heat pipe configurations commonly focus on enhancing the heat pipe performance by a passive method. Many researchers are exposed to the question of whether the increase in the use of nanofluids in thermal applications, which has increased rapidly in recent years, causes any change in the amount of working fluid, especially for heat pipes. While investigating the heat transfer effects between the same amount of nanofluid and the base fluid, it should be at an optimum level according to the amount of heat carried by the working fluid. This study numerically investigates the optimum amount of working fluid for heat pipes comparatively for base fluid water and nanofluid. This study differs from the existing studies at this point, aiming to determine whether the amount of nanofluid used in heat pipes depends on the type of fluid used and to find out the working fluid flow rate that provides the maximum heat pipe performance. In other words, the main target of this study is to find out whether the utilization of various nanoparticles affects the working fluid flow rate by performing numerical analyses for different working fluids and different amounts of these fluids in a 1" diameter, 1 m long, 500 W thermal capacity thermosyphon type heat pipe. In order to evaluate the performance of the heat pipe, different thermal loads were analyzed using computational fluid dynamics method for different working fluids and different fluid amounts. Working fluids selected for the study are water, Al2O3/water and TiO2/water nanofluids. The temperature distribution along the heat pipe was evaluated in terms of performance of the heat pipe, thermal resistance, and total heat transfer coefficient. The amount of liquid filled was changed and the change of performance parameters for the changing liquid inventory was observed. Finally, the optimum liquid filling ratio is determined in terms of lower temperature difference and thermal resistance and higher heat transfer coefficient. Although different working fluids are used, it has been concluded that the best performance working fluid ratio should be 1/3 (33.3%) of the evaporator volume under maximum efficiency conditions.

Keywords: thermosyphon heat pipe, charge rate, nanofluid.

INTRODUCTION

The main purpose of any heat pipe is to transfer heat from the hot region to the cold region through the pipe via the fluids flowing through. As the target of enhancing heat transfer for any device will not end in a several point, it has been a popular topic throughout the researchers to enhance the heat transfer in several ways, like optimizing the design, using various fluids, etc. Utilization of nanofluids in heat pipes was born in the light of this purpose. It is known that the thermophysical properties of nanofluids are more improved than the conventional working fluids, providing enhanced heat transfer in many devices. Hence, the motivation of the presented study is to augment heat transfer and improve the heat exchanger's efficiency with the utilization of Al_2O_3 and TiO_2 nanofluids.

There are numerous numbers of studies found in literature investigating the utilization of nanofluids or any other working fluids in heat pipes. Subramaniyan et al. (2013), Moghanlou et al. (2020), Ullah et al. (2019), Jamil et al. (2020), Sözen et al. (2020), Kang et al. (2006), and Khandekar et al. (2008) conducted studies focusing on the thermal behavior of the heat pipes using nanofluids.

This numerical study aims to find out the optimum mass flow rate providing the maximum performance in a thermosyphon heat pipe using Al_2O_3 and TiO_2 nanofluids as the working fluid for evaporator powers of 300, 400 and 500 W.

MATERIALS and METHOD

The thermosyphon heat pipes contains 3 regions: evaporator, condenser, and adiabatic part. Several configurations may not have the adiabatic part. External heat flux is applied on the evaporator part, and by that the evaporation of the working fluid is provided. After the evaporator section, fluid moves through the adiabatic part, and finally it reaches to the condenser section. A jacketed heat exchanger is located on the outer part of the condenser, in which low temperature fluid moves through. With this means, the condensation of the evaporated fluid is provided and after the condensation, the fluid moves back again to the evaporator section, with the effect of gravity.

ANSYS Workbench 2020 s used throughout the whole study. The 3D geometry of the thermosyphon heat pipe is generated using ANSYS Design Manager. The diameter of the condenser inlet and outlet is 5 mm, and that of the evaporator is 25.4 mm. It is assumed that the heat pipe is of copper material. The generated geometry is presented in Figure 1.

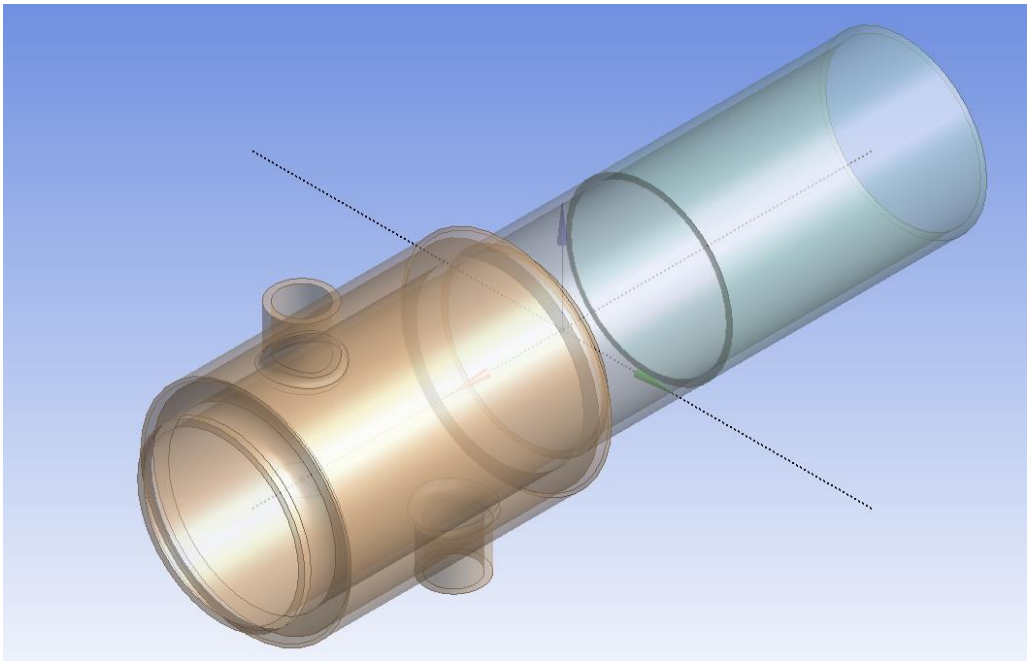


Figure 1. The 3D model of the thermosyphon heat pipe

The bottom part is the evaporator, mid-section is the adiabatic part, and the part shown in brown is the condenser. It is known that conducting a study using experimental means can be exhausting and time-consuming. With the utilization of Computational Fluid Dynamics (CFD) tools, many problems can be modeled and solved accurately, only if the model and the analysis is generated and setup correctly.

After the geometry generation has finished, the grid generation procedure is completed. The generated grid structure has a crucial effect on the accuracy of the attained results. Therefore, it is of substantial importance to create a proper mesh structure. There are several parameters to check whether the grid structure provides the required conditions or not. One should check the skewness, element quality, y+, and likewise parameters to check if there are any existing problematic regions/points in the mesh structure. In addition, a mesh independence study is conducted if the attained results are independent of the generated mesh. The number of elements is increased, and the attained efficiency values are checked. When the difference between the 2 results obtained from 2 different mesh structures are below 1%, the

mesh structure having the lower number of elements is picked up for the analyses in order to save time and computational effort. The utilized mesh structure is given in Figure 2.

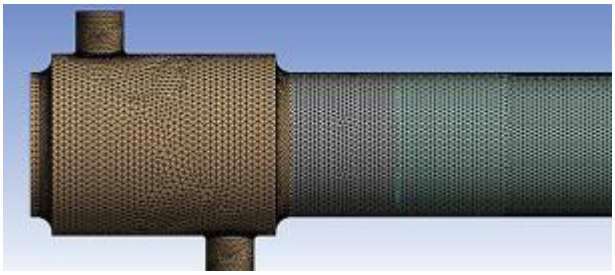


Figure 2. The mesh structure

The setting up of the cases followed the grid generation procedure. The analyses are run on ANSYS Fluent. The boundary conditions of the inlets of the evaporator and condenser are defined as velocity boundary condition, with keeping the condenser's constant, and altering the evaporator's velocity. The evaporator's velocity is calculated using the mass flow rate corresponding to 25, 32, 33, 35, and 50% of the evaporator volume. The outlets of the evaporator and condenser are chosen as pressure-outlet, being equal to atmospheric conditions. A heat flux of 300, 400, and 500 W is applied on the evaporator section and the evaporator, condenser and the adiabatic sections are defined with no-slip boundary condition. The mass flow rate of the condenser is kept constant as mentioned previously, and that of the evaporator is changed for each heat flux value.

The analyses are modeled as transient, with a time step of 0.0005 s, and multiphase. For the solution of multiphase flow Volume of Fluids (VOF) model is used. This model is able to model two or more immiscible fluids while following the volume fraction of each fluid.

The utilized nanofluids are assumed have a concentration of 2%. The thermophysical properties of the nanofluids are presented in Table 1.

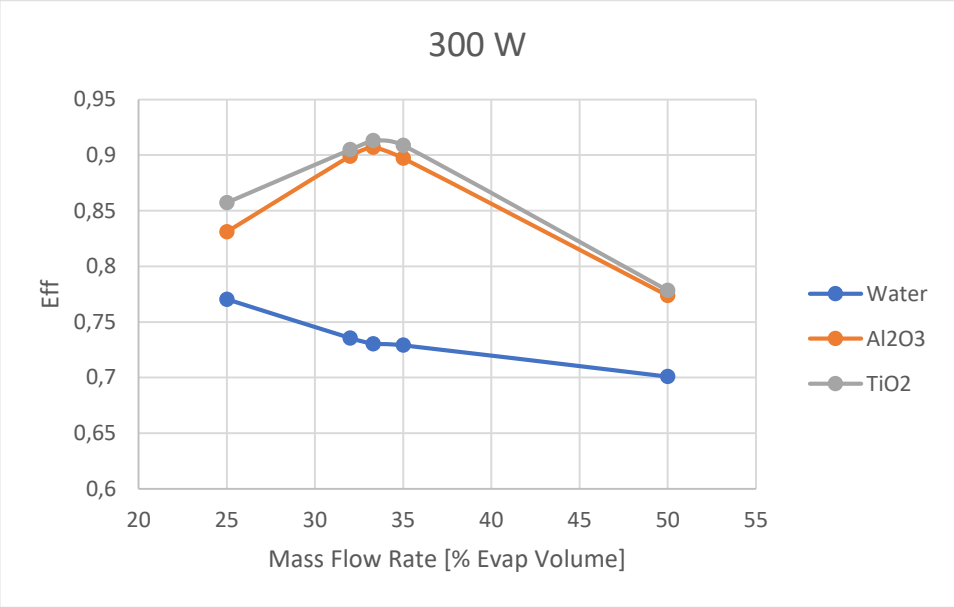
Table 1. The properties of nanofluids

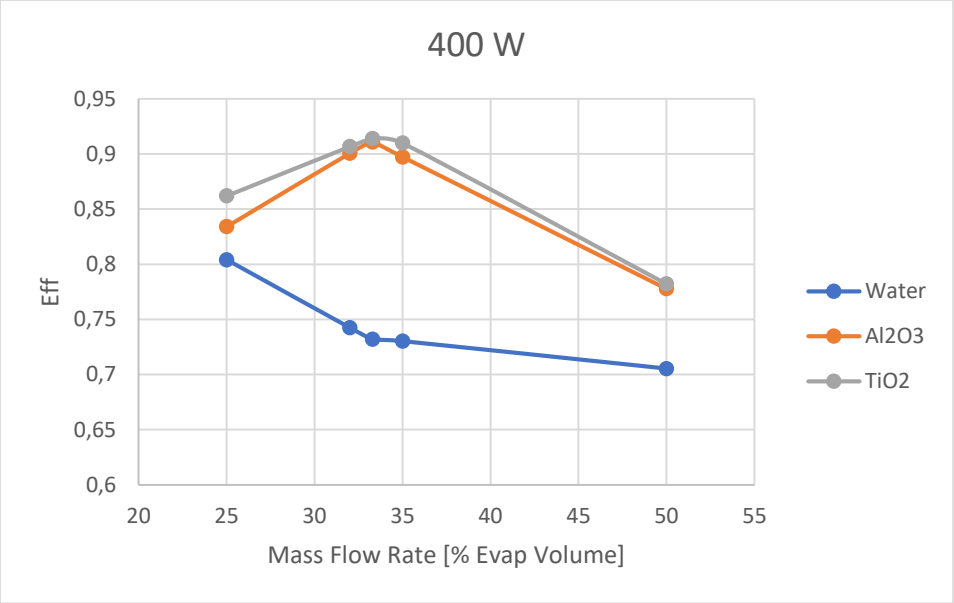
	Al_2O_3	TiO_2	Water
Density, kg/m^3	1053.69	1057.8	998
Specific heat, J/kg K	3937	3919.2	4182
Dynamic viscosity, Pa s	1.1987e-3	0.0012	0.001003
Thermal conductivity, W/m K	0.6444	0.631	0.6

The turbulence model is chosen as k-ε RNG model with enhanced wall treatment. In addition, the residuals are taken as 10^{-6} to ensure that the solution has converged.

RESULTS

The calculated efficiency values for each heater power and working fluid is presented in Figure 3 (a), (b), and (c).


300 W
0,95
0,9
0,85
0,8
0,75
0,7
0,65
0,6
Eff
20
25
30
35
40
45
50
55
Mass Flow Rate [% Evap Volume]
Water
Al2O3
TiO2


400 W
0,95
0,9
0,85
0,8
0,75
0,7
0,65
0,6
Eff
20
25
30
35
40
45
50
55
Mass Flow Rate [% Evap Volume]
Water
Al2O3
TiO2

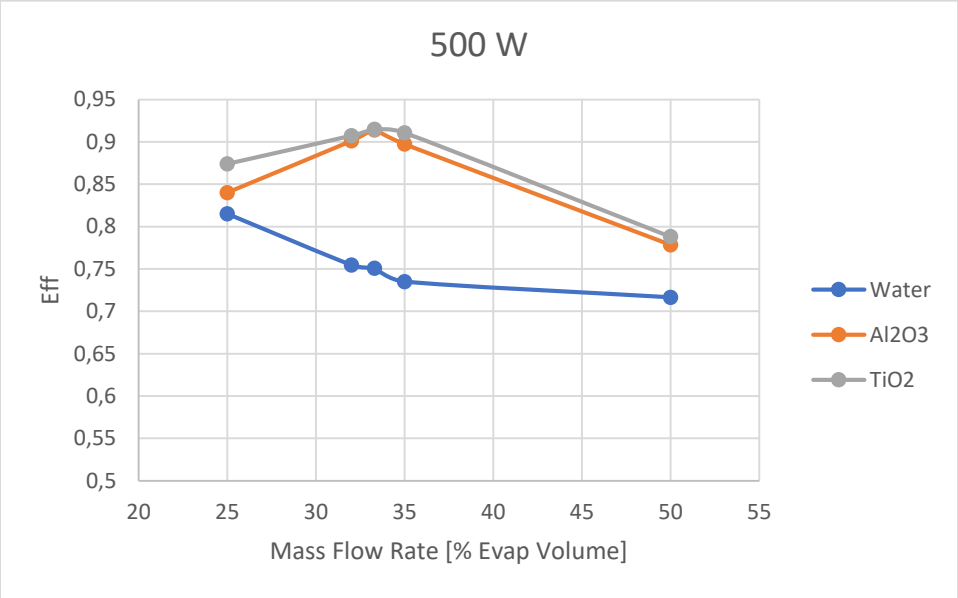


Figure 3. The heat pipe efficiency depending on the mass flow rate: (a) 300 W, (b) 400 W, (c) 500 W

It is clear from the above three figures that the utilization of TiO_2 yields the best efficiency results, whereas using water as the working fluid is the worst case in terms of efficiency. Al_2O_3 nanofluid is slightly lower than the TiO_2. Nevertheless, both nanofluids exhibit a better heat pipe efficiency than water.

Increasing the mass flow rate caused a decrement in the efficiency of the heat pipe for water. Contrarily, when using the nanofluids, the efficiency raised up to a maximum value, and then further increment caused the efficiency to decrease. This optimum mass flow rate is the one corresponding to 33% of the evaporator volume for both nanofluids. It is also seen that increasing the heater power provided the efficiency to increase slightly. For all three heater powers, all fluids kept a consistent trend.

CONCLUSION

The main purpose of this study is to determine the optimum mass flow rate and the effect of this flow rate on efficiency in a thermosyphon heat pipe when using nanofluids. The utilized nanofluids are Al_2O_3 and TiO_2 with 2% concentration. The results are summarized below.

- The optimum mass flow rate is the one corresponding to 33.3% of the evaporator, regardless of the type of nanofluid used.
- The efficiency of TiO_2/water nanofluid is slightly higher than Al_2O_3/water nanofluid. Both nanofluids yield a significantly better efficiency than water.
- When comparing the heater powers, 500 W has the maximum efficiency values.
- The improvement in efficiency with TiO_2/water nanofluid is the most significant when compared to other fluids.

REFERENCES

Jamil, M.M., Che Sidik, N.A., and Muhammad Yazid, M.N.A.W., Thermal Performance of Thermosyphon Evacuated Tube Solar Collector Using TiO2/Water Nanofluid, J. Adv. Res. Fluid Mech. Therm. Sci., vol. 20, no. 1, pp. 12–29, 2020.

Kang, S.W., Wei, W.C., Tsai, S.H., and Yang, S.Y., Experimental Investigation of Silver Nano-Fluid on Heat Pipe Thermal Performance, Appl. Therm. Eng., vol. 26, pp. 2377–2382, 2006.

Khandekar, S., Joshi, M.Y., and Mehta, B., Thermal Performance of Closed Two-Phase Thermosyphon Using Nanofluids, Int. J. Therm. Sci., vol. 47, pp. 659–667, 2008.

Moghanlou, F.S., Noorzadeh, S., Ataei, M., and Vajdi, M., Experimental Investigation of Heat Transfer and Pressure Drop in a Mini Channel Heat Sink Using Al2O3 and TiO2–Water Nanofluids, J. Braz. Soc. Mech. Sci. Eng., vol. 42, Article ID 315, 2020.

Sözen, A., Martin, K., Aytaç, İ., and Filiz, Ç., Upgrading the Performance of Heat Recovery Unit Containing Heat Pipes by Using a Hybrid (CuO + ZnO)/Water Nanofluid, Heat Transf. Res., vol. 5, no. 14, pp. 1289–1300, 2020.

Subramaniyan, A.L., Govardhanan, M.S., Lokesh, M.R., Sundarakannan, Kottaisamy, M., and Ilangovan, R., Investigation of Thermal Performance of a Copper Heat Pipe with TiO2 Nanoparticles, Int. Conf. on Advanced Nanomaterials & Emerging Engineering Technologies, Chennai, India, pp. 634–638, 2013.

Ullah, M.R., Ishtiaq, T.M., and Mamun, A.H., Heat Transfer Enhancement in Shell and Tube Heat Exchanger by Using Al2O3/Water and TiO2/Water Nanofluid, AIP Conf. Proc., vol. 2121, Article ID 070018, 2019. DOI: 10.1063/1.5115925

TRANSLATION AND LANGUAGE TEACHING

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ABSTRACT

In foreign language departments of the universities, translation courses take place; and in these courses translation is mostly seen not a means, but an aim. To broaden; in these courses the aim is to develop learner's translation skill. Although the aim of these departments is to train language teachers, the learners may have a chance to work as translators after graduation owing to the basic information and skills they get during the courses. Translation is not just a language learning technique, but it is also a professional language teaching approach in our universities' undergraduate and graduate programs. In this study, it is tried to describe that translation is not restricted to the technical training programs for future professional translators as it involves all translation courses integrated into a foreign language curriculum considering that the learners are not candidate translators. These kinds of courses enrich the foreign language program.

Keywords: translation, foreign language departments, translation courses, foreign language program, language teaching

Introduction

Translation and Language Teaching Methods

Translation and language teaching are still associated with Grammar-Translation Method due to its primary focus on translation in practicing language. Although this name is newly given, it is has been used by language teachers for many years under different names. "There was little to distinguish Grammar Translation from what had gone in foreign language classrooms for centuries beyond a focus on grammatical rules as the basis for translating from the second to the native language" (Brown, 2001: 18). The only difference was that translation of isolated sentences was also given importance in addition to texts in order for grammar learning and learners are graded according to the difficulty of these sentences. "Instead of using whole texts, the so called grammar-translation method used translation of individual sentences specially devised to exemplify certain grammatical features" (Ferreira, 1999: 356). Chastain states that "at one time it was called the Classical Method since it was first used in the teaching of the classical languages, Latin and Greek" (cited in Larsen-Freeman, 2003: 11). This shows that translation is used as an activity in language teaching long before the emergence of Grammar Translation Method.

Translation has passed through many different phases that are being shaped according to the learning and teaching aims of that age. For instance, it was used as a fundamental learning method and indispensable test technique via Grammar-Translation Method, which as Richards and Rodgers (2002) and Larsen-Freeman (2003) argue, aims to have learners read the literature of the target language. It spreaded Europe as a way to teach modern languages in the same manner as Greek and Latin were taught

[174] This study is a part of an unpublished M.A. thesis "Textlinguistics and Translation Performance: A Sample Study in Translation Courses" (2010), Trakya University, Social Sciences Institute.

and dominated language teaching until the 1940s. Stern (1983: 455) claims that "Grammar Translation is a way of studying a language that approaches the language first through detailed analysis of its grammar rules, followed by application of this knowledge to the task of translating sentences and texts into and out of the target language" (cited in Richard and Rodgers, 2002: 5). Thus, to be able to translate is one of the principles in this method because while translating learners both find the native language equivalents of the target language words and learn the grammar of these languages. During the lessons, usually reading texts are given to the learners and they are asked to translate from native to the target language or vice versa. In short, learners have a chance to practice their grammar knowledge via translation. "An important goal is for students to be able to translate each language into the other. If students can translate from one language into another, they are considered successful language learners" (Larsen-Freeman, 2003: 15).

Although translation had been primarily used in language teaching for long years, it lost its importance considering the language teaching theories developed through the late of the 20th century. The primary reason of this is that translation was regarded as a technique that hinders communication due to merely focusing on structure and emphasizing grammatical construction of the language. While Grammar-Translation Method was the most popular language teaching method, translation exercises, particularly, translating isolated sentences, independent from the context, into and out of the target language resulted in neglecting meaning, only for the purpose of understanding and manipulating the morphology and syntax of the language. "The use of isolated sentences in translation exercises was thought to lead to 'cross associations' between the two languages, thus hindering the development of the foreign language" (Ferreira, 1999:356). Therefore, Grammar Translation Method has many defects and the primary defect source from the overuse of grammar and translation in language teaching. Newmark (1988: 183) states that:

> *"The chief defect was that the method left little or no time for anything else-on the whole, bad grammar and bad translation were all that was thought. The result was that few people learned to speak or write or translate; a few learned to read and appreciate literature, though it was also the wrong kind of literary appreciation. Needless to say, there were exceptions."*

As mentioned, the aim of Grammar-Translation Method is to learn a language in order to read its literature, so reading and writing skills are primarily emphasized. Translation activities and native language are used in order to learn vocabulary and grammatical structure of the foreign language. On the other hand, speaking and listening skills are neglected as communicating with native are not seen as the objectives of language teaching. "In foreign language courses, translation activities do not take part adequately because when the subject is translation, traditional grammar-translation method comes to mind and using native language is found inconvenient for redounding basic communication skills on account of the fact that it is not communicative" (Köksal, 2008). In other words, after a long years study of language, it is seen that learners' fluency does not improve and they cannot communicate in L2. Considering the outcomes of Grammar Translation Method, translation was accepted as uncommunicative, boring and pointless. Colina (2002:1) claims that:

> *"Current interaction among second language acquisition (SLA), language teaching and translation studies is not an entirely positive one. Many language teachers often banish translation from their classrooms as an 'evil' of the past, a reminder of teaching methodologies found to be inadequate at best (e.g. grammar translation)."*

The problem occurs due to the method itself rather than translation because with this method, a language learner tries to learn the target language structures by memorization via doing pure translation. Therefore, the method alienates language from its communicative function due to the fact that it hinders the development of learners' self-expression abilities. Another criticism to this method is that it allows learners to make interference errors which results from using the native language. Duff (1989:7) puts forward that:

> *"The studies that have tackled commonly made criticisms (e.g. translation teaches learners about language, and doesn't really help them learn how to use it, or that it fosters the excessive use of the mother tongue) have demonstrated that these objections are justified only if translation practice amounts to the regular combination of grammar rules with translation into the target language as the principle practice technique. They have also shown that if properly designed, translation activities can be employed to enhance the four skills and develop accuracy, clarity and flexibility"* (cited in Popovic, 2001).

Translation Courses in Foreign Language Departments

Translation courses carried out in the foreign languages departments without including theoretical bases into the syllabus. Therefore, students are just asked to translate some texts from the beginning to the end of the course. However, learners may be involved in theoretical knowledge (translation theories and translation types) about translation, and then begin practicing. According to Cote (1990) in foreign language education departments, the aim of the translation courses is to acquaint learners with the fundamentals of the translation and to provide opportunity to develop their translation skill through practice. Thus, the two important parts of the translation course, namely theory and practice, should be carried out in a parallel way" (cited in Köksal, 2008).

To sum up, in foreign language departments, translation courses syllabuses should not only include translation practice, but also theory of translation since translation is more than being competent in languages. In order to do good translations, the learners should also be familiar with the theoretical knowledge about translation. If the students are inadequate in that knowledge, it is probable that they will translate without being aware of what they are doing, namely they will translate the given texts unconsciously.

Translation and Language Awareness

Owing to the use of translation in foreign language education, learners' language awareness rises. Language awareness can be defined as explicit knowledge about language, and conscious perception and sensitivity in language learning, language use and language teaching. Van Lier (1995: xi) defines it similarly as 'an understanding of the human faculty of language and its role in thinking, learning and social life' (cited in Lier, 2002: 160). In a way, it can be considered as consciousness-raising about the social aspect of language or shortly 'language understanding'. Carter (2003: 64) defines language awareness as:

> *"Language awareness refers to the development in learners of an enhanced consciousness of and sensitivity to the forms and functions of language. The approach has been developed in contexts of both second and foreign language learning, and in mother-tongue language education, where the term 'knowledge about language' has sometimes been preferred."*

Such awareness is obviously a major necessity for any foreign language learner. Translation is a cognitive process involving problem solving and decision making. This process extends from source text analysis to the production of the target language text. Therefore, the strategies learners use and decisions they make are important for genuine construction of utterance meanings in the target language. In order to translate well, learners should have both target and source language knowledge, and contrastive knowledge; thus while translating; learners' structural and vocabulary knowledge develop in both the native and the target languages.

As it is known that sentence formations and word orders of the languages are not the same; therefore while translating, learners try to form correct sentences with appropriate words and conjunctions. While searching for the appropriate word, they use monolingual and mostly bilingual dictionaries because their primary vocabulary may not be enough in some areas. For instance, while translating a law text, most of the time, they would need a dictionary to look up the law terms as they do not know or are unfamiliar with the subject. In that way, they learn the word meanings and/or possible interlinguistic correspondences, and are able to decide the best correspondences. Faber (1998) states that:

> *"As learners are aimed to learn how to extract conceptual meaning from a source text, and to base their translation on a reformulation of that meaning, not on the words or structures that codify it, they discover the connection between language and thought."*

During the lessons, for instance, the teacher may direct students to produce different structures or words while translating. In other words, she/he may ask them 'How to translate it in a different way?', and the learners may produce the same sentences by using different structures and/or words. In this way, both structural and semantic knowledge of the learners will develop and also be tested. Additionally, the learners will practice the surface structures of the native and the target languages. Moreover, due to looking at meaning, the learners, especially in the initial stages of language learning, will gain awareness that some words have multi-meanings.

Thus, contrastive knowledge, i.e. the knowledge from L1 and L2, is an important aspect of linguistic awareness that could be gained through translation. It could be simply defined as learners' transfer knowledge between the two languages. By gaining contrastive knowledge, learners develop awareness that languages have similarities and differences. For instance, they learn correspondences of the statements, idioms, patterns of meaning in the native and the target language. In translation courses, learners are aimed to gain this type of awareness as just having knowledge about the native and the target language is not always enough to be successful in translation. James & Garrett (1991b: 6) point out that:

> *"This {language awareness aimed at foreign language learners} suggests scope for a new type of Contrastive Analysis (CA), not CA of the classical sort done by linguists and then made over to textbook writers, but CA done by pupils as FL learners themselves, to gain linguistic awareness of the contrasts and similarities holding between the structures of the MT {mother tongue} and the FL"* (cited in Faber, 1998: 10).

In other words, while translation contributes to learners' structural, lexicographic and semantic knowledge, it also promotes to their contrastive knowledge, which includes pragmatic aspect of the native and the target languages because syntactic and morphological knowledge about languages are only the parts necessary for good translation. In addition to development of learners' word and grammar

knowledge of the two languages, they are aimed to learn how to construct their own definitions dependent on the context after the investigation into the meaning.

Since translation is the replacement of an original text with another text (House, 2009: 3); the learner should be aware of textlinguistics and its criteria. Thus, in translation courses, the learners should be introduced to texlinguistics and especially, Beugrande and Dressler's seven standards of textuality. In this way, learners can differentiate a text and a non-text. This might contribute to their reading and writing skills as these two skills would probably shape according to the understanding of this concept.

Another important point is that, doing translation let the learners create meaningful texts because while translating, they pay attention to create harmony in each part of the text. For this reason, they link the statements with the previous ones and while doing that, they have a better comprehension of the original text. Thus, in this creation process, their comprehension ability in foreign language develops. Related to this, paying attention to the unity, they start to produce better texts in terms of semantics.

As the learners are given different types of texts, and are informed that every kind of text is not translated in the same way; they try to identify and analyze the text before translating. Firstly, they identify the intention of the writer in order to reflect it correctly in the translation text although the intention of the writer may change from reader to reader since some factors such as education, sex, age, culture etc. influence text comprehension. However, there are some exceptions in which the aim of the text is clear. For instance, advertisement texts are produced for tempting the people to buy a product and thus; they include attractive slogans, descriptive adjectives and sentences. These slogans, descriptive adjectives and sentences are usually attractive for the people living in that culture. In order to have an attractive advertisement text, learners may need to find cultural motifs and structures. For this reason, they may structurally and semantically analyze the original text and translate the advertisement text by considering the target language structures and the culture. In this way, the learners may learn cultural and social norms of the target language which is directly related with the language.

Considering the aim of the writer of the original text, it could be said that his/her target may be specific to a group of people and so the content is chosen for this target readers. For instance, a scientific article will be meaningful for the academic staff, or a story may be written for children. As the translator is also a writer, he/she determines his/her aim and the target group; and then chooses the structures and vocabulary considering that group. In other words, as the age, gender, or education etc of the target readers are not the same, the complexity of the vocabulary and structures are considered by the learner while translating. In order to determine his/her preferences, they may need to read similar texts to see which structures and words are commonly used for a particular text type. Thus, this will direct them towards a further research and reading about many subjects in many text types. As a result, in addition to the contribution to the reading skills and vocabulary knowledge, this process will broaden the perspectives and world-knowledge of the learners.

Although it is widely believed that translation hinders the development of learners' speaking and listening skills, in fact it appeals to the four learning skills. After analyzing the native language and make decisions in the target language, the learners create their own texts. Later on, they share their ideas, criticize and comment on each other's translations in terms of the word preferences, shifts, sentence divisions, and so on keeping language diversity, the cultural differences, and the various contexts in their minds. Therefore, in this discussion process, learners' listening and speaking skills may develop due to the communicative flow if they actively participate in the lessons.

REFERENCES

Brown, H. D. (2001). *Teaching by Principles-An Interactive Approach to Language Pegagogy*. 2nd Edition. Essex: Longman.

Carter, R. (2003) "Key Concepts in ELT: Language Awareness". *ELT Journal*. Volume 57/1, Oxford University Press, pp. 64–65.

Colina S. (2002). "Second Language Acquisition, Language Teaching and Translation Studies". *The Translator*. Volume 8, Number 1, pp. 1–24.

Faber, P. (1998). "Translation Competence and Language Awareness". *Language Awareness*, Vol. 7: No. 1, pp. 9— 21.

Ferreira, S. M. G. (1999). *Following The Paths of Translation in Language Teaching: From Disregard in The Past to Revival Towards The 21st Century*. p.355-371. Retrieved August, 21, 2010, from (www.periodicos.ufsc.br/index.php/traducao/article/download/5541/4999)

House, J. (2009). *Translation*. UK: Oxford University Press.

Köksal, D. (2008). *Çeviri Eğitimi-Kuram ve Uygulama*. 2. Baskı. Ankara: Nobel Basımevi.

Larsen-Freeman, D. (2003). *Techniques and Principles in Language Teaching*. 2nd Edition. Oxford: Oxford University Press.

Lier, V. (2002). "Language Awareness*"*. Chapter 23: ss. 160-165. In Carter, C. and Nunan, D. (eds.). The *Cambridge Guide to Teaching English to Speakers of Other Languages*. UK: Cambridge University Press.

Newmark P. (1988). *Approaches to Translation*. London: Prentice Hall International ELT.

Popovic, R. (2001)."The Place of Translation in Language Teaching". *Bridges*. Issue 5, January 2001, pp. 3-8.

Richards, J. C. ve Rodgers, T. S. (2002). *Approaches and Methods in Language Teaching.* Cambridge: CUP.

TEXT TYPES, TEXT AWARENESS AND TRANSLATION

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ABSTRACT

Text-types are categorized under different names by different linguists and each text type demands a different translation strategy or translation method. Making distinction is useful among informative, expressive and operative texts, but few texts are purely belonging to one type. Most of the texts are compound including more than one or all the communicative functions, such as a didactic poem (information transmitted via an artistic form), or a satirical novel (behavioral responses aroused via an artistic form) etc. Whatsoever the type of any text, each text has its own characteristics designed by its producer. In this study the role of translator as the receiver of the source text and as the producer of the target text is discussed regarding text criteria which is the core of linguistics.

Keywords: text, text-types, text awareness, translation, linguistics

Introduction

Translation and Text Awareness

As the translator is at the same time a text-producer, it's significant for them to identify text types and place the text into one of these types so as to become proficient text-producers, and hence also translators. That is, the awareness of translators about text types affects their proficiency and competency in translation process. Hatim and Munday (2004: 181) establish a correlation between text type and translation methods by stating:

> *"What the translator must do in the case of informative texts is to focus on semantic relationships within the text and only secondarily on connocative meanings and aesthetic values. In the case of expressive texts, the main concern of the translator should be to try and preserve aesthetic effect alongside relevant aspects of the semantic content. Finally, operative texts require the translator to heed the extra-linguistic effect which the text is intended to achieve even if this has to be undertaken at the expense of both form and content."*

Considering the statement above, it is clear that translator's judgment about the text types determines the purpose of translation and translation method. According to Reiss (2008: 171):

> *"Establishment of the 'text type' – a phenomenon going beyond a single linguistic or cultural context, because the following essentially different forms of written communication may be regarded as being present in every speech community with a*

[175] This study is a part of an unpublished M.A. thesis "Textlinguistics and Translation Performance: A Sample Study in Translation Courses" (2010), Trakya University, Social Sciences Institute.

culture based on the written word and also because every author of a text ought to decide in principle on one of the three forms before beginning to formulate his text."

Thus, Reiss categorizes texts according to their communicative function. Munday (2006: 74) illustrates the functional characteristics of text types and links to translation methods (adapted from Reiss 1971) in the table below:

Text Type	**Informative**	**Expressive**	**Operative**
Language Function	Informative (representing objects and facts)	Expressive (expressing sender's attitude)	Appellative (making an appeal to text receiver)
Language Dimension	Logical	Aesthetic	Dialogic
Text Focus	Content-focused	Form-focused	Appellative-focused
TT should	Transmit referential content	Transmit aesthetic form	Elicit desired response
Translation Method	'Plain prose', explicitation as required	'Identifying' method, adopt perspective of ST author	'Adaptive' equivalent effect

Figure 2: Functional Characteristics of Text Types and Links to Translation Methods

The main concern of the informative texts is to inform the readers; thus they convey information. Reports, lectures, manuals, tourist brochures, encyclopedias, articles and etc. belong to this group. They represent facts and readers get new information from them; these texts are constructed on the semantic-syntactic level. For the informative texts, transmitting the content is important for the translators no matter personal views or expressions are added to it. Reiss (1977/1989) states that "If an author of such a text borrows aspects of a literary style, this 'expressive' feature is nevertheless only a secondary one-as, for example, in a book and concert reviews, football reports and the like. The text type corresponding to this basic communicative situation is the 'informative' type" (cited in Reiss, 2008:183). In other words, as the content or topic is the main focus of communication, translator's task is merely transmitting the information from the source text to the target text.

Second type of texts is expressive texts. The author uses his creativity and artistic skills to shape the content. Poems, plays, novels, autobiographies and other literary works are the members of this group. "The core of the expressive function is the mind of the speaker, the writer, the originator of the utterance, so the focus is on the author and the form of message" (Newmark, 1988: 39; Munday, 2009: 232). Therefore, the translator should transmit the artistic and aesthetic form of the source text to the target text by identifying method and adopting the perspective of the source text's author. Newmark (1988: 40) points out that:

"It is essential that you, as translator, should be able to distinguish the personal components of these texts: i.e. unusual ('infrequent') collocations; original metaphors; 'untranslatable' words, particularly adjectives of 'quality' that have to be translated one-to-two or –three; unconventional syntax; neologisms, strange words (archaisms, dialect, odd technical terms) – all that is often character-idioms and metaphors, common collocations, normal syntax, colloquial expressions and 'phaticisms' – the usual

tramlines of language. The personal components constitute the 'expressive' element (they are only a part) of an expressive text, and you should not normalize them in a translation."

Comparing these two text types and their translation method, it can be concluded that while translating informative type of texts, the translator should focus on meaning and structure. On the other hand, while translating expressive texts s/he should pay attention to the reflection in the text-writer's mind. "Reiss (1971) feels that it is more important for a metaphor to be retained in the translation of an expressive text than in an informative TT, where translation of its semantic value alone will be sufficient" (cited in Munday, 2006: 75).

The third text type is operative texts. These are also called as vocative, conative, instrumental, and pragmatic texts. Notices, advertisements, polemical writings and etc. take place in this category as these texts are produced for eliciting a desired response. In other words, operative texts can be considered as stimuli that elicit reaction on the reader. Lotmann (1972) asserts that "the text is doubly, or even triply structured: on the syntactic-semantic level, (in some circumstances, but not necessarily, on the level of artistic organization) and on the level of persuasion" (cited in Reiss, 2008: 183). For this reason, the translator's task is to achieve the similar persuasive effect on the target language so adaptive method should be used to translate. Moreover, these texts are reader-centered as they have a psychological function arousing readers' emotions. By doing this, he/she has to pay attention to cultural differences.

When the reader takes a text in his/her hand his first question is "which type of text is that?" The reader wants to know the text type because he/she wants to know how to approach the text. Put it differently, he determines his/her attitude and expectation before starting to read the text. Ögeyik (2008) puts forward that the reader's way of reading is determined when s/he gets an answer to the question s/he has asked related to the text type, in short when he recognizes the type of the text. Therefore, text type is the most important factor guiding the reader during the text reading period.

Then, the answer to that question will be an article, a CV, a novel, an advertisement and so on. For instance, a reader does not approach a short story and a scientific article in the same way, so he gets ready for reading by learning the type of the text. In other words, when the reader finds an answer to his/her question of the text type, it becomes easy for him/her to read and understand the text. Moreover, the reading aim of the reader will be determined according to the text type. If the act of reading is a conscious and enthusiastic activity, it can be mentioned about two purposes: having information and taking pleasure; and in this sense the purpose of reading also affects the reading process and reveals the functionality of the text type (Günay, 2007; Ögeyik, 2008). However, according to Günay (2007) the type or sort of text actually does not directly interest the reader. According to some previously accepted general text characteristics, a reader can read and understand a text even if s/he is not aware of its type or sort. Type or sort is a result of a general conditioning. That is to say; someone who wants to read a column in a newspaper is aware of the fact that s/he is not reading an epic or a weather forecast. Nevertheless, it is possible to say that, if a reader is aware of the text type and the characteristics of the type, he/she can be able to understand the text better. For this reason, it is important to mention about the text types which readers can come across during their daily lives.

Each text is written for a different purpose; and the purpose of a text determines its stylistic features. For instance, a poem, a recipe, a user's manual, or a letter has a different shape and style. These distinctive features are shaped according to the functionality of the expression in the course of time.

Günay (2007) organizes the text types as follows:

— **Narrative texts** (fictional or non-fictional): Novel, short story, memoir, documentary narration about real experiences.

— **Poetic Texts:** Mania, verse, poem, free verse, song, epic.
— **Conversational Texts:** Drama narration, photo-story, cartoon, movies with subtitles
— **Media Texts:** declaration, interview, news comment, column, statements made by the administrations of newspaper, journal or some other written media, comments.
— **Specific Informative Texts:** Articles in scientific journals, scientific books.
— **Functional Texts:** User's manual, warnings, various printed documents used for formal labor.
— **Instructive Texts:** Course books, lesson photocopies.
— **Analyzing Texts:** Studies, essays, research texts.
— **Occupational Texts:** Report, advertisement text, court record, police record, informative texts, lists of authorized signatures in an institution indicating that the official writings are being read, correspondences in an association and informative notes.
— **Communication Texts:** Letters among family members, letters of friends, official correspondences, occupational correspondences
— **Warnings, billboards, placards**
— **Posters, dodgers**

Although Günay categorizes texts in this order, text types can also be sorted out in three main headings. Therefore, it is possible to refer three kinds of texts. These are:

Functional Texts
Informative Texts
Literary Texts

Functional Texts: A reader can encounter functional texts in his/her daily life. This type of texts is useful for everyday information and helps the reader to accomplish an everyday task. Examples of functional text might include a menu from a restaurant, phone numbers or e-mail addresses, directions on a test, a schedule of event times and locations during a seminar, a store's opening time, user's manual etc. For example, if someone wanted to make baked rice pudding, he/she would read a recipe or if he/she wanted to know his/her friend's phone number, he/she would look in a phone book. Moreover, when a teacher gave a test, he/she would need to read the directions before starting to do the test or read the user's manual in order to learn the functions of a tool or electronic machines. Hence, functional texts are beneficial for people in many aspects of their daily lives.

Informative Texts: Informative texts convey information, such as data or knowledge. Thus, these texts are created for people who would like to gain more knowledge in a particular area. They give details about aspects of life in terms of both the historical and the contemporary facts. Historical books, science books, encyclopedias, newspapers, articles, journals etc. can be classified under this category as they contribute to the readers' knowledge by giving information.

Literary Texts:

Literary texts are inspired by real world situations, but mostly are created by the imagination of the author. Examples of literary texts are poetry, plays, drama, screen play, memoir, and epic. In this type of texts, the author uses symbolic meanings and by setting up similarities to the real world so as to make his/her readers be involved in the text deeply. For this reason, the author uses a creative language reflecting his imagination. Çapan (2004) puts forward that language of literary texts is the artist's individual saving of an intentional choice he made from his mother tongue. From this point, language of the literary work promotes to superior language. The most significant component that differentiates the artist's language from that of science and daily life is the symbolic meanings that it attributes to the words. Therefore, while reading the literary text, the reader uses his/her imagination by the linguistic

properties of the text and his/her experiences in the society s/he lives in. In this way, s/he fills the blanks in order to reach the meaning. Hence, linguistic, social and cultural backgrounds of the reader affect the comprehension of literary texts.

The Notion of Text

All texts are created by a sender, for e.g. an author. The sender creates his/her text and for a receiver. The text is similar to an iceberg as an image. Coşkun (1997) visualizes this figure as follows:

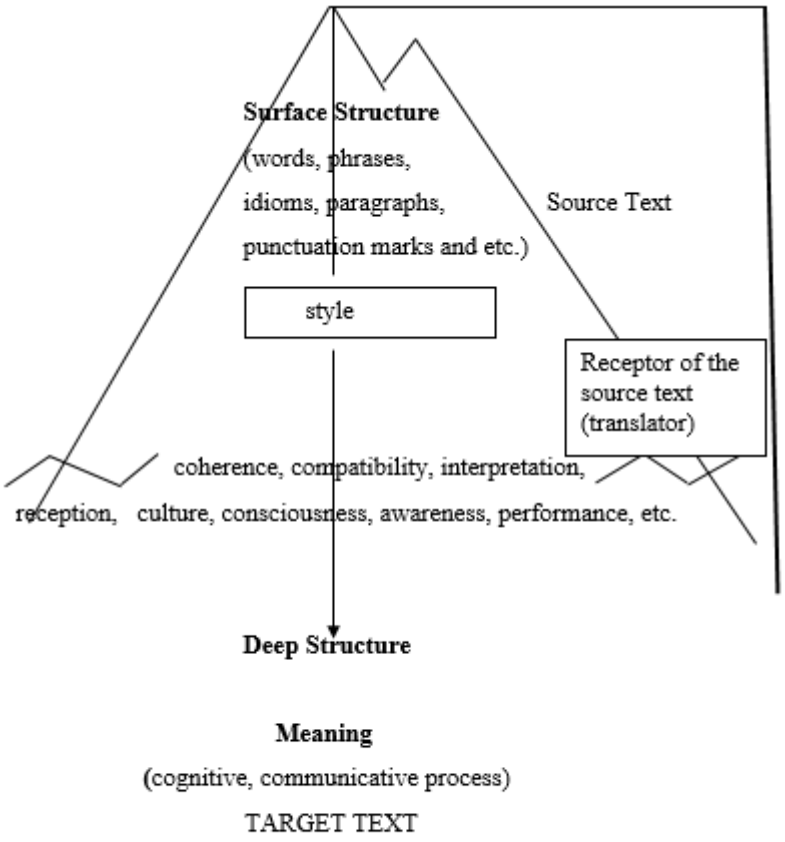

Figure 3: Iceberg Model (Reading Source Text)

In this context, the reader (the receiver) analyzes the features of surface structure of the source text and then, goes through the deep structure. The translator then creates his/her own text by focusing on the meaning of the source text in the target language. Therefore, the translation process is a combination of text comprehension and production processes. In this process, the norms of textuality, i.e. textlinguistics are directive for the translator.

Text and Textlinguistics

Text can be defined as "a sequence of cohesive and coherent sentences realizing a set of mutual relevant intentions" (Munday, 2009: 231). The notion of text is the primary concern of textlinguistics, which is primarily concerned with the analysis of written texts and provides standards for identifying and evaluating textuality. In this sense, it deals with understanding both how texts function as internally coherent systems and how certain kinds of texts function in relation to their larger sociological contexts. In text comprehension process, the reader perceives the surface structure of the text by going through associative, cognitive and communicative process. Understanding the surface and the deep structure of

the text is necessary in structure analyses during the translation process and textlinguistic knowledge enables to comprehend and analyze the text structure. Coşkun (1997) visualizes all these steps through the two figures below:

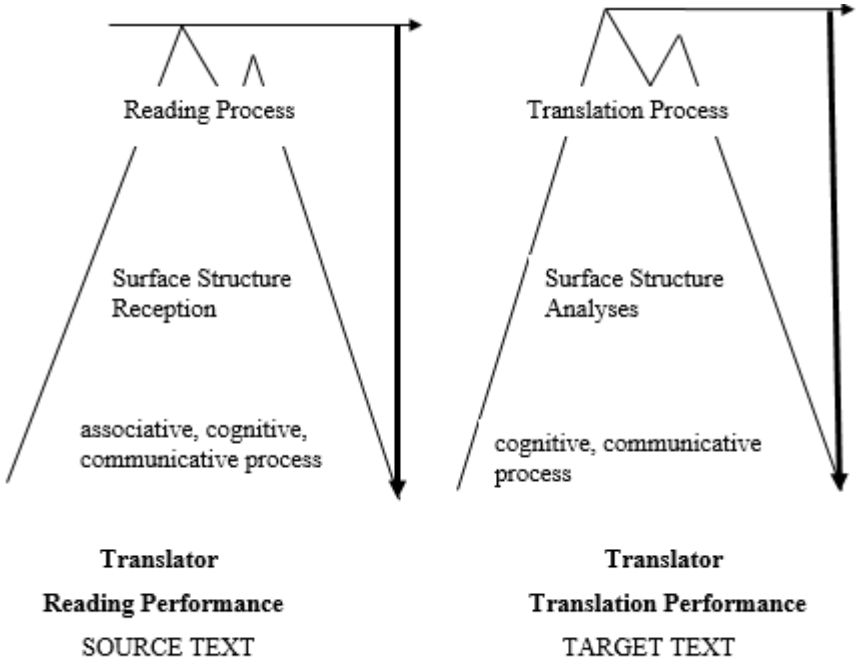

Figure 4: Iceberg Model (Producing Target Text)

REFERENCES

Coşkun, M. (1997) "Çeviri Metinlerde Yüzey/Derin Yapı Hataları". *TÖMER Çeviri Dergisi* 3 (10), ss 43–50.

Günay, D. (2007). *Metin Bilgisi*. 3. Baskı. İstanbul: Multilingual.

Hatim B., Munday J. (2004). *Translation: An Advanced Resource Book*. Oxon: Routledge.

Munday, J. (2006). *Introducing Translation Studies-Theories and Applications*. Oxford :Routledge.

Munday, J. (2009). *The Routledge Companion to Translation Studies*. Oxon: Routledge.

Newmark P. (1988). *Approaches to Translation*. London: Prentice Hall International ELT.

Ögeyik, M. C. (2008). *Metinlerarasılık ve Yazın Eğitimi*. Ankara: Anı Yayıncılık.

Reiss, K. (2008). *Type, Kind and Individuality of Text: Decision Making in Translation*. Chapter 14, pp. 168-179. In Venuti, L. (ed.). *The Translation Studies Reader*.

YÖNETİCİ GÖZÜYLE DEZAVANTAJLI ÖĞRENCİLERİN KARŞILAŞTIĞI SORUNLARIN EĞİTİME YANSIMASI VE ÇÖZÜM ÖNERİLERİ

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ÖZET

Bu araştırmanın amacı dezavantajlılık ve dezavantajlı öğrenci, dezavantajlı öğrencilerin yaşadıkları sorunlar, dezavantajlı öğrencilerin yaşadıkları sorunların eğitime yansıması ve dezavantajlı öğrencilerin eğitimindeki sorunlarla ilgili çözüm önerilerini ortaya koymaktır. Bu amaç doğrultusunda araştırma, Milli Eğitim Bakanlığına bağlı okullarda görev yapan müdür ve müdür yardımcısından oluşan yöneticilerle yapılmıştır. Bu araştırmadaki çalışma grubu amaçlı örneklem yöntemi sınırları içerisindeki benzeşik (homojen) örnekleme yöntemiyle belirlenmiştir. Çalışma grubu, 2021-2022 eğitim öğretim yılında Orta Karadeniz Bölgesi'nde dezavantajlı öğrencilerin yoğunlukta olduğu devlet okullarında müdür ve müdür yardımcısı olarak görev yapan 10 yöneticiden oluşmaktadır. Bu çalışma nitel araştırma yöntemlerinden olan olgu bilim deseni sınırları içinde hazırlanmıştır. Veri toplamak amacıyla araştırmayı gerçekleştirenler, dezavantajlı öğrencilerle ilgili sorunları ve eğitime yansımalarını daha detaylı bir şekilde incelemek için yarı yapılandırılmış görüşme tekniğine başvurmuşlardır. Elde edilen verilerin çözümünde betimsel analiz tekniği kullanılmıştır. Araştırmayı gerçekleştirenler, analizler sonucunda yöneticilerin, dezavantajlı öğrencilerin yaşadıkları sorunları ve bunların eğitime yansıması olarak; olumsuz aile ve çevre koşulları, çocuktaki ilgi ve sevgi eksikliği, eğitimde fırsat ve imkan eşitsizliği, başarının düşüklüğü, elverişsiz çalışma ortamı, duygusal sorunlar, devamsızlık, olumsuz davranışlar, uyum sorunu ve öğrenci başarısızlığı olarak sıralamışlardır. Katılımcılar, dezavantajlı öğrencilerin eğitimindeki sorunların çözümleri ile ilgili olarak; öğrenciye olumlu davranışlar kazandırma, aile ziyaretleri yapma, etkili iletişim kurma, ilgisiz velileri bilinçlendirme, çocuğun okula güven duymasını sağlama ve sosyal etkinlikler düzenleme gibi birtakım önerilerde bulunmuşlardır.

Anahtar Sözcükler: Dezavantajlılık, dezavantajlı öğrenci, eğitime yansıma, çözüm

REFLECTION OF THE PROBLEMS FACED BY DISADVANTAGED STUDENTS IN EDUCATION FROM THE PERSPECTIVE OF MANAGERS AND SUGGESTIONS FOR SOLUTIONS

ABSTRACT

The aim of this research is to reveal the solution proposals for disadvantaged students, the problems experienced by the disadvantaged students, the reflection of the problems experienced by the disadvantaged students on education and the problems in the education of the disadvantaged students. For this purpose, the research was carried out with the managers consisting of the principal and assistant principal working in the schools affiliated to the Ministry of National Education. The study group in this study was determined by the homogeneous (homogeneous) sampling method within the limits of the purposive sampling method. The study group consists of 10 administrators who work as principals and assistant principals in public schools where disadvantaged students are concentrated in the Central Black Sea Region in the 2021-2022 academic year. This study was prepared within the boundaries of the phenomenology pattern, which is one of the qualitative research methods. In order to collect data, the researchers applied the semi-structured interview technique to examine the problems related to disadvantaged students and their reflections on education in more detail. Descriptive analysis technique was used to solve the obtained data. As a result of the analysis, the problems experienced by

administrators and disadvantaged students and their reflection on education; negative family and environmental conditions, lack of interest and love in children, inequality of opportunities and opportunities in education, low achievement, unfavorable working environment, emotional problems, absenteeism, negative behaviors, adjustment problems and student failure. Regarding the solutions of the problems in the education of disadvantaged students; They made some suggestions such as bringing positive behaviors to the students, making family visits, communicating effectively, raising awareness of disinterested parents, ensuring the child's confidence in school and organizing social activities.

Keywords: Disadvantage, disadvantaged student, reflection on education, solution

1. GİRİŞ

Öğrencilerin dezavantajlı olarak değerlendirilmesinde etnik kökeni, ailevi ve ekonomik durumu, sosyal yaşantısı, kullandığı dil, özel ihtiyacının olması, olumsuz çevre koşulları gibi birçok etmen bulunmaktadır. Okullara gelen dezavantajlı öğrenciler okula uyum konusunda sıkıntı çekmekte, okuldaki yönetici, öğretmen ve arkadaşlarıyla farklı problemler yaşamaktadırlar. Örneğin Gebze Atatürk Anadolu Lisesi öğrencisi F.Ç.'nin 2019'un Ocak ayında arkadaşlarıyla yaşamış olduğu tartışma esnasında kullandığı küfür içerikli cümlelerden dolayı disipline sevk edilerek; okuldan üç gün uzaklaştırma cezası aldığı, bu olaydan sonra F.Ç.'nin aynı zamanda disiplin kurulu başkanı olan Okulun Müdür Yardımcısı N. K.'nin odasının çevresinde zaman zaman görüldüğü, 2 Nisan 2019'da da müdür yardımcısını defalarca bıçaklayarak öldürdüğü haberlerde yer almaktadır (https://www.aksam.tr). Bir başka olay ise 8 Kasım 2019'da İzmir Ödemiş'teki Ödemiş Kaymakçı Çok Programlı Anadolu Lisesinde müdür olarak görev yapan A.K.'nin (47) , okulda yapılacak veli toplantısı öncesi çeşitli nedenlerle okuldan atılan İ.P. ve U.Y. isimli iki öğrencisi ile tartıştığı ve öğrencilerin yanlarında getirdikleri tüfekle müdürü göğsünden vurarak öldürdüğü haberlerde yer almaktadır (https://www.hurriyet.com.tr).

Yaşanılan bu üzücü olaylar, öğrencileri dezavantajlı duruma düşüren etkenlerin zamanında tespit edilip öğrenci lehine çözülmez ve gerekli önlemler alınmazsa ilerde bütün toplumu ilgilendiren, telafisi mümkün olmayan daha büyük sorunlarla karşılaşmanın kaçınılmaz olduğunu göstermektedir.

Kazu'ya (2019) göre, kişilerle ilgili farklı özellikler baz alınarak tanımlanan dezavantajlılık, toplumdaki çoğunluk tarafından ulaşılan olanaklara erişim sağlanamamasıyla ortaya çıkan durumdur. Gelirlerdeki adaletsiz dağılım, kişilere göre değişen yoksulluklara yol açarak, farklı dezavantajlı grupların ortaya çıkmasına neden olmuştur. Dezavantajlı gruplar çoğunlukla birbiriyle beslenip iç içedir. Örnek olarak eğitimsizlerin genel olarak işsiz, işsiz olanlar da çoğu kez sosyal güvenceden mahrum, yoksul kişilerdir. Özbaş (2018)**,** dezavantajlı ailelerin; evlerinin yeterli düzeyde olmadığını, gelir seviyelerinin yetersizliğinden kaynaklı ekonomik sıkıntılar çektiğini, birçok eğitim olanağından mahrum kaldığını, çevre koşullarının elverişsiz olduğunu dile getirmektedir. Bu faktörlerin öğrencilerin eğitiminin gerekliliğini önemsiz hale getirip, çocuklarının mecburi eğitiminden çok ailelerin, kendilerinin ve çocuklarının temel ihtiyaçlarını önemsemek durumunda kaldığını ifade etmektedir.

Kardaş (2014), dezavantajlı olarak kabul edilen bireylerin toplumun bir parçası olup bununla birlikte bu bireylerin, zaman içerisinde toplumla bütünleşme noktasında bazı sorunlar yaşayabileceği, bu sorunlar tespit edilip çözüm üretilmediğinde ileride yenilerinin ortaya çıkmasına zemin hazırlayacağına dikkat çekmektedir. Yukarıdaki tartışmalar sonucunda, dezavantajlı öğrenci gruplarının olduğu okullarda öğrencilerin sorunlarını ve öğrencilerle karşılaşılan sorunları olumlu bir şekilde çözümleyip, onların eğitimlerini daha iyi hale getirmenin gerekliliği tespit edildiğinden böyle bir çalışmaya gerek duyulmuştur.

Bu araştırma kapsamında dezavantajlılık ve dezavantajlı öğrenci, dezavantajlı öğrencilerin yaşadıkları sorunlar, dezavantajlı öğrencilerin yaşadıklarının eğitime yansıması, dezavantajlı öğrencilerin eğitimindeki sorunlarla ilgili çözüm önerileri ve araştırmanın amacı alt başlıkları ele alınmıştır.

1.1. Dezavantajlılık ve Dezavantajlı Öğrenci

Özbaş'a (2018) göre dezavantajlılık, insanlar arasındaki eşitsizliğe neden olan önemli bir toplumsal olumsuzluktur. Dezavantajlılığı, daha çok küçük çevrelerde yaşayan benzer olanaksızlıklara sahip benzer şartlarda birlikte yaşayan kişiler oluşturmaktadır. Yer aldığı toplumda ülkesinin ekonomik olanaklarından yeterli düzeyde yararlanamayıp, devlet desteğine ihtiyaç duyan kişilerden oluşan gruplar dezavantajlı olarak adlandırılmaktadır (Es ve Menteşe, 2018). Kardaş (2014) ise dezavantajlılığı, genel olarak, bazı birey ve grupların toplumla bütünleşmesini sağlayan sivil, politik, ekonomik ve sosyal haklara ulaşamaması olarak tanımlayıp, dezavantajlılığın bir süreç bağlamında kesin tanımlamalar içermemesinin gerekçesini ise çok fazla değişkene ve etkene sahip olmasıyla açıklamaktadır. Dezavantajlılığın temel olarak bir toplumun ekonomisi, sosyokültürel yapısı, birey ve aile ilişkileri, toplumsal sınıf sistemi ve siyaset sistemini kapsadığı; eğitim, iş gücü piyasası, toplumsal hayat ve vatandaşlık gibi modern hayatın her alanında görüldüğünü belirtmektedir.

Özbaş (2018), dezavantajlı öğrenciyi; genellikle kentlerin kenar mahallelerinde bulunup merkezdeki arkadaşlarıyla aynı şartlara sahip olmayan, bulundukları yerden dolayı merkeze kıyasla aldığı hizmet bakımından farklılıklar olan, eğitim konusunda da adrese dayalı sistemden dolayı eşitsizlik ve adaletsizliğe maruz kalan, çevredeki elverişsizlikler, ailedeki ekonomik ve eğitim konusundaki yetersizlikler gibi bir çok olumsuzlukla mücadele etmek zorunda kalan, yalnızca zaruri ihtiyaçlarını karşılayabilen, sosyal güvenceden yoksun öğrenci olarak tanımlamaktadır.

1.1. Dezavantajlı Öğrencilerin Yaşadıkları Sorunlar

Aile, çocuğun her yönden gelişimini sağlar, davranışlarını şekillendirip yönlendirir. Aile, çocuğun yetişmesinde etkin bir toplumsallaştırma kurumu durumundadır. Araştırmacılara göre ailenin hoşgörülü demokratik olması, çocuğun yaratıcı fikirlerini özgürce dile getirme eğilimine sahip olduğunu göstermektedir. Bu çocuklar kendilerini daha erken denetleme arzusuna sahiptirler. Baskıcı otoriter ailelerde büyüyen çocuklar ise kendilerini olumsuz yollarla kabul ettirmek çabasına girerler ve kendini ifade etmekte güçlük yaşarlar. Ebeveynlerin duygusal kaynaklı sorunları olması, çocuğun aile içinde yaşanan olumsuzluklara şahit olması gibi kötü ev şartları, çocuğun istenmedik davranışlar sergilemesine neden olabilir (Kazu, 2019). Çalış'a (2019) göre, çeşitli dezavantajlı durumlarla ve sosyal sorunlarla özdeşleştirilen topluluklarda yoksulluk, göç, toplumsal cinsiyet eşitsizliği, suç, madde bağımlılığı, etnik köken ve kültürel farklılıklara dayalı ayrımcılık gibi nedenlerle aileler ve öğrenciler toplumdan dışlanma tehlikesiyle yaşamını sürdürmektedir.

Koçak ve Bostancı'ya (2019) göre dezavantajlı öğrenciler, sınıf içinde anlatılan konularla ilgili hazır bulunuşluk düzeyleri düşük, aile desteğinden, sevgisinden mahrum olur; bu durumları onların başarılarına da yansır. Dezavantaj özelliğine sahip öğrenciler, sınıf ortamında kendilerini diğer öğrencilerden soyutlayarak içe kapalı ve öz güvenini kaybetmiş bir şekilde eğitimini sürdürmeye çalışmaktadır. Bu öğrenciler, okula uyum konusunda da arkadaşları, öğretmenleri ve yöneticileriyle değişik sorunlar yaşamakta ve davranış bozuklukları göstermektedirler. Özellikle değişik nedenlerle göç etmek zorunda kalan ailelerin çocukları, okula devam konusunda sıkıntılar yaşamakta, bu durum da öğrencilerin başarılarını düşürmektedir (Tabcu, 2015).

1.2. Dezavantajlı Öğrencilerin Yaşadıkları Sorunların Eğitimine Yansıması

Ekonomik yetersizlikler, sağlık sorunları, göç, coğrafi koşulların zorluğu, doğal afet, terör, savaş, istismar vb. farklı imkânsızlıklar öğrencileri eğitim ortamından uzaklaştırmaktır. Eğitimin tüm bireylerin bir ömür boyu hakkı olduğu için eğitim sistemlerinin esnek ve duyarlı yapıda olması, ayrımcı ve dışlayıcı anlayıştan uzakta herkesin öğrenebilir olduğunu benimsemesi ve çeşitliliğin bir sorun olarak görülmeyip etkili bir kaynak olarak değerlendirilmesi gerekliliği büyük önem taşımaktadır (Kırnık, 2021). Ülkemizde hala devam etmekte olan yoksulluk, cinsiyet, erken yaşta evlilik, çocuk işçi olma

hali gibi bireylerin kendi kendine yetebilmesinin önündeki dezavantajlılık durumları, eğitim haklarının önüne geçerek onları bu haklardan mahrum bırakmaktadır (Es ve Menteşe, 2018).

Özcan, Balyer ve Yıldız'a (2018) göre, ailelerin yeterli bilince sahip olmaması, çocuklara karşı ilgisiz kalınıp onların sevgiden mahrum bırakılması, ders çalışmak için evdeki ortamının elverişsiz olması, çocuk sayısının fazla olması, aile içinde şiddet görülmesi, aile bütünlüğünün bozulması, çocukların işte çalıştırılma zorunluluğu olması gibi etmenler öğrencilerin başarılarının düşmesinde ve okulu terk etmelerinde etkili olmaktadır. Ebeveynlerinin derslerine yardım edebilecek yeterliliğe sahip olmaması, yardım alabilecekleri birilerinin bulunmaması dezavantajlı öğrencilerin başarılarını daha da düşürmektedir.

Özellikle göç problemiyle karşılaşan dezavantajlı öğrenciler, aileleriyle ilgili taşınma sorunundan dolayı farklı okullarda öğretim görmek mecburiyetinde kalmaktadır. Bu gibi durumlardan kaynaklı olarak öğrencilerin ödevleri vaktinde yapamaması öğretmenlerin kendilerine karşı olumsuz yaklaşımına neden olmaktadır. Sürekli okul değiştirmek zorunda kalan öğrenciler, buna bağlı olarak arkadaşlık kurmakta sorunlar yaşayıp yalnızlık duygusuna kapılmaktadır. Bu gibi durumlar da öğrencilerin derslere karşı ilgisinin azalmasına ve başarısının düşmesine yol açmaktadır (Bozan ve Kaştan, 2018).

Yeşilkayalı ve Meydan **(**2017 **),** öğrencilerin akademik işlevlerini yerine getirmesine engel olacak pek çok sorun olabileceğini belirtmiştir. Öğrenciler evden aç gelme, sağlık problemleriyle karşılaşma, yasa dışı faaliyetlerin yoğun olduğu bir mahallede yaşama, evde ve okulda farklı dil konuşma, ebeveynlerince eğitimi önemsenmeme gibi sorunlarla karşılaştığını ifade etmişler. Bunun sonucunda da yoksul bir aile ve çevre içerisinde bulunup, yeterli aile desteği alamayan öğrencilerin; akademik işlevlerini yerine getirmelerinin, hatta bazen okula devam etmelerinin çok güç olduğunu belirtmişlerdir. Özcan, Balyer ve Yıldız'a (2018) göre, dezavantajlı öğrencilerin olduğu okullarda başarısızlık, ailelerin eğitimin önemini kavrayamamış olması, eğitimle ilgili alt yapıdaki yetersizlik, okuldaki liderlik eksikliği gibi sorunlardan kaynaklanmaktadır. Birçok olumsuzlukla baş etmek mecburiyetinde kalan dezavantajlı öğrenciler, bunun yanında okullarında bulunan idarecilerin yönetsel beceri eksiği bibi daha büyük problemlerle de karşı karşıya kalmaktadırlar.

Tosun, Ay ve Koçak (2020), dezavantajlı öğrencilerin bulunduğu okullarda öğretmen ve yöneticilerde nicelik, motivasyon ve tükenmişlik sorunları yaşandığını, bu okullardaki kadrolar genellikle deneyimi olmayan öğretmenlerden oluştuğunu ve bu okullarda çalışan öğretmenlerin sürekli tayin isteyen öğretmenlerden oluşması nedeniyle sık sık öğretmen değişimleri yaşandığını dile getirmektedirler. Ayrıca dezavantajlı öğrencilerin yoğun olduğu okulların bulunduğu mahallelerdeki velilerin eğitim düzeyinin düşük olması ve genellikle ekonomik sıkıntı yaşamaları bu okulların gelişimleri için gerekli olan veli desteğinden mahrum kalmasındaki önemli faktörlerden biri olduğunu ifade etmektedirler.

1.3. Dezavantajlı Öğrencilerin Eğitimindeki Sorunlarla İlgili Çözüm Önerileri

Dezavantajlı öğrencilerin yoğun olduğu okullarda temelde öğretmen açığını gidermek amacıyla yapılan ücretli öğretmen uygulaması ve bölgenin ihtiyaçlarını göz önünde bulundurmadan kura yöntemiyle yapılan öğretmen ataması, zaten dezavantajlılığı yüksek olan okullarda daha deneyimsiz, genç öğretmenlerin görev yapmasına olanak sunmaktadır. Bu okullarda öğretmen değişim hızı artmakta ve niteliği yüksek, deneyimli öğretmenler buralarda uzun süre kalmamaktadır. Bu nedenle öğretmen atamaları, göreve yeni başlayan öğretmenlerin zorluğu en fazla olan okullara gönderilmesini engelleyen ya da okulların ve bulundukları çevrenin ihtiyaçları ile öğretmenlerin sahip oldukları bilgi, beceri ve deneyimleri göz önünde bulundurularak, o çevreyle örtüşecek şekilde yapılmalıdır. Daha sonra da bu öğretmenlerin buralarda uzun süre kalmasını sağlayacak maddi ve manevi imkanlar tanıyan düzenlemelere yer verilmelidir (Önder ve Güçlü, 2014).

Serttaş'a (2020) göre, okulların fiziki koşullarına ve donanım özelliklerine yeni düzenlemeler yapılarak, eğitimin kapsayıcı bir hal alması için dezavantaja sahip çocukların fiziksel özelliklerini, kişisel ve sosyal ihtiyaçları göz önünde bulundurularak bu koşulların desteklenip geliştirilmesi gerekmektedir. Bu çocuklar için ihtiyaca göre ek derslik yapılıp, derslikler uygun sayılara göre düzenlenmelidir. Fiziksel şartlarla ilgili değiştirme ve geliştirme çalışmalarının daha anlaşılır olması için okullardaki dönüşümün nasıl olacağıyla ilgili yol gösterici bir kılavuz hazırlanmalıdır. Tosun, Ay ve Koçak (2020), dezavantajlı okulların diğer okullar ile aynı seviyeye gelebilmesi için rehber öğretmen atamalarında, yönetici seçimlerinde, disiplin sorunları ile başa çıkabilme yollarında, bütçe kullanımında yasal olarak pozitif ayrıcalıklar yapılmasının gerekli olduğunu ifade etmektedirler.

Kazu'ya (2019) göre, her şeyin hızla değişip geliştiği bir dünyada okula büyük görev düşmektedir. Her seviyedeki öğrencilerin bu değişim karşısında mücadele vermesi için okul tarafından öğrencilere lazım olabilecek her türlü araç gereç sunularak öğrenciler için en elverişli ortam hazırlanmalıdır. Bununla birlikte en iyi öğrenme yöntemleri belirlenerek öğrenciler için gerekli yerlerde etkili olarak kullanılması sağlanmalıdır. Bunların verimli bir şekilde gerçekleşmesi için de okul, aile ve öğretmenlerin birlikte hareket etmesi büyük önem arz etmektedir. Serttaş'a (2020) göre, dezavantajlı öğrencilerin derslere etkin katılımını sağlamanın gerekli olduğu, onların düzenlenecek sosyal, kültürel sportif aktivitelere katılımları en yüksek seviyeye çıkarılarak okul iklimine uyum sağlamaları ve kendilerini okula ait hissederek eğitim yaşantısına aktif katılımları sağlanmalıdır.

Gökmen (2020), bazı bölgelerde eğitimle ilgili olarak cinsiyete dayalı eşitsizlikler gibi ailevi ve toplumsal kaynaklı sorunlardan dolayı okula devam konusunda sorunlar yaşayan, okulu terk etme riskine maruz kalan dezavantajlı çocukların da diğer çocuklar gibi eğitim imkanlarından faydalanabilmesi için gerekli çalışmaların yapılmasının önemine dikkat çekmektedir. Bu zaman zarfında aileler ziyaret edilerek durumun yüz yüze anlatılması, farklı iletişim kanalları kullanılarak aileleri bilgilendirme çalışmalarının yapılması, öğrencileri etkileyebilmek için eğitim sayesinde bir yerlere gelmiş kadınların öğrencilerle buluşturulması gibi etkinliklerin eşitsizlikleri azaltacağını belirtmiştir. Kazu'ya (2019) göre ebeveynler ve öğretmenlerin çocukların sorumluluk almasında, sağlıklı düşünen bireyler olarak yetişmesinde, kendisiyle her zaman barışık, çevreleriyle uyum içerisinde yaşamasında çok büyük etkisi olmaktadır. Ebeveynler ve öğretmenler, çocuklara öncelikli olarak ailenin önemini, toplumsal değerleri güzel bir dille doğru öğreterek çocukları bu konularda iyice bilinçlendirmelidirler.

1.4. Araştırmanın Amacı ve Araştırma Soruları

Bu araştırmanın amacı dezavantajlılık ve dezavantajlı öğrenci, dezavantajlı öğrencilerin yaşadıkları sorunlar, dezavantajlı öğrencilerin yaşadıklarının eğitime yansıması, dezavantajlı öğrencilerin eğitimindeki sorunlarla ilgili çözüm önerilerini ortaya koymaktır. Bu amaç doğrultusunda aşağıdaki araştırma sorularının cevapları bulunmaya çalışılmıştır.

1. Dezavantajlılık ve dezavantajlı öğrencinin tanımı nedir?
2. Dezavantajlı öğrencilerin yaşadıkları sorunlar nelerdir?
3. Dezavantajlı Öğrencilerin Yaşadıkları Sorunların Eğitime Yansıması Nasıldır?
4. Dezavantajlı Öğrencilerin Eğitimindeki Sorunların Çözümüyle İlgili Öneriler Nelerdir?

2. YÖNTEM

2.1. Araştırma Yöntemi ve Deseni

Yönetici gözüyle dezavantajlı öğrencilerin karşılaştığı sorunları, yaşadıklarının eğitimine yansımasını ve onların eğitimiyle ilgili sorunlarla ilgili çözüm önerilerini anlamak için yapılan bu araştırma, nitel araştırma yöntemi kullanılarak gerçekleştirilmiştir. Baş ve Akturan (2017) nitel çalışmayı, keşif odaklı bir yöntem olan derinlemesine görüşmeler gerçekleştirilerek farklı duygu düşünce ve bakış açılarının yansımalarını değerlendirmenin en etkin yolu olarak tanımlamaktadır.

Bu çalışma nitel araştırma yöntemlerinden olan olgu bilim deseni sınırları içinde hazırlanmıştır. Olgu bilimde, günlük hayatta karşılaştığımız tam anlamıyla yabancı olmadığımız ancak anlamını da tam bilmediğimiz olguların derinlemesine inceleme imkanı söz konusudur (Yıldırım ve Şimşek, 2016).

2.2. Çalışma Grubu

Araştırmanın çalışma grubunu belirlemede amaçlı örneklem yöntemi kullanılmıştır. Amaçlı örnekleme, sınırlı kaynakların en etkin kullanımı için bilgi bakımından zengin vakaların belirlenmesi ve seçilmesi için nitel araştırmalarda yaygın olarak kullanılan bir teknik olmaktadır. Bu örnekleme yöntemi, ilgilenilen konu hakkında bilgi ve deneyim bakımından donanımlı birey ya da grupların tanımlanması ve seçilmesini içeren bir yöntemdir (Yağar ve Dökme, 2018).

Amaçlı örneklem yöntemi sınırları içerisindeki benzeşik (homojen) örnekleme yöntemiyle belirlenmiş olan çalışma grubu, toplumda özellikleri bakımından benzer olan bireylerin yer aldığı 10 kişiden oluşmuştur. Benzeşik örneklem yönteminde küçük ve homojen bir örneklem ele alınıp bu grup üzerinde detaylı olarak çalışılma gerçekleştirilmektedir (Neuman, 2014).

Çalışma grubu, 2021-2022 eğitim öğretim yılında Orta Karadeniz Bölgesi'nde dezavantajlı öğrencilerin yoğunlukta olduğu devlet okullarında müdür ve müdür yardımcısı olarak görev yapan 10 yöneticiden oluşmaktadır. Çalışmaya katlı sağlayan yöneticilerin kendilerini rahat hissedip düşüncelerini açıkça söyleyebilmeleri için kimlik bilgileri gizli tutulmuş ve katılımcılar Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y8, Y9 ve Y10 şeklinde harf ve rakamlar birlikte kullanılarak kodlanmıştır.

Tablo 1. Araştırmaya Katılan Yöneticilerle İlgili Demografik Özellikler

Sıra	**Eğitim Düzeyi**	**Cinsiyet**	**Mesleki Kıdem**	**Görevi**
1	Lisans	Erkek	31-35 Yıl	Okul Müdürü
2	Lisans	Erkek	31-35 Yıl	Okul Müdürü
3	Lisans	Erkek	31-35 Yıl	Okul Müdürü
4	Lisans	Erkek	21-25 Yıl	Okul Müdürü
5	Lisans	Erkek	16-20 Yıl	Okul Müdürü
6	Yüksek Lisans	Bayan	11-15 Yıl	Müdür Yardımcısı
7	Lisans	Erkek	11-15 Yıl	Müdür Yardımcısı
8	Lisans	Erkek	16-20 Yıl	Müdür Yardımcısı
9	Lisans	Erkek	16-20 Yıl	Müdür Yardımcısı
10	Lisans	Erkek	21-25 Yıl	Müdür Yardımcısı

Tablo 1'de belirtilen veriler incelendiği zaman araştırmaya katılan yöneticilerin % 90'ının erkek olduğu, % 10'unun bayan olduğu görülmektedir. Mesleki kıdem olarak değerlendirildiğinde katılımcıların % 20'sinin 11-15 yıl aralığında, % 30'unun 16-20 yıl aralığında, % 20'sinin 21-25 yıl aralığında, % 30'unun 31-35 yıl aralığında olduğu görülmektedir. Katılımcılardan

%90'ını lisans mezunu, % 10'unun yüksek lisans mezunudur. Katılımcıların 5'i okul müdürü ve 5'i de müdür yardımcısıdır.

2.3. Verilerin Toplanması ve Analizi

Görüşme için kullanılacak sorular hazırlanırken öncelikle çalışmada istenilen sonuç dikkate alınarak literatür taramasına başvurulmuştur. Dezavantajlı öğrencilerle ilgili sorunları ve eğitime yansımalarını daha detaylı bir şekilde incelemek amacıyla çalışmada yarı yapılandırılmış görüşme tekniğine baş vurulmuştur. Yarı yapılandırılmış görüşmelerde soruların bir kısmı önceden hazırlanır, bir kısmı da görüşme esnasında katılımcıların söylemlerinden hareketle ortaya çıkar (Patton, 2010). Bu sebepten ötürü görüşme soruları görüşme yapmadan önce hazırlanmış olup görüşme esnasında katılımcılarca verilecek cevaplara göre soruların yerlerinde değişiklik yapılması ve yeni sorular eklenmesi ihtimal dahilindedir. Araştırmada kullanılan görüşme soruları için bir uzmanın görüşü alınarak araştırma, 2021-2022 eğitim öğretim yılında Orta Karadeniz Bölgesi'nde dezavantajlı öğrencilerin çoğunlukta olduğu okullarda görev yapan 5 müdür ve 5 müdür yardımcısı olmak üzere 10 okul yöneticisi ile görüşmeler yapılarak gerçekleştirilmiştir

Görüşme formunda bulunan sorulara okul yöneticilerinin verdikleri yanıtlar ses kayıt cihazı ile kaydedilmiş, ses kayıt cihazı kullanılması verilerde oluşacak eksiklik veya yanlışlık ihtimalini büyük ölçüde yok etmektedir. Araştırmayla ilgili veriler araştırmaya katılan yöneticiler için uygun olan yer ve zamanda birebir görüşülerek toplanmıştır. Görüşme esnasında yöneticilerin soruları yanıtlarken araştırmacıdan etkilenmemesine özen gösterilmiş ve her görüşme yaklaşık olarak 20-25 dakika sürmüştür. Elde edilen verilerin analizinde betimsel analiz tekniği kullanılmıştır. Betimsel analizin kullanılmasındaki gerekçe, elde edilen verilerin daha önceden belirlenen temalara göre özetlenip yorumlanabilme imkanına sahip olmasıdır (Yıldırım ve Şimşek, 2006).

Görüşmelerin kaydedilmesiyle ulaşılan veriler bilgisayar ortamında yazıya aktarılarak her bir katılımcıyla ilgili veriler sistemli olarak numaralandırılmış ve bunun devamında veriler betimsel analiz vasıtasıyla çözümlenmiştir (Marshall ve Rossman, 1999; Miles ve Huberman, 1994). Betimsel analizin kullanılma gerekçesi olarak ulaşılan verilerin çözümlenmesinde, betimsel analiz tekniğin önceden belirlenen temalara göre özetlenmesi ve yorumlanmasına olanak sunmasıdır (Yıldırım ve Şimşek, 2011).

3. BULGULAR

Yapılan çalışma sonucunda bulgular, araştırmada kullanılan sorular ölçü alınarak analiz edilmiştir. Bu kapsamda, araştırmada kullanılan birinci soru "Dezavantajlılık ve dezavantajlı öğrencinin tanımı nedir? " şeklinde ifade edilmektedir. Ulaşılan veriler araştırmayı yapanlarca analiz edildiğinde katılım sağlayanların dezavantajlılık ve dezavantajlı öğrenciyi; 1. dezavantajlılık, 2. okula karşı olumsuz tutum , 3. hedef belirsizliği, ve 4. öğrencilerin eğitim ortamından uzaklaşması olarak ifade ettikleri sonucuna ulaşılmıştır. Katılımcı görüşleriyle ilgili tablonun gösterimi aşağıdadır.

Tablo 2. Katılımcıların Okul Dezavantajlılık ve Dezavantajlı Öğrenci Tanımıyla ilgili Görüşleri

Sıra	Kod	f	%	Örnek Cümle
1	Dezavantajlılık ve Dezavantajlı Öğrenci	6	30	*"Eğitim-öğretim sürecinde okullar için sorunlar çıkardığı tespit edilen göç yoluyla gelen, bedensel ve zihinsel engeli bulunan, okul dışında işlerde çalışan , madde kullanan ve parçalanmış aileye sahip olma gibi özellikler taşıyan öğrenciler dezavantajı öğrenci olarak adlandırılmaktadır." (Y1).*
2	Okula Karşı Olumsuz Tutum	6	30	*"Dezavantajlı öğrencilerin ailelerinin kendi eğitim hayatındaki yaşadığı sorunlar, onların okulla ilgili*

				olumsuz düşünceler geliştirmelerine neden olmaktadır." (Y6).
3	Hedef Belirsizliği	5	25	*"Dezavantajlı öğrencilerde belirli bir hedefin olmaması onların dersleri ve sınavı bir eziyet olarak algılayıp onlardan uzaklaşmasına neden olmaktadır." (Y3).*
4	Öğrencilerin Eğitim Ortamından Uzaklaşması	3	15	*" Ekonomik sıkıntılar, yaşanılan sağlık sorunları, aile bütünlüğünün olmaması, okul dışında çalıştırılma zorunluluğu, çevre şartlarının elverişsizliği, doğal afetler vb. farklı olanaksızlıklar dezavantajlı öğrencilerin eğitim ortamından kopmasına sebep olmaktadır." (Y8).*
	Toplam	20	100	

Tablo 2'de görüldüğü gibi araştırmaya katılan yöneticiler, dezavantajlılık ve dezavantajlı öğrenci ile ilgili görüşlerini, dezavantajlı gruplar kavramının tanımı % 30 oranında, okula karşı olumsuz tutum % 30 oranında, hedef belirsizliği % 25 oranında ve öğrencilerin eğitim ortamından uzaklaşması % 15 oranında belirtmişlerdir.

Araştırmada kullanılan ikinci soru "Dezavantajlı öğrencilerin yaşadıkları sorunlar nelerdir? " şeklindedir. Ulaşılan veriler araştırmayı yapanlarca analiz edildiğinde katılım sağlayanların dezavantajlı öğrencilerin yaşadıkları sorunları; 1. olumsuz aile ve çevre koşulları, 2. çocuktaki ilgi ve sevgi eksikliği , 3. eğitimde fırsat ve imkan eşitsizliği, 4. başarının düşüklüğü, 5. elverişsiz çalışma ortamı ve 6. duygusal sorunlar olarak ifade ettikleri sonucuna ulaşılmıştır. Katılımcı görüşleriyle ilgili tablonun gösterimi aşağıdadır.

Tablo 3. Katılımcıların Dezavantajlı Öğrencilerin Yaşadıkları Sorunların Neler Olduğuyla İlgili Görüşleri

Sıra	**Kod**	**f**	**%**	**Örnek Cümle**
1	Olumsuz Aile ve Çevre Koşulları	1	8	*"Öğrenciler, ilk eğitim aldıkları yer olan ailelerinde ve çevrelerinde olumsuz etkilenmektedir." (Y10).*
2	İlgi ve Sevgi Eksikliği	3	25	*"Anne ve baba sevgisinden mahrum kalan çocuklar, hayatları botunca bunun eksikliğini yaşarlar. Bunun neticesinde de çok anlamsız ilişkiler geliştirip olumsuz davranışlar göstermeye meyilli olurlar." (Y7).*
3	Eğitimde Fırsat ve İmkan Eşitsizliği	2	17	*"Okullar, değişik nedenlerden dolayı öğrencilere sağladığı eğitimdeki fırsatlar ve olanaklar bakımından birbirinden farklı özelliklere sahiptir." (Y3).*
4	Başarının Düşüklüğü	6	12	*"Dezavantajlı öğrencilerin ailelerinin eğitim düzeyinin düşük olması ve derslerine yardım edecek birilerinin bulunmaması başarısızlıklarında büyük etkendir."(Y7).*
5	Elverişsiz Çalışma Ortamı	3	8	*"Dezavantajlı öğrenciler elverişsiz çalışma ortamına sahiptirler. Anne-baba ve öğretmenler, dezavantajlı öğrencileri etkin bir şekilde eğitim-öğretime katıp öğrenciler için uygun bir öğrenme ortamı sağlamak için birlikte çaba sarf etmelidirler." (Y6).*

6	Duygusal Sorunlar	3	25	*"Dezavantajlı öğrenciler ailelerinin ilgisizliği, onlardan görmediği sevgisizlik gibi nedenlerle sorumluluk almaya yanaşmayan, içine kapanmış ve paylaşımdan kaçınan bir davranış sergilemektedirler." (Y1).*
	Toplam	12	100	

Tablo 3'te görüldüğü gibi araştırmaya katılan yöneticiler, dezavantajlı öğrencilerin yaşadıkları sorunlarla ilgili görüşlerini, olumsuz aile ve çevre koşulları % 8 oranında, çocuktaki ilgi ve sevgi eksikliği % 25 oranında, eğitimde fırsat ve imkan eşitsizliği % 17 oranında , başarının düşüklüğü % 12 oranında, elverişsiz çalışma ortamı %8 oranında ve duygusal sorunlar % 25 oranında belirtmişlerdir.

Araştırmada kullanılan üçüncü soru "Dezavantajlı Öğrencilerin Yaşadıkları Sorunların Eğitimine Yansıması Nasıldır? " şeklindedir. Ulaşılan veriler araştırmayı yapanlarca analiz edildiğinde katılım sağlayanların dezavantajlı öğrencilerin yaşadıklarının eğitime yansımasını; 1. devamsızlık, 2. olumsuz davranışlar, 3. uyum sorunu ve 4. öğrenci başarısızlığı olarak ifade ettikleri sonucuna ulaşılmıştır. Katılımcı görüşleriyle ilgili tablonun gösterimi aşağıdadır.

Tablo 4. Katılımcıların Dezavantajlı Öğrencilerin Yaşadıklarının Eğitimine Yansımasıyla İlgili Görüşleri

Sıra	**Kod**	**f**	**%**	**Örnek Cümle**
1	Devamsızlık	7	28	*"Öğrencilerin, okurken okul dışında çalışma zorunluluğu, ailelerin ilgisizliği, değişik rahatsızlıklar, okulla ilgili başarı ümidinin olmaması, sosyal ilişkilerinin zayıflığı gibi nedenler okuldan uzaklaşarak devamsızlığına neden olmaktadır." (Y4).*
2	Olumsuz Davranışlar	7	28	*"Dezavantajlı öğrenciler okulda olumsuz davranışlar sergilemekte, öğretmenleri ve öğrenci arkadaşlarıyla farklı sorunlar yaşamaktadır." (Y8).*
3	Uyum Sorunu	6	24	*"Dezavantajlı olarak adlandırabileceğimiz ailelerin okullara gelen çocukları; yönetici, öğretmen ve arkadaşlarıyla iletişim kurma ve ortama uyum sağlama konusunda problemler yaşamaktadırlar." (Y5)*
4	Öğrenci Başarısızlığı	5	20	*"Dezavantajlı öğrencilerin çoğunlukta olduğu okullarda akademik başarı düşüktür. Bu okullardan fen lisesine gidebilen öğrenci genellikle yoktur." (Y9).*
	Toplam	12	100	

Tablo 4'te görüldüğü gibi araştırmaya katılan yöneticiler, dezavantajlı öğrencilerin yaşadıklarının eğitime yansımsıyla ilgili görüşlerini, devamsızlık % 28 oranında, olumsuz davranışlar % 28 oranında, uyum sorunu % 24 oranında ve öğrenci başarısızlığı % 20 oranında belirtmişlerdir.

Araştırmada kullanılan dördüncü soru "Dezavantajlı Öğrencilerin Eğitimindeki Sorunların Çözümüyle İlgili Öneriler Nelerdir? " şeklindedir. Ulaşılan veriler araştırmayı yapanlarca analiz edildiğinde katılım sağlayanların dezavantajlı öğrencilerin eğitimindeki sorunların çözümlerini; 1. öğrenciye olumlu davranışlar kazandırma, 2. aile ziyaretleri yapma, 3. etkili iletişim kurma, 4. ilgisiz

velileri bilinçlendirme, 5. çocuğun okula güven duymasını sağlama ve 6. sosyal etkinlikler düzenleme olarak ifade ettikleri sonucuna ulaşılmıştır. Katılımcı görüşleriyle ilgili tablonun gösterimi aşağıdadır.

Tablo 5. Katılımcıların Dezavantajlı Öğrencilerin Eğitimindeki Sorunların Çözümüyle İlgili Görüşleri

Sıra	Kod	f	%	Örnek Cümle
1	Öğrenciye Olumlu Davranışlar Kazandırma	6	24	*"Çocuklarla ilgili olumlu ve olumsuz davranışları aile ile paylaşılmalıdır. Olumlu davranışların pekiştirilmesi ve olumsuz davranışların da ortadan kaldırılması için okulun aile ile birlikte hareket etmesi büyük önem taşımaktadır." (Y2).*
2	Aile Ziyaretleri Yapma	6	24	*" Aile ziyaretleri, ailelerin ve öğrencilerin kendilerini daha değerli hissetmelerini sağlayarak bazı olumsuzlukların önüne geçilebilir." (Y7).*
3	Etkili İletişim Kurma	5	20	*"Yönetim ve öğretmenlerin dezavantajlı öğrencilerle ilgili olumsuzlukları ortadan kaldırabilmelerinin ilk adımı, öğrencinin içinde bulunduğu aile ve çevreyi tanıyarak onlarla etkili iletişim kurmalarıdır." (Y4).*
4	İlgisiz Velileri Bilinçlendirme	3	12	*"Çocuğu ve okulu umursamayan, evde çocuğun eğitimini desteklemeyen, okul ile olabilecek her türlü işbirliğinden uzak duran, çocuğu eğitimi için kurulmak istenen iletişimlerden kaçınan, okulu gereksiz gören ve zaman ayırmak istemeyen ilgisiz veliler bilinçlendirilmelidir." (Y8).*
5	Çocuğun Okula Güven Duymasını Sağlama	3	12	*"Dezavantajlı öğrenciler elverişsiz çalışma ortamına sahiptirler. Anne-baba ve öğretmenler, dezavantajlı öğrencileri etkin bir şekilde eğitim-öğretime katıp öğrenciler için uygun bir öğrenme ortamı sağlamak için birlikte çaba sarf etmelidirler." (Y9).*
6	Sosyal Etkinlikler Düzenleme	2	8	*"Akademik başarısı düşük farklı dezavantaj özelliklerine sahip öğrencileri okula ve topluma kazandırmak için ilgi ve yeteneklerine uygun sosyal etkinlikler düzenlenmelidir." (Y1).*
	Toplam	25	100	

Tablo 5'te görüldüğü gibi araştırmaya katılan yöneticiler, dezavantajlı öğrencilerin eğitimindeki sorunların çözümleriyle ilgili görüşlerini, öğrenciye olumlu davranışlar kazandırma %24 oranında, aile ziyaretleri yapma %24 oranında, etkili iletişim kurma %20 oranında , ilgisiz velileri bilinçlendirme %12 oranında, çocuğun okula güven duymasını sağlama %12 oranında ve sosyal etkinlikler düzenleme %8 oranında belirtmişlerdir.

4. TARTIŞMA, SONUÇ VE ÖNERİLER

Bu çalışma MEB'e bağlı okullarda müdür ve müdür yardımcılığı yapan okul yöneticileriyle yapılmıştır. Gerçekleştirilen araştırmalar neticesinde dezavantajlı öğrencilerin aile ve yakın çevresinde, eğitim sürecinde birtakım ciddi problemlerle karşılaştıkları görülmüştür. Kahraman (2016), farklı

nedenler dolayısıyla temelden sarsılan ailenin çeşitli sıkıntılar yaşamakta olduğunu ve bu sıkıntıların etkisiyle farklı şekillerde parçalanabildiğini ifade etmektedir. Bununla birlikte ailenin parçalanması neticesinde çocukların anne ve babalarını kaybetmek ya da onlardan ayrı yaşamak zorunda kaldığını; anne baba ilgisinden, sevgisinden, yol göstericiliğinden mahrum kalan çocukların genelinin çevresine uyum sorunu yaşadığını ve bunların sonucunda ciddi psikolojik sorunlar yaşadığını dile getirmektedir. Tosun, Ay ve Koçak (2020), dezavantajlı öğrencilerin çoğunlukta olduğu okulların bulunduğu bölgelerdeki ailelerin sosyo ekonomik düzeylerinin ve eğitim seviyelerinin düşük olduğunu, ebeveynlerin eğitimin önemini kavramaya yönelik bilinç taşımadığını, çocuklarıyla ilgilenmediklerini ve bu durumların da öğrencilerle ilgili farklı sorunları meydana getirdiğini belirtmektedirler.

Araştırmaya katılım sağlayan yöneticilerin, dezavantajlı öğrencilerin yaşadıkları sorunları; 1. olumsuz aile ve çevre koşulları, 2. çocuktaki ilgi ve sevgi eksikliği, 3. eğitimde fırsat ve imkan eşitsizliği, 4. başarının düşüklüğü, 5. elverişsiz çalışma ortamı ve 6. duygusal sorunlar olarak ifade ettikleri sonucuna ulaşılmıştır. İlgili literatür ile ilgili inceleme yapıldığında, bu araştırmanın sonuçlarının bazı araştırmalarla benzerlik gösterdiği tespit edilmiştir. Özcan, Balyer ve Yıldız'a (218) göre dezavantajlı öğrencilerin ailelerinin eğitim konusunda yeterli bilince sahip olmayıp çocuklarla gerektiği gibi ilgilenmemekte, onları en çok ihtiyaç duyduğu sevgiden mahrum bırakmaktadır. Ayrıca dezavantajlı öğrencilerin; evlerinde ders çalışma koşullarının elverişsiz, kardeş sayısının fazla olması başarılarını olumsuz yönde etkilemektedir. Bu çocuklar, aile içi şiddet, parçalanmış aile ve mevsimlik tarım işçiliği gibi olumsuzlar yaşamakta, bu olumsuzluklar sonucu da öğrencilerinin başarılarının düşmesine ve okulu terk etmelerine sebep olmaktadır.

Araştırmaya katılan yöneticilerin, dezavantajlı öğrencilerin yaşadıkları sorunların eğitime yansıması olarak; 1. devamsızlık, 2. olumsuz davranışlar, 3. uyum sorunu ve 4. öğrenci başarısızlığı olarak ifade ettikleri sonucuna ulaşılmıştır. İlgili literatürün taranması sonucunda bu araştırmanın sonuçlarının bazı araştırmalarla benzerlik gösterdiği tespit edilmiştir. Ailelerin asgari düzeyde geçimini sağlayabilecek gelirden yoksun olmaları, çocuklarının okul ihtiyaçlarını karşılayamama gibi durumlar sonucunda onların eğitimlerine devam konusunda sıkıntı yaşamalarına ve okul dışında işlerde çalıştırılmalarına sebebiyet vermektedir. Bu durum çocuğun eğitimiyle ilgili birçok sorunu beraberinde getirmektedir (Terzi, 2009).

Araştırmaya katılım sağlayan yöneticilerin, dezavantajlı öğrencilerin eğitimindeki sorunların çözümlerini; 1. öğrenciye olumlu davranışlar kazandırma, 2. aile ziyaretleri yapma, 3. etkili iletişim kurma, 4. ilgisiz velileri bilinçlendirme, 5. çocuğun okula güven duymasını sağlama ve 6. sosyal etkinlikler düzenleme olarak ifade ettikleri sonucuna ulaşılmıştır. İlgili literatür ile ilgili inceleme yapıldığında, bu araştırmanın sonuçlarının bazı araştırmalarla benzerlik gösterdiği tespit edilmiştir. Bekir, Arbaş ve Aydın (2018) dezavantajlı öğrencilerin çoğunlukta olduğu bölgelerde aile eğitim programlarının yaygınlaştırılması ve eğitimde aile katılımını arttırmaya yönelik teşviklerin yapılması, dezavantajlı öğrencileri çoğunlukta olan okullara rehberlik ve psikolojik danışman öğretmenler verilmesi ve bunların okul yönetimi ile koordineli çalışılması, sosyal ilişkilerinde güvensizlik gibi değişik sorunlar yaşayan çocukların tespitine özen gösterilmesi, çocuğa ve ailesine gerekli yönlendirmelerin yapılması gerektiğini dile getirmektedirler. Kazu (2019), dezavantajlı bölgelerde öğrencilerin ihtiyaç duydukları araçların okul tarafından öğrencilere sağlanması, çalışma ortamının istenilen seviyeye getirilmesi ve etkili öğrenme metodlarının uygulanmasının gerekliliğini belirtmektedir. Bununla birlikte ailelerin, öğretmenlerin ve okulun etkili iletişim kurarak öğrenciler için uygun rehberlik programını hazırlamasıyla istenilen sonucun alınabileceğini dile getirmektedir.

Yukarıdaki tartışmalar, araştırmacıları konuyla ilgili birtakım sonuçlara ulaştırmıştır. Bunlar:

- Eğitim-öğretim sürecinde okul içi ve çevresinde sorunlar çıkardığı tespit edilip göç yoluyla gelen, bedensel ve zihinsel engeli bulunan, okul dışında işlerde çalıştırılan , madde kullanma eylemi gösteren ve bütünlüğü bozulmuş aileye sahip olma gibi özellikler taşıyan öğrencilerin dezavantajı öğrenci olarak adlandırdığı belirtilmiştir.

- Dezavantajlı öğrencilerin ailelerinin kendi eğitim hayatındaki yaşadığı sorunların, onların okulla ilgili olumsuz düşünceler geliştirmelerine neden olduğu ifade edilmiştir.

- Dezavantajlı öğrencilerde belirli bir hedefin olmaması onların dersleri ve sınavı bir eziyet olarak algılayıp onlardan uzaklaşmasına neden olduğu ifade edilmiştir.

- Ekonomik sıkıntılar, yaşanılan sağlık sorunları, aile bütünlüğünün olmaması, okul dışında çalıştırılma zorunluluğu, çevre şartlarının elverişsizliği, doğal afetler gibi farklı olanaksızlıkların dezavantajlı öğrencilerin eğitim ortamından kopmasına sebep olduğu belirtilmiştir.

- Dezavantajlı öğrencilerin, ilk eğitim aldıkları yer olan ailelerinde ve yakın çevrelerinden olumsuz etkilendiği ifade edilmiştir.

- Anne ve baba sevgisinden mahrum kalan çocukların hayatları boyunca bunun eksikliğini yaşayıp bunun neticesinde de çok anlamsız ilişkiler geliştirerek olumsuz davranışlar göstermeye meyilli oldukları belirtilmiştir.

- Okulların, değişik nedenlerden dolayı öğrencilere sağladığı eğitimdeki fırsatlar ve olanaklar bakımından birbirinden farklı özelliklere sahip olduğu belirtilmiştir.

- Dezavantajlı öğrencilerin ailelerinin eğitim düzeyinin düşük olması ve derslerine yardım edecek birilerinin bulunmamasının başarılarının düşük olmasındaki en önemli etkenlerden biri olduğu ifade edilmiştir.

- Dezavantajlı öğrencilerin elverişsiz çalışma ortamına sahip olduğu ifade edilmiştir.

- Dezavantajlı öğrencilerin; ailelerinin ilgisizliği, görmediği sevgisizlik gibi nedenlerle sorumluluk almaya yanaşmayan, içine kapanmış ve paylaşımdan kaçınan bir davranış sergilediği ifade edilmiştir.

- Öğrencilerin, okurken okul dışında çalışma zorunluluğu, ailelerin ilgisizliği, değişik rahatsızlıklar, okulla ilgili başarı ümidinin olmaması, sosyal ilişkilerinin zayıflığı gibi faktörler dolayısıyla devamsızlık yaptığı belirtilmiştir.

- Dezavantajlı öğrencilerin okulda olumsuz davranışlar sergilediği, öğretmenleri ve öğrenci arkadaşlarıyla farklı sorunlar yaşadığı ifade edilmiştir.

- Dezavantajlı ailelerin okullara gelen çocuklarının; yönetici, öğretmen ve arkadaşlarıyla iletişim kurma ve ortama uyum sağlama konusunda problemler yaşadığı belirtilmiştir.

- Dezavantajlı öğrencilerin çoğunlukta olduğu okullarda akademik başarının çok düşük olduğu, bu okullardan genellikle fen lisesine gidebilen öğrenci olmadığı belirtilmiştir.

- Araştırmaya katılanlar, dezavantajlı öğrencilerin ilk eğitim aldıkları yer olan ailelerinde ve yakın çevrelerinde birçok sıkıntıyla karşılaştıkları belirtmişlerdir.

Araştırmayı yapanlar, dezavantajlı öğrencilerin eğitiminde karşılaşılan sorunların çözümlerine ilişkin aşağıdaki çözüm önerilerini geliştirmişlerdir

- Anne-baba ve öğretmenler, dezavantajlı öğrencileri etkin bir şekilde eğitim-öğretime katıp öğrenciler için uygun bir öğrenme ortamı için birlikte çaba sarf etmelidirler.

- Öğrencilerle ilgili olumlu ve olumsuz davranışları aile ile paylaşılmalı, çocukların olumlu davranışların pekiştirilmeli ve olumsuz davranışlarını da ortadan kaldırılmak için okul, aile ile birlikte hareket etmelidir.

- Ailelerin ve öğrencilerin kendilerini daha değerli hissetmelerini sağlayarak bazı olumsuzlukların önüne geçilmelidir.

- Okul yönetimiyle öğretmenler, dezavantajlı öğrencilerle ilgili olumsuzlukları ortadan kaldırmak için öğrencinin içinde bulunduğu aile ve çevreyi tanıyarak onlarla etkili iletişim kurmalıdırlar.

- Çocuğu ve okulu umursamayan, evde çocuğun eğitimini desteklemeyen, çocuğu için çaba sarf etmeyen, okul ile olabilecek her türlü işbirliğinden uzak duran, çocuğu eğitimi için kurulmak istenen iletişimlerden kaçınan, okulu gereksiz gören ve zaman ayırmak istemeyen ilgisiz velilerin bu konularda bilinçlenmesi sağlanmalıdır.

- Elverişsiz çalışma ortamına sahip dezavantajlı öğrencilerle ilgili olumsuzlukları ortadan kaldırıp, onların etkin bir şekilde eğitim-öğretime katılmaları için, anne-baba ve öğretmenler birlikte çaba göstermelidirler.

- Okullar, akademik başarısı düşük , farklı dezavantaj özelliklerine sahip öğrencileri okula ve topluma kazandırmak için ilgi ve yeteneklerine uygun sosyal etkinlikler düzenlenmelidir.

KAYNAKÇA

Baş, T. ve Akturan, U. (2017). Sosyal bilimlerde bilgisyar destekli nitel araştırma yöntemleri (3. Baskı). Ankara: Seçkin Yayıncılık.

Bekir, H., Arbaş, G., ve Aydın, R. (2018). Sosyal dezavantajlı bölgedeki ortaokul öğrencilerinin anneye bağlanma ve sosyal destek algısı. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, (33), 79-90.

Bozan, İ., ve Kaştan, Y. (2018). Göç yaşamış öğrencilerin karşılaştıkları sorunlara ilişkin görüşleri: Bir Durum Çalışması. *Uluslararası Sosyal ve Eğitim Bilimleri Dergisi*, 5(10), 225-248.

Çalış, N. (2019). Ergenlik döneminde bulunan öğrencilerin aile ilişkilerinin okul yaşamına yansımaları ve okul sosyal hizmeti.

Es, M., ve Menteşe, B. (2018). Yerel yönetimlerde dezavantajlı gruplara yönelik uygulanan sosyal politikalar: Şanlıurfa Büyükşehir Belediyesi Örneği. *HAK-İŞ Uluslararası Emek ve Toplum Dergisi, 7.*

Gökmen, G. (2020). Okul psikolojik danışmanlığında hak savunuculuğu. Journal of Inclusive Education in Research and Practice, 1(1), 55-73.

Kahraman, S. (2016). *Boşanma sonrasında genç-ebeveyn ilişkilerinin sürdürülmesi ve öğrencinin akademik başarısına etkisi*: Afyon İli Örneği, Yayınlanmamış Yüksek Lisans Tezi, Konya: Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü.

Kardaş, D. (2014). *Dezavantajlı olarak kabul edilen öğrencilerin okuma anlama gelişimlerini etkileyen unsurlar ve çözüm önerileri* (Yayımlanmamış doktora tezi). Gazi Üniversitesi Eğitim Bilimleri Ensitütüsü, Ankara.

Kazu, İ. Y. (2019). Sosyo-ekonomik açıdan dezavantajlı kişilerin eğitimleri sırasında karşılaştıkları sorunlar. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, (34), 38-47.)

Kırnık, D. (2021). Kapsayıcı Öğrenmeye ilişkin sınıf öğretmenlerinin görüşleri. Asead 7. Uluslararası Sosyal Bilimler Sempozyumu, 275.

Koçak, S., ve Bostancı, A. B. (2019). Sınıf yönetiminde sosyal adalet. Ankara University Journal of Faculty of Educational Sciences (JFES), 52(3), 915-942.

Marshall, C. and Rossman, G. B. (1999). Designing qualitative research. London: Sage Publications. Miles, M. B. and Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook. London: Sage Publications.

Neuman, W. L. (2014). Toplumsal araştırma yöntemleri -Nitel ve nicel yaklaşımlar 2.cilt (S. Özge, Çev.). Ankara: Siyasal Yayınevi.

Önder, E., ve Güçlü, N. (2014). İlköğretimde okullar arası başarı farklılıklarını azaltmaya yönelik çözüm önerileri. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi,* 40(40), 109-132.

Özbaş, M. (2018). Dezavantajlı sosyolojik tabakalarda zorunlu eğitim sürecini etkileyen değişkenler. *Kastamonu Eğitim Dergisi*, 26(4), 1143-1154.

Özcan, K., Balyer, A., ve Yıldız, A. (2018). Ekonomik olarak dezavantajlı bölgelerde görev yapan ortaokul müdürlerinin liderlik davranışları. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 14(2), 532-547.

Patton, M. L. (2010). Proposingempiricalresearch: A Guidetothefundamentals. Glendale, CA: Pyrczak Publis- hing.

Serttaş, B. (2020). İlkokullarda görev yapan okul yöneticilerinin kapsayıcı eğitime dair görüşleri.

Tabcu, G. (2015). *Mevsimlik tarım işçilerinin ortaokul çağındaki çocukların eğitim sorunlarının sosyolojik olarak incelenmesi* (Yayımlanmamış yüksek lisans tezi). Adıyaman Üniversitesi, Sosyal Bilimler Enstitüsü, Adıyaman.

Terzi, F. (2009). *Çocuk işçilerin psiko-sosyal durumları*, Karedeniz Teknik Üniversitesi, Sosyal Bilimler Enstitüsü, (Yayımlanmamış Yüksek Lisans Tezi), Trabzon.

Tosun, A., Ay, M. H., ve Koçak, S. (2020). Yönetici gözüyle dezavantajlı okullar: sosyal adaletin sağlanması için çözüm önerileri. *Eğitimde Nitel Araştırmalar Dergisi*, 8(3), 980-999.

Yağar, F., ve Dökme, S. (2018). Niteliksel araştırmaların planlanması: Araştırma Soruları, Örneklem Seçimi, Geçerlik ve Güvenirlik. *Gazi Sağlık Bilimleri Dergisi*, 3(3), 1-9.

Yeşilkayalı, E., ve Meydan, S. (2017). Bir ortaokul özelinde okul sosyal *hizmeti ihtiyacının belirlenmesi.*

Yıldırım, A., ve Şimşek, H. (2006). Sosyal bilimlerde nitel araştırma yöntemleri. (6. baskı) Ankara: Seçkin Yayıncılık.

Yıldırım, A., ve Şimşek, H. (2011). Sosyal bilimlerde nitel araştırma yöntemleri. (8. baskı) Ankara: Seçkin Yayıncılık.

Yıldırım, A. & Şimşek, H. (2016). Sosyal bilimlerde nitel araştırma yöntemleri. Ankara: Seçkin.

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https://www.aksam.tr

https://www.hurriyet.com.tr

FINDIK YAĞI VE KARNAUBA VAKSI İLE OLUŞTURULAN OLEOJELLERİN TERMAL ÖZELLİKLERİ

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ÖZET

Oleojelasyon, eczacılık, gıda, kozmetik ve petrokimya gibi birçok alanda özellikle son yıllarda kullanılmaya başlanılan ve sıvı yağların jel benzeri bir yapıda katılaştırılmasını sağlayan bir işlemdir. Oleojel, üç boyutlu bir jel ağı tarafından sıkıştırılmış bitkisel yağ olarak tanımlanabilmektedir. Sıvı kısmın immobilize olmasını sağlayan ajanlar olan oleojelatörler ise bitki vaksları, mono-digliseritler, yağ asitlerinin alkolleri ya da esterleri, fosfolipitler ve fitosterollerdir. Oleojeller, gıda teknolojisinde çeşitli ürünlerin üretiminde sıvı yağların katı formda kullanılması açısından önemli bir potansiyele sahiptir. Ayrıca, oleojeller oluşturuldukları bitkisel yağın besinsel özelliklerini korumakla birlikte, gıda ürünlerinde daha iyi yapısal ve duyusal özelliklerin oluşmasına da katkı sağlamaktadır. Gıda alanında yapılan oleojelasyon çalışmalarında genellikle oleojelatör olarak ayçiçeği, balmumu, pirinç kepeği, candelilla, karnauba ve berri vaksları, yağ olarak ise; ayçiçek, mısır, zeytin, fındık ve kanola yağı kullanılmıştır. Oleojellerin termal özelliklerinin belirlenmesi kullanılacağı ürün açısından önem arz etmektedir. Yapılan bu çalışmada fındık yağı ve karnauba vaksı ile oluşturulan oleojellerin termal davranışları incelenmiştir. Bu amaçla farklı oranlarda (%5, %10, %15 ve %20) karnauba vaksı içeren oleojellerin erime sıcaklıkları ve entalpileri DSC ile belirlenmiştir. Farklı oranlarda vaks kullanımının oleojellerin erime pik sıcaklıkları ile entalpileri üzerinde çok önemli seviyede ($P<0,01$) etkili olduğu ve oleojelatör konsantrasyonu arttıkça, erime sıcaklıkları ve entalpilerin de arttığı gözlenmiştir. Örnekler için belirlenen erime entalpilerinin 8.095 ile 27.110 J/g arasında değiştiği tespit edilmiştir. Elde edilen sonuçların fındık yağı ve karnauba vaksı kullanılarak oluşturulan oleojellerin gıda teknolojisinde kullanımı açısında önemli bilgiler sağladığı düşünülmektedir.

Anahtar Kelimeler: Oleojel, DSC, Karnauba vaksı, Fındık yağı, Entalpi

THERMAL PROPERTIES OF OLEOGELS MADE WITH HAZELNUT OIL AND CARNAUBA WAX

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ABSTRACT

Oleogelation is a process that has been used in many fields such as pharmacy, food, cosmetics and petrochemistry especially in recent years, and provides the solidification of liquid oils in a gel-like structure. Oleogel can be defined as vegetable oil compressed by a three-dimensional gel network. Oleogelators, which are agents that provide immobilization of the liquid part, are plant waxes, mono-diglycerides, alcohols or esters of fatty acids, phospholipids and phytosterols. Oleogels have an important potential in terms of using liquid oils in solid form in the production of various products in food technology. In addition, while oleogels preserve the nutritional properties of the vegetable oil from which they are formed, they also contribute to the formation of better structural and sensory properties in food products. In oleogelation studies in the field of food technology sunflower, beeswax, rice bran, candelilla, carnauba and berri waxes and sunflower, corn, olive, hazelnut and canola oils were used. Determining the thermal properties of oleogels is important for the product to be used. In this study, the thermal behavior of oleogels formed with hazelnut oil and carnauba wax was investigated. For this

purpose, melting temperatures and enthalpies of oleogels containing carnauba wax in different ratios (5%, 10%, 15% and 20%) were determined by DSC. It has been observed that the use of wax at different rates has a very significant ($P<0.01$) effect on the melting peak temperatures and enthalpies of oleogels, and as the oleogelator concentration increases, the melting temperatures and enthalpies also increase. It was determined that the melting enthalpies determined for the samples ranged from 8.095 to 27.110 J/g. It is thought that the results obtained provide important information for the use of oleogels formed by using hazelnut oil and carnauba wax in food technology.

Keywords: Oleogel, DSC, Carnauba wax, Hazelnut oil, Enthalpy

GİRİŞ

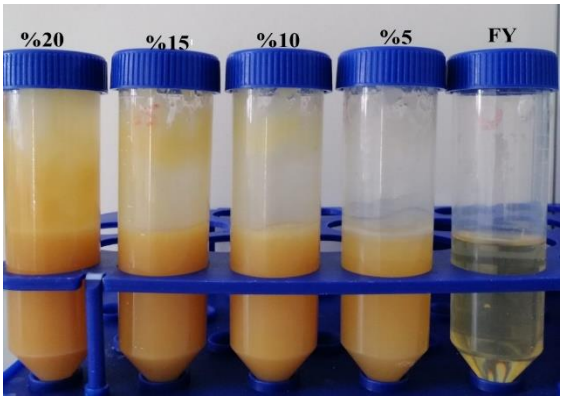
Yemeklik yağlar oda sıcaklığında genellikle katı, yarı-katı ve sıvı formda bulunmaktadırlar. Fiziksel özelliklerine bağlı olarak yağların kullanım alanı da değişmektedir. Oleojelasyon işlemi sıvı formda bir yağın uygun bir oleojelatör kullanılarak katı bir yapıya dönüştürülmesinde önemli bir teknik olarak son yıllarda kullanılmaktadır. Gıda teknolojisi alanında özellikle hayvansal yağların yerine bitkisel yağların ikame edilebilmesi açısından oleojeller önem arz etmektedir (Wang et al., 2016). Oleojelasyon, sıvı yağların jel benzeri bir yapıda katılaştırılmasını sağlayan bir işlemdir (O'Sullivan et al., 2016). Oleojel, üç boyutlu bir jel ağı tarafından sıkıştırılmış bitkisel yağ olarak tanımlanabilmektedir (Jimenez-Colmenero et al., 2015; Stortz et al., 2012). Sıvı kısmın immobilize olmasını sağlayan oleojelatörler ise bitki vaksları, mono-digliseritler, yağ asitlerinin alkolleri ya da esterleri, fosfolipitler ve fitosterollerdir (Dassanayake et al., 2011).

Oleojelasyonda yağın çeşidi, kullanılan oleojelatörün türü ve konsantrasyonu son ürünün reolojik, tekstürel ve termal özellikleri üzerinde doğrudan etki göstermektedir. Gıda alanında yapılan oleojelasyon çalışmalarında genellikle oleojelatör olarak ayçiçeği, balmumu, pirinç kepeği, kandelilla, karnauba ve berri vaksları, yağ olarak ise; ayçiçek, mısır, zeytin, fındık ve kanola yağları kullanılmıştır (Chopin- Doroteo et al., 2011; Patel and Dewettinck, 2015; Öğütçü ve Yılmaz, 2015a; Öğütçü ve Yılmaz, 2015b; Jang et al., 2015). Bu araştırmada ise fındık yağı ve karnauba vaksı ile oluşturulan oleojellerin termal davranışları incelenmiştir. Bu amaçla farklı oranlarda (%5, %10, %15 ve %20) karnauba vaksı içeren oleojellerin erime sıcaklıkları ve entalpileri DSC ile belirlenmiştir.

MATERYAL VE METOT

Araştırmada kullanılan rafine fındık yağı yerel bir marketten, karnauba vaksı ise gıda katkı maddeleri satışı yapan bir firmadan temin edilmiştir. Oleojeller; ağırlık esasına göre %5, %10, %15 ve %20 karnauba vaksı içerecek şekilde fındık yağı kullanılarak hazırlanmıştır (Şekil 1). Oleojeller hazırlanırken belirlenen oranlarda tartılan yağ ve vakslar 90°C'de su banyosunda 20 dk bekletilmiş, ardından her biri 2 dk boyunca vortekslenerek oda sıcaklığında, karanlık ortamda 24 saat depolanmıştır. Daha sonra 4°C'de 1 gece muhafaza edilmiştir.

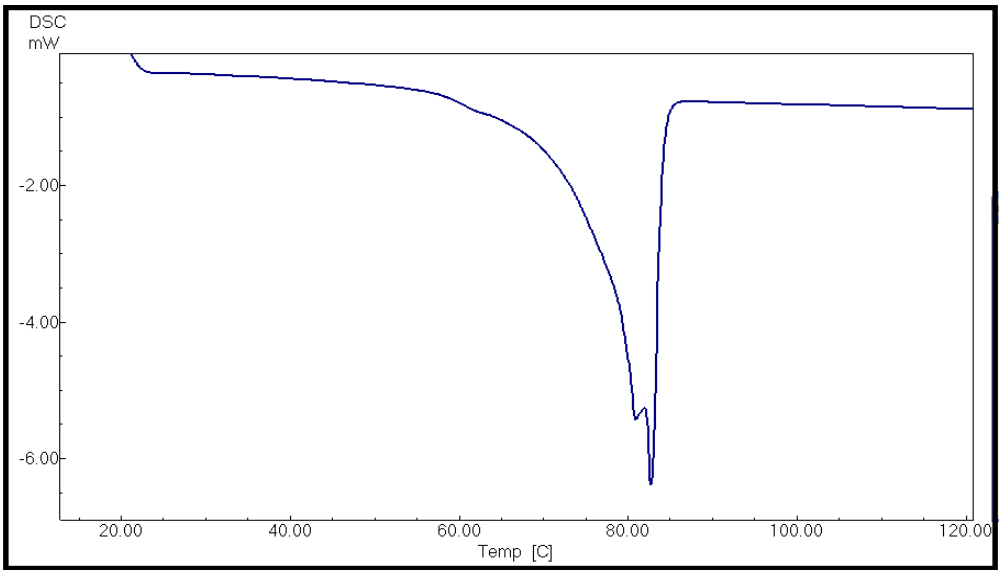
Örneklerin termal özelikleri DSC (Diferansiyel Tarama Kalorimetresi) ile belirlenmiştir. Hazırlanan tüm konsantrasyonlar için iki paralel olacak şekilde örnek alınıp erime piki ve entalpisi tespit edilmiştir. Bu amaçla alüminyum numune kaplarına tartılan yaklaşık 3-4 mg ağırlığındaki örnekler, referans olarak boş bir kap kullanılarak 5°C/dak'lık ısıtma hızı ile oda sıcaklığından 120°C'ye ısıtılmıştır. Ölçümlerde ortam atmosferi olarak nitrojen gazı kullanılmış ve akış hızı 50 ml/dak olarak ayarlanmıştır. Ölçümler sonucu elde edilen termogramlardan gözlenen erime piklerinden pik sıcaklıkları ve entalpileri tespit edilmiştir. Fındık yağı ve karnauba vaksı için de aynı program uygulanarak termal özellikleri belirlenmiştir.



Şekil 1. Farklı oranlarda karnauba vaksı ile hazırlanan oleojeller (FY: fındık yağı)

BULGULAR

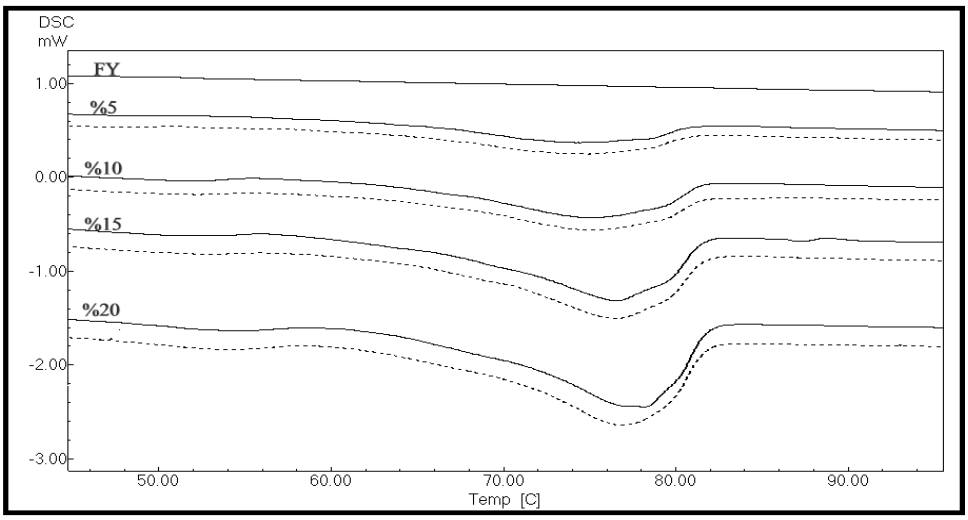
Karnauba vaksının 82-86°C arasında erime noktasına ve yüksek entalpi değerine sahip bir katkı maddesi olduğu bilinmektedir (Zhang et al., 2018). Mevcut bu çalışmada kullanılan karnauba vaksı için elde edilen DSC termogramı Şekil 2'de görülmektedir. Termogramdan karnauba vaksı için erime sıcaklığı 82,73°C ve entalpi değeri ise 216,65 J/g olarak tespit edilmiştir (Tablo 1). Fındık yağı ve farklı oranlarda karnauba vaksı içeren oleojeller için belirlenmiş termogramlar ise Şekil 3'te görülmektedir. Şekilden de görüldüğü üzere fındık yağı için herhangi bir pik gözlenmemişken oluşturulan oleojeller için erime pikleri tespit edilmiştir. Bununla birlikte erime piki alanının kullanılan oleojelatör konsantrasyonu artışı ile büyüdüğü görülmektedir. Böylece vaks konsantrasyonunun artması ile erimenin meydana gelmesi için daha fazla enerjiye ihtiyaç olduğunu ifade etmek mümkündür.



Şekil 2. Karnauba vaksının DSC termogramı

Araştırma kapsamında oluşturulan oleojeller için belirlenen erime başlangıç, bitiş ve pik sıcaklıkları ile entalpi değerleri Tablo 1'de verilmiştir. Bu değerler üzerinde oleojelatör konsantrasyonunun çok önemli seviyede ($p<0,01$) etkili olduğu belirlenmiştir. Tablo 1'de verilen değerler incelendiğinde oleojeller için belirlenen ortalama erime pik sıcaklıklarının74,59 – 76,75°C arasında değiştiği görülmektedir. %5 ve %10 karnauba vaksı kullanılarak elde edilen oleojellere göre, %15 ve %20 karnauba vaksı içeren oleojellerde daha yüksek erime pik sıcaklıkları tespit edilmiştir ($p<0,05$). Benzer şekilde erime başlangıç sıcaklığının %15 ve %20 karnauba vaksı içeren oleojellerde daha yüksek

olduğu görülmektedir. Diğer yandan en düşük erime bitiş sıcaklığı %5 karnauba vaksı içeren, en yüksek erime bitiş sıcaklığı ise %20 karnauba vaksı içeren örneklerde tespit edilmiştir.



Şekil 3. Oleojel örneklerinin ve fındık yağının DSC termogramları

Oleojeller için belirlenen ortalama erime entalpilerinin 8,10 – 27,11 J/g değerleri arasında değiştiği görülmektedir (Tablo 1). En düşük ortalama değer %5 karnauba vaksı içeren örneklerde belirlenmişken, en yüksek ortalama değer %20 karnauba vaksı içeren oleojellerde tespit edilmiştir. Ayrıca, erime entalpisinin artan karnauba vaksı konsantrasyonuna bağlı olarak önemli seviyede ($p<0,05$) artış gösterdiği belirlenmiştir. Bu durum oleojelasyonda kullanılan daha yüksek orandaki karnauba vaksı konsantrasyonunun erime gizli ısısını artırarak daha stabil bir oleojel oluşumuna katkıda bulunduğunu göstermektedir.

Tablo 1. Oleojeller için belirlenen erime başlangıç, bitiş ve pik sıcaklıkları ile entalpi değerleri

	%5	%10	%15	%20	Karnauba Vaksı
Pik (°C)	74,59±0,56^{a}	75,09±0,08^{a}	76,59±0,04^{b}	76,75±0,06^{b}	82,730±0,01^{c}
$T_{baş}$ (°C)	63,79±0,75^{a}	64,49±0,37^{a}	66,23±0,30^{b}	67,85±0,18^{c}	80,71±0,01^{d}
T_{bit} (°C)	80,71±0,12^{a}	81,43±0,01^{b}	81,53±0,13^{b}	81,76±0,03^{c}	84,06±0,01^{d}
Entalpi (J/g)	8,10±0,13^{a}	14,85±0,29^{b}	22,04±0,28^{c}	27,11±0,91^{d}	216,65±0,01^{e}

$^{a-e}$: Aynı satırda farklı harflerle işaretlenmiş ortalamalar istatistiki açıdan birbirinden farklıdır ($p<0,05$).
±: standart sapma

Yapılan bir araştırmada üç farklı konsatrasyonda (%3, %5 ve %7) kandelilla ve balmumu vaksları ile hazırladıkları oleojellerin farklı oranlarda karışımlarının termal özellikleri belirlenmiştir. Elde edilen oleojellerde karıştırılan balmumu vaksı oranı arttıkça oleojellerin erime pik sıcaklıkları ve entalpilerinde azalma olduğu bildirilmiştir. Diğer yandan kandelilla vaksı içeren gruplarda erime pik sıcaklıkları ve entalpilerinin balmumu vaksı içeren gruplara oranla daha yüksek olduğu görülmüştür (Hwang and Winkler-Moser, 2020). Olmos-Oropeza et al. (2021) yaptıkları bir çalışmada %10, %15 ve %20 oranında kandelilla vaksı ile oluşturulan oleojellerin termal özelliklerini belirlemişlerdir. Oleojellerde kullanılan oleojelatör miktarındaki artışın erime piki sıcaklıkları ve entalpilerinde önemli değişimlere neden olduğunu bildirmişlerdir. Başka bir çalışmada ise Wijarnprecha et al. (2018) pirinç kepeği yağı ve pirinç kepeği vaksı kullanarak elde edilen oleojellerden, %3 oranda pirinç kepeği vaksı ile hazırlanan oleojelin en düşük, %25 oranda pirinç kepeği vaksı içeren oleojelin ise en yüksek erime pik sıcaklığı ve entalpi değerine sahip olduğunu ifade etmişlerdir. Yapılan bu araştırmada ise farklı oranlarda karnauba vaksı kullanılarak üretilen fındık yağı oleojellerinin erime termogramındaki

değişikleri incelenmiş, karnauba vaksı konsantrasyonunun erime pik sıcaklıkları ve entalpileri üzerinde önemli seviyede etkili ($p<0,01$) olduğu görülmüştür.

SONUÇ

Araştırmada, farklı konsantrasyonlarda karnauba vaksı kullanılarak fındık yağından elde edilen oleojellerin erime sıcaklıkları ve entalpi değerlerinin, oleojelasyonda kullanılan karnauba vaksı konsantrasyonundan çok önemli seviyede etkilendiği ($p<0,01$) görülmüştür. Artan oleojelatör konsantrasyonu genel itibariyle erime sıcaklıklarında ve entalpi değerlerinde artışa sebebiyet vermiştir. Bu durum fındık yağı oleojelasyonunda karnauba vaksı oranındaki artışın daha stabil bir oleojel oluşumuna katkıda bulunduğunu göstermektedir. Elde edilen sonuçların, fındık yağı ve karnauba vaksı kullanılarak oluşturulan oleojellerin gıda teknolojisinde kullanımı açısından önemli bilgiler sağladığı düşünülmektedir. Bununla birlikte oleojellerin termal özellikleri ile tekstürel karakteristiklerinin belirlendiği yeni çalışmalara da ihtiyaç vardır.

KAYNAKLAR

Chopin-Doroteo M, Morales-Rueda JA, Dibildox-Alvarado E, Charó-Alonso MA, de la Peña-Gil A, Toro-Vazquez JF 2011. The effect of shearing in the thermo-mechanical properties of candelilla wax and candelilla wax–tripalmitin organogels. Food Biophysics, 6(3): 359-376.

Dassanayake LSK, Kodali DR, Ueno S 2011. Formation of oleogels based on edible lipid materials. Current Opinion in Colloid & Interface Science, 16 (5): 432-439.

Hwang HS, Winkler-Moser JK 2020. Properties of margarines prepared from soybean oil oleogels with mixtures of candelilla wax and beeswax. Journal of Food Science, 85(10): 3293-3302.

Jang A, Bae W, Hwang HS, Lee HG, Lee S 2015. Evaluation of canola oil oleogels with candelilla wax as an alternative to shortening in baked goods. Food chemistry, 187, 525-529.

Jimenez-Colmenero F, Salcedo-Sandoval L, Bou R, Cofrades S, Herrero AM, Ruiz-Capillas C 2015. Novel applications of oil-structuring methods as a strategy to improve the fat content of meat products. Trends in Food Science & Technology, 44(2): 177-188.

Patel AR, Dewettinck K 2015. Comparative evaluation of structured oil systems: Shellac oleogel, HPMC oleogel, and HIPE gel. European journal of lipid science and technology, 117(11): 1772-1781.

Stortz TA, Zetzl AK, Barbut S, Cattaruzza A, Marangoni AG 2012. Edible oleogels in food products to help maximize health benefits and improve nutritional profiles. Lipid Technology, 24: 151–154.

Olmos-Oropeza G, Aguilar-Zárate M, Saavedra-Leos MZ ,Martínez-Juárez LG, Toro-Vazquez JF, Sánchez-Macías A, López-Martínez LA 2021. Development of candelillawax oleogels as a medium of controlled release of phosphorus in an ın vitro model. Applied Sciences, 11, 3515.

O'Sullivan CM, Barbut S, Marangoni AG 2016. Edible oleogels for the oral delivery of lipid soluble molecules: Composition and structural design considerations. Trends in Food Science & Technology, 57, 59-73.

Öğütçü M, Yılmaz E 2015a. Characterization of hazelnut oil oleogels prepared with sunflower and carnauba waxes. International Journal of Food Properties, 18(8): 1741-1755.

Öğütçü M, Yılmaz E 2015b. Comparison of the pomegranate seed oil organogels of carnauba wax and monoglycerid. Journal of Applied Polymer Science, 132(4).

Wang FC, Gravelle AJ, Blake AI, Marangoni AG 2016. Novel trans fat replacement strategies. Current Opinion in Food Science, 7, 27-34.

Wijarnprecha K, Aryusuk K, Santiwattana P, Sonwai S, Rousseau D 2018. Structure and rheology of oleogels made from rice bran wax and rice bran oil. Food Research International, 112, 199-208.

Zhang Y, Simpson BK, Dumont MJ 2018. Effect of beeswax and carnauba wax addition on properties of gelatin films: A comparative study. Food Bioscience 26, 88–95.

ÇİN'İN BARIŞÇIL GELİŞİM STRATEJİSİNİN ULUSLARARASI SİSTEM İÇERİSİNDE YARATTIĞI ETKİ

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ÖZET

Soğuk Savaşın sona ermesiyle uluslararası sistem içerisinde çift kutuplu yapının yerini tek kutuplu bir dünya düzenine bırakmış, ABD liderliğinde yeni bir dönemin temelleri atılmıştır. Tek kutuplu yapı içerisinde belirli bir süre hâkimiyetini sürdürmeyi başaran ABD, sistem içerisinde yaşanan 11 Eylül siyasi krizi sonrasında çıkar temelli yürüttüğü stratejileri ve 2008 ekonomik krizin artan etkisiyle küresel ekonomi üzerindekini hâkimiyeti kaybetmeye başlamıştır. ABD'nin sistem içerisindeki hâkimiyetinin daha fazla sorgulandığı dönemde yükselen güçlerin ortaya çıkması yeni bir dizi değişimi başlatmıştır. Özellikle, Çin'in uluslararası sistem içerisinde güçlü bir aktör olarak yükselişi, süreklilik gösteren ekonomik ilerleyişi, askeri ve siyasi reformları güç dengelerinin yeniden inşa edilmesine yol açmış, güç geçişinin daha belirgin olmasını sağlamıştır. Çin'in ekonomik ve askeri yönde birbirini ikame edebilen iki güç bileşeni içerisinde gösterdiği yükseliş karşısında, hegemonyanın ya da yenidünya düzenin inşa edilmesinde önemli olan kültürel ve ya ideolojik gücünü de arttırması önemli hale gelmiştir. Çin'in sistem içerisindeki etki edebilme kapasitesini ve ya ikna kabiliyetlerini geliştirilmesi sistem içerisindeki alternatif düzenin inşa edilmesinde önemlidir. Sistem içerisinde ki mevcut düzeni değiştirmeye yönelik çaba içerisine giren ve ABD karşısında güçlü bir rakip haline gelen Çin, sistem içerisinde uluslararası toplumun rızasını kazanması, normatif düzenin inşası için gerekli olan şeffaf yönetim anlayışını benimsemesi ve diğer ülkelerin cazibesine kazanmak için başarılı bir yükseliş stratejisi yürütmesi gerekmektedir.

Bu çalışma kapsamında, Çin'in ''barışçıl *gelişim strateji''* kapsamında ortaya koyduğu ilkelerin yumuşak gücünün gelişime sağladığı katkının önemini vurgulanırken, Çin'in barışçıl gelişim stratejisinin sistem üzerindeki dengelerin yeniden inşa edilmesinde ve ya mevcut tehdit algısının kırılmasında oynadığı role yer verilecektir. Çin barışçıl gelişim kavramı altında sistem içerisinde yükselişini sürdürmesi yükselen güç ve ya yükselen tehdit algısını kamuflaj etmesinde ve ulusal çıkarlarını uluslararası çıkarlar ekseninde devam ettirmesinde önemli katkı sağlamaktadır. Çalışma kapsamında, Çin'in barışçıl yükselişini destekleyen söylemlere, Konfüsyüs enstitülerinin ve ya Tianxia kuramının artan önemine yer verilirken, Batı karşısında inşa edilen alternatif ilke ve politikaların sistemsel dönüşüm üzerinde yaratacağı etkiye değinilecektir. Çalışma kapsamında, Çin'in idealist temeller çerçevesinde yürüttüğü barışçıl gelişim stratejisinin mevcut ittifak ilişkilerine yansıması, sistem içerisindeki tehdit algısının yön değiştirmesinde ve hegemonik rekabet üzerinde oynadığı etkinin önemine yer verilecektir.

Anahtar Kelimeler: Çin, Uluslararası Sistem, Barışçıl Gelişim Kavramı

THE IMPACT OF CHINA'S PEACEFUL DEVELOPMENT STRATEGY ON THE INTERNATIONAL SYSTEM

ABSTRACT

With the end of the Cold War, the bipolar structure in the international system was replaced by a unipolar world order, and the foundations of a new era were laid under the leadership of the United States. The United States, which managed to maintain its dominance in the unipolar structure for a certain period of time, began to lose its dominance over the global economy with its interest-based strategies and the increasing impact of the 2008 economic crisis after the September 11 political crisis in the system. At a time when the dominance of the United States in the system is being questioned more, the emergence of rising powers has initiated a new series of changes. In particular, the rise of China as a powerful actor in the international system, its continuous economic progress, military and

political reforms have led to the restoration of power balances and made the transition of power more obvious. In the face of China's rise in the two interchangeable power components in the economic and military direction, it has become important for the hegemony or the new world to increase its cultural and ideological power, which is important for the construction of order. Improving China's capacity to influence and or persuade other states within the system is important in building an alternative order within the system. In the effort to change the existing order into the system and the US, which has become a strong competitor in the face of China to win the approval of the international community within the system, adopt the normative order that are required for the construction of a transparent management approach is required to conduct a successful strategy to win the attraction of other countries.

Within the scope of this study, the importance of the contribution of the soft power of the principles laid down by China within the scope of the '*peaceful development strategy'* to development will be emphasized, while the role of China's peaceful development strategy in restoring balances on the system and either breaking the current threat perception will be included.The fact that China continues to rise within the system under the concept of peaceful development makes an important contribution to the recognition of the perception of rising power or new threat and to the continuation of its national interests in the direction of international interests. Within the scope of the study, the discourses supporting China's peaceful rise, the increasing importance of Confucius institutes and the theory of ya Tianxia will be included, and the impact of alternative principles and policies built in the face of the West on systemic transformation will be discussed. Within the scope of the study, the reflection of China's peaceful development strategy carried out within the framework of idealistic foundations on the current alliance relations, the importance of changing the direction of threat perception within the system and the impact it plays on hegemonic competition will be included in the study.

Keywords: China, International System, The Concept of Peaceful Development

Giriş

Soğuk Savaşın sona ermesiyle uluslararası sistem içerisinde çift kutuplu yapının yerini tek kutuplu bir dünya düzenine bırakmış, ABD liderliğinde yeni bir dönemin temelleri atılmıştır. Yeni dünya düzeni içerisinde sistem üzerindeki hakimiyetini sürdüren ABD, liderlerin ve ya aktörlerin uluslararası hukuka aykırı ve ya liberal düzen karşıtı kararlar alması sonucunda meşru yönetim gücünü kaybetmeye başlamıştır. Özellikle, ABD'nin George W. H.Bush yönetiminin 11 Eylül siyasi krizi sonrasında Bush doktrini çatısı altında uygulamaya koyduğu tek taraflı politikalar, 2008 finansal krizi sonrasında ulusal ekonominin zayıflaması sonucunda küresel ekonomi üzerindeki hakimiyetini kaybetmeye başlaması ve Donald Trump yönetimin tek taraflı, uzlaşmadan uzak ve liberal değerleri arka plana tutan dış politika anlayışı ABD'nin sistem içerisindeki gücünün daha fazla sorgulanmasına yol açmıştır. ABD yönetimin küresel yönetişim üzerinde artan pasif duruşu, transatlantik ittifak içerisinde artan ayrıştırıcı politikaları ve ortak güvenlik işbirliği politikalarından uzak bir tavır sergilemesi sistem içerisinde hegemon gücün yarattığı boşluğu ön plana çıkarmıştır. Yükselen güçler arasında yer alan ülkelerden özellikle Çin, uluslararası sistem içerisinde oluşan bu güç boşluğunu doldurma yönünde önemli çaba göstermektedir. Çin'in ekonomik ve askeri yönde birbirini ikame edebilen iki güç bileşeni içerisinde gösterdiği yükseliş karşısında, hegemonyanın ya da yenidünya düzenin inşa edilmesinde önemli olan kültürel ve ya ideolojik gücünü de arttırması bu çabanın varlığını ortaya koymaktadır. Çin'in sistem içerisindeki etki edebilme kapasitesini ve ya ikna kabiliyetlerini geliştirilmesi sistem içerisindeki alternatif düzenin inşa edilmesinde önemlidir. Sistem içerisinde ki mevcut düzeni değiştirmeye yönelik çaba içerisine giren ve ABD karşısında güçlü bir rakip haline gelen Çin, uluslararası toplumun rızasını kazanması, normatif düzenin inşası için gerekli olan şeffaf yönetim anlayışını benimsemesi ve diğer ülkelerin cazibesine kazanmak için ise başarılı bir yükseliş stratejisi yürütmesi gerekmektedir. Bu çalışma kapsamında, Çin'in ''*barışçıl gelişim strateji''* kapsamında ortaya koyduğu ilkeler yumuşak gücünün gelişime katkı sağlarken, Çin'in barışçıl gelişim stratejisinin sistem üzerindeki dengelerin yeniden inşa edilmesinde ve

ya mevcut tehdit algısının kırılmasında oynadığı rol de yadsınamaz. Çin barışçıl gelişim stratejisi kapsamında sistem içerisindeki yükselişini sürdürmesi yükselen güç ve ya yükselen tehdit algısını kamuflaj etmesinde ve ya ulusal çıkarlarını uluslararası çıkarlar ekseninde devam ettirmesinde önemli bir rol oynamaktadır.

Uluslararası sistem içerisindeki yapısal değişiklerin temelinde yer alan materyal güçler kadar normatif güçlerin de etkisi büyüktür. Uluslararası sistem içerisindeki değişim içsel süreçlerden kaynaklanırken dışsal güç bileşenleri ile de desteklenmektedir. Devletlerarasında güç dağılımı sert ve yumuşak güç bileşenleri çerçevesinde tanımlanırken, normatif bakış açısı ile değerlendirilmektedir. Çin'in barışçıl yükseliş söyleminin mimarı olan Hu Jintao, 2004 yılında başkanlık yaptığı dönemde bu kavramı ortaya koymuştur. Hu Jintao, bu kavram çatısı altında teori ile pratiği sentez haline getirerek Çin'in hegemonya arama yolunda olmadığına yönelik önemli adımlar atmıştır. Xi Jinping döneminde ortaya konan teorik çalışmaların pratikte ortaya çıkan sonuçlar ile paralel yönde yorumlanmaması barışçıl yükseliş stratejisinin yeniden tartışılmasına yol açmıştır. Bu çalışmada, barışçıl yükseliş kavramının teori ve pratikte nasıl yorumlandığı, ulusal ve ya uluslararası gelişmeler çerçevesinde hangi yöne doğru evrildiği ve ya aktörlerin ulusal stratejiler üzerinde yarattığı etkinin önemine yer verilecektir. Çin uluslararası sistem içerisindeki barışçıl yükseliş stratejisinin sürdürebilecek mi sorusuna yanıt aranırken, Çin'in gelecekte jeopolitik muhayyilesine uygun bir düzen arayışı ve ya artan ulusal kimlik iddiaları karşısında ne ölçüde bu stratejiyi devam ettireceği yönündeki ikilem varlığını sürdürmektedir.

1.Barışçıl Gelişim Kavramı ve Teorik Altyapısı

Hu Jintao dönemi dış politikasında temel esas alınan barışçıl yükseliş kavramı, 2003 yılında Çin Reform Forumu adlı düşünce kuruluşunun başkanı Zheng Bijian tarafından ortaya konmuştur. Barışçıl yükseliş fikri temel olarak; Çin'in yükselen bir güç olduğunu ancak, diğer güçlerin geçmişte yaptığı gibi güç veya malzeme tedariki yoluyla yükselmeyeceğini, aksine, "*yeni bir dünya düzeni"* yaratmak yerine, uluslararası normlar ve statüko içerisinde yükselişini ifade eder. (Lantaigne, 2009). Çin'in barışçıl yükseliş kavramının temelini oluşturan Konfüçyanist felsefe adalet ve barış kavramlarını ön plana çıkmaktadır. Çin'in ekonomik küreselleşmeden kopmak yerine ona katıldığını ve devlet kapitalizm çatısı altında barışçıl bir yükseliş stratejisi benimsediğini belirtmiştir. Zheng Bijian, barışçıl yükseliş kavramını; "*Çin'in ekonomik küreselleşmeye katıldığı, sosyalizmin Çin değerleriyle yeniden inşa edildiği bir stratejik yol*" olarak tanımlamaktadır. (Guoli, 2003).

Barışçıl yükseliş stratejisi '*'Çin'in Barışçıl olarak Bir Arada Yaşamanın Beş İlkesi*''çerçevesinde değerlendirilmektedir. Çin yönetimi benimsediği beş önemli prensip çerçevesinde başka devletlerin içişlerine karışmamayı, toprak bütünlüğüne saygı göstermeyi, eşitlik ve ortak fayda prensibi, saldırmazlık ilkesi ve barış içerisinde birlikte var olmayı içermektedir. (Pekcan, 2018:324). Çin'in benimsediği bu beş önemli ilke uluslararası sistem içerisinde normatif gücünün artmasına önemli katkı sağlamıştır. Çin dış politikası içerisinde önemli rol oynayan beş prensip içerisinde yer alan diğer ülkelerin iç işlerine karışmama ilkesi sistem içerisinde statükocu dış politika anlayışı sergilediğinin göstergesidir. Pekin yönetimi kalkınma odaklı barışçıl dış politika anlayışının siyasi zeminde de karşılığını bulması, küresel yönetişim içerisinde sorumluluk almayı ve uyum içerisinde bir dünya düzeni yaratmayı amaçlamaktadır. Barışçıl yükseliş kavramının Çin liderliğinin artan gücü kapsamında değerlendirilmesi sistem içerisinde tehdit algısının oluşmasına yol açmıştır. 2004 yılında Boao Forumunda Hu Jintao, oluşabilecek yanlış algının önüne geçmek amacıyla barışçıl gelişme kavramını kullanmaya başlamıştır (Suisheng, 2010:s.365). Hu Jintao gelişme mücadelesinin sadece yükselmek için olmadığını, aynı zamanda barışa bağlı olarak gelişim göstereceğini ve asla hegemon güç olmayı hedeflemediğini belirten bir açıklamada bulunmuştur (Glaser ve Medeiros, 2007: s.294).

Çin'in uluslararası sistem içerisinde önemle altını çizdiği *''Barışçıl gelişim''* stratejisinin temel amacı *''Çin tehdidi''*algsinin önüne geçmektir.

Barışçıl gelişme stratejisinin gelişimine büyük katkı sağlayan Tianxia Kuramı, Konfüçyüs ilkelerinde beslenmektedir. Hu Jintao döneminde, Konfüçyüs felsefesine yönelik yapılan atıfların en belirgin olduğu dönemdir (Pekcan,2017:s. 1132). Konfüçyanist siyaset felsefesi ve dış politikası barışçıl yükseliş ve barışçıl kalkınma kavramlarını temel almaktadır. Çin'in barışçıl dış politika söylemleri Konfüçyanist ilkeler ile uyumlu hale getirilmiştir. Çin merkezli uluslararası ilişkiler kuramı olan Tianxia Kuramı, Batı değerlerinin benimsendiği kuramlar karşısında ortaya konmuştur. Tianxia kuramı, uluslararası sistem içerisindeki karşılıklı uyum ve anlayışın sürekliliğini amaçlarken, devletlerarasındaki farklılıkların yok edileceğini ve farklı toplumların ortak fayda prensibi altında kendi rızaları ile barışçıl bir yolda ilerleyebileceğini savunmaktadır. Tianxia Kuramı, Barış içerisinde bir arada yaşama amacına yönelik temel ilkelerin sürekliliğine hizmet ederken, herkesi kucaklayan, öteki kavramına yer vermeyen ve düşmanı dosta çeviren bir kuram olarak da ön plana çıkmaktadır. Çin barışçıl yükseliş politikası çerçevesinde diğer ülkeler ile ilişkilerini geliştirerek dünya barışına katkı sağlamayı amaçlamakta fakat yapısal iç karışıklıklar, artan ulusal kimlik iddiaları ve ya Batı ile artan sorunlar karşısında sınırlı bir ilerleyiş göstermektedir (Cao, 2007:s.431-450).

Hu Jintao barışçıl gelişim politikasının en önemli bileşeni olan uyumlu toplum ilkesi ile siyasi ve toplumsal zeminde kültürel gücünü arttırmayı, barışçıl ve uyumlu kalkınma modeli ile sistem içerisindeki mevcut imajını da revize etmeyi amaçlamaktadır. Hu yönetimi çok taraflılık, kapsayıcılık ve ortak refah kavramlarına büyük önem vererek ulusal kararlarını uluslar sorumlulukları ile paralel bir çizgide devam ettirmeyi amaçlamaktadır. Ahenkli Dünya prensibi çerçevesinde, uluslararası alandaki barışın devamlılığına hizmet etmektedir. Örneğin, Çin yönetimi, 2005 yılında BM zirvesinde yayınladığı belge ile çok taraflılığın önemine vurgu yaparak, bölgeler arasındaki farklılıkların da önüne geçmeyi hedeflemiştir (People's Daily, 2005).

Çin'in, Deng Xiaoping yönetiminden itibaren ortaya koyduğu kalkınma diplomasisi ve ya kalkınma odaklı dış politika anlayışı, Hu yönetiminde de süreklilik göstermiş, fakat değişen küresel rekabet ortamı sonrasında değişikliğe uğramıştır. Hu yönetiminin uyumlu ve mevcut düzenin devamlılığına hizmet etmeye yönelik dış politikası barışçıl bir çizgiden ilerlerse de Xi yönetiminin proaktif ve iddialı bir dış politika yürütmesi mevcut ilkelerin yeniden yorumlanmasına yol açmıştır.

2. Barışçıl yükseliş Kavramının Dönüşümü

Hu yönetiminin temkinli ve uyumlu dış politika anlayışı Xi yönetimiyle büyük bir değişim içerisine girmiştir. Deng yönetiminden itibaren ortaya konan açık kapı politikasının gelişiminde, Hu yönetiminde küresel ekonomik bütünleşmenin hız kazanmasına önemli katkı sağlayan barışçıl kalkınma kavramı, Çin'in küresel entegrasyon içerisindeki gelişiminde önemli katkı sağlamıştır. Uluslararası sistem içerisinde sadece ekonomik odaklı dış politika anlayışı yerine, diğer güç bileşenlerinin de devreye girdiği, çatışmacı, sistemin sorumluluğunu üstlenen bir aktör olarak ön plana çıkmıştır. Xi Jinping, *''Çin Rüyası''* ve ya Çin'in *''ulusal yenilenmesi''* kavramları kapsamında, Çin'i daha ileri bir seviyeye taşımayı, ekonomik, siyasi ve kültürel gücünü geliştirmeye yönelik önemli adımlar atmayı hedeflemektedir. Xi yönetiminin barışçıl gelişim stratejisi karşılıklı fayda ve samimiyet çerçevesinde kurulan komşuluk diplomasisi ile güçlenirken, bölgesel olumlar ve ya artan paralel kurumsal girişimler ile yeniden revize edilmektedir. Xi yönetiminin dış politika anlayışı Hu yönetimine nazaran daha rekabetçi, daha milliyetçi ve daha revizyonist bir karaktere sahiptir. Her ne kadar Xi Jinping yönetimi barışçıl gelişim stratejisine olan bağlılığını söylemlerinde sıkça yer verse de, değişen rekabet ortamı, aktörlerin karakteristik özelliliği ve ya ülke içi artan ayrılıkçı girişimler karşısında çıkarlarını korumaya yönelik milliyetçi bir dış politika yürütmeye yönelmiştir. Çin yönetiminde artan iddialı güç projeksiyonu hem barışçıl yönetim anlayışını sürdürmeyi hem de başarılı bir diplomasi yürütmeyi amaçlamaktadır.

3. Barışçıl Yükseliş Stratejisi Sürdürülebilir mi?

Çin, uluslararası sistem içerisinde barışçıl diplomasinin önemini uluslararası gelişmeler çerçevesinde yeniden gösterme şansı elde etmiştir. Örneğin, Çin'in İran örneğinde gösterdiği diplomatik çözümleri öncülleyen dış politikası, Myanmar örneğinde, devletlerin kendi iç işleri olduğu yönünde söylemlere yer vererek müdahale etmenin egemenlik kavramına aykırı olduğu yönünde artan iddiaları Çin'in diplomasi kavramına yaptığı önemi ortaya koymaktadır. Bir benzer örnek olarak, Suriye krizinde iç işlerine karışmama ilkesini öne sürerek ilk önceliğin devlete yönelik yaptırım ve ya rejim değişikliği uygulamaları yerine diyalogu arttırmak olması gerektiğini vurgulaması ve BM'nin de gözlemci rolünün desteklenmesi gerektiğini savunmuştur. Çin'in diplomatik etkinliği benzer örnekler çerçevesinde yeniden değerlendirildiğinde uluslararası düzenin devamlılığına hizmet etmektedir.

Çin, küresel yönetişim üzerinde artan yetkilerini düzen yapıcı olma yönünde kullanırken, ulusal sorunlar karşısında dış müdahaleden ziyade devletlerin egemenlik haklarının önemine vurgu yapmaktadır. Çin'in uluslararası operasyonlarda artan desteği, küresel sorumluluklarını arttırması ve küresel alanda alınan kararlara yönelik uyumlu tavrı sistem içerisindeki düzen yapıcı rolünü ortaya koymaktadır. 2015 yılında BM Genel Kurulunda yaptığı konuşmada, Çin'in BM çalışmalarını desteklediğini ve çok taraflı işbirliğini teşvik etmek için 10 yıl süre için ve 1 milyar dolar değerinde Barış Kalkınma Formu kurma kararını açıklamıştır (CPC,2015). Çin'in Birleşmiş Milletlerin Barış Koruma Gücüne (UNPKO) yönelik sağladığı personel destek de önemli bir artış görünmektedir. Örneğin, Çin hükümeti 2017 yılında, BM çatısı altında barış koruma kapasitesi içinde gerekli olan desteği sağlayacağını ve 8000 kişiye yakın barış gücü kuracağını ve yeni krizlere anlık olarak cevap verebileceğini ifade etmiştir (Poh ve Li, 2017). Çinli personeller Birleşmiş Milletlerin karar alma operasyonlarında daha fazla yer alması en güzel örnekler arasında yer almaktadır.

Çin'in içerisinde artan ulusal kimlik iddiaları, yükselen milliyetçilik politikaları ve ya küresel rekabet ortamının varlığı Çin'in barışçıl gelişim stratejisinin sınırlılıklarını ortaya koymaktadır. ABD ile AB arasındaki rekabetin temelini oluşturan ticaret savaşlarının etkisi diğer alanlarda da etkisini göstererek küresel rekabete doğru evirilmiştir. ABD, başta Avrupa ülkeleri olmak üzere birçok ülkeye ziyarette bulunarak Çin karşıtı bir cephe kurmanın yollarını aramaktadır (DS Journal, 2020: s.16). ABD'nin Asya kıtasında artan hakimiyeti, çevreleme politikaları ve ya alternatif oluşumlara yönelmesi (QUAD, AUKUS) Çin'in sistem içerisinde güçlü bir rakip olduğunun göstergesidir. Örneğin, Çin'in bölgedeki hak iddiaları karşısında, ABD, Japonya, Malezya, Filipinler ve Vietnam gibi ülkelerin deniz sınırlarını denetleme, savunma yeteneklerini arttırma ve gerekli askeri desteği sağlama noktasında etkili bir çevreleme stratejisi uygulamaktadır. ABD'nin özellikle Tayvan Krizi ve Güney Çin Denizi sorunlarına dahil olması sistem içerisindeki güç yarışını hızlandırırken, Çin'in barışçıl gelişim stratejisinin önünde de bir kaldıraç görevi görmektedir. ABD'nin bu ve benzer caydırmaya yönelik politikaları çok kutuplu dünyaya gidilen süreci, iki kutuplu dünyaya gidilen bir sürece dönüştürme yönündeki çabayı ortaya koymaktadır.

Çin'in artan rekabet ortamında ön plana çıkan BRICS, ŞİÖ, ASEAN ve ya KYG bölgesel işbirliği girişimleri ile ABD karşısında güçlü bir dayanışmayı örneği sergilemektedir. Çin, KYG ve ya Asya Alt Yapı ve Yatırım Bankası (AIIB) gibi oluşumlar ile Batı tarafından inşa edilen düzene karşı oluşturulan alternatif kurumlar ile stratejik çıkarlarını gerçekleştirmekte ve sistem içerisindeki etki edebilme kapasitesini de barışçıl araçlarla genişletmektedir. Çin'in barışçıl yükseliş politikasının geleceğinin bağlı olduğu alternatif oluşumlar Çin'in siyasi ve kültürel güç politikalarının dönüşümünde önemli rol oynamaktadır. Örneğin, Çin'in Kuşak ve Yol Girişimi (KYG) çatısı altında denizden ve karadan Asya kıtasını Avrupa ve Afrika kıtasına bağlayan engelsiz ticaret ve ulaşımı hedefleyen projesi dünya nüfusunun %63'ünü içine alırken, barışçıl gelişim stratejisinin temel esas aldığı Konfüçyanist ilke ve

değerlerin bu ülkelere tanıtılmasını sağlamaktadır. Örneğin, Kuşak-Yol ülkelerinde toplam 548 Konfüçyüs Enstitüsü'nün kurulmasıyla bu Çin kültür ve değerlerinin yayılmasına öncülük edilmiştir (Karaca,2020). Çin'in ABD'yi dışlayan paralel oluşumlar içerisinde öncü rol oynaması, mevcut tehdit algısının kırılmasına yönelik önemli projeler içerisinde yer alması ve ya Asya merkezli bölgesel oluşumlar içerisinde aktif rol oynaması Pekin'in Çin merkezli siyasi, ekonomik ve hatta kültürel bir ağ kurmasına yönelik çabayı ortaya koymaktadır.

Çin'in alternatif oluşumlar inşa etmesi, yeni ticaret rotalarını oluşturması ve ya ikame finans kuruluşlarını inşa etmesi Batı tarafından büyük bir şüphe ile karşılanmaktadır. Çin'in idealist temeller çerçevesinde lanse ettiği söylemler arasında yer alan barışçıl gelişim stratejisi de ulusal çıkarlar çerçevesinde şekillenmektedir. Çin'in KYG Girişimi kapsamında gelişmekte olan ülkelere sunduğu avantajlı yatırım olanakları, ön koşulsuz yardımlar ve uzun ödemeli krediler sunarak ülkeleri borç tuzağı içerisine sokmakta ve kendi ekonomik ve siyasi çıkarlarının üstünü örtmektedir. Örneğin, 2016 yılında Çin'in Yunanistan'ın Pire Limanı'nın %67 hissesine ve ruhsat haklarına sahip olmuştur (Sputnik,2018).

Sonuç

Çin'in barış için bir arada yaşama stratejisi kapsamında ortaya koyduğu ilkeler gelişmekte olan dünyadan önemli geribildirimler sunarken, Çin'in uluslararası davranışına meşruiyet kazandırmakta ve sistem içerisinde düzen inşa edici bir rol oynamasına katkı sağlamaktadır. Gelişmekte olan ülkeler Çin'i sorumlu lider olarak algılamaya başlamış, çok yönlü işbirliği alanlarını arttırmış ve çeşitli projelerde ortak hareket etmeye başlamıştır. Çin'in paralel kurumsallaşma girişimleri ve alternatif örgütler kapsamında jeopolitik değişikliklere yol açabilecek manevra alanları yaratmadan barışçıl bir çizgiden ilerleyeceğini belirtmiştir. Çin'in barışçıl yönetim stratejisi uzun yıllar diplomasisinin gelişimine hizmet etse de değişen rekabet ortamı, aktörlerin değişen karakteristik özelliği, artan ulusal kimlik iddiaları, rakip güçlerin artan caydırıcı ve çevreleme faaliyetleri ulusal çıkarlar ekseninde şekillenen dış politika anlayışının artan önemini ortaya koymuş ve barışçıl ortamını daha rekabetçi, daha çatışmacı ve daha realist dış politikanın hakim olduğu bir düzene doğru evirilmesine yol açmaktadır.

Kaynakça

Cao, Qing.(2007). Confucian Vision of a New World Order? Culturalist Discourse, Foreign Policy and the Pressing Contemporary China, International Communication Gazette, Cilt 69, No 5,s. 431-450.

Cemre, Pekcan, (2018). Identity Politics in the Post-American World Order: 'The Great America' versus New China Identity, International Journal of Social Science,3.

Cpc News.(2015),China's Power to Charge for Common Development of Mankind people.com.cn, Sept 29, Erişim Adresi: http://cpc.people.com.cn/xuexi/n/2015/0929/c385474-27646713.html

DS JOURNAL,(2020). Çin'in Barışçıl Yükselişi Dosyası Barışçıl Yükseliş Sürdürülebilir mi? Diplomasi ve Strateji Dergisi, s.16

Glaser Bonnie S.- Eva S. Medeiros, (2007). The Changing Ecology of Foreign Policy-Making in China: The Ascension and Demise of the Theory of "Peaceful Rise", The China Quarterly, 190, s. 294

Karaca, Ragip, Kutap,(2020). Kuşak ve Yol Çin için Küresel askeri güç olma aracı mı?.2020. Erişim Adresi: https://fikirturu.com/jeo-strateji/kusak-ve-yol-projesi-cin-icin-kuresel-askeri-guc-olma-araci-mi,.

Lantaigne, Marc.(2009) Chinese Foreign Policy,An Introduction,Routledge Press,s.1-31

L.Leadership Guoli.(2003). Transition and Chinese foreign Policy. Journal of Chinese Political Science, 8(1&2),s.544

Oran, Filiz, Çoban ve Pekcan, Cemre (2017).Uluslararası İlişkiler Düşüncesinde "Dünya Barışı":Immanuel Kant ve Zhao Tingyang Felsefesi Üzerine Bir Karşılaştırma, Uluslararası İlişkiler, Cilt 14, Sayı 55.

Pekcan,Cemre.(2018) Identity Politics in the Post-American World Order: 'The Great America' versus New

Poh,A. ve M.Li.(2017).A China in Transition: The Rhetoric and Substance of Chinese Foreign Policy under Xi Jinpin, Asian Security, C. 13, S. 2, s. 17

People's Daily,(2005). Position Paper of the People's Republic of China on the United Nations Reforms, June 8th,Section 15.

Suisheng, Zhao, (2010).Chinese Foreign Policy under Hu Jintao: The Struggle between Low-Profile Policy and Diplomatic Activism". The Hague Journal of Diplomacy 5.

S. Bonnie Glaser- Medeiros, Eva,S. (2007).The Changing Ecology of Foreign Policy-Making in China: The Ascension and Demise of the Theory of "Peaceful Rise", The China Quarterly, 190, s. 294

Sputnik (2016). Yunanistan'ın en büyük limanı Pire, resmen Çinlilerin,Erişim Tarihi: Yunanistan'ın en büyük limanı Pire, resmen Çinlilerin - 08.04.2016, Sputnik Türkiye (sputniknews.com)

MİLLİ MÜCADELE DÖNEMİ GÖÇ VE GÖÇMEN HAREKETLERİNİN I. TÜRKİYE BÜYÜK MİLLET MECLİSİ'NE YANSIMASI

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ÖZET

Millî Mücadele Dönemi'nin başlamasından önce Anadolu'da savaş sebebiyle birçok göç hareketi yaşanmış ve bunların düzenlenmesi ve hukuki bir uygulamanın yapılması için Türkiye Büyük Millet Meclisi Hükümeti çeşitli, kanun ve kararlar çıkarmıştır. Özellikle meclis içinde muhacir ve mülteci kavramlarının içeriğinin tam çizilmesi gereğine vurgu yapılarak uygulanacak yasaların bu sınırlar doğrultusunda olacağı belirtilmiştir. 18.yy'dan itibaren Anadolu'ya Kafkaslardan, Balkanlardan göç hareketinin çok yoğun bir şekilde olmasının, dışında Dünya Savaşı süresince de Anadolu toprakları üzerinde de iç göçler çok yoğun yaşanmıştır. Bu göç ve yer değiştirmelerin kişi, toplum ve devlet üzerinde birçok etkilerin yaşanmasına, şartlarında zorluğu sebebiyle ölümlere kadar varan mağduriyetler, yokluklar ve düzensizlikler yaşanmıştır. Bu bildiride de göçün genel tanımları yapıldıktan sonra, I. Türkiye Millet Meclisi Hükümeti döneminde, göç ile ilgili kanun, kararlar ve uygulamalar, konunun ana kaynaklarına ulaşılarak incelenmiştir.

İnsan var olduğu andan itibaren, bulunduğu bölgeden, başka bir bölgeye çeşitli sebepler dolayısıyla göç etmiştir. Bu sebepler arsında; daha güvenli bir bölgeye gitme isteği, felaketler, nüfus yoğunluğunun artması, sonucu ortaya çıkan işsizlik, zorunlu göç ve en önemlisi de savaşlardır.

Göç kelimesi ile aynı anlamda kullanılan Muhaceret terimi "İnsanların yaşadıkları coğrafi, sosyal ve kültürel çevrelerinden ayrılarak başka bir coğrafi ve sosyal kültürel çevreye girmesi ve hayatlarının gelecekteki kısmının tamamını veya bir parçasını geçirmek üzere tamamen yahut geçici bir süre için bir iskân ünitesinden diğerine yerleşmek maksadıyla yaptıkları yer değiştirmeyi" ifade eder. Bu eyleme katılanlara da göçmen adı verilir Göç hareketini ortaya çıkaran sebepler sonrasında, birçok konu daha ortaya çıkmaktadır. Katılanların sayısı, zorunluluk ve serbestlik, yerleşme/yerleştirilme, süre gibi mevzularında ortaya çıkması ile oldukça önemli bir sosyal politikayı gerektirmektedir.

Yer değişikliği açısından, göç en genel haliyle ikiye ayrılır, iç göç dış göç. Bu göç hareketlerinin elbette ki birçok, askeri, siyasi, ekonomik sebepleri mevcuttur. Dış göçler, ülkenin, milli sınırlarının dışından olabileceği gibi, milli sınırları içinden dışarıya doğruda olabilir, bunun her ikisine de örnek alarak Lozan Antlaşması ile Türk-Yunan mübadelesi gösterilebilir. İç göçler ise bir ülkenin kendi milli sınırları içinde, bir yerleşim yerinden, başka bir yerleşim yerine bazı sebepler doğrultusunda yerleştirilmeyi/yerleşmeyi ifade eder.

Anahtar Kelimeler: Göç, Göçmen, Muhacir, Mülteci, Millî Mücadele, I. TBMM

REFLECTION OF THE NATIONAL STRUGGLE PERIOD MIGRATION AND MIGRANT MOVEMENTS TO THE I. GRAND NATIONAL ASSEMBLY OF TURKEY

ABSTRACT

Before the start of the National Struggle Period, there were many migration movements due to the war in Anatolia, and the Turkish Grand National Assembly Government issued various laws and decisions in order to regulate them and make a legal application. It was emphasized that the content of the concepts of immigrants and refugees should be drawn precisely in the parliament, and it was stated that the laws to be implemented would be in line with these limits. Apart from the fact that the migration movement from the Caucasus and the Balkans to Anatolia was very intense since the 18th century, internal migrations were also experienced very intensely on the Anatolian lands during the I. World War. This migration has caused many effects on the person, society and the state, and the difficulties in the conditions and grievances up to death, absences and irregularities. In this paper, after the general definitions of migration were made, the laws, decisions and practices related to migration during the I. Turkish National Assembly Government were examined by reaching the main sources of the subject.

From the moment of human existence, from the region he is in to another region, among various reasons; The desire to go to a safer region, disasters, increase in population density, unemployment as a result, forced migration and most importantly wars.
The term Immigration, which is used in the same sense as the word migration, is defined as "the displacement of people in order to leave their geographical and social cultural environment and enter another geographical and social cultural environment and to settle completely or temporarily from one settlement unit to another in order to spend all or a part of their future life.". Those who participate in this action are also called immigrantsIt also emerges in many issues after the causes of the migration movement. The number of participants requires a very important social policy as it emerges from issues such as necessity and freedom, settlement, placement and duration.
In terms of displacement, migration is most generally divided into two, internal migration and external migration… Of course, there are many military, political and economic reasons for these migration movements. External migrations can be from outside the national borders of the country, or outward from within the national borders of the country, taking as an example to both of these, the Treaty of Lausanne and the Turkish-Greek exchange can be shown. Internal migration, on the other hand, refers to being settled in a country within its own national borders, from a settlement to another settlement for some reasons.

Keywords: Migration, Immigrant, Immigrant, Refugee, National Struggle, I. Parliament

GİRİŞ

İnsan var olduğu andan itibaren bulunduğu bölgeden, başka bir bölgeye çeşitli sebepler vesilesiyle ki bu sebepler arasında; daha güvenli bir bölgeye gitme isteği, felaketler, nüfus yoğunluğunun artması, sonucu ortaya çıkan işsizlik, zorunlu göç ve en önemlisi de savaşlardır.

Göç kelimesi ile aynı anlamda kullanılan Muhaceret terimi "İnsanların yaşadıkları coğrafi, sosyal, kültürel çevrelerinden ayrılarak başka coğrafi, sosyal, kültürel çevreye girmesi ve hayatlarının gelecekteki kısmının tamamını veya bir parçasını geçirmek üzere tamamen yahut geçici bir süre için bir iskân ünitesinden diğerine yerleşmek maksadıyla yaptıkları yer değiştirmeyi" ifade eder (Akkayan,1979, s. 21-22). Bu eyleme katılanlara da göçmen adı verilir (İpek 1999 s. 1). Göç hareketini ortaya çıkaran sebepler sonrasında, birçok konu daha ortaya çıkmaktadır. Bunlar katılanların sayısı, zorunluluk ve serbestlik, yerleşme, yerleştirilme, süre gibi mevzularında ortaya çıkması önemli bir sosyal politikayı gerektirmektedir (Gümüş, 1997, s. 243).

Yer değişikliği açısından, göç en genel haliyle ikiye ayrılır, iç göç dış göç (Yüceuluğ,1966). Bu göç hareketlerinin elbette ki birçok, askeri, siyasi, ekonomik sebepleri mevcuttur. Dış göçler, ülkenin, milli sınırlarının dışından olabileceği gibi, milli sınırları içinden dışarıya doğruda olabilir, Bunun her ikisine de örnek alarak Lozan Antlaşması ile Türk-Yunan mübadelesi gösterilebilir (Yıldırım,2016). İç göçler ise bir ülkenin kendi milli sınırları içinde, bir yerleşim yerinden, başka bir yerleşim yerine bazı sebepler doğrultusunda yerleştirilmeyi, yerleşmeyi ifade eder (Cillov,1960). Buna örnek olarak, 1915 Ermeni Tehcir 'i verebilir (Tekeli, 1990).

Göç eyleminin de kendi içinde farklı tanımları söz konusudur. Bunların içinde en önemlisi göçe tabi tutulan nüfusun, bulunduğu bölgeden ayrılarak, yerleştiği, mevki de ne kadar süre kalacağı, geçici maksatla yerleştirildiyseler, durumları neye göre belirleneceği ve bu süreç içinde hem uluslararası göç hem de ulusal göç eylemlerinde, devletin bu göçmenlere uygulayacağı hukuki prosedür oldukça önemlidir. Yerlerinden ayrılmayan vatandaşların hukuku ile yerlerinden ayrılanlar hangi alanlar da hukuki farklılıklar göstereceği devlet tarafından çok iyi planlamayı gerektirmektedir (Eren, 1966). Yine ortaya çıkan en önemli konulardan birisi de kişinin veya toplumun kendi isteğine bağlı olarak bulunduğu mevkiden ayrılması, hukuki ve idari olarak zorunlu göçlerden farklı tutulmasıdır. Daha çok kendi meskenindeki hukuki prosedürün devam etmesi söz konusu iken, yeni yerleştiği bölgenin, sosyal ve ekonomik yapısında değişime sebebiyet verdiği için, göç ile ilgili daha alt başlıklarında ortaya çıkmasına

sebep olmaktadır. Şehir veya kasaba planlamasının yapılmasında, güvenliğin sağlanmasında, işçi ve işveren arasından, sosyal güvenlik yasalarının uygulanıp uygulanmadığının takibinin yapılmasında, taraflar arasında adil prosedürün uygulanması gibi birçok farklı hukuksal, güvenlik, ekonomik, sosyal ve siyasi konularda gün ve gün takibini gerekli kılmaktadır (Akgündüz,1999).

Göç ve Göçmen kavramlarının Tarihsel Gelişimi

Dünya da göç ve göçmenlerin hukuki statüleri, kişi ya da grupların tanımlanmaları birçok ülkede farklılık göstermiştir. İlk olarak 1924 yılında Roma'da toplanan Göçler Kongresi'nde göçmen kelimesi "İş bulmak amacıyla kendi memleketini terk eden, ona eşlik eden ya da sonradan yanına gelen kimse" olarak tanımlanmıştır. 1932 yılında Cenevre'de toplanan kongrede ise süre bakımından "geçici ve sürekli göçmen ayrımı yapılmış Birleşmiş Milletler Nüfus Komisyonu da "geçici göçmenler", "sığınanlar (mülteciler)" ve "mübadiller" olarak tanımlamalar yapmıştır (Geray, 1970).

Değişen dünya haritaları ve yeni çizilen ülke sınırları sebebiyle II. Dünya Savaşı sonrasında dünyada ve Avrupa da göçmen hareketliliği sonrası göçmen kavramı üzerinde de bulundukları statüler gereği yeni kavramlar ortaya çıkmıştır. Bunların bazıları ise, "sürülenler, kovulanlar, anlaşmalara tabi göçmenler, milletlerarası muhacirler, milli muhacirler, tahliye olunanlar, geri gelenler, yurtsuzlar, devletsizler" gibi birçok kavram ile ifade edilirken bunların her birine ayrı hukuki statü verilmiştir (İpek, 1999, s. 295). Bunlara günümüze kadar birçok terim ve kavram eklenerek bulunan statüleri ifade edilmiştir.

Türk devletlerinin kuruldukları andan itibaren, iç ve dış göç olmak üzere dünya tarihinin gidişini etkileyen siyasi, ekonomik, coğrafi alanlarda çok büyük etkiler meydana getirmişlerdir. Göç yolları üzerindeki yerleşim yerlerinin, her alanına etki ederek gerek nüfus gerekse nüfuz bağlamında değişim ve dönüşümün baş mimarları olmuşlardır (Babuş, 2006).

Osmanlı Dönemine gelince, Anadolu'daki beyliklerin Osmanlı Beyliği'nin etrafında birleşmesinden ortaya çıkan Osmanlı İmparatorluğu, bu göç olaylarının en çok yaşandığı coğrafyayı oluşturmuştur (Geray, 1970).

İstanbul'un fethi ile, iç sınırlarının dışına taşan bir nüfus etkileşimi, içten dışa doğru fethedilen topraklara yerleştirilen Anadolu insanı yerleştirildiği topraklardaki yerel halk ile hayatın her alanında değişimleri meydana getirmiştir (Ağanoğlu, 2001). Ancak taarruz savaşlarının bitip, savunma ve geri çekilme sürecinin 18. yüzyılda başlamasıyla, fethedilen topraklardan Anadolu topraklarına doğru göç dalgası birçok siyasi ve ekonomik değişimleri ve dönüşümleri de beraberinde getirmiştir. Osmanlı Devleti'nde göç kelimesi ve göçün etkisi altında bulunan insanlar daha farklı kavramlarla ifade edilerek terminolojisini kendi jargonuna göre belirlemiştir. Batı'ya doğru yapılan fetihler 1683 II. Viyana bozgunu ile durdurulup geriye ricat hareketi başlayınca, bu bölgelerden ayrılan insanlar için muhacir kavramı kullanılmıştır (Babuş, 2006). Bu kavramın ifade ettiği mana ise "düşmandan kaçıp, Türk hakimiyetindeki Türk topraklarına sığınan kâhır-zede, zulûm-dide, Müslümanlar" olarak ifade edilmiştir (Akgündüz, 1999). Bunlar genellikle, bulundukları toprakları, çeşitli sebepler dolayısıyla terk etmek zorunda kalan insanlardır. Yine bulundukları bölgeyi terk etme sebeplerine göre farklı isimler adı altında anılmışlardır. "Muhacîr, harikzede, depremzede, üsara-yı muhacîrîn, istilâzede, kahtzede, ev göçü ve mübadil" adı altında birçok terim kullanılmıştır (İpek, 1996, s. 15). Tüm bu muhacirlik sonrası, gidilen ya da gelinen topraklarda büyük bir değişim genellikle yeni sosyolojik, psikolojik, ekonomik, vb. alanlarda büyük problemleri de beraberinde getirmiştir (Ağanoğlu, 2001; Kaflı, 1966).

Osmanlı hakimiyeti altından çıkan topraklardan, doğudan batıya, güneyden kuzeye Anadolu topraklarına yapılan antlaşmalar gereği çok fazla göç hareketi olmuştur (Tekeli, 1990; Berkok, 1958). Bu hareketlilik, milli sınırlar içinde, göç yerleşim yerlerinin belirlenmesi, iaşelerinin temini, konut ve iş imkanlarının sunulması, askerlik, vergi ve asayişlerinin ve daha birçok hususun halli için göç ve iskân büroları kurulmasına sebep olmuştur.

Göç Hareketlerini Düzenlemek için Kurulan Müesseseler

Osmanlı'da göç hareketlerini düzenleyen Tanzimat'a kadar, özel bir müessese olmamakla birlikte, göç işleri hükümet işlerini yürüten kurumlara bağlı olarak halledilmiştir. Tanzimat Fermanı'ndan sonra ise bu işlerin düzenlenmesi için İstanbul Şehremaneti görevlendirilmiş, ancak Balkanlardan ve Kafkaslardan gelen muhacirlerin çok olması bu iş için daha kapsamlı bir teşkilatın kurulmasını zorunlu hale getirmiştir (Sarıcaoğlu, 1999). Bu zorunluluk sonrası İstanbul'da bir Muhacir Komisyonu kurulmuş, başkan ve üyeleri belirlenerek, 5 Ocak 1960'ta Hamidiye Vakıf Dairesi'nde göreve başlamıştır (Çelebi, 2019). Ancak 19. yy Osmanlı Devleti için savaşların çok olduğu, kayıpların yanı sıra, dışarıdan ülke topraklarına doğru göçlerin çokluğu nedeniyle birçok sorunun ve ölümün meydana geldiği bir süreç olmuştur. Bu sebepler dolayısıyla bu komisyon işlerin hallinde yetersiz kalmıştır. Bunun sonucunda İstanbul'da "İdare-i Umumiyye-i Muhacirîn Komisyonu" 1878'te kurulmuştur (Kaflı, 1996, s. 31). Ayrıca bu idareye bağlı" İdâre-i Umûr-ı Hesâbiye ve İdâre-i Umûr-ı İskâniyye" birimleri de oluşturularak, bu konunun daha planlı ve düzenli bir şekilde halledilmesi için Belediye dairelerinde 20 şube açılmıştır (İpek, 1999, s. 69).

Komisyonun kuruluş maksadından anlaşılacağı gibi, göçe maruz kalmış muhacirlerin bütün işleriyle ilgilenmeyi, sorunların çözümlenmesini ve kayıtlarının tutulmasını amaç edinmiştir. Komisyon görevlerine devam etmiş ancak savaşlar sonucu, ülkeye göç olaylarının daha fazla gelmesi sebebiyle bu biriminde yeniden daha teferruatlı teşkilatlanmasını zorunlu hale getirmiştir. 1897 yılında "Muhacirîn Komisyon-u Âlisi" kurulmuştur (Çelebi, 2019, s. 20).

Hem Osmanlı Devleti'nin imzaladığı antlaşmalar gereği, hem de kaybettiği savaşlar sonrası göç hareketlerinin daha da artması sebebiyle bu komisyonda yetersiz kalmıştır. İttihat ve Terakki Partisi'nin iktidar olduğu bir dönemde Balkan Savaşları'nın çıkması ve bu topraklarının büyük bölümünün kaybedilmesi sonucu 30 Nisan 1913'te "İskân-ı Muhacirîn Nizamnâmesi" çıkarılmış 1914 yılında da "Aşair ve Muhacirin Müdüriyet-i Umumisi" kurulmuştur (Öztürk, 1998, s. 55).

Dahiliye Nezaretine bağlı bulunan Muhacirin İdaresi, Muhacirlerle ilgili bütün mevzular da yetkin kılınmıştır. İdari yapılanması ise ülke geneline yayılması amacıyla vilayetlere de birer şubesinin açılması için bir talimatname hazırlanmıştır. (Muhacirin idaresi Talimatname-i Dahilisi, 1912). Osmanlı Devleti sınırları daraldıkça ülkeye göç sayısı fazlalaşmış, ülkenin hem dış güçlerle uğraşırken hem de ülke içinde birçok sorunla karşı karşıya kalması, bunların üstesinden gelecek, kaynak ve mekanizmaların eksikliği sebebiyle, muhacirlerin yaşadıkları sosyal, ekonomik ve psikolojik sorunlar katlayarak arttırmıştır (Arı, 1995).

Millî Mücadele Dönemi Muhacirin Meseleleri

I. Dünya Savaşı Mondros Ateşkes Antlaşması ile sona ermiştir. Ancak İtilaf Devletleri'nin Osmanlı toprakları üzerindeki planlarını gerçekleştirmek için daha önce yaptıkları gizli antlaşmalar doğrultusunda eylemlerini, ateşkesin 7. Maddesine dayandırarak gerçekleştirmeye geçmişlerdir (Cebesoy, 1953; Kerim, 1955). Anadolu'nun Türklerle meskûn bölgelerinin Wilson Prensiplerine göre, Türkler 'de kalacağı inancı, bu işgaller sebebiyle ortadan kalkmış, Millî Mücadele halkın gücüne dayanarak başlamıştır (Taner, 1971).

İtilaf Devletleri'nin Osmanlı topraklarındaki planlarını hayata geçirecek en önemli unsuru azınlıklardır (Dursunoğlu, 1946). Özellikle Ermenilerin Doğu'daki 6 ilde bir devlet kurma hayalleri ve bunu gerçekleştirmek için Rusya, İngiltere ve Fransa'nın destekleri doğrultusunda hareket etmeleri ve 1.Dünya Savaşı öncesi ve sonrasında bulundukları bölgelerdeki tedhiş hareketleri (Karabekir, 1994; 1939; 1960) büyük ölçüde iç göçlerin yaşanmasına sebep olmuştur (Kaya, 2007).

15 Mayıs 1919'da Yunanlıların İzmir'i işgali ve Eskişehir, Bursa, Ankara Polatlı'ya kadar ilerlemeleri bu bölgelerdeki Müslüman halkında yerlerinden ayrılarak, daha iç bölgelere akın etmelerine sebep

olmuştur (Yalazan, 1994; Öktem,1991). Bu göç dalgalarının güneyden kuzeye, doğudan batıya ya da tam ters istikamette gerçekleşmesi, karşılaşılan sorunları daha farklı etkilememiştir.

İttihat Terakki'nin yönetimi terk etmesi ve İstanbul'da Vahdettin'in himayesinde hükümetlerin kurulması, Mebusan Meclisi'nin açılması (Armaoğlu, 1964; Kuran, 1956) ile Meşruti Monarşinin uygulanması, 28 Ocak 1920'de Misak-ı Millî 'nin kabul edilmesi ve 17 Şubat 1920'de tüm yabancı devletlere deklare edilmesi yeni bir işgal ve mezalimi birlikte getirmiştir (Atay, 1933). Fiili olarak işgal altında bulunan İstanbul, 16 Mart 1920'den itibaren resmen işgal edilmiştir (Belen, 1983). Mebusan Meclisi'ne kadar giren işgal güçleri birçok mebusu tutuklayıp sürgüne göndermiş (Yurtseven, 1976) karşılarına çıkan, sivil savunmasız, ne kadar canlı varsa hepsine mezalim uygulamışlardır. Bulundukları işgal alanlarını terk eden ahali, ortamın yetersizliği ve savaş şartlarının devam etmesi sebebiyle birçok mağduriyetle karşılaşmışlardır (Kansu, 1966).

Türkiye Büyük Millet Meclisi'nin 23 Nisan 1920'de Ankara'da açılması ile hem dış güçlerle hem de iç meselelerin hallinde yeni bir dönem başlamıştır. Millî Mücadele Dönemi'nde hem iç hem de dışarıdan gelen muhacirlerle ilgilenen kurum, Sıhhiye ve Muavenet-i İçtimaîye Vekâlet'ine bağlı Muhacirin Müdüriyetidir (Çelebi, s. 21). Meclis açıldıktan sonra hem kendi meşruiyetini gerçekleştirecek karar ve kanunlar yapmış, hem de İstanbul Hükümeti'nin sorumluluğunda olan memleket meselelerinin çözümü için meşru hükümet görevini üstlenmiştir (Goloğlu, 1967). Meclis kendi çalışma planını M. Kemal 'in Meclis Reisliğine seçildiği 24 Nisan'da bu sıfatla verdiği önerge ile Meclis Hükümeti'nin esaslarını belirlemiş ve 9 Mayıs tarihinde 11 bakanlıkla kurulan hükümet göreve başlamıştır (Gökbilgin, 1959). Bakanlıkların görev ve sorumlulukları ile ilgili görev taksimatlarının yapılmasından sonra, ülkenin yönetimine el koyan Meclis, ülke ile ilgili bütün meseleleri tek tek ele alarak çözümleri için mücadele etmiştir. 1919-1923 tarihlerini kapsayan bu dönemde, meclis hem Misak-ı Millî'nin uygulanması, hem de millet iradesini egemen kılmak düsturundan hareketle icraatlarını gerçekleştirmiştir (İnalcık, 1944). Tüm memleketi ilgilendiren meseleler içinde Muhacirin meselesi de Meclisin gündeminde yoğun bir şekilde işlenmiştir (İskân Mevzuatı, 1936).

Muhacirlerin Meclis Gündemini Oluşturan Meseleleri

1)Anavatana iltihak eden arazide icra edilecek. Teşkilatı Mülkiye'ye dair kanun (Zabıt Ceridesi, c:18, s. 181; c:20, s.454-455

2)Muafiyeti Askeriye Vergisi hakkında kanun (ZC, c:11, s. 285-342)

3)İşgalden kurtarılmış bölge ahalisinden Temettü ve Akaar Vergilerinin ve tehcirden avdet edenlerden, temettü ve akaar ve emlak ve arazi vergileriyle küsuratı muzzammanın istifası hakkında kanun (ZC, c:3, s. 373-375, 405-414)

4)İşgal dolayısıyla mevkiini mecburen terk etmek zorunda kalan memurlara ve ailelerine harcırah verilmesi hakkında kanun (ZC, cilt:3s. 398-cilt:4 s. 343-502, cilt:5: s. 197-208)

5)Muhacirlerin sevkleri için muktazi yüz elli bin liranın avans olarak verilmesine dair kanun (ZC, c:11, s. 40-51)

6)Muafiyeti Askeriye Vergisi hakkında kanun (ZC, c:11, s. 285-296, 304-342)

7)Memaliki müstahlasadan firar veya gayubet eden ahalinin emvali menkule ve gayrimenkullerinin idaresi hakkında kanun (ZC, c:19, s. 303-321-335-336)

8)Elviye i Selâsede vergilerin sureti cibayetine dair kanun (ZC, c:21, s. 177, 195, 201

9)Garp cephesinde bilfiil harekâtı askeriye sahası olan mevakı Âşarı hakkındaki 16 Temmuz 1337(1921) tarihli kanunun temdidi mer'iyetine dair kanun (ZC, c:22, s. 69-103)

10)Düşmandan istihlâs edilmiş ve edilecek mahhalere muaveret hakkındaki 31 teştinievvel 1337(1921) tarihli kanuna Müzeyyel kanun (ZC, c:23, s. 171,180-182)

11)İstanbul Vilâyeti ile düşmandan istihlâs geri alınan mahallerin Âşar Hisse-i İanesi hakkında kanun (ZC, c:26, s. 26, 201, 474-478, 505-513)

12)Havalii Şarkiyye muhacirlerinin iadesi ve mesakinin (meskenlerinin) tamir ve inşası için tahsisat itasına dair kanun (ZC, c:28, s. 252,279,295,301-351)

13)Diğer mahallere nakledilen şahısların emval ve düyun ve matlubatı metrukesi hakkındaki 17 zilkade 1333 ve 13 Eylül 1331 tarihli Kanunu muvakkatin bazı mevaddı ile 20 Nisan 1338 tarihli Emvali Metrüke Kanunu muaddil kanun (ZC, c:29, s. 138-175)

Yapılan bu kanunlar münasebetiyle Mecliste milletvekilleri tarafından bu kanunların esasları ve muhteviyatları münasebetiyle leyhte ve aleyhte açıklamalar yapılmıştır. Meclisin en çok üzerinde durduğu konulardan birisi, mülteci ve muhacirlerin, bulundukları yer içindeki durumlarının düzeltilmesi, bir yere iskân edilmesi, kendilerine ev ve ekim dikim yapacak tarlaların tahsisi ve bunların askerlik görevlerini ne şekilde yerine getirecekleri mevzularıdır. Daha önce Bitlis Mebusu Yusuf Ziya Bey ile arkadaşlarının "muhacir ve mültecilerin askerliklerine dair kanun" teklifine karşılık, Müdafaa-i Milliye Encümeni Reisi Yusuf İzzet Paşa vekaletin mazbatasını 25.06.1337(1921) tarihinde Heyeti Umumiye'ye sunmuştur.

Heyeti Umumiyeye,

Seyyar bir halde henüz bir yere iskân edilmemiş bulunan mülteci ve muhacirinin askerliklerinin iskândan altı ay sonraya tecili lüzumura dair… verilen, tezkere, encümence tetkik edilmiştir. Esasen mültecilerin askere celbedilmemeleri ve muhacirin tevakkuf ve iskânlarından üç ay sonra hizmete davetlleri mukarreratı kanundan olup halen vekâleti müşarünileyhaya vâkı olan şikâyet üzerine üç ay daha muamele ifasına lüzum görülmemiş olmakla Heyeti Umumiyeye arz edilmek üzere iş bu mazbata takdim kılındı." (8.Kanunisani 1337(ZC, c: 11, s. 41)

Encümen reisinin bu mazbatayı meclise sunmasının hemen ardından Erzurum Mebusu Salih Efendi'nin vermiş olduğu takrir okunmuştur. Takrirde Vilayeti Şarkiyye'nin boş kalan arazisi işlenmeye muhtaç kaldığından Harbi Umumi 'de istilâ edildiğinden bu bölge insanının Anadolu'nun içlerine doğru çekildiğini, buralarda da büyük perişanlık yaşadıklarını bu sebeple askerlik görevi için kendi yurtlarına döndükten altı ay sonra, celb edilmelerini ve aynı şekilde Rumeli'den gelen muhacirlerinde gerçek bir yerleşim sağlandıktan sonra askere alınmaları şeklinde düzenlemenin yapılmasını istemiştir (ZC, c:11, s. 42).

Bu takririn okunmasından sonra M.M.E Reisi, kendilerinin hazırladığı mazbata da iki tabirin kullanıldığını ifade etmiş ve bunların, mülteci ve muhacir olduğunu söylemiştir. Mülteci tabiri "öteden beri "memleket haricinden dahili memlekete gelenlerdir. Bunlar askerlik hizmetinden muaftır. Tabi hükümet bunu tespit edip ona göre muamele yapacaktır. Muhacirlere gelince, memleket haricinden ya mensup olduğu hükümetin müsaadesiyle terki tabiyet ederek veyahut bize hicret eder, istida eder. Bizim tabiyetimizi kabul eder. Mükellefiyeti Askeriye Kanununda muhacir böyledir. Kanun bu gibiler hakkındadır. Vilâyetimizin bir yerinden diğer yerine giden muhacir değildir. O gibiler her yerde memleketin Kavanini Umumiye' sine tabidir. Memleket dahilinde bir vilayetten diğer vilayete hali harb dolayısıyla nakledilmiş olanlar hakkında hiçbir

kayıt yoktur." (ZC, c:11, s. 43). Muhacirler için askerlik görevinin yerine getirilme süresi 23 Mart 1331 tarihli kanuna göre 6 senedir. Ancak Harbi Umumi 'de askere duyulan ihtiyaç sebebiyle bu üç aya indirilmiştir. Diğer taraftan, memleket içindeki yer değişimlerden dolayı, askerlik görevi ertelenmemiş ancak ilki şark vilayetleri ahalisi için olmak üzere sonrasında Adana ve çevresi, İzmit, Bursa vs. ahalisi için askerlik görevi bir süreliğine tecil edilmiştir. Bu sürenin 8 Ağustos 1921'de sona erdiğini belirterek," askere celb edileceklerini ifade etmiştir (ZC, c:11, s. 44).

Muhacir ve mültecilik kavramlarının içerdiği manaların uzun uzun tartışılmasından sonra M.M.E.'nin sunmuş olduğu mazbata kabul edilmiştir (ZC, c:11, s. 48). En Önemli meselelerden biri de daha önce Türk idaresinin olduğu, ancak daha sonra işgalci güçlerin eline geçen coğrafyalarda, Kars, Ardahan, Artvin bölgelerinde, Rusların işgali altındayken oluşturulan yönetim, idari şekillerin, anavatana katıldıktan sonra ne şekilde idare edileceğidir. Bu konunun uzun zamandan beri meclis gündeminde olduğu ve bu üç sancağın, liva şeklinde yönetilemeyeceği, Brest-Litovsk, Gümrü ve Moskova Antlaşmalarıyla hudutların değişmesi sebebiyle yeniden tanzim edilip, bir an önce buralarda Umuru İdarenin kurulmasıdır. Bunun için daha önce meclise gelen, bu mevzu 07.07.1337 tarihli oturumda tekrar görüşülerek karara bağlanmıştır. Ayrıca bu bölgelerin, Kaza, Liva ve Nahiyelerin Teşkilat-ı Esasiye Kanunu'nun 19. maddesine göre düzenlenmesi kabul edilmiştir (ZC, c:11, s. 172). Bu bölgelerin, ne şekilde tanzim edileceği kanunu kabul edildikten sonra, bu bölgenin idaresi için nasıl bir yapılanmaya gidileceği üzerine konuşmalar yapılmıştır. Bu mevzu üzerine Batum Mebusu Edib Bey meclisin 07.07.1337 tarihli oturumunda konuyla ilgili "… Altı aydan fazladır Kars elimize geçmiş olduğu halde oraların teşkilatı mülkiyesi yapılmamıştır. Artvin, Ardahan buna mümasil birçok yerler askerî bir idare ile idare olunmuştur. Buralarda çok fena işler yapılıyor, biran önce kanun çıksın …" (ZC c:11, s. 176-177) seklindeki uyarı niteliğindeki açıklamasına ilave olarak o bölgelerin yönetimine, Dahiliye Vekaleti tarafından verilen yetkiye istinaden Nahiye müdürlerinin seçiminin halk tarafından yapılmasının, daha manidar olacağını bulunduğu bölgenin her türlü sorunlarını bilen insanların seçilmesinin merkezden gönderilecek, yöneticilere göre daha verimli çalışacaklarını dile getirmiştir. Yine konuyla ilgili Kastamonu Mebusu Abdulkadir Kemali Bey, bahsedilen bölgelerde 40 yıldır Rus idaresinin kurulduğunu ve yöre halkının da Çarlık Rusya'sının kurduğu teşkilat ile yönetildiğini ancak halkın ruhunun Anadolu'da herhangi bir köyle mukayese edildiğinde aynı ruhta bulunduklarını ifade etmiştir. Sonrasında bu bölgelerin ülke sınırlarına katılmasıyla başlarında bir mülki idarenin bulunmaması hasebiyle an itibarıyla da askeri bir yönetimin bulunması dolayısıyla meyus olabileceklerini, onları hayal kırıklığına uğratmamak için idare-i askeriyenin yerine daha müşfik olan idare-i mülkiyenin kurulmasını talep etmiştir (ZC, Cilt:11, s. 176).

Daha önce İcra Vekilleri Heyeti Reisi ve Müdafaa-i Milliye Vekili tarafından, meclise getirilen tezkere 07.07.1337 tarihli meclis oturumunda oylanarak Anavatana iltihak eden mahallerin ne şekilde taksiminin yapılacağı şu kanun maddesiyle tanzim edilmiştir: Madde 4: "Elviyeyi Selâsede Teşkilât-ı Esasiye Kanununa tevfiken nevahi Teşkilât-ı İcra edilinceye kadar nevahi müdirani kemafissabık ahali tarafından intihap olunur" (Başkanlık Cumhuriyet Arşivi [BCA]: 030.18.1/2.46.49.1)

Yine Garp Cephesinde bizzat askeri bölgede ateş altında bulunan yerlerin vergilerinin nasıl alınacağı ve buraya gönderilecek hükümet görevlilerinin yanına bölge ahalisinden temsilciler katılarak, vergi miktarının belirlenmesi mevzusunda görüşler bildirilmiştir. Vergilerin toplanmasında doğru şekilde ürünün miktarının belirlenmesini ve verginin de bunun üzerinden alınması kanunla belirlenmiştir. (ZC c:11, s. 285,317,342)

Memleket içinde muhacir statüsünde bulunan insanların sevki için bütçeden 150 bin liranın verilmesi mevzusunda 24 Haziran 1337 tarihli layiha münasebetiyle Erzurum Mebusu Durak Bey muhacirlerin çektikleri sefaleti gözler önüne sermek için şu ifadeleri kullanmıştır:

> … Bugün Ayaş'tan 10 hane Muhaciri Ayaş kaymakamı buraya göndermiştir. Onları buraya gönderen söylüyor ki; Bunları Ankara'ya teslim et, İlmühaberini al, getir. Arabacı gelmiş kime teslim edeceğini bilmiyor. Şaşırmış bana teslim etmeye geliyor… Bütün yağan yağmur, dolu onların üzerine yağıyor, canlarını muhafaza edecek kulübeleri bile yok… (ZC, c:11, s. 40).

Bu açıklamadan da anlaşılacağı üzere mebus işgal altındaki topraklarda bulunan muhacirlerin barınma, iaşe ve tedavi için gerekli desteğin verilmediğini ortaya koymuştur. Bunun üzerine 25.06.1337 tarihli oturumda yapılan oylama sonucunda muhacirinin sevkleri için yüz elli bin liranın avans olarak verilmesi kabul edilmiştir (ZC, c:11, s. 50).

Meclis, muhacir ve mülteciler bulunduğu şartları göz önüne alınarak her türlü ihtiyaçlarının giderilmesi için bütün vekaletlerin iş birliği içinde hareket etmesini temin etmiştir. Özellikle, Doğu ve Batı Anadolu'nun işgali, muhacirliğe ait işlerin yapılmasını zor bir hale getirdiği gibi işlerin zamanında halledilmesini de olumsuz etkilemiştir. Anadolu'dan gitmek isteyen gayrimüslim halkında kendi imkanlarıyla gitmeye teşebbüs etmesi, işlerin içinden çıkılmaz bir hal almasına sebep olmuştur. Bunun üzerine Sıhhiye Vekaleti tarafından bir mübadele talimatnamesi yayınlanarak, kurumların birbiriyle olan bağlantılarının düzenlenmesi sağlanmıştır. Kısmi olarak bir iyileşme sağlanmışsa da mübadillerin işlerinin bir elden halledilmesi için 13 Ekim 1923'te İmar ve İskân Vekaleti kurularak, bundan sonraki çalışmalar bu Vekalet tarafından yürütülmüştür (Düstur, 1948, Üçüncü Tertip, c:5, s. 146).

Vilayet-i Şarki mültecilerinin, doğu sınırlarının güvenlik altına alınmasından sonra tekrar yurtlarına gönderilmesi ve meskenlerinin tamiri için ödeneklerin verilmesi(Başkanlık Cumhuriyet Arşivi: 030.18.1/2.46.49.4.) gitmek istemeyenlerin bulundukları yerlerde iskan etmelerine yardımcı olmak için çalışmalar gerçekleştirmiştir.(BCA :030.10.124.885.4) Yapılan tüm bu düzenlemeler, ödeneklerin meclis bütçesine göre en üst seviyeden verilmek istenmesine (BCA:272.11.1/8.82.18) rağmen yeterli gelmemiş ve ülke genelinde büyük mağduriyetler yaşanmaya devam etmiştir. Millî Mücadele Dönemi'nde, bir taraftan Milli istiklâl için askerî harekât yapılırken, diğer taraftan dışarıdan içeriye, vilayetten bir başka vilayete göç hareketlerinin, doğurduğu iskân sorunlarının (Babuş, 2006) çözümü Meclisin işini hayli zorlaştırmış, mağduriyetlerin giderilmesinde aksaklıkların yaşanmasının önüne geçememiştir (Sarı, 2011).

Tüm olumsuz şartlara rağmen, bir muhacirin yaşayabileceği her türlü aksaklık düşünülerek meclisin gündemini oluşturmuş, bütün mebusların, alî cenablığı içinde çözüm yolları aranmıştır (Erdal, 2012).

Sonuç

Millî Mücadele Dönemi'nde meydana gelen göç hareketleri, I. Türkiye Büyük Millet Meclisi'nin açılması ile gündemini yoğun bir şekilde meşgul etmiştir. Bu dönemde "muhacir" ve "mülteci" kapsamına giren konuların takibini ve kanunların hazırlanıp meclise getirilmesi için Sıhhiye ve Muavenet-i İçtimaîye Vekâlet'ine bağlı Muhacirin Müdüriyeti kurulmuştur. Bu müdüriyetin tespit ettiği sorunlar, Meclis Hükümeti'nin her bir vekâletinde, kendi alanlarıyla ilgili çalışmalar yapıldıktan sonra, Meclis genel oturumunda oylanarak, uygulanmaya konmuştur. 13 Ekim 1923'te kurulan İmar ve İskân Vekâleti ile bu iskân politikaları daha planlı bir şekilde yürütülmüştür. Osmanlı döneminde iskân konusu fethedilen topraklarda iktisadi ve İslamiyet'in tebliği şeklinde zuhur eden cihat ekseninde yürütülmüştür. Ayrıca fethedilen topraklara götürülen Türkler yerleştirilerek demografik yapının güvenliğinin teminine çalışılmıştır (Halaçoğlu,1997). Ancak bu demografik yapının güvenlik için gidilen yerlerde değiştirme politikası, savaşlar sonrasında bu bölgelerden gelen, göçmenlerin nereye, ne kadar yerleştirilecekleri gibi birçok demografik sorunu da beraberinde getirmiştir (Nabi, 1936).

Yapılan Antlaşmalar gereği, göç olaylarının yoğun yaşandığı dönemlerde, iskân sorununun giderilmesi için kullanılan metotlarda da değişiklikler yapılarak, karşılıklı mübadele usulleri kullanılmıştır (Soysal,

1989). Aynı zamanda birçok yeni kavramında muhacir, mülteci, göçmen, mübadil vs. ortaya çıkmasına sebep olmuştur (Bıyıklıoğlu, 1987). Ortaya çıkan bu sorunların giderilmesi için meclis ve hükümeti yoğun mesai harcamıştır.

KAYNAKÇA

Ağanoğlu, H. Y. (2001). Osmanlıdan Cumhuriyete Balkanların Makûs Talihi Göç, Kum Saati Yayınları, İstanbul

Akgündüz, A. (Bahar 1999). "Osmanlı İmparatorluğu ve Dış Göçler (1783-1922)", Toplum ve Bilim, sayı:80, ss. 144-179, İletişim Yayınları, Ankara

Akkayan, T. (1979). Göç ve Değişme, İstanbul

Armaoğlu, F. (1964). Siyasî Tarih (1789-1960), Ankara

Atay, N.H. (1933), Büyük Meclis ve İnkılâp, TBMM Matbaası, Ankara

B.C. A Toprak, İskân Genel Müdürlüğü Kataloğu (Muhacirin fonu)

Babuş F. (2006). Osmanlı'dan Günümüze Etnik Sosyal Politikalar Çerçevesinde Türkiye'de Göç ve İskân Siyaseti ve Uygulamaları, Ozan Yayıncılık, İstanbul

Başkanlık Cumhuriyet Arşivi, Bakanlar Kurulu Kararları Kataloğu

Berkok, İ. (1958). Tarihte Kafkasya, İstanbul Matbaası, İstanbul

Bıyıklıoğlu, T. (1987). Trakya'da Millî Mücadele, Cilt:1, T.T.K., Ankara

Cebesoy, A.F. (1953). Millî Mücadele Hatıraları, Cilt:1, Vatan Matbaası, İstanbul

Cillov, H. (1960). Nüfus İstatistikleri ve Demografinin Genel Esasları, İstanbul

Çelebi, E. (2019). Mübadele, İmar ve İskân Vekâleti (Kuruluşu, Teşkilat Yapısı ve Faaliyetleri), Hiper Yayın, İstanbul

Dursunoğlu, C. (1946). Millî Mücadele'de Erzurum, Ankara

Düstur (1948). Üçüncü Tertip, Cilt:5, Ankara

Erdal, İ. (2012). Mübadele (Uluslaşma Sürecinde Türkiye ve Yunanistan 1923-1925), IQ Yayınevi, Ankara

Eren, A. C. (1966). Türkiye'de Göç ve Göçmen Meslekleri, Tanzimat Devri, İlk Kurulan Göçmen Komisyonu, Çıkarılan Tüzükler, İstanbul

Geray, C. (Aralık 1970). "Türkiye'de Göçmen Hareketleri ve Göçmenlerin Yerleştirilmesi", Amme İdaresi Dergisi, Cilt:3, Sayı:4

Goloğlu, M. (1967). Cumhuriyete Doğru, Ankara

Gökbilgin, M. T. (1959). Millî Mücadele Başlarken, Mondros Mütarekesinden Mudanya'ya, Ankara

Gümüş, A. (1997). "Göç, Din ve Asimilasyon", Toplum ve Göç, II. Ulusal Sosyoloji Kongresi (T.C. Başbakanlık İstatistik Enstitüsü 20-22 Kasım 1966), Ankara

Halaçoğlu, Y. (1997). XVIII. Yüzyılda Osmanlı İmparatorluğunun İskân Siyaseti ve Aşiretlerin Yerleştirilmesi, T.T.K., Ankara

İnalcık, H. (1944). Atatürk Devrimleri, Çeşitli Cepheleriyle Atatürk, İstanbul

İpek, N. (1999). Rumeli'den Anadolu'ya Türk Göçleri, Ankara

İpek, N. (Haziran1996)." Göçmen Köylerine Dair", Tarih ve Toplum, Sayı:150 ss. 15-21

İskân Mevzuatı, Sıhhat ve İçtimaî Muavenet Vekâleti İskân Umum Müdürlüğü Yayını, Ankara (1936)

Kaflı, K. (1966). Türkiye'ye Göçler, İstanbul

Karabekir, K. (1939). Erzincan ve Erzurum'un Kurtuluşu, İstanbul

Karabekir, K. (1960). İstiklâl Harbimiz, İstanbul

Karabekir, K. (1994). Ermeni Dosyası, İstanbul

Kaya, E. (2007). Birinci Dünya Savaşı ve Millî Mücadele'de Türk Mültecileri, Ebabil Yayınları, Ankara

Kerim, C. (1955). Türk İstiklâl Harbi, İstanbul

Muhacirin idaresi Talimatname-i Dahilisi, İstanbul, Matbaa-i Amire, (1328/ 1912)

Nabi, Y. (1936). Balkanlar ve Türklük, Ulus Matbaası, Ankara

Öktem, H. R. (1991). Mütareke ve İşgal Anıları (Hazırlayan: Zeki Arıkan) T. T. K., Ankara

Öztürk, A.A. (Ekim 1998). "Sosyo Ekonomik Yapıya Etkileri ile Rumeli'den İzmir'e Yapılan Göçler (1978-1912)", Tarih ve Toplum, Sayı:178

Sarı M. (Güz 2011). "Atatürk Dönemi'nin İskân Politikasında İç İskâna Yönelik Çalışmalar (1923-1938)", Cumhuriyet Tarihi Araştırmaları Dergisi, yıl:7, sayı:14

Sarıcaoğlu, M.E. (1999). "İskân-ı Muhâcirin İ'âne Pulları" (Osmanlı Devleti'nin Göçmen Harcamalarında Uyguladığı Bir Finansman Yöntemi), Osmanlı, Cilt: IV, Yeni Türkiye Yayınları, Ankara

Soysal, İ. (1989). Türkiye'nin Siyasal Antlaşmaları (1920-1945), T. T. K., Ankara

Taner, T. (1971). Türk Devrimi ve Sonrası 1911-1946, Ankara

Tekeli, İ. (Yaz 1990). "Osmanlı İmparatorluğundan Günümüze Nüfusun Zorunlu Yer Değiştirmesi ve İskân Sorunu", Toplum ve Bilim, Sayı:50

Türkiye Büyük Millet Meclisi (1958). Zabıt Ceridesi, Cilt:1, TBMM Matbaası, Ankara

Türkiye Büyük Millet Meclisi (1958). Zabıt Ceridesi, Cilt:10, TBMM Matbaası, Ankara

Yıldırım, S. (Bahar 2016). "Cumhuriyet Dönemi Nüfus Politikaları Çerçevesinde Göç ve Göç Politikaları (1921-1960)", Türkiyat Araştırmaları Dergisi, Yıl:13, Sayı:24, ss. 273-302

Yüceuluğ, R. (1966). Demografi, Ankara

AYER'DE FELSEFENİN İŞLEVİ: DİLSEL ANALİZ YOLUYLA METAFİZİĞİN ELENMESİ

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ÖZET

Alfred Jules Ayer mantıkçı pozitivist geleneğin önemli temsilcilerinden biridir. 20. yüzyılda analitik felsefe geleneği içerisinde kendini gösteren mantıkçı pozitivizm de felsefi problemleri dilsel problemler olarak görür ve bu problemi dil analizi yoluyla çözmeye çalışır. Bu anlayış, Wittgenstein'ın *Tractatus* adlı eserinde dile getirdiği "felsefi sorunların dilin mantığının yanlış anlaşılmasından ileri geldiği" temel tezine dayanır. Yine aynı eserde "dilin sınırları, dünyanın sınırlarına işaret" eder diyen Wittgenstein'ın, gerçekliğin mantıksal yapısı ile dilin mantıksal yapısı arasında bir karşılıklılık ilişkisi, bir özdeşlik kurduğu görülür. Onun bu anlayışı, dile yönelik girişilecek bir analiz ile, gerçeklik ile ilgili temel doğrulara ulaşılabileceği varsayımını ortaya koyar. İşte Ayer de bu anlayışı temsil eden mantıkçı pozitivist geleneğin bir temsilcisi olarak karşımıza çıkar ve görüşlerini *Tractatus*'un empirist yorumu üzerine kurar. Felsefi problemleri temelde dilsel problemler olarak gören Ayer de, gündelik dili taşıdığı belirsizliklerden kurtaracak, nesnel anlamların iş göreceği bir dil arayışına girişir ve bunun için dilsel bir analiz önerir. Böylece Ayer, sahte ve anlamsız olarak nitelendirdiği metafizik önermeleri tespit edebileceğini ve onları devre dışı bırakabileceğini düşünür. Felsefenin epistemolojik olarak ideal bir dile taşınması, eş deyişle bilgiye güvenilir ve sağlam bir zemin oluşturma arayışında Ayer, yasal bilgi sınırını çizecek, anlamlı ve anlamsızı ayırt etmeye yarayacak bu ölçütü ise "doğrulama ilkesi" olarak ortaya koyar. Ayer, dilsel biçim ve tümceleri analiz etmeye yöneldiğinde, doğrulama ilkesinin metafiziksel önermelerden ayıracağı olgusal içerikli önerme ve empirik varsayımların yanında, bir anlamlı grup daha belirler. Ayer, dünya ile ilgili hiçbir şey söylemeyen, yapıları gereği, zorunlu olarak doğru olan ve geçerliliklerini empirik doğrulmaya değil de, dilsel uzlaşıma borçlu olan bu önermelere ise a priori (analitik) önermeler olarak işaret eder. İşte Ayer'e göre, felsefenin temel işlevi, bir dil analizine girişerek anlamlı grupta bulunan olgusal ve empirik içerikli önermeler ile a priori (analitik) önermeleri, anlamsız/sahte önermelere sahip metafizikten ayırmaktır. Böylece Ayer'e göre, metafiziğin elenmesi ile hem felsefe sağlam ve güvenilir önermelere sahip bir disiplin haline getirilebilecek hem de insanlık, taşıdığı anlamsızlık yükünden kurtarılabilecektir.

Anahtar Sözcükler: A. J. Ayer, dilsel analiz, olgusal ve empirik içerikli önermeler, a priori (analitik) önermeler, metafizik önermeler.

FUNCTION OF PHILISOPHY IN AYER: ELIMINATION OF METAPHYSICS THROUGH LINGUISTIC ANALYSIS

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ABSTRACT

Alfred Jules Ayer is one of the most important representatives of logical positivists. Logical positivism having manifested itself within the analytical philosophy tradition in the 20th century also regards philosophical problems as linguistic problems and tries to solve this problem through linguistic analysis. This understanding is based on Wittgenstein's main thesis that "philosophical problems are caused by the misunderstanding of language's logic." in *Tractatus*. Again in the same work, Wittgenstein, stating that "the limits of language points to the limits of the world", is observed to form a relationship or

mutualism, an identicalness between the logical structure of reality and that of language. This understanding of his reveals the assumption that basic truths about reality can be obtained through an analysis towards language. Here, Ayer confronts us as a representative of logical positivist tradition presenting this understanding, and he builds his opinions up on the empiricist comment of *Tractatus*. Ayer, regarding philosophical problems as linguistic problems in main, starts to seek for a language in which objective meanings will work which will free the daily language from its uncertainties, for which he proposes a linguistic analysis. Therefore, Ayer thinks that he will detects metaphysical propositions, which he defines as fake and meaningless, and that he can disable them. In search for the movement of philosophy to an ideal language epistemologically, in other words, for the formulation of a reliable and dependable basis to knowledge, Ayer reveal this yardstick as a "verification principle", which will draw a legal restriction for knowledge and which will help distinguish between the meaningful and meaningless. When Ayer tends to analyze linguistic forms and sentences, he determined one more meaningful group beside empirical assumptions and propositions with factual content which the verification principle will differentiate from metaphysical propositions. Ayer points to these propositions, which do not say anything about the world, which are necessarily true by its structure and which owe their reliability not to empirical verification but to linguistic convention, as a priori (analytical) propositions. Ayer, drawing attention to the fact that the propositions of logic and mathematics are of this kind, thinks that they enlighten us about the way we use the language thanks to the symbolic structure they have and guide us in our empirical studies. According to Ayer, the main function of philosophy is to distinguish factual and empirical propositions and a priori (analytical) propositions from metaphysics with meaningless/ fake propositions by doing linguistic analysis. Thus, in accordance with Ayer, through the elimination of metaphysics, both philosophy will be made a discipline having dependable and reliable propositions and humanity will be rescued from the burden of meaninglessness it has.

Keywords: A. J. Ayer, linguistic analysis, factual and empirical propositions, a priori (analytical) propositions, metaphysics propositions.

GİRİŞ

Dil felsefesindeki temel tartışma konularının en önemlilerinden biri, anlam sorununda dil dünya ilişkisidir. Sözcük-nesne ilişkisi ya da önerme-olgu ilişkisi bağlamında kendini gösteren bu tartışma, felsefe tarihinde temelde bir sözcüğü ya da önermeyi anlamlı yapan şeyin ne olduğunu felsefi bir sorgulamaya dönüştürür. Bu felsefi sorgulamada ön plana çıkan sorulardan biri de, anlamda nesnelliği sağlayan ölçütün ne olduğu konusudur. Bu soruyu 20. yüzyılda kendilerine temel bir çıkış noktası olarak belirleyen, analitik felsefe geleneği olmuştur. Bu geleneğin özellikle mantıkçı positivist kolu, dil-dünya ilişkisini ve anlam problemini, dilsel çözümlemeler ve mantıksal analizler üzerinden ele alır. Öte yandan zaten tüm analitik felsefenin ortak özelliği de, felsefi problemleri dilsel problemler olarak görmeleri ve bu bakımdan da yine onların dil analizi yoluyla bir çözüme ulaştırılabilecekleri düşüncesinde olmalarıdır.

Bilimsel açıklamalardaki kesinliği, felsefenin dünyaya ilişkin ortaya koyduğu önermelerde de görmek isteyen mantıkçı pozitivistler, bu bağlamda gündelik dili taşıdığı belirsizliklerden kurtaracak, nesnel anlamların iş göreceği, biçimsel olarak kusursuz bir dil arayışına girişirler. Viyana çevresi olarak da adlandırılan, mantıkçı pozitivistlerin temel amacı dolayısıyla, felsefeyi anlamsız/sahte önermelerden ibaret olan metafizikten arındırmaktır. Pozitivist bilim anlayışının genel çizgisini belirlediği mantıkçı pozitivizm, anlamsız metafizik önermeleri elemek üzere öncelikle "doğrulama ilkesini" (principle of verification) kendilerine bir ölçüt olarak belirler. Dilsel anlatımları, anlam açısından değerlendirecek olan doğrulama ilkesi, bu anlamda bir anlamlılık denetlemesi olarak da ortaya konulur (Altuğ, 2004: 63). Temelde Wittgenstein'ın *Tractatus*'unun empirist yorumuna dayanan bu doğrulama ölçütü, tüm mantıkçı pozitivistlerin ortak olarak başvurdukları bir formulasyon olsa da, felsefe tarihi içerisinde farklı şekillerde karşımıza çıktığını görmek mümkündür. Altuğ'un (2004: 63-64) da dikkat çektiği gibi, her ne kadar farklı şekillerde dile getirilse de, mantıkçı pozitivizmin bu doğrulama ölçütüne nihai şeklini veren, Alfred Jules Ayer olmuştur.

Viyana Üniversitesi'nde mantıksal pozitivizm felsefesi okuyan A. J. Ayer (1910-1989), bu mantıksal pozitivizmi düşüncelerinde felsefi bir tutum olarak da benimser. Analitik felsefenin önemli bir figürü olarak o da, metafiziğe karşı derin bir hoşnutsuzluk duyar. Bu bağlamda, bünyesinde metafizik içeriğe yer vermeyen bilimler ve mantık onun için önemli bir yerde durur. Bilimlerin yer verdiği gerekçelendirme ve analiz süreçlerinin içerdiği rasyonalitenin, felsefeyi metafizikten arındıracak önemli bir çıkış noktası olduğunu düşünür. Felsefenin epistemolojik olarak ideal bir dile taşınması, eş deyişle bilgiye güvenilir ve sağlam bir zemin oluşturma arayışı doğrultusunda Ayer, izlediği geleneğe de koşut bir şekilde, bu yasal bilgi sınırını çizecek ölçütü "doğrulama ilkesi" olarak benimser. Ayer, doğrulama ilkesi olarak bilinen bu ölçütün, felsefeye en az bilimler kadar sağlam bir temel kazandıracağı görüşündedir. Bunun temel nedeni, Ayer'in bu ölçütü, metafizik önermelerin başarısızlığını, geçersizliğini gösterecek bir anlamlılık denetlemesi olarak belirlemesinden ileri gelir. Ona göre, felsefe tarihinin taşıdığı ve çözmeye çalıştığı büyük sorunlar, sadece yer verdikleri önermelerin taşıdığı kavramsal karışıklıklardan ibarettir. Bu söz konusu kavramsal karışıklıklar ise, bir yandan bilişsel ilkelerin net bir biçimde ortaya konulamaması ile ilgiliyken, bir taraftan da dilin sınırlarının tam olarak çizilememesinden kaynaklanır. İşte Ayer'e göre, doğrulama ilkesi bu noktada devreye sokulacak, felsefeye konu olan önermeleri, dilsel anlatımları açısından denetleyerek onların gerçek bir önerme mi yoksa sahte bir önerme mi olduklarını belirleyecek olan temel bir ölçüt olarak konumlandırılır. Dolayısıyla bu ilke, önermede ileri sürülen savın doğruluk veya yanlışlığını test etmemize olanak tanıyacak olan bir ilke olarak da belirlenir. Ayer'e göre, doğrulama ilkesince onaylanabilecek türden olan önermeler, empirik bakımdan da test edilebilen, olgusal ya da analitik mahiyette olan önermelere karşılık gelir. İşte ancak bu türden önermeler, hakiki önermelerdir ve felsefeye konu olacak önermelerin mahiyeti de bu türden olmalıdır. Bu bağlamda onun felsefeye tanıdığı işlev, dil analizi yoluyla hakiki önermelerin gün yüzüne çıkarılması ve böylece boş, sahte, yani anlamsız önermelerden oluşan metafiziğin elenmesi şeklinde karşımıza çıkar. Bu bağlamda öncelikle Ayer'in görüşlerine temel olan *Tractatus*'a yönelerek, onun metafizik karşısındaki tutumunu ortaya koymak, Ayer'in bu esere getireceği empirik yorum dolayımında felsefeye yüklediği bu işlevi anlamak açısından önemli olacaktır.

Tractatus'un Metafizik Önermelere Karşı Tutumu

Wittgenstein'ın *Tractatus* adlı eseri, dil ve dünya arasında bir uygunluğun bulunduğu tezi üzerinde yükselir. Birinci dönemi olarak işaret edilen bu döneminde Wittgenstein, atomsal önermeler kuramına dayanır ve olgusal temellendirmeyi baz alır. Frege ve Russell'ın kurucusu olduğu mantıksal atomculuk düşüncesi, Wittgenstein'ın ilk döneminde felsefeyi sadece mantıksal anlamda bir dil analizine indirgediği görüşleriyle farklı ve önemli bir boyut kazanır. Burada yer bulan olgusal temellendirme, bir şeyin doğruluğunu onun olgusal olmasıyla eş değer tutar. Bir şeyin olgusal olması, onun doğruluğunun garantisi olacağı gibi, aynı zamanda anlamlı olmasının da bir ölçütü olarak karşımıza çıkar. Böylece belli bir anlam taşıyor olması bakımından tek söylenebilir olan'ın doğa biliminin önermeleri olduğu açığa çıkar. Nitekim doğa bilimleri, gerek empirik olarak konumlandırılabilmeleri gerekse de duyularla doğrulanabilir olmaları açısından, anlamlı önermelere sahip olan bir alana karşılık gelir. İşte onların bu pozisyonu gereği taşıdığı nitelikler göz önünde tutularak, duyusal (empirik) doğrulanabilirlik ilkesi gündeme getirilir.

Wittgenstein (2002: 3), *Tractatus*'ta felsefi sorunları, dilin mantığının yanlış anlaşılmasından kaynaklanan sorunlar olarak ele alır. Dil ve dünya arasında bir uygunluğun bulunduğu tezinden hareket eden Wittgenstein, dünyanın yapısının matematiksel, mantıksal bir yapıda olduğu tezini temele alır ve kurulacak mantıksal biçimli, ideal bir dilin bu yapıyı yansıtabileceğini düşünür. Böylece, dilin mantıksal yapısı ile gerçekliğin mantıksal yapısı arasında bir özdeşlik ilişkisi kuran Wittgenstein, dilin sınırlarını dünyanın sınırları olarak belirlemiş olur. İşte bu husus, onun neden dile ilişkin bir analiz ile, gerçekliğe ilişkin doğrulara ulaşabileceğimizi düşündüğünün bir açıklaması niteliğindedir. Bu düşüncenin ortaya koyduğu temel sav görülebileceği gibi, doğrulamanın empirik gözlem ya da duyu deneyimine dayanması gerektiğidir. Çünkü açıktır ki, dilin işlevi dünyayı betimlemektir. Bu betimleme ise dilsel resimlerle dünyayı yansıtmayı, yani dünyayı dilde temsil etmeyi gerektirir. Bunun yolu da o halde, empirik gözlem ya da duyu deneyiminden geçmek durumundadır. Soykan da Wittgenstein'da dil ve dünya arasındaki bu ilişkiyi bir de şöyle ifade eder: "Cümlenin yapıcı öğelerini ayrıştırırken de bunların dünyadaki karşılıklarını göstereceğiz (Soykan, 2016: 53)". Bu şunu açık kılar ki, dil-dünya arasındaki

bu bağıntıdan ötürü bir dil incelemesine giriştiğimizde de, dünyanın yapısını araştırırken elde ettiklerimizi de yine karşımızda buluruz.

Öte yandan şunu da ifade etmek gerekir ki Wittgenstein, bu eserinde özel olarak önermeleri nitelik açısından inceleyecek ne bir yöntemden söz etmekte, ne de duyusal doğrulamaya ilişkin bir gönderim yapmaktadır. Onun *Tractatus*'ta gündeme getirdiği şey sadece, bir önermenin anlamsız oluşunun, onun sahip olduğu göstergelere bir anlam verilmemiş olmasıyla açıklanabileceğidir. Bu hususta Wittgenstein açısından, ön planda tutulan düşüncenin, önermenin gerçeklikle ortak olarak taşıdığı "mantıksal biçim" olduğu görülür. Nitekim, *Tractatus*'ta anlam söz konusu olduğunda, duyu içerikleri ya da dolaysız gözlem verileri değil, önermenin kendi içerisinde bulunan öğelerin birbirleri ile olan ilişkisi temele alınır (Altuğ, 2004: 65). Wittgenstein'ın bu tutumu daha sonra, mantıkçı pozitivist geleneğin empirist yorumuyla, olgusal karşılığı olmayan, her şeyin tamamıyla yadsınması sonucunda duyu deneyi ile doğrulanamayan önermelerin anlamsız olduğu düşüncesine vardırılır. *Tractatus*'un bu yöndeki empirist yorumunu nihai sonuçlarına erdiren düşünür ise Ayer olmuştur. Onun bu yorumunda, felsefenin asıl işlevinin bir dil analizi yoluyla metafizik önermeleri elemek; güvenilir, yani açık ve seçik önermelere ulaşmak olduğu açık bir şekilde ortaya konulur.

Ayer'in Tractatus'a Empirist Yorumu ve Dilin Analiziyle Metafiziğin Elenmesi

Ayer kendine özgü empirik *Tractatus* yorumunda, duyu içerikleri (sense contents) ve doğrulanabilirlik ilkesini temele alarak metafiziği reddeder ve onu felsefeden uzaklaştırmayı dener. Duyu içeriklerini merkeze aldığı düşüncelerinde Ayer, bir önermenin doğrulanabilirliğinin koşulunu, onun duyu deneyimi ile doğrulanmış olmasına bağlar. Bir başka ifade ile, önermenin ifade ettiği, betimlediği ya da bildirdiği şeyin, duyu içeriklerine ya da duyu deneyimine dayanıyor olması gerektiğini düşünür. Böylece Altuğ'un (2004:65) da dikkat çektiği gibi, Wittgenstein'ın anlamı mantıksal düzeyle sınırlı tuttuğu noktada, Ayer'in ise bu empirik yorumla birlikte anlam kuramının içeriğini daha çok epistemolojik bir düzeye taşıdığı görülür. Buna bağlı olarak Ayer'de anlamlı ve anlamsız bir önermeyi birbirinden ayıracak olan şey de, onun deneyimle, yani duyusal gözlemle doğrulanabilir olup olmadığı olarak karşımıza çıkar. Dolayısıyla duyu veri ve duyu içeriklerinin belirlediği bildirim, açıklama ve ifadelerin dışında kalan tüm önermeler bu bakımdan Ayer'e göre, anlamsız önermeler olarak karşılık bulur.

Görülebileceği gibi Ayer, bir önermenin doğruluğunu yine onun anlamlılığıyla eş değer tutar fakat Wittgenstein'dan farklı olarak, doğrulanabilirlik ilkesiyle mantıksal düzlemin dışına çıkarak, onu deney ve gözlem yoluyla elde edilen verilere bağlar. Böylece Ayer, metafizik bir önermenin yanlışlığını, bu da demektir ki anlamsızlığını ortaya koymak üzere, önermenin dile getirdiği şeyin olgusal durumla ilgili bir şey söyleyip söylemediğini test etmeye olanak tanıyacak ölçütü, "doğrulanabilirlik ilkesi" olarak ortaya koymuş olur. Artık Ayer'e (1998: 13) göre, yapılması gereken, ele alınacak dilsel biçim ve tümceleri, bu ölçütle sınamak ve anlamlıları anlamsız olanlardan ayrıştırmaktır.

Ayer'e göre, elbette ki tüm önermeler empirik doğrulama yöntemi ile test edilebilir bir nitelikte de değildir. Empirik doğrulamanın kendilerine uygulanamadığı önermeleri Ayer, a priori önermeler ve metafizik önermeler olarak belirler. Ancak Ayer, anlamlılık hususunda, a priori ve metafizik önermeler arasındaki önemli bir farka dikkat çeker. Ayer tarafından a priori önermeler, olgusal içerikten yoksun olsalar da doğrulukları totoloji olmalarından kaynaklanan önermeler olarak konumlandırılır. Böylece Ayer, anlamlı ve doğru önermeler olmaları açısından a priori, yani analitik önermeleri, metafiziğin önermelerinden de ayrı tutar. Birer totoloji olsalar da, Ayer onların mantıksal dönüşümlere izin veren yapıları gereği, yani bir önermenin eş değeri olacak başka bir önerme ortaya koymada işlevsel olmalarından ötürü yararlı oldukları kanaatindedir. Ayer'e göre sadece, tümevarıma başvuran filozofların sıklıkla yaptığı gibi, totolojiden olgular üzerine bir önerme çıkarılabileceğini kabul etmek hatalı bir tutumdur (Ayer, 1998: 27). Çünkü duyu deneyiminden bağımsız olarak bilinebilecek, ortaya konulabilecek bir doğru söz konusu değildir. Ayer için, a priori önermeler, dünya ile ilgili hiçbir şey söyleyemez. Onlar yapıları gereği, zorunlu olarak doğru olan ve dolayısıyla da geçerlilikleri empirik doğrulamaya bağlı olmayan türden önermelerdir. Ayer bu türden önermelere "analitik önermeler" der ve mantık ile matematiğin önermelerini bu türden önermelere örnek verir. Dünyaya ilişkin hiçbir bilgi sağlamasalar da, sahip oldukları simgesel yapı dolayısıyla dili kullanma biçimimiz hakkında bu analitik önermelerin bizi aydınlattığını düşünen Ayer, onların doğruluklarını da dilsel uzlaşım ürünü olmalarında

bulur. Dolayısıyla Ayer, analitik önermelerin her ne kadar duyu deneyiminden bağımsız olsalar da, bize empirik bilgi araştırmamızda yol gösterici olduklarını düşünür.

Ayrıca Ayer (1998: 35), felsefenin tanımlarımızın biçimsel sonuçlarıyla da ilgili olabilmesi açısından, onun mantığın bir bölümü olarak da kabul edilmesi gerektiğini düşünür. Bu noktada dikkat çekilmesi gereken husus, Ayer'e göre felsefe önermelerinin, öznitelikseL olarak, yani karakteristik olarak olgusal olmayıp, dilsel oldukları gerçeğidir. Felsefe önermeleri bu bakımdan ne fiziksel ne de zihinsel nesnelerin davranışlarını betimlemekle ilgilidir; onlar sadece tanımları ya da tanımların biçimsel sonuçlarını anlatmalarından ötürü mantığın bir bölümü olarak değerlendirilmelidir (Ayer, 1998; 34-35).

Ayer a priori önermelerin karakterini olgusal içerikten yoksun olsa da, dilsel uzlaşıma bağlı olarak zorunlu bir şekilde doğru olan, tanımsal ve analitik yapıdaki önermeler olarak belirlediğinde, böylece onlarla metafiziksel önermeler arasında da bir ayrım çizgisi çekmiş olur. Böylece Ayer için artık açıktır ki, bir önerme olgusal içerikten yoksunsa ya da analitik olan, yani a priori karakterde totolojik bir önerme değilse metafizik bir önermedir. Dolayısıyla bir önerme, empirik bir varsayım ya da bir totoloji dile getirmiyorsa, anlamsız bir önerme olarak konumlandırılmalı ve metafizik olduğu tespit edildiği için elenmelidir. Dolayısıyla Ayer'e göre bir filozofun öncelikli işi, bu da demektir ki felsefenin temel işlevi, olgusal önermeler ya da empirik varsayımlar, totolojiler ve tanımlar ile anlamsız ya da metafiziksel söz biçimlerini birbirinden ayırmak, bunun güvenilir yollarını bulmak ve zihinleri metafizik önermelerden arındırmaktır. Görülmektedir ki bu güvenilir yol, Ayer için, dilin analizinden geçmektedir.

SONUÇ

Mantıkçı pozitivizmin önemli temsilcilerinden biri olan Ayer de görülebileceği gibi mantıkçı pozitivist anlayışın yasal bilgi çerçevesi içerisinde hareket etmektedir. Ayer, bilgi taşıma niteliği olan bütün dilsel biçim ya da tümceleri kendi içerisinde üç türe ayırarak, felsefenin ve aslında insan zihninin kendisini uzak tutması gerekenleri metafizik önermeler olarak belirlemektedir. Ayer açısından anlamlı ve doğru olarak nitelendirilen önerme türleri, deneyimle doğrudan doğrulanmaya müsait türde olan olgulara ilişkin ifadeleri içeren olgusal önermeler veya empirik varsayımlar ile empirik doğrulama yolu ile doğrulanmaya müsait olmasalar da, doğruluğunu dilsel uzlaşımdan alan a priori (analitik), totolojik yapıdaki önermelerdir.

Ayer, olgusal bir içeriğe sahip olan ve a priori (analitik) önermelerin dışında kalan tüm önermeleri, metafiziksel, yani doğrulanmaktan uzak ve bu bakımdan da anlamsız önermeler olarak belirler. Bu bakış açısına yerleşen Ayer, ne felsefe tarihinin büyük ölçüde bir metafizik tarihi olduğunu kabul eder, ne de metafiziği felsefenin bir alt dalı olarak görmeyi. Ayer (1998: 30), felsefe tarihinde büyük filozof olarak kabul görenlerin çoğunun, birer metafizikçi olarak değil de birer çözümlemeci olarak değerlendirilmesi gerektiğini düşünür. Bu bağlamda örneğin Locke'un ortaya koyduğu sağduyu felsefesini ele aldığında, onun amacının sağduyularımıza sanıldığı gibi bir önsel doğruluk vermek olmadığının altını çizer ve onun buradaki misyonunu "çözümlemek" olarak belirler. Çünkü ona göre burada Locke, bir filozof olarak ne birtakım deneysel önermelerin geçerliliğinden söz etmekte ne de onların geçersizliğini göstermeye niyetlenmektedir. Ayer açısından Locke, sağduyu felsefesinde sadece bu türden önermelerin çözümlemesiyle ilgili görünür; onun öte bir niyeti yoktur. Ayer'in de işaret ettiği gibi, Locke da *Deneme*'sinde kendisine, "ortalığı biraz temizleyip bilgi yolunu kaplayan saçmalıklardan birazını ortadan kaldırmada bir kol işçisi (Locke, 2004: 63)" olarak işaret eder. Bu açıdan Ayer, onun dil üzerinden (ideler ve göstergeler incelemesi ile) kendini bilgiyi tanımlama, önermeleri öbekleme ve özdeksel şeylerin doğasını gösterme gibi analitik işlere vakfettiğini düşünür (Ayer, 1998: 30). Bu bağlamda kendisini de, dilsel önermelerin analizi ile anlamsız, sahte önermelerden oluşan metafiziği eleme çabasında, Locke gibi bir çözümleyici olarak konumlamış olur.

Ayrıca dikkat edilmesi gereken şey şudur ki, Ayer'e göre, filozof bir çözümleyici olarak, nesnelerin fiziksel özellikleriyle hiçbir zaman doğrudan ilgili değildir; o, bu çözümleme işleminde daha çok bizim onlardan ne şekilde söz ettiğimizle ilgilidir. Felsefe önermelerinin öznitelik açısından olgusal değil, dilsel olduğuna dikkat çeken Ayer, çözümleme işleminde tanımlar ve tanımların biçimsel sonuçlarından oluşan bu dilsel ifadelerin kendisine yönelmeyi önerir. Bu bakımdan onun çözümleme olarak ifade ettiği şey, özünde bir dilsel analize karşılık gelmektedir. Nitekim Ayer, bir filozofun ister olgularla, ister kavramlarla ve hatta isterse nesneleri çözümlemeye girişmiş görünsün, onun bu çözümlemede asıl olarak ilgili olduğu şeyin, onları ifade eden sözcüklerin tanımı üzerinde çalışmak olduğunun altını çizer

(Ayer, 1998: 36). Böylece Ayer'in düşüncelerinde, felsefi çözümlemenin hem her türlü deneysel kabullerden hem de metafizik kabullerden bağımsız olarak düşünüldüğü de açığa çıkar.

Bu bakımdan Ayer, filozofun ana görevini, felsefenin temel işlevini, bir çözümleme, yani dilsel bir analiz ile dilsel ifadelerin kendisine yönelmek olduğunu, onların bir önerme, dilsel bir biçim olarak olgusal önermeler ya da empirik varsayımlar mı, totolojiler ve tanımlar mı, yoksa anlamsız olan metafiziksel söz biçimlerine mi karşılık geldiğini belirleme olarak ortaya koyar. Böylece metafizik önermeler elenebilecek, felsefe sağlam ve güvenilir önermelere sahip bir disiplin haline getirilebilecek ve en önemlisi, insan anlamsızlığın külfetinden kurtarılabilecektir.

KAYNAKÇA

Altuğ T 2004. Modern Felsefede Metafiziğin Elenmesi. İstanbul: Etik Yayınları.

Ayer AJ 1998. Dil Doğruluk ve Mantık. Hacıkadiroğlu V. (çev.). İstanbul: Metis Yayınları.

Locke J 2004. İnsan Anlığı Üzerine Bir Deneme. Hacıkadiroğlu V. (çev.). İstanbul: Kabalcı Yayınevi.

Soykan ÖN 2016. Felsefe ve Dil, Wittgenstein Üstüne Bir Araştırma. İstanbul: Bilge Kültür Sanat.

Wittgenstein L 2002. Tractatus Logico-Philosophicus. Pears DF and McGuiness (trans.). London and New York: Routledge Classics.

DAĞITILAN ADALET ALGILAMASI VE ALGILANAN DAVRANIŞ İLİŞKİSİ ÜZERİNE BİR ARAŞTIRMA

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ÖZET

Çalışma organizasyonlarda örgütsel adalet kavramı üzerine yapılan, geniş ölçekli bir çalışmaya hazırlık maksadı ile yapılmış bir saha çalışmasının sonuçlarını içermektedir. Yapılan çalışma bir örgütteki bireylerin, örgütsel adalet boyutlarından dağıtım adaleti ile algıladıkları davranışlar arasındaki ilişkiye odaklanmaktadır.

Örgütsel adalet kavramının üç temel boyutu boyutundan birisi olan dağıtım adaleti temel olarak; bir kimsenin örgüte katkısı ve kazançları arasındaki algılamaları ile kendisi ve aynı konumda örgütteki diğer kimseler arasındaki kıyaslamaları içermektedir. Algılanan davranış ise örgüt iklimi ilgili bir kavram olarak, kişilerin birbirlerine olan tutum ve davranışlarının, örgütteki bir bireyin üzerinde yarattığı etki olarak açıklanmaktadır.

Dağıtılan adalet, iş ve işyeri standartlarına uygunluk, gösterilen çaba ve elde edilen gelir, kariyerde ilerleme ve bunun onaylanması ile gelir dışı ek olanaklar gibi somut göstergelere sahiptir. Davranış algılaması ise işbirliği, karşılıklı güven ve yardımlaşma gibi kişilerin algılamalarına göre değişiklik gösteren bir durumu ifade etmektedir.

Çalışma; büyük ölçekli kimya sanayi firmasında çalışan, yükseköğrenim görmüş kişiler arasında, dağıtılan adalet ile algıladıkları davranışlar arasındaki ilişkileri incelenmesine yönelik olarak gerçekleştirilmiş bir saha çalışmasından elde edilen sonuçların değerlendirilmesini içermektedir.

Anahtar Kelimeler: Örgütsel Adalet, Dağıtılan Adalet, Eşitlik Teorisi, Algılanan Davranış

A RESEARCH ON THE RELATIONSHIP OF DISTRIBUTED JUSTICE AND PERCEIVED BEHAVIOR

ABSTRACT

The study includes the results of a field study on the concept of organizational justice in organizations, conducted with the aim of preparing for a large-scale study. The study focuses on the relationship between the distribution justice and the behaviors felt by individuals in an organization from the dimensions of organizational justice

Distribution justice, which is one of the three basic dimensions of the concept of organizational justice, is basically; includes perceptions between comparisons of anyone to the organization and gains of him/he to the organization and comparisons of him/her with the others who have working in the same position.

The perceived behaviour is a concept which is related with the climate of organizations is explained as an effect of the attitudes and behaviours of indivividuals on each other and effects on the individual in the organization

It has concrete indicators such as compliance with distributed justice, compliance with work and workplace standards, effort and revenue obtained, career progression and approval and additional non-income opportunities. Behavioral perception refers to a situation that varies according to the perceptions of individuals such as cooperation, mutual trust and cooperation.

The study includes the evaluation of the results of a field study which conducted to examine the relationships between the justice distributed and the perception of behavior of highly educated people who Works in a large-scale chemical industry company.

Keywords: Organizational justice, Distributive Justice, Equity Theory, Perceived Behavior

GİRİŞ

Adalet kavramın sözlük anlamı hak ve hukuka uygunluk, hakkı gözetme, hakkını verme, eşitlik, doğruluk gibi kavramlarla açıklanmaya çalışılmaktadır. Bu tanımlamalarda genel manada bir adalet tanımı ortaya konmamaktadır. Genel manada adalet kavramını tanımlamak son derece zordur.

Felsefi olarak adalet isteği bir fikir (ide) olarak karşımıza çıkar. Bu sebeple somut olarak tanımlanamaz. Adaletin zıddı olan adaletsizlik kavramından yola çıkarak "**kişilerin temel haklarının korunması**" biçiminde soyut alarak tanımlanabilir. Ancak bir birey açısından belli bir duruma ait olarak tanımlanmak istendiğinde **somut ve haklı bir talep** alarak karşımıza çıkar. Birey burada kendisine verilmesi gereken, başkasında bulunup kendisinde bulunmayan bu sebeple eşitsizlik olduğunu ileri sürdüğü somut bir talebi ileri sürer ve bu talep adaleti bir soyut bir fikir olmaktan çıkarak, birey ve durum bakımından somut bir kavrama dönüşür (Kuçuradi, 1993).

Esasen adalet kavramı sosyal bir yapı içinde tanımlanmaktadır. Bu sosyal yapı içinde kişiler içinde bulundukları belli koşulları, diğerleri ile kıyaslatarak kendileri bakımından sonuçlar elde ederler. Kişiler belli alanlarda elde ettikleri bu sonuçlarda ilgili konuda kendi lehine bir sonuç elde ettiklerinde yâda bir eşitlik söz konusu olduğunda adaletli bir durum olduğu algısına sahip olurlar.

Örgütsel adalet, çalışma hayatında iş tatmini, organizasyonel bağlılık, performans ve örgütsel vatandaşlık gibi kavramlarla yakından ilişkilidir (Ployhard ve Rayn, 1997). Çalışanların davranışları ve birbirleri ile olan ilişkileri bakımından da önemli bir etkisi vardır. Bu bakımdan herhangi bir organizasyonun başarısı için önemli değişkenlerden birisidir.

Örgütsel adalet, *bireylerin örgüt içinde adaleti nasıl anladıkları ve buna nasıl tepki verdikleri ile ilgili bir sistemi ifade eder* (Ployhard ve Rayn, 1997). Birey ve örgüt ilişkisi içinde de adalet bireyler bakımından somut haklı bir talep olarak düşünülmektedir. Bu sebeple örgütsel adalet kavramı da bir gruptaki insanların algılamalarından kaynaklanan ve somut hale dönüşen talepleri temel alır. Bir eylemin bir kimse tarafından adil olarak hissedilmesi, bu eylemin o kişi bakımından adil olması anlamını taşır (Fortin, 2008). Ancak örgüt bakımından gruptaki diğer kimselerinde bunu haklı bulmaları ve desteklemeleri gerekmektedir.

Örgütsel adalet ile ilgili çalışmalarda Adams'ın eşittik teorisi ve Homnas'ın "eşitsizlik" düşüncelerine sıkça atıfta bulunulmaktadır. Her iki görüşte de, değeri dağıtan, payını alan (kişi) ve kıyas yapılan kimseler (diğerleri) olmak üzere üç tarafın bulunduğu bir sistem mevcuttur. Adams'a göre bir örgütteki bir kimse için normatif bir temelde (ideal kurallar sistemi içinde), kişiler kendi girdi ve çıktıları ile diğerlerini kıyaslayarak eşitlik olup olmadığını kontrol ederek dağıtım yapan otoritenin adil olup olmadığı konusunda algılamada bulunurlar. Kıyaslama yapan kişinin, ileri sürdüğü girdi ve çıktıların gerçek ve mutlak doğru olması gerekmez. Bu tamamen kişilerin kendi algılamaları ile ilişkili, psikolojik bir durumdur (Adams, 1963). Burada adalet algısında kişinin kendi değerlendirmesinin önemli olması durumu söz konusudur. Homans'a göre ise eşitliğin kendisi "eşitsizlik" yaratmaktadır. Dağıtımın eşit olması adaletsiz bir durumdur. Çünkü kişilerin sağladığı girdi ile aldıkları sonuç hakkındaki değerlendirmeleri sübjektif değerlendirmelerdir. Burada temel olarak örgüte yapılan katkı esas olmalıdır. Bu bakımdan Değeri dağıtan organizasyona katkı yüksek olan kişilere daha yüksek pay vermelidir. Buradaki sorun ise bunun nasıl ölçüleceği konusundadır (Homans, 1958).

Örgütsel adaletle ilgili çalışmalarda üç önemli boyutun varlığından söz edilmektedir. Bunlar *dağıtım adaleti, işlem adaleti* ve *etkileşim adaleti* boyutlarından oluşmaktadır (Bies ve Tyler, 1993). Dağıtım adaleti, yaratılan değerin nasıl paylaşıldığına odaklanan, yapılan katkı, ücret ve tefi gibi somut

ölçülebilen değerlerle ilgilidir. İşlem adaleti, paylaşımdaki süreçlere odaklanır ve daha ziyade formal kurallar sistemi ile tekrar edilen davranışların oluşturduğu "sembolik" yapıyı ifade etmektedir. Etkileşim adaleti ise temelde örgüt üyeleri arasındaki iletişimin niteliği ile ilgilidir. Bu manada etkileşim adaleti, aslında dağıtım adaleti ile işlem adaletinin davranışsal sonuçları olarak nitelendirilebilir (Greenberg, 1993).

Örgütsel adalet söz konusu üç boyut içinde tanımlansa da, konu ile ilgili çalışmaların başlangıcının *dağıtılan adalet* boyutu ile başladığını söylemek mümkündür. Dağıtılan adalet boyutunun, somut ölçülebilen hususlarla ilgili olması ve bu somut ölçülerin davranışsal sonuçlara nasıl yansıdığı konusu çalışmaların uzun zaman konunun odak noktasını oluşturmuştur.

Dağıtılan adalet kavramının literatürde, özellikle "sosyal mübadele teorisi" ve "göreceli yoksunluk teorisi" ile ilgili olduğuna ilişkin yaygın bir görüş mevcuttur. Sosyal mübadele, sosyal ilişkileri kaynak değişimi yolu ile karşılıklı ödüllendirmeler biçiminde anlatmaktadır (Bedük ve Ertürk,2015). Göreceli yoksunluk ise, toplum içinde bir kimse tarafından hissedilen eşitsizlik deneğimi olarak tanımlanmaktadır (Crosby ve Gonzales, 1984). Kişiler bu teorilerde geniş bir sosyal alanda değerlendirmeler yapmakta ve çıkarımlarda bulunmaktadırlar. Ancak örgütsel adalet kavramı genel bir toplum yapısı içinde, daha mikro düzeyde bir birim içinde yer alan bireylerin örgüt ve o örgütteki diğer bireyler ile olan ilişkisi bağlamında değerlendirilmektedir.

Dağıtılan adalet örgütün elde ettiği sonuçların örgüt içinde adaletli bir biçimde dağıtılması ile ilgilidir (Doğrar ve Bostancı, 2020). Bu bakımdan, ücret, terfi ve çalışılan yıl gibi ölçülebilir sonuçlardan hareket edilerek yapılan değerlendirmeleri ifade eder. Dağıtılan adaletle ilgili olarak bir tarafta ölçülebilen sonuçlar diğer tarafta ise bunun sonucunda ortaya çıkan davranışlar söz konusudur. Çalışanlar diğerleri ile kendilerinin kıyas ettiklerinde hak ettikleri sonuçları alamadıklarının düşünüyorlarsa, temel olarak iki yolla eşitliği sağlamak durumundadırlar. Bunlar psikolojik olarak bir şekilde ikna edilmek yâda tepki göstererek eşitliği sağlamaya çalışmak seçenekleridir (Biyes ve Tyler, 1993).

Psikolojik olarak ikna edilmek seçeneği ya kişinin kendisi tarafından yaşanıldığı düşünülen eşitsizlikle ilgili temel bir açıklama bulması, yâda başkaları tarafından yapılan açıklamalar, verilen vaatler ve farklı alanlarda sağlanan menfaatler gibi hususlarla yatıştırılmayı ifade etmektedir. Tepki göstermek ise işten ayrılma, dava açma ve açık bir şekilde çatışmaya girme gibi açık bir şekilde itiraz olabileceği gibi, kapalı bir şekilde işle ilgili olumsuzluk yaratma, kişileri yıpratmaya çalışma ve gizi bir çalışmaya girme gibi değişik yollarla olabilir.

Örgütsel adalet kavramında da sosyal onay önemli bir kavram olarak karşımıza çıkmaktadır. Sosyal onay bireyin bulunduğu grupta davranış ve düşünceleri ile ilgili olarak başkalarının onayını araması şeklinde tanımlanabilir (Leite ve Beretvas, 2005). Kişi dağıtılan adalet ile ilgili olarak somut sonuçlardan yola çıkarak ilgili konuda bir sosyal onay aldığında adaletsiz olarak algıladığı husus bireysel olmaktan çıkarak gruba ait bir tepkiye dönüşebilir. Bu durumda bireyin ileri sürdüğü sav daha kuvvetli hale gelmektedir.

Dağıtılan adalette yapılan karşılaştırmalar sadece içinde olunan örgütteki kurallalar, yapılan dağıtım ve kişiler arasındaki karşılaştırmalardan ibaret değildir. Alanda yapılan çalışmalarda, kişilerin ilgili olarak örgüt içi olduğu kadar, örgüt dışı diğer örgütler ve alanlarda eşitlik kıyaslaması yapılması söz konusudur (Colquitt, 2001).

Örgüt iklimi, iklimi, işletme kültürünün örgütte yarattığı ve çalışanların hissettiği psikolojik ortamdır (Varol, 1993). Bu ortam içince birbiri ile ilişkili insanların karşılıklı olarak gösterdikleri tutum ve davranışlar, bireylerin içinde bulundukları durum bakımından farklı olarak algılanabilmektedir. Davranış geliştirme, birey bakımından yalnızca kişisel işlemlerle ilgili değil, başkalarının davranışını

incelemeyi ve davranışın meydana geldiği ortamı da etkileyen bir durum arz eder (Hoeksema vd., 2009). Bireyin burada kendine yönelen tutum ve davranışları nasıl algıladığı da önem kazanmaktadır. Bireyin yaptığı olumlu yâda olumsuz değerlendirmeler, örgütte diğer kimseler tarafından da yaygın olarak paylaşılıyorsa bir genelleme yapılarak olumlu yâda olumsuz bir örgüt ikliminden söz etmek mümkündür. Örgüt içindeki kimseler, kendilerine yönelen davranışları değerlendirirken, Örgüt içinde kaldıkları muamele ile ilgili olarak da kanaat oluştururlar.

DAĞITILAN ADALET VE ALGILANAN DAVRANIŞ ARASINDAKİ İLİŞKİ

Dağıtılan adalet, örgütsel adaletin ücret, sahip olunan haklar ve imkânlar gibi ölçülebilen değişkenleri ile ilgilidir. Varsayımsal olarak, örgütteki kişilerin genel olarak dağıtılan adalette olumlu fikre sahip olmaları, bireysel olarak kendilerine yönelen davranışlarında olumlu algılanmasına katkı sağlayacağı düşüncesidir. Bu durumda Dağıtılan adalet ile algılanan davranış arasında bir korelasyondan söz etmek mümkündür. Ancak bu genel değerlendirmenin dışında ölçülmek istenen diğer bir konu ise, demografik değişkenler olan, yaş, cinsiyet, medeni durum, çalışma süresi ve eğitim durumuna göre dağıtılan adalet ve algılanan davranış arasında anlamlı farklılık olup olamadığı konusudur. Buradan hareketle araştırmanın modeli ile ilgili olarak kurgulanan hipotezler aşağıdaki gibi oluşturulmuştur.

H1: Dağıtılan Adalet Algısı ile Algılanan davranış arasında pozitif yönlü anlamlı bir ilişki vardır.
H2: Dağıtılan Adalet Algısı, demografik değişkenlerden yaşa göre farklılaşmaktadır.
H3: Dağıtılan Adalet Algısı, demografik değişkenlerden cinsiyete göre farklılaşmaktadır.
H4: Dağıtılan Adalet Algısı, demografik değişkenlerden medeni duruma göre farklılaşmaktadır.
H5: Dağıtılan Adalet Algısı, demografik değişkenlerden Yüksek Eğitim düzeyine göre farklılaşmaktadır.
H6: Dağıtılan Adalet Algısı, demografik değişkenlerden çalışma süresine göre farklılaşmaktadır.
H7: Algılanan davranış, demografik değişkenlerden yaşa göre farklılaşmaktadır.
H8: Algılanan davranış, demografik değişkenlerden cinsiyete göre farklılaşmaktadır.
H9: Algılanan davranış, demografik değişkenlerden medeni duruma göre farklılaşmaktadır.
H10: Algılanan davranış, demografik değişkenlerden çalışma süresine göre farklılaşmaktadır.
H11: Algılanan davranış, demografik değişkenlerden Yüksek Eğitim düzeyine göre farklılaşmaktadır.

Araştırmanın Amacı ve Metodolojisi

Anket Colquitt, Adalet Algısı Ölçeğinden yararlanılarak oluşturulmuştur. İlgili ölçek örgütsel adaletin boyutları ile ilgili ölçüm yapmak üzerine geliştirilmiştir. Çalışmada bu boyutlardan sadece dağıtım adaleti ile bunun çıktılarından olan bireyler üzerindeki olumlu yâda olumsuz davranış algılamaları üzerindeki etkileri inceleme altına alınmıştır.

Anket toplam yirmi beş sorudan ve üç bölümden oluşmaktadır. Birinci bölümde, katılımcıların cinsiyet, medeni durum, mesleki değneğim, yüksek eğitim durumu ve yaşına ilişkin beş ana bölümde demografik sorular yer almaktadır. İkinci bölümde ise Colquitt ölçeğindeki dağıtılan adalet ile ilgili on soru mevcuttur. Üçüncü bölümde ise dağıtım adaletinden etkilendiği varsayılan kişilerin, örgüt içinde kendilerine nasıl davranıldığına ilişkin olarak algılanan davranış ile ilgili on soru mevcuttur.

Birinci bölümde yer alan demografik sorular dışındaki, dağıtım adaleti ve Algılanan Davranış yönelik ikinci bölümdeki sorular, beşli Likert ölçeği biçiminde olumsudan olumluya doğru, (1) Kesinlikle katılmıyorum, (2) Katılmıyorum, (3) Fikrim yok, (4) Katılıyorum ve (5) Kesinlikle katılmıyorum şeklinde, katılımcılara sunulmuştur.

Veri Analizi ve Bulgular

Tablo 1:Demografik Değişkenler		
CİNSİYET		
	f	**%**
Bayan	30	53,6
Bay	26	46,4
Toplam	56	100,0
MEDENİ DURUMU		
	f	**%**
Evli	30	53,6
Bekâr	26	46,4
Total	56	100,0
YAŞ DAĞILIMI		
YIL	**f**	**%**
20-25	7	12,5
26-30	20	35,7
31-35	14	25,0
36-40	8	14,3
41-	7	12,5
Total	56	100,0
EĞİTİM DURUMU		
	f	**%**
Ön Lisans	4	7,1
Lisans	47	83,9
Lisans Üstü	5	8,9
Total	56	100,0
MESLEKİ DENEYİM		
	f	**%**
1-5	17	30,4
6-10	16	28,6
11-15	14	25,0
16-20	5	8,9
20-	4	7,1
Total	56	100,0

Veri toplama ve Örneklem alanına ilişkin genel değerlendirme

Araştırma Kocaeli'nde faaliyet gösteren bir kimya şirketinde gerçekleştirilmiştir. Firma 1949 yılında kurulmuştur, Firma bir kimya şirketi olarak, alkali zirai ilaçlar ve temizlik ürünleri üretmektedir. Firmada çalışan sayısı 520 kişidir. Firma bir grup çatısı altında faaliyet gösteren bir firma olarak, ilgili alanda Türkiye'de lider konumunda olan bir firmadır.

Araştırma firmada çalışan yüksek eğitimli idari ve Üretim personeli olan 122 kişi üzerinde gerçekleştirilmiştir. Anketin demografik kısmında cinsiyet, medeni durum, mesleki değneğim, yüksek eğitim durumu ve yaşına ilişkin sorular yer almaktadır. Söz konusu çalışanlardan 61 kişi çalışma için oluşturulan ankete cevap vermiştir. Katılımcı olan 61 kişiden toplanan anketlerden 56'sı değerlendirmeye alınmıştır.

Ankete cevap katılımcıların (30 kişi) % 54'ü Bayan (26 kişi) % 26'sı ise erkek çalışanlardan oluşmuştur. Katılımcıların medeni durumuna göre dağlım ise (30 kişi) %54'ü evli, (26 kişi) %26'sı bekâr şeklindedir.

Katılımcıların yaş dağılımları ise, (7 Kişi) % 12.5 ile 20-25 yaş aralığında, (20 Kişi) % 35.7 ile 26-30 yaş aralığında, (14 Kişi) %25 ile 31-35 yaş aralığında, (8 Kişi) % 14.3 ile 36-40 yaş aralığında, (7 kişi) % 12.5 41 ve üstü yaş aralığında yer almaktadır.

Katılımcıların yüksek eğitimi dikkate alındığında, ön lisans (4 Kişi) % 7,1, (47 Kişi) % 83,9 lisans, (5 Kişi) % 8,9 yüksek lisansa sahiptir.

Katılımcıların, aynı firmada çalışma yıllarına oluşan mesleki deneğime ilişkin dağılım ise, 1-5 yıl, aralığında (17 Kişi) % 30.4, 6-10 yıl aralığında (16 Kişi) % 28.6,11-15 yıl aralığında (14 Kişi) %25, 16-20 yıl aralığında (5Kişi) % 8.9, 20 yıl ve üstü ise (4 Kişi) % 7.1 şeklinde dağılım göstermektedir.

Verilerin Analizi Ve Elde Edilen Sonuçlar

Anketler yolu ile toplanan verilerin analizinde SPSS programından yararlanılmıştır. Veri girişlerinin yapılmasından sonra öncelikle, anket sorularının II ve III. bölümünde yer alan sorular üzerinde Adalet Algısı Ölçeği temel alınarak, güvenirlik analizleri yapılmıştır. Burada Dağıtılan adalete ilişkin 10 soru için Cronbach's Alpha 0,794, Davranış algılamaları ile ilgili 10 soru için Cronbach's Alpha 0,799 olarak hesaplanmıştır. Elde edilen sonuçlara göre kabul edilebilir sınırlar içinde güvenilir olduğu tespit edilmiştir.

Tablo 2: Dağılan Adalet Algısı İle Algılanan Davranışa İlişkin Korelasyon Analizi

		Dağıtım Adaleti	Algılanan Davranış
Dağıtım Adaleti	Pearson Correlation	1	0.753
	N	56	56
Algılanan Davranış	Pearson Correlation	0.753	1
	N	56	56

Tablo 2., Dağıtılan adalet algılaması ile Algılanan davranış arasında r=0.01düzeyinde 0.753; p<.01 anlamlı, çift ve pozitif yönlü yüksek düzeyde korelasyon mevcuttur. Buradan hareketle, Katılımcıların Dağıtım adaleti ile Algılanan davranış arasında doğrusal pozitif yönlü bir ilişki olduğu sonucu çıkmaktadır. Bu durumda H1 (Çalışanların Dağıtılan Adalet Algısı ile Algılanan Davranış arasında pozitif yönlü anlamlı bir ilişki vardır) hipotezi kabul edilmiştir.

Tablo 3: Dağılan Adalet Algısı İle Yaş Değişkenine ilişkin Anova analizi

Yaş Dağılımları	N	X	S	V	KT	df	KO	F	P
20-25	7	3.5429	0.56526	Bg	2.248	4	0.562		
26-30	20	3.1900	0.49300	Wg	14.481	51	0.284		
31-35	14	3.4143	0.50208	Total	16.729	55			
36-40	8	2.8875	0.74150					1.979	0.112
41-	7	3.1000	0.36968						
Total	56	3.2357	0.55150						

Tablo 3., Homojenlik testi 0.390 >0.05 varyanslar homojen dağılmıştır. Anova testinde (F=1.979; P >0.05) anlamlı bir farklılık yoktur. Bu durumda H2 (Dağıtılan Adalet Algısı, demografik değişkenlerden yaşa göre farklılaşmaktadır) hipotezi reddedilmiştir.

Tablo 4: Cinsiyete göre Dağılan Adalet Algısı (T) testi sonuçları

	Cinsiyet	N	Mean	Std Deviation	Std. Error Mean
Dağıtım Adaleti	Bayan	30	3.2400	.46431	.08477
	Bay	26	3.2308	.12695	.12695

Tablo 4., Yapılan T testi sonucunda 0.951>0.05 ve cinsiyete göre ortalamalar (Bayan 3,2400 Bay 3,2308) birbirlerine yakın değerler olarak hesap edilmiştir. Bu durumda H3 (Dağıtılan Adalet Algısı, demografik değişkenlerden cinsiyete göre farklılaşmaktadır.) hipotezi reddedilmiştir.

Tablo 5: Medeni Duruma göre Dağılan Adalet Algısı (T) testi sonuçları

	Medeni Durum	N	Mean	Std Deviation	Std. ErrorMean
Dağıtım Adaleti	Evli	30	3.2533	.61236	.11180
	Bekâr	26	3.2154	.48307	.09474

Tablo 5., Yapılan T testi sonucunda 0.800 >0.05 ve medeni duruma göre ortalamalar (Evli 3,2533 Bekar 3,2154) birbirlerine yakın değerler olarak hesap edilmiştir. Bu durumda H4 (Dağıtılan Adalet Algısı, demografik değişkenlerden medeni duruma göre farklılaşmaktadır.) hipotezi reddedilmiştir.

Tablo 6. Yüksek Eğitim Düzeyine Göre Dağıtılan Adalet Anova Test Sonuçları

Eğitim Düzeyi	N	X	S	V	KT	df	KO	f	p
Ön lisans	4	2.5250	0.77681	Bg	2.300	2	1.150		
Lisans	47	3.2745	0.51688	Wg	14.429	53	0.272		
Lisans Üstü	5	3.4400	0.28810	Total	16.729	55			
Total	56	3.2357	0.55150					4.224	0.020

Tablo 6., Homojenlik testi 0.358 >0.05 varyanslar homojen dağılmıştır. Anova testinde (F=4.224; P <0.05) Eğitim düzeyine göre dağıtılan Adalet algılamasında anlamlı bir farklılık vardır. Söz konusu farklılığın Belirlenmesi bakımından yapılan LSD testi sonuçlarına göre, Yüksek lisans eğitim düzeyinde olanların dağıtılan adalet yönelik algıları (X=3.4400) ile lisans (X=3.2745) ve ön lisansa (X=2.5250)göre daha olumludur. Buradan hareketle eğitim seviyesi yükseldikçe Dağıtılan adalet algılamasının daha olumlu olduğunu söylemek mümkündür. Bu durumda H5 (Dağıtılan Adalet Algısı, demografik değişkenlerden Yüksek Eğitim düzeyine göre farklılaşmaktadır.) Hipotezi kabul edilmiştir.

Tablo 7. Mesleki Deneğime Göre Dağıtılan Adalet Anova Test Sonuçları

Mesleki deneğim Yılı	N	X	S	V	KT	df	KO	f	p
1-5	17	3.4176	0.52110	Bg	1.482	4	0.371		
6-10	16	3.2625	0.61739	Wg	15.246	51	0.299		
11-15	14	3.0714	0.55391	Total	16.729	55			
16-20	5	2.9200	0.46583					1.240	0.306
20-	4	3.3250	0.33040						
Total	56	3.2357	0.55150						

Tablo 7., Homojenlik testi 0.390 >0.05 varyanslar homojen dağılmıştır. Anova testinde (F=1.240; P >0.05)anlamlı bir farklılık yoktur. 11-15 ve 16-20 yıları arasında deneğime sahip olanlarda diğer yıl aralıklarına göre ölçek boyutunda çok küçük olsa da Dağıtılan Adalet algılamasının daha düşük olduğu söylenebilir. Ancak söz konusu deneğim aralıklarındaki fark H6 hipotezinin reddi için yeterli görülmemiştir. Bu durumda, **H6** (Dağıtılan Adalet Algısı, demografik değişkenlerden çalışma süresine göre farklılaşmaktadır) hipotezi reddedilmiştir.

Tablo 8. Yaşa Göre Algılanan Davranış Anova Test Sonuçları

Yaş Dağılımları	N	X	S	V	KT	df	KO	f	p
20-25	7	3.7571	0.39940	Bg	1.408	4	0.352		
26-30	20	3.7800	0.47195	Wg	14.922	51	0.293		
31-35	14	3.8214	0.61040	Total	16.330	55			
36-40	8	3.3750	0.73046					1.203	0.321
41-	7	3.5286	0.43861						
Total	56	3.6982	0.54489						

Tablo 8., Homojenlik testi 0.774 >0.05 varyanslar homojen dağılmıştır. Anova testinde (F=1.203; P >0.05)anlamlı bir farklılık yoktur. Yaş dağılım tablosundaki ilk grup olan 20-25 yaş aralığından başlayarak algılanan davranışa olumlu bakış yükselmekte, 31-35 yaş aralığında en yüksek düzeyine ulaşmakta ve sonra azalmakta olduğu söylenebilir. Ancak 41 yaş ve üstünde bu durum yeniden yükselmektedir. Ancak genel manada her yaş grubunda olumlu bir bakış olduğu söylenebilir. Bu durumda **H7** (Algılanan davranış, demografik değişkenlerden yaşa göre farklılaşmaktadır) hipotezi reddedilir.

Tablo 9: Cinsiyete göre Algılanan Davranış (T) testi sonuçları

	Cinsiyet	N	Mean	Std Deviation	Std. Error Mean
Algılanan Davranış	Bayan	30	3.6467	.38213	.06977
	Bay	26	3.7577	.69061	.13544

Tablo 9., Yapılan T testi sonucunda p=0.452 ve cinsiyete göre ortalamalar (Bayan 3,6467 Bay 3,7577) birbirlerine yakın değerler olarak hesap edilmiştir. Bu durumda, H8 (Algılanan davranış, demografik değişkenlerden cinsiyete göre farklılaşmaktadır.) hipotezi reddedilmiştir.

Tablo 10. Medeni Duruma Göre Algılanan Davranış (T) Test Sonuçları

	Medeni Durum	N	Mean	Std Deviation	Std. Error Mean
Davranış Algılaması	Evli	30	3,7233	,64791	,11829
	Bekar	26	3,6692	,40573	,07957

Tablo 10.,yapılan T testi sonucunda p=0.715ve medeni duruma göre ortalamalar (Evli 3,7233 Bekar 3,6692) birbirlerine yakın değerler olarak hesap edilmiştir. Bu durumda, H9 (Algılanan davranış, demografik değişkenlerden medeni duruma göre farklılaşmaktadır) Hipotezi reddedilmiştir.

Tablo 11. Mesleki Deneğime Göre Algılanan Davranış Anova Test Sonuçları

Mesleki deneğim Yılı	N	X	S	V	KT	df	KO	f	p
1-5	17	3.8471	0.46518	Bg	1.636	4	0.409		
6-10	16	3.8188	0.60246	Wg	15.694	51	0.288		
11-15	14	3.5071	0.61452	Total	16.330	55			
16-20	5	3.3800	0.27749					1.419	0.241
20-	4	3.6500	0.43589						
Total	56	3.6982	0.54489						

Tablo 11., Homojenlik testi 0.774 >0.05 varyanslar homojen dağılmıştır. Anova testinde (F=1.419; P >0.05)anlamlı bir farklılık yoktur. H10 (Algılanan davranış, demografik değişkenlerden çalışma süresine göre farklılaşmaktadır) Hipotezi reddedilmiştir.

Tablo 12. Eğitim Düzeyi Göre Algılanan Davranış Anova Test Sonuçları

Eğitim Düzeyi	N	X	S	V	KT	df	KO	f	p
Ön lisans	4	3.0500	1.02144	Bg	2.108	2	1.054		
Lisans	47	3.7234	0.47145	Wg	14.222	53	0.2682		
Lisans Üstü	5	3.9800	0.46583	Total	16.330	55			
Total	56	3.2357	0.54489					3.927	0.026

Tablo 12.,Homojenlik testi sig = 0.774 >0.05 varyanslar homojen dağılmıştır. Anova testinde (f=3.927; p <0.05) Eğitim düzeyine göre Algılanan davranış arasında anlamlı bir farklılık vardır. Söz konusu farklılığın Belirlenmesi bakımından yapılan LSD testi sonuçlarına göre, Yüksek lisans eğitim düzeyinde olanların dağıtılan adalet yönelik algıları (X=3.9800) ile lisans (X=3.7234) ve ön lisansa (X=3.0500)göre daha olumludur. Eğitim seviyesi yükseldikçe algılanan davranış daha olumlu olduğunu söylemek mümkündür. Bu durumda H11 (Algılanan davranış, demografik değişkenlerden Yüksek Eğitim düzeyine göre farklılaşmaktadır.) Hipotezi kabul edilmiştir.

SONUÇ VE DEĞERLENDİRME

Çalışma kapsamında yapılan analizlerde, Dağıtılan Adalet ile kişilerin örgüt içinde Algıladıkları Davranışlar arasında pozitif yönlü, anlamlı ve yüksek düzeyde bir korelasyon olduğu sonucuna ulaşılmıştır. Çalışma yapılan örgütteki yüksek eğitimli çalışanlarda, dağıtılan adalet algısının, karşılıklı güven, yardımlaşma ve işbirliği gibi olumlu davranışlar üzerinde etkili olduğu ve kişilerin kendisine yönelen davranışlarla ilgili olarak algılamasını olumlu etkilediği soncuna ulaşılmıştır.

Çalışma alanı ile ilgili olarak, Dağıtılan Adalet algısı ile temel değişkenler olan cinsiyet, medeni durum ve mesleki deneğim duruma göre farklılaşma tespit edilememiştir. Ancak bu değişkenlerden olan eğitim düzeyinde, eğitim seviyesi yükseldikçe Dağıtılan adalet algılamasının olumlu yönde etkilendiği tespit edilmiştir.

Çalışma ölçeğinde, Algılanan Davranış ile ilgili olarak çalışma kapsamında incelenen değişkenlerden cinsiyet, medeni durum ve mesleki deneğim duruma göre anlamlı farklılaşma tespit edilememiştir. Ancak bu değişkenlerden olan eğitim düzeyinde, Dağıtılan Adalet algısında olduğu gibi Algılanan Davranışın da eğitim seviyesi yükseldikçe daha olumlu algılama gösterme eğitiminde olduğu tespit edilmiştir.

KAYNAKÇA

Adams Stacy J.,(1963). Toward An Understandıng Of Inequity, Journal of Abnormal and, Social Psychology, 67 (5), 422-434.
http://dx.doi.org/10.1037/h0040968
Aykut Bedük, Ebru Ertürk, (2015) Sosyal Mübadele Bağlamında Güç Mesafesi ve Örgütsel Adalet Algılamalarının Örgütsel Vatandaşlık davranışları Üzerine Etkisi, İşletme Bilimi Dergisi 3 (1),1-19.
Ionna Kuçuradi, (1993) Adalet Kavramı, Ankara Barosu Dergisi, (1), 80-88.
Bies Robert J., Tyler Tom R., (1993), The "Litıgation Mentalıty" In Organizations:A Test Of Alternatıve Psychologıcal Explanations",Organization Science, 7 (3).352 – 365.
Cansu C.Doğrar, Barış Bostancı, Evrim Mayatürk Akyol, (2020),Dağıtım Adaleti ile İşten Ayrılma Niyeti Arasındaki İlişkide Duyarsızlaşmanın Aracılık Rolü: Bir Telekomünikasyon Firmasında Çalışan Mühendisler Üzerine Bir Araştırma, İşletme Araştırmaları Dergisi, 12 (4)., 3633-3655.
https://doi.org/10.20491/isarder.2020.1063
Crosby A., Gonzales M., (1984), The Sense of Injustice: Relative Deprivation and Equity Theories Felt Injustice and the Undeserved Benefits of Others , (R.G. Folger, Ed.)
Greenberg Jerald, (1990), Organizational Justice: Yesterday Today, and Tomorrow, Journal Management,16 (2), 310-324.
Homans George C. , (1958), Social Behavior as Exchange, American Journal of Sociology , 63, (6), 597- 606.
https://doi.org/10.1086/222355
Ployhart Robert E., Rayn Ann M.(1997) Toward an Explanation of Applicant Reactions: An Examination of Organizational Justice and Attribution Frameworks, Organization Behavior And Human Decision Processes, 72 (3) .308-335
https://doi.org/10.1006/obhd.1997.2742
Fortin, Marion (2008), Perspectives on Organizational Justice: Concept Clarification, Social Context İntegration, Time and Links With Morality, İnternational Journal of Management Rewiews, 10(I2), 93-126.
https://doi.org/10.1111/j.1468-2370.2008.00231.x

Jason A.Colquitt, (2001) One the Dimensionality of Organizational Justice: A Construc Validation of a Measure", Journal of Applied Psychology, 86 (3), 386-400.
https://doi.org/10.1037/0021-9010.86.3.386
Muharrem VAROL, Halkla İlişkiler Açısından Örgüt Sosyolojisine Giriş, Ankara Üniversitesi İletişim Fakültesi Yayınları No:2, Ankara, 1993, s. 205-207.
Nolen-Hoeksema Fredrickson B.L., Geoff R. Wagner Loftus &Willem A., (2009), Introduction to Pyschology, (15rd digital ed.).
https://hostnezt.com/cssfiles/psychology/Introduction%20to%20Psychology
Walter L. Leite , S. Natasha Beretvas, (2005), Validatiıon Of Scores On The Marlowe-Crowne Social Desirability Scale And The Balancedinventory Of Desirable Responding, Educational And Psychological Measurement, 65 (1),140-154.
http://dx.doi.org/10.1177/0013164404267285

DÜNYA SAĞLIK ÖRGÜTÜ YENİ LİMİT DEĞERLERİNE GÖRE TÜRKİYE'DE HAVA KALİTESİNİN DEĞERLENDİRİLMESİ

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ÖZET

Partikül maddeler ($PM_{2.5}$ ve PM_{10}), ozon (O_3), azot dioksit (NO_2), kükürt dioksit (SO_2) ve karbon monoksit (CO) dış ortam havasında sürekli olarak izlenmesi gereken hava kirleticileridir. Hava kalitesi sadece uyulması gereken bir standart değil, sağlıklı bir hayat ve çevre için sağlanması gereken gereksinimdir. Dünya Sağlık Örgütü (DSÖ), tüm dünya nüfusunun %99'unun önerilen hava kalitesi standartlarına uygun olmayan şehirlerde yaşadığı belirtilmiş ve 2021 yılında sınır değer önerilerini daha sıkı olacak şekilde güncellemiştir. Bu çalışmanın amacı, Türkiye'deki hava kalitesi izleme istasyonlarında 2020 yılında ölçülen PM_{10}, $PM_{2.5}$, SO_2 ve NO_2 kirletici değerlerinin yeni DSÖ sınır değer önerilerine uygun olup olmadığının belirlenmesidir. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı tarafından işletilen Ulusal Hava Kalitesi İzleme Ağı'ndan 2020 yılı için indirilen veriler kullanılarak Türkiye'deki hava kalitesi yeni DSÖ sınır değer önerilerine göre değerlendirilmiştir. Çalışma sonucunda, yıllık ortalama $PM_{2.5}$, NO_2 ve PM_{10} sınır değerinin aşıldığı istasyonların oranları sırasıyla %81, %63 ve %40 olarak tespit edilmiştir. Ayrıca çalışmada, PM_{10}, $PM_{2.5}$, SO_2 ve NO_2 kirletici ölçümlerinin en yüksek olduğu istasyonlar da belirlenmiştir. DSÖ sınır değerlerinin üzerinde ölçüm yapan istasyonların bulunduğu bölgelerdeki hava kalitesinin halk sağlığını tehdit edecek düzeyde olduğu söylenebilir.

Anahtar Kelimeler: Hava kalitesi izleme, DSÖ, sınır değerler, Türkiye.

EVALUATION OF AIR QUALITY IN TURKEY ACCORDING TO THE NEW LIMIT VALUES OF THE WORLD HEALTH ORGANIZATION

ABSTRACT

Particulate matter ($PM_{2.5}$ and PM_{10}), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and carbon monoxide (CO) are air pollutants that must be constantly monitored in ambient air. Air quality is not only a standard to be followed but also a requirement for a healthy life and environment. The World Health Organization (WHO) stated that 99% of the entire world population lives in cities that do not comply with the recommended air quality standards, and in 2021 it updated its limit value recommendations to be more stringent. This study aims to determine whether the pollutant values of PM_{10}, $PM_{2.5}$, SO_2, and NO_2 measured in air quality monitoring stations in Turkey in 2020 comply with the new WHO limit value recommendations. Air quality in Turkey was evaluated according to the new WHO limit value recommendations, using data downloaded for 2020 from the National Air Quality Monitoring Network operated by the Turkish Ministry of Environment, Urbanization, and Climate Change. As a result of the study, the rates of stations where the annual average $PM_{2.5}$, NO_2, and PM_{10} limit values are exceeded were determined as 81%, 63%, and 40%, respectively. In addition, the stations with the highest measurements of PM_{10}, $PM_{2.5}$, SO_2, and NO_2 pollutants were also determined in the study. It can be said that the air quality in the regions where the stations measuring above the WHO limit values are at a level that will pose a threat to public health.

Keywords: Air quality monitoring, WHO, limit values, Turkey.

GİRİŞ

Farklı gazlardan oluşan, yeryüzünü kaplayan ve içinde bulunduğumuz katmanı hava küre veya atmosfer olarak tanımlayabiliriz. Şehirlerin büyümesi, endüstriyelleşme ve fosil yakıtların tüketimine

bağlı olarak atmosferdeki hava kirleticilerinin konsantrasyonları sürekli artmaktadır. Artan bu kirletici konsantrasyonlarının çevreye ve insan sağlığına zararlı olacak miktarlarda ve yeterince uzun süre havada bulunmasına, hava kirliliği denir. Hava kirliliğinin diğer kirliklerden farklı olmasının sebebi, kirleticilerin kaynaktan salınmasından sonra herhangi bir geri dönüşüm veya arıtma prosesi bulunmamasıdır. İnsanlar hava kirliliğinde çok sayıda kirleticinin oluşturduğu bir bileşime maruz kalmaktadır. Partikül maddeler ($PM_{2.5}$ ve PM_{10}), ozon (O_3), azot dioksit (NO_2), kükürt dioksit (SO_2) ve karbon monoksit (CO) dış ortam havasında sürekli olarak izlenmesi gereken hava kirleticileridir. Hava kalitesi sadece uyulması gereken bir standart değil, sağlıklı bir hayat ve çevre için sağlanması gereken gereksinimdir. Hava kalitesinin sağlanmadığı şehirlerde, kısa ve uzun vadede büyük problemler ortaya çıkmaktadır.

Hava kirliliğinin sağlık etkileri, kirleticilerin oluşturduğu kompleks yapıya göre değerlendirmelidir (Burnet vd, 2000). Kirleticilerin yarattığı etkiler, yaş, kronik rahatsızlıklar gibi duyarlılık faktörlerine göre değişmektedir. Solunum ve dolaşım sistemi rahatsızlıkları hava kirliliğine maruziyet sonucu ortaya başlıca hastalıklardır. Literatürde, Kronik Obstrüktif Akciğer Hastalığı (KOAH), astım, bronşit, alt solunum yolları enfeksiyonu, akciğer kanseri, iskemik kalp hastalığı ve inme gibi hastalıklar hava kirliliği ile ilişkilendirilmiştir (Kampa ve Castanas, 2008). Amerika Birleşik Devletleri'nde yapılan bir araştırmaya göre, ilaç kullanan astım hastası çocuklarda artan astım krizlerinin, Çevre Koruma Örgütü (EPA) standartlarına uyulmayan şehirlerde dış ortamda artan hava kirletici seviyelerine bağlı olduğunu saptanmıştır (Gent vd, 2003). Haftalık gözlemler yapılan bir grupta hava kirliliğinin sağlık etkileri araştırılmış, astım hastalığına sahip çocuklarda bronşite yakalanma oranlarındaki artışla temel kirleticiler arasında kuvvetli bağlantılar bulunmuştur (McConnel, 1999). Bir diğer çalışmada ise trafik yoğunluğuna bağlı kirliliğe maruz kalan çocuklarda astım, öksürük ve hırıltılı solunum prevalasının artışı gözlemlenmiştir (Nicolai, 2003). UNICEF tarafından yayınlanan başka bir rapora göre de dünyada 300 milyon çocuk, uluslararası hava kalitesi standartlarından en az 6 kat daha kirli bölgelerde yaşamaktadır (UNICEF, 2016). Ayrıca Çek Cumhuriyet'inde genç erkekler ile iki yıl boyunca yapılan bir çalışma sonucunda hava kirliliğine maruz kalmanın spermde DNA hasarı ile sonuçlanabileceği ve böylece erkek kaynaklı kısırlık, sperm sayısında azalma ve diğer olumsuz sonuçlarının oranının artabileceği saptanmıştır (Rubes, 2005). Son olarak, Dünya Sağlık Örgütü (DSÖ), 2016 yılında dünya genelinde 4,2 milyon erken ölümün meydana geldiğini bildirmiştir. Bu ölümlerin %91'i orta ve düşük gelirli ülkelerde gerçekleşmektedir (DSÖ, 2021).

Dünya nüfusunun %99'unun DSÖ tarafından önerilen hava kalitesi standartlarına uygun olmayan şehirlerde yaşadığı belirtilmektedir (DSÖ, 2021). Bu sebeple DSÖ, 2021 yılında hava kirleticileri için belirlemiş olduğu sınır değer önerilerini güncelleyerek daha düşük seviyelere çekmiştir. Bu çalışmanın amacı, Türkiye'deki hava kalitesi izleme istasyonlarında 2020 yılında ölçülen PM_{10}, $PM_{2.5}$, SO_2 ve NO_2 kirletici değerlerinin yeni DSÖ sınır değer önerilerine uygun olup olmadığının belirlenmesidir.

MATERYAL VE METOT

DSÖ Hava Kalitesi Sınır Değerleri

Dünya Sağlık Örgütü 2005'te yayımladığı hava kalitesi sınır değer önerilerini 2021 yılında güncellemiştir. Tablo 1'de, DSÖ tarafından başlıca kirleticiler için önerilen 2005 ve 2021 yılı sınır değer önerileri gösterilmiştir. 24 saatlik SO_2 sınır değer önerisi hariç tüm kirleticiler için sınır değer önerilerinin azaltıldığı veya daha önceden bulunmayan değerlerin eklendiği görülmektedir (DSÖ, 2021). Bu tabloda ayrıca, ülkemizde dış ortam hava kalitesi için yürürlükte olan Hava Kalitesi Değerlendirme ve Yönetimi Yönetmeliği (HKDYY) kapsamında belirlenen sınır değerler de gösterilmiştir. Türkiye, Avrupa Birliği (AB) üyelik müzakereleri sonucunda, çevre mevzuatını güncellemiş ve 2019 yılında hava kirleticilerinin sınır değerleri (NO_2 hariç) AB ile uyumlu hale getirilmiştir. NO_2 sınır değeri ise hala kademeli olarak azaltılmaktadır ve 2024 yılında AB ile uyumlu hale gelecektir (Zeydan, 2021).

Tablo 1. Hava Kirleticileri Sınır Değerleri
($\mu g/m^3$)

Kirletici	Ortalama Süre	DSÖ Sınır Değeri (2005)	DSÖ Sınır Değeri (2021)	HKDYY Sınır Değeri (2020 yılı için)
$PM_{2.5}$	Yıllık	10	5	—
	24 saatlik	25	15	—
PM_{10}	Yıllık	20	15	40
	24 saatlik	50	45	50
O_3	Pik sezon *	—	60	—
	8 saatlik	100	100	120
NO_2	Yıllık	40	10	48 **
	24 saatlik	—	25	—
	Saatlik	200	200	240 ***
SO_2	24 saatlik	20	40	125
	Yıllık	—	—	20
CO	24 saatlik	—	4000	—
	8 saatlik	—	10000	10000

*En yüksek konsantrasyonun görüldüğü birbirini takip eden 6 ayın ortalaması. ** Bu değer 2024 yılında 40 $\mu g/m^3$ olarak uygulanacaktır. *** Bu değer 2024 yılında 200 $\mu g/m^3$ olarak uygulanacaktır.

Veri Temini

Değerlendirmede kullanılan veriler, ülkenin büyük bir bölümünde mevcut olan hava kalitesi izleme istasyonları (HKİİ) tarafından sağlanmaktadır. Bu verilere, Çevre, Şehircilik ve İklim Değişikliği Bakanlığı tarafından işletilen Ulusal Hava Kalitesi İzleme Ağı'ndan ulaşmak mümkündür. 2020 yılına ait veriler https://www.havaizleme.gov.tr/ adresinden indirilmiştir. Çalışma, ülkedeki tüm hava izleme istasyonlarını kapsamaktadır. Türkiye genelinde toplam 250 istasyonun verileri değerlendirme amacıyla kullanılmıştır. Hava Kalitesi Değerlendirme ve Yönetimi Yönetmeliği'ne göre herhangi bir istasyonun verisinin değerlendirilebilmesi için o istasyonun veri oranının %75 ve üstü olması gerekmektedir. Bu nedenle, yıllık veri miktarı %75'in altında olan istasyonlar değerlendirme kapsamından çıkartılmıştır.

BULGULAR VE TARTIŞMA

Çevre, Şehircilik ve İklim Değişikliği Bakanlığı'na bağlı hava kalitesi izleme istasyonlarından elde edilen veriler 2020 yılı için derlenmiştir. Ölçülen kirletici seviyelerinin DSÖ'nün yeni sınır değerlerine göre uygun olup olmadığı değerlendirilmiştir. İlk değerlendirme yıllık ortalamalara göre yapılmıştır. Tablo 2'de 2020 yılı için Türkiye'deki hava kalitesi izleme istasyonlarının DSÖ yıllık sınır değer önerilerine göre analizi yer almaktadır. PM_{10} konsantrasyonları 80 istasyonda sınır değeri aşarken, 119 istasyonda limit değerin altında ölçülmüştür. $PM_{2.5}$ konsantrasyonları 63 istasyonda DSÖ sınır değerini aşarken, 15 istasyondaki ölçümler limitin altındadır. NO_2 ölçümleri ise 77 istasyonda sınır değerin üzerineyken, 46 istasyonda NO_2 konsantrasyonunun limit değerin altında olduğu belirlenmiştir. Kirletici ölçümünün yapılmamış olması veya yeterli oranda veri üretilmemiş olması sebebiyle çok sayıda istasyonun değerlendirme kapsamında olmadığı görülmektedir. SO_2 için DSÖ tarafından herhangi bir yıllık sınır değer önerilmediği için değerlendirme yapılmamıştır.

Tablo 2. Türkiye'deki hava kalitesi izleme istasyonlarının DSÖ yıllık sınır değer önerilerine göre analizi (2020)

Kirletici	DSÖ yeni sınır değer önerisini aşan istasyonların		DSÖ yeni sınır değer önerisini sağlayan istasyonların	
	Sayısı	Oranı	Sayısı	Oranı
PM_{10}	80	%40	119	%60
$PM_{2.5}$	63	%81	15	%19
NO_2	77	%63	46	%37

Çalışma kapsamında ayrıca, PM_{10}, $PM_{2.5}$, SO_2 ve NO_2 kirleticileri için en yüksek konsantrasyonun ölçüldüğü 10 istasyon belirlenmiştir. 2020 yılında PM_{10} konsantrasyonun en yüksek olduğu 10 hava kalitesi izleme istasyonu Tablo 3'te gösterilmiştir. Ayrıca, DSÖ tarafından önerilen günlük sınır değerleri aşım sayıları da yine bu tabloda yer almaktadır. Muş istasyonunda PM_{10} parametresinin yıllık ortalaması 105,65 µg/m^3 olarak belirlenmiştir. DSÖ günlük değerinin aşım sayısı bu istasyonda 310 gün olarak tespit edilmiştir. Bu istasyonu takip eden Ankara – Siteler istasyonunda yıllık ortalama PM_{10} konsantrasyonu 91,52 µg/m^3 olarak ölçülmüştür. Iğdır istasyonunu üçüncü sırada yer almaktadır. Bu istasyonları sırasıyla Ankara – Etimesgut, Ağrı – Patnos, İstanbul – Sultangazi 3, Ağrı – Doğubeyazıt, Karabük – Kardemir 1, Denizli – Bayramyeri ve Kayseri – OSB istasyonları takip etmektedir. 2019 yılındaki PM_{10} kirliliğinin değerlendirilmesi için yapılan bir çalışmaya göre Muş ve Iğdır istasyonları PM_{10} konsantrasyonu bakımından yine birinci ve ikinci sırada yer almaktadırlar (Zeydan, 2021). Bu sonuçlar Muş ve Iğdır illerinde partikül madde kirliliğinin kronikleşmiş olduğunun göstergesidir. Tablo 3'teki istasyonlar içinde Denizli – Bayramyeri istasyonu 311 günlük aşım ile günlük limitin en fazla aşıldığı istasyon olmuştur. Ayrıca, Tablo 3'te gösterilen tüm istasyonlar HKDYY'ne göre de PM_{10} açısından yıllık sınır değeri aşmaktadır.

Tablo 3. PM_{10} konsantrasyonun en yüksek olduğu 10 istasyon

Hava Kalitesi İzleme İstasyonu	Yıllık Ort. Kons. (µg/m^3)	Veri yüzdesi	DSÖ yıllık değer aşımı (Sınır değer: 45 µg/m^3)	DSÖ günlük değerinin aşım sayısı
Muş	105,65	92,60%	Limit Aşıyor	310
Ankara - Siteler	91,52	97,26%	Limit Aşıyor	234
Iğdır	89,79	93,70%	Limit Aşıyor	249
Ankara - Etimesgut	87,20	79,18%	Limit Aşıyor	162
Ağrı - Patnos	86,95	95,34%	Limit Aşıyor	289
İstanbul - Sultangazi 3	85,16	89,86%	Limit Aşıyor	290
Ağrı - Doğubeyazıt	80,24	93,42%	Limit Aşıyor	265
Karabük - Kardemir 1	75,88	95,89%	Limit Aşıyor	287
Denizli - Bayramyeri	71,83	97,81%	Limit Aşıyor	311
Kayseri - OSB	71,79	97,53%	Limit Aşıyor	236

2020 yılında $PM_{2.5}$ konsantrasyonun en yüksek olduğu 10 hava kalitesi izleme istasyonu Tablo 4'te sunulmuştur. Ankara – Siteler istasyonunda $PM_{2.5}$ parametresi, yıllık ortalaması sınır değer olan 15 µg/m^3'ü oldukça aşmış ve yıllık ortalama konsantrasyon 41,45 µg/m^3 olarak ölçülmüştür. $PM_{2.5}$ kirliliğinde Ankara – Siteler istasyonunu sırasıyla Çorum – Bahabey, Sakarya – Hendek OSB – MTHM, Düzce, Erzurum – Taşhan, Gümüşhane, Amasya – Şehzade, Gaziantep Atapark Yaygınlaştırma, Edirne – Keşan – MTHM ve Zonguldak – Çatalağzı Cumayanı istasyonları takip etmektedir. Tablo 4'teki tüm istasyonların $PM_{2.5}$ seviyeleri DSÖ limitinin en az 2 katı üzerindedir. Bu istasyonlar arasında en yüksek günlük aşım sayısı ise 335 gün olarak Sakarya – Hendek OSB – MTHM istasyonunda belirlenmiştir. HKDYY'de $PM_{2.5}$ kirleticisi için sınır değer belirtilmemiş olması

sebebiyle bu istasyonlardaki seviyelerin ülkemizdeki mevzuata uygunluğu hakkında herhangi bir yorumda bulunmak mümkün değildir.

Tablo 4. $PM_{2.5}$ konsantrasyonun en yüksek olduğu 10 istasyon

Hava Kalitesi İzleme İstasyonu	Yıllık Ort. Kons. (µg/m³)	Veri yüzdesi	DSÖ yıllık değer aşımı (Sınır değer: 15 µg/m³)	DSÖ günlük değerinin aşım sayısı
Ankara - Siteler	41,45	89,04%	Limit Aşıyor	201
Çorum - Bahabey	37,16	88,22%	Limit Aşıyor	261
Sakarya - Hendek OSB - MTHM	35,86	95,07%	Limit Aşıyor	335
Düzce	35,73	86,58%	Limit Aşıyor	284
Erzurum - Taşhan	33,36	84,66%	Limit Aşıyor	252
Gümüşhane	31,57	100,00%	Limit Aşıyor	15
Amasya - Şehzade	31,51	97,26%	Limit Aşıyor	279
Gaziantep Atapark Yaygınlaştırma	30,79	99,24%	Limit Aşıyor	118
Edirne - Keşan-MTHM	29,79	99,45%	Limit Aşıyor	281
Zonguldak - Çatalağzı Cumayanı	28,20	88,77%	Limit Aşıyor	239

2020 yılında SO_2 konsantrasyonun en yüksek olduğu 10 hava kalitesi izleme istasyonu Tablo 5'te yer almaktadır. Hakkâri istasyonunda SO_2 parametresinin yıllık ortalaması 175,48 µg/m³ olarak belirlenmiştir. Aynı istasyonda günlük sınır değer ise 191 gün boyunca aşılmıştır. Edirne – Keşan – MTHM istasyonu yıllık ortalama SO_2 kirliliğinde ikinci sırada yer almaktadır. SO_2 kirliliğinde adı geçen istasyonları sırasıyla Şırnak, Şanlıurfa, Trabzon – Akçaabat, Kütahya – Tavşanlı, Karabük – Kardemir 2, Tunceli, Bitlis ve Gaziantep Atapark Yaygınlaştırma istasyonları takip etmektedir. Tablo 5'te yer alan tüm istasyonlar HKDYY'ne göre yıllık SO_2 sınır değeri olan 20 µg/m³'ü aşmaktadırlar.

Tablo 5. SO_2 konsantrasyonun en yüksek olduğu 10 istasyon

Hava Kalitesi İzleme İstasyonu	Yıllık Ort. Kons. (µg/m³)	Veri yüzdesi	DSÖ günlük değerinin aşım sayısı
Hakkari	175,48	96,16%	191
Edirne - Keşan-MTHM	69,98	99,18%	169
Şırnak	40,63	98,90%	96
Şanlıurfa	38,19	91,78%	99
Trabzon - Akçaabat	33,75	93,42%	0
Kütahya - Tavşanlı	32,25	83,56%	91
Karabük - Kardemir 2	31,18	96,99%	98
Tunceli	29,34	86,03%	86
Bitlis	29,02	93,70%	75
Gaziantep Atapark Yaygınlaştırma	24,41	97,73%	27

2020 yılında NO_2 konsantrasyonun en yüksek olduğu 10 hava kalitesi izleme istasyonu Tablo 6'da gösterilmiştir. Tokat – Meydan istasyonu yıllık ortalama 70,98 µg/m³'lük NO_2 konsantrasyonu ile ilk sırada yer almaktadır. Bu istasyonu 70,84 µg/m³'lük NO_2 konsantrasyonu ile takip eden Amasya – Şehzade istasyonu, aynı zamanda günlük ortalama değerin en çok aşıldığı (347 kez) istasyondur. Bu istasyonları sırasıyla İstanbul – Selimiye, Sivas – İstasyonkavşağı, Çorum – Bahabey, İstanbul – Esenler, Samsun – Yüzüncüyıl, İstanbul – Göztepe, İstanbul – Beşiktaş ve Ankara – Keçiören

Sanatoryum istasyonları takip etmektedir. Tablo 6'daki tüm istasyonlar HKDYY'ne göre 2020 yılı için belirlenen NO_2 sınır değeri olan 48 µg/m^3'ü aşmaktadırlar.

Tablo 6. NO_2 konsantrasyonun en yüksek olduğu 10 istasyon

Hava Kalitesi İzleme İstasyonu	Yıllık Ort. Kons. (µg/m^3)	Veri yüzdesi	DSÖ yıllık değer aşımı (Sınır değer: 40 µg/m^3)	DSÖ günlük değerinin aşım sayısı
Tokat - Meydan	70,98	81,92%	Limit Aşıyor	290
Amasya - Şehzade	70,84	96,99%	Limit Aşıyor	347
İstanbul - Selimiye	65,19	81,64%	Limit Aşıyor	288
Sivas - İstasyonkavşağı	65,07	87,95%	Limit Aşıyor	319
Çorum - Bahabey	63,90	77,81%	Limit Aşıyor	270
İstanbul - Esenler	58,03	87,40%	Limit Aşıyor	303
Samsun - Yüzüncüyıl	57,32	82,47%	Limit Aşıyor	285
İstanbul - Göztepe	56,77	92,60%	Limit Aşıyor	330
İstanbul - Beşiktaş	56,28	87,40%	Limit Aşıyor	306
Ankara - Keçiören Sanatoryum	53,84	90,19%	Limit Aşıyor	291

SONUÇ

Yapılan değerlendirmede, öncelikle çok sayıda istasyonun, kirletici ölçümü yapmaması veya yetersiz düzeyde veri üretmesi sebebiyle değerlendirme dışı kaldığı görülmüştür. Değerlendirmeye alının hava kalitesi izleme istasyonlarının büyük çoğunluğunun, 2020 yılında DSÖ yeni limit değer önerilerinin üzerinde ölçüm sonuçlarına sahip olduğu görülmüştür. Özellikle yıllık $PM_{2.5}$ sınır değerini aşan istasyonların oranı %81 gibi çok yüksek bir seviyededir. Ulusal mevzuatımızda $PM_{2.5}$ için sınır değer belirtilmemiş olması ise çok büyük bir eksikliktir. Ülkemizde hava kalitesinin izlenmesi ile ilgili bir başka sorun da mevcut verilerin doğrulamasının Bakanlık tarafında yeterince yapılmamış olmasıdır.

DSÖ limit değerlerinin üzerinde ölçüm yapan istasyonların bulunduğu bölgelerdeki hava kalitesinin, halk sağlığı açısında tehlike arz edecek düzeyde olduğu söylenebilir. Ülkemizde hava kalitesinin iyileştirilmesi için ciddi tedbirlerin alınması gerekmektedir. Kirleticilerin kaynakları iyi anlaşılmalı ve bu kaynaklara karşı önlemler alınmalıdır. Fosil yakıtlar içerisinde, kömür ve fuel-oile kıyasla daha temiz sayılabilecek bir yakıt olan doğalgaz fiyatlarında yapılacak indirimlerle, hava kalitesi bir miktar daha iyileştirilebilir. Ülke genelinde hava kirliliği ile mücadele etmek amacıyla fosil yakıtların ısınmada, sanayi ve enerji üretiminde kullanımı azaltılmalı ve alternatif enerji kaynaklarının kullanılmaya başlanmalıdır.

KAYNAKLAR

Burnett RT, Brook J, Dann T, Philips O, Çakmak S, Vincent R, Goldberg MS, Krewski D 2000. *Association between particulate and gas phase components of urban air pollution and Daily mortality in eight Canadian cities*. *Toxica*l. 12 (sup4): 15-39.

DSÖ, 2021. Ambient (outdoor) air pollution, Erişim: https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health [03.03.22]

Gent JF, Trşche E, Holford TR, Belanger K, Bracken MB, Beckett WS, Leaderer BP 2003. *Association of low-level ozone and fine particles with respiratory symptoms in children asthma*. J.Am Med. Assoc., 290: 1859-1867.

Kampa M, Castanas E 2008. *Human health effects of air pollution*. Environ Pollut, 151: 362–367.

McConnel R, Berhane K, Gillialand F 2003. *Prospective study of air pollution and bronchitic symptoms in children with asthma.* J.Am Respir. Crit. Care. Med, 168: 790-797.

Nicolai T, Carr D, Weiland SK 2003. *Urban traffic and pollutant exposure related to respiratory outcomes and atopy in large sample of children*. Eur Respir J., 32: 956-963.

Rubes J, Selevan G 2005. *Episodic air pollution is associated with increased DNA fragmentation in human sperm without other changes in semen quality*. Human Reproduction, 20(10): 2776-2783.

UNICEF, 2016. Clear the air for children, The impact of air pollution on children, Erişim: https://www.unicef.org/media/60106/file [03.03.22]

Zeydan Ö 2021. *2019 Yılında Türkiye'deki PM_{10} kirliliğinin değerlendirilmesi*. Iğdır Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 11(1): 106-118.

EĞİTİM YÖNETİCİLERİNİN İNSAN İLİŞKİLERİ VE İLETİŞİM BECERİLERİ KONUSUNDAKİ YETERLİLİKLERİNİN EĞİTİME YANSIMASI

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ÖZET

Okulun hedefi öğrencilere, gerekli bilgi, beceri, yaratıcı düşünme ve eleştirel bakış açısı kazandırmak ve toplumu yönlendirmektir. Bu hedeften hareketle, girdi ve çıktısı insan olan okul örgütünün yönetimi belli bir bilgi ve beceri isteyen bir eğitim yöneticiliğini gerektirir. Bu araştırmada eğitim örgütlerinde görev yapan yöneticilerin insan ilişkileri ve iletişim becerilerinin eğitime yansıması açısından değerlendirilmesi amaçlanmaktadır. Araştırma nitel araştırma kapsamında, olgu bilim deseni kullanılarak gerçekleştirilmiştir. Araştırmadaki katılımcılar, amaçsal örnekleme yöntemi çerçevesinde, Amasya İl Millî Eğitimi Müdürlüğüne bağlı okullarda görev yapan 10 öğretmenin katılımıyla gerçekleştirilmiştir. Araştırmada kapsamında toplanan veriler yarı yapılandırılmış görüşme formu kullanılarak toplanmış, elde edilen veriler betimsel analiz kullanılarak çözümlenmiştir. **A**raştırmada sonuç olarak eğitim yöneticisinin insan ilişkileri ve iletişim becerileri konusundaki yeterlilikleri eğitim ortamına olumlu ve olumsuz olarak yansıdığı sonucuna ulaşılmıştır. Katılımcılar eğitim örgütündeki iletişimi, bilgi aktarımı, sözlü-sözsüz davranışlar ve etkileşim olarak tanımlarken, eğitim yöneticisinin, iletişim becerilerinin, anlayışlı olmalı, önyargısız olmalı, çift taraflı iletişimi olmalı, resmi olmalı ve samimi olmalı şeklinde bulunmuştur. Ayrıca katılımcılar, eğitim yöneticisinin iletişimi, öğretmenlerini nasıl etkilediğine dair, olumlu iletişimin öğretmen motivasyonunu arttırdığını, olumsuz iletişimin ise öğretmen motivasyonunu düşürdüğü ve iş gücü kaybı yaşandığını belirtmişlerdir. Katılımcılar öğretmenler ve yöneticiler arasındaki iletişim problemlerini ise, makamsal ego, protokol kurallarına uymama, fikir ayrılıkları ve büro işlerinin fazlalığı olarak tanımlamışlardır. Katılımcılar iletişim problemlerine yönelik çözüm önerilerini ise takdir etmek-ödüllendirmek, etkinlik ve empati kurulması şeklinde tanımlamışlardır.

Anahtar Kelimeler: İletişim, İnsan İlişkileri, Okul Yöneticisi

THE REFLECTION OF THE COMPETENCIES OF EDUCATION ADMINISTRATORS ON HUMAN RELATIONS AND COMMUNICATION SKILLS ON EDUCATION

ABSTRACT

The aim of the school is to provide students with the necessary knowledge, skills, creative thinking and critical perspective and to guide the society. Based on this goal, the management of the school organization, whose input and output is human, requires an educational administration that requires a certain knowledge and skill. In this study, it is aimed to evaluate the human relations and communication skills of administrators working in educational organizations in terms of their reflection on education. The research was carried out within the scope of qualitative research, using the phenomenology design. The participants in the research were carried out with the participation of 10 teachers working in schools affiliated to the Amasya Provincial Directorate of National Education, within the framework of the purposive sampling method. The data collected within the scope of the research were collected by using a structured interview form, and the obtained data were analyzed using descriptive analysis. As a result of the research, it was concluded that the competencies of the education administrator on human relations and communication skills were reflected in the educational environment positively and negatively. While the participants defined the communication in the education organization as information transfer, verbal-nonverbal behaviors and interaction, it was found that the communication

skills of the education manager should be understanding, non-judgmental, bilateral communication, formal and sincere. Also, the participants stated that how the education administrator affects communication and teachers, positive communication increases teacher motivation, while negative communication thinks teacher motivation and loss of work motivation is experienced. Participants defined communication problems between teachers and administrators as bossy ego, non-compliance with protocol rules, disagreements and excess of office work. Participants defined solutions for communication problems as appreciating-rewarding,establishing empathy.

Keywords: Communication, Human Relations, School Administrator

1. GİRİŞ

Bir örgütü oluşturan her birey cinsiyet, yaş, öğrenim, dini inanç, ilgi, tutum, duygu düşünce, beceri yönlerinden birbirlerinden farklı özelliklere sahiptirler. Yöneticilerin örgütteki insanları ortak amaç doğrultusunda çalışma durumuna sokarak hem örgütün amaçlarını gerçekleştirmek hem de çalışanların beklentilerini karşılamak, oldukça meşakkatli bir iştir. Okulun girdi ve çıktılarının insan olması, okul yönetimine, insan ilişkilerinin ve iletişim becerilerinin aktif olduğu bir zeminin ve iklimin oluşturulması görevini yüklemektedir. Eğitim yöneticisi, okul içerisinde insani ilişkileri ve iletişim becerilerini kullanarak, hoşgörünün, samimiyetin ve karşılıklı güvene dayalı bir atmosferin oluşumuna öncülük ederek olumlu bir okul iklimi yakalayabilmelidir. Olumlu bir iklime ve kültüre sahip olan bir örgütte çalışan insan, örgüte olan bağlılığı ve motivasyonu artacak, iş verimindeki artışla birlikte, örgütün amaçlarına ulaşmasına önemli bir katkı sunacaktır. İnsan ilişkileri bu anlamda, örgütte çalışan personelin, hareket tarzlarını, biçimlerini ve personeli etkili çalıştırmanın nedenlerini açıklamaktadır. Organizasyonu oluşturan etmenler ise; maddi kaynaklar, teknolojik gelişmeler ve işgücünden oluşmaktadır. Bu etmenler arasındaki uyumu sağlayamayan, bir arada tutamayan veya hareket ettiremeyen yönetimlerin örgütün amaçlarını gerçekleştirmede başarılı olacağı savunulamaz.

Son yıllarda yönetimde insan ilişkilerinin önemi anlaşılıncaya kadar, insanları çalışmaya yönelten etkenlerin, para veya da paraya bağlı maddi kaynak olarak görülüyordu**.** Oysaki insanın yaratılışı gereği, kendine has özellikleri vardır. Yönetici üretime katkı sunan etmenleri ahenkli bir şekilde yürütürken, iş çabalarına ve emeğe gerekli değeri vererek, çalışanların inançlarını, tutumlarını ve beklentilerini de bilmelidir. Örgütte çalışanların birbirleriyle olan etkileşimleri, iletişimleri etkili düzenlenmediği takdirde iş gücü verimi azalırken disiplinsizlik artarak, geçimsizlik başlayacaktır. Bununla birlikte de işten ayrılmalar olacaktır. Bu yönden yöneticiler, astlarını ve ilişkilerini iyi yönetmeyi bilmesi gerekir (Durukan, 2003).

Etkili yöneticinin en önemli özelliklerinden birisi de iletişimdir. İletişim unsuru örgütte planlama, örgütleme, yöneltme ve denetleme etkinliklerinin tamamında etkin olarak kullanılan bir süreçtir. Örgütün herhangi bir aşamasında yer alan çalışan, iletişim unsurunun bir öğesi durumundadır. Bu anlamda yönetici, örgütün yönetsel amaçlarını gerçekleştirmede mutlak suretle iletişim süreçlerini kullanmak zorundadır. Bir örgütte iletişimi başlatan ve sürdüren yöneticidir. Örgütün kendisine verdiği yetkiye dayalı olarak emrinde çalışanlara yön vermek, işlerle ilgili bilgilendirmek, geri dönüt almak vb. gibi yönetsel süreçleri yürütmek için iletişime ihtiyaç duyar (Şahin, 2010).

Bir eğitim kurumunda verimliliği arttıran en önemli unsur ise; o kurum yöneticisinin etkileşimli ve insan davranışlarını iyi analiz edebilen ve bunu uygulayabilen kişilik özelliklerine sahip olmasıdır. Son dönemde yönetim bilimi alanındaki kuramcılar, personeliyle iyi ilişkiler kurabilme, onları insani davranışlar konusunda anlayabilen ve bu yeterliliklere sahip olan yöneticilerin, okulun amacını gerçekleştirme konusunda daha başarılı olduklarını ve bu okullarda çalışan personelin iş doyumlarının yüksek olduğunu vurgulamaktadırlar. Okullarda başarının yakalanmasında yöneticinin insan ilişkileri ve iletişim becerileri konusundaki yeterlilikleri veya bu özelliklere uygun davranıp davranmadığı, okul

başarısına olumlu ve olumsuz anlamda yansımakta olduğunu söylemek mümkündür (Durukan, 2003). "*Fallot'e göre iyi bir yönetici, personelde birinin emrinde çalışma duygusu yerine, birisiyle birlikte çalışma duygusu yaratan kişidir"* (Bursalıoğlu, 1979). Çalışanlarda bu duyguyu oluşturmanın yolu da çalışanlarla alt üst şeklinde olan iletişimin gelişmesine imkân sağlanmalıdır. Okul içerisindeki yönetici ve öğretmen iletişimin niteliği, okulun hedeflerine ulaşmasını doğrudan ve dolaylı olarak etkilemektedir. (Celep, 1992). Gökçe ve Baskan'a (2012) göre; eğitim kurumlarında öğretmenlerle ve çalışanlarla kurulan iletişim tüm çalışanların ve kurumun performansını etkileyebilmektedir. Bu sebeple eğitim de iletişim bilginin aktarılması ve paylaşılması sırasında yoğun olarak kullanılmakta olup eğitimin hedeflerine ulaşmasında iletişim önemli bir yer tutar.

Sonuç olarak okul yöneticileri, okulun amaçlarını yani, öğrencilere, gerekli bilgi, beceri, yaratıcı düşünme ve eleştirel bakış açısı kazandırmak, toplumdaki işlevlerini yerine getirmek ve hedeflerine ulaşmak için; insan ilişkilerine dayalı, sevgi, saygı ve güven duygularının egemen olduğu olumlu bir atmosferin oluşturulmasını ve karşılıklı iletişime dayanan demokratik bir okul kültürü yaratabilmelidir

1.1.Yönetimde İnsan İlişkilerinin Tanımı ve Önemi

Bugünün insanı eşit koşullar altındaki çalışma arkadaşlarının isteklerine ve üst yöneticilerinin emirlerine körü körüne uymamaktadırlar. Diğer taraftan, insanlar arasındaki, ilişkilerde düzensizlik, geçimsizlik veya çatışma olaylarına sık rastlanılması, çağdaş personel yönetimi, bu konu üzerinde iş verimliliğini arttırmak için önemle durmaktadırlar (Tortop, 1992; Akt. Bozkurt, 1995). Bugün örgütte bulunan personelin, örgüte katkı miktarının en üst seviyede olması, insan kaynakları yönetimi programının niteliği, aşağıdan yukarıya örgütü temsil eden herkesin, etkin bir şekilde yönetilmesi, teşvik edilebilmesi, yöneticinin tutum ve yeteneklerine bağlı olduğu kabul edilmektedir (Durukan, 2003).

İnsan ilişkileri, inansın çevresindeki her türlü insan ve durumla ilgili, karşılıklı temasa geçtiği sırada kurduğu iletişim ve etkileşimdir. Yönetimde insan ilişkileri, örgütün amaçlarının gerçekleştirilmesi ile personelin gereksinimlerinin karşılanmasını dengelemeye yöneliktir. Yönetimde insan ilişkisinin konusu, insan insana olan ilişkidir (Başaran, 1992). Çalışma hayatında insan davranışları ve ilişkileri konusunda bilgili olmanın amacı çalışma ortamında karşılıklı ilişkilere dayalı uyumlu bir havanın oluşturularak, çatışma nedenlerini ortadan kaldırmaktır. Birden fazla kişinin bir arada olduğu ortamda etkileşimden kaynaklı çatışmaların olması, toplumsal olarak beklenen gerçekçi bir durumdur. Örgüt üyelerinin tepkileri, algıları ve davranış gibi insani özelliklerini öncesin de anlama gibi bir çalışma alanı olmadığından, ortaya konan insan özelliklerinin yorumlanması bakımından, örgütün bir ilişki dizisi olarak algılanması gerekmektedir (Muhçıoğlu, 1985).

Okul yapısı gereği sosyal-toplumsal bir yapı göstermesi nedeniyle, insan davranışlarını, bağlantılarını ve birbirleri arasındaki uyumu anlamak önem arz etmektedir. Eğitim örgütünün girdi ve çıktısının insan olması ve diğer örgütlere girdi olarak insanları hazırlaması, okul yönetimine bazı görevler yüklemektedir. İnsanların bir arada bulunma şartlarını taşıyacak uygun ortamı hazırlamak, insan ilişkileri konusunda yeterli bilgiye sahip olmak ve bu bilgileri sahada uygulamak gibi görevleri ve yeterlilikleri içermektedir. Yapılan araştırmalarda eğitim yöneticisinden kaynaklı birçok sorunun olduğu bilinmektedir. Bu sorunlarda daha çok insan ilişkileri konusundaki yetenek eksikliğinden kaynaklandığı belirtilmektedir. Eğitimim yöneticisinin öğretmenler tarafından ifade edilen yönetici davranışlarının adil ve aktif bir yönetim sergilemesi gerektiği üzerine yoğunlaşmaktadır (Bozkurt, 1995). Ataklı'nın (l994) yaptığı bir çalışmada, yöneticinin insan ilişikleri konusunda sergilediği tutum ve davranışı öğretmen motivasyonunda ve iş verimliliğinin artmasında önemli rol oynamaktadır şeklinde ifade edilmiştir. Sergilenen bu davranışları ise, örgütte alınan kararlara öğretmenleri ortak etmek, iş görev ve tanımlarını

yapabilmek, personel arasındaki çatışmaları çözebilmek, anlaşılır ve açık sade bir dille haberleşme ve iletişim kanallarını kurmak ve öğretmenleri çeşitli güdüleme araçları kullanarak aktif etmek ve adil dönütler ve değerlendirmeler yapabilmektir. (Karakoç, 1990, Akt. Bozkurt, 1995)

Durukan (2003) eğitim yöneticisinde, insan ilişkileri konusunda olması gereken genel ilkeleri şu şekilde sıralamaktadır: Personeline önemli olduğunu hissettirebilmeli, herkesin kişiliğine saygı göstermeli, herkese adaletli olmalıdır. İyi bir dinleyici olmalı, personeliyle tartışıp üstte çıkmamalıdır. İşgörenleriyle daima iletişim içinde olmalı, onlarla iyi geçinmelidir. İşgörenlere fikirlerini rahatça söyleyebileceği ortam yaratmalıdır. İnsan ilişkilerini kullanan eğitim yöneticilerinin bu ilkeleri bilmesi ve uygulaması eğitim örgütünün etkililiğini verimliliğini arttıracaktır.

1.2.Okul Yöneticiliği

Yöneticilik, yönettiği örgütün yapısı ve personelinin dengede tutan önemli etmenlerden biridir. Örgüt sisteminde dengesizlik yaşandığın da örgütün devamlılığı için denge durumunun sağlanması gerekir. Yöneticide bu dengeyi sağlayan, koruyan konumundaki yasal kişidir. Yani örgütün düzenli ve doğru işleyişinden sorumlu olan, olması gerektiği gibi yöneten kişidir (https://www.iienstitu.com.tr).

Okul yöneticiliği ise, bir okulun amaç ve hedeflerini yerine getirmek için bir araya gelen çalışanları örgütleyen, yönlendiren ve koordine eden, denetleyip geri bildirim sağlayan kişi veya yetkiliye okul yöneticisi denir (Gürsel, 2012; Akt. Arslan ve Sevinç, 2020). Okul yöneticiliği ise elinde bulunan maddi, manevi kaynağını ve insan gücünü etkili ve verimli kullanarak belirlenen hedeflere ulaşmak için eğitim politikalarını ve alınan kararları uygulayabilmeyi gerektirir (Toprakçı, Altunay ve Acer, 2019). MceWan'a (2020) göre, okul idarecisi bir iletişim uzmanıdır. Okulundaki çalışanlarıyla, öğrencilerle ve dış paydaşlarıyla verimli ve çözüm odaklı iletişim kurabilen ve kendini toplum önünde ifade edebilen, bilgi paylaşan ve sunan insanları motive etme becerilerine sahip özgün ve açık bir insandır.

Bir okul yöneticisini başarıya götüren en önemli özelliği iletişim becerisi konusundaki yeterliliğidir. Okul yöneticisi izleyenleri tarafından, iletişim yeteneklerine sahip bir kişi olarak görülmektedir. Okulda öğretmenlerle ve öğrencilerle, öğrenmeyi anlamlı hale getirme, ortak öğrenme alanları oluşturma ve okulda mükemmelliğe yakalama aracıdır. Okuldaki paydaşlar arasındaki öğrenme ortamını, okul yöneticisi, dil ile inşa eder. Okul müdürü öğretmenlerle tüm öğrencilerin başarısı hakkında fikir alışverişinde bulunur. Çalışanların iş verimini belirlemede etik değerlere dayalı ölçme teknikleri kullanır. Okulun gelecekte nerede olması gerektiğiyle ilgili açık ve anlaşılır bir vizyon ortaya koyar. Öğretimin amaçlarına ulaşıp ulaşmadığıyla ilgili öğretim kadrosuyla açık iletişim kurar. Bu görevleri yerine getirirken karşılıklı diyaloğa dayalı bir iletişim kullanır (Açıkalın, Şişman ve Turan, 2011). Başarılı okul yöneticileri, okulda geçirdikleri zamanın tümünde çalışanlarıyla ve çevreyle iletişim halindedirler; emir verirler, dinlerler, konuşurlar, yazarlar ve okurlar. İletişim halinde olmadıklarını düşündükleri zamanda bile; oturuşlarıyla, duruşlarıyla, giyim kuşamlarıyla bile mesaj gönderirler (Mcewan, 2020). Bir yöneticinin başarılı olabilmesi için; yönetimin gerektirdiği kavram ve metotları bilmesi teknolojiyi takip etmesi ve insan ilişkileri konusunda yetenekli olması gerekmektedir (Arslan ve Sevinç, 2020).

1.3.Okul Yönetiminde İletişim

İletişim insanın yaratılışı gereği anne ile bağlantı kurduğu ilk an dâhil hayatı süresince kullandığı bir beceri olarak değerlendirilmektedir. İletişime bu anlamda bakıldığında insanın varlığını idame ettirmesinin bir ürünüdür diyebiliriz. Aynı şekilde **i**letişim, kişinin sosyal hayatında hem de örgütlerde faaliyet gösteren yönetici/personelin aynı zamanda örgütün varlığını devam ettirme biçiminin bir ürünüdür. Ayrıca iletişim becerisi ve iletişim tutumları günlük hayatta ve iş yaşamında meydana

gelen olaylardan ve gelişmelerden etkilenebilmektedir. İletişim bireysel olarak insanlara hem de tüzel bir kişilik olan örgütlere özel bir olgudur. Diğer bir deyişle iletişim kişiden kişiye, örgütten örgüte değişen bir beceridir (Eroğlu ve Ark. 2013). Gönenç'e (2014) göre ise; iletişim, duygu düşünce ve bilgilerin akla gelebilecek her türlü yolla söylenmesidir.

İletişimin örgüt ve yönetimdeki yeri ve önemi ise; iletişim emirlerin, enformasyonun, sorunların ve çözüm yollarının çalışanalar arasında ve birimler arasında karşılıklı aktarılmasıdır. Yani çalışanalar arasında bir etkileşim sürecidir. "*Başka bir anlatımla iletişim olmadan örgüt olamaz, iletişim olmadan ortak bir amacın oluşturulması, bu amaç doğrultusunda bireysel çabaların eşgüdümlenmesi olanaksızdır."* (Aydın, 2018). Söylenmek istenen şudur ki, iletişim sadece insanların varlığını sürdürmesi için değil aynı zaman da örgütler içinde iletişim hayati önem taşıyan bir durum haline gelmiştir. Aydın (2005) iletişim, yönetsel amaçların gerçekleştirilmesinde önemli bir yere sahiptir. İletişim bu anlamda örgütsel değişimin ve örgütsel fonksiyonların gerçekleşmesinde iş akışını sağlayıcı bir görev görmektedir. Özellikle son zamanlarda bilimdeki hızlı değişiklikler, teknolojik gelişmeler, pazar arayışı, rekabet vb. gibi sebepler, tüzel birer kişilik olan örgütler için iletişim becerilerini ve örgütsel iletişim yönetimi çabalarını azımsanmayacak derecede önemli hale getirmiştir (Eroğlu ve Ark. 2013).

Eğitim kurumlarında aktif bir iletişim gerçekleştirmek için, okul çalışanları ve yöneticiler arasında eşgüdüm sağlanarak, okul kültürü haline gelecek olumlu bir iletişim şekli oluşturulabilir. Yöneticiler ve çalışanlar tarafından bu iletişim şeklinin sürekli olması sağlanabilir. Örgüttü oluşturan kişiler, bu iletişim şekliyle, ortak karar alma, politika ve plan yapma düzeylerinde olan katılımı arttırır (Aydın, 2018). McEwan, (2020) etkili okul yöneticisin 10 özelliğini sıralarken iletişim konusunda aşağıdaki konulara değinmiştir. İletişim uzmanlarının ilgili olduğunu, dinlediğini, empati kurduğunu, doğru sorular sorduğunu, eleştiriye açık olduğunu, personeliyle duygusal ve mesleki bağ kurduğunu ve iyi bir öğretici olduğunu belirtmişlerdir.

İletişim uzmanı okul yöneticileri, durmaksızın süren görüşmeler, etkileşimler iletişimler, bağlantılar, bilgi alışverişleri ve temaslarla meşguldürler. Bunları bazıları kısa bazıları uzundur. Bazıları ise hayatı değiştirebilen yaşantılaradır. Etkili okul yönetici bunların hepsini büyük bir marifet ve yetenekle gerçekleştirirler.

Güçlü'ye (2000) göre ise, eğitim örgütlerinde öğretmenler ve yöneticiler arasındaki iletişimin sağlıklı olabilmesi için bir takım kurallar aşağıdaki gibi sıralamıştır.

- Her bir bireyin kendine has özelliklerinin olduğunu ve bununla birlikte herkesin değerli olduğunu bilmek,
- Karşısındaki bireyi anlamaya çalışarak onu kabul etmek,
- Yönetici ve öğretmenlerin maske takmadan, dürüst bir şekilde kendini gösterebilmek,
- Duygu, düşünce, tutum ve davranışlarda tutarlı olmak ve
- İnsanlara karşı empati kurarak onların sorunlarına onlar gibi bakabilmektir.

1.4.Araştırmanın Amacı

Bu araştırmada eğitim yöneticilerinin insan ilişkileri ve iletişim becerileri konusundaki yeterliliklerinin eğitime yansımasını ortaya koymak amaçlanmıştır. Bu amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır.

1. Okul yöneticisinin insan ilişkileri nasıl olmalıdır?

2. Okul yöneticisinin insan ilişkileri eğitime nasıl yansımaktadır?
3. Okul yönetimindeki iletişimi nasıl tanımlanmaktadır?
4. Okul yöneticisinin iletişimi nasıl olmalıdır?
5. Okul yöneticisinin iletişimi öğretmenler üzerinde nasıl bir etki bırakmaktadır?
6. Okul yöneticisinin iletişim becerilerinin geliştirilmesine yönelik çözüm önerileri nelerdir?

2. YÖNTEM

Bu çalışma nitel araştırma kapsamında gerçekleştirilmiştir. Nitel araştırma; gözlem, görüşme ve doküman analizi gibi farklı nitel veri oluşturma yöntemlerinin kullanıldığı, bakış açılarının, algıların ve olayların doğal ortamda gerçekçi ve bütüncül biçimde ortaya konmasına yönelik nitel bir sürecin izlendiği araştırmadır (Yıldırım ve Şimşek, 2016).

Bu çalışma nitel araştırma desenlerinden olgu bilim deseni çerçevesinde düzenlenmiştir. Olgu bilim deseni, farkında olduğumuz ancak derinlemesine ve ayrıntılı bir anlayışa sahip olmadığımız olgulara odaklanmaktadır. Olgu bilim araştırmalarında veri kaynakları araştırmanın odaklandığı olguyu yaşayan ve bu olguyu dışa vurabilecek veya yansıtabilecek bireyler ya da gruplardır (Cropley, 2002).

2.1.Çalışma Grubu

Araştırmanın çalışma grubu amaçlı örneklem yöntemi çerçevesinde kolay ulaşılabilir örneklem tekniğiyle belirlenmiştir.. Amaçlı örneklem yöntemi sayesinde derinlemesine araştırma ve analiz yapabilmek için çalışmanın amacının bilgi açısından zengin durumları seçebilmek hedeflenmiştir (Büyüköztürk ve Ark. 2012). Araştırmada kullanılan kolay ulaşılabilir örneklem tekniği ise, Nitel araştırmalarda yaygın olarak kullanılan bir yöntem olan kolay ulaşılabilir durum örneklemesi, maliyet ve zaman açısından avantaj sağlamaktadır (Yıldırım ve Şimşek, 2016).

Çalışma grubu 2021-2022 eğitim öğretim yılında Amasya ili merkez ilçesindeki ortaöğretim resmi eğitim kurumlarında görev yapan 10 öğretmenden oluşmaktadır. Katılımcıların bilgileri gizli tutulmuş ve katılımcılar Ö1, Ö2, Ö3, Ö4, Ö5, Ö6, Ö7, Ö8, Ö9 ve G10 şeklinde kodlanarak araştırmacı tarafından saklı tutulmuştur. Katılımcıların demografik bilgileri aşağıdaki tabloda gösterilmiştir.

Tablo 1. Görüşme sorularına katılım sağlayan öğretmenlerin demografik özellikleri.

Araştırma Milli Eğitim Bakanlığında kadrolu olarak görev yapan 10 öğretmenle birlikte gerçekleştirilmiştir.

Katılımcı	**Cinsiyet**	**Branş**	**Mesleki Yılı**
Ö1	E.	Edebiyat	35
Ö2	E.	Resim	25
Ö3	E.	Beden Eğitimi	15
Ö4	E.	İngilizce	25
Ö5	E.	Coğrafya	15
Ö6	E.	Resim	16
Ö7	E.	Fizik	20
Ö8	E.	Coğrafya	35
Ö9	E.	Resim	18
Ö10	K.	Müzik	18

Katılımcıların özelliklerine bakıldığında tamamın erkek ve branş öğretmeni olduğu görülmektedir. Mesleki kıdemleri ise 15-35 yıl aralığında değişmektedir. Ayrıca katılımcıların hepsi lisans mezunudur.

3. BULGULAR

Katılımcılarla yapılan görüşmeler sonucunda elde edilen veriler, görüşme sorularına göre analiz edilmiştir. Katılımcıların "Eğitim örgütlerindeki iletişimi nasıl tanımlarsınız?", "Eğitim örgütlerindeki okul yöneticisinin, iletişim becerisi nasıl olmalıdır?", "Eğitim yöneticisinin iletişim becerisi, öğretmenler üzerinde nasıl bir etki bırakmaktadır?", "Yöneticiler ve öğretmenler arasındaki iletişim engelleri nelerdir?", "İletişim engellerine yönelik çözüm önerileriniz nelerdir?" sorularına verilen cevaplar analiz edildiğinde, aşağıda tablolarda belirtilen bulgular elde edilmiştir.

Tablo 2. Eğitim Örgütündeki İletişimi Nasıl Tanımlarsınız?

Tema	f	%	Örnek cümle
Bilgi Aktarımı	4	%44,5	*Öğretmen öğrenci arasında bilgi aktarımı olduğu, öğretmenler arasında ve idareciler arasında bilgi aktarımı ve paylaşımı olabilir. Bu noktada iletişim hepsini kapsayan genel bir süreçtir* (Ö9).
Sözlü ve Sözsüz Davranış.	4	%44,5	*İletişim sözlü ifadeler olduğu gibi bakışmalarda olabilir. Bazen, sabah bir yöneticinin bir öğretmenle göz teması veya oradaki bir tebessüm bile iletişim sayılabilir* (Ö9).
Etkileşim	2	%11	*Eğitim ortamında bulunan herkes, idarecisi öğretmeni, öğrencisi, velisi ve hatta diğer çalışanlar arasında kurduğu eğitim ilişkilerine dair her türlü etkiletişim, iletişimi ifade eder* (Ö5).
Toplam	9	100	

Katılımcıların "Eğitim Örgütündeki İletişimi Nasıl Tanımlarsınız?" Sorusuna 4 defa (%44,5) bilgi aktarımı, 4 defa (%44,5) sözlü ve sözsüz davranış ve 1 defa (%11) etkileşim şeklinde cevap vermişlerdir.

Tablo 2. Eğitim örgütlerindeki okul yöneticisinin, iletişim becerisi nasıl olmalıdır?

Tema	f	%	Örnek cümle
Anlayışlı Olmalı	4	%40	*Kendi üzerimden örnek vererek bunu biraz daha somutlaştırayım, Ben 35 yıllık bir kıdeme sahip öğretmenim. Genelde kurallara tam uyarım. Örneğin dersime zamanında girer zamanında çıkarım. Ancak; zaman zaman benim dışımda olan gecikmelerde olabiliyor. Geçen hafta ulaşım nedeniyle okula beş dk. geç geldim. Gittim okul müdürüme bunu söyledim. Müdür beyin bana verdiği cevap, "hocam tabii ki insani bir durum bu hepimizin başına gelebilir" dedi. Bir başka vakitte aynı sebepten geç kaldığımda, okul müdür baş yrd. denk geldim. Ona da elimden gelmeyen*

			sebeplerle geç geldim dedim. Fakat tepkisi farklı oldu. Ellerini yana açarak hiçbir tepki vermedi. Bu iki örnek okul yöneticisinin olaylara anlayışla yaklaşımı veya da olumsuz anlamda yaklaşımı, iletişim becerisine konusunda yaşanan bir örnektir (Ö8).
Önyargısız Olmalı	3	%30	*Herkese karşı önyargısız olmalı farklı tutum ve düşüncelere açık olmalıdır* (Ö7).
Çift Taraflı İletişimi Olmalı	1	%10	*Yönetici okulda iletişimi biz olarak tanımlarsa herkesin mutlu olacağı kendisini ifade edebileceği bir iletişim ortamı olur iletişimde benmerkezcilik varsa iletişim tek taraflı olur bu durumda diğer kişiler kendilerini ifade edemez. Bu şekilde kurulan iletişim sağlıklı olmadığı için eğitimde istediğimiz sonucu elde edemeyiz* (Ö3).
Resmi Olmalı	1	%10	*Duygu ve düşüncelerini bir yana bırakarak, müfredat, yönerge ve yönetmeliklerle yani kanunların çizdiği çerçevede hareket etmeli, herkese eşit davranarak karşısındakiyle konuşmayı başaran her zaman iyi bir yönetici olmuştur* (Ö4).
Samimi Olmalı	1	%10	*Samimiyetin birçok kapıyı açacağını düşünüyorum. Samimiyet kişiler arası riyayı ve yanlış anlaşılmaları ortadan kaldırır* (Ö9).
Toplam	10	100	

Katılımcıların "Eğitim örgütlerindeki okul yöneticisinin, iletişim becerisi nasıl olmalıdır?" Sorusuna 4 defa (%) anlayışlı olmalı, 3 defa (%) ön yargısız olmalı ve 1 defa (%) çift taraflı iletişimi olmalı 1 defa (%) resmi olmalı, 1 defa (%) samimi olmalı şeklinde cevap vermişlerdir.

Tablo 3. Eğitim yöneticisinin iletişim becerisi, öğretmenler üzerinde nasıl bir etki bırakmaktadır?

Tema	f	%	Örnek cümle
Motivasyonunu Etkilemekte	4	%57	*Öğretmenin motivasyonunu sağlayan en önemli unsur bence yöneticinin öğretmenle yaptığı konuşmalardır. Burada yöneticinin öğretmenine kullandığı dil, tavır son derece önemli sonuçta öğretmende bir insan, her insanda takdir edilmeyi ister. Öğretmen güçlü yönlerinin söylenmesinden mutluluk duyar. Bu yüzden Öğretmenle iletişim kurarken öncelikle onun güçlü yönlerini söylemeli, şu aşamada çok iyisin, şunu çok iyi yapıyorsun demelidir* (Ö5).
İş Gücü Kaybı	3	%43	*Olumlu iletişim özgüven ve güdüleyici bir etki bırakırken, olumsuz iletişim öğretmende iş gücü kaybına ve iletişimde isteksizliğe yol açar* (Ö6)

Toplam	7	100

Katılımcıların "Eğitim yöneticisinin iletişim becerisi, öğretmenler üzerinde nasıl bir etki bırakmaktadır?" Sorusuna 4 defa (%57) motivasyonu etkilemekte, 3 defa (%43) iş gücü kaybı olmaktadır şeklinde cevap vermişlerdir.

Tablo 4. Yöneticiler ve öğretmenler arasındaki iletişim engelleri nelerdir?

Tema	f	%	Örnek cümle
Protokol Kurallarına Uymama	4	%31	*Öğretmenin arkadaşı olan idareciye üslup konusundaki yanlış yaklaşımı, protokol kurallarına uymaması idaresini onur etmemesi (Müdür Bey, Ahmet Bey gibi)* (Ö9).
Makamsal Ego	3	%24	*İletişimin en büyük engeli ego yani bir üstünlük mücadelesidir. Her şeyi ben bilirim her şeyin kararın vericisi benim tarzında yaklaşımlar öğretmenle idareciler arasında iletişimi engeller* (Ö3)
Fikir Ayrılıkları	2	%15	*Bazen de, iletişim engellerine dair siyasi görüşler uyuşmuyor bunun eğitimde hiçbir yeri yoktur, âmâ maalesef ki idarecinin siyasi görüşü öğretmenin siyasi görüşü eğitimde büyük iletişim engeli oluşturuyor* (Ö5).
Önyargılar	2	%15	*İletişimin önündeki en önemli engel önyargılardır. Yönetici deneyim ve yaşantılarını bir kenara bırakarak bu konuda esnek olmalıdır.* (Ö10)
Büro İşlerinin Fazla Olması	2	%15	*Yöneticilerle ve öğretmeler arasında gerçekte bir iletişim engeli yok. Zamanlama engeli var diye düşünüyorum Okullarda kırtasiye ve büro işleri yapmaktan, öğretmenlerle sağlıklı iletişim kurma fırsatını bulamadıklarını düşünüyorum. Yazılara cevap verme, form-istatistik doldurma, toplantılara katılma vb. gibi* (Ö1).
Toplam	13	100	

Katılımcıların "Yöneticiler ve öğretmenler arasındaki iletişim engelleri nelerdir?" Sorusuna 4 defa (%31) protokol kurallarına uymama, 3 defa (%24) makamsal ego, 2 defa (%15) fikir ayrılıkları, 2 defa (%15) önyargılar, 2 defa (%15) büro işlerinin fazla olması, şeklinde cevap vermişlerdir.

Tablo 5. İletişim engellerine yönelik çözüm önerileriniz nelerdir?

Tema	f	%	Örnek cümle
Takdir Etmek Ödüllendirmek	4	%40	*Yönetici yeteneğinin yanında akademik kariyere de sahip olmalıdır. Bununla beraber ödüllendirme yönteminin devreye girmesi gerekiyor. Tabii maddi olması anlamında*

			demiyorum. Ama öğretmenleri özendirmeli, teşvik edici olmalıdır (Ö8).
Hizmetiçi Eğitimler	2	%20	*Buradaki en temel şey insanları eğitmek ve geliştirmek bu anlamda kişisel gelişim ve iletişim becerilerine yönelik kurslara ve seminerlere katılım sağlanması gerekir* (Ö9).
Etkinlikler	2	%20	*Öğretmenleri zaman zaman bir araya getirerek birlikte sohbet etmelerini, zaman geçirmelerini sağlayabiliriz. Resmi toplantılar dışında özel toplantılar ve organizasyonlar düzenleyerek iletişimi sağlayabiliriz.* (Ö1)
Empati Kurulması	2	%20	*Her ne kadar bir kurumda sorumluluk sahibi bir birey olsa da herkesin bir aile ve özel hayata sahip olduğundan yola çıkılarak uyarı yapılmadan önce empati kurulması, psikolojik ve ruhsal durumların gözetilerek yaklaşılması gerekmektedir* (Ö2)
Toplam	10	100	

Katılımcıların "İletişim engellerine yönelik çözüm önerileriniz nelerdir?" Sorusuna 4 defa (%40)takdir etmek, ödüllendirmek, 2 defa (%20) hizmetiçi eğitimler, 2 defa (%20) etkinlikler, 2 defa (%20) empati kurulması, şeklinde cevap vermişlerdir.

4. TARTIŞMA, SONUÇ VE ÖNERİLER

Sonuç olarak eğitim yöneticisinin insan ilişkileri ve iletişim becerileri konusundaki yeterlilikleri eğitim ortamına olumlu ve olumsuz olarak yansıdığı sonucuna ulaşılmıştır. Celep (1992) eğitim örgütlerinde sağlıklı iletişimin kurulabilmesi ve gelişim göstermesi, eğitim yöneticisinin, yöneticilik konusundaki algılarına ve yeterliliklerine bağlıdır. Literatür de yönetici ve öğretmen arasındaki iletişimle ilgili araştırmalarda, eğitimdeki iletişim sürecinin diğer süreçlerden daha önemli olduğu, öğretmen ve yönetici arasındaki iletişimin kalitesinin eğitimin niteliğine ve kalitesine yansıdığı aynı zamanda da öğretmen verimliliğini artırdığı sonucuna ulaşılmıştır (Yıldız, 1996; Çubukçu ve Döndar, 2003).

Katılımcılar okul yöneticisinin iletişim becerisi nasıl olması gerektiğiyle ilgili sırasıyla, anlayışlı olmalı, önyargısız olmalı, çift taraflı iletişimi olmalı, resmi olmalı ve samimi olmalı şeklinde sonuçlar elde edilmiştir. Şimşek (2005) Eğitim örgütündeki yöneticiler, fikirlerini ve söylemlerini açıkça ifade etme, karşılıklı iletişim kurma, karşısındakini dinleme, karşısındakinin isteklerine cevap verme, bilgi alışverişini sağlama ve empati kurma gibi özellikleri olması gerektiğini vurgulamıştır. Celep (1992) öğretmenlerle yukarıdan aşağıya bir iletişim yolu izleyen yani, iletişimde daha çok yazılı emirleri kullanan, istişareden uzak tek taraflı iletişim sağlayan, öğretmenlerle sağlıklı iletişim kuramayan yöneticilere rahatlıkla sorunlarını iletemediklerini, eğitim öğretimle ilgili istişare yapmada geri durdukları sonucuna varılmıştır.

Çalışmaya katılan öğretmenlerin, eğitim yöneticisinin iletişim becerisi, öğretmenler üzerinde nasıl bir etki bırakmaktadır sorusuna, yöneticilerin öğretmenlerle kurmuş olduğu iletişimin kalitesi öğretmenin iş motivasyonu ve okula olan bağlılıklarını arttırdığı sonucuna ulaşılırken, olumsuz olan iletişimde ise; öğretmende iş gücü kaybına ve iletişimde isteksizliğe yol açtığı sonucuna ulaşılmıştır. Doğan ve Koçak'ın (2014) yaptığı araştırmada, öğretmenlerin algılarına göre, yöneticinin öğretmenlerle

olan sosyal iletişimi arttıkça, öğretmenlerin motivasyonlarının da pozitif anlamda arttığı sonucuna ulaşılmıştır. Lal'ın (2012) yaptığı, ilköğretim okul müdürlerinin iletişim becerileri ile okul kültürü arasındaki ilişkiler adlı araştırmasında, okul yöneticilerinin iletişim becerisi ile okul kültürü arasında pozitif anlamda bir ilişkinin olduğu bulunmuştur. Çağlar ve Çınar'ın (2020) yaptığı araştırmada, okul yöneticilerinin iletişim becerileri, öğretmenlerin örgütsel bağlılıklarını etkilediği sonucuna ulaşılmış.

Araştırmaya katılım gösteren öğretmenler, yöneticiler ve öğretmenler arasındaki iletişim engellerini, protokol kurallarına uymama, makamsal ego, fikir ayrılıkları, önyargılar ve büro işlerinin fazla olması şeklinde cevaplamışlardır. Güngör ve Ark'nın, (2018) yaptığı araştırmada, farklı düşünce ve fikirlere sahip olan öğretmenlerin daha fazla iletişim engeli yaşadığını belirtmişlerdir. Argon ve Zafer (2009) ise, yöneticiler ve öğretmenler arasında, öğretmenlerin kişisel yeterlilikleri ve mesleki yeterlilikleri ile ilgili eksiklikleri, önyargılı olmaları ve geleneksel bakış açılarından kaynaklı iletişim engelleri olabileceğini söylemişlerdir. Okul yöneticisinin düşünceleri ve fikirleri, iletişim kuracağı kişiler arasında engel teşkil edebilir. Eğer okul müdürü bağnaz ve sabit bir düşünceye sahipse, okul yöneticisinin iletişimde bir takım zorluklarla karşılaşması kaçınılmaz olacaktır (Dökmen 1996).

Katılımcılar iletişim engellerine yönelik çözüm önerileri ise, takdir etmek, ödüllendirmek, etkinlikler, hizmet içi eğitimler ve empati kurmak şeklinde sıralamışlardır. Çelik (2007) empati yoksunluğu örgütlerde, insanlar arasındaki bağları koparma ve iletişimin sağlıksız ilerlemesi sonucunu doğurur. Bu durumda kişi önemsenmediğini ve değerli olmadığı hissine kapılır. Yılmaz'ın (2011) yaptığı çalışmada, iletişim becerileri konusunda eğitim alan kişilerin, iletişimde çatışma yaşamadığını, iletişim becerilerinin geliştiği ortaya konmuştur.

Yapılan çalışmadan çıkarılan sonuçlara göre şu öneriler getirilmiştir: Yöneticilerin iletişim becerisindeki yeterliliği eğitime olumlu olarak yansımaktadır. Bu sebeple yöneticiler kendilerini iletişim becerileri konusunda geliştirmeleri, bu anlamda yapılacak olan kurs ve seminerlere katılım göstermelidirler. Kırtasiye ve büro işlerinin daha çok memurlar aracılığıyla yapılması, okul yöneticilerinin öğretmenlerle ve diğer paydaşlarla daha çok iletişim kurması gerekmektedir. Öğretmenlerle ve diğer çalışanlarla olan iletişiminde, onların psikolojik ve ruhsal durumunu gözeterek empati kurmalıdırlar. Okul yöneticilerinin makamsal ego davranışlarından uzak durarak herkesle açık şeffaf ve güven verici bir iletişim ortamı oluşturmalıdır. Öğretmenlik mesleğinin stresli ve yorucu bir iş olduğundan hareketle, öğretmenlerin daha keyifli vakit geçirebileceği, etkinlik ve faaliyetler düzenleyerek olumlu bir okul ikliminin oluşmasına zemin hazırlamalıdırlar. Ayrıca okul içinde alınacak kararlarda, öğretmenlerin düşünce ve fikirlerinden yararlanması gerekmektedir.

Diğer çalışmalarda olduğu gibi bu çalışmada da bir takım sınırlılıklar mevcuttur. Bu anlamda 10 katılımcı ile nitel araştırma kapsamında gerçekleştirildiğinden, katılımcıların sayısı sınırlılık arz etmektedir. Ayrıca katılımcıların sadece Amasya merkez ilçesindeki branş öğretmenlerinden seçilmesi diğer bir sınırlılık olarak gösterilebilir. Bu yüzden çalışmadan çıkarılan sonuçlar genellendirilemez. Belirtilen sınırlılıklar ortadan kaldırılması için; çalışmanın evreni genişletilerek başka il ve çevrelerde de diğer öğretmenleri de kapsayacak araştırmalar yapılabilir. Ayrıca çalışmada verileri toplamak için yarı yapılandırılmış görüşme formu kullanılmıştır. Yapılacak farklı çalışmalar da veri toplama aracı olarak başka görüşme formları kullanılabilir.

5. KAYNAKÇA

Açıkalın, A. Şişman, M. ve Turan, S. (2011). Bir insan olarak okul müdürü. Ankara: Pegem Akademi Yayıncılık

Arslan, H. ve Sevinç, N. (2020). Okul yöneticiliğinden entelektüel liderliğe. Ankara: Anı Yayıncılık.

Argon, T. ve Zafer, D. (2009). İlköğretim Okulu yöneticilerinin iletişim sürecinde yaşadıkları problemler. *Sakarya Üniversitesi Eğitim Fakültesi Dergisi,*

Ataklı, A. (1994). İlkokullarda yönetici davranışlarının öğretmenlerin verimliliğine etkisi. Doktora tezi. Hacettepe Üniversitesi.

Aydın, M. (2018). Eğitimi yönetimi. Ankara: Gazi Kitapevi.

Başaran İ. E. (1992). Yönetimde insan ilişkileri. Ankara: Kadıoğlu Matbaası.

Bozkurt, E. (1995). İnsan ilişkileri ve eğitim yönetimi. kuram ve uygulamada eğitim yönetimi. *Dergipark,* Cilt:2 Sayı: 2 231-237-1995.

Bursalıoğlu, Z. (1979). Okul yönetiminde yeni yapı ve davranış. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi,* Yayın No: 78,

Büyköztürk, Ş. ve Ark. (2012). Bilimsel araştırma yöntemleri. Ankara: Pegem Akademi, 13. Baskı, Ekim 2012

Durukan, H. (2003). Yönetimde insan ilişkileri. *Kastamonu Eğitim Dergisi,* 277-284, Ekim 2003 Cilt:11 No:2

Çubukçu, Z. Döndar, İ. (2003). Okul yöneticilerinin iletişim becerilerine ilişkin algı ve beklentileri. *Milli Eğitim Dergisi.* Sayı:157, Kış:2003.

Doğan, S., ve Koçak, O. (2014). Okul yöneticilerinin sosyal iletişim becerileri ile öğretmenlerin motivasyon düzeyleri arasındaki ilişki. kuram ve uygulamada eğitim yönetimi *Educational Administration: Theory and Practice,* 20(2), 191-216. doi: 10.14527/kuey.2014.009

Dökmen, Ü. (1996). Sanatta ve günlük yaşamda iletişim çatışmaları ve empati. İstanbul: Sistem yayıncılık.

McEwan, E. K. (2020). Etkili okul yöneticilerinin 10 özelliği. Ankara: Pegem Akademi 2020

Eroğlu, E., Ataizi M. N., Yüksel, N. A. ve Yüksel A. H. (2013). Etkili iletişim teknikleri. *Anadolu Üniversitesi,* yayını no: 2775

Celep, C. (1992). İlkokullarda yönetici-öğretmen iletişimi.

Cropley, A. (2002). Qualitative resarch methods: An introduction for students of psychology and education. University of Latvia: Zinatne.

Çağlar Ç. ve Çınar H. (2020). Okul müdürlerinin iletişim yeterliklerinin öğretmenlerin örgütsel bağlılığı üzerindeki etkisi. *E-Uluslararası Eğitim Araştırmaları Dergisi,* Cilt: 12, Sayı: 1, 2021, ss. 157-170

Çelik, Ç. (2007). *İlköğretim Okulu Müdürlerinin İletişim Becerileri İle Tükenmişlik Düzeyleri Arasındaki İlişki.* Yüksek Lisans Tezi. Gaziantep Üniversitesi.

Getmez, D. (2018). *Okul Müdürlerinin İletişim Becerileri İle Okul İklimi Arasındaki İlişkinin İncelenmesi.* Yüksek Lisans Tezi. Marmara Üniversitesi.

Gökçe, D. ve Baskan G. A. (2012). Eğitim denetçilerinin iletişim becerileri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* (H.U. Journal Of Educaiton) 42: 200-211 (2012)

Gönenç, Ö. (2014). İletişim dünyası. İstanbul: Derin Yayınları.

Güçlü, N. (2000). İletişim. Ankara: Nobel, 133-154.

Güngör, S. Özen, S. A. ve Aksoy, N. (2018) Okul Öncesi Eğitim Kurumlarında İletişim Engelleri. Değişen Dünyada Eğitim.

Lal, İ. (2012). İlköğretim *okulu müdürlerinin iletişim becerileri ile okul kültürü arasındaki ilişkiler.* Yayımlanmamış yüksek lisans tezi. Ahi Evran Üniversitesi, Kırşehir.

Mıhçıoğlu, C. (1985). Yönetimde İnsan İlişkileri. Ankara

Şahin, A. (2010). İlköğretim okulu yöneticilerinin kişiler arası iletişim becerileri ve çatışma yönetimi stratejileri arasındaki ilişki. *Millî Eğitim Dergisi.* Sayı 188 Güz/2010.

Şimşek, Y. (2005). Okul müdürlerinin iletişim becerileri ile okul kültürü arasındaki ilişki. *Anadolu Üniversitesi Eğitim Fakültesi Yayınları;* No. 94, Eskişehir.

Toprakçı E. Altunay E. Ve Karataş E. A. (2019). Anılarla okul müdürlüğü. Ankara: Pegem Akademi

Yıldırım, A. ve Şimşek, H. (2016). Sosyal bilimlerde nitel araştırma yöntemleri. Ankara: Seçkin Yayıncılık.

Yıldız, K. (1996). *Bolu ilköğretim okullarında yönetici öğretmen iletişimi*. Yayımlanmamış Yüksek lisans tezi. Abant İzzet Baysal Üniversitesi. Sosyal Bilimler Enstitüsü. Bolu

Yılmaz, N. (2011). *Okul öncesi öğretmenlerinin iletişim becerileri, problem çözme becerileri ve empatik eğilim düzeyleri*. Yüksek lisans tezi. Muğla Üniversitesi.

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DESIGN OF AN UNDERWATER METAMATERIAL FOR ACOUSTIC ABSORPTION

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ABSTRACT

The importance of marine is emerged by World War II once more. Especially, submarines have a critical role in maritime warfare and intelligence. However, these vehicles, which must operate in high secrecy, have a problem, noise. Due to their movement and internal machines, acoustic waves in high frequency range, could reveal. Detection by enemy forces is a significant issue in this situation especially in terms of their intelligence mission. Active and passive Sound Navigation and Ranging (Sonar) systems could catch acoustic waves which propagated or reflected from an object, and its location is revealed. Submarines must defend itself from these systems for secrecy, hence, acoustic coatings are emerged. Nevertheless, providing fully protection is not possible yet, there are several approaches that provide partial protection. However, there are several problems that must be overcome especially at low frequencies. In this study, it is aimed to design a metamaterial for protection from active Sonar systems in a wide frequency range. Cylindrical air cavity is added to the coating to reach high acoustic absorption performance at low frequency range. Then, several parametric studies are done to determine effect of the air cavity dimensions. Consequently, it is seen that, the air cavity with 5 mm radius shows better results and increasing radius does not always mean high acoustic absorption performance.

Keywords: Acoustics, Metamaterials, Finite Element Analysis, Anechoic coating, Submarine

INTRODUCTION

With the spread of marine warfare, intelligence gathering, and stealth attacks have become significant subjects. Submarines are used for these purposes since World War II (Bai et al., 2019). This situation accelerated the advances in Sonar systems to locate submarines (Zhang & Song, 2021). Therefore, several protection approaches are developed against to Sonar systems. One of them is acoustic coating. To avoid active Sonar systems, incoming acoustic waves must be absorbed or transmitted. If the incoming waves do not return Sonar system, the object which exposed to acoustic waves could not be located. Therefore, with using acoustic coating incoming waves must diminished by absorption or all of them transmitted by acoustic cloak (Luo et al., 2021). In this study, it is aimed to design an acoustic coating which absorb the incoming Sonar acoustic waves by dissipating its energy.

Recently, several novel approaches are proposed to achieve perfect acoustic absorption such as local resonance acoustic metamaterials, gradient distributing acoustic absorbers, and acoustic carpet cloak. However, the acoustic absorption ability of these novel materials still is in a narrow frequency range (Gao & Lu, 2020). At middle or high frequency range, nearly perfect acoustic absorption could be achieved by these novel materials, but high cost and difficult manufacturing processes restrict the usage field. Moreover, broadband acoustic absorption could not be achieved yet by these novel materials. For

underwater acoustic absorption, polymer has been a traditional material. Since World War II, it is using in submarines to prevent active sonar systems (Gaunaurd, 1977). Polymer is an effective absorption material with a certain frequency level. Especially, at high frequency range, it can provide high acoustic absorption, because of low reflecting characteristics and high damping characteristics. For high acoustic absorption, there are two main conventional approaches (Gao & Lu, 2020). Impedance matching is the first traditional approach (Wu et al., 2021). As acoustic impedance of material closes the water impedance, the reflection decreases. When the impedance matching happens between water and material, there is no reflection from material. It means that all the incident acoustic wave enters the material, no part of it reflected. After, acoustic wave energy must dissipate in the material, this is the second method. Polymer viscoelastic material has high absorption characteristics. Incident wave acoustic energy transformed another kind of energies in the material. Hence, combination of these two conventional methods provides high absorption.

In this study, it is aimed to design a metamaterial which absorb energy of incoming acoustic waves. To reach high absorption efficiency at low frequencies, air cavity is added to the coating. For the calculation of acoustic efficiency of the metamaterial coating, COMSOL 5.6 is used, both 2D and 3D analyses. Also, the FEA models are based on literature, and validated in terms of accuracy.

MATERIALS AND METHOD

In this chapter, the mathematical background of finite element method of acoustics is introduced. Sound wave equation for a lossless medium is (COMSOL-Multiphysics);

$$\frac{1}{\rho c^2}\frac{\partial^2 p}{\partial t^2} + \nabla \cdot \left(-\frac{1}{\rho}(\nabla p - q_d)\right) = Q_m \qquad (1)$$

ρ (kg/m^3) and p (Pa) are the density of medium and acoustic pressure, respectively. Also, q_d and Q_m represent the dipole and monopole domain sources, respectively. Speed of sound is represented by c (m/s). For a lossy media, an additional term is putted in the Eq. 1.

$$\frac{1}{\rho c^2}\frac{\partial^2 p}{\partial^2 t} - d_a\frac{\partial p}{\partial t} + \nabla \cdot \left(-\frac{1}{\rho}(\nabla p - q_d)\right) = Q_m \qquad (2)$$

d_a is the damping coefficient.

A. Modelling

The metamaterial model is designed by considering literature [3,4]. According to this, air cavity is added to increase the absorption performance at low frequencies. However, there is a challenging situation here. The matrix material which hosted the air cavity is rubber, at high frequencies rubber provide high absorption performance, due to its high damping characteristics. Therefore, designing acoustic metamaterial, requires optimal air-rubber ratio and geometrical arrangements. Firstly, rubber coating without air cavity is designed and analyzed. After, air cavity is introduced in the rubber matrix. Both are evaluated in terms of absorption performances. 3D model is designed as a hexagonal unit cell. Evaluations between 3D and 2D axisymmetric FEA models are done to validate the results. Also, to decrease the computation time, 2D model is preferable. While the 3D model transforms into 2D axisymmetric model, hexagonal unit cell is considered as cylindrical form.

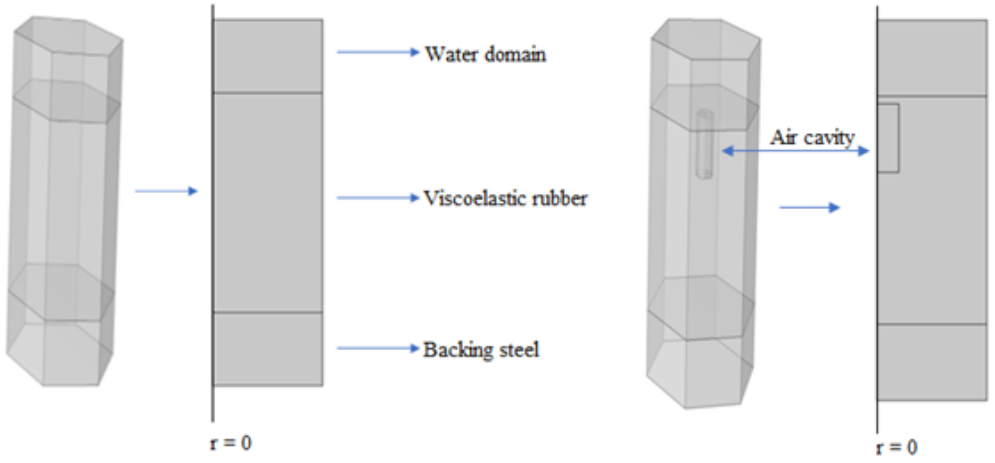

Figure 1. a) 3D, and b) 2D axisymmetric FEA models without air cavity; c) 3D, and d) 2D axisymmetric FEA models with air cavity

The thickness of water domain is set as 10 mm, the backing steel thickness is 10 mm, the length and width of rubber matrix are 30 mm. The 3D and 2D axisymmetric FEA models have 30 mm and 15 mm width, respectively. The air cavity is a cylindrical form with 3 mm radius and 9 mm length. The location of air cavity is set close to metamaterial surface, to reach impedance matching with water.

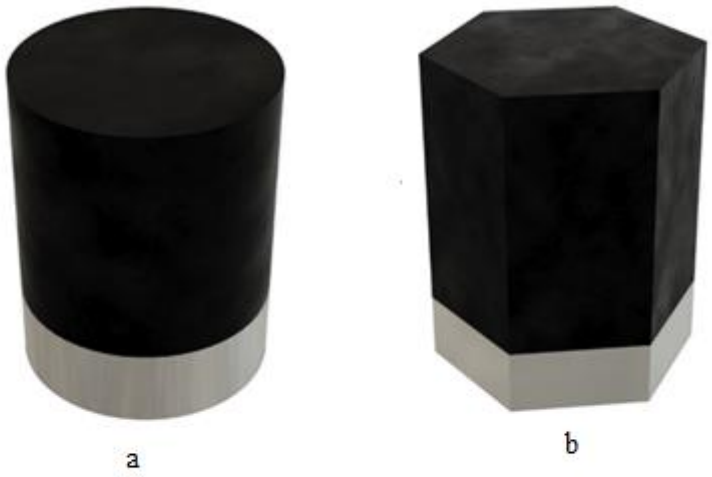

Figure 2. Metamaterials a) cylindrical and b) hexagonal form

Figure 1. shows the 3D and 2D models with/without air cavity, also, transformation of them. The density, and Young's modulus of backing steel are $\rho = 7.85\ x\ 10^3$ and $E = 3.6\ x\ 105$ (MPa). The loss factor (η) and Young's modulus (E) of rubber are frequency dependent. Fig. 2 shows cylindrical and hexagonal forms of metamaterial to see how 2D axisymmetric model is designed. Acoustic performance of 3D model is calculated by using hexagonal form. Bloch's boundary condition and Brillouin zone approach are used to decrease the computation time of the 3D model. Hexagonal form is divided into 12 same parts. According to this theorem, the acoustic performance of each part is equal to overall model (Maurin et al., 2017). Fig. 3 shows the reduced 3D FEA model.

RESULTS

Acoustic absorption performances of designed models are obtained by using pressure acoustic module, frequency domain of COMSOL Multiphysics 5.6. The incident acoustic wave is introduced to surface of water domain. The lower face of backing steel is set as low reflecting boundary. Since high absorption performance at low frequencies are aimed, the frequency range is determined up to 10.000 Hz. Fig. 4 and Fig. 5 show the absorption performance of 2D axisymmetric, and 3D FEA models, respectively. To compare and validate the 2D axisymmetric and 3D FEA models, acoustic absorption performance of these models with air cavity is shown in Fig. 6, together.

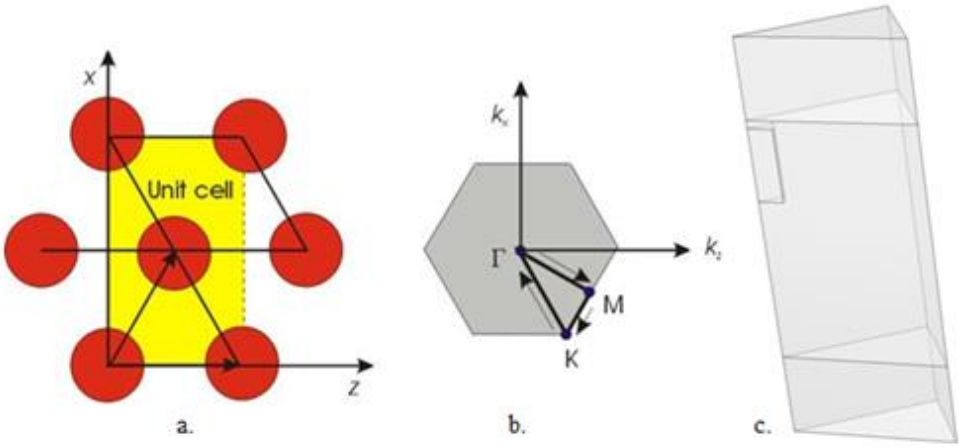

Figure 3. Hexagonal lattice a) unit cell, b) Brillouin zone (Software), and c) reduced 3D FEA model with air cavity

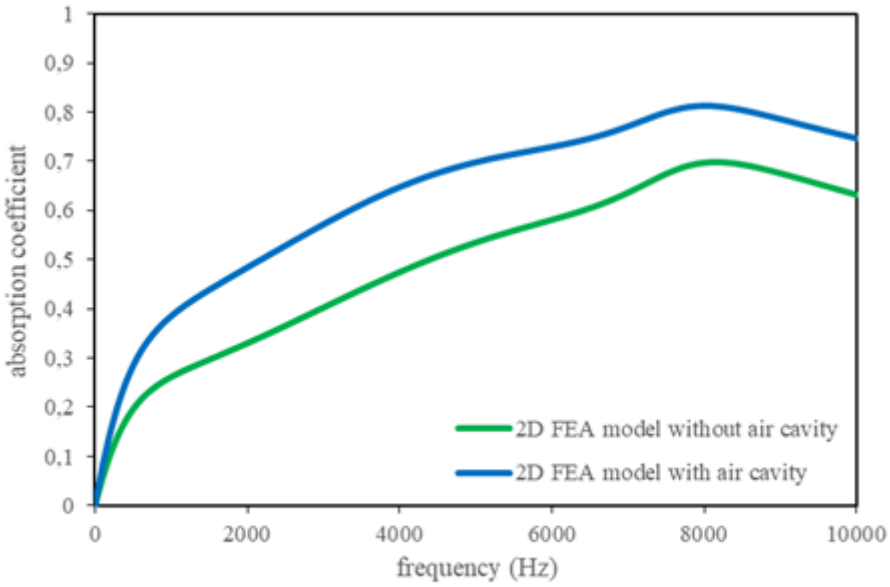

Figure 4. Acoustic performance of 2D axisymmetric FEA models

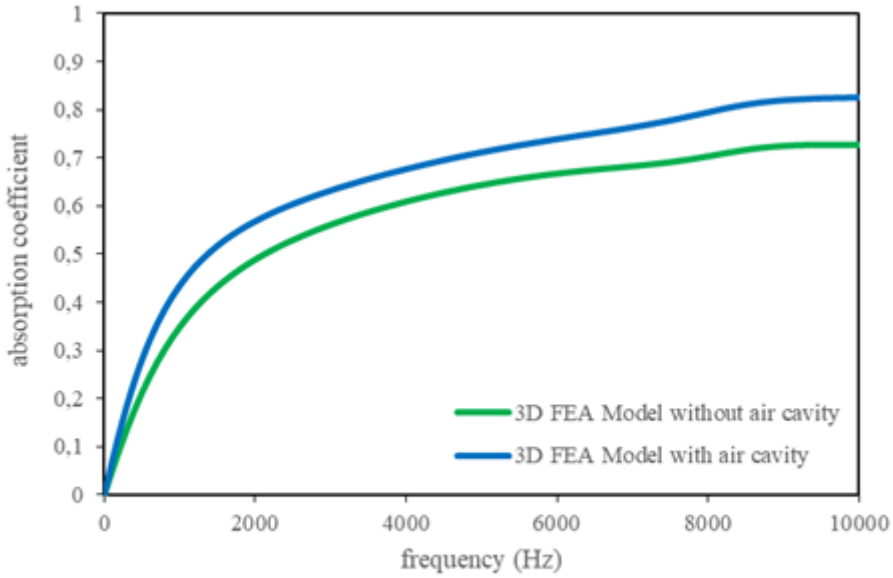

Figure 5. Acoustic performance of 3D FEA models

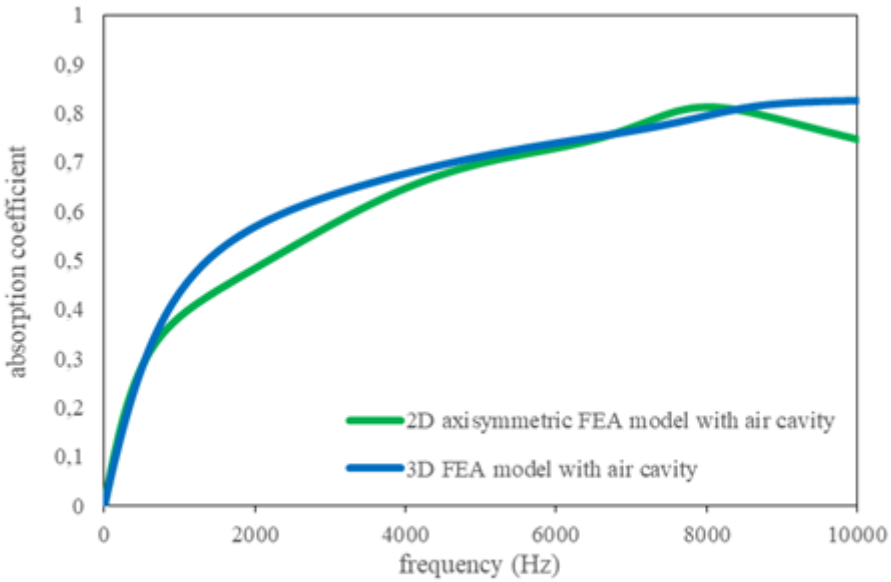

Figure 6. Comparison of 2D axisymmetric and 3D FEA models with air cavity

A. Optimization

The radius, and length of the air cavity are the main parameters that effect the acoustic absorption performance. To obtain mentioned parameters effects, several parametric studies are done. Firstly, radius of cylindrical cavity selected as a variable and introduced to 3D FEA model. Fig. 7 shows the results of the radius based parametric study. Then, length of cavity is selected as second parameter in terms of acoustic absorption performance of the metamaterial. Fig. 8 shows the effect of the cylindrical cavity length. Finally, both are introduced to 3D FEA model. Fig. 9 shows the effect of these parameters simultaneously. All parametric studies are done by using the 3D FEA model.

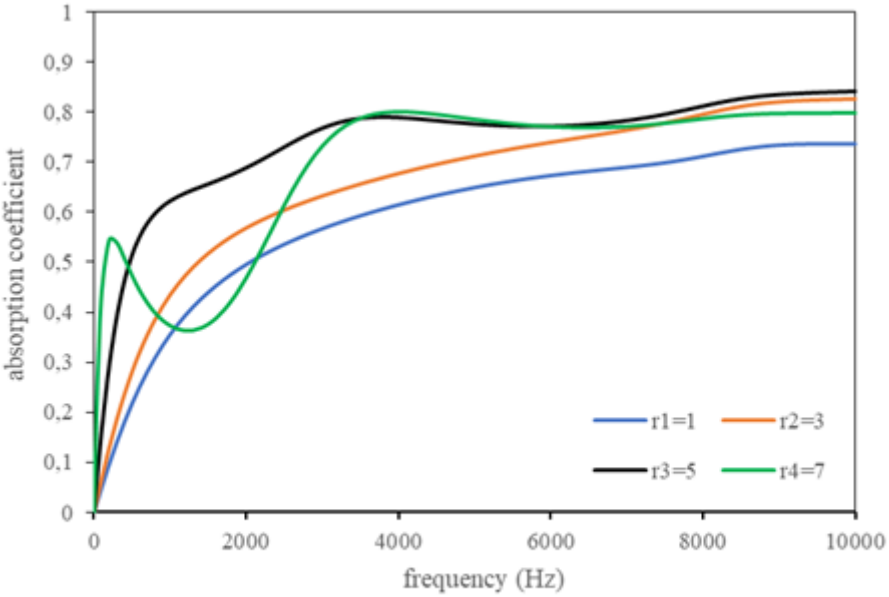

Figure 7. Parametric study results based on effect of cavity radius (mm)

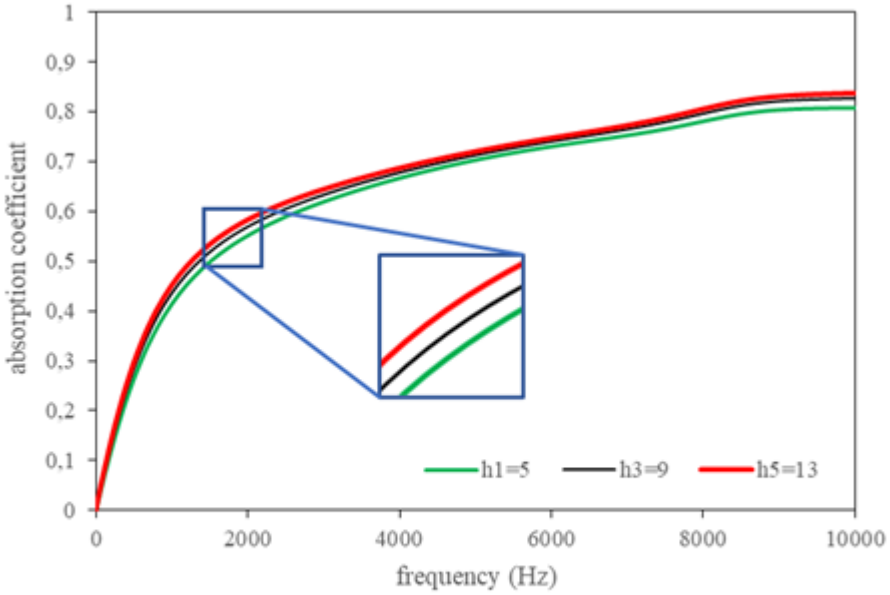

Figure 8. Parametric study results based on effect of cavity length (mm)

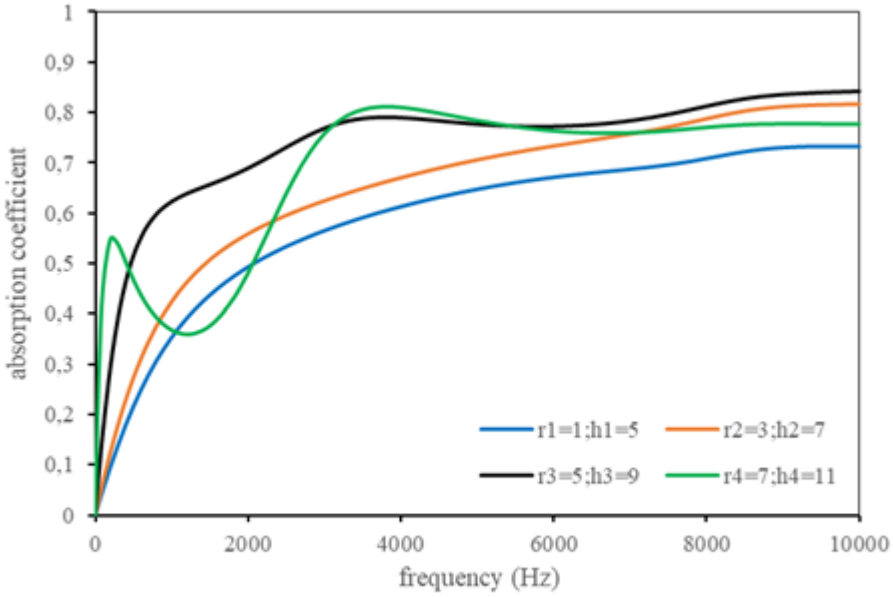

Figure 9. Parametric study results based on both effect of cavity length and radius (mm)

DISCUSSION

The metamaterial which includes an air cavity with 3mm radius and 9mm high, has an average absorption performance. There is a slightly difference between analyses results of 2D axisymmetric and 3D FEA models, resulting from reduced 3D model which constructed by using Brillouin zone approach. This approach is used to decrease the high time consuming on 3D model. There is a small difference between 1 and 4 kHz, remaining data is same in broad frequency range, and the difference between 2D and 3D models is in negligible range that shown in Fig. 6. After verifying the data, parametric studies are done based on cavity radius and high. By considered below and above values from default model, it is aimed to see optimal dimensions. Consequently, cavity radius is selected as 1, 3, 5, and 7 mm. It is observed that for radius greater than 5 mm, acoustic performance of the metamaterial has an unstable order. On the other hand, cavity high is selected as 5, 9, and 13 mm. Increasing cavity high results in poor improvement on absorption performance. After parametric studies are done separately, both terms are considered simultaneously. Due to the effect of the cavity high is very small, combined parametric study which include both radius and length parameters, do not show much difference than only radius-based study. Our future works will tend to optimize other parameters and reach perfect absorption mechanism.

CONCLUSION

Acoustic metamaterials are gained significant interest in the last few decades. Application of these material have a widespread field from electromagnetic to acoustic. In this study, an acoustic metamaterial that consist of rubber as matrix material, backing steel, and air cavity is introduced to eliminate acoustic waves by dissipate their energy. Hence, by the designed acoustic metamaterial, underwater vehicles especially submarines could not be detected by active Sonar systems. However, high acoustic absorption performance at low frequencies is still a challenging problem. Air cavity has a potential to overcome this issue. But it requires several arrangements on its dimension, shape, and location. In this study, it is aimed to reach how its dimension effect the acoustic performance of the metamaterial. For this purpose, several parametric studies are done, and it is shown that the radius of cavity is more efficient parameter than cavity high. However, increasing cavity radius could not provide

high acoustic absorption proportionally. It is determined that, 5 mm cavity radius shows better results than 7 mm in terms of stability. On the other hand, with the increasing cavity high, acoustic performance increases slightly but it is not considerable.

REFERENCES

Bai, H., Zhan, Z., Liu, J., & Ren, Z. (2019). From local structure to overall performance: An overview on the design of an acoustic coating. *Materials*, *12*(16), 2509.

COMSOL-Multiphysics. *Comsol Acoustic User Guide*. https://doc.comsol.com/5.3/doc/com.comsol.help.aco/AcousticsModuleUsersGuide.pdf

Gao, N., & Lu, K. (2020). An underwater metamaterial for broadband acoustic absorption at low frequency. *Applied Acoustics*, *169*, 107500.

Gaunaurd, G. (1977). One-dimensional model for acoustic absorption in a viscoelastic medium containing short cylindrical cavities. *The Journal of the Acoustical Society of America*, *62*(2), 298-307.

Luo, Z., Li, T., Yan, Y., & Zhou, Z. (2021). Analysis of Sound Absorption Performance of Underwater Acoustic Coating considering Different Poisson's Ratio Values. *Shock and Vibration*, *2021*.

Maurin, F., Claeys, C., Van Belle, L., Deckers, E., & Desmet, W. (2017). Bloch theorem applied to structures with additional symmetries: reduced unit cell and irreducible Brillouin zone. METAMATERIALS 2017, Date: 2017/08/28-2017/09/02, Location: Marseille,

Software, O. P. *Bloch's Boundary Condition*. https://optiwave.com/optifdtd-manuals/fdtd-blochs-boundary-condition/

Wu, H., Zhang, H., & Hao, C. (2021). Reconfigurable spiral underwater sound-absorbing metasurfaces. *Extreme Mechanics Letters*, *47*, 101361.

Zhang, W., & Song, Y. (2021). Anechoic Coating for Underwater Vehicles. *Inorganic and Organic Thin Films: Fundamentals, Fabrication and Applications*, *2*, 549-586.

INTERPRETATION OF EVIDENCE AND EXPERT FAULTS FOR LAWYERS

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ABSTRACT

After an event in the society, in order to satisfy the sense of justice and ensure social peace, it is necessary to clarify the judicial events and make those responsible pay the price for their actions. In this process, material evidence have a great importance.

While interpreting the material evidences analyzed as a result of scientific methods, technical studies and laboratory studies by Judge who are far from this field, various wrong evaluations may occur.

In our study, the importance of evidence, which is vital for forensic sciences, in illuminating the events and the findings about the wrong judgments in investigations/prosecutions were investigated. In addition, studies on the effects of faults in the collection and examination of evidence on the justice process, expertise reports, expert reports and scientific opinions have been researched.

Along with raising awareness about the mistakes experienced in the process of interpreting the evidence, it is aimed to prevent the criminals from being punished unjustly or getting rid of the crime due to the insecurity of evidence.

Keywords: Crime scene, Evidence, Expert errors

INTRODUCTION

The most important science that serves to reveal the truth in the clarification of crimes and forensic events is forensic sciences, also known as criminalistics. Although many different branches of science are used with a multidisciplinary approach in the resolution of forensic cases, the sub-disciplines of these branches of science, which usually have the suffix "forensic" at the beginning of the field name, are united under the umbrella of forensic sciences.

Forensic sciences, in its most general definition, has been described as the use of science in the resolution of forensic cases. Forensic science has sub-branches such as forensic medicine, forensic chemistry, forensic biology, ballistics, crime scene investigation (Horswell J. 2004).

Even if a judicial incident took place within seconds, it often takes years for the incident to be clarified with all the details and the punishments of those responsible to be decided. Because the action that is the subject of the event is a whole and many different information is needed to conclude the case. In this whole process, the event should be analyzed well and different information should be collected and interpreted correctly.

FINDING AND EVIDENCE CONCEPT

According to forensic scientists, an "incident" is a set of actions that occur as a result of an act specified as a crime in a certain place and within a time frame. When an event occurs, it is necessary to document the crime scene in order to reveal the connections between the people involved, the crime scene and the event, that is, the initial state of the crime scene should be documented during the investigation phase. In the next stage, the material evidence collected from the crime scene should be examined in accordance with science and technique. For this reason, the first step of forensic investigations and investigations is the crime scene.

The aims of crime scene investigation are to recognize the samples that have the quality of evidence, to collect them in a way that does not spoil the quality of evidence and to deliver them to the laboratory where the examination will be conducted (Saferstain R. 2004).

One of the most important reasons why the investigation and prosecution process is interrupted and the clarification of an incident is blocked at a certain point is the inadequacy of the crime scene investigation. The only data that prosecutors and judges have while carrying out the judicial process is usually the file where the documents from all stages of the case are collected. In other words, whatever is in the investigation or case file, the judgment is established accordingly.

Criminalistics specialists can be very experienced and knowledgeable in their field of expertise. Laboratories can accommodate very advanced devices equipped with the latest system technology. These good odds increase the likelihood of results from materials from the crime scene. However, as a result of an unsuccessful crime scene investigation, materials do not come to the laboratories, and positive results may not be obtained from the materials received. Most of the time, it is not possible to make up for the mistakes made in the crime scene investigation. Missing evidence negatively affects the whole process. Sometimes, the perpetrator may go unpunished, causing the victim to become more victimized, and sometimes an innocent person may be punished or suffer until his innocence is proven.

A researcher has some goals that he or she tries to achieve regarding the events that occur. These;

a. Detection of the event

b. Detection of the crime scene

c. Detection of evidence

d. Documentation and documentation process

to. It is the determination of the crime scene, the time of the event, the relationship between the perpetrator and the victim (K.P.L. 2005).

"Things that are tangible, with a material (physical) structure, other than objection and martyrdom (witness)" are defined as material evidence (Official Gazette. 1983). Every evidence that comes to the laboratory can only be considered as evidence in courts when it is evaluated and interpreted with correct and accepted scientific techniques. wins (Kalfoglu E. 2002).

A wide range of identified findings have been categorized for better understanding. The statements given by those who experienced the event and those who saw the event are called declarative evidence, and the physical evidence that can be felt with the five senses directly or with the help of tools/equipment is called material evidence (Sevinç, 2011). Evidence such as fingerprints, blood, chemicals, footprints, weapons are considered among the material evidence. Showing these evidences on the sketch helps to understand the event (Picture 1)

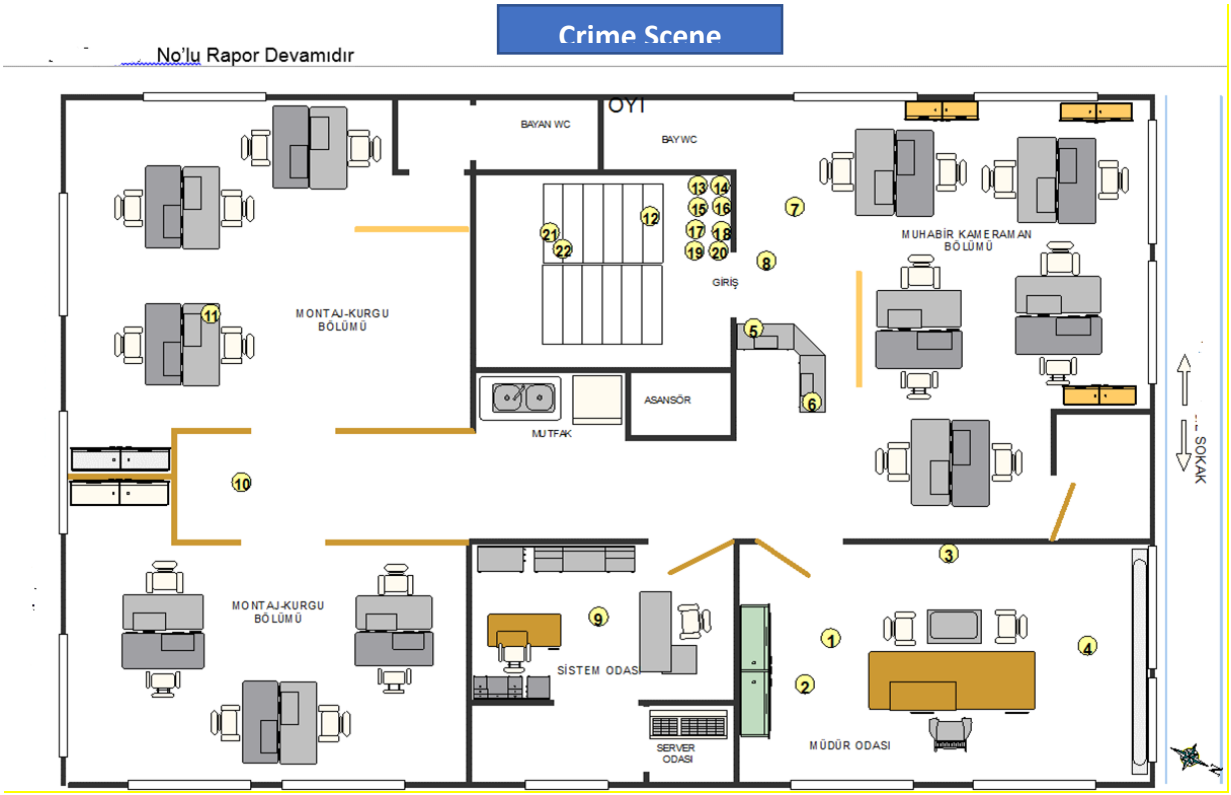

Figure 1: Example of crime scene sketch

Points to be considered according to Evidence Types:

Analysis and interpretation of biological evidence:

All kinds of findings that break, fall or flow from the body of living things are called. Biological findings include blood, hair, saliva, runny nose, sweat, semen, body swaps, vaginal, anal, penis, oral, tissue pieces, nails, urine-stool, dandruff and skin rashes. The main purpose of examining biological findings is to reach DNA.

Because it requires technical knowledge, the crime scene investigator usually decides which biological findings to collect. Sometimes the prosecutor says, "Take this too." But it does not interfere how to get it.

Biological Evidence; It can be taken directly (such as bloody clothes), cotton swab (dry swab and physiological water), Scraping (dry blood stain) methods. Since many lawyers do not have an opinion on this issue, it does not occur to them to blame the experts for the corrupted evidence. However, in some cases, the only way to win a case is to prove that the evidence is insecure or incomplete.

The most common biological evidence is blood. But drops of blood are not always visible to the naked eye. Making visible biological findings invisible to the naked eye is possible with blood detection fluids. This method is popularly known as Blue Light. Blood detection liquids such as Luminol-Blue Star, which are applied to the surface where the blood stain is sought, glow in a greenish blue color in the dark. No light source is required. It can even give positive results to blood stains that have passed for years. Luminol/Blustar vs. It would be beneficial for the lawyers to have information about the situations in which the test should be done. Because many investigative units are not aware of this test.

Biological Findings are sensitive findings. They are open to temperature, humidity, contamination. They break easily. Their protection is important. If there is no result from biological evidence, the reason should be investigated. Loss of evidence due to law enforcement/expert error is a frequently encountered but rarely questioned issue. Loss of evidence significantly affects the investigation process.

It is very difficult for the personnel not to leave biological materials on the scene, gloves, bonnets, masks and protective clothing should be worn. Sometimes the Law Enforcement/Specialist will damage the

evidence completely to destroy the evidence left by himself. For example, a police officer who accidentally touches a gun can thoroughly clean all parts of the gun and destroy all evidence before giving it to the lab. However, no lawyer questions the situation that there is no fingerprint on the gun.
Evidence must be dried and packaged. Evidence packaged without being thoroughly dried will most likely deteriorate. Because biological evidences are in protein structure, they are open to microbial contamination. Suspects, complainants or forensic supervisors often cannot control the conditions under which biological evidence is collected, stored, transported to the laboratory and analyzed. Detection of loss of evidence can affect the investigation and prosecution process. After analyzing the biological evidence, it is necessary to have a general idea about which methods are used when interpreting. In isolated/closed societies such as villages, especially if consanguineous marriages are common, erroneous results may be obtained in DNA matches. However, since DNA detection is accepted as conclusive evidence, grievances are often caused.
You should have an idea about the accuracy rates specified in the laboratory results. For example, 99.96% accuracy means that 4 out of ten thousand detections may be incorrect.
In cases where DNA cannot be obtained, what can be learned from other genetic studies should be investigated. For example, the Y chromosome is the same in all male members of the family. Even if the suspect's DNA is not in the data bank, it can be learned from which family he is. There is a lot of information about us in our DNA. In unsolved cases, a DNA cannot be compared with another DNA, but it should be questioned whether this DNA belongs to a man, a woman, a person with colored eyes, or how old it is, and evidence should be sent to institutions that can perform this analysis.

Analysis and Interpretation of Chemical Evidence:
These are all findings that have chemical properties on or around the victim-victim-perpetrator at the crime scene and that require chemical examination. Chemical evidence; shot residues, explosive materials, narcotic substances, dyes, polymers and adhesives, fiber, fabric pieces, bottle-glass pieces, soil samples, fire residues.
The most well-known method used to identify the shooter; It is the detection of shot residue from the swap sample taken from the hands, arms, faces or clothes of the persons. When taking hand swaps, mistakes are often made and results are misinterpreted. In incidents where firearms are used, attention should be paid during the intervention and hands should not be washed, since it is considered that the hand swabs of the persons involved in the incident give information about the incident. This should be included in the reports. Otherwise, the evidence is doubted. People should be prevented from making physical contact with each other and with other people. Otherwise, chemicals may be transmitted from someone who has fired to someone who has not fired. It should be ensured that the persons receiving the hand swab do not change their clothes. If there is any doubt, it can be interpreted in favor of one party. In each contact, the results of the person who shot and the person who did not are mixed. For example, if there is a person close to the shooter at a distance of less than 1 meter, the shot swap will be positive even if he did not shoot. A person who extends his hand for defensive purposes to someone who has shot at him at close range will also have shot residues on their hands. This positive value should also be interpreted correctly by the lawyers.

Analysis and Interpretation of Physical Evidence:
Evidence that has a material structure and is not counted in other types of evidence generally falls under the category of physical evidence. The most well-known physical evidences; firearms (long and short barreled), shotguns, cartridges, casings, bullet cores, bullet liner and parts, core, shotgun cartridges, shotgun pellets, shotgun plug, ammunition, knives, wedge, dagger, assault, knives, machetes, swords, shovels, pointed and grooved knives, mace, choke chain, brass knuckles, bayonets, sticks, sticks, and skewers (Mardin Bar Association, 2011). It would be appropriate to read the reports about whether these objects are criminal elements and to get opinions from more than one expert.

Analysis and Interpretation of Trace Evidence:

living or inanimate objects; Findings that are left on objects in two or three dimensions, visible or invisible, that have characteristic features and that occur as a result of a certain pressure are called trace evidence (Karakuş, 2009). The most important trace evidences; fingerprints and palm prints, shoe prints, vehicle tire prints, tooth prints, tool prints, ear prints. There are no data banks for evidence other than fingerprints and palm prints. These findings contribute to the solution of the case if there is a significant similarity as a result of the comparison of the trace and the tool. What lawyers should know here is that trace analysis is done by a manual expert with the naked eye and with the help of instruments such as microscopes and magnifying glasses, and the opinion may vary from expert to expert. For this reason, it would be appropriate to request a re-examination of the criminal reports that are considered to be false by another authority.

Analysis and Interpretation of Cyber Evidence, HTS, Base and Digital Evidence:

Developing technology has introduced new types of evidence to forensic sciences and those working in this field. Cyber evidence provides great benefits in crimes committed in the virtual environment or in collecting the elements of crimes in the virtual environment. Many crimes, from theft of social media accounts to breaking the cyber firewalls of banks, can make people victims. Due to the fact that it requires expertise in itself, it will be useful for lawyers to know at least which issues can be detected and which cannot be determined, and the recognition of institutions, organizations and experts in the field of cybercrime will be useful in interpreting the events.

HTS and Base analysis is a system that records the calls of people with mobile phones and other fixed lines. Generally, these records are kept by a certain central institution of each country, and telecommunication companies are also obliged to keep data for a certain period of time. In these records, a record of the conversation of the people with which number is kept, as well as the base station from which both parties are talking on the phone, and therefore where they are as a region. These base stations report where the person is in general, but they cannot address the point because each base station has a certain capacity. If there is a call over this capacity, it is transferred to another base station and the call is made over the other base station.

Digital evidence is the evidence needed if a part of the event takes place in the virtual environment. For example, when a complainant declares that his/her own images are kept on someone else's phone without permission and that he/she is blackmailed, that mobile phone must be examined. Images and other data on the mobile phone that are subsequently deleted can be recovered to a certain extent by cyber experts. All the data obtained in this search are examined by experts and it is investigated whether there is data subject to crime. What lawyers need to know in this regard; It should be ensured that these evidences are examined by good experts, and in case of doubt, a re-examination should be requested.

Voice and Picture Comparisons:

In the examination and comparison of the images, studies are generally carried out to determine whether the people in the security cameras are the suspects detected. For example, whether the person withdrawing money from an ATM in a fraud event is one of the Suspicious persons is a frequently asked question by the prosecutor's office and the courts. In this regard, support can be obtained from various software, and a comparison report is prepared by experts in their fields. The most important problem is that the camera images are not good enough and therefore the person on the camera is not recognized. The most important issue for lawyers to know is the mismatches and the knowledge that the camera in hand can be improved with various programs.

CONCLUSION

In the last twenty years, the method of going from the evidence to the accused instead of concluding the crime by starting from the accused is the preferred method due to human rights and ethical rules. Because of this understanding, the importance of evidence has gained even more importance. However, each of

the stages of finding, collecting, preserving, analyzing and interpreting the evidence correctly after analysis is of great importance. In order for the evidences to be of maximum benefit in solving the case, they should be well known and their characteristics should be well known.

Evidence security requires expertise in itself. For this reason, it is necessary to analyze and interpret the evidence correctly for the establishment of justice.

REFERENCES

Horswell J. 2004. The Practice of Crime Scene Investigation, p: 33, CRC Press, Washington DC.

Saferstain R. 2004. Criminalistics: An Introduction to Forensic Science, Pearson Prentice Hall, New Jersey.

Kriminal Polis Laboratuvarları Dairesi Başkanlığı 2005. Olay Yeri İnceleme Teknikleri Temel Eğitim Kitabı, Ankara.

Resmi Gazete, Polisin Adli Görevlerinin Yerine Getirilmesinde Delillerin Toplanması, Muhafazası ve İlgili Yerlere Gönderilmesi Hakkında Yönetmelik. Madde 3. Resmi Gazete Yayım Tarihi ve Sayısı: 17.2.1983 – 17962 (http://mevzuat.ozlukblog.com/mevzuat/YONETMELIKLER/PolAdli.htm Erişim tarihi: 16.01.2014)

Kalfoğlu E., Yükseloğlu EH. 2002. İnsan Genomu, Suç ve Suçun Önlenmesi, Dokuz Eylül Üniversitesi Tıp Fakültesi Dergisi, s.71-81 İzmir.

Sevinç, A. 2011, Olay Yeri İnceleme, Emniyet Genel Müdürlüğü Kriminal Daire Başkanlığı, Ankara,

Mardin Barosu 2011. Ceza Muhakemesi ve İlgili Mevzuat, Sayfa 589, Seçkin Yayıncılık, Mardin

Karakuş O. 2009 Kriminalistik, s: 8 Adalet Yayıncılık, Ankara.

THE EFFECTS OF APPLYING MICROFLUIDIZATION AT DIFFERENT CYCLES ON THE PROPERTIES OF GRAPHENE PLATELETS

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ABSTRACT

In recent years, graphene platelets (GPLs) have attracted attention as reinforced material to improve the properties of materials, thanks to their high surface area, superior mechanical, thermal and electrical properties. On the other hand, they have exhibited agglomeration tendency due to the Van der Waals attraction between them. Therefore, they need to be dispersed before mixing with matrix powders. Sonication and planetary ball milling are the most common preparation techniques used in dispersions of GPLs. In this study, as an alternative to these techniques, the effects of dispersing with microfluidization technique on GPL's properties and degree of dispersion were investigated. Microfluidization is a homogenization method in which high pressure is applied to a fluid that is forced to pass through a microchannel (diameter <100 μm). During the study, GPLs have exposed to 1, 2, 4 and 8 cycles of microfluidization followed by 3 h of sonication. Morphological images (SEM, Zeiss 50 VP), platelet measurements (Malvern Instruments, Hydro 2000) and Raman (WITec, alpha 300) analyzes of the GPLs obtained in different cycles were carried out. Morphological images and size measurements revealed that the GPL sizes were reduced by ~13, 23, 48, and 65 % with the 1, 2, 4, and 8 cycles of microfluidization. According to Raman analyses, up to 4 cycles the dispersion in GPLs increased effectively. When the number of cycles increased to 8, there was no significant change in the dispersion of GPLs compared to 4 cycles.

Keywords: Microfluidization, GPLs, SiAlON, Morphology

INTRODUCTION

In recent years, graphene platelets (GPLs) have attracted attention as reinforced material to improve the properties of materials, thanks to their high surface area, superior mechanical, thermal and electrical properties (Pop et al., 2012, Balandin et al., 2011, Novoselov et al., 2005) On the other hand, they have exhibited agglomeration tendency due to the Van der Waals attraction between them. This makes difficult their homogeneous distribution within the matrix, which they are added (Soldano et al., 2010). Therefore, they need to be dispersed before mixing with matrix powders.

In this study, microfluidization technique was used as an alternative to the techniques generally used in the dispersion of GPLs such as sonication and planetary ball milling (Taylor, 2012, Suslick et al., 1999, Shen et al., 2010). Microfluidization is a homogenization method in which high pressure is applied to a suspension that is forced to pass through a microchannels. During the microfluidization process, the suspension containing particles loaded into the inlet chamber is directed into y-type or z-type narrow channels under high pressure by a pump. At this stage, the particles break off or separate from each other due to the continuous impact and shear rate effect. Microfluidization device can complete the exfoliation process in a much shorter time than sonication or sonication+centrifuge methods (Karagiannidis et al., 2016, Yurdakul et al., 2012, Yurdacan et al., 2021). Microfluidization has been used in the dispersion or exfoliation of various materials. Yurdakul et al. (Yurdakul et al., 2012) were

able to exfoliate two-dimensional (2D) boron nitride nanosheets from large flake micro-sized hexagonal boron nitride (h-BN) with microfluidization technique.

The characteristics of GPLs have affected their reinforcement strength on the matrix material. Therefore, the motivation of this study is to investigate the effects of microfluidization technique on the properties and dispersion degree of GPLs. For this purpose, GPLs have been exposed to 1, 2, 4 and 8 cycles of microfluidization followed by 3 h of sonication.

MATERIALS AND METHODS

The properties of the untreated GPLs (Graph. Chem. Ind. Comp.) used during the study were ~ 12.2 µm average lateral size, 5-8 nm thickness and 99.9 % purity. First of all, 3 h of probe-sonication were applied to the GPLs. Then, GPLs exposed to 1, 2, 4 and 8 cycle microfluidization (M-110P, Microfludics Corp.) processes. Platelet sizes were measured (Malvern Instruments, Hydro 2000) after all microfluidization process. The morphological secondary electron images (SE-SEM) of GPLs obtained in the scanning electron microscope (SEM-Zeiss 50 VP). Raman analyzes have been performed on all GPLs.

RESULTS

Table 1 presents the measured platelet sizes of the GPLs after each microfluidization cycle. In addition, Figure 1 shows morphological SE-SEM images of untreated GPLs and GPLs dispersed at different microfluidization cycles. Both size measurements and morphological images revealed that the platelet sizes of the GPLs decreased with increasing number of microfluidization cycles. The size of untreated GPLs (12. 22 µm) reduced by ~13, 23, 48, and 65 % to 10.55, 9.35, 6.85 and 4.20 µm with the 1, 2, 4, and 8 cycles of microfluidization, respectively. Under the impact of the collision and shear forces generated in the interaction chamber, the platelets were fragmented and became small during microfluidization processes (Başkut, 2019).

The platelet size difference was evident among the untreated GPLs (Fig. 1 a). On the other hand, it was observed that the platelet sizes tended to be similar with increasing number of cycles. GPLs dispersed with 8 cycles of microfluidization had a narrower size distribution than untreated GPLs.

Table 1. The platelet sizes of the GPLs depending on the number of microfluidization cycles (Başkut, 2019).

Number of microfluidization cycles	Average Platelet Size (µm)
0	12.22 (05.40-30.15)
1	10.55 (04.02-25.33)
2	09.35 (03.40-20.45)
4	06.85 (01.42-12.32)
8	04.20 (0.60-06.65)

Table 2 includes the average values of the ratios of 2D band intensity to G band intensity (I_{2D}/I_G) calculated using at least ten Raman analysis results from each GPLs (Başkut, 2019). 2D-band gives information about the thickness of the GPLs. The ratio of the 2D-band intensity to the D-band intensity (I_{2D}/I_G) is generally used for interpretation of the number of layers (Li et al., 2011, Childres et al., 2013). An increase in the I_{2D}/I_G ratio means that the number of layers decreases. The average I_{2D}/I_G value of untreated GPLs indicated multi-layered GPLs. However, this ratio value increased as the number of applied microfluidization cycles increased. This revealed that the

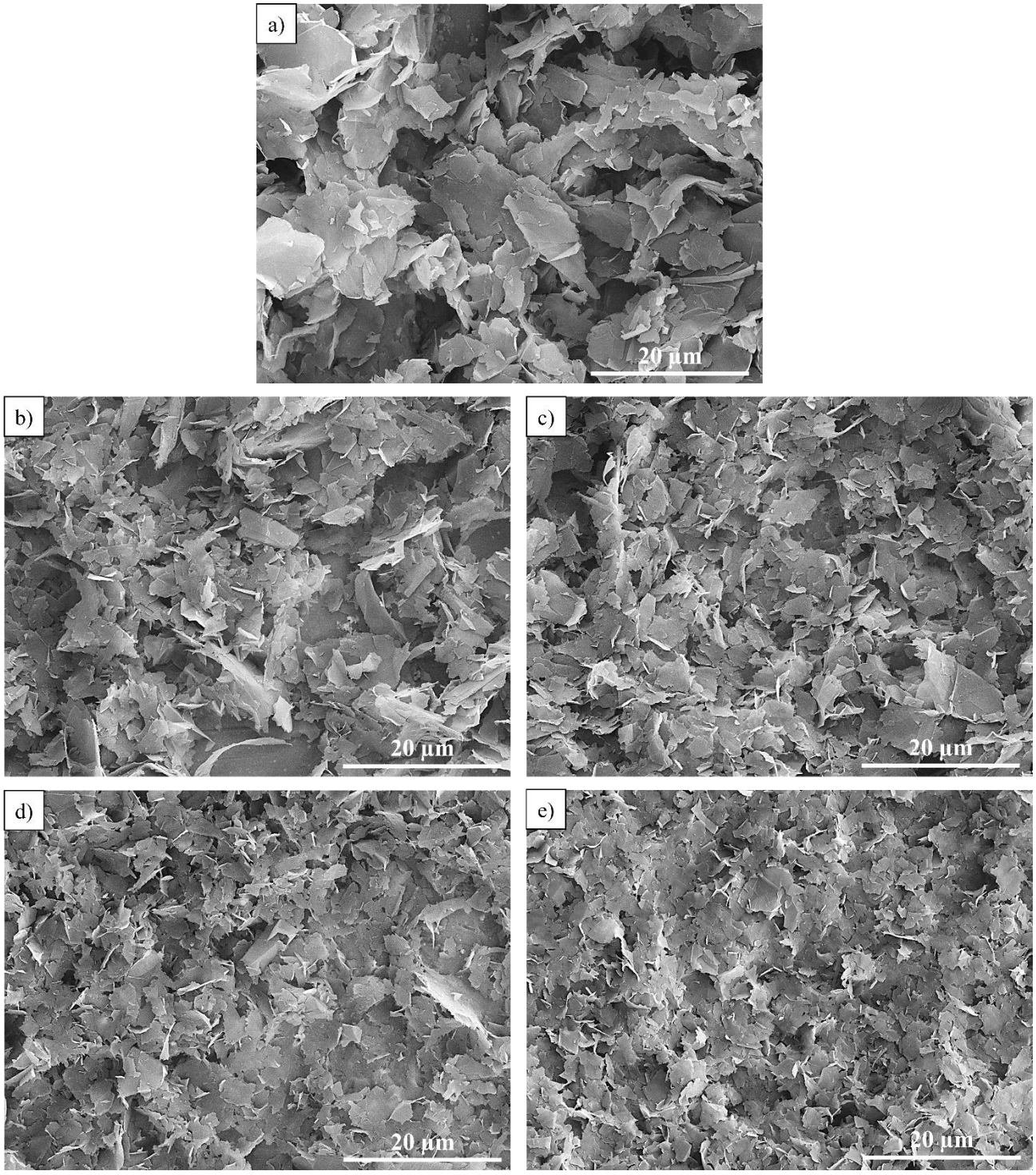

Figure 1. Morphological SE-SEM images of the (a) untreated GPLs and (b) 1, (c) 2, (d) 4, (e) 8 cycles microfluidized GPLs (Başkut, 2019).

microfluidization process reduces the platelet size as well as dispersed the agglomerated GPLs from each other. On the other hand, the ratio increased rapidly up to the GPLs microfluidized at 4 cycles but slowed down when the number of cycles increased to 8. This showed that after a certain number of cycles, the microfluidization process break up the GPLs rather than dispersing them.

Table 2. Average I_{2D}/I_G values calculated by using at least ten Raman measurements from untreated GPLs and GPLs dispersed at 1, 2, 4 and 8 cycles of microfluidization (Başkut, 2019).

Number of microfluidization cycles	Average I_{2D}/I_G
0	0.870 (0.770-0.980)
1	0.920 (0.800-0.990)
2	0.960 (0.830-1.020)
4	0.990 (0.890-1.040)
8	0.992 (0.890-1.040)

CONCLUSION

In this study, GPLs were prepared by microfluidization technique as an alternative and new approach to sonication and ball milling techniques which are generally used for dispersing GPLs. For this purpose, 1, 2, 4 and 8 cycles of microfluidization processes were applied to the GPLs. Morphological SE-SEM images and size measurements revealed that the platelet size of GPLs decreased as the number of microfluidization cycles increased. Further, Raman analyzes showed that GPLs thinned (became less layered) as the number of cycles increased. However, the dispersion of GPL agglomerates was rapid up to 4 cycles and slowed when the number of cycles increased to 8. This indicated that after a certain number of cycles, the microfluidization process breaks up the GPLs rather than dispersing them.

ACKNOWLEDGEMENTS

The Eskisehir Technical University Scientific Research Projects under the project numbers of 1606F570 supported this work. Authors would like to thank to Prof. Dr. A.Tuğrul Seyhan for providing the microfluidizer.

REFERENCES

Balandin AA 2011. Thermal properties of graphene and nanostructured carbon materials. Nature Materials, 10:569-581.

Başkut S 2019. The Effect of Different Graphene Nanoplatelets Addition on Mechanical, Thermal and Electrical Properties of SiAlON Ceramics. PhD Thesis. Eskisehir Technical University, Institute of Graduate Programs.

Childres I, Jaureguib LA, Park W, Cao H, Chen YP 2013. Raman spectroscopy of graphene and related materials. 97: 173109.

Karagiannidis PG, Hodge SA, Lombardi L, Tomarchio F, Decorde N, Milana S, Goykhman I, Su Y, Mesite SV, Johnstone DN, Leary RK, Midgley PA, Pugno NM, Torrisi F, Ferrari AC 2016. Microfluidization of Graphite and Formulation of Graphene-Based Conductive Inks. *Acs Nano*, 11(3): 2742-2755.

Li C, Li D, Yang J, Zeng X, Yuan W 2011. Preparation of single- and few-layer graphene sheets using Co deposition on SiC substrate. Journal of Nanomaterials, 319624.

Novoselov KS, Geim AK, Morozov SV, Jiang D, Katsnelson MI, Grigorieva IV, Dubonos SV, Firsov AA 2005. Two-Dimensional Gas of Massless Dirac Fermions in Graphene. Nature, 438: 197–200.

Pop E, Varshney V, Roy AK 2012. Thermal properties of graphene: fundamentals and applications. MRS Bulletin, 37(12): 1273–1281.

Soldano C, Mahmood A, Dujardin E 2010. Production, properties and potential of graphene. Carbon, 48: 2127-2150.

Suslick KS, Price GJ 1999. Applications of ultrasound to materials chemistry. Annual Review of Materials Science, 29:295-326

Shen J, Shi M, Ma H, Yan B, Li N, Hu Y, Ye M 2010. Synthesis of hydrophilic and organophilic chemically modified graphene oxide sheets. Journal of Colloid and Interface Science, 352:366-370

Taylor, AC 2012. Processing of polymer nanocomposites. Manufacturing Techniques for Polymer Matrix Composites (PMCs), 95-119.

Yurdakul H, Göncü Y, Durukan O, Akay A, Seyhan AT, Ay N, Turan S 2012. Nanoscopic characterization of two-dimensional (2D) boron nitride nanosheets (BNNSs) produced by microfluidization. Ceramics International, 38:2187-2193.

Yurdacan HM, Mufrettin MS 2021. Functional green-based nanomaterials towards sustainable carbon capture and sequestration in Sustainable Materials for Transitional and Alternative Energy, ISBN: 9780128243992

BİYOGAZ VE BİYOGAZDAKİ SON GELİŞMELER

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ÖZET

Fosil yakıt kaynaklarının günden güne azalması, artan enerji ihtiyacı ve fosil yakıtların çevreye verdiği zarar, yenilenebilir enerji kaynaklarına gereksinimi artırmıştır. Biyogaz da bu yenilenebilir enerji kaynaklarından biridir. Biyogaz, organik maddelerin, oksijensiz ortamda belirli tür bakteri ya da bakteri gruplarıyla farklı evrelerden geçerek parçalanmasıyla oluşmaktadır. Bu derleme çalışmasında biyogaz ve oluşumu, potansiyel biyogaz kaynakları, biyogazın oluşumunu etkileyen faktörler (pH, sıcaklık, organik yükleme oranı, uçucu yağ asitleri, karbon-azot oranı, alıkonma süresi vb.), biyogazın avantajları ve kullanım alanları, diğer enerji türleri ile kıyaslanması yanı sıra biyogaz üzerine yapılan güncel çalışmalar incelenmiştir. Bunlardan bazıları şunlardır: abamektin pestisitinin biyogaz üretimine etkisi, ülkemizdeki, canlı ve kanatlı hayvanlardan elde edilebilecek biyogaz potansiyeli, biyogazın saflaştırılması (silikon bileşiklerinin giderimi), nano boyuttaki partiküllerin biyogaz üzerine etkisi, farklı türde materyallerin birlikte sindiriminin biyogaz verimi üzerine etkisi, farklı türde ön arıtma işlemleri (ozonlama, mezofilik aerobik ön arıtım, ötektik çözücülerin kullanılması) ile biyogaz veriminin incelenmesi, yapay sinir ağları kullanılarak biyogaz üretiminin modellenmesi, iz elementlerin biyogaz üretimi üzerine etkilerinin modellemeler ile araştırılması. Yenilenebilir bir enerji türü olarak biyogazın, enerji tüketimi ve ihtiyacı arttıkça, çevresel etkisi ve ekonomik getirisi de göz önünde bulundurularak öneminin günden güne artacağı umulmaktadır.

Anahtar Kelimeler: Yenilenebilir Enerji, Biyogaz'daki Son Gelişmeler, Biyogaz Potansiyeli

Teşekkür

Bu çalışmayı destekleyen Gazi Üniversitesi BAP Birimine 06/2018-30 numaralı BAP Projesi kapsamında verdikleri destek için teşekkür ederiz.

BIOGAS AND RECENT DEVELOPMENTS IN BIOGAS

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ABSTRACT

With the decrease of fossil fuel resources day by day, the increasing energy need, and the damage caused by fossil fuels to the environment, the need for renewable energy sources has increased. Biogas is one of the types of energy used as a renewable energy source. It is formed by the decomposition of organic substances by passing through different stages with certain types of bacteria or bacterial groups in an oxygen-free environment. In this review study, biogas and its formation, potential biogas sources, factors affecting the formation of biogas (pH, temperature, organic loading ratio, volatile fatty acids, carbon-nitrogen ratio, retention time, etc.), advantages and uses of biogas, comparison with other types

of energy, In addition, current studies on biogas were examined. Some of these are the effect of abamectin pesticide on biogas production, the potential of biogas to be obtained from live and poultry in our country, the purification of biogas (removal of silicon compounds), the effect of nano-sized particles on biogas, the effect of co-digestion of different types of materials on biogas yield, different types of pretreatment Investigation of biogas yield by processes (ozonation, mesophilic aerobic pretreatment, use of eutectic solvents), modeling of biogas production using artificial neural networks, investigation of the effects of trace elements on biogas production by modeling. It is hoped that the importance of biogas, as a renewable energy type, will increase day by day as energy consumption and need increase, taking into account its environmental impact and economic return.

Keywords: Renewable Energy, Recent Developments in Biogas, Biogas Potential

Acknowledgment

We would like to thank Gazi University BAP Unit for their support within the scope of BAP Project numbered 06/2018-30.

1. Giriş

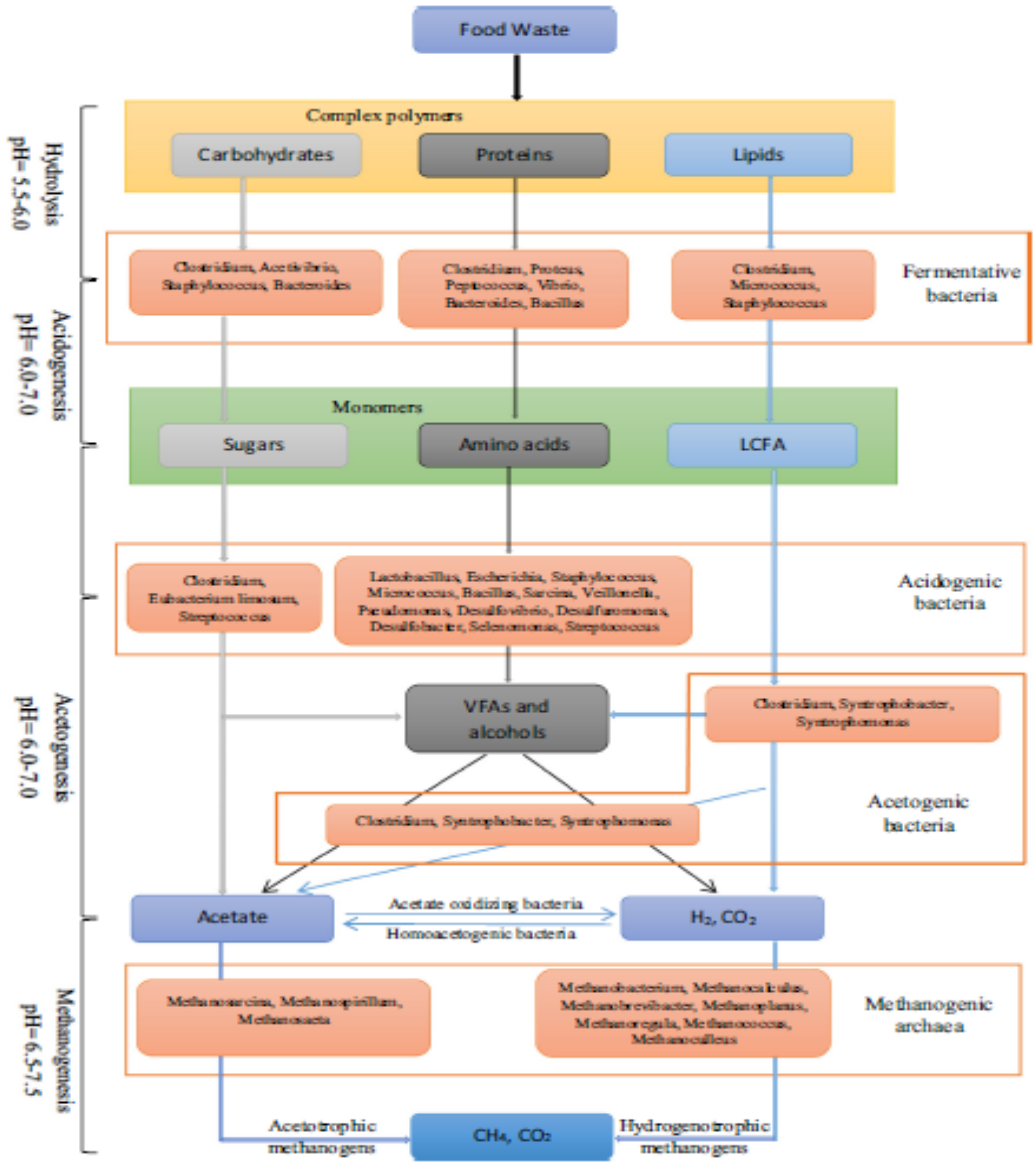
Kentleşme, tarım ve endüstriyel faaliyetler sonucu meydana gelen organik atıklar, finansal ve çevresel açıdan problemlere yol açmaktadır. Organik atıklar, çoğunlukla etkin bir şekilde değerlendirilmeden doğaya bırakılmakta, depolanmakta, yakılmakta ya da etikili bir şekilde kullanılmamaktadır. Belirtilen uygulamalar neticesinde organik atıkların, tamamen bozunması sağlanamamakta ve ülkenin finans kaynağı olarak önemli bir yeri olmasına rağmen, çevre, doğa ve insan sağlığı için tehlike faktörü haline gelmektedir. Kontrolsüz depolanan ve ayrışan atıklar, sağlığımıza olumsuz etki eden ve iklim değişikliğinde önemli rol oynayan CH_4 ve CO_2 gibi sera gazlarının oluşmasına sebep olmaktadır. Organik atıkların kontrolsüz depolanması, koku, sinek ve patojen oluşumu ile hijyen şartlarının kötüleşmesine sebep olmaktadır. Nitrat birikimi, toprak yapısı ile toprağın bakteri yapısının bozulmasına, nitratın yüzey ve yeraltı sularına karışarak sebze-meyve tüketimi ve içme suyu aracılığıyla da insan ve diğer canlı habitatını tehdit etmesine neden olabilmektedir. Temiz bir enerji kaynağı olan biyogaz başlıca hayvan gübresi olmak üzere özel olarak yetiştirilen bazı bitkilerden, tarımsal ve her türlü organik atıktan ortam için ideal mikroorganizmaların yardımıyla anaerobik arıtım sonucunda elde edilmektedir. Şekil 1.'de biyokütle kaynakları gösterilmiştir (Deviren ve ark, 2017).



Şekil 1. Biyokütle Kaynakları (Deviren ve ark, 2017).

2. Biyogaz Nedir, Özellikleri ve Avantajları Nelerdir ?

Gıda atıkları, bitki atıkları, hayvan gübreleri, arıtma çamurları, belediye katı atıklarının biyobozunur kısımları vb. organik maddelerin oksijen yokluğunda çürüdüğünde gaz meydana gelmektedir. Meydana gelen bu gaz, %40-70 oranında metandan oluşmaktadır. Kalan kısmın çoğunu CO_2, diğer gazlar, bileşikler ve iz elementler (H_2O, O_2, S_2, H_2S) oluşturur. Oluşan bu gaz, kötü, ağır koku ve is olmadan ateşlendiğinde sıvılaştırılmış petrol gazı (LPG) ya da sıkıştırılmış doğal gaza (CNG) benzer şekilde, temiz bir biçimde yakılabilir. Oluşan bu gaz, biyogaz olarak isimlendirilmektedir (Abbasi ve ark, 2011). Biyogazı oluşturan 4 aşama ve her aşamada görev alan bakteriler Şekil 2.1.'de ayrıntılı olarak verilmiştir.



Şekil 2. Biyogazı oluşturan 4 aşama ve her aşamada görev alan bakteri ve bakteri grupları (Pramanik ve ark, 2019).

Biyogazın ısıl değeri LPG ve CNG'den az olmasına rağmen iyi bir ısıl değere sahiptir. Farklı türde yakıtların ısıl değerleri Çizelge 1.'de verilmiştir (Abbasi ve ark, 2011). Doğalgaz ve biyogazın bileşimlerinin oransal karşılaştırılması Çizelge 2.'de verilmiştir.

Çizelge 1. Çeşitli yakıtların ısıl değerlerinin karşılaştırılması (Deviren ve ark, 2017).

Yakıt	**Yaklaşık Isıl Değer**
Doğal Gaz	8600 kcal/m^3
Sıvılaştırılmış Petrol Gazı	10800 kcal/kg
Gaz Yağı	10300 kcal/kg
Dizel	10700 kcal/kg
Biyogaz	5000 kcal/m^3

Çizelge 2. Doğalgaz ve biyogazın bileşimlerinin oransal karşılaştırılması (Kumar, 2012).

Bileşen	**Doğal Gaz (%)**	**Biyogaz (%)**
CH_4	85	50-80
CO_2	0,89	20-45
C_2H_6	2,85	-
C_3H_8	0,37	-
C_4H_{10}	0,14	-
N_2	14,32	-
O_2	< 0,5	-
H_2S	< 0,5	0-1,5
NH_3	-	0-0,45

Biyogaz, sera gazlarının yayılmasının azaltılmasına katkıda bulunabilir. Metan gazı, biyogazın sera gazlarının azaltılmasında önemli rol oynadığı gazlardan biridir. Bizlere, ısıtma, elektrik ve ulaşım için yenilenebilir bir enerji kaynağı olanağı sunabilmektedir. Atıkların bertarafından kaynaklanan kirliliğin etkilerinin azaltılmasında, etkin rol oynayabilmektedir. Atığın değerli bir organik gübreye dönüşümünde biyogazın rol alması, ayrıca önem taşımaktadır. Çünkü gübreden ürüne, elde edilen üründen atığa, atıktan tekrardan gübreye olan döngü bu şekilde kapanmaktadır. Biyogazın, biyogaz saflaştırma tesislerinde saflaştırılarak, içerisindeki metan oranının yaklaşık %98 oranına getirilmesi, elde edilen biyometanın doğalgaz ile aynı özelliklere sahip olması anlamına gelmektedir (Wellinger ve Murphy, 2013). Doğal gaz yaklaşık %80 metan içermektedir (Manesh ve ark, 2020). Bu durum da biyometanın, doğalgazın kullanıldığı uygulamalarda kullanılabilmesine olanak sağlamaktadır. Biyogaz, kojenerasyon ünitelerinde basit bir kükürtten arındırma ve kurutma işleminden sonra ısı ve elektriğe dönüştürülebilir. Biyogaz ve biyogazın saflaştırılması ile elde edilen biyometan, depolanabilen esnek yenilenebilir yakıtlardır. Biyogazdan ısı ve elektriğin üretilmesi yan ısıra, sürdürülebilir enerji temini kapsamında motor yakıtı da üretilebilir. Ayrıca biyogaz, plastik ürünler içerisindeki karbon bileşiklerinin yerini alabilir (Wellinger ve Murphy, 2013). Isı ve elektriğe dönüştürülebilen biyogaz dolayısıyla evlerin ve binaların aydınlatılmasında, mutfakta ve güç üretimi için yanmalı motorlarda da kullanılabilmektedir (Manesh ve ark, 2020). Organik atıkların oksijensiz ortamda çürümesi ile meydana gelen biyogaz, sadece atık bertarafı üzerinde etkili değildir. Aynı zamanda enerji güvenliği için enerji üretim ve tüketim süreçlerinin, fosil yakıtların aksine, aynı coğrafik bölgede konumlandırılabilmesi olanağını sunmaktadır. Sürdürülebilir biyogaz potansiyelinin tam kullanımı, dünyanın doğal gaz arzının yaklaşık %20'sini karşılayabilir. Sürdürülebilir biyogaz ve biyometan potansiyeli sırasıyla 570 ve 730 milyon ton petrole eşdeğerdir. Organik atıkların içerisinde bulunan karbonhidratlar, yağlar ve proteinlerin içeriği, biyogaz üretim sistemi ve takip eden süreçler üzerinde önemli etkiye sahiptir. Çizelge 3.'te sunulan farklı hammaddelerden elde edilen biyogaz miktarları verileri bunun önemli bir örneğidir. Çizelge 4.'te ise farklı hammaddelerden elde edilen biyogaz miktarlarının, fosil yakıtlara kıyasla sera gazı (CFC) emisyonlarını azaltma oranları verilmiştir (Rafiee ve ark, 2021).

Çizelge 3. Farklı hammaddelerin biyogaz ve metan verimleri (Rafiee ve ark, 2021).

Hammadde	Metan Verimi (Hacim %)	Biyogaz Verimi ($N.m^3/t$ Taze Hammadde)
Çimen silajı	54	172
Domuz Gübresi	60	60
İnek Gübresi	60	45
Mısır silajı	52	202
Sıvı domuz gübresi	65	28
Yem pancarı	51	111
Tavuk gübresi	60	80
Sığır Bulamacı	12,8	200
Peynir altı suyu	15	330
Şeker pancarı	53	88
Tatlı sorgum	54	108
Çim silajı	54	172

Çizelge 4. Farklı hammaddelerden elde edilen biyogazın fosil yakıtlara göre sera gazı emisyonlarını azaltma yüzdeleri (Rafiee ve ark, 2021).

Hammadde	Fosil Yakıtlara Karşı CFC Azaltımı [%]
Mısır	75
Şeker Pancarı	85
Çim	86
Organik Evsel Atıklar	103
Gıda Endüstrisi Kaynaklı Atıklar	119
Gübre	148

(Capuno ve ark, 2016) tarafından yapılan bir çalışmada, yemek pişirmede biyogazın yakıt olarak kullanılmasının Filipinler'deki küçük çocuklarda şiddetli öksürük ve nefes almada güçlük vakalarını % 2.4 oranında düşürebileceği belirtilmiştir. (Neupane ve ark, 2015) tarafından yapılan bir çalışmada da biyogazın yakıt olarak pişirme amaçlı ve uzun süreli kullanımının, özellikle yaşlı kadın aşçılar arasında yüksek tansiyon riskini azaltarak, kalp-damar hastalıklarına karşı koruyabileceği ifade edilmiştir. Ekolojik, yaşanabilir bir toplum inşa etmede biyogazın sağlayacağı yararlar açıkça görülmektedir. (Gao ve ark, 2019).

3. Biyogaz Üretimini Etkileyen Faktörler

Şekil 2.'de de görüldüğü gibi biyogazın oluşum aşamalarında farklı kategoride bakteriler görev almaktadır. Biyogazın oluştuğu anaerobik süreçte görev alan bakteriler için en uygun işletme koşulları sağlandığı takdirde, kararlı süreç elde edilebilir (Leung ve Wang, 2016). Aksi halde işletme koşullarındaki dalgalanmalar bakterilerin dengesini bozabilir, sekteye uğratabilir hatta biyogaz oluşum sürecini tamamen durdurabilir. Bundan dolayı biyogaz oluşum sürecindeki işletme koşulları en uygun aralıklarla gözlenmelidir. Gözlenmesi gereken, biyogaz üretimini etkileyen ve işletme koşullarını belirleyen parametreler şunlardır: Sıcaklık, pH, karbon-azot oranı (C/N), uçucu yağ asitleri, organik yükleme oranı, alıkonma süresi (Pramanik ve ark, 2019).

3.1. Sıcaklık

Biyogaz üretimi ve biyogaza bağlı olarak metan üretimi sıcaklıktan oldukça etkilenmektedir. Çünkü sıcaklık, biyogazın meydana geldiği anaerobik reaktörlerin içerisinde görev alan bakterilerin performansını etkilemektedir. Bu bakteriler asit oluşturan ve metan oluşturan bakterilerdir (Gerardi, 2003).(12) Biyogaz, 3 farklı sıcaklık koşullarında meydana gelmektedir. Bu sıcaklık koşulları şunlardır: (Kothari ve ark, 2014).

1- Psikrofil Sıcaklık Koşulları (15-25 ^oC)

2- Mezofilik Sıcaklık Koşulları (35-40 ºC)
3- Termofilik. Sıcaklık Koşulları (50-60 ºC)

Bu 3 farklı sıcaklık koşullarındaki biyogaz üretimlerinin birbirlerine göre avantajları ve dezavantajları bulunmaktadır. Mezofilik sıcaklık koşullarında, biyogazın oluşum süreci, termofilik sıcaklık koşulları ile kıyaslandığında daha kararlıdır ve daha düşük maliyet gerektirirken termofilik sıcaklık koşullarında ise biyogazın oluşum sürecine yönelik bazı avantajlar bulunmaktadır. Bu avantajlar şunlardır: Biyogaz oluşum sürecinin daha kısa sürede meydana gelmesi, patojenlerin yok edilmesi, biyogaz oluşumu için kullanılan madde ya da maddelerin katı ve sıvı kısımlarını ayırmanın yanı sıra katı maddeler için daha iyi ayrışabilirlik ve sindirilebilirlik sağlaması (Khalid ve ark, 2011). (14) Termofilik sıcaklık koşullarının biyogaz oluşum süreci için getirdiği dezavantajlar da bulunmaktadır. Bunlardan bazıları şu şekildedir: Yüksek sıcaklık gereksiniminin getirdiği yüksek enerji ihtiyacı, biyogaz üretimini etkileyen faktörlere ve sistemi durdurucu etkisi olan zehirli maddelere karşı daha hassas olma (A.Zhang ve ark, 2015).

3.2. pH ve Uçucu Yağ Asitleri

pH, biyogazın oluşum sürecinde anaerobik reaktörün kararlılığını etkileyen en önemli etkenlerden birisidir. Biyogaz oluşum sürecinde görev alan bakteriler pH'a karşı çok hassastır. Bu sebeple her bir bakteri grubu kendi gelişimi için farklı pH aralıklarına ihtiyaç duymaktadır (Appels ve ark, 2008).(16) Asit oluşturan bakteriler enzim aktivasyonları için pH 5'ten küçük olmasına ihtiyaç duymaktadır. Metan oluşturan bakterilerin için bu değer pH'ın 6,2'dir. Fakat metan bakterilerinin biyogaz oluşum sürecinde daha iyi performans gösterdiği pH değeri, 6,8-7,2 aralığıdır (Abbasi ve ark, 2011). (Yadvika ve ark, 2004).

Biyogaz oluşum sürecinde pH belirli faktörler etkisinde değişebilmektedir. Bu faktörler kullanılan sistemin alkalinitesi, bikarbonat (HCO_3) derişimi, sistemde üretilen CO_2 miktarı, uçucu yağ asidi (VFA) olarak sıralanabilir.. Biyogaz oluşum süresince en ideal pH koşulunun ayarlanabilmesi için uçucu yağ asitleri derişimi ile bikarbonat derişimi arasındaki ilişki kontrol edilmelidir (Krishna ve Kalamdhad, 2014).(18) Kararlı ve iyi tamponlanmış bir biyogaz oluşum sürecini devam ettirebilmek için HCO_3 / VFA en azından 1,4 /1 molar oranında sürdürülmelidir ya da 70 meq $CaCO_3$/L değerinde bir tamponlama kapasitesi sürdürülmelidir (Appels ve ark, 2008).
Uçucu yağ asitleri, başlıca asetik asit, propiyonik asit, bütrik asit ve valerik asidi içerir. Bu asitler organik atıkların oksijensiz ortamda parçalanması sonucu oluşan başlıca ara ürünlerdir. Uçucu yağ asitleri arasından asetik asit ve propiyonik asit biyogaz üretiminde daha baskın rol oynamaktadır. Bu sebeple biyogaz oluşum sürecinde bu 2 asidin derişimleri, sistem performansı için gösterge olarak kullanılabilir. Propiyonik asidin asetik aside oranı 1,4 değerini aşması ya da asetik asit derişiminin 0,8 g/L değerinin üzerine çıkması, biyogaz oluşum sürecinin başarısız olmasına sebep olmaktadır. Bu sebeple, propiyonik asidin asetik aside oranı sistem dengesizliğinin bir göstergesi olarak kullanılabilir (Zhang ve ark,2014).

3.3.Karbon-Azot Oranı (C/N)

C/N oranı, organik maddelerin içerisindeki karbon miktarı ile azot miktarı arasındaki ilişkiyi temsil etmektedir (Kothari ve ark, 2014). Biyogaz oluşum süreci C/N oranından önemli ölçüde etkilenmektedir. Etkili bir biyogaz üretimi için en ideal C/N oranına ihtiyaç vardır. Çünkü C/N oranı, biyogaz oluşum sürecinin kararlılığını büyük ölçüde etkilemektedir. Bu sebeple C/N oranı sadece uygun anaerobik ortam koşullarının sürdürülmesine katkıda bulunmaz, aynı zamanda bakterilerin gelişmesi aracılığıyla düzenli besin dengesini kontrol etmeye yardımcı olmaktadır (Zhang ve ark, 2014). C/N oranının yüksek olması durumunda metan oluşturan bakteriler azotu hızlı bir şekilde tüketmektedirler. Azotun hızlı bir şekilde tüketilmesi de düşük biyogaz üretimi ile sonuçlanmaktadır. C/N oranı düşük olduğunda ise, sistem içerisinde amonyak birikimi meydana gelmektedir ve pH 8,5 değerini aşmaktadır. Bu durum da metan üreten bakteriler için uygun olmayan zehirli bir ortam anlamına gelmektedir (Kothari ve ark, 2014). Biyogaz oluşumu için en ideal C/N oranı 20-30 aralığındadır (Puyuelo ve ark, 2011). İdeal C/N oranı, biyogaz üretimi için kullanılan organik maddenin türüne göre değişiklik göstermektedir (Li ve ark, 2011). Yüksek ve düşük C/N oranına sahip organik maddeler karıştırılarak ideal C/N oranı elde edilebilir ve muhafaza edilebilir (Kothari ve ark, 2014).

3.4. Alıkonma Süresi

Alıkonma süresi, anaerobik reaktörlerde, sürekli takip edilmesi gereken en önemli parametrelerden birisidir. Alıkonma süresi, organik maddelerin reaktörde tamamen çürümesi için gereken süreyi ya da organik maddelerin reaktörde ortalama kalma süresini ifade eder. Biyogaz oluşum sürecinde 2 çeşit alıkonma süresi vardır. Bunlar: Katı Alıkonma Süresi (SRT) ve Hidrolik Alıkonma Süresi (HRT)'dir. SRT, bakterilerin reaktörde geçirdiği ortalama zamandır. HRT ise sıvı çamurun reaktörde geçirdiği ortalama zamanı ifade eder (Deepanraj ve ark, 2014). Alıkonma zamanı ile ilişkili olan bakteri gelişim oranı; biyogaz oluşum sürecinin sıcaklığına, kullanılan hammadde bileşimine ve organik yükleme oranına bağlıdır (Mao ve ark, 2015). HRT, ne kadar kısa olursa, organik yükleme oranı değeri o kadar yüksek olmaktadır. Organik atıkların alıkonma süresi, mezofilik sıcaklık koşullarında 10-40 gün arasında bir zaman dilimini gerektirirken, termofilik sıcaklık koşullarında bu süre, daha az olabilmektedir (Khalid ve ark, 2011).

HRT, iklim değişikliğine göre değişiklik göstermektedir. Örneğin; tropikal iklim özelliği gösteren Hindistan gibi ülkelerde ve soğuk iklim koşullarında HRT, sırasıyla 30-50 ve 100 gün aralığında değişmektedir (Kondusamy ve Kalamdhad, 2014).

3.5.Organik Yükleme Oranı (OLR)

Organik yükleme oranı, birim zamanda, birim anaerobik reaktör hacmi başına beslenen uçucu katıların miktarıdır (Nsair ve ark, 2020). Aşağıdaki denklem ile tanımlanabilir (Nsair ve ark, 2020).

$$OLR = \frac{m \times c}{V_R \times 100} \ (kg.oDM\ m^{-3}\ d^{-1}) \quad (1)$$

Bu denklemde "m", birim zaman başına beslenen hammadde miktarıdır (kg d^{-1}), "c" organik kuru maddenin derişimidir(% Odm), "V_R" ise reaktörün hacmidir (m^3) (Nsair ve ark, 2020). Biyogaz oluşum sürecinde kullanılan reaktörlere, uygun OLR miktarının üzerinde bir besleme yapılması durumunda, yağ asitleri gibi sistemi durdurucu maddeler reaktörde birikebilir. Sistemde biriken yağ asitleri de üretilen biyogaz miktarının azalmasına sebep olabilmektedir. Çünkü biyogaz oluşum sürecinde mikrobakteriler, anaerobik reaktör içerisindeki asidik ortam koşullarında yaşamlarını devam ettiremezler. Bu nedenden ötürü, anaerobik reaktörün organik yükleme oranını kontrol etmek önemlidir (Kothari ve ark, 2014).

4. Biyogaz'daki Son Gelişmeler

(Taşkan, 2021) tarafından yapılan bir çalışmada, tarım ve hayvancılıkta yaygın olarak kullanılan "abamektin " pestisitinin, biyogaz oluşum sürecinde bakteriler ve biyogaz üretimi üzerine etkisi anaerobik bir reaktör içerisinde incelenmiştir. 0.25 mg/L ve 5 mg/L olmak üzere 2 farklı derişimde abamektin ile çalışılmıştır. 2 mg/L üzerindeki abamektin derişimi, bakteriyel ekoloji üzerine durdurucu etkiye sahip olduğu ve biyogaz üretimini önemli derecede azalttığı belirtilmiştir. 5 mg/L derişimde abamektin içeren reaktörde biyogaz miktarının %97 oranında düştüğü ifade edilmiştir. Anaerobik reaktör içerisindeki abamektin derişimi arttıkça, canlı bakteri oranında azalma meydana gelmiştir. Çalışma sonucu abamektinin bakteriler üzerine zehir etkisi yaparak biyogaz üretimine olumsuz etkiye sebep olan bir pestisit olduğu vurgulanmıştır.

(Hesar ve ark, 2021) yaptığı bir çalışmada ülkemizde bulunan canlı hayvan ve kanatlı hayvanların atıklarından elde edilebilecek teorik ve teknik biyogaz potansiyelini ele almışlardır. Ülkemizde hayvan yetiştirme modeli olarak yaygın olan modeller şu şekilde belirtilmiştir: Endüstriyel hayvan yetiştirme modeli ve geleneksel hayvan yetiştirme modeli. Endüstriyel hayvan yetiştirme modeli, ülkemizin batısında yaygın iken geleneksel hayvan yetiştiriciliğinin ülkemizin doğusunda daha yaygın olduğu belirtilmiştir. Ülkemizin 2018 yılı baz alınarak canlı hayvanlardan elde edilebilecek teorik biyogaz potansiyelinin yıllık 4807.1 milyon m^3olduğu belirtilmiştir. Ülkemizin doğu ve batı bölgelerinden elde edilebilecek teknik biyogaz potansiyelinin ise sırasıyla, 1 yılda 296.7 milyon m^3 ve 1765,08 milyon m^3 olduğu vurgulanmıştır.

(Atelge, 2021) yaptığı bir çalışmada sığır gübresinden biyogaz elde ederek, elde edilen biyogaz miktarını ülkemizdeki sığır sayısı ile ilişkilendirmiştir. Böylece, ülkemizin 2018 yılı baz alınarak sığır gübresinden elde edilebilecek biyogaz potansiyeli miktarına ulaşılmıştır. Ulaşılan potansiyel biyogaz miktarının, elektrik enerjisi ve karbondioksit (CO_2) eş değerlikleri hesaplanmıştır. Ülkemizde kömür yerine, ifade edilen potansiyel biyogaz enerjisi kullanılması durumunda, 23.26 milyon ton CO_2 eş değerinde gazın atmosfere salınmasının azalacağı belirtilmiştir. ARIMA tahmin modeli kullanılarak 2023, 2030 ve 2053 yılları için sığır gübresinden potansiyel biyogaz hesabı ve CO_2 eş değerlikleri hesaplanmıştır. CO_2 eş değerindeki azalmalar 2023,2030 ve 2053 yıllarında sırasıyla 32.62 milyon ton CO_2, 44.22 milyon ton CO_2 ve 70.74 milyon ton CO_2'dir.

(Uçar ve ark, 2021) biyogaz üretiminde, atıkların biyogaz verimi üzerine etkilerini araştırmışlardır. Çalışmada 50 litre hacminde laboratuvar tipi pilot reaktör kullanılmıştır. Hammadde olarak birçok farklı evsel ve endüstriyel atıklar kullanılarak biyogaz verimleri araştırılmıştır. Yağ ve protein içeriği yüksek olan atıklarda biyogaz üretiminin gerçekleşmediği, fakat zengin hidrokarbon içeriğine sahip olan dut atığı ve bayat olan unun biyogaz miktarını önemli ölüde artırdığı belirtilmiştir. Ayrıca biyogaz üretiminde, maya kültürü barındıran bayat ekmek gibi atıkların kullanılması durumunda, maya kültürlerinin metan oluşturan bakterilerin büyümelerini durdurduğu belirtilmiştir.

(Kızılkaya, 2021) biyogaz akımı içerisinde bulunan siloksan bileşiklerinin giderimi üzerine yaptığı çalışmada Denizli Merkez Atıksu Arıtma Tesisi biyogaz örnekleri ile çalışmıştır. Biyogaz içerisinde bulunan CO_2, H_2S ve siloksan bileşiklerinin enerji üretimi esnasında motor aksamlarına verdiği hasar ve biyogaz enerjisinden alınabilecek enerji verimini artırmanın önemi belirtilmiştir. Atıksu arıtma tesisi biyogaz örneklerinde bulunan uçucu metil siloksan (UMS) bileşiklerinin derişimleri, gaz yıkama şişesi ve Tedler Torbalama Yöntemleri ile belirlenmiştir. İki yöntem kıyaslandığında, gaz yıkama şişesi ile sahada örneklemede daha fazla verim elde edildiği belirtilmiştir. Ayrıca siloksan adsorpsiyon kapasitelerini ortaya koymak için, sahada adsorpsiyon çalışmaları yapılmıştır. Sahadaki bu çalışmalar için farklı adsorbanlar kullanıldığı belirtilmiştir. Bu adsorbanlar şunlardır: Granüler aktif karbon (GAC), metal organik kafes yapılar (MOF) ve karbon nanotüptür (CNT). Sonuç olarak çalışmada, bir adsorbanın yüzey alanını ve mezogözenek dağılımını artırmanın, büyük molekül yapısına sahip UMS bileşiklerinin adsorpsiyonunda ciddi artışlara neden olabileceği vurgulanmıştır.

(Demir ve Ateş, 2021) tarafından yapılan bir çalışmada nano boyutta olan manyetik partiküllerin, anaerobik reaktörde biyogaz üzerine etkisi incelenmiştir. Çalışmada en yaygın olarak kullanılan nanopartiküllerden birisi olan Fe_3O_4 kullanılmıştır. Fe_3O_4'ün nanopartikülü laboratuvar ortamında, birlikte çökeltme yöntemi ile elde edilmiştir. Elde edilen nanopartikülden farklı derişimler alınarak anaerobik reaktörlere eklenmiştir ve etkileri incelenmiştir. Fe_3O_4 manyetik nanopartkül derişimi arttıkça biyogaz miktarında da artış gözlemlendiği belirtilmiştir. Fe_3O_4 manyetik nanopartkülün kullanılmadığı kontrol reaktörlerindeki ortalama biyogaz miktarının 428.9 ml iken, 0.3 g/L derişimde Fe_3O_4 ilavesinde 572.8 ml biyogaz elde edildiği rapor edilmiştir.

(Hıraoğlu, 2021) tarafından yapılan bir çalışmada bozulan ve atık hale gelen biraların biyogaza dönüştürülmesi aracılığıyla elektrik enerjisi miktarı hesaplanmıştır. Çalışmada hammadde olarak kullanılan atık biraların gösterimi bir biyoproses tasarım ve simülasyon programı olan SuperPro Designer ile gösterilmiştir. 2150 litre/gün bira atığı çamur ile karıştırılarak oksijensiz ortamda biyogaz üretimi için çürümeye bırakılmıştır. 163 m^3/gün biyogaz elde edilmiştir. Elde edilen biyogaz miktarından ise 766.1 kWh elektrik enerjisi elde edilmiştir. Çalışma sonucu, bozulan biraların değerlendirilmesinin artan enerji ihtiyacında önemli yer tutabileceği belirtilmiştir.

(Üçok ve Aybek, 2021) biyogaz tesisleri için hammadde olarak kullanılabilecek büyükbaş hayvan dışkısı ve makroalg (Cladophora sp.) materyallerinin, en uygun karışım oranlarında, birlikte anaerobik arıtımı ile biyogaz ve metan verimlerinin belirlenmesi üzerine çalışmışlardır. Biyogaz elde etmek için, biyometan potansiyeli (BMP) denemeleri yapılmıştır. Büyükbaş hayvan gübresi ve makroalgler, %7 kuru madde oranında, 5 farklı oranda karıştırılmıştır. Karışım-1 %100 makroalglerden oluşmaktadır. Karışım-2, %69 makroalg ve %31 büüyükbaş hayvan gübresinden oluşmakadır. Karışım-3, %42 makroalg ve %58 büyükbaş hayvan gübresinden oluşmaktadır. Karışım-4, %20 makroalg ve %80 hayvan gübresinden oluşmaktadır. Karışım-5 ise %100 hayvan gübresinden meydana gelmektedir. Kimyasal içeriklerin belirlenmesi amacıyla kuru madde analizi, ham kül, organik kuru madde içeriği, C/N oranı, pH, kimyasal oksijen ihtiyacı, elektriksel iletkenlik, nötr deterjanda çözünmeyen lif, asit deterjanda çözünmeyen lif değerleri saptandığı belirtilmiştir. BMP denemelerinde oluşturulan

karışımlardan şu sonuçlar elde edildiği rapor edilmiştir: metan oranı %25-62, biyogaz üretimi 0.02-1.61 L gün^{-1}, günlük metan üretimi 0.01-0.94 L gün^{-1}, kümülatif biyogaz üretimi 2.5-27.42 L, kümülatif metan üretimi 1.15-15.77 L, özgül metan üretimi 10.67-186.41 NmL gOM^{-1}. En yüksek biyogaz parametrelerinin karışım-4'ten elde edildiği belirtilmiştir.

(Ehimen ve ark, 2021) tarafından yapılan bir derleme çalışmasında Avrupa'daki küçük ölçekli anaerobik arıtma tesisleri ile ilgili mevcut durumlar ele alınmıştır. Ayrıca küçük ölçekli anaerobik tesislerin (SSAD), küçük ve orta ölçekli tarımsal çevrelerden kaynaklanan hammaddelerden elde edilebilecek yenilenebilir enerji kapasitesi ele alınmıştır. SSAD'lerin tesis konfigirasyonları açısından efektif olduğu ve çeşitli biyoenerji kullanım uygulamaları için finansal sürdürülebilir olduğu belirtilmiştir. Avrupa ülkeleri içerisinde SSAD'nin benimsenme oranı açısından ulusal destek çerçevesinin önemli bir faktör olduğu ifade edilmiştir. SSAD'lerin benimsenmesinde ağır basan engeller şu şekilde belirtilmiştir: Yüksek ön yatırım maliyeti, yatırımcıların SSAD teknolojisinin getireceği kardan endişe etmeleri ve huzursuz olmaları. Bu endişelerin, daha fazla tesis gelişme evresinden geçtikçe azalabileceği belirtilmiştir.

(Abomohra ve ark, 2021) tarafından yapılan bir çalışmada su yosunlarının hem ağır metal biyosorpsiyonu hem de biyoyakıt üretim potansiyelini değerlendirmek amacıyla çift yönlü kullanımı üzerine çalışılmıştır. 3 farklı makroalg birliğini temsil edecek şekilde 3 farklı su yosunu cinsi toplanmıştır. Bunlar şunlardır: Ulva spp. (Chlorophyte), Gracilaria spp. (Rhodophyte), and Sargassum spp. (Phaeophyte). Ağır metal biyosorpsiyonu olarak Cu^{+2} gideriminin, proses optimizasyonu ile %94,6 oranına kadar ulaştığı belirtilmiştir. Ham su yosunu biyokütlesinin, bakırı giderilmiş su yosunu biyokütlesine göre biyogaz üretim potansiyelinin daha yüksek olduğu belirtilmiştir. Elde edilen biyoetanol miktarının 289.2 mg/g olarak elde edildiği ve 72 saat sonunda bu rakama ulaşıldığı rapor edilmiştir. Ham su yosunu biyokütlenin biyogaz potansiyeli, bakırı giderilmiş biyokütlenin biyogaz potansiyelinden %24.3 fazla olduğu belirtilmiştir. Fakat bakırı giderilmiş su yosunu biyokütlesinin içerisindeki Cu^{+2}'nin yokluğu, biyogaz ve biyoetanol verimi açısından sırasıyla %18.4 ve %5.2'ye kadar azalmaya sebep olduğu bildirilmiştir. Daha sonra, fermante edilmiş bakırı giderilmiş su yosunu biyokütlesinin, fermante edilmiş ham su yosunu biyokütlesine göre daha yüksek biyogaz ve biyoetanol verimine sahip olduğu belirtilmiştir. Bakırı giderilmiş su yosunu biyokütlesinden elde edilen en yüksek değerin 1597.3 GJ/yıl olduğu rapor ediilmiştir.

(Lin ve ark, 2021) Tayvan'da ki geleneksel domuz gübresi atıklarının tek kademeli anaerobik arıtımından ve çift kademeli anaerobik arıtımından elde edilen biyogaz verimlerini karşılaştırmışlardır. Çift kademeli anaerobik arıtımın, tek kademeli anaerobik arıtıma göre şu avantajlarından faydalanıldığı belirtilmiştir. Bunlar: İki kademeli anaerobik sistemlerde, hidroliz ve asit oluşum evrelerinde, organik yükleme oranını tamponlamanın kolaylığı ve sağladığı kararlılık, bu kararlılığa bağlı olarak metan oluşum aşamasına kararlı ve sürekli besleme oranı sağlanması. Her iki sistemde de optimum işletme koşulları sağlandığında, iki kademeli sistemden %60 daha fazla verim sağladığı rapor edilmiştir.

(Ioannou-Ttofa ve ark, 2021) tarafından yapılan bir çalışmada, Mısır'daki evsel biyogaz üretiminin yaşam döngüsü değerlendirmesi üzerine çalışılmıştır. Ev tipi biyogaz çürütme teknolojisi detaylıca çalışılmasına rağmen, Mısır koşullarında çevresel sürdürülebilirliği geniş ölçüde bilinmediği ifade edilmiştir. Bu sebeple, yaşam döngüsü envanter verileri, Mısırda halihazırda çalıştırılan tipik sabit kubbe çürütücülerden toplandığı belirtilmiştir. Çevresel modellemenin temelinin, Simapro metadolojisi kullanılan yaşam döngüsü değerlendirme metadolojisine dayandığı ifade edilmiştir. 1 m^3 biyogaz üretmek için 100 yıllık küresel ısınma potansiyelinin Mısır koşullarında eşdeğerinin 2.72 kg CO_2 ve çevresel ayak izinin 160.1 mPt olduğu rapor edilmiştir. Esas katkı %89.1 ile işletme aşamasına ait iken, %10.9 ile inşaa aşamasına ait olduğu belirtilmiştir.

(Kowthaman ve ark, 2021) tarafından yapılan bir çalışmada, yağı giderilmiş alglerden biyogazın iyileştirilmesi için bazik termo-kimyasal ön arıtmanın optimizasyon stratejileri üzerine çalışılmıştır. Yağı alglerden gidermek için farklı çözücüler kullanılmıştır. Bu çözücülerin dietil eter, izo-propanal, etanol ve metanol olduğu belirtilmiştir. Bu solventler arasında en yüksek verim yüzdesinin %1.8 ile dietil eter olduğu rapor edilmiştir. Yağı giderilmiş algler ile mısır kabuğunun ön arıtıma tabii tutulmuştur. En iyi biyogaz verimi Box-Behnken Deney Tasarım'ı kullanarak elde edilmiştir. Sıcaklık, ısıtma zamanı ve sodyum hidroksit derişimi gibi ön arıtma parametreleri 3 aşamada araştırılmıştır. Ön arıtmadan sonra kesikli sistemde 17 deney yolu, termofilik koşullarda uygulanmıştır. Deneylerden sonra biyogaz verimi açısından sodyum hidroksit en etkili olan ön arıtma parametresi olarak bulunmuştur. %6

sodyum hidroksit derişiminde,70 ºC sıcaklık ve 3 saat tepkime süresi en iyi tepkime koşulları olarak belirtilmiştir. Bu koşullarda yüzey tepki yöntemi kullanılarak elde edilebilecek maksimum biyogaz verimi 740 ml/g UKM olarak tahmin edilmiştir. Ön arıtıma tabi tutulmuş algler ve mısır kabuğunun, iyileştirilmemiş alglere göre %60 daha fazla biyogaz verimi verdiği rapor edilmiştir. Uygulanan model için bulunan R^2 değerinin 0.98 olması, yağı alınmış algler ve mısır kabuğunun birlikte sindiriminden daha büyük uygulamalarda efektif sonuçlar elde edilebileceği vurgulanmıştır.

(Kong ve ark, 2021) 25 ºC ortam sıcaklığında belediye atıksuyu ve biyogaz üretiminin iyileştirilmesi için, geniş pilot ölçekli suya batık anaerobik membran biyoreaktör (AnMBR) kullanmışlardır. Çalışmanın hedefinin belediye atıksuyundan biyogaz üretimi için, 5,0 m^3 hacimli büyük pilot ölçekli suya batık, anaerobik membran biyoreaktörün işletimi ve etkinliği göstermek olduğu belirtilmiştir. Kullanılan reaktörün rapor edilen en geniş, suya batık ve tek evreli AnMBR olduğu ifade edilmiştir. 6 saatlik bir HRT ile çalışılan membranın, arıtma kapasitesi 20 m^3/gün, %90'ın üzerinde etkili KOİ giderimine sahip mükemmel çıkış suyu kalitesi sağladığı ve $BOİ_5$ gideriminin %95'in üzerinde olduğu ifade edilmiştir. AnMBR kullanılarak elde edilen biyogaz üretimi, 0.25-0.27 L/g giderilen KOİ ve 0.09-0.10 L/L arıtılmamış atıksu olarak bulunmuştur. Biyogazın metan içeriği ise %75-%81 aralığında bulunmuştur. KOİ ve azot kütle denkliği, uzun vadeli çalışmaya dayanarak tanımlanmıştır. İçi boş fiber membran modülü, 2.75-17.83 LMH'lik bir akı gerçekleştirmiştir. Çevrimiçi bir geri yıkama kimyasal temizleme sistemi, transmembran basıncını zamanında düşürmeye yardımcı olmuştur.

(Karami ve ark, 2021) oldukça zor ayrışabilir bir çam ağacından elde edilebilecek biyogaz üretimini artırmak için ucuz ve etkili bir biyolojik ön arıtım olan mezofilik aeorobik arıtım kullanmışlardır. Ayrıca mezofilik aerobik ön arıtımın verimliliği, sıvı su (LHW), sodyum hidroksit (NaoH) ve ultrasonik ön arıtım yöntemleri ile birlikte araştırılmıştır. LHW ve Alkali (%8 w/w NaOH kullanılarak) ön arıtımlaı, bu termokimyasal ön arıtımların biyogaz üretimi üzerindeki sinerjik etkisini değerlendirmek için daha az şiddetli koşullarda (10 dakika boyunca 100 °C) gerçekleştirilmiştir. Ultrasonik ön işlem 40 KHz'de 30 dakika boyunca 40 °C'de gerçekleştirilmiştir. Biyolojik ön arıtma, aerobik çamur kullanılarak 37 °C'de 10 gün süreyle gerçekleştirilmiştir. Aerobik çürütme, çam ağacından metan verimini bireysel olarak 7.3 kat artırabilen tek ön arıtım işlemi olduğu bulunmuştur. Bununla birlikte, en yüksek metan veriminin (ön arıtıma tabi tutulmuş çam ağacının 57.7 mL/g UKM'si), ön arıtım işlemine tabi tutulmamış çam ağacından 11.2 kat daha yüksek olduğu, bu verimin NaOH, biyolojik ve ultrasonik ön arıtım kombinasyonu ile elde edildiği belirtilmiştir. Sonuç olarak, aerobik arıtım ile ön arıtımın, özellikle hafif termo-kimyasal ön arıtımla kombinasyon halinde uygulanmasıyla biyogaz üretim verimini önemli ölçüde artırabileceği sonucuna ulaşılmıştır.

(Yaqoob ve ark, 2021) tarafından yapılan bir çalışmada Pakistan'da elektrik üretimi için, Pakistan'ın biyokütle atıklarından sürdürülebilir biyogaz üretim potansiyeli araştırılmıştır. Pakistan'ın kırsal kesimlerinde yaz aylarında, elektriğe artan talep ve şiddetli elektrik ihtiyacı ile birlikte, elektrik kesintilerinin günlük 8-12 saat arası olduğu belirtilmiştir. Elektrik ihtiyacı için dışardan ithal edilen fosil yakıtların ülke ekonomisine ve sera gazı etkisiyle çevreye devasa bir zarar verdiği belirtilmiştir. Pakistan'da mevcut olarak bolca bulunan biyokütle kaynakları şu şekilde sıralanmıştır: hayvan gübresi, kümes atıkları, şeker kamışı küspesi ve mutfak atıkları. Bolca bulunan bu biyokütle kaynaklarının, Pakistan'ın enerji açığını kapatmak için yeteri kadar değerlendirilerek kullanılmadığı vurgulanmıştır. Tüm Pakistan için, atıklardan elde edilebilecek biyogaz potansiyelinin günlük 226.8 milyon m^3 olduğu rapor edilmiştir. Elde edilebilecek 59.536 GWh ile Pakistan'ın elektrik açığının ortadan kalkabileceği belirtilmiştir. Biyogaz ile, Pakistan'da 1 yılda üretilen toplam elektrik miktarının %49.4 ünün üretilebileceği sonucuna varılmıştır. Ayrıca Pakistan'da biyogübre konusunda 12.9 milyon Amerikan Doları değerinde bir Pazar olduğu belirtilmiştir.

(Neto ve ark, 2021) yapay sinir ağları kullanarak yiyecek, meyve ve sebze atıklarından biyogaz üretiminin modellenmesi üzerine çalışmışlardır. Bu çalışmada, gıda atıklarından biyogaz üretimine ilişkin deneysel bir çalışma, 37 °C'de kesikli bir reaktörde 21 günden sonra 5, 10 ve 20 g VS/(L.gün)'e eşit bir organik yükleme hızı (OLR) ile üç set halinde gerçekleştirilmiştir. Ayrıca, gıda atıkları, meyve ve sebze atıkları veya her ikisinin de birlikte sindirimi, reaktördeki karışımları için yapay sinir ağları (YSA) kullanılarak sayısal bir model geliştirmek için literatürde sunulan değerler kullanılarak bir veri tabanı oluşturulmuştur. /besleme türü, uçucu katı (VS), pH, OLR, hidrolik tutma süresi, sıcaklık ve reaktör hacmi, girdi değişkenleri olarak ve çıktı değişkeni olarak kümülatif biyogaz üretimi kullanılmıştır. YSA modelinin tepki yüzeylerinin biyogaz üretiminde optimum bölgeyi tanımlamada,

çalıştırmada, test ve doğrulama veri kümelerine uygulandığında faydalı olduğu bulunmuştur. Model kabul edilebilir katsayısı değerleri göstermiştir (sırasıyla giriş parametreleri için 0.9929, 0.8486 ve 0.6167). Biyogaz üretiminin, sıcaklıklar, mezofilik koşullar için yerel bir maksimum ile termofilik koşullar aralığında olduğunda en yüksek olduğu bulunmuştur. Birlikte sindirim veya gıda atıklarının optimize edilmiş biyolojik sindirimi, meyve ve sebze atıklarının uçucu katı yüzdesine göre (%10'dan düşük), daha yüksek uçucu katı yüzdesine olanak tanımıştır (%15-20). Meyve ve sebze atıklarının biyolojik sindiriminin en yüksek kümülatif biyogaz üretimini beraberinde getirdiği gözlemlendiği belirtilmiştir (yiyecek atıkları ve birlikte sindirim için bulunan değerin yaklaşık iki katı).

Yeni bir alternatif çözücü sınıfı olan derin ötektik çözücüler (DES), yakın zamanda lignoselülozik biyokütlenin ön arıtımında kullanılmıştır. Fenolik bileşikleri çözme yetenekleri nedeniyle, delignifikasyon ajanları olarak verimli bir şekilde uygulanmıştır (Lima ve ark, 2021). (Lima ve ark, 2021) tarafından yapılan bir çalışmada biyogaz üretiminde ilk kez kolin klorür (ChCl) ve oksalik asit (OA) (1:1)'den oluşan etkili bir delignifiye edici DES hazırlanmış ve etkisi değerlendirilmiştir. Sonuçların, DES varlığının derişimine bağlı olarak anaerobik konsorsiyum üzerinde hem yararlı hem de zararlı etkilere sahip olduğu belirtilmiştir. 0.3–12.5 g/L derişimi aralığında, DES'in varlığı, DES derişimi arttıkça 1 ila 8 günlük bir gecikme fazına yol açtığı rapor edilmiştir. Gecikme fazı aşıldıktan sonra, 12.5 g/L'lik bir derişime kadar DES, biyogaz üretimini artırmıştır ve 12.5 g/L'lik konsantrasyon için kontrol deneyinden üç kat daha yüksek birikmiş biyogaz hacmine ulaşılmıştır. En yüksek DES derişimlerinde (19.8–78.1 g/L), biyogaz üretimi engellenmiştir. Tek başına DES bileşenleriyle yapılan testler, biyogaz üretiminin engellenmesinden ana sorumlu olanın 3.2 g/L'deki OA olduğunu göstermiştir (kontrolden %50 daha az biyogaz üretilmiştir). 4.9 g/L'deki ChCl, bir gecikme fazı göstermemiştir ve kontrol deneyi gibi (30 günlük inkübasyon için 1200 mL) birikmiş biyogaz hacmi üretilmiştir. ChCl:OA DES'nin, OA'nın inhibe edici derişimlere ulaşmaması koşuluyla, anaerobik arıtımdan önce biyokütlenin delignifikasyonunda kullanılabileceği sonucuna varılmıştır.

(Hodaei ve ark, 2021) Tahran Atıksu Arıtma Tesisi'nin aktif atık çamurundan üretilen biyogaz üzerine ozonlama ön arıtımının etkisini çalışmışlardır. Anaerobik sindirim üzerindeki ozonlama etkilerini araştırmak için üç ana çamur özelliği göz önünde bulundurulmuştur. Kısa süreli (10 gün) ve uzun süreli (30 gün), çamur tutma süreleri için iki farklı ozon dozunun, yani 0.05 ve 0.1 g O_3 / g TS 'nin karşılaştırması yapılmıştır. Ayrıca yukarıda belirtilen sürelerde biyogaz üretimi, çamur bileşimi, susuzlaştırılabilirlik ve enerji dengesi incelenmiştir. Sonuçlar, düşük ozon dozunun, tüm senaryolarda negatif olan enerji dengesi dışındaki tüm parametreler için kısa süreli bir operasyonda kabul edilebilir bir performansa sahip olduğunu göstermiştir. Daha yüksek ozon dozajı, yalnızca biyogaz üretimini ve uçucu katıların azalmasını azaltmakla kalmamış, aynı zamanda sistemin enerji talebini de önemli ölçüde artırmıştır. Ek olarak, daha uzun bir alıkonma süresi, bu süre zarfında ozon ön arıtımının etkinliğini azaltmıştır. Sonuç olarak, ekonomik ve teknolojik perspektiflerden farklı çamurların sürdürülebilir yönetimi için ozon ön arıtma kapasitesinin fizibilitesi, bu vaka çalışmasının daha fazla araştırılmasıyla değerlendirilebileceği vurgulanmıştır.

(Unpaprom ve ark, 2021) ezilmiş su sümbülü ile birlikte domuz gübresinin birlikte sindiriminden biyogaz üretimi, biyogazın metan oranının iyileştirilmesi ve biyogübrenin sürdürülebilir değerlendirilmesi üzerine çalışmışlardır. 34 °C ve 36 °C aralığında değişen, mezofilik sıcaklık koşullarında, 45 gün boyunca anaerobik arıtım uygulanmıştır. Alkali (sodyum hidroksit, NaOH) WH hidrolizi, dört farklı hafif konsantrasyonda toplu kuru AD'den önce gerçekleştirildi. Su sümbülünün alkali hidrolizi (Sodyum Hidroksit, NaoH), 4 farklı hafif derişimde, kesikli kuru anaerobik arıtımdan önce gerçekleştirilmiştir. NaOH ile ön arıtıma tabi tutulmuş numuneler, işlenmemiş (ham) numunelerden daha yüksek bir biyogaz verimi üretmiştir. Taramalı elektron mikroskobu (SEM),su sümbülünde meydana gelen ana yapısal dönüşümler hakkında destekleyici doğrulama sağlamak için kullanılmıştır. Optimum su sümbülü derişimi ile domuz gübresinin 1:1 oranında birlikte sindiriminden en yüksek metan verimi elde edilmiştir. Elde edilen biyogazın içeriğine dair sayısal bilgiler şu şekilde belirtilmiştir: karbondioksit (CO_2) %29.08, metan (CH_4) %68.89 ve hidrojen sülfür (H_2S) %1.09. Kimyasal saflaştırma ile iyileştirilen biyogazdaki CH_4 ve CO_2 oranları sırasıyla %92.35 ve %8.04 olarak rapor edilmiştir.

(Lin ve ark, 2021) içecek fabrikası atıksuyundan, seyyar bir biyoenerji sistemi içerisinde biyogaz üretimi üzerine çalışmışlardır. Tayvan Feng Chia Üniversitesi tarafından geliştirilen yüksek verimli hidrojenez ve metanojenez teknolojisine (HyMeTek) dayalı bir seyyar biyoenerji üretim istasyonu inşa

edilmiştir. Hammadde olarak, 1200 mg/L kimyasal oksijen ihtiyacı (KOİ) derişimine sahip bir içecek atık suyu kullanılmıştır. Bu biyoenerji istasyonunda bir hammadde tankı (3.8 m^3), bir besin tankı (0.8 m^3), bir asidojenez tankı (AT, 2 m^3), iki metanojenez tankı (MT, her biri 4 m^3), bir membran biyoreaktörü ve bir kontrol odası vardır. Tesisin biyogaz üretim hızı, metan derişimi, KOİ giderme verimleri, enerji verimliliği ve ekonomik çıkarları değerlendirilmiştir. AT (hidrolik tutma süresinde, HRT, 4 saat) ve MT (HRT 8 saatte) için en yüksek toplam metan üretim oranları sırasıyla 430 ve 7 mL/L.gün olarak rapor edilmiştir. HRT'yi kısaltma stratejisi, biyogaz kalitesini ve enerji verimliliğini artırmak için umut verici bir yöntem olduğu belirtilmiştir. Bu seyyar biyoenerji sisteminin ticari potansiyele sahip olduğu, bunun da yüksek başlangıç getiri oranı (%58.84) ve kısa geri ödeme süresi (2.68 yıl) gibi iyi ekonomik göstergelere dayandığı vurgulanmıştır.

Jeong ve ark, (2021) derin öğrenme (DL) modelleri kullanarak organik atıkların anaerobik birlikte sindirilmesinde biyogaz üretiminin tahminini yapmışlardır. Çift aşamalı kayıt (DA) tabanlı uzun kısa süreli bellek (LSTM) ağının değişken seçim ağları (VSN'ler) ile entegre olduğu bir hibrit DL mimarisi, yani DA–LSTM–VSN önerilmiştir. Model öngörülebilirliğini artırmak için hiper parametre optimizasyonu yapılmıştır. Model doğruluğu, iki yıllık belediye atıksu arıtma tesisi işletimi üzerinden ölçülen uzun süreli birlikte sindirim izleme verileri kullanılarak doğrulanmıştır. Ardından diğer iki DL tabanlı modelle (yani, DA–LSTM ve standart LSTM) karşılaştırılmıştır. Ek olarak, girdi değişkenlerinin biyogaz üretim tahminine göreceli katkısını araştırmak için özellik önemi (FI) analiz edilmiştir. Son olarak, onaylanmış DL modelinin anaerobik birlikte sinidirim süreç optimizasyonuna uygulanması gösterilmiştir. Sonuçlar, DA'nın LSTM'ye dahil edilmesiyle model doğruluğunun önemli ölçüde arttığı, yani belirleme katsayısının (R^2) 0.38'den 0.68'e yükseldiği; ancak, DA–LSTM'yi bir VSN ile birleştirerek R^2 0,76'ya yükseltilebileceği belirtilmiştir. Anaerobik birlikte sindirim modelinin biyogaz tahmini için, VSN, birlikte sindirim sırasında biyolojik olarak bozunabilir organik-ilişkili değişkenler üzerinde süreksiz ölçüm verileri serisini kullanarak önemli ölçüde katkıda bulunmuştur. Ek olarak, VSN, anaerobik birlikte sindirim modelinin ağırlıklı giriş özelliklerini kullanarak FI analizi yoluyla yorumlanabilmesine olanak tanımıştır. FI sonuçları, gıda atığı sızıntı suyuyla ilişkili değişkenler için nispi önemin hayati önem taşıdığını, buna karşın birincil ve kimyasal destekli çökeltme çamurları ile ilişkili olanlar için marjinal olduğunu göstermiştir. Sonuç olarak, burada önerilen birlikte sindirim modelinin, biyogaz üretimini iyileştirmek için optimal çamur koşullarını sağlayabildiği için pratik uygulamalarda sağlam bir araç olarak kullanılabileceği belirtilmiştir. Bunun nedeninin, eksik değer ataması veya aykırı değerlerin kaldırılması ile işlenmemiş veri kümelerini kullanarak tam ölçekte zaman serisi biyogaz tahminini kolaylaştırması olduğu vurgulanmıştır.

(Wang ve ark, 2021) tarafından ikili ve üçlü olarak iz elementlerin (TE'ler) (Fe/Co, Fe/Ni ve Fe/Co/Ni) sığır gübresinin anaerobik sindirimi (AD) üzerindeki etkileri kinetik modeller (birinci derece, lojistik, modifiye edilmiş Gompertz ve Coats-Redfern) ve deneysel ölçümler kullanılarak araştırılmıştır. İkili ve üçlü iz elementlerin (TE'ler), biyogaz üretim hızını ve verim potansiyelini önemli ölçüde iyileştirebileceği belirtilmiştir. Lojistik model (%2.1-%5.3) ve modifiye Gompertz modeli (%0.32-%2.9) ile biyogaz verimi için öngörülen ve ölçülen veriler arasındaki sapma, birinci derece kinetik modelden (%6.9-%9.9) daha küçük bulunmuştur. Coats-Redfern model uyumu, piroliz sırasında iz elementli sindirim ürünlerinin aktivasyon enerjisinin kontrol grubu ile karşılaştırıldığında %3.9-%26.2 oranında azaldığını göstermiştir. İz elementlerin kullanıldığı sindirilmiş ürünler, dikkate değer bir verimlilik göstermiştir (%5.72-5.95). Kinetik modeller ve deneysel ölçümlerin kombinasyonunun, iz elementlerin anaerobik sindirim performansı üzerindeki etkisini etkili bir şekilde ölçebileceği ve endüstriyel üretim için bilinçli bir seçim sağlayabileceği sonucuna varılmıştır.

(Bernat ve ark, 2021) Poli Laktik-Asit (PLA) içeren malzemelerin termofilik ve mezofilik sıcaklık koşullarında, ihtimalleri ve sınırlamaları da dahil ederek biyogaz üretimi üzerine çalışmışlardır. PLA bazlı malzemelerin yüksek derecede kümülatif biyogaz üretimine olanak sağladığı belirtilmiştir. PLA bazlı malzemelerden biyogaz üretiminin kinetiğinin, biyoatık biyogaz tesislerinde tıkanma oluşturduğu rapor edilmiştir. PLA bazlı malzemelerden biyogaz üretim oranı ve biyogaz verimi sıcaklığa bağlı olduğu ifade edilmiştir. PLA parçaları görünmese de mezofilik sıcaklık koşullarında biyogaz üretiminin yoğun bir şekilde ilerlediği belirtilmiştir.

5. Tartışma ve Yorum

Fosil yakıt kaynaklarının günden güne azalması ve çevreye olan olumsuz etkileri sebebiyle yenilenebilir enerji kaynağı olarak biyogazın önemi günden güne artmaktadır. Ülkeler bazında bakıldığında biyogazın, ekonomik bir getiri olması, enerji açığını kapatma potansiyeli ya da fazla enerji üretimi ile ticaret akışına olumlu katkı sunabilme potansiyeli ortadadır. Bu çalışmada biyogazın yapısı, oluşumu, kullanım alanları ve son yıllarda biyogaz ile ilgili yapılan güncel çalışmalar ele alınmıştır. Yapılan güncel çalışmaların bu derleme çalışmasında sunulmasının, gelecekte çevresel, ekonomik ve insan sağlığı açısından yapılacak biyogaz ile ilgili çalışmalara ışık tutması umulmaktadır.

6. Teşekkür

Bu çalışmayı destekleyen Gazi Üniversitesi BAP Birimine 06/2018-30 numaralı BAP Projesi kapsamında verdikleri destek için teşekkür ederiz.

7. Kaynakça

Abbasi, T., Tauseef, S. M., & Abbasi, S. A. (2011). Biogas energy (Vol. 2). Springer Science & Business Media.

Abomohra, A. E. F., El-Hefnawy, M. E., Wang, Q., Huang, J., Li, L., Tang, J., & Mohammed, S. (2021). Sequential bioethanol and biogas production coupled with heavy metal removal using dry seaweeds: Towards enhanced economic feasibility. Journal of Cleaner Production, 316, 128341.

Appels, L., Baeyens, J., Degrève, J., & Dewil, R. (2008). Principles and potential of the anaerobic digestion of waste-activated sludge. Progress in energy and combustion science, 34(6), 755-781.

ATELGE, R. (2021). Türkiye'de Sığır Gübresinden Biyoyakıt Olarak Biyogaz Üretiminin Potansiyeli ve 2030 ve 2053 Yıllarında Karbon Emisyonlarının Azaltılmasına Öngörülen Etkisi. International Journal of Innovative Engineering Applications, 5(1), 56-64.

Aydın Kızılkaya, Y. M. (2021). Biyogaz akımı içerisindeki siloksan bileşiklerinin giderimi.

Bernat, K., Kulikowska, D., Wojnowska-Baryła, I., Zaborowska, M., & Pasieczna-Patkowska, S. (2021). Thermophilic and mesophilic biogas production from PLA-based materials: Possibilities and limitations. Waste Management, 119, 295-305.

Capuno, J. J., Tan, C. A. R., & Javier, X. (2016). Cooking and coughing: Estimating the effects of clean fuel for cooking on the respiratory health of children in the Philippines. Global Public Health, 13(1), 20–34.

Deepanraj, B., Sivasubramanian, V., & Jayaraj, S. (2014). Biogas generation through anaerobic digestion process-an overview. Research Journal of Chemistry and Environment, 18, 5.

DEMİR, Ö, & Ateş, N. Manyetik Nanopartiküllerin Anaerobik Çürütücüde Biyogaz Üretimi Üzerine Etkileri. Çukurova Üniversitesi Mühendislik Fakültesi Dergisi, 36(2), 283-296.

Deviren, H., İLKILIÇ, C., & AYDIN, S. (2017). Biyogaz Üretiminde Kullanılabilen Materyaller ve Biyogazın Kullanım Alanları. Batman Üniversitesi Yaşam Bilimleri Dergisi, 7(2/2), 79-89.

Gao, M., Wang, D., Wang, Y., Wang, X., & Feng, Y. (2019). Opportunities and challenges for biogas development: a review in 2013–2018. Current Pollution Reports, 5(2), 25-35.

Gerardi, M. H. (2003). The microbiology of anaerobic digesters. John Wiley & Sons.

HESAR, L., GÜRDİL, G., & DEMİREL, B. Türkiye'de Çiftlik Gübresinden Biyogaz Üretim Potansiyeli. Erciyes Tarım ve Hayvan Bilimleri Dergisi, 4(1), 28-33.

HIRAOĞLU, İ., & ÖZÇİMEN, D. D. BOZULAN VE ATIK HALE GELEN BİRALARIN ELEKTRİK ENERJİSİNE DÖNÜŞTÜRÜLMESİ.

Hodaei, M., Ghasemi, S., Khosravi, A., & Vossoughi, M. (2021). Effect of the ozonation pretreatment on biogas production from waste activated sludge of tehran wastewater treatment plant. Biomass and Bioenergy, 152, 106198.

Ioannou-Ttofa, L., Foteinis, S., Moustafa, A. S., Abdelsalam, E., Samer, M., & Fatta-Kassinos, D. (2021). Life cycle assessment of household biogas production in Egypt: Influence of digester volume, biogas leakages, and digestate valorization as biofertilizer. Journal of Cleaner Production, 286, 125468.

Jeong, K., Abbas, A., Shin, J., Son, M., Kim, Y. M., & Cho, K. H. (2021). Prediction of biogas production in anaerobic co-digestion of organic wastes using deep learning models. Water Research, 117697.

Karami, K., Karimi, K., Mirmohamadsadeghi, S., & Kumar, R. (2021). Mesophilic aerobic digestion: An efficient and inexpensive biological pretreatment to improve biogas production from highly-recalcitrant pinewood. Energy, 122361.

Khalid, A., Arshad, M., Anjum, M., Mahmood, T., & Dawson, L. (2011). The anaerobic digestion of solid organic waste. Waste management, 31(8), 1737-1744.

Kondusamy, D., & Kalamdhad, A. S. (2014). Pre-treatment and anaerobic digestion of food waste for high rate methane production–A review. Journal of Environmental Chemical Engineering, 2(3), 1821-1830.

Kong, Z., Wu, J., Rong, C., Wang, T., Li, L., Luo, Z.,& Li, Y. Y. (2021). Large pilot-scale submerged anaerobic membrane bioreactor for the treatment of municipal wastewater and biogas production at 25° C. Bioresource Technology, 319, 124123.

Kothari, R., Pandey, A. K., Kumar, S., Tyagi, V. V., & Tyagi, S. K. (2014). Different aspects of dry anaerobic digestion for bio-energy: An overview. Renewable and Sustainable Energy Reviews, 39, 174-195.

Kowthaman, C. N., Vam.S, & Kumar, P. S. (2021). Optimization strategies of alkaline thermo-chemical pretreatment for the enhancement of biogas production from de-oiled algae. Fuel, 303, 121242.

Kumar, S. (Ed.). (2012). Biogas. BoD–Books on Demand.

Leung, D. Y. C., & Wang, J. (2016). An overview on biogas generation from anaerobic digestion of food waste. International Journal of Green Energy, 13(2), 119–131.

Li, Y., Park, S. Y., & Zhu, J. (2011). Solid-state anaerobic digestion for methane production from organic waste. Renewable and sustainable energy reviews, 15(1), 821-826.

Lima, F., Branco, L. C., Lapa, N., & Marrucho, I. M. (2021). Beneficial and detrimental effects of choline chloride–oxalic acid deep eutectic solvent on biogas production. Waste Management, 131, 368-375.

Lin, C. Y., Chai, W. S., Lay, C. H., Chen, C. C., Lee, C. Y., & Show, P. L. (2021). Optimization of hydrolysis-acidogenesis phase of swine manure for biogas production using two-stage anaerobic fermentation. Processes, 9(8), 1324.

Lin, C. Y., Lay, C. H., Chew, K. W., Nomanbhay, S., Gu, R. L., Chang, S. H., ... & Show, P. L. (2021). Biogas production from beverage factory wastewater in a mobile bioenergy station. Chemosphere, 264, 128564.

Manesh, M. K., Rezazadeh, A., & Kabiri, S. (2020). A feasibility study on the potential, economic, and environmental advantages of biogas production from poultry manure in Iran. Renewable Energy, 159, 87-106.

Mao, C., Feng, Y., Wang, X., & Ren, G. (2015). Review on research achievements of biogas from anaerobic digestion. Renewable and sustainable energy reviews, 45, 540-555.

Neto, J. G., Ozorio, L. V., de Abreu, T. C. C., dos Santos, B. F., & Pradelle, F. (2021). Modeling of biogas production from food, fruits and vegetables wastes using artificial neural network (ANN). Fuel, 285, 119081.

Neupane, M., Basnyat, B., Fischer, R., Froeschl, G., Wolbers, M., & Rehfuess, E. A. (2015). Sustained use of biogas fuel and blood pressure among women in rural Nepal. Environmental Research, 136, 343–351.

Nsair, A., Onen Cinar, S., Alassali, A., Abu Qdais, H., ve Kuchta, K. (2020). Operational parameters of biogas plants: A review and evaluation study. Energies, 13(15), 3761, 10.

O'Connor, S., Ehimen, E., Pillai, S. C., Black, A., Tormey, D., & Bartlett, J. (2021). Biogas production from small-scale anaerobic digestion plants on European farms. Renewable and Sustainable Energy Reviews, 110580.

Pramanik, S. K., Suja, F. B., Zain, S. M., ve Pramanik, B. K. (2019). The anaerobic digestion process of biogas production from food waste: Prospects and constraints. Bioresource Technology Reports, 8, 100310.

Puyuelo, B., Ponsá, S., Gea, T., & Sánchez, A. (2011). Determining C/N ratios for typical organic wastes using biodegradable fractions. Chemosphere, 85(4), 653-659.

Rafiee, A., Khalilpour, K. R., Prest, J., & Skryabin, I. (2021). Biogas as an energy vector. Biomass and Bioenergy, 144, 105935.

Sreekrishnan, T. R., Kohli, S., & Rana, V. (2004). Enhancement of biogas production from solid substrates using different techniques—a review. Bioresource technology, 95(1), 1-10.

Taşkan, B. Abamektin Pestisitinin Anaerobik Arıtma Sisteminde Mikrobiyal Komunite ve Biyogaz Üretimi Üzerindeki Etkisinin Araştırılması. Journal of the Institute of Science and Technology, 11(3), 1854-1865.

Uçar, İ. R., Zekeriya, Özer., & Sarıbıyık, O. Y. Biyogaz Üretiminde Atıkların Verim Üzerine Etkilerinin Araştırılması. Çukurova Üniversitesi Mühendislik Fakültesi Dergisi, 36(3), 581-589.

Unpaprom, Y., Pimpimol, T., Whangchai, K., & Ramaraj, R. (2021). Sustainability assessment of water hyacinth with swine dung for biogas production, methane enhancement, and biofertilizer. Biomass Conversion and Biorefinery, 11(3), 849-860.

Üçok., S ve Ayberk, A. Büyükbaş hayvan dışkısı ve makroalg (Cladophora sp.)'den biyogaz üretimi. Mustafa Kemal Üniversitesi Tarım Bilimleri Dergisi, 26(2), 238-248.

Wang, K., Yun, S., Xing, T., Li, B., Abbas, Y., & Liu, X. (2021). Binary and ternary trace elements to enhance anaerobic digestion of cattle manure: Focusing on kinetic models for biogas production and digestate utilization. Bioresource Technology, 323, 124571.

Wellinger, A., Murphy, J. D., & Baxter, D. (Eds.). (2013). The biogas handbook: science, production and applications. Elsevier.

Yaqoob, H., Teoh, Y. H., Din, Z. U., Saba, N. U., Jamil, M. A., Mujtaba, M. A., & Abid, A. (2021). The potential of sustainable biogas production from biomass waste for power generation in Pakistan. Journal of Cleaner Production, 127250.

Zhang, A., Shen, J., & Ni, Y. (2015). Anaerobic digestion for use in the pulp and paper industry and other sectors: an introductory mini-review. BioResources, 10(4), 8750-8769.

Zhang, C., Su, H., Baeyens, J., & Tan, T. (2014). Reviewing the anaerobic digestion of food waste for biogas production. Renewable and Sustainable Energy Reviews, 38, 383-392.

RESEARCH OF THE EFFECTS OF HEAT TREATMENT APPLIED TO THE BARREL OF 22LR RIFLE ON SOLID PARTICLE EROSION WEAR

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ABSTRACT

It is targeted as a priority to produce rifled barrels by applying grooves in the barrel to efforts to contribute positively to today's arms and defense industry expectations. For this reason, it is predicted that the induction process (E.g. the variety of materials to be used as well as heat treatment variability, etc.) in these barrels during the transition to rifled firearms will directly contribute to the working life.

Very important to design rifles and pistols to allow production in different weather conditions like Sandstorm, desert, wind, blizzard, etc. and to prevent the rifle or pistol from being out of service due to deformation caused by particle contact. In particular, in terms of acceptability in the international arena specified in NATO standards; It is important to examine the "MIL-STD-810G Method 510.5 Sand and Dust" tests for certain particle effects. There is material loss in moving machine elements such as rifle components and/or friction surfaces, and this phenomenon is called wear. Since wear causes great economic losses, even if intensive research is carried out on it, a clear correlation has not yet been developed to estimate the amount of wear in practice, based on the results obtained from laboratory conditions, since wear is an event in which a wide variety of factors play a role. However, the amount of wear generally depends on the type of material, the shape of the rubbing surfaces, the friction conditions and the chemical effects of the environment, when solid particles with a certain speed hit a surface solid particle erosion wear occurs as a result of material loss in the upper layer of the surface. In general, severe erosion wear can occur when solid particles strike moving blading, valve holes, pipe joints, pipe elbows, and other surfaces. With this convergence, this experimental study was planned by prioritizing that the inner and outer surfaces of the barrels of rifles and pistols may be exposed to this type of wear.

Controlled heating and cooling processes applied in solid state with the aim of removing the residual stresses and internal structural tensions that may occur after the cold and hot forming processes applied to the materials, gaining hardness and strength ability, increasing the resistance of the material against impacts, changing the crystal structure and increasing the corrosion resistance. process applications are also applied to rifle and pistol barrels. In this study, 1144 (44SMn28) free cutting steel was used as the barrel material, and it was exposed to heat treatment with an impact time of 20 seconds. Before and after this process, the untreated barrel material had a hardness level of 226 HB, that is, approximately 18-20 HRC, while the heat treated barrel material reached a hardness of 53-55 HRC at the end of the application.

In order to carry out solid particle erosion wear tests for the use of rifles in different environmental conditions, especially under the influence of sand and dust, the experiments have been carried out by taking into account that the particle impact angle is 30°, 60° and 90° modeling the working conditions of the abrasive particles with Al2O3, SiO2 and C20 properties and the impact speed of 34 m/s. When the erosion rates obtained by proportioning the material loss in the samples to the abrasive particle used are compared, it is concluded that the heat treatment applied to the barrel materials and the effect of the different abrasive particles hitting the sample surfaces have a significant effect on the abrasion.

Keywords: 22LR Rifle, Barrel, Heat Treatment, solid particle erosion wear, erosion rate.

LR22 TÜFEĞİNİN NAMLUSUNA UYGULANAN ISIL İŞLEMİN KATI PARTİKÜL EROZYON AŞINMASINA ETKİLERİNİN İNCELENMESİ

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ABSTRACT

Tüfek namlularının boylu boyunca yiv-set işleminin uygulanması amacıyla yivli silah üretimine geçiş planlaması doğrultusunda namluya dahil edilecek yiv bölümü sayesinde yivli tüfek üretiminden günümüz silah ve savunma sanayi beklentilerine olumlu yönde katkı sağlama çalışmaları sektörel öncelik olarak hedeflenmektedir. Bu sebeple yivli tüfeklere geçiş aşamasında bu namlularda yapılan indüksiyon işleminin (örneğin, kullanılacak malzeme çeşitliliği yanında ısıl işlem değişkenlikleri vb.) çalışma ömrüne doğrudan katkısının olacağı öngörülmektedir.

Tüfek ve tabancaların kum fırtınası, çöl, rüzgâr, tipi vb. farklı hava koşullarında imalat hedeflerine imkân verecek ve partikül teması kaynaklı deformasyona bağlı tüfeğin veya tabancanın kullanım dışına çıkmasını önleyecek şekilde tasarlanması büyük önem arz etmektedir. Özellikle uluslararası kulvarda kabul edilebilirlik açısından NATO standartlarında belirtilen; "MIL-STD-810G Method 510.5 Sand and Dust" testlerinin belli partikül etkilerinde incelenmesi önemsenmektedir. Tüfek bileşenleri gibi hareket halindeki makine elemanlarında ve/veya sürtünen yüzeylerde malzeme kaybı söz konusu olup bu olay aşınma olarak adlandırılmaktadır. Aşınma büyük ekonomik kayıplara neden olduğundan üzerinde yoğun araştırmalar yapılsa bile aşınma, çok çeşitli etkenlerin rol aldığı bir olay olduğundan laboratuvar koşullarından elde edilen sonuçlara dayanarak uygulamadaki aşınma miktarını tahmin edecek net bir bağıntı henüz geliştirilememiştir. Bununla birlikte aşınma miktarı genel olarak malzemenin türüne, sürtünen yüzeylerin biçimine, sürtünme koşullarına ve çevrenin kimyasal etkilerine bağlı olup belirli bir hıza sahip olan katı parçacıkların bir yüzeye çarptığı zaman yüzeyin üst tabakasında malzeme kaybı meydana getirmesi sonucu katı partikül erozyon aşınması ortaya çıkmaktadır. Genel olarak katı parçacıkların hareketli kanatlara, valf deliklerine, boru bağlantıları ile boru dirseklerine ve diğer yüzeylere çarpmasıyla şiddetli erozyon aşınmaları meydana gelebilmektedir. Bu yakınsamayla tüfek ve tabancaların namlularının iç ve dış yüzeylerinin bu tür aşınmaya maruz kalabileceği önceliklendirilerek bu deneysel çalışma planlanmıştır.

Malzemelere uygulanan soğuk ve sıcak şekillendirme işlemleri sonrasında ortaya çıkması muhtemel kalıntı gerilmelerin ve iç yapı gerginliklerinin giderilmesi, sertlik ve dayanım yeteneği kazandırılması, darbelere karşı malzeme direncinin yükseltilmesi, kristal yapının değiştirilmesi ve korozyon direncinin arttırılması amaçları gözetilerek katı halde uygulanan kontrollü ısıtma ve soğutma işlemleri yani ısıl işlem uygulamaları tüfek ve tabanca namlularına da uygulanmaktadır. Bu çalışmada da 1144 (44SMn28) otomat çelik namlu malzemesi olarak kullanılmış olup 20 saniye etki süresinde ısıl işleme maruz kalmıştır. Bu işlem öncesi ve sonrasında sertlik seviyesinde ısıl işlem görmemiş namlu malzemesi 226 HB yani yaklaşık olarak 18-20 HRC sertlik seviyesine sahip iken ısıl işlem görmüş namlu malzemesi ise uygulama sonunda 53-55 HRC sertliğe ulaşmıştır.

Tüfeklerin farklı çevre şartlarında kullanımına yönelik özellikle kum ve toz etkisi özelinde katı partikül erozyon aşınma testlerinin yapılabilmesi amacıyla partikül çarpma açısının 30°, 60° ve 90° olması gözetilerek Al_2O_3, SiO_2 ve C20 özellikte aşındırıcı partiküllerin etkisinde ve 34 m/s çarpma hızına ait çalışma şartları modellenerek deneyler gerçekleştirilmiştir. Numunelerdeki malzeme kaybının kullanılan aşındırıcı partiküle oranlanmasıyla elde edilen erozyon oranları karşılaştırıldığında namlu

malzemelerine uygulanan ısıl işlemin ve numune yüzeylerine çarpan farklı özellikteki aşındırıcı partikül etkisinin aşınmaya önemli etkisi olduğu sonucuna varılmıştır.

Anahtar Kelimeler: LR22 tüfek, namlu, ısıl işlem, katı partikül erozyon aşınması, erozyon oranı.

INTRODUCTION

Causing great economic losses on the economies of countries and wear ,defined as material loss during a certain period or suddenly ; It is a very complex phenomenon that depends on the material type, the additional processes applied to the material, the shape of the surfaces, the load effect, the surface roughness, the friction coefficient, the relative motion, the contact of the abrasives with the surface, the environmental parameters and many similar parameters. (DIN 50320, 1979).

Since wear is a phenomenon in which a wide variety of factors play a role, a clear relationship has not yet been developed for estimating the amount of wear in practice based on results from laboratory conditions.Erosion wear is one of the most common types of wear and occurs as a result of material loss in the upper layer of the surface as a result of particles hitting a surface at a certain speed (ASM, 1997 and ASM, 2017).Solid particle erosion caused by the collision of solid particles on the material surface, especially in weapons and defense industry applications, especially in products such as sand, gravel, dust cloud, volcanic ash, etc. The necessity of using it especially in conditions where it has effects in international standards has become increasingly important in recent years (Stachowiak and Batchelor, 2006).

In addition to the impact velocity and impact angle of the particles, the particle type, shape, size, hardness and flow rate also reveal serious differences in the course of wear. In addition, changes in target material properties directly affect this wear (Hutchings, 2000 and Bağcı, 2016).

The barrel, defined as the most important part of the weapon, reveals all the effectiveness of a weapon. The barrel is defined as the pressure-resistant tube directed by the gun bullet to the desired target at a certain speed of use. The maximum number of shots that can be made in the barrel determines the barrel life. This is sufficient when the TOP (Test Operation Procedure) standard 3-2-045 (2007) determines as the basic criterion that the barrels used in rifles used by the rifled armed forces must withstand the NATO requirement of 25,000 shots. Smooth barrels that can withstand 100 shots as required by the TSE 870 (2019) standard are sufficient. In this context, the durability of the barrels also varies according to the usage area and conditions, and improvements can be achieved in the life of the barrel material thanks to heat treatment applications. With this aim in mind, induction surface hardening was applied to the barrel material in order to determine and compare the resistance of the inner and outer surface materials of the LR22 rifle against solid particle erosion wear conditions. In this process, high-frequency currents on the metal surface and the resistance of the metal against these currents are moved, and the surface of the part is suddenly heated and cooled, and hardness variability is ensured. Precise control of hardening depth is the most basic parameter of the process. Although the studies in the international arms industry are generally on propellants, design, control systems and materials, current studies on the barrel continue to extend the life of the barrels in different environmental conditions (Bolton-King, 2012).

"Sand and Dust" tests have become more and more important in weapons and defense industry applications and it has been predicted that the effect of this effect adapted to laboratory conditions can be determined by solid particle erosion wear tests. By giving priority to this situation, different impact angles, abrasive particle effects and changes in impact velocities of 1144 carbon steel barrel samples with and without heat treatment were revealed with this experimental study. As a result, the importance of particle contact in barrel materials has been focused on with models adapted to the change in environmental conditions.

MATERIALS AND METHODS

Barrels produced in weapons vary according to weapon types. There are many types such as long barrel, short barrel, fluted and non-fluted. Although the barrels differ according to the weapons, it is expected to hit all kinds of targets, to have mechanical strength and longevity. In order to meet these expectations,

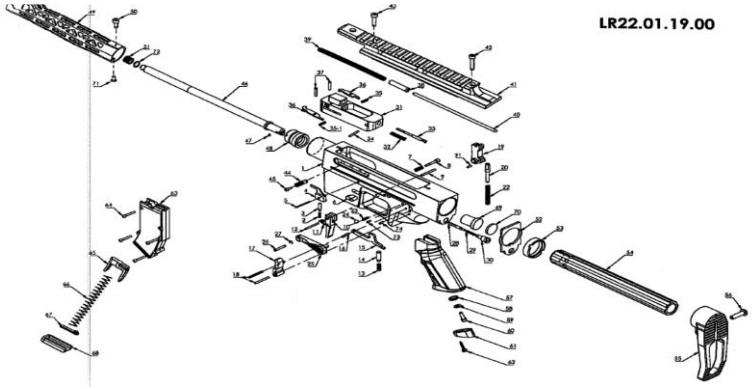
steels whose mechanical properties can be improved by heat treatment and corrosion resistance are used especially in barrel construction. However, improving the properties of steels and bringing them to the desired form is not enough to become a barrel.The barrel must be resistant to corrosion on the outer surface and wear-resistant on the inner surface. In this context, it is necessary to apply different technological processes inside and outside the barrel, and these processes should not go beyond the barrel form and tolerances (Chen et al., 2017).

Lr 22 Rifle And Its Features

In order to determine the compliance of the heat treatment differences in the inner and outer surface materials of the 22LR rifle with the international standard tests, the answers given to the results under the effect of particles were determined and focused on the definition of life efficiency sand and dust. environments. These experiments were carried out on the 22LR Derya Silah branded rifle, the details of which are given in Figure 1, of the barrel material properties.



a)



b)



c)

Şekil 1. 22LR rifle details; a) Assembled view, b) Exploded view, c) Technical specifications.

Abrasion Tester

Solid particle erosion wear tests were carried out in the specially designed test installation shown in Figure 2, and the test method in which abrasive particles of different abilities were hit on the test sample surface and the wear status was examined by using dry and compressed air. The impact angle (30°, 60°,

90° was chosen in the experiments), which is one of the most important variables affecting this type of wear, can be changed by rotating the sample holder, in which the barrel samples with different properties are placed, around its own axis. In addition, the distance between the nozzle and the test sample can be adjusted in a controlled manner by moving the sample holder up and down (ASTM G76–95, 2000).

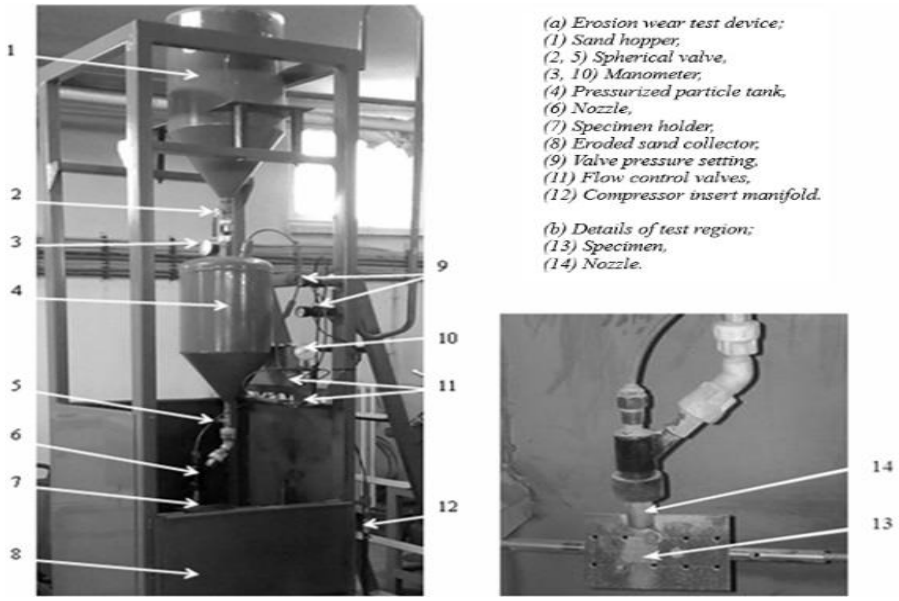


Figure 2. Wear test setup and equipment.

The double disc method was used to determine the abrasive particle impact velocity (experiments were performed at 34 m/s) in solid particle erosion wear, and the details of this method are shared in Figure 3 (Ruff and Ives, 1975).

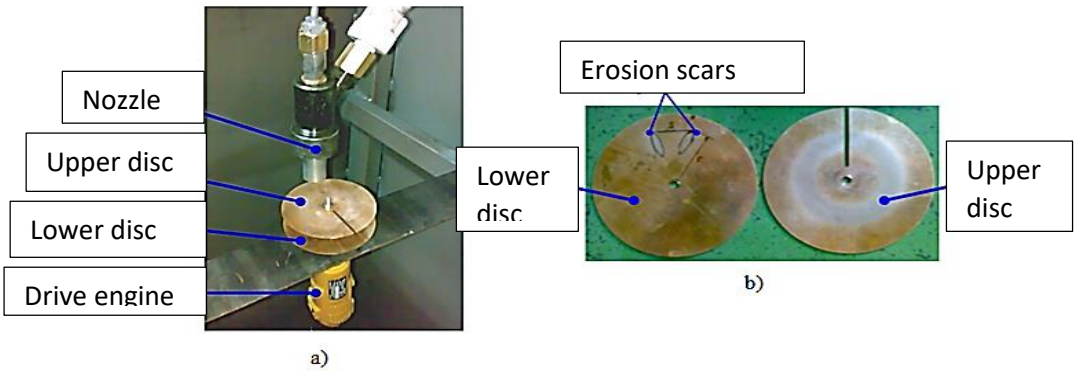


Figure 3. Double disc method; a) Impact velocity measurement and equipment, b) Detection of erosion marks on the discs.

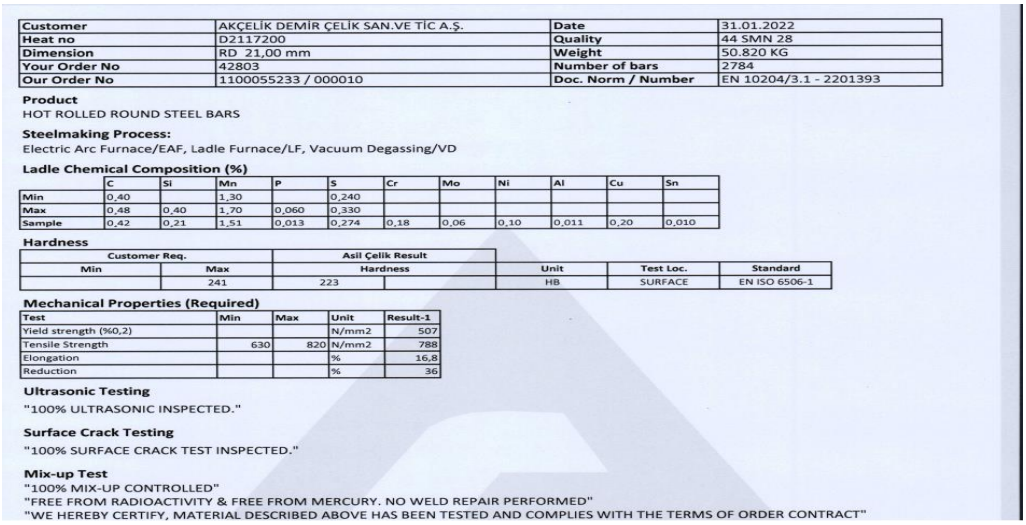
In the experiments, abrasive particles such as Al2O3, SiO2 and C20, which are widely used in the literature, were preferred as abrasive particles and their effects on the barrel materials were examined. Before and after the experiment, the erosion rates were determined according to the weight of the abrasive particles used by measuring the weights of the samples by means of a precision balance with ±0.1 mg sensitivity.

Considering the experimental studies, the erosion rate (ER) value Eq. It is calculated by the formula (1). The unit of erosion rate calculated in the formula is mg/kg. In order to determine the mass loss (ΔW) of the samples after the experiments, the result is obtained in mg by using a precision balance. The abrasive mass acting on the surface of the barrel samples that have been heat treated and not subjected to any heat treatment is expressed with the symbol (m) and is determined in kg in the formula.

$$ER = \frac{aşınan\ malzemenin\ kütle\ kaybı\ (\Delta W)}{aşındırıcı\ partikül\ kütlesi\ (m)} \quad (1)$$

Experimental Samples

Although 1144 (44SMn28) carbon steel is used as the barrel material in the LR22 rifle, significant variations in hardness level are provided in products with the same chemical composition, depending on the processes applied to the inner and outer surfaces of the barrel. In case of low amount of carbon in the steel composition, the high hardness values that can be obtained in diffusion hardening processes cannot be achieved in induction hardening. In addition, BRUKER Brand Q2 ION 250247 Model Optical Emission Spectrometer device was used to obtain the results in Figure 4 by prioritizing that the steels to be heat treated should contain carbon in the range of 0.3%–0.7%, due to the high probability of warping and cracking in high-carbon steels.



Customer	AKÇELİK DEMİR ÇELİK SAN.VE TİC A.Ş.	**Date**	31.01.2022
Heat no	D2117200	**Quality**	44 SMN 28
Dimension	RD 21,00 mm	**Weight**	50.820 KG
Your Order No	42803	**Number of bars**	2784
Our Order No	1100055233 / 000010	**Doc. Norm / Number**	EN 10204/3.1 - 2201393

Product
HOT ROLLED ROUND STEEL BARS

Steelmaking Process:
Electric Arc Furnace/EAF, Ladle Furnace/LF, Vacuum Degassing/VD

Ladle Chemical Composition (%)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Sn
Min	0,40		1,30		0,240						
Max	0,48	0,40	1,70	0,060	0,330						
Sample	0,42	0,21	1,51	0,013	0,274	0,18	0,06	0,10	0,011	0,20	0,010

Hardness

Customer Req.		Asil Çelik Result			
Min	Max	Hardness	Unit	Test Loc.	Standard
	241	223	HB	SURFACE	EN ISO 6506-1

Mechanical Properties (Required)

Test	Min	Max	Unit	Result-1
Yield strength (%0,2)			N/mm2	507
Tensile Strength	630	820	N/mm2	788
Elongation			%	16,8
Reduction			%	36

Ultrasonic Testing
"100% ULTRASONIC INSPECTED."

Surface Crack Testing
"100% SURFACE CRACK TEST INSPECTED."

Mix-up Test
"100% MIX-UP CONTROLLED"
"FREE FROM RADIOACTIVITY & FREE FROM MERCURY. NO WELD REPAIR PERFORMED"
"WE HEREBY CERTIFY, MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF ORDER CONTRACT"

Figure 4 Chemical composition of 1144 "44SMN28" carbon steel in standards

After the surface hardening process, dry tempering is applied in the range of 160 ℃ – 200 ℃ in order to transform the residual austenite form in the inner structure into cubic martensite form. It was concluded that sufficient strength was obtained as a result of keeping the hardness of the induction areas at the hardness level of 50–56 HRC by tempering after the induction process, and the hardness values were obtained in the measurements made with the TRONIC brand vickers micro hardness measuring device.



Figure 5 Barrel with heat treated surface

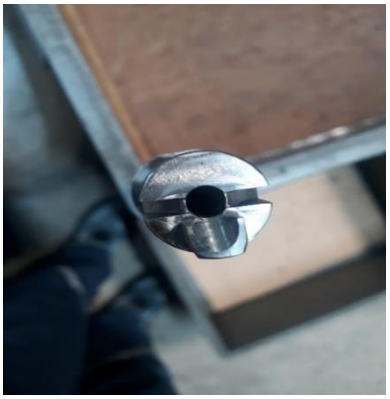


Figure 6 Barrel without surface heat treatment

In Figure 5 and Figure 6, heat-treated and non-heat-treated grooved barrel surfaces are visible. Here, it is seen that the surface of the heat-treated surface is protected from the wear effect after the bullet shot, and the surface of the untreated barrel is deformed. This deformation shortens the working life of the rifled rifle due to "the failure to remove the shell of the bullet". Thanks to the heat treatment we apply, this effect is eliminated. The same issue is more important because the pressure is much higher in shotguns, which is another product group.

The most critical parts in a shotgun are the parts that are under the influence of sudden pressure during the re-opening movement as a result of the explosion of the cartridge, and these parts can be defined as the barrel, lock, cap, bolt handle, mechanism, hammer and trigger. Based on the induction and surface hardening logic in this study, these processes on other parts will be questioned in the future.

RESULTS

Al2O3, SiO2 and C20 in which three different impact angles (30°, 60° and 90°) were preferred in this experimental study, in which heat treatment was also used in order to impart hardness to 1144 carbon steel test samples, depending on the difference in expectations on the inner and outer surfaces of the barrel materials. In this study, the erosion wear behaviors of solid particles formed on the test sample surfaces by the abrasive particles at 34 m/s impact speed were determined. Depending on the experimental data obtained, the graphs in Figures 7 and 8 were created. These graphs show the variation of the erosion rates under the effect of different abrasives and a constant impact velocity of the untreated and heat treated test samples, respectively, depending on the impact angle. In order to better interpret the results obtained in the experiments, the graphs of similar test samples are given collectively.

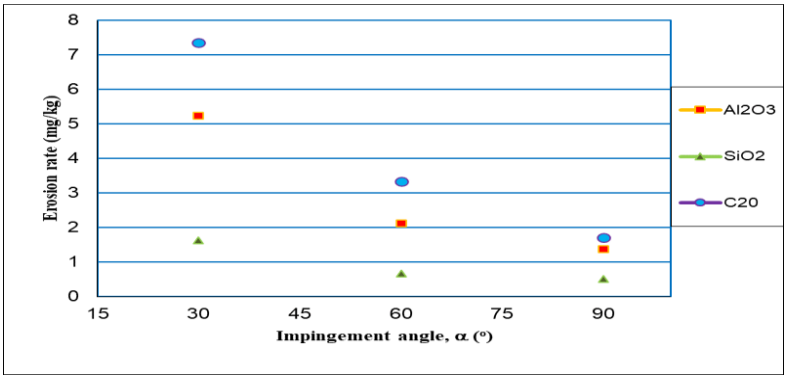


Figure 7. Erosion rate variation with impact angle of untreated test specimens in different abrasives.

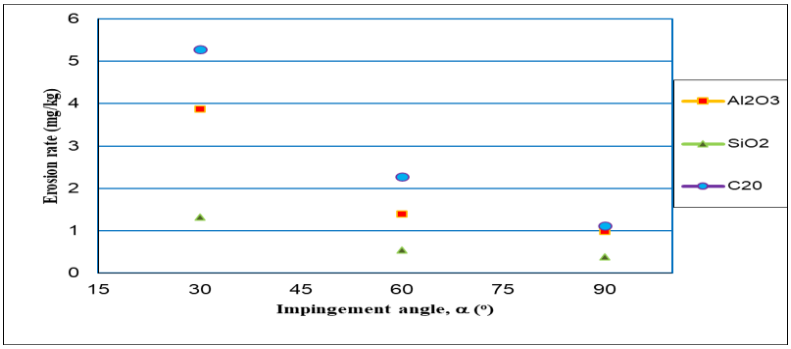


Figure 8. The variation of the erosion rate with the impact angle of the heat-treated test specimens in different abrasives.

DISCUSSION

In order to increase the sensitivity obtained from the experimental results, each test sample was subjected to three repetitions at each impact angle and graphs were created by taking the average of these values as a reference. The erosion rate (mg/kg) values used in the creation of the graphs were calculated by dividing the weight loss in the test samples by the total abrasive particle weight used for each test sample, and it was determined that the heat treatment effect contributed positively to the solid particle erosion wear and increased the erosion resistance of the barrel materials. In other words, depending on the heat treatment effect applied to the 1144 carbon steel barrel materials, the 18-20 HRC value in the hardness level was subtracted from 53-55 HRC, resulting in a decrease in the erosion rate value by reducing the amount of wear.

Solid particle erosion wear in materials varies significantly depending on the impact angle of abrasive particles of different properties and grain sizes. When the results are interpreted in terms of literature compatibility, the trend in the test samples is generally in the case of oblique impact, which is defined for the erosion rate of materials with ductile structure.

As a result of the changes in the surfaces of the test samples at different impact angles, the orientation at the 30° impact angle was defined as the scraping effect, and the impact at the 60° and 90° impact angles was interpreted as transforming into the burial style. This situation affected the deformation on the material surface depending on the change in the impact angle of the abrasive particles, and this changed the wear on the materials.

CONCLUSION

Depending on the experiments, the following results were obtained regarding the solid particle erosion wear behavior of the barrel materials with sectoral use.

In addition to the contribution of the heat treatment effect to the hardness level, the change in erosion wear, namely the presence of dust and sand effect, had an important effect. It has been determined that variables affecting the mechanical properties of materials such as hardness have a significant effect on erosion wear. In other words, it contributed positively to the erosion resistance of approximately 25%-40% in the heat treated test samples compared to the untreated test samples.

Abrasive particle properties also showed a dominant effect on the erosion wear mechanism, and it was determined that both mechanical property difference and dimensional variability seriously affected the erosion rate.

Regardless of the heat treatment effect, it was concluded that the highest erosion rate of the barrel materials in both groups occurred at the impact angle of 30°, and a decrease in the erosion rate occurred as the impact angle increased, that is, from 30° to 90°.

ACKNOWLEDGEMENTS

In addition to the authorities who contributed to the use of experimental facilities of Konya Technical University Tribology laboratory, we would like to thank especially DERYA Arms Industry and Trade Limited Company for their hardware support for the barrel material and abrasive particle samples.

REFERENCES

ASM Handbook 1997. Materials Selection and Design. American Society for Metals International, Volume 20, George E. Dieter, USA. In addition to the authorities who contributed to the use of experimental facilities of Konya Technical University Tribology laboratory, we would like to thank especially DERYA Arms Industry and Trade Limited Company for their hardware support for the barrel material and abrasive particle samples.

ASM Handbook 2017. Friction, Lubrication, and Wear Technology. American Society for Metals International, Volume 18, George E. Totten, ABD.

ASTM G76–95 2000. Standard Test Method for Conducting Erosion Tests by Solid Particle Impingement Using Gas Jets, Annual Book of Standards, ASTM, Vol.03.02, West Conshohocken, PA.

Bagci M 2016. Determination of solid particle erosion with Taguchi optimization approach of hybrid composite systems. Tribology International, 94: 336-345.

Bolton-King RS 2012. Classification of Barrel Rifling Transitions for the Forensic Identification of Firearms, Nottingham Trent Univercity.

Chen G, Sun J, Qian L, Liu T 2017. Analysis Of Gun Barrel Rifling Twist. AIP Conference Proceedings, 1839, 020096, 1-12.

DIN 50320 1979. Wear; terms; systems analysis of wear processes; classification of the field of wear, Deutsches Institut für Normung.

Hutchings, I.M., Solid particle erosive wear testing, ASM Handbook, ASM International, Materials Park, vol. 8, 338–345, 2000.

Ruff AW and Ives LK 1975. Measurement of solid particle velocity in erosive wear. Wear, 35: 195–199.

Stachowiak GW and Batchelor AW 2006. Abrasive, erosive and cavitation wear. Engineering Tribology (Third Edition), 501–551.

Test Operations Procedure 3-2-045, (2007), Small Arms, Hand and Shoulder Weapons and Machineguns, US Army Aberdeen Test Center, ABD.

TS 870 2019. Ateşli Silahlar-Yivsiz-Setsiz Tüfekler- Av, Spor ve Müsabakalar İçin. Türk Standartları Enstitüsü, Ankara.

REDESIGN OF WING FUSELAGE BRACKET BY USING TOPOLOGY OPTIMIZATION

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ABSTRACT

Topology optimization (TO) has gained great importance in aeronautics and aerospace engineering according to its capability to decrease mass and get the optimum material distribution. Aviation industry also looks for the optimum material distribution to decrease weight of the aerospace vehicles. However, there are still not lots of topology optimization applications in this industry. This work focuses on structural analysis, topology optimization and its capability to decrease mass of the aerospace bracket. The main purpose of the paper is to create a new design of wing fuselage bracket which is a middle size aircraft's lug via topology optimization tools under predetermined boundary conditions. The wing fuselage bracket is formulated as a general optimization problem and is solved by using the finite element method (FEM). Bracket is modelled and then analysed with finite element analysis software. Static analyses and density-based topology optimization methods are applied to the structure. According to the results, new wing fuselage bracket is designed, and total mass decreased under determined boundary conditions where it can withstand the existing level of stresses. This work indicates that a heavy loaded attachment bracket is redesigned by topology optimization and mass reduction higher than 20% is achieved under specified boundary conditions.

Keywords: Topology optimization, Structural design, Finite element analysis (FEA), Structural analysis, Wing fuselage bracket, Aerospace.

INTRODUCTION

Aircrafts have been flying in the sky since early 20th century(Petrescu et al., 2017). They can be called as an advanced mechanical structure where aerospace applications can be used wide range of areas such as transportation of cargo or passenger, military purpose etc. There can be any other classification according to engine system (turbojets, turbofans etc. (Jaw & Mattingly, 2009)), their size or air speeds. These advanced mechanical structures design is a challenging task for designers because they should withstand various loads while they are in operation. Also, they should withstand manoeuvre movement in the sky. According to this, it is easy to obtain that there will be lots of different loads on these structures. Although, there is a difference between aircrafts according to their duties, there are some common components in the system. One of the primary and widely used structural elements can be named as lugs in airframe structure (Witek, 2006).

Wing fuselage bracket is one of the critical parts of aerospace applications. Generally, these brackets are subjected to miscellaneous air conditions where they operate under moisture, warm or cold air (Witek, 2006). These kinds of brackets not only used for wing but also, they used for pylon supports or landing gears (E.R.M, Patel, & Technology, 2013). They are occupying relatively huge area and creates

lots of mass in the structure. One of the most important problems in the aerospace applications is mass reduction. To beat this situation new materials and designs are used and adopted for these components (Mrazova, 2013). Generally, applications of mass reduction activities should be hold without missing their structural functionalities. Mass reductions are also good for the environmental purpose (Nickels, 2015). At this moment topology optimization is a good key point for reducing mass because it is an effective tool for mass reduction without using any performance capacities (Zhu, Zhang, & Xia, 2016). In the literature there are some works about topology optimization and its effectiveness. Parts of Airbus A320 gain approximately 64% mass reduction by using topology optimization (Tomlin & Meyer, 2011). Optimized aerospace parts can be used by using additive manufacturing methods (Berrocal et al., 2019). Wing fuselage attachment bracket are shown in some works it can be said that it is a common structure for the aerospace application to connect wing's frame (E.R.M et al., 2013). This can be one of the aerospace parts which optimized. Steel 4340 and aluminum 2024 are common materials for these kinds of structures (E.R.M et al., 2013; Rao, Rao, & Development, 2017; Sriranga, Kumar, & Technology, 2014). Brackets also can be used in UAV aircraft (Ferro, Mazza, Belmonte, Seclì, & Maggiore, 2017). Similar brackets are shown in the different studies with different perspectives (Balamurugan, 2021). It is easy to obtain these structures are very common in the aerospace application and mass reduction of the structure will be great advantage according to its widespread usage. Thus, this paper focuses to redesign of a wing fuselage bracket by using topology optimization method. The bracket can be seen in the Figure 1 as initial geometry and dimensions are taken from literature references (Sumanth & Ayyappa, 2018).

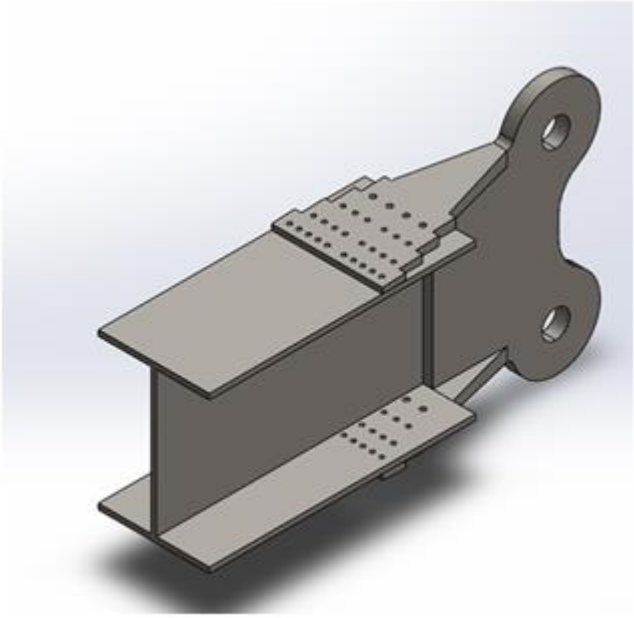

Figure. 1 Wing fuselage bracket.

Topology Optimization

Generally, optimization can be defined as to reach maximum efficiency under some circumstances. Basically, essential purpose of optimization is to figure out the best possible solution under given circumstances (Olason & Tidman, 2010). Topology optimization and advancement has turned into a viable apparatus for least-weight and execution plan, particularly in air transportation and aeronautic design (Zhu et al., 2016). The purpose is to get maximum efficiency from the existing product. Basically, for the topology optimization it can be said that purpose is to get the minimum mass for maximum performance. The main difference between topology optimization and size, shape optimization that

topology optimization does not deal with predefined configurations. The result of the topology optimization can be rearranged by using intuition and knowledge of the designer or users.

To accomplish this purpose, finite element methods (FEM) can be used. FEM discreet the area into the meshes where this operation allows easy to make complicated calculations (Olason & Tidman, 2010).

The Figure 2 illustrates the difference between size, shape, and topology optimization clearly. Size and shape optimization strive pre-existing topology. Topology optimization creates new one. Size optimization adjusts size of the object it can be length, width etc. Shape optimization deals with existing shapes and finds optimal ones. Shortly, topology optimization optimizes whole geometry according to loading conditions and areas.

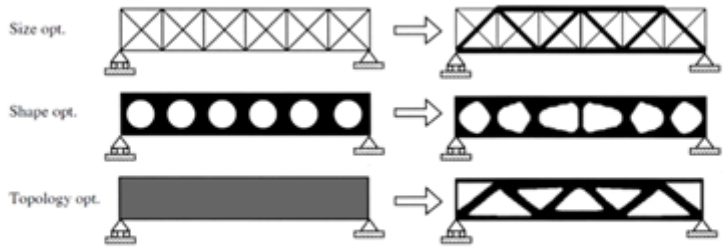

Figure. 2 Comparison between optimization types (Gebisa & Lemu, 2017).

MATERIALS AND METHODS

A. Materials

AISI 4340 is a good structural material option for aerospace structures because of its mechanical properties. Some heat treatment operations provide excellent mechanical properties. According to literature studies, it is possible to get ultimate tensile strength values which are higher than 2000 MPa and high fracture toughness values by conducting heat treatment processes. It is classified as high strength alloyed steel and it offers different properties at the different temperature levels. Table 1 shows chemical properties of AISI 4340 steel and Table 2 shows mechanical properties of the AISI 4340 steel (Lee & Su, 1999; Ritchie, Francis, & Server, 1976).

Aluminum 2024 can be classified as one of the materials which are suitable for the infrastructure of wings. According to its density, they can be classified as light weight structure. Aluminum 2024 which is one of the advanced aluminum alloys for the aerospace application offers better fracture toughness, ductility, and damage tolerance. Thanks to these qualifications as they are suitable material for the advanced aerospace applications. Table 1 shows chemical properties and Table 2 shows mechanical properties of Al2024. According to its density and other mechanical properties it can be used as wing spar in the wings to get light structures for aerospace applications (Huda, Taib, Zaharinie, & Physics, 2009; Nakai, Eto, & A, 2000; Petrašinović, Petrašinović, Rašuo, & Milković, 2017).

Table 1. Chemical properties of AISI 4340 steel and Aluminum 2024 (Dagdag et al., 2019; Lee & Su, 1999).

AISI 4340

Elements	C	Si	Mn	Ni	Cr	Mo	P	S
wt. (%)	0.39	0.24	0.61	1.46	0.67	0.17	0.02	0.006

Aluminum 2024

Elements	Zn	Mg	Cu	Cr	Mn	Si	Fe	Ti
wt. (%)	0.25	*1.2-1.8*	*3.8-4.9*	*0.10*	0.3-0.9	0.50	0.50	0.15

Table 2. Mechanical properties of AISI 4340 steel and Aluminum 2024 (Ganesh, 2016).

S.No	Parameters	Steel Alloy, AISI-4340	Aluminum Alloy-2024-T351
1	Young's Modulus(N/mm^2)	203000	72400
2	Poison's Ratio	0.32	0.33
3	Ultimate Tensile Strength (N/mm^2)	1835	503.7
4	Yield Stress, σ_y (N/mm^2)	1600.8	472.6

B. Methodology

Models were designed by using CAD (Computer Aided Drawing) software. FEA (Finite Element Analysis) methods were used in structural analysis of the components. Different cases and verification studies were analysed in FEA.

For the load calculation of existing situation were done by using medium size aircraft information and 6g methods (Ganesh, 2016).

Total weight of the aircraft and load factor in design were considered as 6000kg (~58800N) and 6g respectively. Design limit load on the structure is 352800N with a 1.5 factor of safety.

Design ultimate load can be calculated as 352800*1.5 = 529200N.

Distribution of lift load on fuselage and wing is 35% and 65%. Total load acting on the wings are then 529200*0.65 = 343980N. Load acting on each wing is 343980/2 = 171990N. Number of spars in the wing is 3. Load sharing by spares are

Spar 1 = 30% Spar 2 = 45% Spar 3 = 25%

The wing fuselage attachment considered for the current analysis is at spar 3. Therefore, load acting on the spar 3 = 171990*0.25 = 42997.5N

Therefore, total load acting on the wing-fuselage (lug) attachment bracket is calculated as P1 = 90584.62N (Ganesh, 2016; Sumanth & Ayyappa, 2018).

C. Boundary Conditions and Loads

After modelling by using CAD software and meshing operations, static analysis was done by using finite elements software. Calculated load was acted on the end of the I beam through to +y direction which is given in the Figure 3. Blue region shows us the fixed supports and red region illustrates us the force load that is 90854.62N. I beam is chosen as Aluminum 2024 alloy and wing fuselage bracket is chosen as AISI 4340 steel.

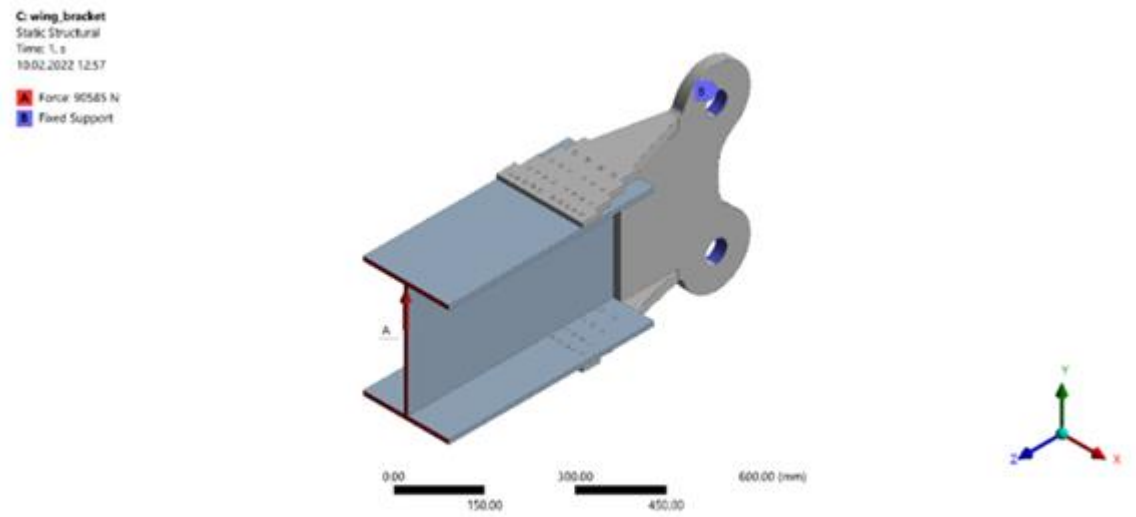

Figure. 3 Load and boundary condition applications.

Linear contact application was done by choosing no separation contacts and rivets were modelled in the FEM software. First static analysis shows us the current situation of the bracket. Tetrahedron mesh elements which are strong meshing elements, were chosen for this purpose. Sizing methods were used some points on the structure. Model consists of 82147 nodes and 44460 elements. Mesh element quality was higher than 0.70 in the average which is acceptable value (Ansys, 2013). The element quality is the ratio of the element's volume to the edge length and gets perfect as it approaches 1. Applied load showed as A, and B shows us the fixed points of the structure in the Figure 3. Results were given in the result and discussion section. Result of static analysis was branched through to topology optimization. The Figure 4 illustrates the excluded region for topology optimization process. Some points should be extracted from the topology optimization study. In the program controlled, supporting points were already extracted, but it should be rearranged according to the structure. Mass optimization was aimed under predefined circumstances.

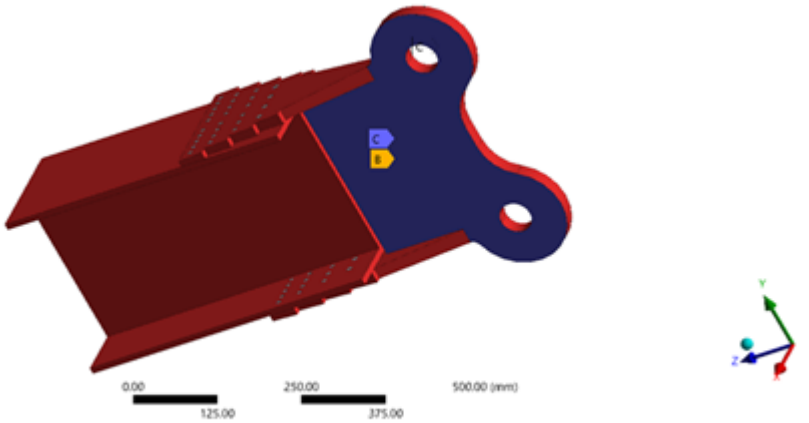

Figure. 4 Topology optimization regions.

Red regions show the restricted areas during the optimization. While solving the case, program do not touch these areas during the optimization works. These areas restricted because there can be any other regions inside the wing which are related with this structure's general shape. The case desires to minimize mass around the blue regions. According to optimization results, new model designed by using CAD software, and validation analysis were done by using FEA software again.

RESULTS AND DISCUSSION

The Figure 5 shows the results of the static analysis. It is easy to see stress concentration and stress contour on the structure. Maximum stress points were close to fixed support holes which are pointed on the Figure 5. As expected, the other critical areas are located close to the rivet connection regions. Approximately, 1200 MPa stress was obtained according to static structural analysis on the wing fuselage bracket. This results also consistent with the literature works (Ganesh, 2016; Rao et al., 2017; Sumanth & Ayyappa, 2018) According to these results topology optimization studies started to run. Boundary conditions of it was already given by the Figure 4 which red regions excluded from the topology optimization operation and blue region depict the mass optimization area.

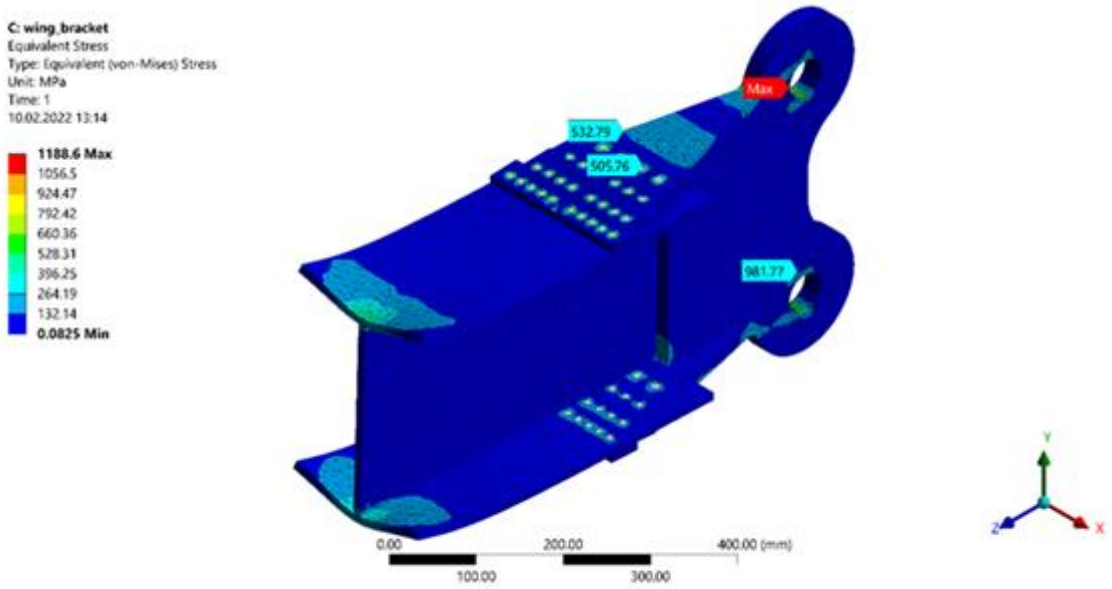

Figure. 5 Static analysis results.

This model branched through to topology optimization. The Figure 6 shows us the topology optimization result data of the model. According to this result, model was revised and redesigned. In this operation, CAD softwares were employed together to get optimal design. Shapes which are shown in the user defined data on the structure by using design software and intuition of the designer. New design showed in the Figure 7. It gives isometric view of the optimized model. It redesigned again via CAD and the Figure 6 illustrates the user defined topology optimization result instead of stereolithography (STL) data. This data is more useful while you are doing your new designs on the structure. Finally, design was completed by using CAD software which can be seen in the Figure 7.

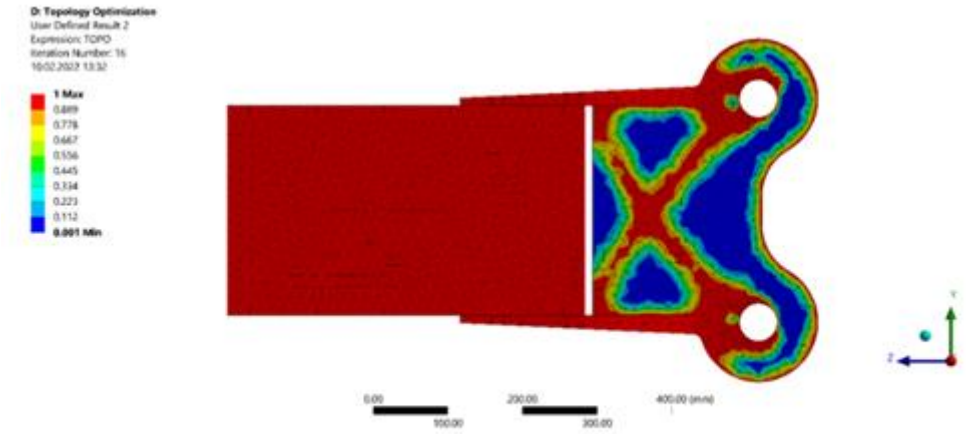

Figure. 6 Topology optimization results of the bracket.

According to optimization, there are lots of mass gained, it is quite important when we think that there are lots of structure like this in the plane wing. This calculation and predesign was done according to medium size fighter jet, all the calculations can be rearranged according to different plane. There are lots of wing fuselage bracket inside of the wing. Thanks to this situation, there will be lots of weight reduction according to this optimized model. First model which is given in the Figure 1 is 26.74561 kg, after the optimization processes the final value decreased to 20.59812 kg as seen in the Figure 7.

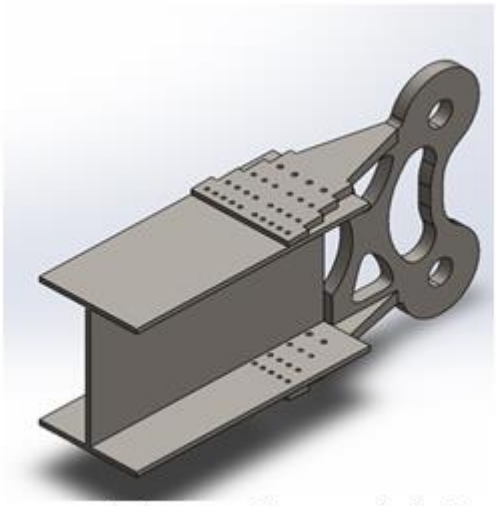

Figure. 7 New design according to optimization results.

It is an acceptable mass reduction according to topology optimization works. It is needed to validate work doing some structural analysis to the structure again. In some cases, topology optimization works can be helpful to decrease level of the stress on the structure. Branches or empty spaces can be helpful to create uniform stress distribution on the structure. New analysis results should be discussed, and new designs should be interpreted according to the improvements achieved by topology optimization. Loading conditions were kept same as seen in the Figure 3. Also meshing operations were done by using tetrahedron elements.

The Figure 8 shows the analysis result of the optimized model. In the Figure 8 'I' beam was hidden from the data to concentrate on the wing fuselage bracket.

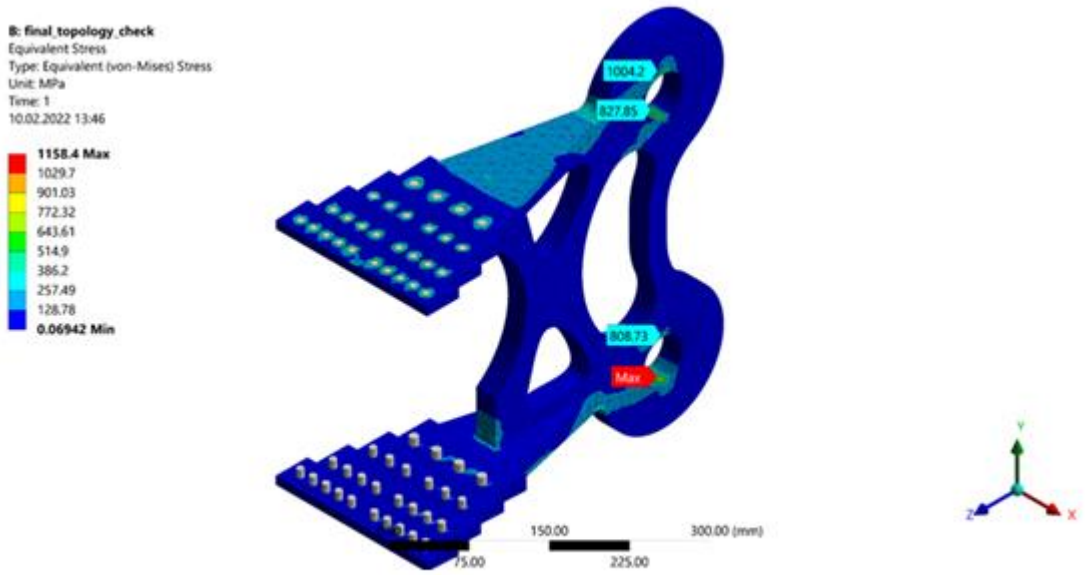

Figure. 8 Verification operations of optimized model.

Maximum stress obtained in the similar points as observed in the initial model. These positions are close to fixed supports, and also close to rivets. Results shows stress distribution fields are close to the connection points. According to these results it might be said that this connection point can be redesigned. Another connection approach may be helpful for the structure instead of rivets to improve strength.

CONCLUSION

Table 3 which excludes 'I' beam mass and shows that mass reduction of the structure. Topology optimization operation gained mass, which is approximately 6.15 kg (22.98%). This result is beneficial for the fuel consumption of the airplane and also environmental impact. It can be said that topology optimization is a helpful and fast tool for the designers to make new designs under some circumstances. After the optimization process considerable amount of mass reduction was obtained and these results were given in the Table 3. Maximum stress points were also presented on the figures for the cases before and after optimization. Maximum stress and stress concentration regions shows similar trends after the optimization process and values are acceptable according to material properties of the AISI 4340 where these values lie under the yield strength. Larger mass reduction can be gained during the processes, but operational criteria's should be considered for higher expectation in the aerospace industry.

Table 3. Mass reduction of the wing fuselage bracket.

Model	Mass before optimization	Mass after optimization	Gained mass
Wing fuselage bracket	26.74561 kg	20.59812 kg	6.14749 kg (only lug)

D. Future Scope

For the critical locations stress intensity factors can be calculated and some representative and expected cracks can be included to the model to analyse failure modes in detail. Also, new connection methods and new materials can be investigated instead of the rivets.

REFERENCES

Ansys, I. J. v. (2013). ANSYS meshing user's guide. *15317*, 724-746.

Balamurugan, K. J. M. T. P. (2021). Fracture analysis of fuselage wing joint developed by aerodynamic structural materials. *38*, 2555-2562.

Berrocal, L., Fernández, R., González, S., Periñán, A., Tudela, S., Vilanova, J., . . . Lasagni, F. J. P. i. A. M. (2019). Topology optimization and additive manufacturing for aerospace components. *4*(2), 83-95.

Dagdag, O., Hsissou, R., Berisha, A., Erramli, H., Hamed, O., Jodeh, S., & El Harfi, A. J. J. o. B.-a. T.-C. (2019). Polymeric-based epoxy cured with a polyaminoamide as an anticorrosive coating for aluminum 2024-T3 surface: experimental studies supported by computational modeling. *5*(3), 1-13.

E.R.M, H., Patel, S. J. I. J. o. I. R. i. S., Engineering, & Technology. (2013). Stress Analysis for Wing Attachment Bracketof a six seater Transport Airframe Structure. *2*, 3170-3177.

Ferro, C. G., Mazza, A., Belmonte, D., Seclì, C., & Maggiore, P. J. P. C. (2017). A comparison between 3D Printing and Milling process for a Spar Cap Fitting (wing-fuselage) of UAV Aircraft. *62*, 487-493.

Ganesh, S. C. N. N. (2016). Design and Analysis of Wing fuselage attachment bracket for fighter aircraft. *IJERGS*, *4*(1).

Gebisa, A. W., & Lemu, H. G. (2017). *A case study on topology optimized design for additive manufacturing*. Paper presented at the IOP conference series: materials science and engineering.

Huda, Z., Taib, N. I., Zaharinie, T. J. M. C., & Physics. (2009). Characterization of 2024-T3: An aerospace aluminum alloy. *113*(2-3), 515-517.

Jaw, L., & Mattingly, J. (2009). *Aircraft engine controls*: American Institute of Aeronautics and Astronautics Virgin.

Lee, W.-S., & Su, T.-T. J. J. o. m. p. t. (1999). Mechanical properties and microstructural features of AISI 4340 high-strength alloy steel under quenched and tempered conditions. *87*(1-3), 198-206.

Mrazova, M. J. I. b. (2013). Advanced composite materials of the future in aerospace industry. *5*(3), 139.

Nakai, M., Eto, T. J. M. S., & A, E. (2000). New aspect of development of high strength aluminum alloys for aerospace applications. *285*(1-2), 62-68.

Nickels, L. J. M. P. R. (2015). AM and aerospace: an ideal combination. *70*(6), 300-303.

Olason, A., & Tidman, D. (2010). Methodology for topology and shpe optimization in the design process.

Petrašinović, N., Petrašinović, D., Rašuo, B., & Milković, D. J. F. T. (2017). Aircraft duraluminum wing spar fatigue testing. *45*(4), 531-536.

Petrescu, R. V., Aversa, R., Akash, B., Bucinell, R., Corchado, J., Apicella, A., . . . Technology, S. (2017). History of aviation-a short review. *1*(1).

Rao, N. B., Rao, K. S. J. I.-I. J. f. S. R., & Development. (2017). Dynamic Analysis and Fatigue Life Estimation of Wing Fuselage Attachment Bracket of an Airframe Structure. *4*(12).

Ritchie, R. O., Francis, B., & Server, W. L. J. M. T. A. (1976). Evaluation of toughness in AISI 4340 alloy steel austenitized at low and high temperatures. *7*(6), 831-838.

Sriranga, B., Kumar, R. J. I. J. o. R. i. E., & Technology. (2014). Stress analysis and fatigue life prediction of wing-fuselage lug joint attachment bracket of a transport aircraft. *3*(3), 818-822.

Sumanth, M., & Ayyappa, T. J. I. J. T. R. E. (2018). Comparative analysis of aircraft wing fuselage lug attachment bracket. *5*(11), 4422-4429.

Tomlin, M., & Meyer, J. (2011). *Topology optimization of an additive layer manufactured (ALM) aerospace part*. Paper presented at the Proceeding of the 7th Altair CAE technology conference.

Witek, L. J. E. F. A. (2006). Failure analysis of the wing-fuselage connector of an agricultural aircraft. *13*(4), 572-581.

Zhu, J.-H., Zhang, W.-H., & Xia, L. J. A. o. C. M. i. E. (2016). Topology optimization in aircraft and aerospace structures design. *23*(4), 595-622.

CHARACTERISTICS OF PEI-LOADED UNCALCINED MCM-48 AS POTENTIAL ADSORBENT FOR CO_2 CAPTURE

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ABSTRACT

Carbon dioxide (CO_2) emissions are increasing due to the use of fossil fuels in power plants with the rapid increase in global energy demand. Accordingly, the significant increase in the global atmospheric concentration of greenhouse gases causes global warming and climate change. Carbon capture and storage (CCS) have been recognized as the most beneficial methods applied to reduce CO_2 emissions while consuming fossil fuels for energy production. Although the low selectivity of solid porous materials towards carbon dioxide has emerged as a problem, it has been recently reported that mesoporous silica materials combined with amine-type CO_2 capture agents have superior performance for CO_2 removal. In this study, considering that silica-based materials loaded with polyethyleneimine (PEI) can be used as an adsorbent in gas systems, scanning electron microscope images, N_2 adsorption/desorption isotherms, x-ray diffraction patterns, Fourier transform infrared spectrums were investigated to clarify the effect of different PEI loading ratios (50 and 70 wt.%) on the uncalcined MCM-48 properties.

Keywords: Characterization, Polyethyleneimine, Uncalcined MCM-48.

INTRODUCTION

The formation of climate change due to human activities such as the burning of fossil fuels (coal, oil, and gas) and large-scale deforestation, the effects of which have increased after the industrial revolution, as well as due to other factors such as biotic processes, changes in solar radiation received by the Earth, plate tectonics and volcanic eruptions, points to an important problem that is defined as global warming and concerns all life (Al-Ghussain, 2019; Bhattacharya, 2019; Sodangi et al., 2011). In addition to water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3), which are caused both naturally and by human activities; fluorinated gases released as by-products of industrial processes (chlorofluorocarbons-CFCs, hydrochlorofluorocarbons-HCFCs, hydrofluorocarbon-HCFCs, bromofluorocarbons (halons), perfluorocarbons-PFCs, nitrogen trifluoride-NF_3, and sulfur hexafluoride-SF_6) are defined as greenhouse gases. (ACS Climate Science Working Group, 2013; Gillenwater, 2010; Watson et al., 1992). Significant amounts of greenhouse gases are released into the atmosphere each year, and it is known that approximately 7 billion tons of carbon are released as carbon dioxide per year (Houghton, 2005).

A number of porous solid adsorbents including porous carbons, zeolites, amine modified silicas, MOFs, etc. have been developed to capture larger amount of carbon dioxide by the adsorption process, which is among the techniques that have been widely applied in recent years (Singh et al., 2018). Currently, interest in studying amine species grafted with mesoporous materials to improve CO_2 capture by amino groups has greatly increased. The main goal of the study is to prepare polyethyleneimine (PEI) impregnated silica-based materials at different amin loading ratios, to characterize them with various techniques (XRD, SEM, N_2 sorption, and FT-IR), and to examine their CO_2 adsorption capacities.

MATERIALS AND METHODS

MCM-48 Synthesis Procedure

A gel with a molar composition of 1.0 TEOS: 0.48 NaOH: 0.4 CTMABr: 55 H_2O was prepared to obtain MCM-48 in basic medium with the traditional hydrothermal synthesis method (HTS) (Li et al.,

2006; Yargıç, 2011). Accordingly, CTMABr (98%, Alfa Aesar) was completely dissolved at 30 °C using distilled water, NaOH (≥98%, Iso Lab), and TEOS (98%, Acros Organics) were added in the solution, respectively, and the mixture was stirred for 90 minutes. After the reaction mixture was transferred to a Teflon bottle, hydrothermal synthesis was carried out for 3 days in an oven at 120 °C. The support material was separated from the synthesis medium using a vacuum filtration system, washed with distilled water until pH neutral, and dried at room temperature. As-prepared MCM-48 was coded as *"UC-MCM-48"*.

Preparation of PEI-Impregnated Adsorbents

Polyethyleneimine (PEI, branched, M.W. 1200, 99%, Alfa Aseaer) was loaded at two different impregnating ratios (50% and 70% by weight) to prepare amine-doped silica materials, which are known to be accomplished in CO_2 capture. According to the desired amine additive ratio, PEI was weighed and dissolved in methanol, mixed with *UC-MCM-48*, and stirred for 6 hours. PEI-impregnated silica-based adsorbents were prepared by drying in an oven at 80 °C for 12 hours (Yan et al., 2011) and coded as *"UC-MCM-48-xPEI"* where *"x"* was denoted as polyethyleneimine loading ratio of 50% or 70% by weight.

Characterization of Adsorbents

Surface morphologies (particle sizes, shapes, and distributions) of uncalcined MCM-48 and PEI-loaded adsorbents were determined by scanning electron microscopy (Zeiss Supra VP 40) with platinum sputter-coated (Quorum Q 150 R ES DC Sputter), BET surface areas (S_{BET}), total pore volumes, and pore size distributions were clarified by Micromeritics TriStar II 3020 instrument via N_2 sorption at 77K. Fourier transform infrared (FT-IR, Agilent Cary 630) spectrums were taken in the wavenumber range of 4000-400 cm^{-1} to define the functional groups in the structure of the materials, and the crystalline structures were analyzed in PANalytical X'Pert Pro Materials Research Diffractometer employing CuKα radiation (λ = 0.15406 nm, in the range of 0–10° 2θ). The carbon dioxide adsorption capacities of silica-based materials were determined based on their CO_2 isotherms, measured using a Micromeritics ASAP 2020 analyzer at 75 °C. Before the measurements, the materials were outgassed at 100 °C for 3h.

RESULTS AND DISCUSSION

FT-IR spectrum of *UC-MCM-48* (Figure 1) comprised two bands at 2851 and 2921 cm^{-1}, which were correlated with symmetric and asymmetric stretching vibrations of CH_2 groups, respectively (Taba et al., 2017). Another two peaks at 1650 and 1460 cm^{-1} were defined for –O-H and C-H bending vibrations. The existence of the peaks related to C-H stretching and bending vibrations indicated the presence of surfactants used as the structure-directing agents. The intense peaks at 1212 and 1024 cm^{-1} were associated with the asymmetric stretching vibrations of Si–O–Si groups (Taba et al., 2018). Defective Si–O–H vibration in the silicate lattice occurred at 956 cm^{-1} (Venkatachalam et al., 2012). The weak bands at 778 and 430 cm^{-1} were assigned to the symmetric stretching vibration of Si–O–Si bonds and their bending mode, respectively (Dapurkar and Selvam, 2003; Venkatachalam et al., 2012). PEI-impregnated *UC-MCM-48* materials had an intense broad envelope between 3000 and 3600 cm^{-1}, which was assigned to –OH stretching vibration of water (Aghaei et al., 2014). The peak due to stretching vibration of defective Si–O–H groups were masked by the broad band of –OH stretching vibration of water (Malhis et al., 2018). Besides, the emerged peaks at 1560 cm^{-1} defined the bending vibration of amino in the FT-IR spectrum of PEI-loaded sorbents verified that amine groups were doped successfully. Finally, the existence of amino was predicated by the peak at 1665 cm^{-1} (Du et al., 2013).

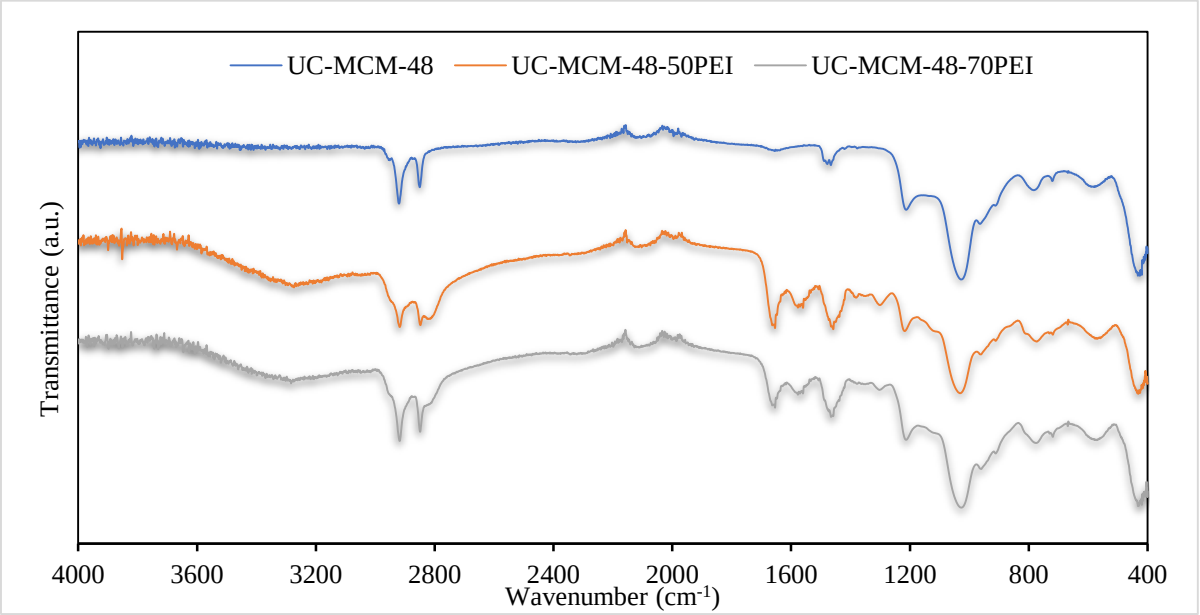

Figure 1. FT-IR spectrums of sorbents

N_2 adsorption/desorption isotherms at 77 K were used to investigate the structural information for silica-based sorbents (Figure 2a). The isotherm types were examined to make a qualitative evaluation of the porous structure of the materials. It was seen that *UC-MCM-48* had the Type IV nitrogen isotherm of the IUPAC classification. The isotherm of *UC-MCM-48* exhibited a Type H4 hysteresis loop in the range of approximately $0.40 < P/P_0 < 0.99$ which specified the presence of nonuniform slit-like pores (Kuila and Prasad, 2013; Kruk and Jaroniec, 2001; Hunter, 2001) and secondary (larger) mesopores in the structure (Gregg and Sing, 1982; Gucbilmez, et al., 2012). However, the PEI-loaded materials showed somewhat different isotherms to that of *UC-MCM-48*, as shown in Figure 2(a). PEI-loaded *UC-MCM-48*-based materials exhibited almost reversible Type II nitrogen isotherms. The isotherm shape defined *that UC-MCM-48-50PEI* and *UC-MCM-48-70PEI* were mainly macroporous and micro-mesopores were inexistent in the structure. The hystereses were extremely narrow demonstrating the existence of fine macropores. The amount adsorbed at very low-relative pressure ($P/P_0 < 0.01$) was very low referring that PEI-loaded materials had neglectable or unavailable micropores (Kuila and Prasad, 2013). The pore size distribution curves calculated from the desorption branch by the BJH method were also shown in Figure 2b. The PEI-loaded sorbents (*UC-MCM-48-50PEI* and *UC-MCM-48-70PEI*) demonstrated a broad pore size distribution at the mesopore region with similar features, while *UC-MCM-48* displayed essentially narrow, sharp, and homogenous distribution curves. For *UC-MCM-48*, the distribution was bimodal with two distinct peaks around 2,11 and 3,47 nm. The average pore diameters of sorbents were attained between 4,82 nm and 5,62 nm by using BJH-method at the mesopore region. BET surface areas, total pore volumes, and average pore sizes of adsorbents were given in Table 1. It was determined that the surface area of *UC-MCM-48* was ~13,29 m^2/g, while the surface areas were decreased by %62 and 81, respectively, which was related to the pore blockage after 50 and 70 wt.% amine impregnation. Besides, the total pore volume was decreased from 0.0265 cm^3/g to 0.0078 and 0.0035 cm^3/g, respectively (Table 1).

Table 1. Structural properties of pure UC-MCM-48 and PEI-impregnated samples

Sample code	S_{BET} (m^2/g)	V_{total} (cm^3/g)	Average pore diameter (nm)
UC-MCM-48	13.2888	0.026499	5.62
UC-MCM-48-50PEI	5.0475	0.007805	4.82
UC-MCM-48-70PEI	2.5645	0.003462	4.98

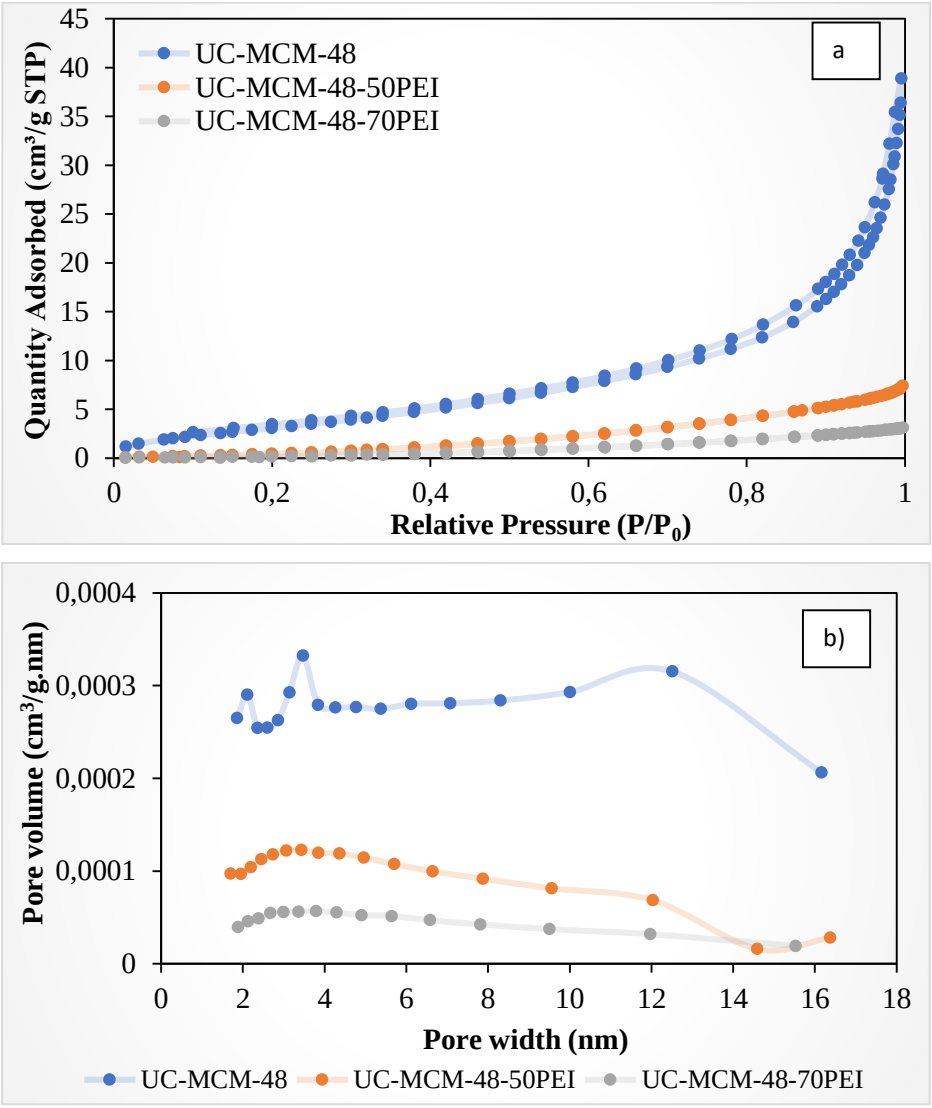

Figure 2. a) N_2 adsorption/desorption isotherms and b) pore size distribution curves of *UC-MCM-48*, *UC-MCM-48-50PEI*, and *UC-MCM-48-70PEI*

The x-ray diffraction patterns used to obtain information about the crystal structures (amorphous, crystalline, or semi-crystalline) of the prepared materials were given in Figure 3. The characteristic peak of MCM-48 silica materials with the highest intensity belongs to the (211) reflection (Pirouzmand et al., 2013). In XRD diffraction patterns, peaks related to planes (211), (220), (321), (400), (420), and (332), corresponding to the *Ia3d* space group of cubic mesophase *MCM-48*, were observed (Banerjee et al., 2010; Boote et al., 2007; Hua et al., 2011; Liu et al., 2016; Park et al., 1999; Wang et al., 2012; Yun et al., 2011). The intensity of small-angle XRD peaks and the well-resolved peaks indicated the long-range ordering of the synthesized *UC-MCM-48*. In addition, it was determined that the main diffraction peak (211) shifted to higher 2θ values with *PEI* impregnation. This is an indication that the d-spacing decreases with the addition of an amine group to the structure (Shao et al., 2008).

SEM images of adsorbents prepared by using *UC-MCM-48* as silica support material were taken, and morphological structures were examined (Figure 4). The *UC-MCM-48* host (Figure 4a) appeared to be composed of agglomerated irregular-sized spherical particles and the size of the individual *UC-MCM-48* particles was less than 1 µm, while the morphologies of the *UC-MCM-48-PEI* adsorbents (Figures 4b and c) were different due to surface coating by PEI with a sticky nature.

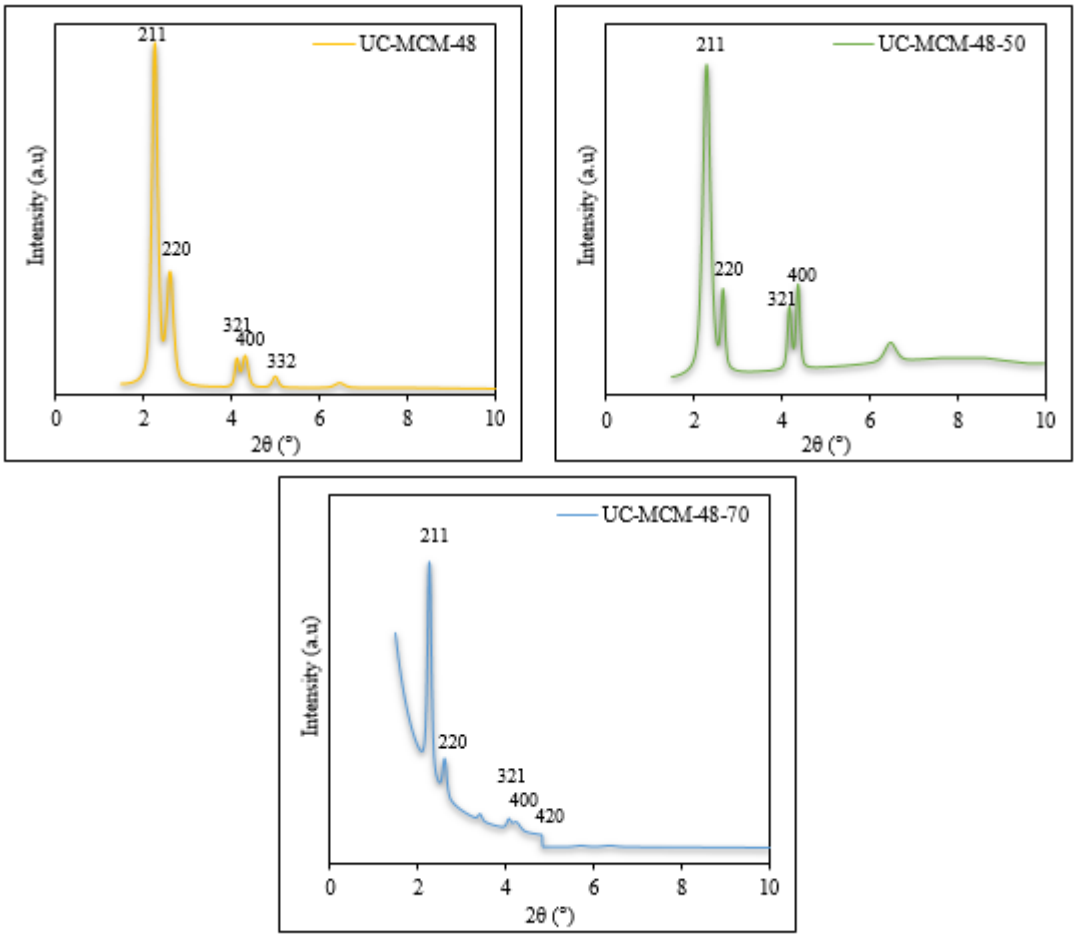

Figure 3. X-ray diffraction patterns of UC-MCM-48 based adsorbents

The isotherms of the analyzes performed at 75 °C to examine the carbon dioxide adsorption capacity of non-calcined MCM-48 supported adsorbents were given in Figure 5. Due to the analysis results, it was found that the absorbent coded *UC-MCM-48-50PEI* with 50% polyethyleneimine addition had the highest CO_2 sorption capacity of 2.26 mmol/g. Inversely proportional to the surface area of the adsorbents, the CO_2 holding capacities of the PEI doped materials were calculated to be 3.35 and 4.71 times that of the synthesized *UC-MCM-48*, respectively.

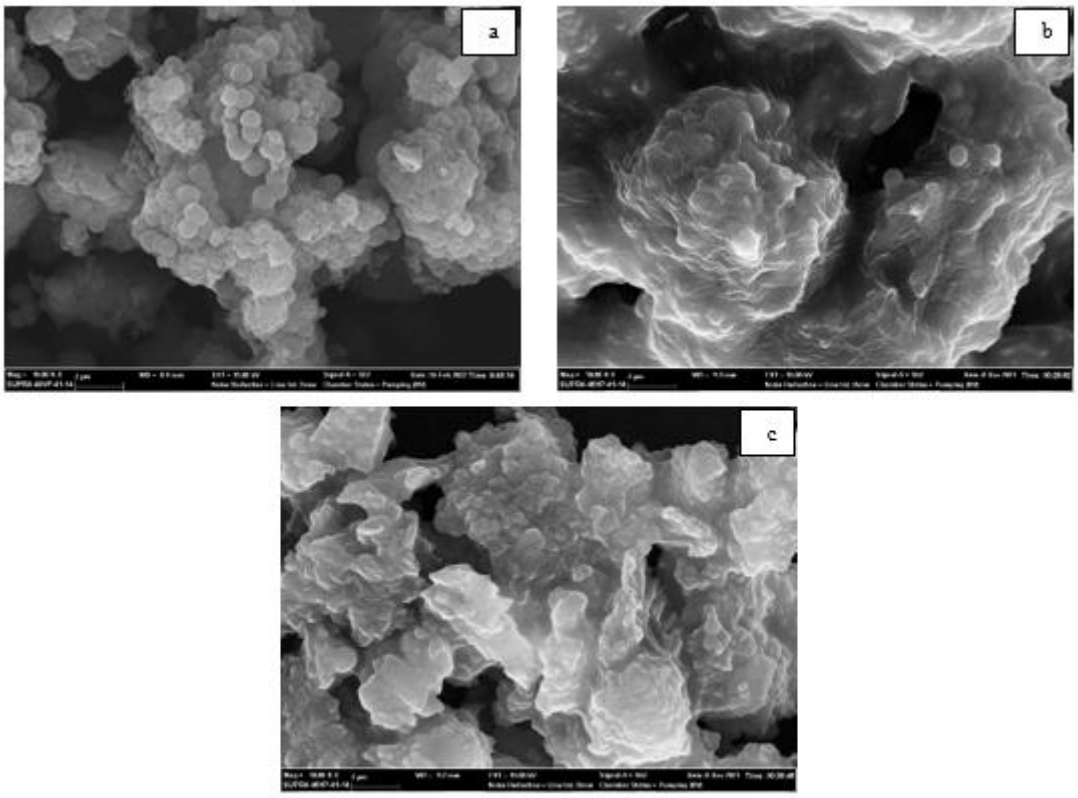

Figure 4. SEM images of MCM-48 supported adsorbents (a) *UC-MCM-48*, (b) *UC-MCM-48-50*, and (c) *UC-MCM-48-70*.

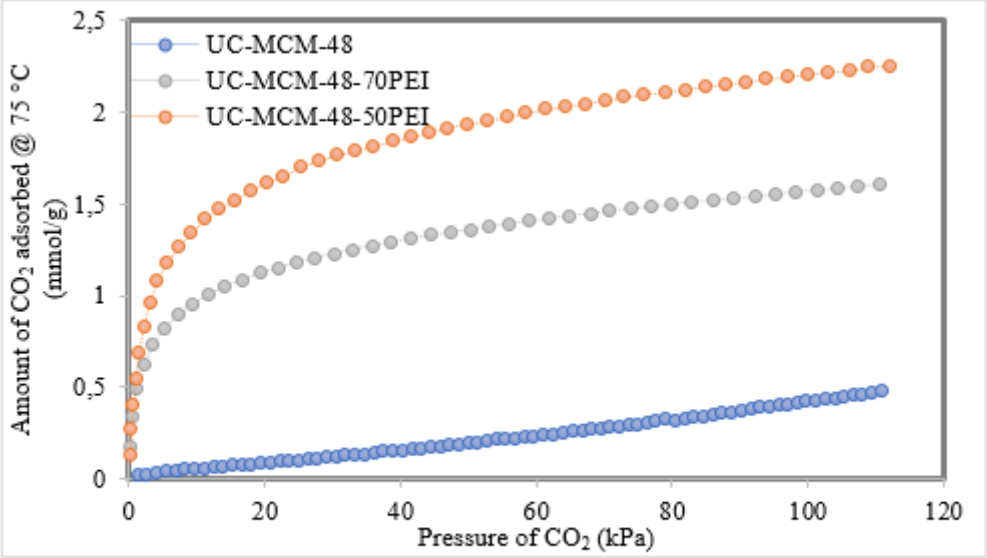

Figure 5. CO_2 adsorption isotherms of UC-MCM-48 based materials

CONCLUSION

Within the scope of the study, the amine group impregnated silica materials known to have high CO_2 adsorbing capacity in gas-phase systems were synthesized and the structure of adsorbents was elucidated using methods such as x-ray diffraction, FT-IR spectroscopy, nitrogen sorption, and scanning electron microscopy. After polyethyleneimine impregnation at different ratios on a silica support material of the synthesized MCM-48 (*UC-MCM-48*), the effect of PEI loading on the adsorbent properties was investigated. It was determined that the surface area decreased significantly as the PEI

loading ratio increased. Accordingly, while the surface area of *UC-MCM-48* was 13.29 m^2/g, the surface areas decreased to 5.05 and 2.56 m^2/g after adding 50 and 70 wt.% PEI, respectively. In addition, it was noted that the characteristic diffraction peak belonging to the (2 1 1) plane with the highest intensity associated with the crystal structure of *UC-MCM-48* was preserved even after the incorporation of the amine group into the structure. When the CO_2 uptake abilities of adsorbents for gaseous pollutants were examined, it was observed that *UC-MCM-48* had a very low capacity of 0.48 mmol/g, the capacity values were improved as 1.61 and 2.26 mmol/g for *UC-MCM-48-50PEI* and *UC-MCM-48-70PEI*, respectively with the addition of the amine group to the structure. As a result, it was determined that the characteristic properties of adsorbents produced using non-calcined MCM-48 silica support material were preserved and the carbon dioxide uptake capacity was improved despite the decrease in their surface area with the addition of PEI. Our study on this project continues by using calcined MCM-48 support material and focuses on the comparison of structural properties related to the calcination process.

ACKNOWLEDGEMENTS

The authors acknowledge the financial support provided by Bilecik Şeyh Edebali University Scientific Research Council with project number 2021-01.BŞEÜ.01-06.

REFERENCES

ACS Climate Science Working Group, 2013. Which Gases Are Greenhouse Gases. Available at: https://www.acs.org/content/acs/en/climatescience/greenhousegases/whichgases.html [10.03.2022]

Aghaei H, Nourbakhsh AA, Karbasi S, JavadKalbasi R, Rafienia M, Nourbakhsh N, Bonakdar S, Mackenzie KJ 2014. Investigation on bioactivity and cytotoxicity of mesoporous nano-composite MCM-48/hydroxyapatite for ibuprofen drug delivery. Ceramics International, 40(5): 7355-7362.

Al-Ghussain L 2019. Global warming: review on driving forces and mitigation. Environmental Progress & Sustainable Energy, 38(1): 13-21.

Banerjee S, Balasanthiran V, Koodali RT, Sereda GA 2010. Pd-MCM-48: a novel recyclable heterogeneous catalyst for chemo-and regioselective hydrogenation of olefins and coupling reactions. Organic & Biomolecular Chemistry, 8(19): 4316-4321.

Bhattacharya A 2019. Global climate change and its impact on agriculture. Changing Climate and Resource Use Efficiency in Plants, Elsevier/Academic Press, London, 1-50.

Boote B, Subramanian H, Ranjit KT 2007. Rapid and facile synthesis of siliceous MCM-48 mesoporous materials. Chemical Communications, (43): 4543-4545.

Dapurkar SE, Selvam P 2003. Mesoporous H-AlMCM-48: highly efficient solid acid catalyst. Applied Catalysis A: General, 254(2): 239-249.

Du Y, Du Z, Zou W, Li H, Mi J, Zhang C 2013. Carbon dioxide adsorbent based on rich amines loaded nano-silica. Journal of Colloid and Interface Science, 409: 123-128.

Gregg SJ, Sing KSW 1982. Adsorption, Surface Area and Porosity, Elsevier/Academic Press, London, UK, 2nd edition, 3.

Gillenwater M, 2010. What are greenhouse gases, Greenhouse Gases Management Institute. Available at: https://ghginstitute.org/2010/06/15/what-are-greenhouse-gases/ [10.03.2022]

Gucbilmez Y, Yargic AS, Calis I 2012. A comparative characterization of the HPA-MCM-48 type catalysts produced by the direct hydrothermal and room temperature synthesis methods. Journal of Nanomaterials, 2012.

Houghton J 2005. Global warming. Reports on Progress in Physics, 68(6): 1343.

Hua D, Chen S, Yuan G, Wang Y 2011. Synthesis and characterization of tungsten-incorporated mesoporous molecular sieve MCM-48 by one step. Journal of Porous Materials, 18(6): 729-734.

Hunter RJ 2001. Foundations of Colloid Science, Oxford University Press, Oxford, UK, 2nd edition.

Kruk M, Jaroniec M 2001. Gas adsorption characterization of ordered organic−inorganic nanocomposite materials. Chemistry of Materials, 13(10): 3169-3183.

Kuila U, Prasad M 2013. Specific surface area and pore-size distribution in clays and shales. Geophysical Prospecting, 61(2-Rock Physics for Reservoir Exploration, Characterisation and Monitoring), 341-362.

Li H, Wang S, Ling F, Li J 2006. Studies on MCM-48 supported cobalt catalyst for Fischer–Tropsch synthesis. Journal of Molecular Catalysis A, 244: 33-40.

Liu L, Zhu G, Liu Z, Gao C 2016. Effect of MCM-48 nanoparticles on the performance of thin film nanocomposite membranes for reverse osmosis application. Desalination, 394: 72-82.

Malhis AA, Arar SH, Fayyad MK, Hodali HA 2018. Amino-and thiol-modified microporous silicalite-1 and mesoporous MCM-48 materials as potential effective adsorbents for Pb (II) in polluted aquatic systems. Adsorption Science & Technology, 36(1-2): 270-286.

Park DH, Park SS**,** Choe SJ 1999. The formation of metal (M= Co (II), Ni (II), and Cu (II)) complexes by aminosilanes immobilized within mesoporous molecular sieves. Bulletin of the Korean Chemical Society, 20(3): 291-296.

Pirouzmand M, Amini M, Safari N, Hamoule T 2013. Immobilization of Cobalt Phthalocyanine and Tetrasulfophthalocyanine onto MCM-41 and MCM-48: Effect of Immobilization Method on Catalytic Activity. Journal of the Brazilian Chemical Society, 24: 1864-1870.

Shao Y, Wang L, Zhang J, Anpo M 2008. Synthesis and characterization of high hydrothermally stable Cr-MCM-48. Microporous and Mesoporous Materials, 109(1-3): 271-277.

Singh J, Bhunia H, Basu S 2018. CO2 adsorption on oxygen enriched porous carbon monoliths: Kinetics, isotherm and thermodynamic studies. Journal of Industrial and Engineering Chemistry, 60: 321-332.

Sodangi IA, Izge AU, Maina YT 2011. Climate change: causes and effects on African agriculture. Journal of Environmental Issues and Agriculture in Developing Countries, 3(3): 22-33.

Taba P, Budi P, Puspitasari AY 2017. Adsorption of heavy metals on amine-functionalized MCM-48. In IOP Conference Series: Materials Science And Engineering, IOP Publishing, 188(1):012015.

Taba P, Mustafa RDP, Ramang LM, Kasim AH 2018. Adsorption of Pb2+ on Thiol-functionalized Mesoporous Silica, SH-MCM-48. In Journal of Physics: Conference Series, IOP Publishing, 979(1): 012058.

Venkatachalam K, Visuvamithiran P, Sundaravel B, Palanichamy M, Murugesan V 2012. Catalytic performance of Al-MCM-48 molecular sieves for isopropylation of phenol with isopropyl acetate. Chinese Journal of Catalysis, 33(2-3): 478-486.

Wang J, Lu J, Yang J, Xiao W, Wang J 2012. Synthesis of ordered MCM-48 by introducing economical anionic surfactant as co-template. Materials Letters, 78: 199-201.

Watson RT, Meira Filho LG, Sanhueza E, Janetos A 1992. Greenhouse gases: sources and sinks. Climate Change, 92: 25-46.

Yan X, Zhang L, Zhang Y, Qiao K, Yan Z, SK 2011. Amine-modified mesocellular silica foams for CO2 capture. Chemical Engineering Journal, 168(2): 918-924.

Yargıç AS 2011. Heteropoly acid incorporated MCM-41 and MCM-48 type catalysts. Eskişehir, Turkey: Anadolu University, Graduate School of Natural and Applied Sciences, Chemical Engineering Program, Master of Science Thesis.

Yun M, Yeon J, Kim J, Lee H, Kim J, Kim S, Jung Y 2011. Preparation and Application of Chelating Polymer-Mesoporous Silica Composite for Europium-ion Adsorption. Macromolecular Research, 19(5): 421-426.

SYNTHESIS OF Fe/Al_2O_3 CATALYST USING CO-PRECIPITATION METHOD AND ITS USE IN Py-GC/MS SYSTEM

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ABSTRACT

Biomass is one of the most important renewable energy sources with the potential to replace petroleum-derived polymers and fuels. Due to environmental problems, the use of cleaner fuels and chemicals is increasing worldwide. Catalytic pyrolysis is one of the most important methods in biofuel production. The liquid product obtained by catalytic pyrolysis is both a potential source of biofuel and chemical raw materials for a sustainable energy system. In this study, sugar beet pulp was used as a biomass source to produce bio-oil. In the first part of the study, Fe/Al_2O_3 (5%wt) catalyst to be utilized in pyrolysis was synthesized by the co-precipitation method, and the catalyst was characterized by using SEM, BET, XRD, and FTIR methods. In the second part, catalytic pyrolysis experiments of sugar beet pulp at 550 °C were carried out by Py-GC/MS system with a heating rate of 10 °C/min. According to catalytic pyrolysis results, it has been observed that valuable chemical raw materials such as phenolic compounds can be obtained from sugar beet pulp pyrolysis. Eventually; it is recommended to synthesize catalysts that have economic advantages over commercial catalysts and to use them in the production of liquid products equivalent to petroleum from biomass.

Keywords: Bio-fuel, characterization, catalytic pyrolysis, $Fe–Al_2O_3$.

INTRODUCTION

The increase in world energy demand, environmental concern and the shortage of fossil fuels have driven interest in alternative energy sources. Biomass is such an alternative and renewable energy source. Among the various type of renewable energy, biomass is considered a promising alternative and renewable resource to petroleum because high value-added fuels and/or chemicals can be obtained from biomass using the proper conversion technologies, such as fermentation, gasification, and pyrolysis (Stefanidis et al., 2016).

Pyrolysis is an endothermic decomposition process implemented in oxygen-deficient and high-temperature environments to yield bio-oil, syngas, and biochar. The bio-oil is a complex mixture of oxygenated compounds (i.e. ketones, phenolics, furans, acids, aldehydes, etc.) derived from the thermal degradation of the holocellulose and lignin fractions in the biomass. Bio-oil or pyrolysis oil has a low calorific value and thermal stability as well as high corrosivity and viscosity (Ozbay et al., 2019), which restrict the direct bio-oil application to alternative transportation fuels. To resolve this issue, the upgrading method to remove oxygen from bio-oils should be developed (Kim et al., 2016).

The use of catalysts to improve the properties of biomass pyrolysis products is also one of the most commonly used methods. Catalyst is favorable for pyrolysis intermediates and accelerates the secondary reactions towards specific chemicals, thereby improving the selectivity of target components in the bio-oil (Özbay et al., 2018). Various catalytic systems or catalysts can support suitable reactions to obtain desirable chemicals. Different catalyst types such as alkali metals, transition metals, and alkaline earth metals, molecular sieves have been investigated to optimize the efficiency and performance of bio-oil and value-added chemical products, many metals and their oxides have shown exclusive characteristics among them (Dai et al., 2020). But it is worth noting that most studies only use one kind of effective metal or one kind of effective metal which was supported on another porous metal support (such as γ-

Al_2O_3). The most active surface sites on the alumina are on turning, edges, and the oxide structure lack, the sites located on surface plates being likely fewer reactive. Over the gappy sites, the deposited groups would interact firstly, while at higher coverage they also hold down fewer reactive sites. Research on effective metals and detecting the interaction between the two is extremely scarce (Farahmandjou et al., 2020).

Among the numerous types of waste from agricultural production, sugar beet pulp plays an essential role. Beet pulp is a waste product from beet sugar production. Turkey has an important position among the countries producing sugar from beet, and ranks fifth in the world after the USA, Russia, France, and Germany, and ranks fourth in the European Continent after Russia, Germany, and France. Sugar beet pulp can be used as only animal feed and as a raw material in cosmetic and paper industries (TürkŞeker, 2020). It can also be used as a raw material for catalytic pyrolysis reactions.

Pyrolysis and on-line gas chromatography and mass spectroscopy (Py-GC/MS) has been announced as a direct method to investigate the pyrolytic performance of biomass and its volatile product characterization. It has gained excessive attention in recent years, as it permits identifying all pyrolytic products with superior efficiency than in GC/MS of condensable products (liquid fraction), whose identification under several operating conditions needs full condensation (Bensidhom et al., 2021). This present work focuses on two aspects; *i)* to synthesized Fe-Al_2O_3 catalysts via co-precipitation method and characterized by using SEM, BET, XRD, and FTIR analytical technics, *ii)* to ınvestigate the effects of catalytic pyrolysis of sugar beet pulp by using Py-GC/MS technique for production of high value-added bio-oil and chemical raw material.

MATERIALS AND METHODS

In this section, preparation and characterization techniques of Fe-Al_2O_3 catalysts, and Py-GC/MS experiments were given in detail. In addition, the properties of biomass feedstock that was used in this study were determined.

Biomass Feedstock

The sugar beet pulp for this study was taken from sugar factories around Eskişehir located in Central Anatolia. Prior to use pulp samples were ground to have an average particle size. Proximate analysis was applied on sugar beet pulp to detect the weight fractions of volatile matter, ash, moisture, and fixed carbon. The ultimate analysis was performed using an elemental analyzer (Leco CNH628 S628).

Preparation and Characterization of Catalyst

The co-precipitation method was used to prepare 5 wt.% of iron-containing Fe-Al_2O_3 catalysts. Through the synthesis of catalysts, aqueous solutions containing the needed quantity of $Fe(NO_3)_2.9H_2O$ and $Al(NO_3)_3.9H_2O$ with a concentration of 0.1 N each were simultaneously precipitated using an aqueous solution containing 0.25 N KOH. The co-precipitated catalyst was entirely washed, filtered, and dried at 110 °C for 12 h in the air at room temperatures. After that, the catalyst was calcined in a tubular furnace at 900 °C for 6 h in an air atmosphere.

The x-ray diffraction measurements (XRD, PANalytical Empyrean diffractometer) were performed to determine crystal structure by employing CuKα radiation (λ=0.15405 nm, running at 45 kV and 40 mA). The XRD patterns were accumulated in the range of 2θ= 10-90 degrees every 0.02 degree (2θ) with a counting time of 2 s per step. N_2 adsorption/desorption experiments were conducted at -196°C, using an automatic volumetric sorption analyzer for the determination of surface area, pore-volume, and pore size. The samples were previously outgassed for 300 min at 360 °C. The surface area of catalyst was calculated from N_2 adsorption/desorption isotherms by using the BET (Brunauer–Emmett–Teller) method with Quantachrome NovaWin analyzer. SEM images of the catalysts were obtained by using a Zeiss Supra VP40 scanning electron microscope. Samples were placed on carbon bands and coated with a platinum thin layer in an argon atmosphere using Quorum Q150RESDC Sputter Coater. Fourier transform infrared spectroscopy (FT-IR) analysis of catalyst was carried out using a Perkin Elmer Spectrum 100 to identify structural groups in the range of 4000-400 cm^{-1} wavenumber by using the ATR technique.

Py-GC/MS Experiments

A Py-GC/MS system (Frontier Py-2020 pyrolyzer, Shimadzu QP2010 GC/MS) was used to pyrolyze sugar beet pulp. Approximately 1.0 mg raw material was loaded into a small size crucible, and then transferred to the micro-furnace. The pyrolysis process was isothermal at 550 °C and the reaction time was 10 min. The column and injection part temperatures were 40 °C and 320 °C, respectively. The carrier gas was helium which flowed 1.0 mL/min.

RESULTS AND DISCUSSION

Properties of Biomass Sample

Proximate analysis of sugar beet pulp gave 9.9% moisture, 74.5% volatile matter (dry basis), 4.2% ash (dry basis), 11.4% fixed carbon (dry basis), respectively. Elemental analysis (wt.%, dry basis) gave 41.2% C, 6.7% H, 1.3% N, and 50.8% O for sugar beet pulp, respectively.

Catalyst Characterization

The surface area of the catalyst was measured through the conventional Brunauer, Emmett, and Teller (BET) method. The properties of Fe-Al_2O_3 catalysts were given in Table 1. The surface area and total pore volume of the 5% Fe-Al_2O_3 catalysts were 13.218 m^2/g and 0.4173 cm^3/g, respectively. As seen in Table 1 pore size and the pore volume data, the catalyst was highly macroporous with textural and structural defects that caused the observed limited micro- or mesoporosity.

Table 1. Surface Properties of Fe-Al_2O_3 catalysts

Catalyst type	Surface Area (m^2/g)	Pore size (nm)	V_{total} (cm^3/g)
5% Fe-Al_2O_3	13.218	63.14	0,4173

Figure 1 showed XRD patterns of 5% Fe-Al_2O_3. As it could be seen in Figure 1, peaks formed at 2θ angles of 33.41° and 37.51° represented α-Fe_2O_3. The detection of the α-Fe_2O_3 phase indicated that only a certain amount of Fe^{3+} could incorporate into the crystal lattice of γ-Al_2O_3. Moreover, peaks obtained at 39.52°, 46.03°, 60.59°, and 66.71° indicated γ-Al_2O_3-Fe_2O_3 and the intensities of these peaks were bigger than that of Fe_2O_3. No peaks of Al_2O_3 were observed. It was evident that iron was diffused in the catalyst surface while preparing the catalyst, acquisition in the formation of γ-Al_2O_3-Fe_2O_3 structures.

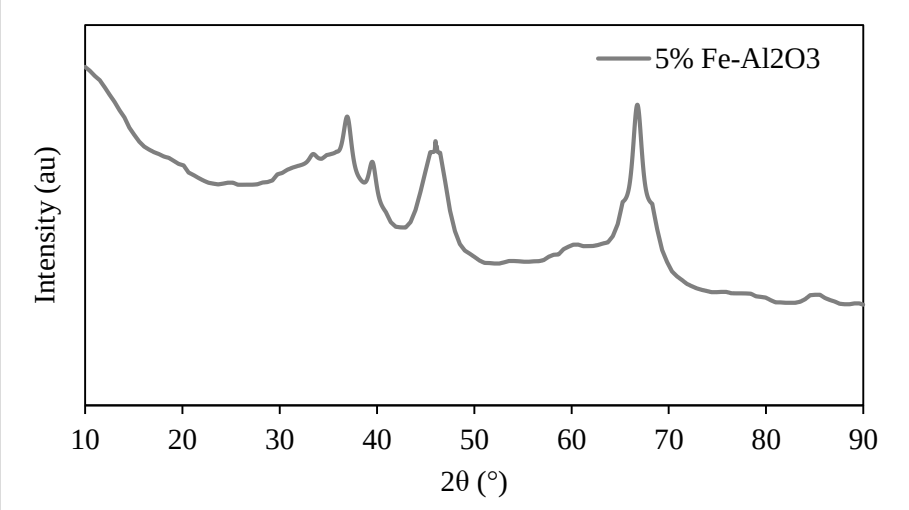

Figure 1. XRD Pattern of 5% Fe-Al_2O_3

Figure 2 showed the surface morphology of 5 wt.% Fe-loaded Al_2O_3 taken at 1000 magnification. According to SEM images (Figure 2), catalyst particles had an angular morphology with a large size range.

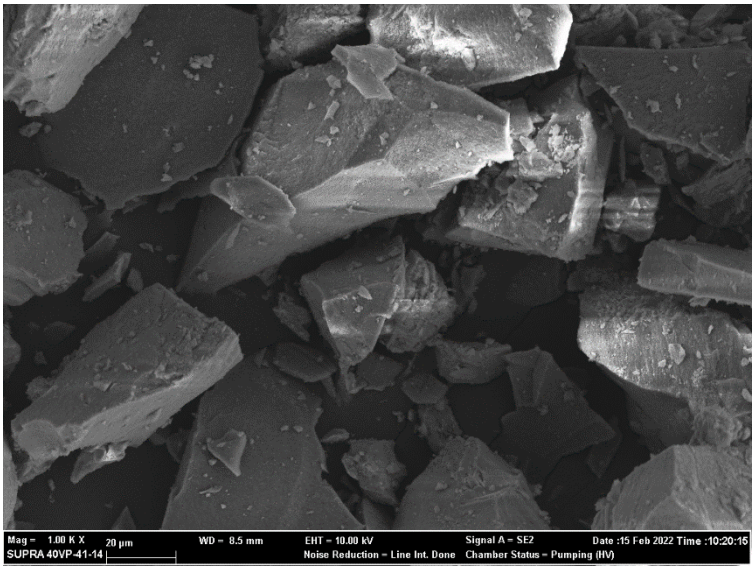

Figure 2. SEM image of 5% Fe-Al_2O_3

Fourier-transform infrared spectroscopy (FT-IR) analysis was applied to determine the functional groups and vibrational bond (Figure 3). According to the FT-IR result, a broad peak in the wavenumber of 3387 cm^{-1} was associated with the hydroxyl vibrational bond. This peak corresponded to the stretching vibrations of the O-H group. The absorption peak observed in the wavenumber of 2161 cm^{-1} was related to the C-H vibrational bond, the peak generated in the wavenumber of 1586 cm^{-1} was related to the tensile vibrational bond C=C, and the vibrational peaks generated in the sample in the wavenumber of 850 and 510 cm^{-1} were related to the tetrahedral and Octo-Al_2O_3 groups, respectively.

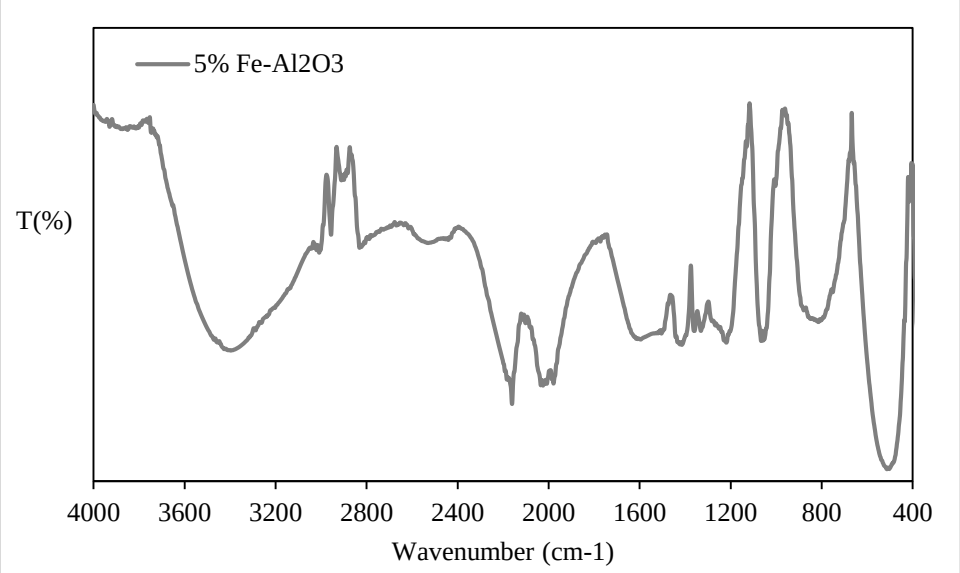

Figure 3. FTIR spectra of 5% Fe-Al_2O_3

Py-GC/MS Results

Figure 4 showed the catalytic Py-GC/MS spectra of sugar beet pulp. According to the results, the catalytic pyrolysis products were a mixture of organic compounds in the range of C_6–C_{29} carbons. The aliphatics groups consisted of n-alkanes, alkenes, and branched hydrocarbons. While considering the result of GC/MS detailed analysis, the total amounts of hydrocarbons were %15.28. In order to determine the distribution of volatile components obtained from the catalytic Py-GC/MS experiments, a semi-quantitative study was made by means of the percentage of the area of chromatographic peaks. As shown in Figure 5, the highest peak area was obtained in aromatic compounds at 23%. The peak

areas of other value-added chemical products were obtained as 25%, 15%, and 10% as alcohol, acid, and ketone, respectively,

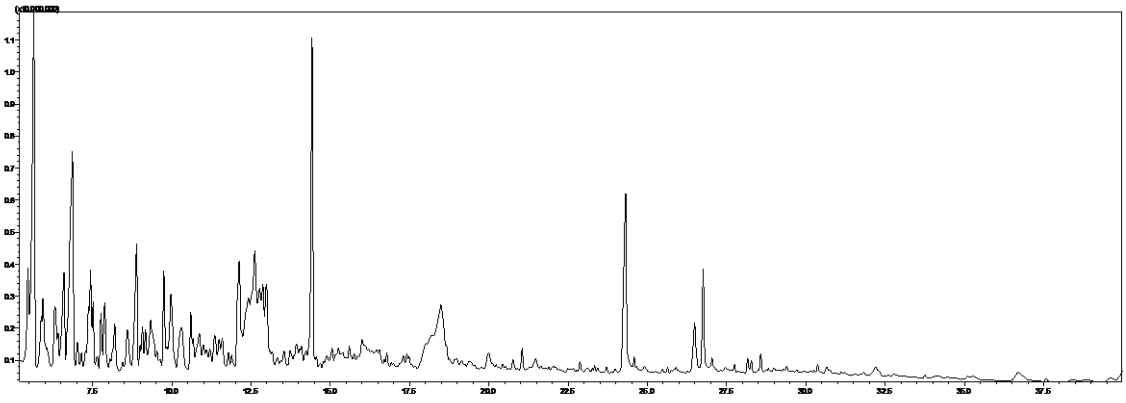

Figure 4. GC/MS chromatogram catalytic Py/GC-MS spectra of sugar beet pulp

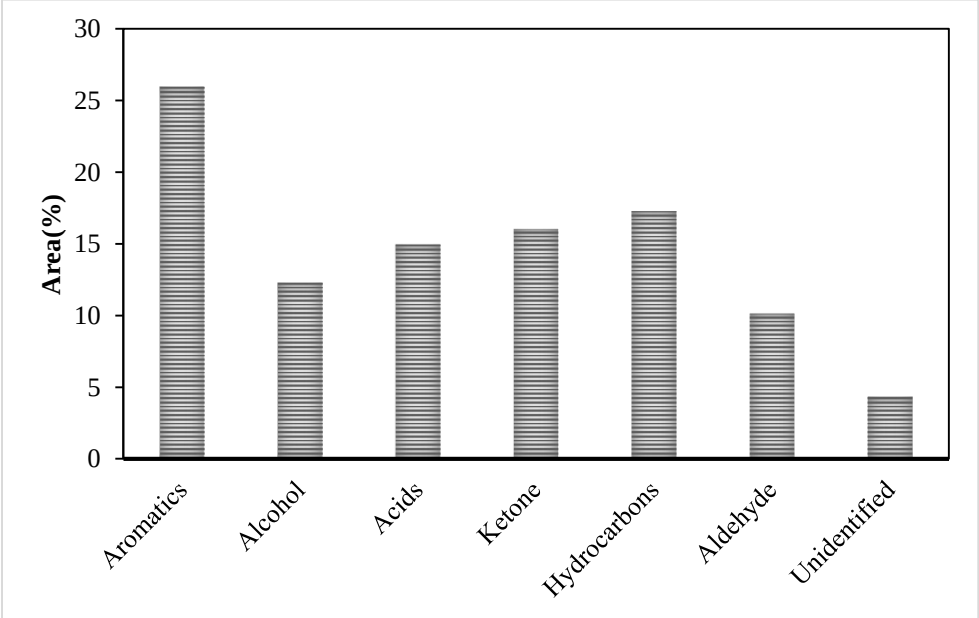

Figure 5. Chemical composition from Py-GC/MS spectra of sugar beet pulp

CONCLUSION

In this study, Fe-doped Al_2O_3 were successfully synthesized with iron percentages of 5% using the co-precipitation method. Catalytic pyrolysis was carried out using the Py-GC/MS method, which was an advantageous method for detecting pyrolysis vapors. This study showed that precise chemicals, such as aromatics, alcohols, and hydrocarbons, could be produced in the presence of Fe/Al_2O_3 catalyst.

REFERENCES

Bensidhom G, Arabiourrutia M, Trabelsi ABH, Cortazar M, Ceylan S, Olazar M 2021. Fast pyrolysis of date palm biomass using Py-GCMS. Journal of the Energy Institute, 99: 229-239.

Dai L, Wang Y, Liu Y, He C, Ruan R, Yu Z, Jiang L, Zeng Z, Wu Q 2020. A review on selective production of value-added chemicals via catalytic pyrolysis of lignocellulosic biomass. Science of the Total Environment, 749: 142386.

Farahmandjou M, Khodadadi A, Yaghoubi M 2020. Low concentration iron-doped alumina (Fe/Al2O3) nanoparticles using Co-precipitation method. Journal of Superconductivity and Novel Magnetism, 33(11): 3425-3432.

Kim YM, Jae J, Lee HW, Han TU, Lee H, Park SH, Kim S, Watanabe C, Park YK 2016. Ex-situ catalytic pyrolysis of citrus fruit peels over mesoporous MFI and Al-MCM-41. Energy conversion and management, 125: 277-289.

Ozbay N, Yargic AS, Sahin RZY, Yaman E 2019. Valorization of banana peel waste via in-situ catalytic pyrolysis using Al-Modified SBA-15. Renewable energy, 140: 633-646.

Özbay N, Yargıç AŞ, Şahin RZY, Yaman E 2018. Research on the Pyrolysis Characteristics of Tomato Waste with Fe–Al2O3 Catalyst. In Exergetic, Energetic and Environmental Dimensions. Academic Press, pp. 815-828.

Stefanidis SD, Karakoulia SA, Kalogiannis KG, Iliopoulou EF, Delimitis A, Yiannoulakis H, Zampetakis T, Lappas A, Triantafyllidis KS 2016. Natural magnesium oxide (MgO) catalysts: a cost-effective sustainable alternative to acid zeolites for the in situ upgrading of biomass fast pyrolysis oil. Applied Catalysis B: Environmental, 196: 155-173.

TürkŞeker 2020. Agricultural Products Markets Sugar Report.

CRYSTAL STRUCTURE AND HIRSHFELD SURFACE ANALYSIS OF TIYOFEN-2-KARBOXAMID

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ABSTRACT

To examine the title compound, C_5H_5NOS, (with the possibility of improved computers and software) the data from STOE IPDS II were evaluated and compared with previous studies. Hirshfeld surface analysis was used to analyze two-dimensional fingerprint graphs, molecular electrostatic potential surfaces, and interactions found in the crystal. The crystalline crystal system and space group are Orthorhombic, Pna21, lattice parameters are a = 10.1202 (4) (2), b = 14.3757 (6), c = 16.4632 (8) Å and the number of molecules per cell is 16. The intramolecular N—H•••O bonds are formed in the R22(6) ring motif and they are in dimer form. The molecule also contains intramolecular and intermolecular C—H•••S bonds. The distances between atoms, bond angles, and torsion angles between the rings in the molecule are determined and these values are given in tables. In addition to these, to understand the packaging of the molecules in the crystal lattice of the compound and to determine the important interactions between the molecules, Hirshfeld surface analysis was performed using the CrystalExplorer17.5 program, and the surface shapes of the molecule were determined and drawn. Intermolecular interaction regions and the interaction ratios that make up the package structure are determined and shown and explained with figures. Again, the "energy-framework" study was carried out with the same program.

Keywords: Hirshfeld surface analysis, Crystal system, Thiophene

INTRODUCTION

Thiophene derivatives have lately been explored as anti-inflammatory (Pillai et. Al, 2005) agents in new pharmaceutical and chemical products. Low et al., (2009), in their study, mentioned the synthesis information of the thiophene-2-carboxamide compound and made the structural analysis of the crystal obtained by slow evaporation. In this study, using a Single Crystal X-Ray Diffractometer (STOE IPDS II), diffraction data were collected and the crystal structure was elucidated. Hirshfeld surface analysis and energy framework study were also carried out.

MATERIALS AND METHODS

The data obtained from the diffractometer were solved using the following programs and visuals were obtained. X-AREA (Stoe & Cie, 2002), X-AREA, X-RED32 (Stoe & Cie, 2002), SHELXT2018/3 (Sheldrick, 2015a), SHELXL2018/3 (Sheldrick, 2015b), OLEX2 (Dolomanov et al., 2009) and Mercury (Macrae et al., 2006), WinGX (Farrugia, 2012), SHELXL2018/3 (Sheldrick, 2015b), PLATON (Spek, 2009) and publCIF (Westrip, 2010).

The positions and bond lengths, bond angles, and torsion angles of the atoms in the molecule were calculated. In addition, Hirshfeld surface analysis of the molecule was performed using the Crystal Explorer program 17.5 (Turner et al., 2017).

STRUCTURAL COMMENTARY

Crystal data, data collection, and structure refinement details are summarized in Table 1. The C-bound H atoms were positioned geometrically and refined using a riding model: C—H = 0.93–0.97 Å with

*U*iso(H) = 1.2*U*eq(C). The molecular structure of the title complex is illustrated in Fig.1. Some selected geometric parameters of the molecule are given in Table 2 and Figure 3.

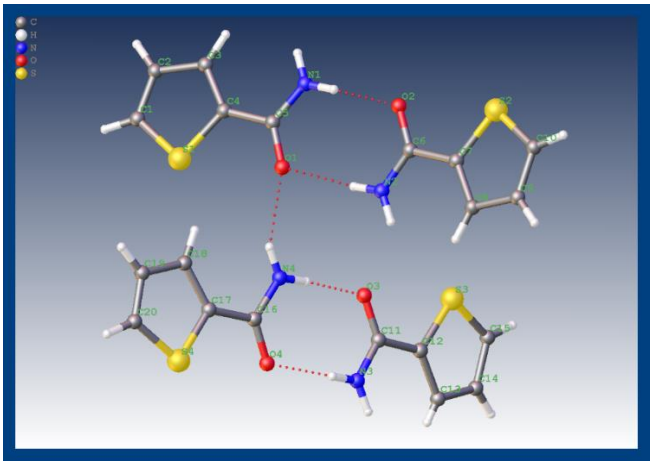

Figure 1. The molecular structure of the title compound, showing the atom labeling. Displacement ellipsoids are drawn at the 40% probability level.

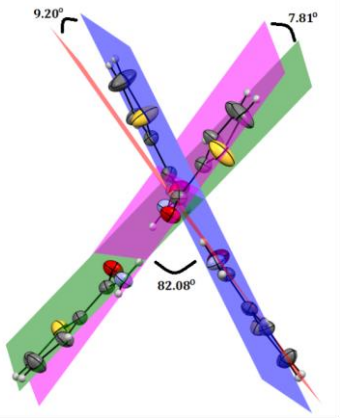

Figure 2. 3D view of the molecule. The mean plane of each C_5H_5NOS molecule is visualized.

Table1. Experimental details

Crystal system, Space group	orthorhombic, $Pna2_1$
Temperature/K	296
a, *b*, *c* (Å)	10.1202(4),14.3757(6), 16.4632(8)
α/°=β/°= γ/°, *V* (Å^3)	90, 846.02(13), 2395.15(18)
Z	16
X-Ray, (Å)	Mo *K*α , 0.71073
μ (mm^{-1})	0.431
Diffractometer	STOE IPDS II
Absorption correction	integration
No. of measured, independent and observed [*I* > 4u(*I*)] reflections	26465, 26465, 6891

R_{int}	0.058
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.061, 0.176, 0.88
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e Å^{-3})	0.55, −0.39

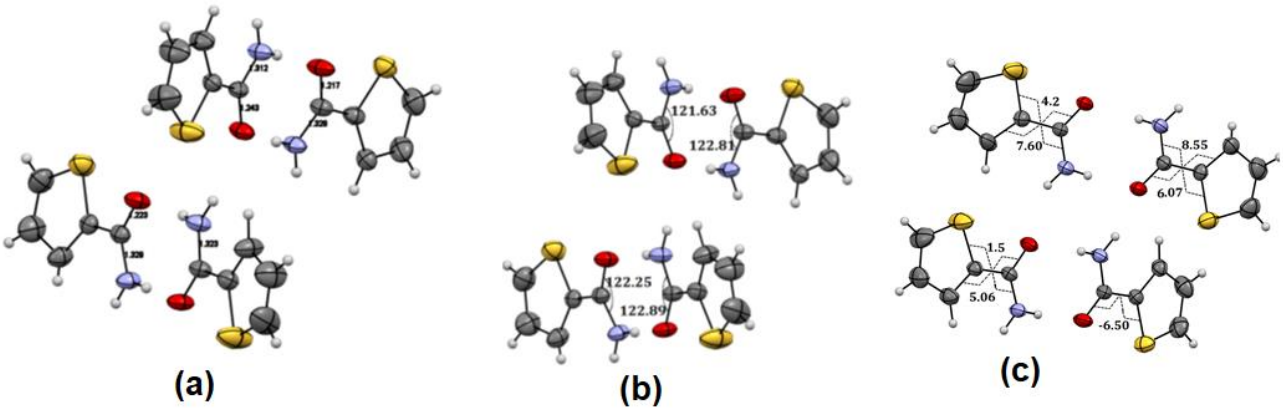

Figure 3. (a) C-N and C-O bond lengths, **(b)** N-C-O bond angles, selected torsion angle.

Tablo 2. Selected geometric parameters

Atom	Atom	Lenghts/Å	Atom	Atom	Lenghts/Å	Atom	Atom	Atom	Angle/^{0}	
S2	C7	1.698(5)	C11	C12	1.465(8)	C10	S2	C7	91.7(3)	
S2	C10	1.669(8)	C8	C7	1.417(7)	C15	S3	C12	92.3(3)	
S3	C12	1.707(5)	C8	C9	1.410(9)	C1	S1	C4	92.8(3)	
S3	C15	1.682(8)	N4	C16	1.325(6)	C17	S4	C20	91.1(4)	
S1	C4	1.700(5)	C7	C6	1.484(8)	O1	C5	N1	121.6(5)	
Atom	Atom	Atom	Atom	Angle/^{0}		Atom	Atom	Atom	Atom	Angle/^{0}
S2	C7	C6	N2	175.2(4)		C4	C3	C2	C1	-0.8(11)
S2	C7	C6	O2	-6.4(7)		C17	S4	C20	C19	-1.5(10)
S2	C10	C9	C8	0.7(9)		C17	C18	C19	C20	-2.8(13)
S3	C15	C14	C13	-2.6(10)		C2	C3	C4	S1	1.2(8)
S4	C17	C16	O4	4.2(8)		C2	C3	C4	C5	-180.0(7)
S4	C17	C16	N4	-175.5(5)		C16	C17	C18	C19	178.8(7)

SUPRAMOLECULAR FEATURES

The intramolecular N—H•••O bonds are formed in the $R_2^2(6)$ ring motif and they are in dimer form. The molecule also contains intramolecular and intermolecular C—H•••S bonds. Table 3 and Figure 4 show hydrogen bonds geometry.

Table 3. Hydrogen bonds geometry

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
N2 —H2B···O2[1]	0.86	**2.108**	2.939	**162.33**
N3—H3B···O3[1]	0.86	**2.120**	**2.945**	**160.83**
C8 —H8···O2[1]	0.93	**2.645**	**3.467**	**147.75**
C3 —H3···O4[2]	**0.94**	**2.655**	**3.554**	**159.02**
N1 —H1B···O4[2]	**0.86**	**2.108**	**2.933**	**160.45**
N2—H2A···O1	**0.86**	**2.098**	**2.949**	**169.95**
N3—H3A···O4	**0.86**	**2.045**	**2.899**	**172.04**
N —H1B···O2	**0.86**	**2.071**	**2.928**	**174.83**
N4—H4A···O3	**0.86**	**2.078**	**2.932**	**172.54**
N4—H4B···O1	**0.86**	**2.094**	**2.879**	**151.42**
C18—H18···S1	**0.93**	**2.902**	**3.669**	**140.64**
N2—H2B···O2	**0.86**	**2.108**	**2.939**	**162.33**

Equivalent positions: (1) x+1/2,-y+1/2+1,+z (2) x-1,+y,+z

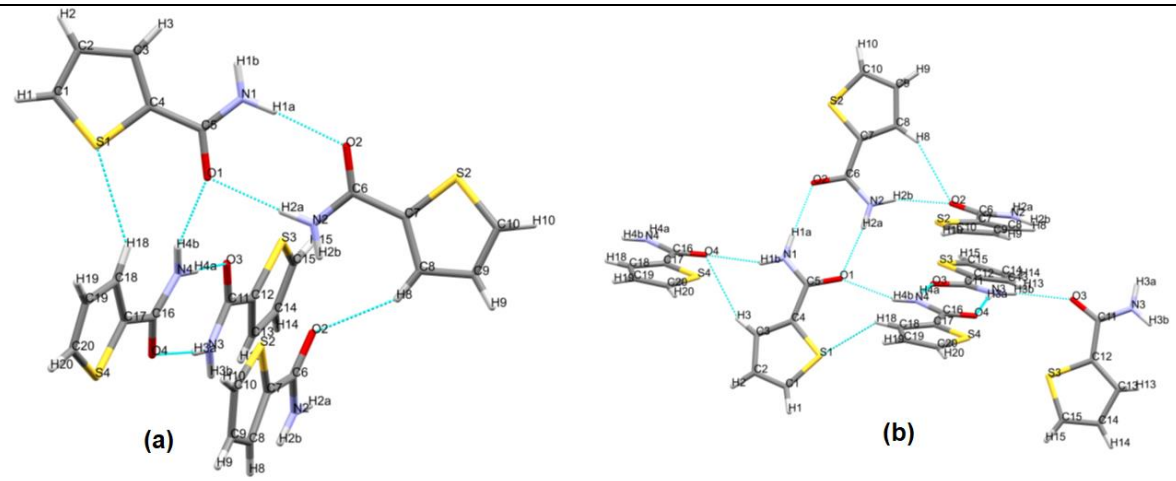

Figure 4. Intramolecular (a) and intermolecular (b) hydrogen bonds

HIRSHFELD SURFACE ANALYSIS

The Hirshfeld surfaces mapped over d_{norm}, curvedness, shape index, and curvedness are shown in Figure 5 and Figure 6. Red spots in Figure 5 correspond to the near-type H···O contacts resulting from N—H···O and C—H···S hydrogen bonds.

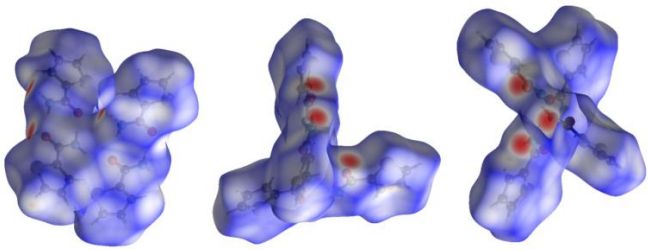

Figure 5. D_{norm} surface of the title molecule

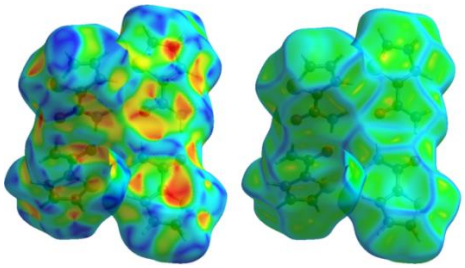

Figure 6. Shape-index and curvedness surfaces

Fingerprint plots revealed that the most significant contributions to the crystal packing are from H···H (29.7%), H···S/S···H (20.1%), H···C/C···H (16.4%), and H···O/O···H(16.0%) contacts (Figure 7).

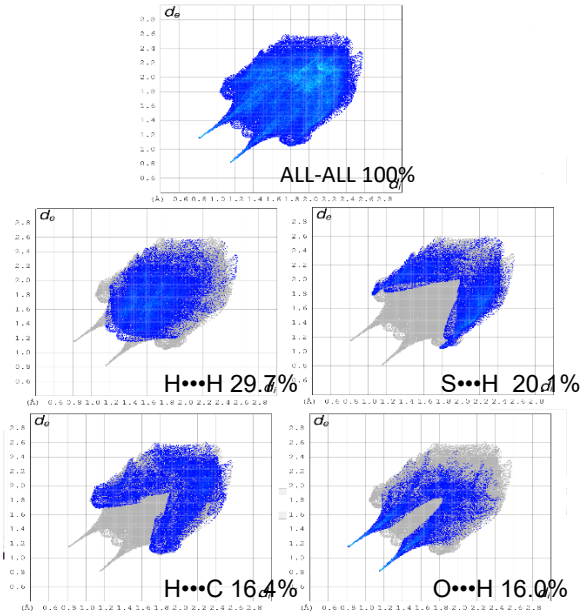

Figure 7. Fingerprint plots of the title molecule

INTERACTION ENERGIES

Interaction energies in the title compound were calculated using HF/3-21G quantum level of theory, as available in CrystalExplorer 17.5. The total intermolecular interaction energy (Etot) is the sum of four energy terms: electrostatic (Eele), polarization (Epol), dispersion (Edisp), and exchange-repulsion (Erep). The relative strengths in interaction energies in individual directions are represented by cylinder-shaped energy frameworks. The energy framework calculations were analyzed to understand the topologies of pair-wise intermolecular interaction energies of the two compounds. The energy framework is constructed to compare the different energy components module, i.e. repulsion (Erep), electrostatic (Eele), dispersion (Edis), polarization (Epol), and total (Etot) energy (Mackenzie et al., 2017). The energies between molecular pairs were indicated as cylinders joining the centroids of pairs of molecules with the thickness of the cylinder radius directly proportional to the amount of interaction energy between the pair of molecules (Wu *et al.*, 2020). As seen in Fig.8. the red colored molecule with symmetry operation (x, y, z) located at a distance of 7.33Å from the centroid of the selected molecule has shown the highest total interaction energy of -64.2 kJ/mol. The net interaction energies for the title compound were found to be electrostatic (Eele = -79.3 kJ/mol), polarization (Epol = -28.8), dispersion (Edis = -62.2), repulsion (Erep = 65.3 kJ/mol), total interaction energy (Etot = -102.0 kJ/mol)(Figure 9).

	N	Symop	R	Electron Density	E_ele	E_pol	E_dis	E_rep	E_tot
	1	-	7.33	HF/3-21G	-75.1	-20.5	-11.5	44.4	-64.2
	1	-	5.67	HF/3-21G	-1.3	-1.7	-16.6	10.5	-8.9
	1	-	6.46	HF/3-21G	-0.4	-1.1	-7.4	3.9	-4.7
	1	-	7.62	HF/3-21G	6.3	-0.7	-1.0	0.0	5.0
	1	-	8.24	HF/3-21G	0.0	nan	0.0	0.0	nan
	1	-	8.28	HF/3-21G	-1.4	-0.1	-0.5	0.0	-2.0
	1	-	5.99	HF/3-21G	0.0	-0.0	-0.0	0.0	-0.0
	1	-	4.08	HF/3-21G	-0.6	-0.1	-0.2	0.0	-0.9
	2	-x, -y, z+1/2	8.53	HF/3-21G	-1.4	-0.1	-0.5	0.0	-2.0
	2	-x+1/2, y+1/2, z+1/2	12.33	HF/3-21G	-1.2	-0.0	-0.1	0.0	-1.3
	2	x+1/2, -y+1/2, z	7.14	HF/3-21G	3.2	-0.9	-6.2	2.3	-1.0
	1	-	5.19	HF/3-21G	0.0	nan	0.0	0.0	nan
	1	-	8.77	HF/3-21G	0.0	nan	0.0	0.0	nan
	1	-	9.70	HF/3-21G	-0.8	-0.0	-0.1	0.0	-0.8
	1	-	5.37	HF/3-21G	3.2	-0.9	-6.2	2.3	-1.0
	2	x+1/2, -y+1/2, z	10.62	HF/3-21G	-0.6	-0.1	-0.2	0.0	-0.9

	1	-	6.79	HF/3-21G	-2.2	-0.9	-4.8	1.6	-5.8
	1	-	7.01	HF/3-21G	2.0	-1.3	-4.5	0.3	-2.6
	1	-	11.63	HF/3-21G	-1.4	-0.1	-0.5	0.0	-2.0
	1	-	12.31	HF/3-21G	-0.8	-0.0	-0.1	0.0	-0.8
	1	-	9.48	HF/3-21G	-0.6	-0.1	-0.2	0.0	-0.9
	1	-	8.24	HF/3-21G	-2.9	-0.1	-0.2	0.0	-3.2
	1	-	9.05	HF/3-21G	0.6	-0.0	-0.0	0.0	0.6
	2	-x+1/2, y+1/2, z+1/2	11.78	HF/3-21G	-0.1	-0.0	-0.2	0.0	-0.3
	1	-x+1/2, y+1/2, z+1/2	11.78	HF/3-21G	-0.8	-0.0	-0.1	0.0	-0.8
	1	-	5.53	HF/3-21G	-2.9	-0.1	-0.2	0.0	-3.2
	1	-	11.20	HF/3-21G	0.3	-0.0	-0.1	0.0	0.3
	1	-	8.20	HF/3-21G	0.2	-0.0	-0.1	0.0	0.2
	1	-	9.66	HF/3-21G	-0.1	-0.0	-0.2	0.0	-0.3
	1	-	9.30	HF/3-21G	-1.0	-0.0	-0.3	0.0	-1.2
	1	-	11.26	HF/3-21G	0.4	-0.0	-0.2	0.0	0.3
	1	-	10.04	HF/3-21G	0.5	-0.0	-0.0	0.0	0.5
	1	-	12.78	HF/3-21G	-0.4	-0.0	-0.0	0.0	-0.4

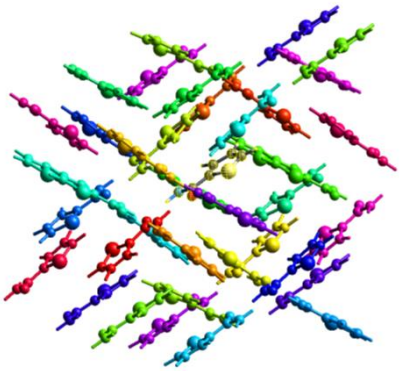

Figure 8. Interaction energies for the title molecule were calculated with the HF/3-21G model.

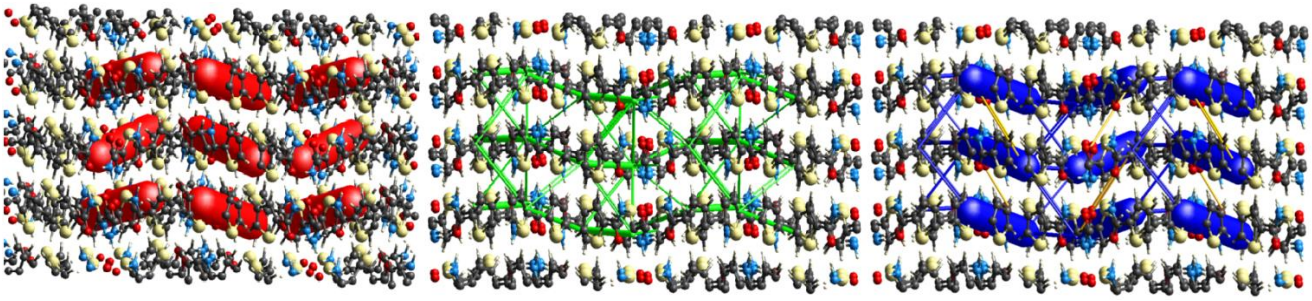

Figure 9. Energy frameworks for a 2x2x2 supercell viewed down the crystallographic b axis for the threefold interpenetrated crystal structure. The red-colored frame shows the Coulomb energy, green shows dispersion, and blue shows total energy.

RESULTS

The crystal and molecular structure of the C_5H_5NOS compound were solved experimentally using a single-crystal X-Ray diffractometer and the Hirshfeld surface analysis was done theoretically. The molecule is not planar and interactions connecting molecules; N—H···O and C—H···S hydrogen bonds were detected. The most important bond in crystal packaging is N—H•••O bonds. Components of the framework energies i.e. electrostatic energy (Eele) was being more ascending over others.

DISCUSSION

This study elucidated the internal structure of a previously synthesized compound and touched on intermolecular bonds and bond energies. The clarification of these data of the compound contributes to the literature and paves the way for studies that have been or will be made on the use of this compound.

CONCLUSION

The thiophene-2-carboxamide crystalline crystal system and space group are Orthorhombic, Pna21, lattice parameters are a = 10.1202 (4) (2), b = 14.3757 (6), c = 16.4632 (8) Å and the number of molecules per cell is 16. The intramolecular N—H•••O bonds are formed in the $R_2^2(6)$ ring motif and they are in dimer form. thiophene-2-carboxamide. IR, NMR data of the molecule can also be examined. In addition, it will be useful to conduct ADMET and Molecular Docking studies to understand its pharmacological properties.

ACKNOWLEDGEMENTS

Author contributions are as follows. Conceptualization, EBÇ and ND; writing; formal analysis, EBÇ, and ND; validation, ND; project administration, ND, EBÇ. Funding for this research was provided by: Ondokuz Mayıs University under Project No. PYO.FEN.1906.19.001

REFERENCES

Dolomanov, O. V., Bourhis, L. J., Gildea, R. J., Howard, J. A. K. & Puschmann, H. (2009). *J. Appl. Cryst.* 42, 339–341.

Farrugia, L. J. (2012). *J. Appl. Cryst.* 45, 849–854

Low J.N., Quesada,A., Santos Luı´s M. N. B. F. , Schröder B. & Gomes L.R. J .Chem. Crystallogr. (2009). 39:747–752.

Macrae, C. F., Sovago, I., Cottrell, S. J., Galek, P. T. A., McCabe, P., Pidcock, E., Platings, M., Shields, G. P., Stevens, J. S., Towler, M. & Wood, P. A. (2020). *J. Appl. Cryst.* 53, 226–235.

Mackenzie, C. F., Spackman, P. R., Jayatilaka, D. & Spackman, M. A. (2017). IUCr. 4, 575-578.

Pillai AD, Rani S, Rathod PD, Xavier FP, Vasu KK, Padh H, Sudarsanam V (2005) Bioorg Med Chem 13:1275–1283.

Sheldrick, G. M. (2015*a*). *Acta Cryst.* A71, 3–8.

Sheldrick, G. M. (2015*b*). *Acta Cryst.* C71, 3–8.

Spek, A. L. (2020). *Acta Cryst.* E76, 1–11.

Stoe & Cie. (2002). *X-AREA* and *X-RED32*. Stoe & Cie GmbH, Darmstadt, Germany.

Turner, M. J., MacKinnon, J. J., Wolff, S. K., Grimwood, D. J., Spackman, P. R., Jayatilaka, D. & Spackman, M. A. (2017). *CrystalExplorer 17.5*. The University of Western Australia. http://hirshfeldsurface.net.

Wu, Q., Xiao, J.-C., Zhou, C., Sun, J.-R., Huang, M.-F., Xu, X., Li, T. & Tian, H. (2020). *Crystals*, **10**(4), 334–348.

CONVOLUTIONAL NEURAL NETWORK MODELS FOR PLANT SEEDLING CLASSIFICATION

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ABSTRACT

With growing concerns about the increasing population in the world and finite food resources, the application of the benefits of contemporary computing technology to improve the efficiency of agricultural fields is inevitable. CNN models today are outperforming traditional machine learning methods especially in image classification area. Consequently, CNN models are being used more and more prevalent day to day. In this study, in addition to contributing to agricultural activities, it is aimed to reveal the best method in the classification of plant seedling images by using prominent CNN models and to facilitate the work of farmers in the agricultural field. Using various CNN models, plant seedlings' images that were gathered from online data science platform Kaggle classified. There are 12 different plant seedling classes in the data set and the total number of data samples are 4750. Data preprocessing and data augmentation both are applied to improve the performance of the models. Furthermore, learning rate reduced properly to fine tune the models. Root-mean-square error was used to evaluate the model performance. It is observed that augmentation and removing backgrounds of the images significantly improved the performance of the models. Accordingly, With the use of the InceptionResNETv2 model, the accuracy value was obtained as 96.55 percent. This result is a significant improvement comparing the previous works on the same dataset. The results are encouraging to say that this work will improve agricultural activities and help farmers classify plant seedlings.

Keywords: Machine Learning, Convolotinal Neural Networks, Plant Seedling Classification, Deep Learning

1. INTRODUCTION

Plants continue to provide food and oxygen to a wide range of living organisms. Every day, approximately 700 million people go hungry due to a lack of access to staple foods such as maize, rice, and wheat (Our World in Data, 2021). According to (FAO, 2018) sustainable food and agriculture are the key factors for economic growth and increasing productivity. Separating plant seedlings is a time-consuming and work-intensive problem, especially for very similar-looking plant seedlings. Farmers are now confronted with a new challenge: undesired plants. Weeds are plants that are unwelcome in the gardens. Weeds are plants that are undesirable in a cornfield. It harms the cash crop by competing with it for nutrients and water, reducing yield production and affecting quality (Rahman et al., 2020).

In order to find solutions to all these difficulties, many machine learning methods have been tried, and it is aimed to facilitate agricultural development by facilitating the work of farmers. It is aimed to be able to increase productivity in agriculture and help farmers save time and money by having an automated system that classifies plant seedlings. However, traditional machine learning methods are not well-structured enough to deal with such datasets of small-scale plants in images. Previous works reported that K-Nearest-Neighbour and Support Vector Machine algorithms had accuracy 56.84 and 64.47 respectively (D. K. Nkemelu et al., 2018).

CNN has performed extremely well in medical image recognition (Li et al., 2014), face recognition (Lawrence et al., 1997), malware detection (Lo et al., 2019), image classification (Sharma et al., 2018)

and many more. A convolutional neural network's primary principle is to develop a hierarchy of self-learned features, all of which are based on less abstract information from earlier layers of the network and these self-learned properties make the convolutional neural network less impacted by natural variations such as changes in light, shadows, skewed leaves, and obscured plants as compared to other valuable classification approaches (Dyrmann et al., 2016). Convolutional Neural Networks turned out to be one of the best options to classify plant seedlings since it has been outperforming traditional machine learning methods as well as other deep learning methods (Elnemr, 2019a, 2019b; Nkemelu et al., 2018; Rahman et al., 2020).

In this paper, we focused on CNN models to classify plant seedlings' images. We put forward an approach to develop the best possible method to solve the problem. We compared 10 different CNN models and showed that InceptionResNetV2 model is the best one to classify plant seedlings.

2. MATERIALS AND METHODS

2.1. Dataset

We used a dataset that we obtained from kaggle.com. This dataset has been become a challenge for years by Kaggle.com. Researchers from worldwide, worked on this dataset to be able to obtain higher accuracy values classifying these plant seedling images. Dataset consists of 12 plant species.

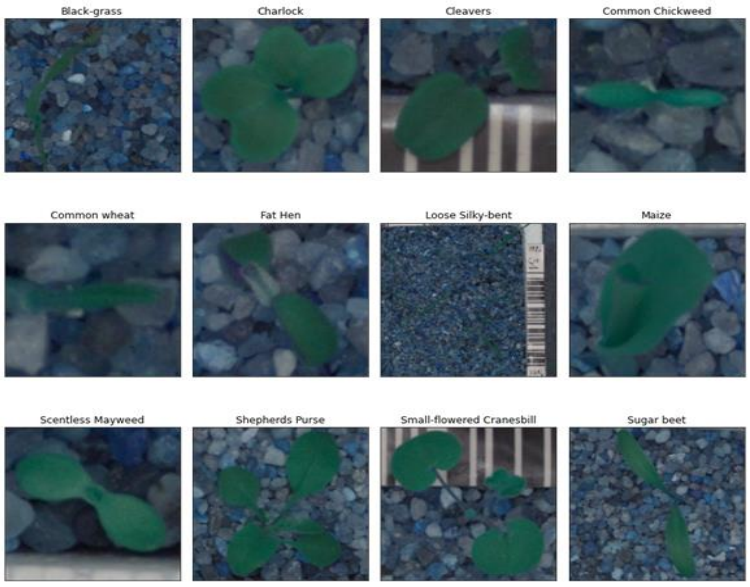

Figure 2: Visualization of Plant Seedling Images

In Figure 1, there are sample images for each kind of plant seedlings existing in the dataset. As it is seen on the images, some plant seedlings are very small compared to image size so it is a tough challenge to be able to classify these plant seedlings.

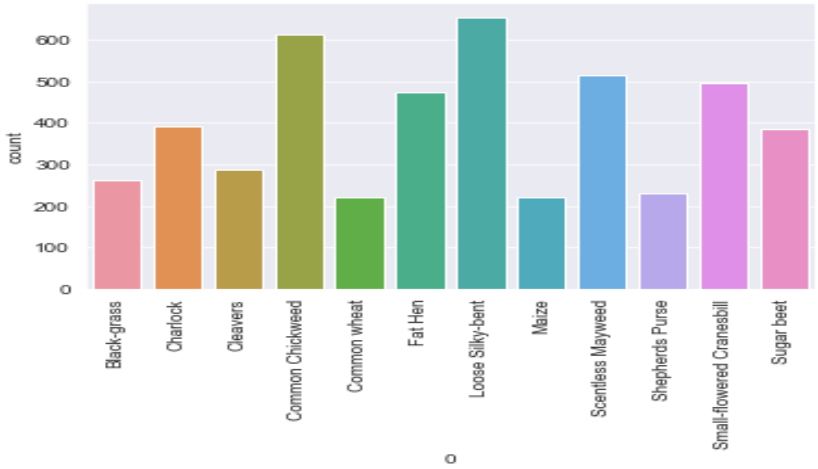

Figure 3: Distribution of plant seedlings by species

There are 4750 samples of images in the dataset and in figure 2, there is the distribution of plant seedlings by species in the dataset. It may be seen that number of samples varies.

2.3. Preprocessing

Images were resized differently for each model. The process for preparing the data included, normalization, encoding, and categorizing the labels.

2.4. Data Augmentation

We applied data augmentation to increase the data so that we aim to help models learn more and enhance the accuracy of the models. Also, it prevents model overfitting. We implemented various methods for data augmentation. Randomly chosen training images were rotated randomly by 180 degrees, randomly zoomed by ten percent of the width, randomly shifted vertically by ten percent of the height, and randomly flipped vertically and horizontally.

2.5. Removing Backgrounds

In figure 1, it is clearly seen that plant seedlings cover a very small scale of whole images and this causes some problems to classify images for CNN models. To solve this problem, we have removed the backgrounds of the images. With this method, we observed significant increases in the accuracy values of models.

2.6. ProposedApproach

Many improvements were made to the classification process to achieve the best results. Firstly, we preprocessed the data. Then, we removed the background from the images. After that, Data augmentation was performed on the dataset. Also, an optimizer algorithm was chosen to increase the accuracy of the models. Finally, our model classified the image.

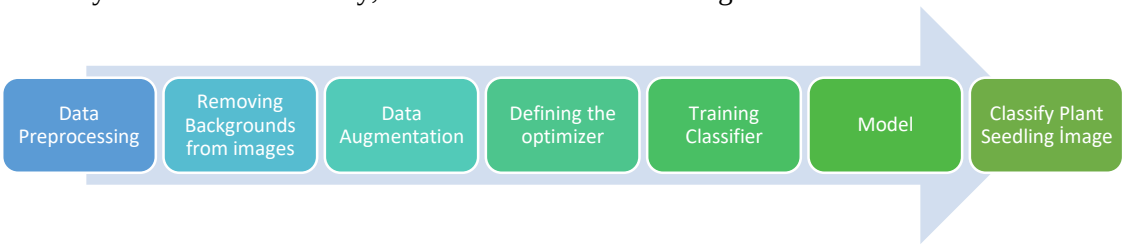

Figure 4: Our approach for the problem

In figure 3, there is the process of our approach to classify plant seedlings' images.

2.7. CNN Model Architechtures

A CNN architecture is a multi-layered stack of simple modules that mimics brain function in general. This multilayered structure takes in data, computes it, and then feeds the results to the next layer (Rahman et al., 2020).

ResNet-50. This architecture makes use of shortcut connections that don't add any more complexity to the network but instead simplify it (Rahman et al., 2020).

GoogleNet Naive. A deep CNN model called GoogLeNet. Its architecture aids in the better utilization of network computation resources. Its well-crafted architecture allows for greater network depth and width while maintaining a consistent computing budget (Almawas et al., 2020).

VGG-16. Thirteen convolutional layers, five pooling layers, and three fully linked layers make up this simple yet effective architecture. (Rahman et al., 2020)

InceptionV3. Inception-v3 network model is a deep neural network that is difficult to train on a low-configuration computer; it takes at least a few days to train, and the number of output nodes in the final layer in this model is equal to the number of categories in the dataset (Thakallapelli et al., 2016).

DenseNET. The DenseNet system is made up of Dense blocks. It has a unique characteristic in that each layer takes a feature map from the preceding levels as an input and uses its own feature maps as inputs to all following layers (Rahman et al., 2020).

MobileNETV2. MobileNetV2 is a CNN architecture for mobile devices (Lawrence et al., 1997). MobileNetV2's architecture includes a fully convolutional layer with 32 filters, followed by 19 residual bottleneck layers (Sandler et al., 2018).

NasNETLarge. Nasnet is a scalable CNN architecture (created using neural architecture search) made up of fundamental building blocks (cells) that are fine-tuned through reinforcement learning (Zoph et al., 2018).

ResNET152V2. ResNet152V2 has a total of 84,022,273 parameters, including 83,878,529 trainable parameters and 143,744 non-trainable parameters (Elshennawy & Ibrahim, 2020).

Xception. Xception is a hypothesis based on the Inception module, which provides cross-channel and spatial correlations inside CNN feature maps that can be decoupled fully (Jinsakul et al., 2019).

InceptionResnetV2. This model consists of 55.9 million parameters and is one of the newest models that give satisfying results in image classification.

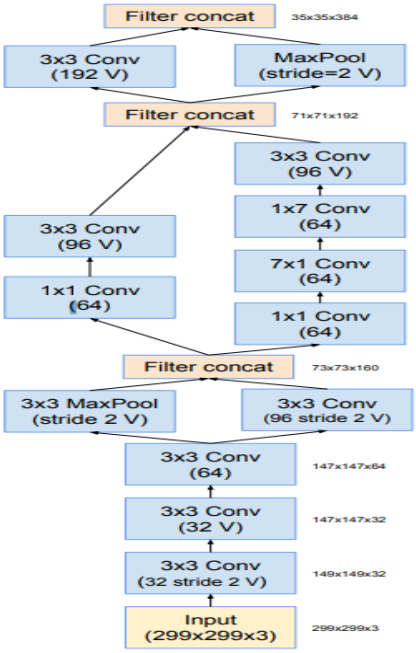

Figure 5: The stem of the pured Inception-ResNet-v2 networks' structure. This is the network's input section (Szegedy et al., 2017)

In Figure 4 above, there is the main structure of InceptionResNetV2.

2.8. Optimizer

Learning rate reduction as an optimizer was applied to increase the validation accuracy. We define patience value as 3 so the learning rate is reduced when there were no improvements on the validation accuracy for 3 epochs. We observed that reducing the learning rate significantly improved the accuracy of the model.

Provide sufficient detail to allow the work to be reproduced. The uniform appearance will assist the reader to read paper of the proceedings book. It is therefore suggested to authors to use the example of this file to construct their papers. This particular example uses this paper format with 25 mm margins left, right, top and bottom.

2.9. Model Evaluation

Root-mean-square error was used to evaluate the model performance of the model.

3. RESULTS

The following metrics are used to assess the proposed system's performance: average accuracy, average precision, average recall, and averageF1-score.

Table 1: Obtained results using different CNN models

Model	Precision	Recall	F1-Score	Test Accuracy	Validation Accuracy	Training Accuracy
ResNET-50	0.92	0.92	0.92	0.9183	0.9352	0.9949
GoogleNet Naive	0.80	0.80	0.78	0.7584	0.6995	0.7633
InceptionResNETV2	0.97	0.97	0.96	0.9654	0.9655	0.9980
VGG-16	0.88	0.89	0.88	0.8863	0.8864	0.9715
InceptionV3	0.95	0.95	0.95	0.9461	0.9470	0.9969
DenseNET	0.93	0.91	0.91	0.9099	0.9520	0.9997
MobileNETV2	0.91	0.90	0.90	0.9015	0.9310	0.9980
NasNETLarge	0.90	0.90	0.90	0.9015	0.9133	0.9834
ResNET152V2	0.92	0.91	0.91	0.9099	0.9444	0.9963
Xception	0.95	0.95	0.95	0.9511	0.9571	0.9994

We implemented ten different Convolutional Neural Network models. InceptionResNetV2 proposed the best results among all models and GoogleNet Naive had the lowest values of accuracy, precision, recall and f1-score as it may be seen in Table 1.

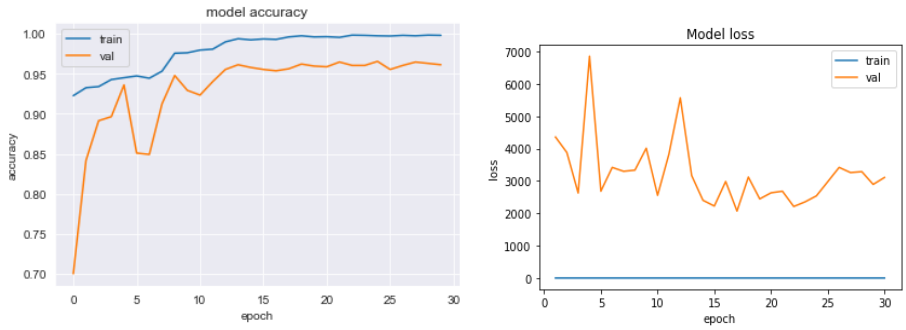

Figure 6: Training and validation accuracy and loss graphs of InceptionresnetV2 model

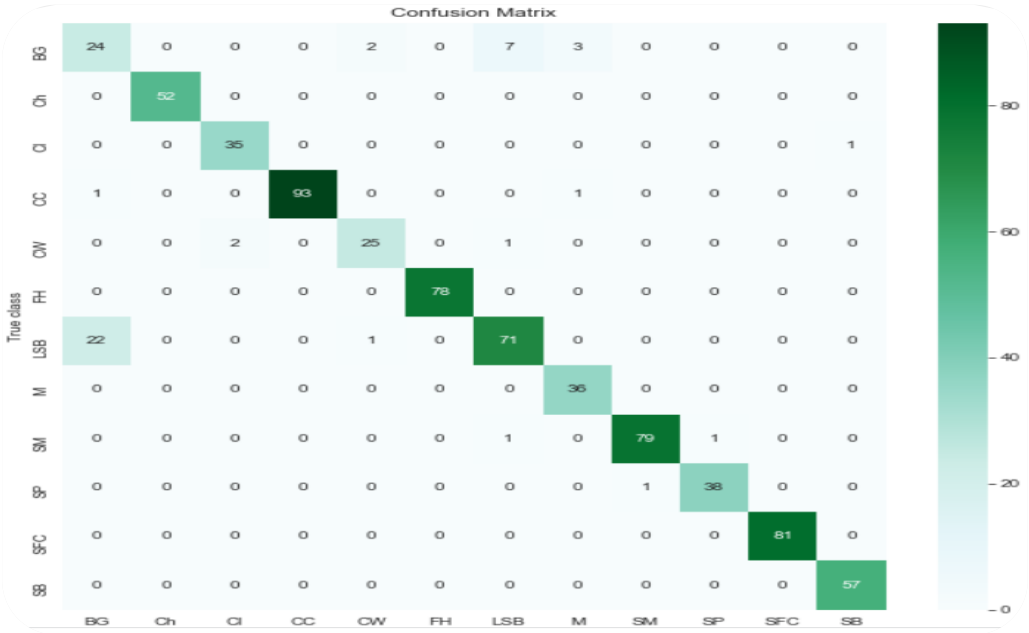

Figure 7: Confussion matrix for InceptionResnetV2 model

Confussion matrix of InceptionResnetV2 model shows the correct and incorrect predictions made by the model. Numbers stand on the diagonal part of the matrix that represents correct predictions and other parts represent the wrong predictions. Colors indicate the amount of data classified correctly. When it gets darker, it remarks there is more intensity in terms of amount of correct predictions.

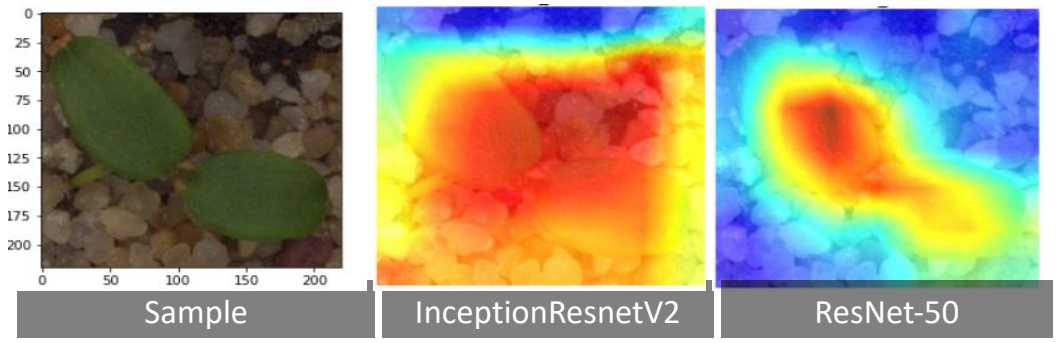

Figure 8: Class activation map for InceptionResnetV2 and ResNet-50

Figure 7 shows the difference in terms of approach on the images by InceptionResNetV2 and ResNet-50. Class activation maps shown in Figure 7 are gathered from the last convolutional layers of the models. While the parts where the red color tone is dominant are shown as the parts where the model focuses more frequently, the parts with the blue tone appear as the least focused parts.

4. DISCUSSION

Table 1 shows InceptionResnetV2 model outperformed other CNN models in this specific problem. It performs better both on validation data and test data. The second-best model became Xception in terms of accuracy, precision, recall and f1-score. It is observed that VGG-16, DenseNet, ResNET152V2 and ResNET-50 models learn training data fastly and did exceedingly well in terms of training accuracy. However, these models lack accuracy values on the test dataset compared to Xception, InceptionResNETV2 and InceptionV3.

InceptionResNET model becomes increasingly stable on the validation set with rapid learning on the training data set. Maximum validation accuracy obtained during the learning process became %96,55. We saved the best status of the model when the model reached the maximum value of %96,55 and we

used this state of the model in the test dataset. In terms of model loss, for training, it is very close to zero and for validation, it tends to decrease throughout the process as may be seen in Figure 5.

In Figure 6, it may be noticed that loose-silky bent plant misclassified 22 times. This is a clear clue on how to improve accuracy. To get a better accuracy value, it requires more work on this specific plant species. Other plants are classified with a very good percentage of accuracy according to Figure 6. The confusion matrix indicates that even classes that have not as much data as others are correctly classified frequently. This point proves our proposed method. It is remarkable that removing image backgrounds and data augmentation play a key role to improve the accuracy of the model.

In Figure 7, we observe that InceptionResNetV2 focuses on a large scale of the image and this leads us to remove the background of images. Therefore, we obtain much better accuracy values after removing the backgrounds as the model was able to focus only on the key parts of the images.

5. CONCLUSION

In this study, convolutional neural network models were examined comparatively to classify plant seedlings effectively and quickly, and the model that gave the best results was revealed. The findings showed that the most effective model is InceptionResnetV2. We obtain %96.54 accuracy value on the test dataset using InceptionResnetV2 and this result is remarkable compared to 92.60 percent accuracy obtained using CNN, 56.84 for K-Nearest Neighbour and 64.47 percent for Support Vector Machine in the past study (D. Nkemelu et al., n.d.) and another corresponding study (Elnemr, 2019a) which reached 94.38 percent accuracy using CNN. Therefore, we may conclude that the proposed method given in this paper outperforms both traditional machine learning approaches and many previous CNN methods. This study, which has the potential to accelerate production, will reduce the workload of farmers by separating plant seedlings from each other. Therefore, we think that the contribution of this study to agriculture is important. In future work, it is planned to implement more data preprocessing. It is clear that we have one plant species that misclassified significantly more than any other plant species. Therefore, we will focus on this species and fine-tune the model to classify them with more accurate results.

REFERENCES

Almawas, L., Alotaibi, A., & Kurdi, H. (2020). Comparative performance study of classification models for image-splicing detection. *Procedia Computer Science*, *175*, 278–285. https://doi.org/10.1016/J.PROCS.2020.07.041

Dyrmann, M., Karstoft, H., & Midtiby, H. S. (2016). Plant species classification using deep convolutional neural network. *Biosystems Engineering*, *151*, 72–80. https://doi.org/10.1016/J.BIOSYSTEMSENG.2016.08.024

Elnemr, H. A. (2019a). Convolutional Neural Network Architecture for Plant Seedling Classification. *IJACSA) International Journal of Advanced Computer Science and Applications*, *10*(8). www.ijacsa.thesai.org

Elshennawy, N. M., & Ibrahim, D. M. (2020). Deep-Pneumonia Framework Using Deep Learning Models Based on Chest X-Ray Images. *Diagnostics 2020, Vol. 10, Page 649*, *10*(9), 649. https://doi.org/10.3390/DIAGNOSTICS10090649

FAO. (2018). *Transforming Food and Agriculture to Achieve the SDGs. 20 Interconnected Actions to Guide Decision-Makers*. https://www.fao.org/3/I9900EN/i9900en.pdf

Jinsakul, N., Tsai, C. F., Tsai, C. E., & Wu, P. (2019). Enhancement of Deep Learning in Image Classification Performance Using Xception with the Swish Activation Function for Colorectal Polyp Preliminary Screening. *Mathematics 2019, Vol. 7, Page 1170*, *7*(12), 1170. https://doi.org/10.3390/MATH7121170

Lawrence, S., Giles, C. L., Tsoi, A. C., & Back, A. D. (1997). Face recognition: A convolutional neural-network approach. *IEEE Transactions on Neural Networks*, *8*(1), 98–113. https://doi.org/10.1109/72.554195

Nkemelu, D. K., Omeiza, D., & Lubalo, N. (2018). *Deep Convolutional Neural Network for Plant Seedlings Classification*. http://arxiv.org/abs/1811.08404

Our World in Data. (2021). *Mapped: Food Production Around the World*. https://www.visualcapitalist.com/cp/mapped-food-production-around-the-world/

Rahman, N. R., Hasan, M. A. M., & Shin, J. (2020). Performance comparison of different convolutional neural network architectures for plant seedling classification. *2020 2nd International Conference on Advanced Information and Communication Technology, ICAICT 2020*, 146–150. https://doi.org/10.1109/ICAICT51780.2020.9333468

Sandler, M., Howard, A., Zhu, M., Zhmoginov, A., & Chen, L. C. (2018). MobileNetV2: Inverted Residuals and Linear Bottlenecks. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, 4510–4520. https://doi.org/10.1109/CVPR.2018.00474

Sharma, N., Jain, V., & Mishra, A. (2018). An Analysis Of Convolutional Neural Networks For Image Classification. *Procedia Computer Science*, *132*, 377–384. https://doi.org/10.1016/J.PROCS.2018.05.198

Szegedy, C., Ioffe, S., Vanhoucke, V., & Alemi, A. A. (2017). Inception-v4, inception-ResNet and the impact of residual connections on learning. *31st AAAI Conference on Artificial Intelligence, AAAI 2017*, 4278–4284.

Thakallapelli, A., Ghosh, S., & Kamalasadan, S. (2016). Real-time frequency based reduced order modeling of large power grid. *IEEE Power and Energy Society General Meeting*, *2016-Novem*. https://doi.org/10.1109/PESGM.2016.7741877

Zoph, B., Vasudevan, V., Shlens, J., & Le, Q. v. (2018). Learning Transferable Architectures for Scalable Image Recognition. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, 8697–8710. https://doi.org/10.1109/CVPR.2018.00907

5-FENİL-1,3,4-TİYODİAZOL-2-AMİN BİLEŞİĞİNİN YAPI ÇÖZÜMÜ VE HIRSHFELD YÜZEY ANALİZİ

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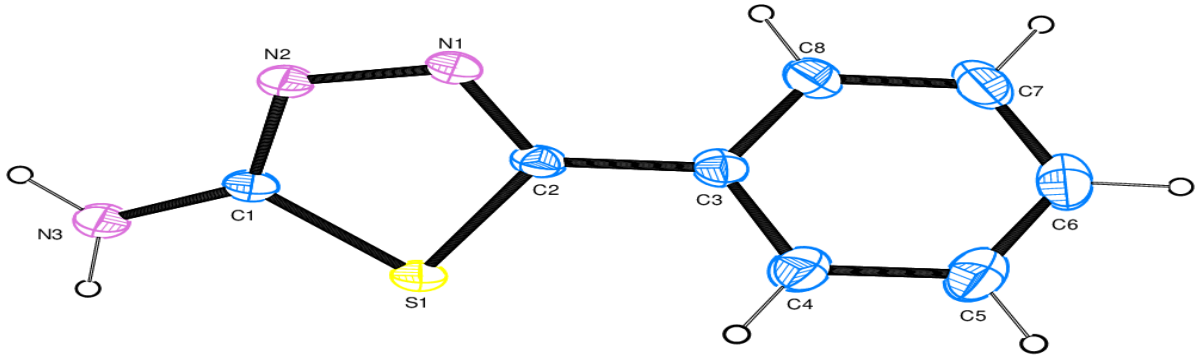
ÖZET

Bu çalışmada, 5-fenil-1,3,4-tiyodiazol-2-amin bileşiğinin deneysel olarak tek kristal X-Işınları kırınımmetresi kullanılarak bileşiğin kristal ve moleküler yapısı çözüldü ve teorik olarak Hirshfeld yüzey analizi yapıldı. Tek kristal X-Işınları kırınımmetresinden alınan deneysel veriler, bilgisayar ve kristalografide kullanılan yazılımlar (WinGx, Olex2, Mercury, ShelxT, ShelxL) ile yapılan hesaplamalar sonucunda, bileşiğin kristal yapısının monoklinik $P2_1/c$ uzay grubunda kristallendiği belirlendi ve birim hücre parametreleri a=11.1226 (10) Å, b=7.5135 (6) Å, c=11.1823 (9) Å ve α=90, β=115,134 (7), γ=90°'dir. Kristale ait açık molekül yapısı aşağıda verilen şekilde görülmektedir. Kristalin paket yapısı moleküller arası N-H···N hidrojen bağları ve π-π etkileşimleri ile oluştuğu tespit edilmiştir. Molekül yapısındaki atomlar arası uzaklıklar, bağ açıları ve moleküldeki halkalar arası torsiyon açıları belirlenip bu değerler tablolar halinde verilmiştir. Bunlara ilave olarak bileşiğin kristal örgüsündeki moleküllerin paketlenmesinin doğasını anlamak ve moleküller arasındaki önemli etkileşimleri belirleyebilmek için CrystalExplorer17.5 programı kullanılarak Hirshfeld yüzey analizi yapılıp molekülün yüzey şekilleri belirlenmiş ve çizilmiştir. Moleküller arası etkileşim bölgeleri ve paket yapıyı oluşturan etkileşim oranları belirlenerek şekillerle gösterilip açıklanmıştır.



Anahtar Kelimeler: Hirshfeld yüzey analizi, tiyodiazol, fenil, kristal yapı çözümü

CRYSTAL STRUCTURE AND HIRSHFELD SURFACE ANALYSIS OF 5-PHENYL-1,3,4-THIODIAZOL-2-AMIN

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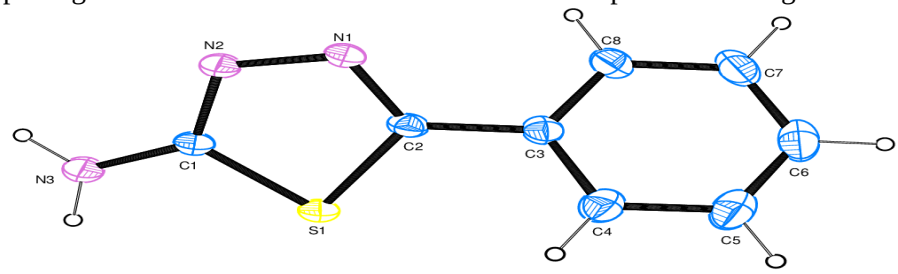
ABSTRACT

In this study, the crystal and molecular structure of the 5-phenyl-1,3,4-thiadiazole-2-amine compound were solved experimentally by using a single crystal X-Ray diffractometer, and the Hirshfeld surface analysis was performed theoretically. Experimental data obtained from single crystal X-Ray diffraction as a result of calculations made with computers and software (WinGx, Olex2, Mercury, ShelxT, ShelxL)

were used and results showed that the crystal structure of the compound crystallized in the monoclinic P21/c space group. The unit cell parameters are a=11.1226 (10) Å, b=7.5135 (6) Å, c=11.1823 (9) Å; α=90, β=115.134 (7), γ=90°' . The net defined structure of the crystal is shown in the figure below. It has been determined that the crystalline package structure is formed by intermolecular N-H···N hydrogen bonds and π-π interactions The distances between atoms, bond angles and torsion angles between the rings in the molecule are determined and these values are given in tables. In addition to these, to understand the nature of the packaging of the molecules in the crystal lattice of the compound and to determine the important interactions between the molecules, Hirshfeld surface analysis was performed using the CrystalExplorer17.5 program. Intermolecular interaction regions and the interaction ratios that make up the package structure are determined and shown and explained with figures.

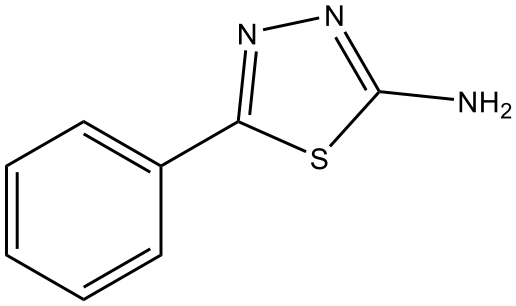


Keywords: Hirshfeld surface analysis, Crystal system, Thiodiazole

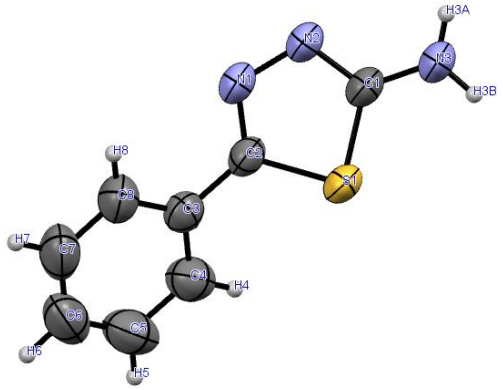
GİRİŞ

1,3,4-tiadiazol türevi bileşiklerinin farmakolojik,ve antilösemik etkileri, biyo aktiviteleri geniş bir araştırme konusu olmuştur (Adam, 1987; Ovsesyan, 1988; Sandstrom, 1969). Bu serinin bazı sentezlerinin ^{1}H NMR ve IR spektroskopisi ile incelenmiştir (Eremin vd., 1997).

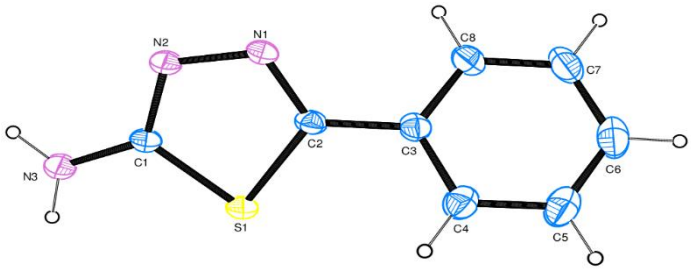
Yapılan bu çalışmada; 5-fenil-1,3,4-tiyodiazol-2-amin, $C_8H_7N_3$, bileşiğinden elde edilen tek kristalin, Tek Kristal X-Işınları Kırınımmetresi (STOE IPDS II) kullanılarak, kırınım verileri toplanıp kristalin yapısı aydınlatıldı ve Crystal Explorer programı kullanılarak, Hirshfeld yüzey analizi yapıldı. $C_8H_7N_3$, tek kristalinin açık kimyasal formülü Şekil 1a'da Mercury programı ile çizilen molekül şekli Şekil1b' de ve Ortep3 programı ile çizilen şekli Şekil 1c'de görülmektedir.



(a)



(b)

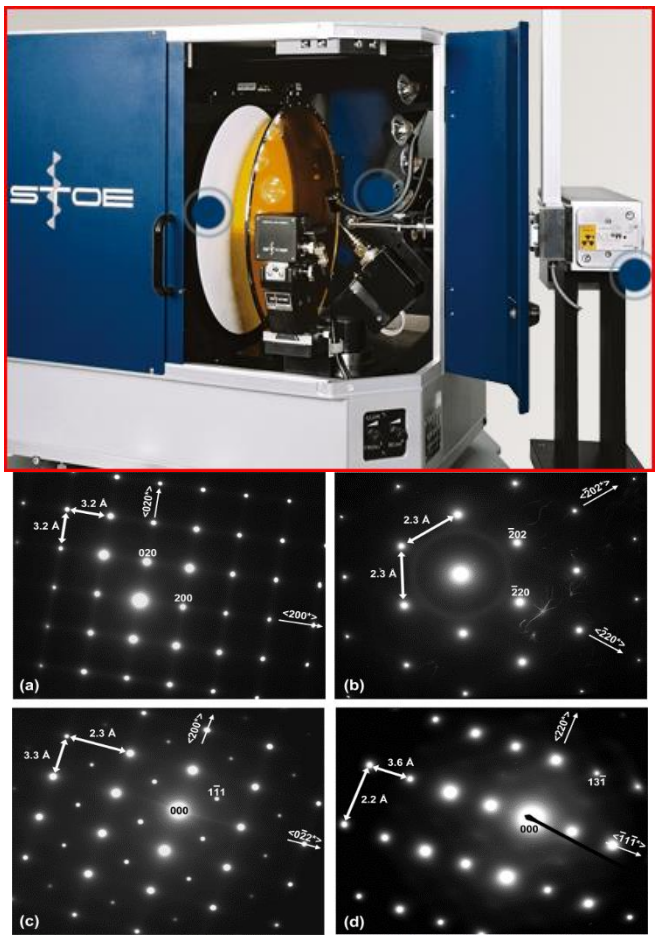


(c)

Şekil 1- (a) Molekülün açık kimyasal formülü,
(b) Mercury programı ile çizilen molekül şekli, (c) Molekülün ORTEP şekli.

ÇALIŞMA METODU

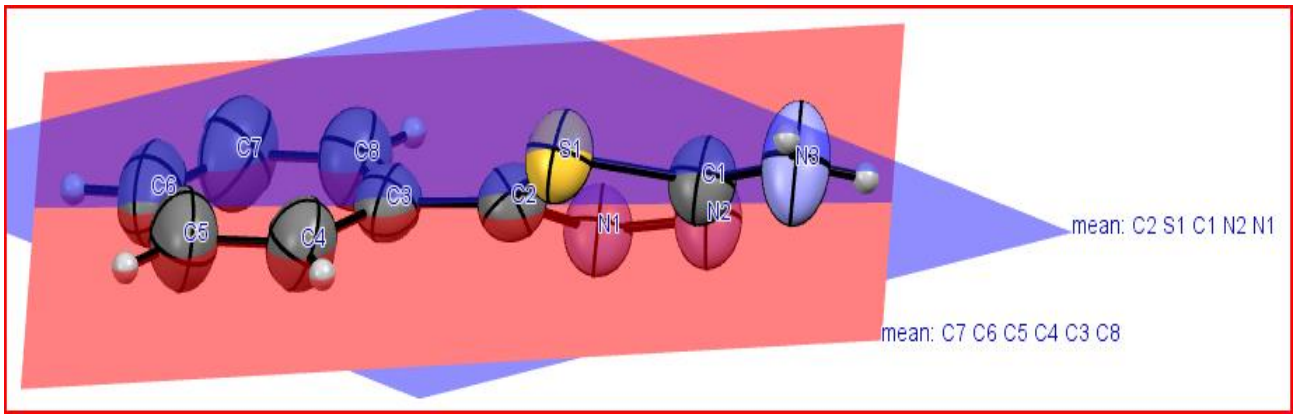
Şekil 2a'da görülmekte olan STOE IPDS Kırınımmetresi kullanılarak, bileşikden elde edilen üzerinden Tek kristalden saçılan X-Işınlarının kırınımı sonucu Görüntü Plakası (IP) üzerinde oluşan kırınım deseni Şekil 2b' de görülmektedir.



Şekil 2- (a) STOE IPDS Kırınımmetresi, (b) Görüntü Plakası (IP) üzerinde oluşan kırınım deseni

Kırınımmetreden elde edilen veriler; **WinGX** ve **Olex2** arayüz programları, **ShelxT**, **ShelxL** ve **Platon** gibi yapı çözüm ve arıtım programları, **Ortep-3** ve **Mercury** grafik programları kullanılarak tek kristalin yapı çözümü yapılıp molekül şekli çizildi.

Molekül içindeki atomların konum ve bağ uzunlukları, bağ açıları ve torsiyon açıları hesaplandı. Ayrıca **Crystal Explorer** programı kullanılarak molekülün Hirshfeld yüzey analizi yapıldı.
Molekülün yapısının düzlemsel olmayıp **fenil** halkası (C7 C6 C5 C4 C3 C8) ve **tiyodiazol** halkasının (C2 S1 C1 N2 N1) oluşturduğu düzlemler arasında 34.778(6) derece açı olduğu hesaplanmıştır Şekil 3.



Şekil-3 Bileşiğin fenil halkası düzlemi ile tiyodiazol halka düzlemlerinin görünümü.

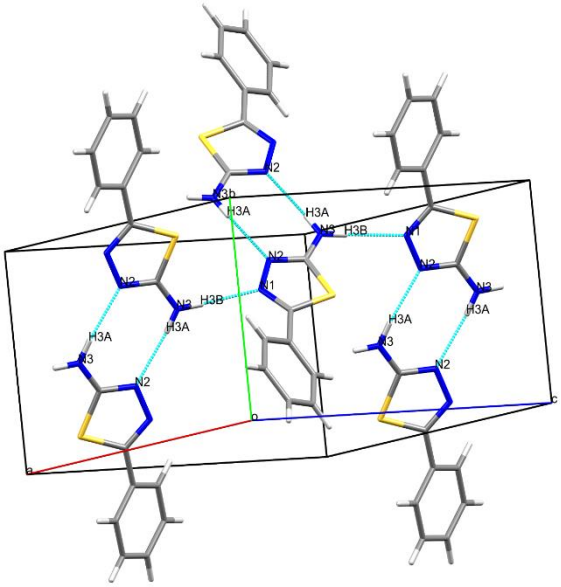
Moleküller arası hidrojen bağları melekkülleri birbirine bağlayarak bileşiğin paket yapısının oluşumuna katkı sağlamaktadır Tablo 1. Bunun dışında C—H···π =3.173 Å ve π ··· π = 3.774 Å etkileşimleri de paket yapının oluşumunda önemli etkiye sahiptir.

Tablo 1. Hidrojen Bağları tablosu.

D*—H···*A	***D*—H**	**H···*A***	***D*···*A***	***D*—H···*A***
N3—H3A···N1^{i}	0.86	2.148	2.985	164.58
N3—H3B···N2^{ii}	0.86	2.132	2.974	166.08

Simetri Kodları: (i) *x, -y+1/2, z+1/2*; (ii) −*x*+1, -*y*+2, -*z+1*

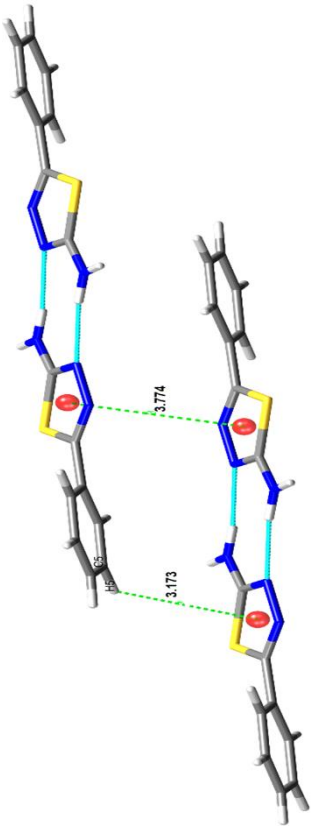
Kristalin paket yapısı moleküller arası N—H···N hidrojen bağları, C—H···π ve π ··· π etkileşimleri ile oluştuğu tespit edilmiştir. Molekülün paket yapısı oluşurken N3—H3A···N2 hidrojen bağının dimer yapı oluşturduğu ve N2—H3B···N1 hidrojen bağının bu dimer yapıları birbirine bağladığı şekil 4' de görülmektedir. Şekil 5'de ise tiyodiazol (C2 S1 C1 N2 N1) halkaları arasındaki π ··· π = 3.774 Å etkileşimi ve tiyodiazol halkası ile fenil (C8 C7 C6 C5 C4 C3) halkası arasındaki C5—H5···π =3.173 Å etkileşimi görülmektedir şekil 5.
Bileşiğin kristalinin kristalografik değerlerine bakıldığında kristalden toplanan toplam yansıma sayısının 4684, bağımsız yansıma sayısının 2721 ve gözlenen [$I > 2\sigma(I)$] yansıma sayısının 1484, R_{int} = 0.044 ve S=0.90 olduğu görülmektedir Tablo 2.



Şekil 4. Hidrojen bağları.

Tablo 2. Molekülün kristalografik değerleri.

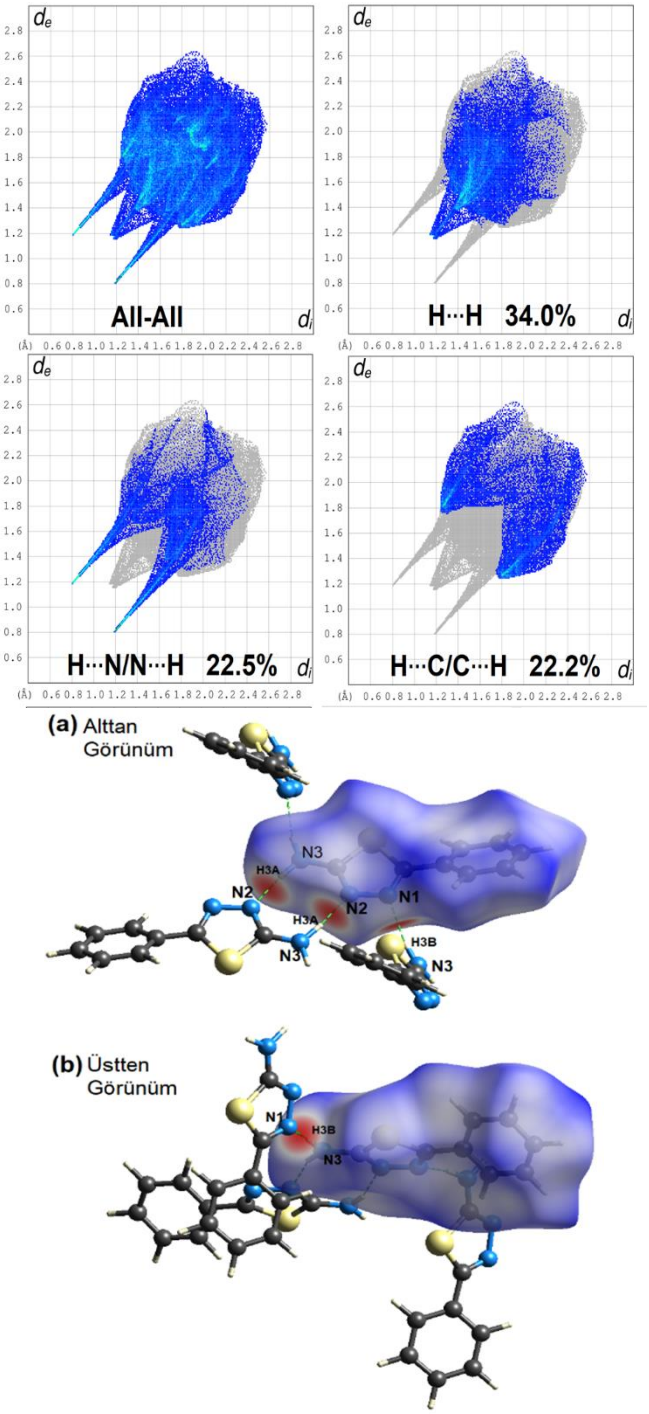
Kristal Verileri	
Kristal Sistemi, Uzay Grubu	Monoklinik, **$P2_1/c$**
Sıcaklık (K)	296
a, *b*, *c* (Å)	11.1226(10), 7.5135(6), 11.1823(9)
β/°, V (Å^3)	115.134(7), 846.02(13)
Z	**4**
X-Işını, Dalgaboyu (Å)	Mo $K\alpha$, 0.71073
μ Soğurma Katsayısı (mm^{-1})	0.325
Veri Toplama	
Difraktometre Modeli	STOE IPDS II
Soğurma Düzeltmesi	integrasyon
Ölçülen, Bağımsız ve Gözlenen [$I > 2\sigma(I)$] yansıma sayısı	4684, 2721, 1484
R_{int}	0.044
Arıtım	
$R[F^2 > 2\sigma(F^2)]$, $wR(F^2)$, S	0.041, 0.111, 0.90
H-atom yerleştirme	Geometrik sınırlama
$\Delta\rho_{max}$, $\Delta\rho_{min}$ (e Å^{-3})	0.14, −0.17



Şekil 5. C—H···π ve π ··· π etkileşimleri

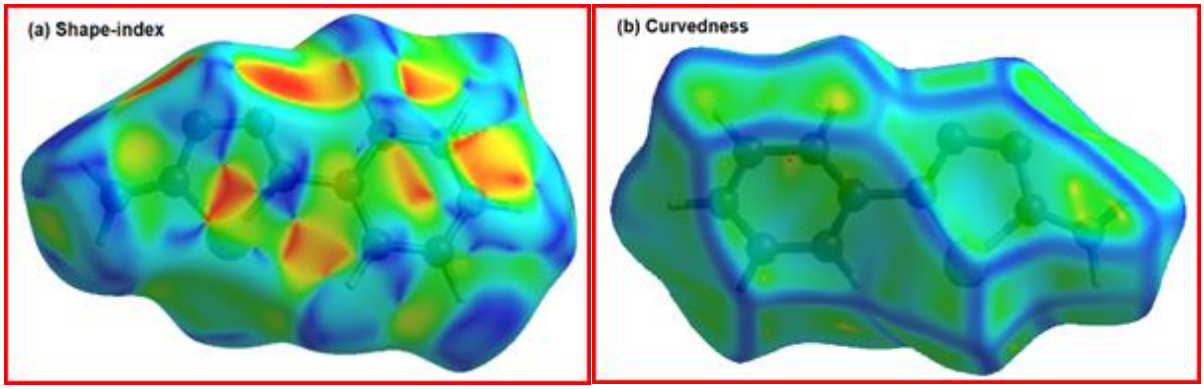
Hirshfeld Yüzey Analizi:

Kristal yapıda bulunan moleküller arası etkileşimler, Crystal Explorer17.5 programı kullanılarak hesaplanmış ve Şekil 6'da bu etkileşimler görselleştirilmiştir. Şekilde görülen kırmızı renkli bölgeler moleküllerin hidrojen bağı yapma olasılığı yüksek olan bölgeleri göstermektedir. Şekil 6'dan molüküller arası tüm etkileşimlerin %34 ü hidrojenler arası etkileşimlere, %22.5 i azot-hidrojen arası etkileşmelere ve %22.2 si karbon-hidrojen arası etkileşimlere ait olduğu görülmektedir.



Şekil 6. Hirshfeld analizinde moleküller arası etkileşimin.

Molekülün shape index haritası aromatik istifleme etkileşimlerinin (C—H···π ve π ···π) varlığını 'papyon desenleri ' (uç uca eklenmiş üçgenler) oluşturacak şekilde gösterir . Şekil 7' de curveddness çizimleri, düzlemsel istiflemenin karakteristiği olan düz yüzey bölümlerini göstermektedir.



Şekil 7. C—H···π ve π ···π etkileşimleri.

SONUÇ

5-fenil-1,3,4-tiyodiazol-2-amin, C8H7N3, bileşiğinin deneysel olarak tek kristal X-Işınları kırınımmetresi kullanılarak bileşiğin kristal ve moleküler yapısı çözüldü ve teorik olarak Hirshfeld yüzey analizi yapıldı. Molekülün düzlemsel olmadığı ve molekülleri birbirine bağlayan etkileşimlerin; N—H···N hidrojen bağları, C—H···π ve π ···π etkileşimleri olduğu tespit edildi. Bu etkileşimler tablolarla ve şekillerle açıklanarak ifade edildi.

REFERENCES

Adam, F.A., J. Chin. Chem. Soc., 1987, vol. 34, pp. 111-115.

Allen, F. H., Johnson, O., Shields, G. P., Smith, B. R. & Towler, M. (2004). J. Appl. Cryst. 37, 335-338.

Dolomanov, O. V. Bourhis, L. J. Gildea, R. J. Howard J. A. K. and Puschmann. H. (2009). J. Appl. Cryst. 42, 339-341

Eremin, K.I., Golovanov, A.V., Krutikov, V.I., and Lavrent'ev, A.N., Russ. J. Gen. Chem., 1997, vol. 67, no. 1, pp. 138-140

Farrugia, L. J. (2012). J. Appl. Cryst. 45, 849-854.

Goldstein, A., Aronow, L., & Kalman, S. M. (1974). Drug metabolism. Principles of Drug Action, 289-292.

Macrae, C. F., Edgington, P. R., McCabe, P., Pidcock, E., Shields, G. P., Taylor, R., Towler, M. & van de Streek, J. (2006). J. Appl. Cryst. 39, 453-457.

Ovsesyan, T.R., Gushoglyan, L.A., and Mirzoyan, V.S., Arm. Khim. Zh., 1988, vol. 41, no. 3, pp. 136-142.

Sandstrom, J., Adv. Heterocycl. Chem., 1969, vol. 9, pp. 1653177, 199-209.

Sheldrick, G. M. (2015). Acta Cryst. A71, 3-8.

Spek, A. L. (2009). Acta Cryst. D65, 148-155.

Stoe & Cie (2002). X-AREA (Version 1.18) and X-RED32 (Version 1.04). Stoe & Cie, Darmstadt, Germany.

Westrip, S. P. (2010). J. Appl. Cryst. 43, 920-925.

IRREGULAR OPERATIONS BY AN AIRLINE: ANALYSIS OF METAHEURISTIC APPROACHES IN LITERATURE WITH TEXT-MINING METHOD

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ABSTRACT

Airline irregular operations management is an active field of work; as well as it is observed that there is an increase in publications containing two or more sources in the analyzes (aircraft, crew, passengers, etc.) (Hassan, Santos, & Vink, 2020). In this study, it is aimed to examine and classify the approaches in the literature in order to determine the conditions under which irregular operations occur and to analyze the problems, and to present suggestions by determining the future research areas. The study analzyed publications published between 1991 and 2021 and scanned in academic databases. The focus of the research has been determined as academic publications using "Metaheuristic Methods" under the topics of "Airline Disruption Management and Airline Irregular Operations". The keywords used in the search bases were determined as "Airline" and "Metaheuristic". In-depth analysis of peer-reviewed publications in English and Turkish languages, which have the field and method specified in the literature, was made with the text mining method. As findings, it is seen that there are very few studies in which the words airline and metaheuristic are used, but the number of studies has increased in the last ten years and the interest in this field is increasing day by day. Most of the studies have tried to present an approach that models "Airplane routing" and "crew scheduling" problems together and minimizing the lost time and financial loss. It shows that the problem of airline disruption management is still a growing research area, and future models in aviation that will use the metaheuristic approach should have a structure that predicts future disruptions while solving current disruptions.

Keywords: Airline, Irregular Operations, Disruption Management, Metaheuristic, Text Mining.

1. INTRODUCTION

Commercial aviation operations are the most complex and interdependent of transportation systems. Airplanes, which are one of the important elements in the air transport system, act according to a schedule determined by the decision makers in the airline company. However, any disruption to these schedules may result in delays and/or cancellations in flights. According to Eurocontrol (2021) data, in 2019, 46.1% of the flights took off 5 minutes or later than the planned departure time; in 2020, it was stated that this rate was 26.9%. 40.3% of incoming flights in 2019; in 2020, it was stated that 22.1% of incoming flights landed 5 minutes or later than the planned landing time. In the United States, the rate of delayed flights was 19.95% in 2019; It was realized as 9.5% in 2020. While the rate of canceled flights was 2.21% in 2019, it was 8.28% of all flights in 2020 (BTS, 2021). In addition, this may have a reducing effect on the airline company's earnings (Erkayman, 2013). According to the FAA (2021), the cost of delayed flights, which was $23.7 billion in 2016, was 26.6 in 2017, respectively; It was determined as 33 billion dollars, showing an increase of 30.2 in 2018 and approximately 40% in 2019 (compared to 2016). For this reason, the airline planning process needs to be done carefully. Operations become irregular due to the occurrence of unplanned problems such as mechanical failure, lack of crew

members and bad weather conditions on flights planned to carry out operations belonging to airline companies. At this stage, aircraft assignment and crew scheduling are done again (Erkayman, 2013).

Airline irregular operations management is an active field of work; In the analyzes, it is observed that there is an increase in publications containing two or more sources (aircraft, crew, passengers, etc.) (Hassan, Santos, & Vink, 2020). In this study, the approaches in the literature will be examined and classified in order to determine the conditions under which irregular operations occur and to analyze the problems, and suggestions will be presented by determining the future research areas. This study updates previous literature research.

2. MATERIALS AND METHODS

In this study, text mining method was used. Looking at the historical development of text mining, the first examples started with the development of the first computers in the 1960s; As a result of the increase in end-user experiences, text mining approaches were seen more frequently in the mid-1980s. Since more than 80% of the stored information is in the form of text, it is predicted that the commercial value of text mining is high (Melek, 2012).

The first step in text mining is to organize and structure the data. The aim is to cluster the text, to examine it in categories; is to obtain information about word frequencies and relationships between data entities. In the past, text mining based on statistical models based on "Natural Language Processing" algorithms; it is based on less supervised deep learning models that have evolved over the past decade. At the present time, search engines such as "Google" create more possibilities to identify items in text (Çelik, 2020).

According to PORT (2019), there are three stages of text mining:

- ***Access to Information:*** It is the first stage of text mining. It is provided by using the search engine of digitized texts or by digitizing the written texts and obtaining outputs.
- ***Information Selection:*** In the second stage, text marking is done. It is generally defined as adding metadata about the text (Author, title, date, etc.). This process allows search engines to select information and identify relationships between texts.
- ***Data Mining:*** The final stage is to convert data texts into written texts using various tools in order to find relationships between pieces of information that reveal meaning and to discover new information that would normally be difficult for researchers to discover.



Figure 1. Text Mining Stages

In the research, the literature review method, which is one of the exploratory research methods, will be used to determine the irregular operations and the problems in the studies in the field of disruption management. In addition, the approaches in the literature will be examined and classified, and it is aimed to conduct research on developing hypotheses in order to identify future research areas and offer suggestions. The study is cross-sectional research according to the time it covers and qualitative research according to its method.

In the study, the publications published between 1991 and 2021 and scanned in academic databases were analyzed. Based on peer-reviewed publications searched online in three academic databases (Web of Science, Scopus, and Dergipark). The focus of the research was determined as academic publications using "Metaheuristic Methods" under the topics of "Airline Disruption Management and Airline Irregular Operations". The keywords used in the search bases were determined as "Airline" and "Metaheuristic". In-depth analysis of peer-reviewed publications in English and Turkish languages, which have the field and method specified in the literature, will be made with the Text Mining method.

After analyzing the studies in the literature, the results were categorized as follows:

- ***Problem type:*** It includes which disruption management problem they aim to solve in the analyzed studies. In this section, the problem types are "CS (Crew Scheduling), AR (Airplane Routing) and AM (Aircraft Maintenance)".
- ***Methodology:*** This is the part in which the algorithmic approach is applied from the metaheuristic methods to solve the research problem in the analyzed studies.
- ***Disruption type:*** This is the section in which the types of disruption mentioned in the studies analyzed in the research are presented (see Table 1 and Table 2). The type of disruption is the stage of identifying these situations in order to prevent or solve the disruptions that occur in irregular airline operations. In this section, "Flight Delay, Flight Cancellation, Aircraft Exchange and Airport Disruption" were determined as disruption types; The disruptions that were addressed in the studies were indicated with "Yes (Y)" and the ones that were not addressed with "No (N)".
- ***Solution action:*** This is the section in which it is revealed how the disruptions in the studies analyzed in the research were resolved with the determined methods (see Table 1 and Table 2). In this section, "Flight Delay, Flight Cancellation, Additional Flight, Aircraft Exchange, Aircraft Maintenance, Crew Assignment" were determined as solution actions; The solutions that were addressed in the studies were indicated with "Yes (Y)", and those that were not addressed with "No (N)".
- ***Number of indexes:*** According to TLS (Turkish Language Society), index is defined as a mathematical term as "a separator mark added above or below the letter when it is desired to be used two or more times in similar but still different forms". Parallel to this, the index terms analyzed in the study were calculated in two ways as subscript and superscript. In each study, the amount of subscript and superscript terms used in the text (including text and formulas) was evaluated separately (see Table 1 and Table 2).
- ***Number of formulas:*** According to the TLS, the word formula as a mathematical term is defined as "the mathematical expression for calculating a quantity dependent on one or more quantities". While calculating the number of formulas in Table 1 and Table 2 in the study, each formula in the studies analyzed within the scope of the research was accepted independently from each other. Except for the formulas numbered in the text, all the mathematical expressions with equations were accepted as formulas and added to the calculation.

During the literature review, studies that were included in the publications that were first scanned in academic databases within the scope of the limitations of the research, but were found to be unsuitable for the keyword, were not included in the research. In addition, although the keywords in the studies seem to be suitable for the research at first glance, the studies whose data sets and/or methods were not in accordance with the scope of the study were excluded from the study. Moreover, since there is no data set in the publications made to provide comprehensive information in the research area and to discuss which data sets are appropriate, such studies are excluded from the scope of the research.

3. ANALYSIS OF ACADEMIC PUBLICATIONS SCANNED IN DATABASES

First, a search was made in the "Web of Science" database with the determined keywords. According to this;

- 50 academic publications under the keyword "Airline irregular operations,"
- 50 academic publications under the keyword "Airline disruption management,"
- When the studies containing the words "Airline and Metaheuristic (Airline + Metaheuristic) together were scanned, the results of 6 academic publications were reached.

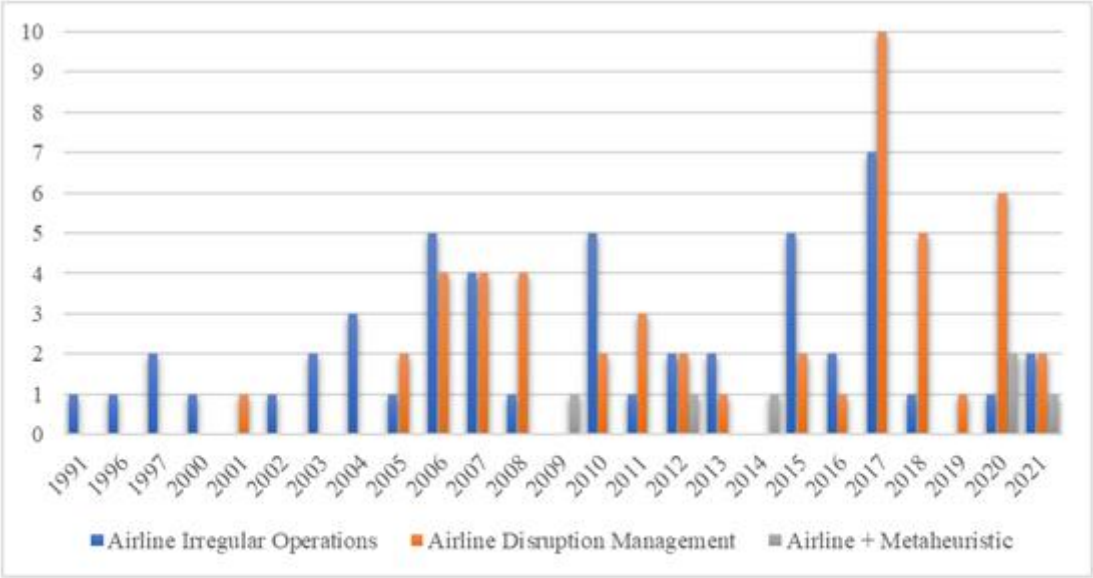

Figure 2. Number of Publications Scanned in Web of Science Database

Table 1. Analysis of Scanned Publications in Web of Science Database

Article	Problem Type	Methodology	Data	Disruption Type				Solution Action						Number of Indices		Number of Formulas
				Flight Delay	Flight Cancellation	Aircraft Exchange	Airport Disruption	Flight Delay	Flight Cancellation	Additional Flight	Aircraft Exchange	Aircraft Maintenance	Crew Assignment	Subscript	Superscript	
Mirjafari et al. (2020)	AR + CS	PSO	16 Aircraft & 26 Cabin Crew	N	Y	Y	N	Y	N	N	Y	Y	N	143	35	20
Ezzinbi et al. (2014)	AM	GA + PSO	8 Flights based on 9 Airport	N	N	Y	Y	N	N	N	Y	Y	N	93	49	8
Bulbul & Kasımbeyli (2021)	CS + AM	FMSG + ACO	67 Aircraft & 260 Flight	N	N	Y	N	N	N	N	N	Y	Y	204	101	25
Mansi et al. (2012)	AR	Dynamic+ Oscillation	35 Airport & 85 Aircraft	Y	Y	N	N	Y	Y	Y	N	N	N	243	68	39

Source: Author (2021).

Problem Type	*Methodology (Which Metaheuristic Algoritm)*	*Abbreviations*
AR: Aircraft Routing	PSO: Particle swarm optimization	Y: Yes, N: No
CS: Crew Scheduling	GA: Genetic algorithm	
AM: Aircraft Maintenance	FMSG: The Modified Subgradient Algorithm Based On The Feasible Values ACO: Ant colony optimization algorithms	

In the second stage, studies containing the words "Airline and Metaheuristic (Airline + Metaheuristic) together" were scanned in the DergiPark database and it was determined that no academic publications were made.

In the third stage, according to the scan made in the Scopus database;

- One academic publication in 2020, 2017, 2010, 2009 and 2007,
- Two academic publications in 2019,2018 and 2012,
- Four academic publications in 2016.

It is seen that there are 15 academic studies in total. However, in 9 academic studies that were determined to be within the scope of the research during the analysis of the studies, a deep analysis of the studies was carried out using the text mining method (see Graph 2).

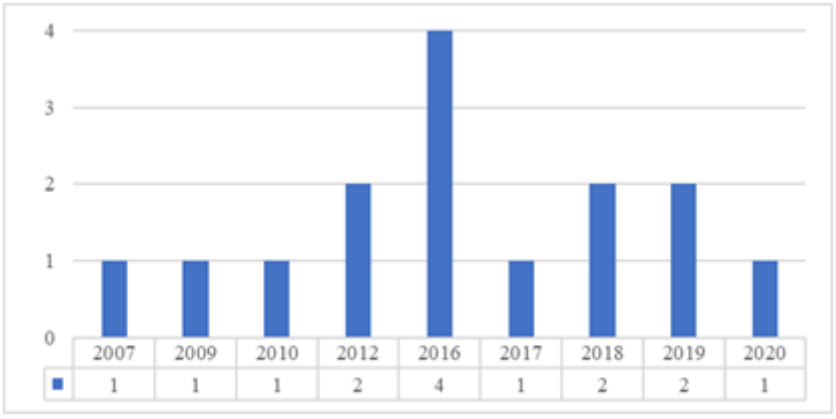

Figure 3. Number of Publications Scanned in Scopus Database

Table 2. Analysis of Scanned Publications in Scopus Database

Article	Problem Type	Methodology	Data	Disruption Type				Solution Action						Number of Indices		Number of Formulas
				Flight Delay	Flight Cancellation	Aircraft Exchange	Airport Disruption	Flight Delay	Flight Cancellation	Additional Flight	Aircraft Exchange	Aircraft Maintenance	Crew Assisgnment	Subscript	Superscript	
Agustin vd. (2016)	CS	BR	41 Flight	Y	Y	N	N	Y	Y	N	N	N	Y	10	2	4
Lucic ve Teodorovic (2007)	CS	GA	53 Pilot	Y	Y	N	N	Y	Y	N	N	N	Y	34	165	57
Valenzuela vd. (2012)	CS	GA-SS + GA-ACO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27	9	9
Al-Bazi vd (2019)	AR	GA	Flight Tickets	Y	Y	Y	N	Y	Y	Y	Y	N	N	124	1	11
Aoun vd. (2016)	CS	PSO	110 Flight	Y	Y	N	N	Y	Y	N	N	N	Y	75	16	14
Arayikanon ve Chutima (2018)	CS	MOEA/D	53 Flight & 363 Cabin Crew	Y	Y	N	N	Y	Y	N	N	N	Y	134	59	42
Bartodziej vd (2007)	CS	SA GDA RRT	1400 Flight	N	N	Y	N	N	N	Y	Y	N	Y	271	176	28
Doi ve Nishi (2015)	CS	POPMUSIC	1260 Flight & 150 Flight Crew	Y	Y	N	N	Y	Y	N	N	N	Y	163	39	36
Maulana vd. (2017)	AR	GA	USA Airline Network	Y	Y	Y	N	Y	Y	Y	N	N	N	37	17	6

Source: Author (2021)

Problem Type	*Methodology (Which Metaheuristic Algorithm)*	*Abbreviations*
AR: Aircraft Routing	BR: Biased Randomisation	Y: Yes N: No
CS: Crew Scheduling	GA: Genetic algorithm	N/A: Not Available
AM: Aircraft Maintenance	PSO: Particle swarm optimization	
	ACO: Ant colony optimization algorithms	
	SS: Scatter Search	
	MOEA/D: A Multiobjective Evolutionary Algorithm Based on Decomposition	
	SS: Simulated Annealing	
	GDA: Great Deluge Algorithm	
	RRT: Record-to-Record Travel Algorithm	
	POPMUSIC: Partial Optimization Metaheuristic under Special Intensification Conditions	

4. Approaches to Airline Irregular Operations

4.1. First Studies in the Field

It is seen that the first studies in the field of irregular airline operations around the world date back to the 1990s. Clarke (1997) developed a comprehensive real-time decision support system for operations that includes revenue management, aircraft routing, maintenance planning, and crew scheduling. It is aimed to make an efficient planning with these experiential procedures developed. The algorithm was developed by verifying the actual operational data used in the study from a major American domestic carrier and an international carrier located in the Asia-Pacific region. It is aimed to observe the potential benefits of the analysis on airline operations, which includes data such as percentage of flights delayed, percentage of flights canceled and overall loss in operating income.

4.2. Studies in the Field of Aircraft Recovery

Argüello et al. (1998), in their study, aimed to minimize the costs that would occur during reassignment of aircraft to flights when aircraft shortages occur. Two models are presented to highlight the difficulty of this question. Resource allocation model and multi-product flow model are also stated to move away from efficient solution methods. However, by presenting the third model, the time band approach model, it has been determined that high quality aircraft routes can be created in real time by using the adaptive search procedure approach together.

Vos et al. (2015) aimed to present an innovative dynamic modeling to the flight schedule recovery problem in their study. In this study, the modeling, called the disruption set solver, uses parallel time-space networks to monitor the aircraft in the fleet, while solving the disruption as it occurs, it also continues to take into account the decisions made by the airline company. It is also stated that the purpose of this modeling is to minimize the costs arising from operational delay, passenger delay and flight cancellation. It has been observed that the application is able to solve the aircraft assignment problem for real-time operations, by verifying with data from a large African airline.

Ateş and Kağnıcıoğlu (2012) defined the delays in airline companies in their studies and put forward the studies to prevent these delays. It was mentioned that the most important reason for the delays is the applications of the airlines, and it was stated that the prevention of the delays belonged to the decision makers. It was emphasized that the airline companies should prepare carefully the flight schedule and the decision makers should have the knowledge and equipment to apply anti-delay techniques in order to prevent delays. In addition, recommendations are given for the development of civil aviation in Turkey by evaluating the approaches that have been successful in preventing delays around the world. In addition, it was recommended to create crisis delay desks in order to minimize the impact of unavoidable delays such as bad weather conditions and accidents on the system, and it

was emphasized that success could be achieved in cooperation with the authorities, airline service delivery systems stakeholders and universities.

4.2.1. Metaheuristic

Ezzinbi et al. (2014) proposes a formulation for the maintenance of aircraft on the ground (AOG Checks) and a solution approach based on metaheuristic algorithms to solve the problem. The experimental section in the study shows the computational results of this approach to this variant of the aircraft maintenance routing problem. The method of the study is based on the "techno-economic" model proposed by Chryssolouris (2008) to model the cost of unplanned maintenance and model the effect of maintenance features on aircraft maintenance cost. The research problem was solved with two metaheuristic approaches. First, it is the Genetic algorithm (GA), which is a random search method based on the evolutionary process of species found in nature. Second, Particle swarm optimization (PSO), an evolutionary approach proposed by Kennedy and Eberhart in 1995, has been identified as a metaheuristic method. To evaluate the effectiveness of PSO and GA algorithms, it has been tested on hypothetical problems similar to Sarac et al. While maintaining the necessary conditions for a balanced flight leg schedule, a network of 8 flight legs has been established over 9 airports. It has been stated that 5 of these 9 airports are overnight stations, there are maintenance stations where planned maintenance can be done, and unplanned maintenance can be carried out at the other 4 airports. Computational results at the end of the study showed the effectiveness of PSO in solving this problem. It is stated that future research needs to improve the PSO algorithm to obtain better results for the solution of the airway maintenance problem by considering the AOG.

4.3. Studies in the Field of Flight Crew Recovery

Kornecki and Vargas (2000) aimed to provide a background on simulation-based training in the aviation industry in their study. An example of an object-oriented development strategy is presented for a simulation program that mimics an airline operation with the assignment of equipment and crew to daily routes.

Soykan and Erol (2014) used the Dual-Purpose General Cluster Coverage model, which ensures that a cost-effective solution is maintained in their study in order to make team mappings where disruptions may occur less or that are easy to reschedule in the face of problems. As a solution approach, an algorithm based on the Branch-Fee algorithm has been developed. In experiments with real data from a small airline company, it was stated that the approach gave the best results on average. It has been observed in the experiments that all team pairings can be planned to be more resistant to disruptions by allowing a slight increase in the best cost.

Aksu and Temiz (2021), in their work, aimed to anticipate possible delays that may occur in flights during the operational planning stage and to create a scheduling prepared for irregularities. In the application part, a model is established and solved with a two-objective optimization-based cluster partitioning formulation. In addition, the objectives were combined with the weighted aggregation method. In order to produce team mappings, it has been observed that the number of teams and the spread delay totals can be obtained for different weight values, and a schedule can be created with the least number of teams and increased durability. In addition, it was stated that they should be considered together for spreading delay and cost reduction.

4.3.1. Metaheuristic

Arayikanon and Chutima (2018), in their study of cockpit crew scheduling, aimed to match the cockpit crew for each flight model. In the study, a multi-objective evolutionary algorithm is proposed to solve the complex cockpit crew scheduling problem of the MOEA/D algorithm, which is one of the decomposition algorithms for comparison with Honey Bees Mating Optimization (HBMO). The performance evaluation of the proposed MOEA/D algorithm was applied based on actual data from an airline in Thailand. As a result of his study, it was determined that the intended MOEA/D algorithm is an efficient and effective meta-heuristic for cockpit crew scheduling under a complex problem.

4.4. Studies in the Field of Passenger Recovery

The study conducted by Erkayman (2013), is aimed to create a computerized decision support system in order to quickly determine the solution to the operational disruptions caused by mechanical failures, bad weather conditions, problems on the ground and airport-air traffic restrictions encountered in scheduled flights and to make the lowest decision in terms of cost. In the developed software, it is aimed to determine the affected flights by determining the type of disruption of the assigned flights. It has been stated that the cost of this disruption, the time to return to the planned schedule and the number of affected passengers can be reported. With the proposed software development, it is expected that the decision makers will be able to make the most accurate decision by aiming to get rid of time loss and transaction crowding.

4.4.1. Metaheuristic

Mansi et al. (2012) presented a release strategy heuristic combined with mathematical programming for disruption management in the airline industry. The aim of the study is to minimize the costs and possible effects on passengers during the process of returning the disrupted flights to their normal course as soon as possible. The method of the study is divided into two main stages; In the first stage, a viable solution to the problem was tried to be produced by using a dynamic program-based heuristic algorithm; in the second, it is aimed to improve this solution by using an oscillation strategy that alternates between constructive and destructive phases. As a result of the hybrid method used, after producing an applicable solution with mixed integer programming programs and a heuristic method, a solution was developed by adding and subtracting some parts of the aircraft routes. The assignment of passengers to aircraft and aircraft to routes was governed by a mixed integer programming model. Possible paths were created using heuristics.

4.5. Mixed Studies

Lee et al. (2003) developed a discrete event simulation model to simulate airline operations and evaluate various performance measures of an airline schedule. It is stated that this simulation model, called SIMAIR, can be used as a research tool to test the robustness of an airline schedule, as well as to obtain a viable schedule in case of disruption. In practice, a program consisting of 82 aircraft, 335 crews and 45 stops was created, and a seven-day airline program was successfully simulated.

In the study of Suntur (2002), which is one of the first studies conducted in Turkey in the field of irregular operations, it is aimed to optimize the operations and revenue management of airlines by using operations research techniques in order to maximize their revenues. In the study, models were created, and solutions were proposed for aircraft assignment, crew shift scheduling, air traffic flow management and decision support systems for crew management in operational disruptions. As a result, it is stated that the proposed models have the effect of maximizing the revenue management of the airlines.

Another study is Orhan et al. (2010) examined the operational planning and scheduling problems faced by airlines. In the study, it was seen that the solution times of the integratedly solved models were long. It was emphasized that with the introduction of new methods that will minimize the solution times, they will enable the problems to be solved in a shorter time and contribute significantly to the operating costs.

Yıldız and Başar (2020), in their study, in which the general evaluation of operational disruptions in the aviation industry is made, it is aimed to examine the cost by specifying the organizations that determine these malfunctions and the rules determined by these organizations. Moora method, which is one of the multi-criteria decision-making techniques, has been applied to minimize costs. In the application carried out in the study, it is aimed to choose the best alternative for airlines and passengers by creating five different travel plans and applying rate approach and reference point methods, taking into account seven different criteria. As a result, it is stated that the determined alternative will minimize the costs for the airline, and in addition, the travel determined as an alternative can be realized in the fastest way for the passenger.

Erdem et al. (2021), using the meta-heuristic comparison method, revealed the results of flight planning including bad weather conditions through big data analytics. The statistics of the United States Department of Transportation between 1987-2018 were used as the data set. In the study, it was optimized using Apache Spark software, scheduling and constraints used to avoid flight delays. In the results obtained, it has been observed that as the dimensions of the searched space increase, solving the problem with metaheuristic approaches is more advantageous in terms of time compared to the classical method.

4.5.1. Metaheuristic

Among the academic studies published using the metaheuristic algorithm method, Mirjafari et al. (2020), aircraft routing and crew scheduling problems are handled simultaneously in order to minimize costs. In the proposed model, several important issues are considered, including aircraft replacement, flight cancellations, highly distributed night flights and long-lived aircraft. What sets this research apart from its predecessors is the introduction of a new framework for controlling aircraft maintenance. In the study, it is aimed to present a new framework for controlling aircraft maintenance, aircraft replacement, better use of long-life aircraft and fair distribution of night flights. In the proposed model, it is defined by the flight hours of the aircraft, which is much more accurate than the duty time. In this framework, it was stated that the aircraft should be checked before reaching a predefined threshold value. It was stated that once maintenance has been carried out, previous flight hours can be ignored, and the aircraft can continue the program until the threshold is reached again. In the proposed model, issues such as reducing aircraft replacement, better and more efficient use of long-life aircraft, maximum crew night flight restriction, fair distribution of night flights and dead point flights are taken into consideration. The crew may have to make two consecutive flights on a predefined schedule with two different aircraft for various reasons. This is called plane switching. Of course, aircraft replacement incurs cost increases. On the other hand, dead flights also place huge costs on an airline. It is stated that the aim of the proposed model is to minimize costs. In addition, another important issue mentioned in the study is the use of airplanes. Long-lived aircraft with higher flight hours would require a more precise schedule; It has been said that determining the appropriate level of use of aircraft will lead to an increase in fleet reliability. In the proposed model, better use of long-lived aircraft is considered.

The assumptions of the model used in the study are stated as follows:

- Data is deterministic.
- Each aircraft and crew may make several take-offs and landings in a city in one day.
- The difference in crew night flights should not exceed a predefined level.
- Crew night flights must not exceed the defined maximum.
- The flight hours of long-lived aircraft should not exceed a certain level.
- Maintenance control is done according to flight hours.

In the study, the subgradient method was used as a method. Sub-gradient is an iterative method for solving convex minimization problems. In addition, Particle swarm optimization (PSO) is used as a metaheuristic approach. PSO is a metaheuristic approach to optimizing problems with few or no assumptions. This approach searches very large areas to find the best solution. As the data set used in the study, nine numerical examples of small, medium and large sizes were created to evaluate the effectiveness of solution approaches. All problems are solved using Lagrange Relaxation method and PSO algorithm as well as GAMS. Some assumptions have been set for all examples. Long-life aircraft should not be used for more than 30 hours. Maximum night flights are defined as 50 hours, and the night flight difference between the crew should not exceed 40 hours. In the study, all numerical examples are solved with GAMS, Lagrangian Relaxation and PSO algorithms. 500 iterations are performed to solve

the model using the Lagrange relaxation method. In addition, a proposed mathematical model to read the input data is coded in Matlab software.

In this study, an integrated model is presented for aircraft routing and crew scheduling problems. The main contribution of the article is to control the maintenance activities according to the flight hours of the aircraft rather than the duty time. As a result of the study, the presented model includes aircraft replacement, better utilization of long-life aircraft, dead flights and fair distribution of night flights. The model includes restrictions to ensure better use of aircraft and a fair distribution of night flights. In addition, the proposed model leads to a reduction in spare aircraft and dead center costs.

The study conducted by Bülbül and Kasımbeyli (2021), the "Aircraft Maintenance Routing Problem (AMRP)", which is the next step after flight scheduling and fleet assignment problems, was examined. It has been stated that the main purpose of AMRP is to create flight sequences for aircraft in a fleet, taking into account the fleet size, in order to meet the maintenance requirements stipulated by national and international regulations and airline operators. In the study, large-loop AMRP is defined in a link network and formulated as an asymmetrical TSP with fleet size and maintenance violation constraints to account for maintenance resource availability. The reason for using the connection network in the study, Barnhart et al. (1998), as stated in their study, to provide richer modeling possibilities. An exact solution method based on the sharply augmented Lagrangian duality scheme was used as the method of the study. In the study, FMSG algorithm and Ant Colony Optimization (ACO) metaheuristic are combined to solve the proposed model for AMRP. As an approach, it was originally intended to formulate a sharply increased Lagrangian without maintenance violation constraints and minimize it using ACO. If the solution obtained in this way meets the maintenance requirement, the algorithm is terminated. The reason is that the solution obtained theoretically is the most suitable solution for the current situation. Otherwise, it is stated that this violation is minimized using ACO after formulating the constraint and adding to the sharply increased Lagrangian function using even variables (Lagrange multipliers). The success of the results obtained in the study shows that the method developed in this paper can be applied to a wide variety of integer programming problems. It has been noted that maintenance violation restrictions appear to be one of the main challenges in researching AMRP. It is thought that it will be interesting to study how this problem can be solved by developing an appropriate mathematical model in the future.

5. CONCLUSION AND DISCUSSION

In this study, current literature in the field of airline disruption management and recovery methodologies that can be used as decision support solutions in Airline Operations Control Centers (AOCCs) is reviewed. In the study, the articles in which the keywords "Airline and Metaheuristic" were used together were scanned in academic databases and examined by text mining method. The articles published since 1991 were scanned, and the articles published since 2007 were found to be suitable for the purpose of the study. In particular, although the literature in the field of airline disruption management and irregular operations is sufficient, it has been observed that there are very few studies (only 13 studies have been done) using the metaheuristic method with airline. In addition, it is seen that the number of studies suitable for the purpose of the research has increased in the last ten years and the interest in this field is increasing day by day (see Graph 1 and Graph 2). Different trends were observed in the literature review. First of all, it is striking that the majority of the studies are aimed at solving the problems of "Airplane Routing (AR)" and "Crew Scheduling (CS)". It is seen that the tendency to “Passenger Recovery” and “Aircraft Maintenance” problems is less. Another observation is that the studies are generally mixed studies. In studies dealing with such mixed problems, it is taken into account that disruption management is not caused by a single problem, and it is predicted that the problems may be interconnected. Accordingly, the majority of the studies have tried to present an approach that models "Airplane routing" and "crew scheduling" problems together and minimizing the lost time and financial loss. Another trend concerns the increasing number of functionalities incorporated into proposed approaches to better represent the real-world operational context. The use of real-world data comes with

the increase in computing power, which allows for more detailed operational aspects to be included in the models, such as considering multiple aircraft fleets in many studies, using large numbers of flight data. Accordingly, this focus on elaborating the functionality of the models will increase the accuracy and added value of the models presented.

As a suggestion, it can be mentioned that future research in which the metaheuristic approach will be used in the field of aviation should include more practical applications. The models to be established should include recovery solutions whenever new information about disruptions in operations is obtained and a proactive outage management that can be revoked if it improves the solution. In other words, models that offer approaches should have a structure that predicts future disruptions while solving current problems.

The main conclusion that can be drawn from this literature review is that the problem of airline disruption management is still a growing area of research. It is thought that various practical and methodological difficulties may arise, and these difficulties may have a stimulating effect for future research.

REFERENCES

AA, 2019. İstanbul Havalimanı'nda 74 saniyede bir sefer yapıldı. URL: https://www.aa.com.tr/tr/turkiye/istanbul-havalimaninda-74-saniyede-bir-sefer-yapildi/1523832 (Date Accessed: 12.12.2021).

Agustín, A., Gruler, A., de Armas, J., & Juan, A. A. (2016, September). Optimizing airline crew scheduling using biased randomization: A case study. In *Conference of the Spanish Association for Artificial Intelligence (pp. 331-340). Springer, Cham. URL: https://link.springer.com/chapter/10.1007/978-3-319-44636-3_31* (Date Accessed: 26.11.2021).

Aksu, E. Ö., & Temiz, İ. (2021). Havayolu Operasyonlarında Dayanıklı Ekip Eşleme İçin Eniyileme Yaklaşımı: Bir Havayolu Şirketi Uygulaması. *Politeknik Dergisi*, 24(2), 417-429. URL: https://dergipark.org.tr/en/pub/politeknik/issue/61515/629311 (Date Accessed: 15.11.2021).

Al-Bazi, A., Üney, E., & Abu-Monshar, A. (2019). Developing an overbooking fuzzy-based mathematical optimization model for multi-leg flights. *Transportation Research Procedia*, 43, 165-177. URL: https://www.sciencedirect.com/science/article/pii/S2352146519305988 (Date Accessed: 23.11.2021).

Aoun, O., Sarhani, M., & El Afia, A. (2016). Investigation of hidden markov model for the tuning of metaheuristics in airline scheduling problems. *IFAC-PapersOnLine*, 49(3), 347-352. URL: https://www.sciencedirect.com/science/article/pii/S2405896316302543 (Date Accessed: 24.11.2021).

Arayikanon, K., & Chutima, P. (2018, November). Solving cockpit crew scheduling problem of a low-cost airline using metaheuristics. In *AIP Conference Proceedings* (Vol. 2044, No. 1, p. 020002). AIP Publishing LLC. URL: https://aip.scitation.org/doi/abs/10.1063/1.5080055 (Date Accessed: 27.11.2021).

Argüello, M. F., Bard, J. F., & Yu, G. (1998). Models and methods for managing airline irregular operations. In *Operations research in the airline industry* (pp. 1-45). Springer, Boston, MA. URL: https://link.springer.com/chapter/10.1007/978-1-4615-5501-8_1 (Date Accessed: 04.11.2021).

Ateş, S. S., & Kağnıcıoğlu, C. H. (2012). Havayolu İşletmelerinde Gecikme: Başarıya Götüren Yaklaşımlar Airline Companies Delay: Approaches Leading To Success. URL: https://www.researchgate.net/profile/Savas_Ates/publication/256461595_Havayolu_Isletmelerinde_Gecikme_Basariya_Goturen_Yaklasimlar/links/00b7d522dcbc7e6d6c000000/Havayolu-Isletmelerinde-Gecikme-Basariya-Goetueren-Yaklasimlar (Date Accessed: 02.11.2021).

Bartodziej, P., Derigs, U., Malcherek, D., & Vogel, U. (2009). Models and algorithms for solving combined vehicle and crew scheduling problems with rest constraints: an application to road feeder service planning in air cargo transportation. *OR spectrum*, 31(2), 405-429. URL: https://link.springer.com/article/10.1007/s00291-007-0110-7 (Date Accessed: 27.11.2021).

Bulbul, K. G., & Kasimbeyli, R. (2021). Augmented Lagrangian based hybrid subgradient method for solving aircraft maintenance routing problem. *Computers & Operations Research*, 132, 105294. URL: https://doi.org/10.1016/j.cor.2021.105294 (Date Accessed: 25.11.2021).

Bureau of Transportation Statistics, 2021. TranStats, On-Time Performance - Reporting Operating Carrier Flight Delays at a Glance. URL: https://www.transtats.bts.gov/HomeDrillChart.asp (Date Accessed: 15.11.2021).

Clarke, M. D. D. (1997). Development of heuristic procedures for flight rescheduling in the aftermath of irregular airline operations (Doctoral dissertation, *Massachusetts Institute of Technology*). URL: https://dspace.mit.edu/bitstream/handle/1721.1/10109/39760797-MIT.pdf (Date Accessed: 04.11.2021).

Çelik, S. (2020). Metin madenciliği ile Shakespeare külliyatının incelenmesi. *MANAS Sosyal Araştırmalar Dergisi*, 9(3), 1343-1357. URL: https://dergipark.org.tr/en/download/article-file/1208790 (Date Accessed: 21.11.2021).

Doi, T., & Nishi, T. (2016). Application of two-phase decomposition algorithm to practical airline crew rostering problem for fair working time. *Journal of Advanced Mechanical Design, Systems, and Manufacturing*, 10(3), JAMDSM0036-JAMDSM0036. URL: https://www.jstage.jst.go.jp/article/jamdsm/10/3/10_2016jamdsm0036/_article/-char/ja/ (Date Accessed: 28.11.2021).

Erdem, E., Aydın, T., & Erkayman, B. (2021). Flight scheduling incorporating bad weather conditions through big data analytics: A comparison of metaheuristics. *Expert Systems*, e12752. URL: https://doi.org/10.1111/exsy.12752 (Date Accessed: 12.11.2021).

Erkayman, B. (2013). Havayollarında uçuş aksaklıkları problemi için bir çözüm yaklaşımı ve uygulaması. URL: https://hdl.handle.net/20.500.12619/76577 (Date Accessed: 03.11.2021).

Eurocontrol, 2021. CODA Digest All-causes delay and cancellations to air transport in Europe. URL: https://www.eurocontrol.int/archive_download/all/node/12738 (Date Accessed: 09.11.2021).

Ezzinbi, O., Sarhani, M., El Afia, A., & Benadada, Y. (2014, June). A metaheuristic approach for solving the airline maintenance routing with aircraft on ground problem. In *2014 International Conference on Logistics Operations Management* (pp. 48-52). IEEE. URL: https://doi.org/10.1109/GOL.2014.6887446 (Date Accessed: 25.11.2021).

FAA, 2021. Cost of Delay Estimates. URL: https://www.faa.gov/data_research/aviation_data_statistics/media/cost_delay_estimates.pdf (Date Accessed: 08.11.2021).

Hassan, L. K., Santos, B. F., & Vink, J. (2020). Airline disruption management: A literature review and practical challenges. *Computers & Operations Research*, 105137. URL: https://doi.org/10.1016/j.cor.2020.105137 (Date Accessed: 25.11.2021).

Kornecki, A., & Vargas, D. (2000). Simulation-based training for airline controller operations. In *Proceedings of Society of Computer Simulation 2000 Advanced Simulation Technologies Conference* (pp. 162-171). URL: http://pages.erau.edu/~kornecka/papers/ASTCwash_korn2.PDF (Date Accessed: 04.11.2021).

Lee, L. H., Huang, H. C., Lee, C., Chew, E. P., Yong, Y. Y., Liang, Z., ... & Tan, Y. P. (2003, December). Discrete event simulation model for airline operations: SIMAIR. In *Proceedings of the 2003 Winter Simulation Conference*, 2003. (Vol. 2, pp. 1656-1662). IEEE. URL: https://dstm.ntou.edu.tw/var/file/71/1071/attach/19/pta_14957_1396244_65803.pdf (Date Accessed: 04.11.2021).

Lučić, P., & Teodorović, D. (2007). Metaheuristics approach to the aircrew rostering problem. *Annals of Operations Research*, 155(1), 311-338. URL: https://link.springer.com/article/10.1007%252Fs10479-007-0216-y (Date Accessed: 26.11.2021).

Mansi, R., Hanafi, S., Wilbaut, C., & Clautiaux, F. (2012). Disruptions in the airline industry: math-heuristics for re-assigning aircraft and passengers simultaneously. *European Journal of Industrial Engineering* 10, 6(6), 690-712. URL: https://www.inderscienceonline.com/doi/abs/10.1504/EJIE.2012.051074 (Date Accessed: 26.11.2021).

Maulana, A., Kefalas, M., & Emmerich, M. T. (2017). Immunization of networks using genetic algorithms and multiobjective metaheuristics. In *2017 IEEE Symposium Series on Computational Intelligence* (SSCI) (pp. 1-8). IEEE. URL: https://ieeexplore.ieee.org/abstract/document/8285368 (Date Accessed: 28.11.2021).

Melek, C. (2012). Metin madenciliği teknikleri ile şirketlerin vizyon ifadelerinin analizi (Doctoral dissertation, *DEÜ Sosyal Bilimleri Enstitüsü*). URL: http://acikerisim.deu.edu.tr:8080/xmlui/bitstream/handle/20.500.12397/10519/351044.pdf (Date Accessed: 23.11.2021).

Mirjafari, M., Rashidi Komijan, A., & Shoja, A. (2020). An integrated model for aircraft routing and crew scheduling: Lagrangian Relaxation and metaheuristic algorithm. *WPOM-Working Papers on Operations Management*, 11(1), 25-38. URL: http://hdl.handle.net/10251/147710 (Date Accessed: 25.11.2021).

Orhan, İ., Kapanoğlu, M., & Karakoç, T. H. (2010). Havayolu operasyonlarında planlama ve çizelgeleme. *Pamukkale Üniversitesi Mühendislik Bilimleri Dergisi*, 16(2), 181-191. URL: https://dergipark.org.tr/en/download/article-file/190878 (Date Accessed: 04.11.2021).

Petersen, J. D., Sölveling, G., Clarke, J. P., Johnson, E. L., & Shebalov, S. (2012). An optimization approach to airline integrated recovery. *Transportation Science*, 46(4), 482-500. URL: https://pubsonline.informs.org/doi/abs/10.1287/trsc.1120.0414 (Date Accessed: 04.11.2021).

PORT (Postgraduate Online Research Training), 2019. An introduction to text mining. *School of Advanced Study, University of London*. URL: https://port.sas.ac.uk/mod/book/view.php?id=554&chapterid=325 (Date Accessed: 20.11.2021).

Soykan, B., & Erol, S. (2014). A branch-and-price algorithm for the robust airline crew pairing problem. *Savunma Bilimleri Dergisi*, 13(1), 37-74. URL: https://dergipark.org.tr/en/pub/khosbd/issue/19221/204273 (Date Accessed: 12.11.2021).

Suntur, A. S. (2002). Havacılık Sektöründe Yöneylem Araştırması Modelleri (Doctoral dissertation, *Fen Bilimleri Enstitüsü*). URL: https://polen.itu.edu.tr/bitstream/11527/6365/1/126726.pdf (Date Accessed: 05.11.2021).

Valenzuela, C., Crawford, B., Soto, R., Monfroy, E., & Paredes, F. (2014). A 2-level metaheuristic for the set covering problem. *International Journal of Computers Communications & Control*, 7(2), 377-387. URL: http://univagora.ro/jour/index.php/ijccc/article/view/1417 (Date Accessed: 20.11.2021).

Vos, H. W. M., Santos, B. F., & Omondi, T. (2015). Aircraft schedule recovery problem–a dynamic modeling framework for daily operations. *Transportation Research Procedia*, 10, 931-940. URL: https://doi.org/10.1016/j.trpro.2015.09.047 (Date Accessed: 04.11.2021).

Yıldız, O. T., & Deniz, Ö. (2020). Havacılıkta Operasyonel Aksaklık Maliyetlerinin Moora Yöntemiyle İncelenmesi. *İstanbul Ticaret Üniversitesi Teknoloji ve Uygulamalı Bilimler Dergisi*, 3(1), 1-11. URL: https://dergipark.org.tr/en/pub/icujtas/issue/57160/823040 (Date Accessed: 05.11.2021).

VIBRATION ANALYSIS OF UNDERWATER PROPELLER BLADE

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ABSTRACT

The marine propeller is a difficult part of the ship to study because of the underwater environmental effects and unbalanced rotating system. Since unpredictable conditions such as varying pressure distribution make the vibration analysis of underwater propellers difficult, some simplifying assumptions are made. In the present study, the underwater propeller blade is assumed as a cantilever beam. Due to the difficulty of describing the fluid-structure interaction (FSI) between the blade and water in the software, a damping ratio is given instead of defining water around the blade. A modal analysis of two propeller blades made of structural steel and brass is performed using COMSOL Multiphysics software for four different blade rotation angles of 0°, 10°, 20° and 30°. Natural frequencies and mode shapes of each blade for eight different conditions are obtained and compared. It has been achieved that the natural frequency of the blade made of brass is smaller than that of the blade made of structural steel, and the natural frequency decreases for both blades made of brass and structural steel as the blade rotation angle increases.

Keywords: Marine Propeller, Modal Analysis, Eigenfrequency.

INTRODUCTION

Underwater propeller is a critical component which rotates at the stern of the ship. The propeller has blades of the same length and size, which vary according to the area of usage. The blades are designed as slightly twisted to push the fluid back, and produce the thrust force thanks to pressure distribution on the blades. There are many studies on the marine propellers to examine the dynamic behaviors of the structure in underwater environmental condition, (Ghassemi et al., 2015; Magionesi et al., 2018; Y. S. Rao & Reddy, 2012; Shayanpoor et al., 2020; Uslu et al., 2021; Young, 2008).

Propellers can be built from different materials such as metal alloys and composite materials. Especially in recent years, it is clear that the use of composite materials has become more popular, (Harsha Vardhan et al., 2019).

In this study, underwater vibration analysis of the propeller blade which rotates at speed of 30 rad/s has been done for eight conditions. Structural steel (SS) and brass are selected as blade material and four different twist angles of 0°, 10°, 20° and 30° are defined for each blade. The propeller blade is also assumed as a cantilever beam which is fixed at one end and free at the other end.

MATERIALS AND METHODS

Modal analysis is a useful technique to investigate vibrational parameters of the rotating system like natural frequency and mode shape. Numerical vibration analysis is based on the equation of motion formula.

Equation of motion for forced vibration can be expressed as shown in the Eq.1, (S. S. Rao & Griffin, 2011).

$$m\ddot{x}(t) + c\dot{x}(t) + kx(t) = F(t) \quad (1)$$

where m, c and k are the mass of the structure, damping coefficient and stiffness coefficient, respectively and x(t) and F(t) are time-dependent displacement and applied force to the structure.

The blade model has been drawn using the SOLIDWORKS software. Geometry of the blade with a twist angle of 20º is as shown in Figure 1.

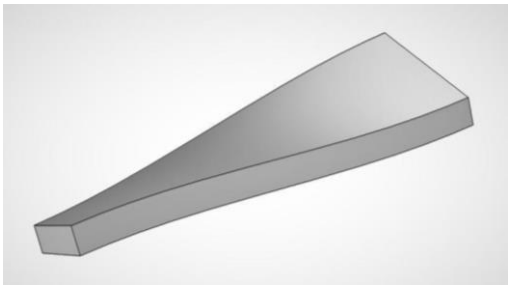

Figure 1. Geometry of the Blade

In the underwater environment, the propeller blades are subjected to a higher pressure load than in air. Thus, the rotational speed of the propeller is lower in water than in air. In this study, the rotational speed of the blade is taken as 30 rad/s for each condition. Physical specifications of the blade are given in Table 1.

Table 1. Physical Properties of the Blade

Blade length (m)	0.20
Blade width (m)	0.10
Blade thickness (m)	0.0125
Rotational speed (rad/s)	30
Damping ratio	0.3

FSI is an important method for underwater applications. Marine propellers, for instance, are inside the water and there is a coupling between the blades and water as they rotate. In fact, vibrational energy is converted into other forms of energy with different physical processes otherwise the structure would vibrate forever. The dissipation of vibration energy is called damping. For this study, a damping ratio of 0.3 is identified instead of defining the water around the blade in COMSOL software.
Material properties of the brass blade are taken from literature, (Uslu et al., 2021) while that of the structural steel are described from the COMSOL Multiphysics software. Table 2 shows the properties of the blade materials.

Table 2. Properties of the Blade Materials

Property/Material	Structural Steel	Brass
Young's Modulus (GPa)	200	100
Density (kg/m^3)	7850	8500
Poisson's Ratio	0.30	0.33

The blade model is meshed with free tetrahedral and calibrated for extra fine mesh elements using the COMSOL Multiphysics software. Figure 2 presents the generated mesh elements on the blade.

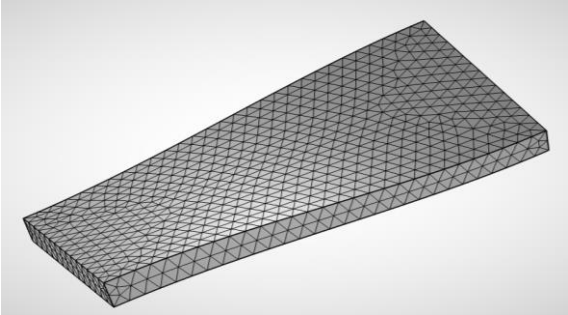

Figure 2. Meshed Model of the Blade

RESULTS AND DISCUSSION

As a result of the analysis, eigenfrequencies of both structural steel and brass blades for four different twist angles are obtained in the complex number form as shown in Table 3 and Table 4, respectively. As it can be seen from tables, the computed natural frequencies are complex-valued due to giving a damping coefficient that has dissipative effects to the model. As the twist angle increases from 0° to 30°, the eigenfrequency of the blades decreases for the first, third and sixth modes, while that of the other modes increases. Moreover, the frequency of the blades becomes greater along with the modes.

Table 3. Eigenfrequencies of the Structural Steel Blade for Six Modes

Mode Number	SS (0°) Eigenfrequency (Hz)	SS (10°) Eigenfrequency (Hz)	SS (20°) Eigenfrequency (Hz)	SS (30°) Eigenfrequency (Hz)
1	258.86+38.006i	258.29+37.922i	256.62+37.676i	253.83+37.267i
2	1059.9+155.56i	1070.8+157.16i	1100.9+161.58i	1144.8+168.03i
3	1586.4+232.84i	1502.9+220.59i	1374.2+201.69i	1243.2+182.47i
4	1741.2+255.56i	1827.1+268.16i	1963.6+288.20i	2108.3+309.44i
5	3403.0+499.45i	3418.7+501.76i	3463.3+508.31i	3535.4+518.89i
6	4326.3+634.96i	4277.5+627.80i	4143.4+608.12i	3949.5+579.67i

Table 4. Eigenfrequencies of the Brass Blade for Six Modes

Mode Number	Brass (0°) Eigenfrequency (Hz)	Brass (10°) Eigenfrequency (Hz)	Brass (20°) Eigenfrequency (Hz)	Brass (30°) Eigenfrequency (Hz)
1	176.81+25.968i	176.41+25.910i	175.25+25.739i	173.31+25.456i
2	714.23+104.83i	721.76+105.94i	742.54+108.99i	772.88+113.44i
3	1082.2+158.84i	1024.4+150.35i	936.63+137.47i	847.61+124.40i
4	1182.2+173.51i	1241.6+182.23i	1334.5+195.86i	1432.6+210.27i

5	2297.4+337.20i	2308.2+338.77i	2338.6+343.23i	2387.9+350.47i
6	2949.6+432.92i	2916.2+428.01i	2824.6+414.56i	2692.5+395.17i

Graphical representations of Table 3 and Table 4 are shown in Figure 3 and Figure 4, respectively. As it is seen from the figures, eigenfrequencies of the blades increase along with the modes.

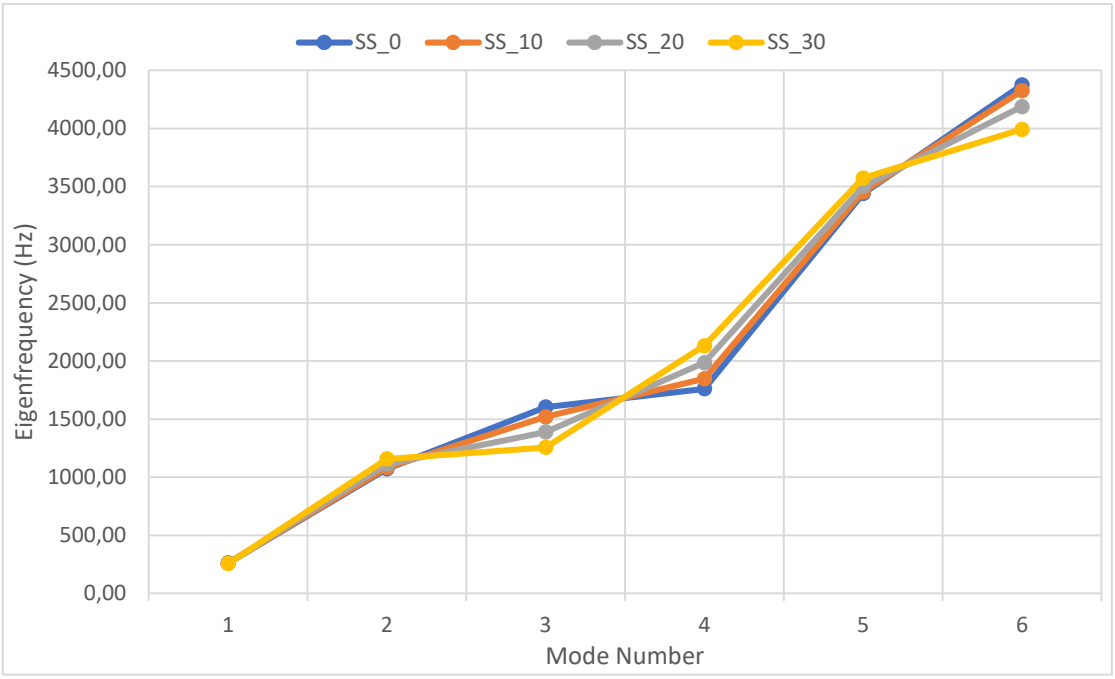

Figure 3. Graphical Representations of the SS Blade Eigenfrequencies

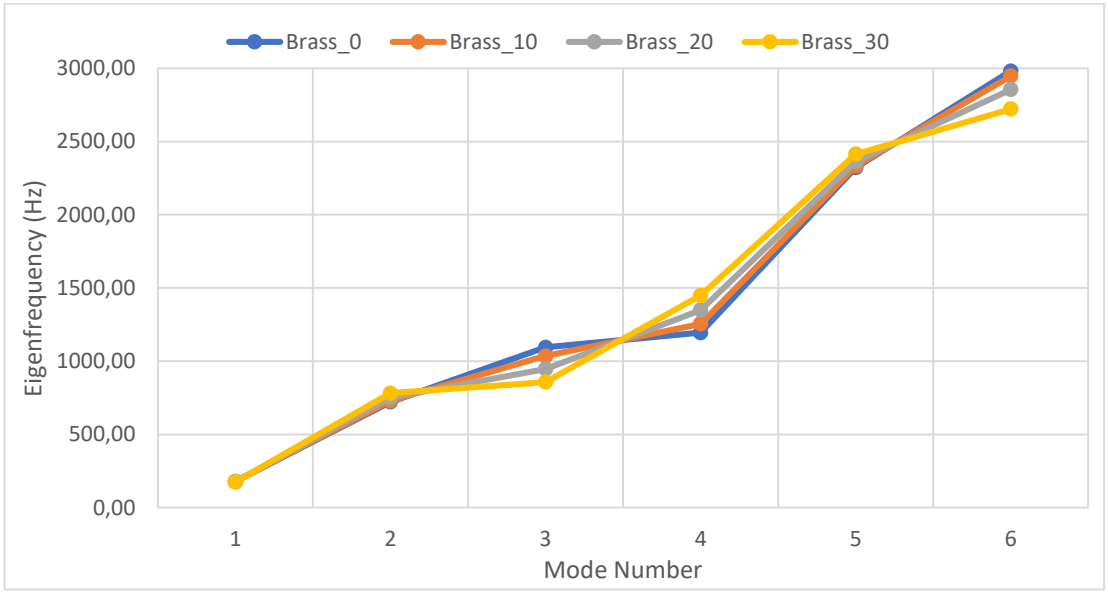

Figure 4. Graphical Representations of the Brass Blade Eigenfrequencies

Eigenfrequencies of the SS and brass blades with 20º twist angle are compared to each other in Figure 5. As it is seen, the brass blade has lower natural frequency than the SS blade.

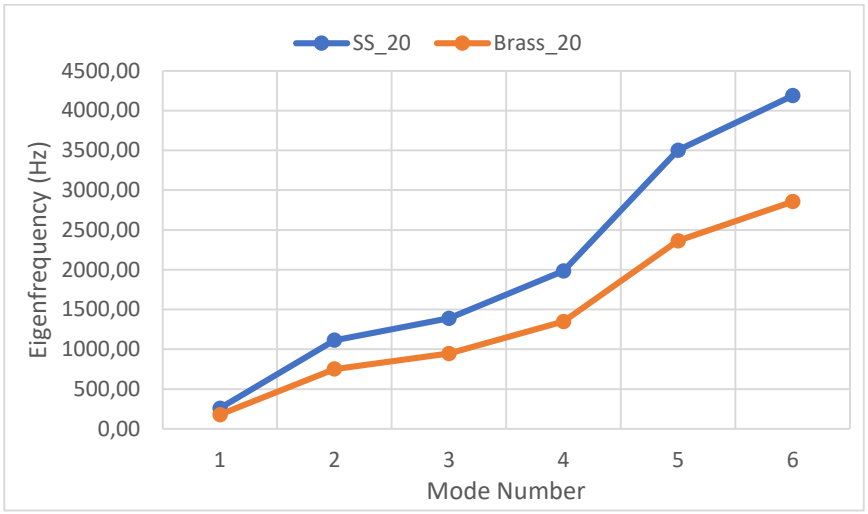

Figure 5. Comparison of the SS and Brass Blades Eigenfrequencies

Figure 6 shows the mode shapes of the brass blade with 20º twist angle. The first three modes are the bending modes while the other modes are torsional modes.

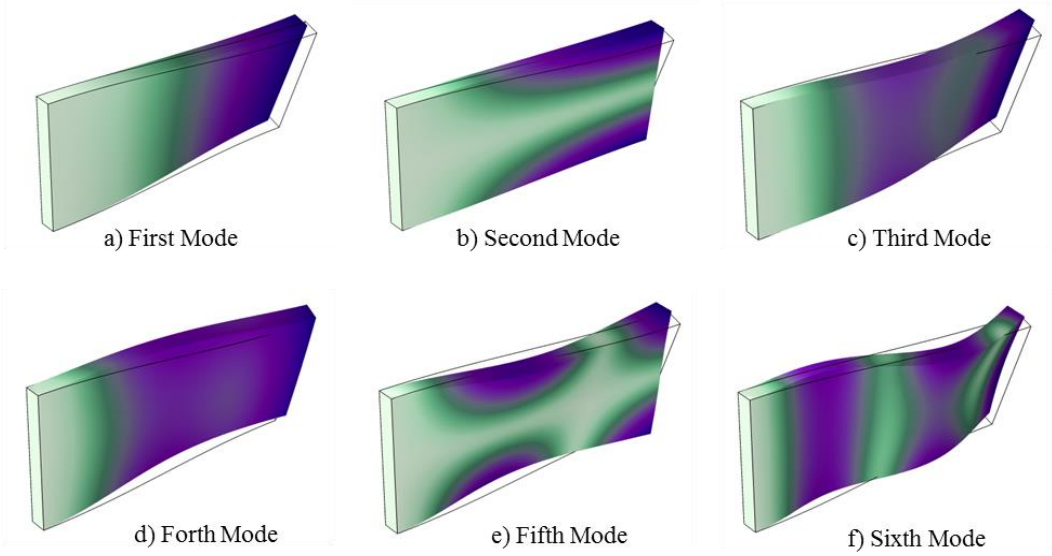

Figure 6. Mode Shapes of the Brass Blade with Twist Angle of 20º

CONCLUSION

The numerical vibration analysis allows to achieve mode shapes and natural frequencies of the dynamic structure. In this study, using COMSOL Multiphysics software, modal analysis of the underwater propeller blade which rotates at the speed of 30 rad/s has been performed for two different materials and four different twist angles. The propeller blade is taken as a cantilever beam with a damping ratio of 0.3. Eigenfrequencies and mode shapes of the structural steel and brass blades are obtained and compared to each other. It is resulted that the brass blade has lower natural frequencies than that of SS. Besides, it is concluded that as the twist angle increases, the eigenfrequencies of the blades decreases for the first, third and sixth modes whereas that of the second, fourth and fifth modes increases.

REFERENCES

Ghassemi, H., Fadavie, M., & Nematy, D. (2015). Hydro-Structure Analysis of Composite Marine Propeller under Pressure Hydrodynamic Loading. *American Journal of Mechanical Engineering*, *3*(2), 41–46. https://doi.org/10.12691/ajme-3-2-2

Harsha Vardhan, D., Ramesh, A., Chandra, B., & Reddy, M. (2019). ScienceDirect A Review On Materials Used For Marine Propellers. In *Materials Today: Proceedings* (Vol. 18). www.sciencedirect.comwww.materialstoday.com/proceedings

Magionesi, F., Dubbioso, G., Muscari, R., & Di Mascio, A. (2018). Modal analysis of the wake past a marine propeller. *Journal of Fluid Mechanics*, *855*, 469–502. https://doi.org/10.1017/jfm.2018.631

Rao, S. S., & Griffin, P. (2011). Mechanical Vibrations Fifth Edition in SI Units. In *Mechanical Vibrations*. www.pearsonglobaleditions.com/rao.

Rao, Y. S., & Reddy, B. S. (2012). Modal Analysis of Composite Propeller for Ships Application. In *International Journal of Engineering Research and Applications* (Vol. 2, Issue 5). www.ijera.com

Shayanpoor, A. A., Hajivand, A., & Moore, M. (2020). Hydroelastic Analysis of Composite Marine Propeller Basis Fluid-Structure Interaction (FSI). *International Journal of Maritime Technology*, *13*, 51–59. https://ijmt.ir/article-1-689-en.pdf

Uslu, S., Bayraktar, M., Demir, C., & Bayraktar, S. (2021). Innovative computational modal analysis of a marine propeller. *Applied Ocean Research*, *113*. https://doi.org/10.1016/j.apor.2021.102767

Young, Y. L. (2008). Fluid-structure interaction analysis of flexible composite marine propellers. *Journal of Fluids and Structures*, *24*(6), 799–818. https://doi.org/10.1016/j.jfluidstructs.2007.12.010

GÖREVE YENİ BAŞLAYAN OKUL YÖNETİCİLERİNİN MEVZUAT ALAN BİLGİSİ VE İLETİŞİM KONULARINDA HİZMET İÇİ EĞİTİMLERİNİN ARTIRILMASINA İLİŞKİN YÖNETİCİ GÖRÜŞLERİ

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ÖZET

Bu araştırma, göreve yeni başlayan okul yöneticilerinin mevzuat, alan bilgisi ve iletişim konularında hizmet içi eğitimlerinin artırılmasına ilişkin yönetici görüşleri sunmayı amaçlamaktadır. Çalışma grubunu Bayburt İli Merkez İlçesinde Millî Eğitim Bakanlığına bağlı devlet okullarının farklı eğitim ve yönetim kademelerinde halen çalışmakta olan görev süresi bir ile dört yıl arasında olan 4 okul yöneticisi oluşturmaktadır. Çalışmada nitel araştırma yöntemi kullanılmaktadır. Veriler yarı yapılandırılmış görüşme tekniği hazırlanarak toplanmıştır. Elde edilen verilere göre göreve yeni başlayan yöneticiler mevzuat, alan bilgisi ve iletişim konularının okul yönetiminde çok önemli konular olduğunu ifade etmektedirler. Ancak göreve başlama öncesinde mevzuat, alan bilgisi ve iletişim konularında herhangi bir hizmet içi eğitim almadıkları görülmektedir. Hizmet içi eğitimin göreve başlandıktan sonrada belli program dâhilinde yapılmadığı katılımcılar tarafından beyan edilmektedir. Bu konularda eksikliklerini gidermek için yaparak yaşayarak öğrenme yöntemini uygulanmaktadır. Bazı okul yöneticilerimiz ise yüksek lisans, seminer, kurs gibi eğitimlere imkânları ölçülerinde katılmaya çalıştıkları gözlenmektedir. Araştırma sonucunda araştırmacı tarafından tüm bu sorunları göz önünde bulundurarak çözüm önerileri sunulmaktadır.

Anahtar Kelimeler: Okul Yöneticiliği, Mevzuat, Alan bilgisi, İletişim, Hizmet içi.

EXECUTIVE OPINIONS ON INCREASING THE IN-SERVICE TRAINING OF SCHOOL DIRECTORS BEGINNING TO THE WORK ON THE REGULATIONS FIELD KNOWLEDGE AND COMMUNICATION

ABSTRACT

This research aims to provide executive opinions on increasing the in-service education of school administrators who are just starting their job in terms of legislation, field knowledge and communication. The working group consists of 4 school administrators whose decencies are between one and four years who are currently working at different levels of education and management of public schools affiliated to the Ministry of National Education in the Central District of Bayburt Province. The qualitative research method is used in the study. The data were collected by preparing a semi-structured interview technique. According to the data obtained, the administrators who have just started their duties state that legislation, field knowledge and communication issues are very important issues in school management. However, it is seen that they did not receive any in-service training on legislation, field knowledge and communication issues prior to taking office. It is declared by the participants that the in-service training is not carried out within a certain program after the start of the mission. In order to eliminate the shortcomings of these subjects, the learning method is applied by living by doing it. It is observed that some of our school administrators are trying to participate in trainings such as master's degrees, seminars, courses to the extent possible. As a result of the research, solutions are offered by the researcher taking into account all these problems.

Keywords: School Management, Legislation, Field knowledge, Communication, In-service.

1.GİRİŞ

Yönetim kavramı bilim insanları tarafından özelliklerine göre birçok farklı şekilde tanımlanmıştır. Genç'e (2017) göre, yönetim insanlar arası iş birliğini sağlama, onları belli bir amaca yöneltme ve yürütme faaliyet ve çabası, farklı bir deyişle başkaları aracılıyla iş yapabilme bilim ve sanatıdır. Aydın (2018) ise, belirli hedefi gerçekleştirmek için personel, zaman, mekân ve maddi kaynakları verimli bir şekilde kullanmak olarak tanımlamaktadır**.**

Yönetimle ilgili farklı tanımlar olmaklar birlikte planlama, denetleme, geliştirme ve izleme gibi ortak süreçlerden bahsedildiği gözlenmektedir.

Eğitim yönetimi ise Okutan' a (2016) göre, eğitim sisteminin hedeflerine ulaşmasını sağlamak için örgütlerdeki insan gücünü, zamanı, malzemeyi, sermayeyi daha verimli ve daha ekonomik kullanılması olarak tanımlamaktadır. Eğitim yönetimi, eğitim sistemi içinde bulunan bütün paydaşların yönetim görevi olarak ifade edilirken, okul yönetimi ise sadece eğitim kurumlarında gerçekleştirilen, okul yöneticileri tarafından yürütülen yönetimsel çalışmalardır.

Milli Eğitim Bakanlığı tarafından kurum yöneticilerin görevleri Milli Eğitim Bakanlığı Ortaöğretim Kurumları Yönetmeliğinin 77. Maddesinde açıklanmaktadır. İlgili maddede tüm okul paydaşlarına rehberlik yapması, verimliliği arttırması konusunda çalışmalar yapması, ekip ruhu içerisinde kurum kültürü oluşturması kurum yöneticilerinin görevleri arasında sıralanmaktadır. Ayrıca bilimsel ve teknolojik gelişmeler ışığında okulu sürekli yenileyip geliştirmek, okulun amaçlarına hizmet etmek okul yöneticilerinin asli görevleri arasında bulunmaktadır.

Okul yöneticilerinin öğretmenler arasından seçiliyor olmasından dolayı öğretmenlerin yönetici olma tutumları ve yöneticiliğe bakış açıları çok önemlidir. Literatür araştırmalarında öğretmenlerin yöneticilik görevine yeni başlamaları için yapılan merkezi sınavlara karşı güven duydukları tespit edilmiştir. Aksel ve Elma (2019) araştırmalarında yöneticilerin ve öğretmenlerin ÖSYM'nin yapmış olduğu sınavları MEB'in yapmış olduğu sınavlarından daha güvenilir buldukları sonucuna ulaşmıştır.

Üstün'e (2021) göre, sözlü sınava karşı okul yöneticilerinin olumsuz tutumları tespit edilmiş, bu sınavların adil olmaması, verilen puanların kriterlerinin olmayışı sözlü sınava karşı güvensizlik oluşturduğu, dolayısıyla sözlü sınavlara olan güvenin sarsıldığı vurgulanmaktadır. Elçin ve Ergin (2016) çalışmalarında okul yöneticilerinin sözlü sınavları bir siyasi görüşü ön plana çıkarmak, ideolojiyi sürdürmek amaçlı gördüklerini ifade etmektedirler. Baş ve Şentürk (2017) çalışmalarında sözlü sınavlara olan güvensizliği ortadan kaldırmak için alanlarında profesyonelleşmiş kişilerin sözlü sınavlarda bulunması gerektiğini vurgulamaktadırlar.

Memduhoğlu (2007) çalışmasında okul yöneticilerinin atanmasında kesin ölçütlerin bulunmaması, kriterlerin net bir şekilde ifade edilmemiş olması atamalarda keyfiyet olacağı sonucuna bağlanmıştır. Üstün'e (2021) göre mesleki tecrübeler, projeler, akademik çalışmalar, ödül ve cezalar puanlama kriterleri olarak kullanılması olumlu karışılanılarken bu kriterlerin 4 yıl ile kısıtlanması ve formların içeriğinin yönetmelikle birlikte sık değiştiriliyor olması keyfiyet algısının var olduğunun göstergesi olduğunu belirtmektedir.

Yazılı hukuk kurallarında en üst sıralamada Anayasa bulunmaktadır. Anayasa sonrasında sırayla yasalar, kanun hükmünde kararnameler, tüzükler ve yönetmelikler şeklinde sıralanmaktadır. Hiçbir hukuksal kural kendinden önce gelen kurala aykırı bir hüküm barındıramaz. Eğitim yöneticileri de diğer örgüt yöneticileri gibi hukuk kurallarını iyi bilmeli ve eğitim örgütlerini bu hukuk kurallarına göre yönetmeleri gerekmektedir. Eğitim yöneticilerinin uyması gerektiği bu hukuk kurallarına "eğitim mevzuatı" denir.

TC Anayasası: Devletin varlığını devam ettirmesi, kişilerin hak ve özgürlükleri noktasında kayıp yaşanmaması için oluşturulan en temel yazılı hukuk kaynağıdır. Gözübüyük'e (2002) göre, 1982 Anayasası'nda eğitim mevzuatı açısından eğitim yöneticilerinin hâkim olması gereken birçok hükümler ve ilkeler içermektedir.

Eğitimle İlgili Yasalar: Yasalar yasama organı tarafından çıkartılan nitelikli hukuk metinleridir. Kamu yönetiminin her alanında olduğu gibi eğitim yönetimi alanında da birçok yasa bulunmaktadır. Millî Eğitim Bakanlığı'nın kurulması, örgütlenmesi ve görevlerine ilişkin yasa 1992 tarih ve 3797 sayılı "Millî Eğitim Bakanlığı'nın Teşkilat ve Görevleri Hakkında Kanun" dur. Bu yasada Millî Eğitim Bakanlığı'nın amacı, görevi ve diğer bakanlık birimlerinin yetki ve sorumluluklarını içeren hükümler bulunmaktadır.

Eğitimle İlgili Kanun Hükmünde Kararnameler: Kanun hükmünde kararnameler, Bakanlar Kurulunca, yasama organının bir yetki kanunu ile verdiği düzenleme yetkisine dayanılarak veya olağanüstü hallerde böyle bir yetki kanunu olmadan da çıkarılabilen ve yürürlükteki şekli kanunları değiştirebilme ve yürürlükten kaldırabilme gücüne sahip olan yazılı metinlerdir.

Eğitimle İlgili Yönetmelikler: Kamu kuruluşları kendi görev alanlarına giren konular hakkında yönetmelik çıkartabilirler. Eğitim alanında, işleyişin devamını sağlamak için birçok yönetmelik çıkartılmaktadır. Bunlara Millî Eğitim Bakanlığı Yönetici Atama, Değerlendirme, Görevde Yükselme ve Yer Değiştirme Yönetmeliği örnek olarak verilebilmektedir.

Ülkemizde yönetici atamaları belli yasal çerçevelere göre yapılmaktadır. 2021 Şubat tarihli "Millî Eğitim Bakanlığına Bağlı Eğitim Kurumlarına Yönetici Seçme ve Görevlendirme Yönetmeliği göre Milli Eğitim Bakanlığına bağlı her türdeki okullardaki yöneticiler görevlerini ikinci görev olarak ifa etmektedirler. 652 sayılı Kanun hükmünde Kararnameye göre okul yöneticilerin atama ve yer değiştirmelerine ilişkin usul ve esasların yönetmelikle düzenlendiği hükmü yer almaktadır. Bu yönetmelikler Millî Eğitim Bakanlığı tarafından hazırlanmaktadır.

Resmî Gazete 'de son yayınlanan ve halen yürürlükte olan 5 Şubat 2021 tarihli "Milli Eğitim Bakanlığına Bağlı Eğitim Kurumlarına Yönetici Seçme ve Görevlendirme Yönetmeliği'ne göre yönetici görevlendirmede izlenecek yöntem belirlenmiştir. Bu yönetmeliğe göre yöneticiliğe ilk defa müracaat edecekler yazılı sınav, Ek-1 değerlendirme formu ve son olarak Ek-3 de yer alan sözlü değerlendirme ölçütlerine göre görevlendirmeleri yapılmaktadır. Halen görevde olan yöneticilerin 4 yıl sonunda tekrar yapılan görevlendirmeleri ise ilgili yönetmelikte bulunan Ek-2 değerlendirme ölçütlerine göre yapılmaktadır.

Yöneticiliğe ilk defa atama sürecinde yapılacak olan yazılı sınavların konu ağırlıkları; %20 Genel Kültür, %10 Atatürk İlkeleri ve İnkılap Tarihi, %10 Değerler Eğitimi, %10 Eğitim ve Öğretimde Etik, %30 Eğitim Bilimleri, %20 Mevzuat; sözlü sınav konu ağırlıkları ise; %20 yazılı sınav konuları, %20 bir konuyu kavrayıp özetleme, ifade yeteneği ve muhakeme gücü, %20 temsil kabiliyeti, liyakati, tutum ve davranışlarının göreve uygunluğu, % 20 özgüveni, ikna kabiliyeti ve inandırıcılığı, %20 bilimsel ve teknolojik gelişmelere açıklığı şeklinde belirlenmiştir.

Okul yöneticisi olarak görev yapmak isteyen öğretmenlerin gerek kendi branş alanında gerekse eğitim alanında iyi bir alan bilgisine sahip olmaları gerekmektedir. Mishra ve Koehler'e (2009) göre, alan bilgisi öğretilmesi gereken konuları öğrenme yâda düşünme yoluyla elde edilmesidir. Matematik, Türkçe, Fen Bilimleri vb. gibi derslerde öğretilmesi gereken konular ve içerikler farklıdır. Bundan dolayı öğretmenlerin alanlarında sahip olmaları gereken bilgiler önemlidir. Shulman'a (1986) göre içerik ile pedagoji bilginin çok önemli iki parçasıdır. Pedagojik alan bilgisi; Bir konun nasıl öğretilmesi gerektiği

ile ilgilenen bilim dalıdır. Pedagojik alan bilgisi bir konu alanının başkalarına anlatılırken nasıl daha iyi, daha anlaşılabilir bir biçimde sunulması ve örneklenmesi gerektiğini vurgulayan bilim alanıdır**.**

İletişim örgüt süreçlerinin en önemli fonksiyonlarından bir tanesidir. Gün geçtikçe örgüt içerisindeki iletişimin rolü artmaktadır. Bundan dolayı okul yöneticisi klasik yönetim fonksiyonlarına ek olarak iletişim gibi yeni becerilere sahip olması gerekmektedir. (Stewart, Martin & Tyrone'e (2005) göre güçlü bir iletişim olmadan yapılan tüm stratejilerin ve etkin planların başarıya ulaşma ihtimali düşüktür. Amerikan Yönetim Derneğinin 2003 yılında üyeleri üzerinde yapmış olduğu araştırmada iletişim vurgusu ön plana çıkmaktadır. "Hangi özellikler sizi etkili bir lider yapar?" şeklindeki araştırma sorusuna en çok etkili iletişim cevabı verilmektedir.

Bursalıoğlu'na (2010, 110) göre, yöneticilerin iletişim sürecini kullanma amaçları;

1. İnsan davranışını değiştirme,
2. Örgütte bir haberleşme ağı kurma,
3. Kişiler ve gruplar arası ilişkileri geliştirme,
4. Yetkinin görevlerini gerçekleştirme,
5. Etkili bir koordinasyon sağlama olarak sıralanabilir

Mullins'e (2005, 201) göre, İnsan kaynağı, okul örgütün amaçlarına ulaşmada çok önemli olmakla birlikte; diğer kaynaklardan en üst derecede yararlanmada da kilit bir role sahiptir. İnsan kaynağının bu derece önemli olduğunu düşünülürse, okul yöneticisinin iletişim becerilerinin hayati öneme sahip olduğu söylenilebilmektedir.

Uygur (2021) çalışmasında Fransa, Güney Kore, Finlandiya ve İngiltere'de okul yöneticisi adaylarının hizmet öncesinde okul yönetimi konusunda eğitim ve okul yöneticiliği sertifikası almaları gerektiğini tespit etmektedir. Bu duruma benzer bir şekilde MEB 2023 Vizyon Belgesi'nde öğretmen ve okul yöneticilerine yönelik hizmet içi eğitimin üniversiteler tarafında akredite sertifika programına dönüştürüleceği belirtilmektedir. Bunun sonucunda hizmet içi eğitimi veren eğitimcilerin alanlarında daha donanımlı kişilerden oluşacağı bunun neticesinde de verimin, katılımın ve motivasyonun daha da artacağı bulgusuna ulaşılmaktadır. Üstün (2021) araştırmasında hizmet içi eğitimleri veren kişilerin hizmet içi eğitimi alan kişilerle aynı yâda alt düzeyde olmaları, hizmet içi eğitimi alacak kişiler tarafından verimsiz geçtiği yönünde bir algının olduğunu belirtmektedir. Ancak aynı kişiler tarafından merkezi eğitimleri daha verimli olduğu ifade edilmektedir.

1.1.Araştırmacının Amacı ve Araştırma Soruları

Bu çalışmanın amacı göreve yeni başlayan okul yöneticilerinin mevzuat, alan bilgisi ve iletişim konularında hizmet içi eğitimlerinin artırılmasına ilişkin yönetici görüşlerini ortaya koymaktır. Bu amaçla araştırma boyunca aşağıdaki sorulara cevap aranmaktadır:

1. Okul yönetiminde mevzuat, alan bilgisi ve iletişimin önemi nedir?
2. Okul yöneticiliğine mevzuat, alan bilgisi ve iletişim konularında yapılan hizmet içi çalışmalar nelerdir?
3. Okul yöneticiliğinde mevzuat, alan bilgisi ve iletişim konularında eksikliklerin doğurduğu sonuçlar ve bu eksiklikleri gidermeye yönelik yapılan çalışmalar nelerdir?

1.2. Araştırmanın Önemi

Bu araştırma, yönetici atamaları sonrasında göreve yeni başlayan okul yöneticilerinin mevzuat, alan bilgi ve iletişim konularına ilişkin yaşamış oldukları sorunları ortaya çıkarmakta faydalı olacaktır.

Göreve yeni başlayan okul yöneticilerine sağlanan hizmet içi eğitimlerin sağladığı faydaları ve eksiklikleri okul yöneticileri tarafından değerlendirilecek nihayetinde göreve yeni başlayan okul yöneticilerinin karşılaşmış oldukları sorunlar karşısında bu çalışma yol gösterici olacaktır.

2.YÖNTEM

2.1.Araştırmanın Modeli

Göreve yeni başlayan okul yöneticilerinin mevzuat, alan bilgisi ve iletişim konularında hizmet içi eğitimlerinin artırılmasına ilişkin yönetici görüşler sunulduğu bu araştırmada nitel araştırma modeli kullanılmıştır. Özdemir'e (2010) göre nitel araştırma kendi iç dünyasındaki sırları çözmek ve kendi biçimlendirdiği toplumsal sistemlerin tüm detaylarına ulaşmak için geliştirilen bilgi üretme yöntemlerinden biridir. Altunışık, Bayraktaroğlu, Coşkun & Yıldırım'a (2010) göre ise nitel araştırma, bütüncül bir bakış açısını merkeze almak kaydıyla, araştırılan problemi yorumlayıcı bir şekilde incelemeyi kabul eden bir yöntemdir. Bu bağlamda nitel araştırma, üzerinde araştırmalar yapılan konuları kendi içinde ele alarak araştırmaya katılan kişilerin o konulara yükledikleri anlara göre yorumlanmasıdır.

Bu çalışmada yarı yapılandırılmış görüşme tekniği kullanılmıştır. Altunışık, Yıldırım ve Şimşek' e (1999: 283) göre, yarı yapılandırılmış görüşme tekniği önceden hazırlanmış görüşme soruları ve belli kuralları olmasından dolayı daha programlı ve mukayeseli bilgi sunmaktadır. Bu haliyle eğitim bilimi çalışmalarına daha uygun bir araştırma tekniğidir.

2.2.Çalışma Grubu

Araştırmanın çalışma grubunu Bayburt ili Merkez İlçesinde, 2021-2022 eğitim öğretim yılında çalışmakta olan okul yöneticileri oluşturmaktadır. Bu okul yöneticilerinin görev süreleri 1 ile 4 yıl arasında değişen, göreve yeni başlayan okul idarecileri bulunmaktadır.

Araştırmanın çalışma grubunu Bayburt ili Merkez ilçesinde, 2020-2021 eğitim öğretim yılında halen çalışmakta olan okul yöneticileri oluşturmaktadır. Bu okul yöneticileri içerisinden her bir değişkenin yönetici atama süreçleri ile ilgili tutumlarını etkileyebileceği öngörüldüğünden yöneticilik yapılan okul türü, yönetim kademesi, hizmet yılı, mezuniyet durumu gibi değişkenleri konusunda çeşitlendirilmiş 4 okul yöneticisi belirlenmiştir.

Katılımcı Kodu	Yaş Aralığı	Cinsiyet	Mezuniyet	Okul Türü	Yönetici Kadrosu	Yöneticilikte Geçen Süre
Y1	35-40	Erkek	Lisans	İlkokul	Mdr Yard.	4 yıl
Y2	30-35	Erkek	Ysk Lisans	İlkokul	Müdür	3 yıl
Y3	25-30	Erkek	Lisans	Orta Okul	Mdr Yard.	1 yıl
Y4	30-35	Erkek	Lisans	Orta Okul	Müdür	2 yıl

Tablo 1. Çalışma Grubunun Demografik Özellikleri

2.3.Veri Toplama Aracı

Araştırmada veri toplama aracı olarak yarı-yapılandırılmış görüşme formu kullanılmıştır. Türnüklü'e (2000) göre yarı yapılandırılmış görüşme formu tekniğinde araştırmacı görüşmenin akışına bağlı olarak değişik yan ya da alt sorularla görüşmenin akışını etkileyebilir ve kişinin yanıtlarını açmasını sağlayabilir. Görüşme Formu Demografik Sorular ve Görüşme Soruları olmak üzere iki

bölümden oluşmaktadır. Demografik Sorulara verilen yanıtlar ve analizi tablo 1 de verilmiş olup görüşme soruları aşağıdaki gibidir:

1. Okul yöneticisi olarak göreve başlarken eğitim yönetimi konusunda herhangi bir eğitim aldınız mı? Aldığınız eğitimler yararını görüyor musunuz?
2. Eğitim yöneticilerinin hâkim olması gereken mevzuatlar konusunda eğitim aldınız mı?
3. Eğitim yönetimiyle ilgili mevzuat konusunda kendinizi eksik görüyor musunuz? Eksikliklerinizi nasıl gideriyorsunuz?
4. Yükseköğretim sürecinden sonra alan bilginizi geliştirmek için yaptığınız çalışmalar nelerdir?
5. Bağlı bulunduğunuz kurumların eğitim yöneticilerinin alan bilgilerini geliştirmesine yönelik eğitim çalışmaları var mı?
6. Eğitim yönetiminde iletişimin rolü nedir?
7. Eğitim yöneticisi olarak göreve başlarken iletişim becerileri konusunda eğitim aldınız mı?
8. Kurum içi iletişimi nasıl sağlarsınız?
9. Eğitim yöneticilerinin mevzuat bilgisi, alan bilgisi ve iletişim bilgilerinin artırılmasına dönük ne tür çalışmalar yapılmalıdır?

Görüşme formunun oluşturulmasında uzman kişilerden destek alınmıştır.

2.4.Verilerin Toplanması

Bu süreçte katılımcılarla çeşitli iletişim araçlarıyla görüşülerek randevu alınmış ve daha sonra yüz yüze görüşülmüştür. Görüşmede katılımcıların kendilerini herhangi bir baskı altında görmemeleri için gönüllülük esasına göre yapılmıştır. Görüşmelere öncelikle birinci grup olan demografik sorular sorulmuş akabinde ikinci görüşme soruları sorulmuştur. Görüşmeler 30-40 dakika arası sürmüştür. Görüşmeler ses kaydı alınarak gerçekleştirilmiştir.

2.5.Verilerin Analizi

Araştırmada görüşme formu aracılığı ile elde edilen veriler betimsel analiz yöntemi ile analiz edilmiştir. Yıldırım ve Şimşek'e (2016: 239) göre, bu analizde elde edilen veriler önceden belirlenen konulara göre özetlenir ve yorumlanır. Analiz sürecinde okul yöneticilerine Y1, Y2, Y3 ve Y4 şeklinde kod adlar verilmiştir.

3.BULGULAR

3.1. Birinci Araştırma Sorusuna İlişkin Bulgular

Göreve yeni başlayan okul yöneticilerinin mevzuat, alan bilgisi ve iletişim konularında hizmet içi eğitimlerinin artırılmasına ilişkin yöneticilere "Okul yöneticisi olarak göreve başlarken eğitim yönetimi konusunda herhangi bir eğitim aldınız mı? Cevabınız EVET ise ne tür bir eğitim aldınız?" sorusu yöneltilmiştir. Öğretmenlerden alınan cevaplardan bazıları şu şekildedir:

Y1: Hayır. Böyle bir eğitimin alınması yönetici olarak göreve başlayanlar için büyük bir kazanım olurdu.

Y2: Hayır. Fakat böyle bir eğitimin olmasını ve böyle bir eğitim alıp kendim geliştirmiş bir şekilde yöneticiliğe başlamak isterdi.

Araştırmaya katılan yöneticilerin hepsi okul yöneticisi olarak göreve başlamadan önce eğitim yönetimi konusunda herhangi bir eğitim almadıklarını ve bunun eksikliğini yaşadıklarını söylemektedirler.

3.2. İkinci Araştırma Sorusuna İlişkin Bulgular

Araştırmaya katılan yöneticilere "Eğitim yöneticilerinin hâkim olması gereken mevzuatlar konusunda eğitim aldınız mı? Cevabınız EVET ise eğitimin yeterliliği hususunda bilgi verir misiniz?" sorusu yöneltilmiş olup alınan cevaplardan bazıları şunlardır:

Y2: Hayır. Fakat yönetici sınavında mevzuat ve alan bilgisi soruları mevcut olduğundan dolayı sınava çalışırken mevzuat ve alan bilgisi konusunda yeteri kadar olmasa da bilgi sahibi olduğumu düşünüyorum.

Y3: Doğrudan yöneticiliğe ait mevzuatlar konusunda eğitim almadım.

Y4: Kendi bireysel gayretimle çalışıyorum. Mevzuata yönelik bir eğitim almadım.

Araştırmaya katılan yöneticilerin hepsi eğitim yöneticilerin hâkim olması gereken mevzuat konusunda eğitim almadıklarını beyan etmektedirler.

3.3. Üçüncü Araştırma Sorusuna İlişkin Bulgular

Tablo 2. "Eğitim yönetimiyle ilgili mevzuat konusunda kendinizi eksik görüyor musunuz? Eksikliklerinizi nasıl gideriyorsunuz?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
Yönetmelik Okumak	3	%50	"Boş olduğum zamanlar yönetmelik okumaya çalışıyorum." (Y2)
Yaşayarak Öğrenme	2	%34	"Eksiklik hissettiğim zaman ya literatür tarama yapıyorum ya da tecrübeli bir idareci büyüğümüzden yardım alıyorum." (Y3)
Mevzuat İncelemek	1	%17	"Boş olduğum zamanlarda mevzuat ve yönetmelik inceliyorum" (Y1)

Yöneticilerin "Eğitim yönetimiyle ilgili mevzuat konusunda kendinizi eksik görüyor musunuz? Eksikliklerinizi nasıl gideriyorsunuz?" sorusuna 3 defa (%50) yönetmelik okumak, 2 defa (%34) yaşayarak öğrenme, 1 defa (%17) mevzuat incelemek olarak cevap vermiştirler.

3.4. Dördüncü Araştırma Sorusuna İlişkin Bulgular

Tablo 3. "Yükseköğretim sürecinden sonra alan bilginizi geliştirmek için yaptığınız çalışmalar nelerdir?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
Seminerlere Katılmak	3	%25	"Öğretmenlik yaptığım zaman sürecinde katılma imkânım olan seminer, eğitim," (Y2)
Hizmet İçi Eğitim	2	%50	"Hizmet içi eğitimlere katılmak ve bireysel okumalara yapmak." (Y3)
Yüksek Lisans	1	%25	"Kendi branşımda ilgili yüksek lisans yapmaktayım." (Y1)

Yöneticilerin "Yükseköğretim sürecinden sonra alan bilginizi geliştirmek için yaptığınız çalışmalar nelerdir" sorusuna 3 defa (%25) seminerlere katılmak, 2 defa (%50) hizmet içi eğitim, 1 defa (%25) yüksek lisans olarak cevap vermiştirler.

3.5. Beşinci Araştırma Sorusuna İlişkin Bulgular

Yöneticilerin "Bağlı bulunduğunuz kurumların eğitim yöneticilerinin alan bilgilerini geliştirmesine yönelik eğitim çalışmaları var mı?" sorusuna 2 defa (%66) MEB faaliyetleri, 1defa (%33) Yerel faaliyetler, olarak cevap vermiştirler.

Tablo 4. "Bağlı bulunduğunuz kurumların eğitim yöneticilerinin alan bilgilerini geliştirmesine yönelik eğitim çalışmaları var mı?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
MEB Faaliyetleri	2	%66	"Çok az düzeyde de olsa Milli Eğitim Bakanlığının düzenlemiş olduğu yönetici eğitim faaliyetler bulunmaktadır.." (Y2)
Yerel Faaliyetler	1	%33	"Hizmet içi eğitimler düzenlenebiliyor." (Y3)

3.6. Altıncı Araştırma Sorusuna İlişkin Bulgular

Tablo 5. "Eğitim yönetiminde iletişimin rolü nedir?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
İletişim Becerileri	2	%50	"İletişimin yönetim konusunda mevzuat bilgisinden daha önemli olduğunu düşünüyorum." (Y2)
Temel Unsur	2	%50	"İletişim, yönetim için temel unsurdur." (Y1)

Yöneticilerin "Eğitim yönetiminde iletişimin rolü nedir?" sorusuna 2 defa (%50) iletişim becerileri, 2 defa (%50) temel unsur, olarak cevap vermiştirler.

3.3. Yedinci Araştırma Sorusuna İlişkin Bulgular

Araştırmaya katılan yöneticilere "Eğitim yöneticisi olarak göreve başlarken iletişim becerileri konusunda eğitim aldınız mı? Cevabınız EVET ise aldığınız eğitimin katkısı hakkında ne düşünüyorsunuz?" sorusu yöneltilmiş olup alınan cevaplardan bazıları şunlardır:

Y1: Hayır. Kendim iletişim konusuyla ilgili kaynakları inceledim.

Y2: Hayır. Fakat bu konuda kesinlikle bir eğitim verilmeli. Bende bu eğitimi almayı çok isterdim.

Y3: Yöneticiliğe başlarken değil ancak 2 yıl önce bu konuda bir eğitim almıştım.

Araştırmaya katılan Y1 ve Y2 yönetici olarak göreve başlarken herhangi bir iletişim eğitimi almadıklarını yalnızca Y3 göreve başlamadan 2 yıl önce iletişim konusuyla ilgili bir eğitim aldığını ifade etmektedirler.

3.8. Sekizinci Araştırma Sorusuna İlişkin Bulgular

Tablo 6. "Kurum içi iletişimi nasıl sağlarsınız? Örneklerle ifade edebilir misiniz?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
Empati	3	%60	"Bütün çalışanlarımla iyi bir iletişim kurmaya çalışır, oluşan problemler karşında empati kurmaya çalışırım." (Y2)
Şeffaflık	1	%20	"Konu hakkında personel ile doğrudan ve şeffaf bir şekilde iletişim kurarak." (Y3)
İletişim Araçları	1	%20	"Yüz yüze konuşmanın mümkün olmadığı zamanlar whatsapp, Bip, gibi gruplardan mesaj atarak iletişim sağlarım" (Y1)

Yöneticilerin "Kurum içi iletişimi nasıl sağlarsınız? Örneklerle ifade edebilir misiniz?" sorusuna 3 defa (%60) empati, 1 defa (%20) şeffaflık, 1 defa (%20) iletişim araçları olarak cevap vermiştirler.

3.9. Dokuzuncu Araştırma Sorusuna Ilişkin Bulgular

Tablo 7. "Eğitim yöneticilerinin mevzuat bilgisi, alan bilgisi ve iletişim bilgilerinin artırılmasına dönük ne tür çalışmalar yapılmalıdır?" sorusuna yöneticilerin verdiği cevaplar.

Tema	f	%	Örnek cümle
Görev Öncesi Eğitim	1	%33	"Eğitim yöneticilerinin daha iyi bir yönetici olabilmeleri için göreve başlamadan önce geniş kapsamlı bir eğitim almaları gerekir." (Y2)
Hizmet İçi Eğitim	2	%66	"Belli aralıklarda hizmet içi eğitim şeklinde bu eğitimler verilebilir." (Y1)

Yöneticilerin "Eğitim yöneticilerinin mevzuat bilgisi, alan bilgisi ve iletişim bilgilerinin artırılmasına dönük ne tür çalışmalar yapılmalıdır?" sorusuna 1 defa (%33) görev öncesi eğitim, 2 defa (%66) hizmet içi eğitim olarak cevap vermiştirler.

4. TARTIŞMA, SONUÇ ve ÖNERİLER

Araştırmadaki katılımcılarımız mevzuat, alan bilgisi ve iletişim konularının yöneticilerin hâkim olunması gereken önemli konular olarak değerlendirmektedir. Kepenekçi 'ye (2004) göre eğitim mevzuatı, eğitim örgütlerindeki eğitim yöneticilerinin kurumunu yönetirken uyması gereken yazılı hukuk kurallar bütünüdür. Alan bilgisi, herhangi bir alandaki kavramsal karmaşıklığı minimize etmek için Lee Shulman tarafından ortaya çıkartılmıştır (Bilgin, Tatar, & Ay, 2012). Stewart, Martin & Tyrone'e (2005) göre ise iletişimin rolü gün geçtikçe daha önemli hale gelmektedir. Bu değerlendirmeler neticesinde araştırmamızdan mevzuatın, alan bilgisinin ve iletişimin önem derecesi incelenen diğer araştırmalarla paralellik gösterdiği söylenilebilmektedir Ancak göreve yeni başlayan idarecilerin göreve başlamadan bu konulara ait hizmet içi eğitim almadıkları, bu durumun bir eksiklik olarak görüldüğü katılımcılar tarafından ifade edilmektedir. Göreve yeni başlayan yöneticilerin mevzuat alanında eksikliklerini gidermek için mevzuatı inceleme, yönetmelikleri okuma ve yaşayarak öğrenme yöntemiyle eksikliklerini giderdikleri sonucuna ulaşılmaktadır.

Araştırma sonuçlarına göre göreve yeni başlayan yöneticiler, yöneticilik için girmiş oldukları sınavlarda alan bilgisi konularının varlığından dolayı bu konuda hâkimiyetlerinin olduğunu ifade etmektedirler. Bunun yanı sıra göreve başladıktan sonra seminerlere katılarak, hizmet içi faaliyetlerde bulunarak ve alanlarında yüksek lisans yaparak var olan eksikliklerini gidermektedirler.

Okul yöneticiliğinin en önemli unsurunun iletişim olduğu çalışmamızda ön plana çıkmaktadır. Bu araştırmaya göre iyi bir iletişimin çift taraflı yapılan iletişimle sağlandığı, bunu sağlamak için empati ve şeffaflığın önemli bir yer tuttuğu sonucu çıkmaktadır. İletişiminin çift yönlü olduğu okullarda öğrencilerinin başarılarının arttığı ve okul disiplinlerinin azaldığı görülmektedir (Epstein, 2002). İletişim ile ilgili literatür taramalarında araştırmamızla aynı doğrultuda bulgulara rastlanılmaktadır. Ancak araştırma verileri değerlendirildiğinde Milli Eğitim Bakanlığı bünyesindeki kurumlarda görev yapan ve göreve yeni başlayan idarecilere yönelik iletişim konusuyla alakalı yapılan çalışmaların

eksikliği gözlenmektedir. Bu eksiklik kamunun en önemli hizmet kollarından biri olan eğitimi olumsuz etkilemektedir.

İyi bir eğitim öğretim ortamı oluşması için okul yöneticilerinin rolü çok önemlidir. Bir bilim dalı olarak kabul gören eğitim yönetiminde, yöneticilerin etkili, bilgi ve beceri yönünden birikimli olmaları gerekmektedir. Eğitim yönetiminin okulda uygulanma durumuna okul yönetimi denilmektedir. (Bursalıoğlu, 2011, s. 5). Okul yöneticileri mevzuat, alan bilgisi ve iletişim konularında kendilerini geliştirmeli bu gelişimi sağlamaları için hem kendilerine hem çalıştıkları Milli Eğitim Müdürlüklerine büyük görevler düşmektedir. Bu gelişimleri sağladıkları takdirde eğitim öğretimin paydaşı olan öğretmen, öğrenci ve veli ile birliktelik içerisinde kurum kültürü oluşturarak verimli öğrenme ortamları oluşturulabilir. Okul yöneticileri zaman yönetimini, insan yönetimini ve iletişim becerisini geliştirdiği takdirde zaman ve insan kaynağını verimli kullanır. Bunun sonucunda okul yönetimi noktasında etkili sonuçlar elde edebilmektedir (Yalçın, 2019).

Çalışmalarda elde edilen bulgular ışığında sorunların çözümüne ilişkin şu önerilerde bulunulabilir:

- ✓ Okul yöneticilerinin görevlerine başlamadan önce mevzuat, alan bilgisi, iletişim konularında hizmet içi eğitim programları oluşturulmalıdır.
- ✓ İletişim konusun sınav müfredatının içerisinde alınmalıdır.
- ✓ Hizmet içi eğitimler belli periyotlarda tekrar edilmelidir.
- ✓ Belirli zaman aralıklarında okul idarecilerinin mevzuat hâkimiyeti, alan bilgisi ve iletişim becerileri değerlendirilmelidir.
- ✓ Bu çalışmada göreve yeni başlayan 4 yöneticinin görüşlerine yer verilmiştir. Çalışma grubu genişletilerek araştırmanın güvenirliği artırılabilir.

KAYNAKÇA

Aksel, N., Elma, C. (2019). 1980 Sonrası Uygulanana Yönetici Atama Ölçütlerine Yönelik Yönetici ve Öğretmen Görüşleri. Black SeaJournal of PublicandSocialScience, 2(1), 46-54.

Altunışık, R., Coşkun, R., Bayraktaroğlu, S., & Yıldırım, E. (2010). Sosyal Bilimlerde Araştırma Yöntemleri SPSS Uygulamalı (6. Baskı). Sakarya: Sakarya Yayıncılık.

Aydın, A. H. (2018). Yönetim Bilimi. Ankara: Seçkin Yayıncılık.

Bilgin, İ., Tatar, E., & Ay, Y (2012). Sınıf Öğretmeni Adaylarının Teknolojiye Karşı Tutumlarının Teknolojik Pedagojik Alan Bilgisi (TPAB)' ne Katkısının İncelenmesi.

Bursalıoğlu, Z. (2010). Okul Yönetiminde Yeni Yapı ve Davranış. Ankara: Pegem A Yayıncılık.

Elçin Ergin, A. (2016). Milli Eğitim Bakanlığına bağlı eğitim kurumlarına yönetici seçme ve atamaya ilişkin yönetici, öğretmen ve veli görüşlerinin değerlendirilmesi: bir durum çalışması. Yayınlanmamış Yüksek Lisans Tezi, Akdeniz Üniversitesi, Eğitim Bilimleri Enstitüsü, Antalya.

Genç, N. (2017). Yönetim ve Organizasyon- Çağdaş Sistemler ve Yaklaşımlar-.(5. Baskı). Ankara: Seçkin Yayıncılık.

Kepenekçi Y. (2004). İlköğretim Okulu Yöneticilerinin Eğitim Mevzuatına İlişkin Görüşleri 2004, Eğitim Bilimleri ve Uygulama, 3, (6), 159-174

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? Contemporary Issues in Technology and Teacher Education, 9(1), 60-70

MEB. (2018). 2023 Eğitim vizyonu. http://2023vizyonu.meb.gov.tr/doc/2023

Memduhoğlu, H. B, (2007). Türk eğitim sisteminde okulların yönetimi ve okul yöneticilerinin yetiştirilmesi sorunsalı, *Milli Eğitim Dergisi*, 176, 86-97.

MEB. (2011). Millî Eğitim Bakanlığının Teşkilat ve Görevleri Hakkında Kanun Hükmünde Kararname (14 Eylül). Resmi Gazete (Sayı: 28054 (Mükerrer)). http://www.resmigazete.gov.tr/eskiler/2011/09/20110914-1.htm adresinden erişilmiştir

MEB.(2014). Milli Eğitim Bakanlığına Bağlı Eğitim Kurumları Yöneticilerinin Görevlendirilmelerine İlişkin Yönetmelik.

MEB. (2015). Milli Eğitim Bakanlığına Bağlı Eğitim Kurumları Yöneticilerinin Görevlendirilmelerine Dair Yönetmelik.

MEB. (2017). Milli Eğitim Bakanlığına Bağlı Eğitim Kurumlarına Yönetici Görevlendirme Yönetmeliği.

MEB. (2021). Milli Eğitim Bakanlığı Eğitim Kurumlarına Yönetici Görevlendirme Yönetmeliği, 2018 Milli Eğitim Bakanlığına Bağlı Eğitim Kurumlarına Yönetici Seçme ve Görevlendirme Yönetmeliği.

Milli Eğitim Bakanlığı Ortaöğretim Kurumları Yönetmeliği Okutan, M. (2016). Eğitim Yönetimi ve Denetiminde Örnek Olaylar. 2. Baskı. Ankara:Pegem Akademi.

Mullins, L. J. (2005). Management and organizational behavior. New Jersey: Prentice Hall

Okutan, M. (2016). Eğitim Yönetimi ve Denetiminde Örnek Olaylar. 2. Baskı. Ankara:Pegem Akademi.

Özdemir, M. (2010). Nitel veri analizi: sosyal bilimlerde yöntembilim sorunsalı üzerine bir çalışma. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi,* 11(1), 323-343.

Shulman, L. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15(2), 4-14.

Türnüklü, A. (2000). Eğitimbilim Araştırmalarında Etkin Olarak Kullanılabilecek Nitel Bir Araştırma Tekniği: Görüşme. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi*, 24, 543-559

Uygur, M. (2021). Türkiye, Fransa, İngiltere, Finlandiya, Güney Kore ve Yunanistan'daki Okul Yöneticilerinin Yetiştirilme ve Atanma Süreçlerinin Karşılaştırılması*, İnsan ve Sosyal Bilimler Dergisi (JOHASS)*, 4 (1), 171-191.

Üstün, A. (2021). Okul Yöneticilerinin Yönetici atama Süreçleri İle İlgili Tutumları

SOME VIRAL INFECTIOUS OF WILD CARNIVORES

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ABSTRACT

The number of wild species is decreasing day by day. It is not known exactly whether diseases cause this. There are very few studies on viral infections of wild animals. Canine Herpesvirus (CHV) is a viral infection common in domestic and wild dogs all over the world. Herpesviruses that cause lysis in infected cells, cause latent infections in sensory ganglia and mononuclear blood cells. Genus in the *caliciviridae* family are known to infect mammals, birds, and fish. Feline calicivirus in the genus Vesivirus is known to infect felines, canine calicivirus infects dogs, and the San Miguel sea lion virus infects sea lions. Moreover sapovirus has been detected in hyenas, lions, foxes, and Noroviruses in cats, dogs, lions, sea lions, and raccoon. Paramyxoviruses infect many domestic and wild mammals, marine mammals, and birds. Antibodies to CPIV have been demonstrated in 20 of 44 wildlife species (Bovidae, Equidae, Felidae). Besides, CPIV-5 has been detected in tigers, black bears (Ursus americanus), raccoons, pandas, wild maned wolves (Chrysocyon brachyurus), and fisher marten (Martes pennanti). More interestingly, viruses like CPIV/SV5 can infect humans and non-human primates.

In this study, it was aimed to give information about three important viral infections affecting the respiratory system of wild carnivores. As a result, it was concluded that more detailed studies are needed. It is recommended that veterinary authorities, wildlife authorities and public health sectors focus on wildlife diseases collaboratively.

Keywords: wild carnivore, canine herpesvirus, canine calicivirus, canine parainfluenzavirus

Infectious diseases may affect the distribution and abundance of animals, but the potential role of disease in wildlife conservation has only recently drawn considerable attention. Disease impacts appear to be largely contingent on the particular epidemiological or ecological conditions associated with the outbreak. Wild carnivores are susceptible to a wide array of highly debilitating or lethal viruses many of which are either native to, or easily transmitted by, domestic species.

Lions (*Panthera leo*) and Ethopian wolves (*Canis simensis*) highlight the impact of diseases of domestic origin upon wild carnivore populations. Also, it is suspected that the effect of disease may be aggravated if it interacts with factors common to endangered populations, such as stress, malnutrition, or inbreeding. Such interactions have been suggested as being important in causing declines in black-footed ferret *(Mustela nigripes*) and cheetah *(Acinonyx juba-tus)* and populations, although data supporting this idea are absent for free-ranging animals.

The present paper summarizes the current literatüre on some viral infectious diseases. Understanding such patterns is important because it may enable researchers to develop effective measures for control and prevention of future disease outbreaks.

CANINE HERPES VIRUS

Canine Herpesvirus (CHV) is a viral infection common in domestic and wild dogs all over the world. Canine herpes virus was first identified and described in 1965 as a causative agent of fatal systemic infections in newborn dogs. Latent CHV infection is an endemic infection in dog populations worldwide (Carter et al., 2004; Decaro et al., 2008).

Canine herpesvirus belongs to the subgroup *alpha herpesviruses* of the causative *herpes viruses*. It is an enveloped virus, about 120-200nm in diameter. The genome consists of double-stranded linear

DNA. The capsid is icosahedral, 100nm in diameter, and consists of 162 capsomeres (Carter et al., 2004; Decaro et al., 2008).

The virus is not resistant to environmental conditions. Therefore, the transmission occurs through direct contact oronasal, veneral, and transplacental. Contamination by direct contact with infected body fluids, saliva, nasal and genital discharges is also an important mode of transmission. Sexual transmission is possible, but not very common as the infected dog must be shedding the virus at the time of mating for this to occur. Infection is limited to the respiratory system in adult dogs only. The group with the most clinical signs of CHV infection is female dogs and their puppies. In dogs infected with the virus in mid-pregnancy, the virus can cross the placenta and reach the fetus. As a result, abortion may occur, fetal disorders may occur, or virus-infected puppies may be born. Female dogs previously infected with CHV also have the virus in a latent form. The stress caused by labor pains causes the virus to scatter, and the offspring can become infected through direct contact with vaginal fluids during birth. The weak thermoregulation of puppies within 2-3 weeks makes the animals susceptible to the virus. The virus begins to reproduce in the tonsils, nasal mucosa, and pharynx in puppies and then settles through the blood to the lungs, liver, kidneys, and brain. Disease symptoms in these puppies are characterized by malnutrition, respiratory distress, soft yellow-green stools, abdominal pain, and subcutaneous hemorrhages. Puppies usually die within 48 hours after symptoms appear. Mortality can reach 100% (Hashimoto et al., 1983; Ronsse et al., 2004; Kawakami et al., 2010; Evermann et al., 2011).

The virus multiplies first in the nasal mucosa, tonsils, and pharynx. A viremia due to leukocytes then occurs, macrophages can become infected. Then, the virus reproduces in vascular endothelium, cells of the reticuloendothelial system, spleen, liver, lymph nodes, parenchyma of all organs, lamina propria of the intestinal tract, and brain. Following the viremia period in newborns, the virus also multiplies in the internal organs. Hemorrhages in the renal capsule, gastrointestinal mucosa, and liver are characteristic in young puppies. In some cases, central nervous system disorders may occur. Swelling is seen in the lymph nodes and spleen. Besides, liver necrosis and pulmonary edema are common. A serous fluid mixed with blood accumulates in the body cavities. It is also manifested by respiratory changes, bronchopneumonia, and necrotic tracheitis (Evermann et al., 2011; Piegari et al., 2020).

The outcome of CHV infection is determined by the age of the dogs and the time of infection. Fatal infection was recorded only in puppies less than 4 weeks of age under both experimental and natural conditions. When puppies older than 3 weeks are exposed to experimental infection, the virus has been found to reproduce in the respiratory tract without showing clinical signs (Evermann et al., 2011).

Multifocal areas such as hemorrhage and necrosis can be observed in many organs such as the lung, liver, brain, small intestine, and especially the kidneys. Limited hemorrhage and necrosis in the cortex of organs appear as pale gray spots. The lymph nodes and spleen are enlarged. Meningoencephalitis is common. Non-suppurative meningoencephalitis is most severely observed in brain cells and cerebellum. And this may be accompanied by cerebellar cortex necrosis. Inflammatory changes may occur in the retina, peripheral nerves, and ganglia. Necrotic areas are seen in the placentas of infected pregnant animals. Fetal lesions are similar to lesions seen in infected offspring (Decaro et al., 2008; Piewbang et al., 2017).

The appearance of the clinical signs of CHV infection is related to the period when the virus is effective and accordingly the age of the infection, especially in puppies. Infection of susceptible 1-2 week old dogs is characterized by fatal generalized necrotic and hemorrhagic disease. It is usually asymptomatic in adult animals. In older dogs, the infection is limited to the upper respiratory tract. Also, the virus has been detected in corneal swabs of old dogs with corneal ulceration. CHV can spread through the placenta and cause fetal death. CHV is suspected in dogs with fertilization problems. The death of newborn dogs due to acute CHV is most likely associated with low body temperature. A lower body temperature than normal is opportune for the development of CHV. The infection progresses with similar symptoms in both natural and experimental conditions. The incubation period is 4-6 days. Although the mother dogs are healthy and their milk production continues normally, the puppies are

lacking in appetite. First, there is a flat manifestation of gray-yellow or green color, soft, odorless, and watery. Some animals have nausea, vomiting, and increased salivation. There may be dyspnea and serous nasal discharge. There is restlessness due to significant abdominal pain until death and a painful appearance that persists for several hours to 2 days after the onset of the first symptoms. Staggering gait and opisthotonus have been observed experimentally after exposure to the disease. Erythematous eruptions of the skin in the inguinal region and subcutaneous edema have been reported. The disease can spread rapidly. Many puppies die suddenly before the first signs of the disease appear, or die within 24-48 hours of the onset of clinical signs. Puppies infected in their first two weeks of life die within 6-9 days of exposure, rarely survive. Apart from the decrease in platelet count in infected dogs, no change in hematology is observed. When dogs older than two weeks are exposed to CHV, it replicates throughout the upper respiratory tract, but only a moderate degree of rhinitis and pharyngitis occurs (Appel et al., 1969; Carter et al., 2004; Piewbang et al., 2017).

Clinical symptoms and deaths occurring within 48 hours of birth are findings suggestive of CHV. Diagnosis of CHV infection in adult dogs can be made based on virus isolation from vaginal or nasal swabs and the increase in antibody titer in double serum samples. PCR is a reliable and sensitive method in diagnosis. Serological tests assessing neutralizing antibodies can be useful for investigating the presence of CHV in shelters. Since CHV antibodies do not remain at high titers in the blood for a long time, low seropositivity was detected in studies using serum neutralization. In differential diagnosis, Parvovirus, Canine distemper, coronavirus, and Parainfluenzavirus should be considered (Evermann et al., 2011).

CHV has been recognized as one of the common and fatal viral infections for newborn puppies. Recent reports have shown that this virus can be transmitted subclinically in up to 70% of some dog populations. As with other herpesviral infections, particularly feline herpesvirus, CHV may exacerbate after periods of physiological, hormonal, and nutritional stress. The management is limited due to the uncommonness of vaccination. The antibody response created by the virus in the organism is weak and neutralizing antibodies disappear a few months after the infection develops. Virus reactivation is always in question, especially in the birth season due to hormonal factors and birth trauma (Ronsse et al., 2004; Ledbetter et al., 2016).

Especially after delivery, rapid colostrum intake and maternal antibodies are very important in protection against infection.

CALICIVIRUS

Viruses in the family *Caliciviridae* are non-enveloped, positive-sense single-stranded RNA (ssRNA). While genus *Norovirus, Lagovirus, Nebovirus, Recovirus, Valovirus, Sapovirus,* and *Vesivirus* in the family *Caliciviridae* infect mammals, *Minovirus* and *Salovirus* infect fish, *Bavovirus* and *Nacovirus* infect birds. Feline calicivirus in the genus *Vesivirus* is known to infect felines, canine calicivirus infects dogs, and the San Miguel sea lion virus infects sea lions. *Sapovirus* has been detected in hyenas, lions, foxes, and *Noroviruses* in cats, dogs, lions, sea lions, and raccoons (Oka et al., 2017; Vinjé et al., 2019).

The NoV responsible for acute gastroenteritis consists of seven genogroups (G), which can be divided into at least 40 genotypes. The GI, GII, and GIV strains have been reported to infect humans, GIV.2, GVI.1, GVI.2, and GVII carnivores. Some NoV strains obtained from carnivores are genetically related to human GIV NoVs, suggesting common pathways in their evolution (Chhabra et al., 2019).

The most important source of viruses in Calicivirus infections, which are widely observed in carnivores all over the world, are acutely infected animals. The virus is found in the oral, nasal, and ocular secretions of infected animals. The transmission of the virus can be transmitted from person to person horizontally or indirectly. In external environments, the virus can survive from a few days to a few weeks. They can cause mild to severe respiratory system infection symptoms, mouth lesions, or gastrointestinal system disorders. The main mode of transmission of enteric caliciviruses is the fecal-oral transmission. The occurrence of diarrhea in animals depends on a wide variety of factors such as immune status, age, and environmental factors (Abaylı et al., 2020).

Because the virus causes necrosis in epithelial cells, vesicles form on the edge of the tongue and these can turn into ulcers over time. Although recovery is observed in 2-3 weeks, the infection can spread to other tissues. Subclinically infected cats or cats that have recovered from FCV infection may continue to shed virions from their ocular and nasal discharges, saliva, and feces. Lameness can be seen due to pneumonia, joint inflammation that develops as a result of increased synovial fluid. Clinical findings are usually prominent in puppies. Following an incubation period of approximately 2-10 days, clinical findings such as ulcers in the mouth, increase in body temperature, sneezing, runny nose, and anorexia are observed. Extremely virulent, systemic strains (FCV-33585, etc.) of Feline calicivirus (against FCV) have been described in recent years. Against FCV isolates, they cause severe edema, cutaneous ulcers, lameness, and other upper respiratory and oral clinical manifestations in cats typically associated with FCV infection. FCV isolates can cause high mortality rates, even in cats vaccinated with currently available commercial vaccines. Anorexia, diarrhea, atrophy of the villus, decreased enzyme activity and xylose malabsorption are observed in Norovirus and Nebovirus infections (Rong et al., 2014).

Cats become infected by the nasal, oral, or conjunctival route. The oropharynx is the primary proliferation site. Through viremia, which develops approximately 3-4 days after infection, the virus spreads to other organs through the bloodstream. In addition to the development of upper respiratory tract infection in most cats, in severe cases the virus infects the lungs, causing pneumonia. Enteric caliciviruses cause diarrhea by multiplying in the small intestine following contamination. Histopathological examinations reveal acute intestinal lesions such as atrophy of the villi, inflammatory lesions, and hyperplasia of the intestinal crypts (Junginger et al., 2015).

Depending on the tissue in which clinical findings are observed, nasal discharge, eye discharge, blood, feces samples can be taken from animals and antigen detection can be made by tests such as electron microscopy, ELISA, RT-PCR, virus isolation, immunoperoxidase, immunofluorescence. The antibody can be detected by serum neutralization and indirect ELISA tests (Abayli et al., 2020).

There is no known specific treatment for caliciviruses. Even if it cannot completely prevent the occurrence of the disease, vaccination is recommended as the most effective method of prevention because it reduces the severity of clinical findings. FCV vaccines are both inactive and live modified vaccines. These are usually designed in combination with other feline viral infections (feline herpesvirus, feline panleukopenia). Studies are showing that the feline calicivirus vaccine does not produce a significant antibody response in lions, tigers, and cheetahs. Norovirus vaccine candidates based on inoculation of virus-like particles (VLPs) created by viral vectors with subviral particles (P-particles) made from the protruding domain of the main capsid protein VP1, VP1, or an NoV capsid gene insert produced by bioengineering technologies. Polyvalent vaccines containing multiple NoV genotypes and/or other enterically acquired viruses have been developed. One VLP vaccine candidate (Norovirus VLPs GI.1 and GII.4) has reached phase II clinical trials and others are still in their preclinical stages (Spiri et al., 2021).

PARAINFLUENZA VIRUS

Within the family *Paramyxoviridae* in the order *Mononegavirales*, there is 5 genus as *Morbilivirus, Rubulavirus, Avulavirus, Henipavirus,* and *Respirovirus.* Paramyxoviruses infect many domestic and wild mammals, marine mammals, and birds. The viral genome is segmentless, negative-sense single-stranded RNA. The most important protein on the enveloped virion is the hemagglutinin-neuraminidase (HN) glycoprotein, which is responsible for attaching to host cell receptors. Apart from that, there are Fusion (F), nucleoprotein (N), matrix (M), phosphoprotein (P), and nucleocapsid proteins involved in the fusion of the host cell membrane and the virus envelope. Mammalian Rubulavirus-5 (canine parainfluenza virus-5, CPIV-5) infection was first isolated in 1960 from laboratory dogs with respiratory system disorder. The virus has an antigenic affinity with simian virus type 5 (SV-5), bovine, sheep, swine, and feline parainfluenza viruses (Liu et al., 2017; Thibault et al., 2017).

Antibodies to CPIV have been demonstrated in 20 of 44 wildlife species (Bovidae, Equidae, Felidae). Besides, CPIV-5 has been detected in tigers, black bears (Ursus americanus), raccoons, pandas, wild maned wolves (Chrysocyon brachyurus), and fisher marten (Martes pennanti). More

interestingly, viruses like CPIV/SV5 can infect humans and non-human primates (Thibault et al., 2017; Zhai et al., 2017; Charoenkul et al., 2021).

Parainfluenza virus is a highly contagious infection. The prevalence of the disease varies depending on the density of the dog population, malnutrition, and poor environmental conditions. After infection, animals shed the virus through their respiratory tract for 8-10 days. The cause of the disease is transmitted to susceptible animals by respiratory aerosols (Ellis and Krakowka, 2012).

After the virus enters the body through the respiratory tract mucosa, it multiplies in the nasal mucosa, pharynx, trachea, and bronchi. Viremia is rarely observed. While asymptomatic cases can be observed, viruses have been detected in the kidney, spleen, lung, and liver in cases complicated by other infectious agents. Petechial hemorrhages in the lung, mono and polymorphous nuclear cell infiltration in the mucosa and submucosa, catarrhal rhinitis, and tracheitis were observed in experimentally infected animals. CPIV gnotobiotic isolated from a dog with transient posterior paralysis has been reported to cause acute encephalitis when injected intracranially into dogs (Ellis and Krakowka, 2012).

Symptoms appear 2-8 days after infection. CPIV infection is limited to the upper respiratory tract in dogs older than 2 weeks of age and progresses with mild clinical findings such as runny nose, mild fever, harsh-dry cough, pharyngitis, tonsillitis that usually heal spontaneously within 6 days. When secondary infections develop, severe clinical findings characterized by anorexia, lethargy, high fever, and pneumonia are observed (Ellis and Krakowka, 2012).

Nasopharyngeal and laryngeal swabs, tracheal and lung tissue samples can be taken for antigen detection. In its diagnosis, methods such as virus isolation, hemadsorption test, immunofluorescence test, immunohistochemical techniques, rapid test, RT-PCR can be used. Hemagglutination inhibition and indirect immunofluorescence tests can be used in indirect diagnosis (Peaper and Landry, 2014).

Considering that domestic dogs can also pose a threat to wild carnivores, it is recommended to vaccinate domestic dogs and keep their populations under control. Although full protection cannot be achieved with vaccination, it reduces the severity of clinical findings. Also, the disinfection of cages, food-water containers in the shelter, and a good ventilation system can limit the spread of the virus. In conclusion, further research is needed to elucidate disease effects and dynamics and to guide management actions for neotropical wild Canidae conservation.

REFERENCES

Abayli H, Can-Sahna K, Ozbek R, Karaca BI 2020. Feline calicivirus prevalence among cats in Turkey's Kayseri Province. Israel Journal of Veterinary Medicine, 75(2): 94-99.

Appel MJG, Menegus M, Parsonson IM, Carmichael LE 1969. Pathogenesis of canine herpesvirus in specific-pathogen-free dogs: 5-to 12-week-old pups. American Journal of Veterinary Research, 30: 2067–2073.

Carter GR., Wise DJ, Flores EF 2004. A concise review of veterinary virology. A concise review of veterinary virology. Ithaca: International Veterinary Information Service: A3412.0605.

Charoenkul K, Nasamran C, Janetanakit T, Chaiyawong S, Bunpapong N, Boonyapisitsopa S, Amonsin A 2021. Molecular detection and whole genome characterization of Canine Parainfluenza type 5 in Thailand. Scientific reports, 11(1): 1-11.

Chhabra P, de Graaf M, Parra GI, Chan MCW, Green K, Martella V, Vinjé J 2019. Updated classification of norovirus genogroups and genotypes. The Journal of general virology, 100(10): 1393.

Decaro N, Martella V, Buonavoglia C 2008. Canine adenoviruses and herpesvirus. Veterinary Clinics of North America: Small Animal Practice, 38(4): 799-814.

Ellis JA, Krakowka GS 2012. A review of canine parainfluenza virus infection in dogs. Journal of the American Veterinary Medical Association, 240(3): 273-284.

Evermann JF, Kennedy MA 2011. Viral infections in: Peterson M.E. Kutzler M.A. Small animal pediatrics The first 12 months of life. Elsevier-Saunders, St Louis (MO) pp. 79-129.

Hashimoto A, Hirai K, Fukushi H, Yutaka F 1983. The vaginal lesions of a bitch with a hystory of canine herpesvirus infection. The Japanese Journal of Veterinary Science, 45(1): 123-126.

Junginger J, Hansmann F, Herder V, Lehmbecker A, Peters M, Beyerbach M, Baumgärtner W 2015. Pathology in captive wild felids at German zoological gardens. PLoS One, 10(6): e0130573.
Kawakami K, Ogawa H, Maeda K, Imai A, Ohashi E, Matsunaga S, Mochizuki M. 2010. Nosocomial outbreak of serious canine infectious tracheobronchitis (kennel cough) caused by canine herpesvirus infection. Journal of clinical microbiology, 48(4): 1176-1181.
Ledbetter EC, Kim K, Dubovi EJ, Mohammed HO, Felippe MJB 2016. Clinical and immunological assessment of therapeutic immunization with a subunit vaccine for recurrent ocular canine herpesvirus-1 infection in dogs. Veterinary microbiology, 197: 102-110.
Liu C, Li X, Zhang J, Yang L, Li F, Deng J, Tian K. 2017. Isolation and genomic characterization of a canine parainfluenza virus type 5 strain in China. Archives of virology, 162(8): 2337-2344.
Peaper DR, Landry ML 2014. Laboratory diagnosis of viral infection. Handbook of clinical neurology, 123, 123-147.
Piegari G, Cardillo L, Alfano F, Vangone L, Iovane V, Fusco G. 2020. Pathological, bacteriological and virological findings in sudden and unexpected deaths in young dogs. Animals, 10(7): 1134.
Piewbang C, Rungsipipat A, Poovorawan Y, Techangamsuwan S 2017. Viral molecular and pathological investigations of canid herpesvirus 1 infection associated respiratory disease and acute death in dogs. Acta Veterinaria, 67(1):11-24.
Rong S, Lowery D, Floyd-Hawkins K, King V 2014. Characterization of an avirulent FCV strain with a broad serum cross-neutralization profile and protection against challenge of a highly virulent vs feline calicivirus. Virus research, 188: 60-67.
Ronsse V, Verstegen J, Onclin K, Farnir F, Poulet H 2004. Risk factors and reproductive disorders associated with canine herpesvirus-1 (CHV-1). Theriogenology, 61(4): 619-636.
Spiri AM, Riond B, Stirn M, Novacco M, Meli ML, Boretti FS, Hofmann-Lehmann R 2021. Modified-Live Feline Calicivirus Vaccination Reduces Viral RNA Loads, Duration of RNAemia, and the Severity of Clinical Signs after Heterologous Feline Calicivirus Challenge. Viruses, 13(8): 1505.
Oka T, Doan YH, Shimoike T, Haga K, Takizawa T 2017. First complete genome sequences of genogroup V, genotype 3 porcine sapoviruses: common 5′-terminal genomic feature of sapoviruses. Virus genes, 53(6): 848-855.
Thibault PA, Watkinson RE, Moreira-Soto A, Drexler JF, Lee B. 2017. Zoonotic potential of emerging paramyxoviruses: knowns and unknowns. Advances in virus research, 98: 1-55.
Vinjé J, Estes MK, Esteves P, Green KY, Katayama K, Knowles NJ, Consortium IR 2019. ICTV virus taxonomy profile: Caliciviridae. The Journal of general virology, 100(11): 1469.
Zhai JQ, Zhai SL, Lin T, Liu JK, Wang HX, Li B, Luo ML 2017. First complete genome sequence of parainfluenza virus 5 isolated from lesser panda. Archives of virology, 162(5): 1413.

İNGİLİZCE ÖĞRETMEN ADAYLARININ MEZUNİYET SONRASI ÖĞRETİM KADEME TERCİHLERİ

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ÖZET

Bu çalışmada öğretmen adaylarının fakültede alana yönelik aldıkları temel dersler ve öğretmenlik uygulamaları derslerini yürütürken oluşan algıları doğrultusunda hangi kademede öğretim yapmayı tercih ettiklerini belirlemek amaçlanmaktadır. Bu araştırmada nitel araştırma yöntemlerinden durum çalışması ile desenlenmiştir. Araştırmanın katılımcıları Trakya üniversitesi İngilizce Öğretmenliği dördüncü sınıf öğretmen adaylarından oluşmaktadır. Veri toplama aracı olarak görüşme formu sunulacaktır. Elde edilen veriler betimsel analiz ve içerik analizi yöntemleriyle çözümlenecektir.

Anahtar Sözcükler: Öğretmen adayları, Öğretim seviyesi, tercihler, İngilizce Öğretmeliği

VIEWS OF PROSPECTIVE TEACHERS ON THEIR PREFERENCES OF TEACHING GRADES

ABSTRACT

In this study, it is aimed to determine the views of prospective teachers on their preferences of teaching grades in the light of perceptions retrieved from the main courses and teaching practicum courses. The study is designed in the form of case study. Participants of the study is composed of prospective teachers of Trakya University ELT department. Data is collected via interview form and will be analyzed in terms of descriptive and content analysis.

Keywords: Prospective teachers, Teaching grades, preferences, ELT

GİRİŞ

Türkiye'de yabancı dil öğretmeni yetiştiren programlarda sunulan ders içerikleri ve amaçları bazı yönlerden Avrupa Birliği'ne üye olabilme çabaları içerisinde olan ülkemizin eğitim politikalarının şekillenmesinden etkilenmiştir. Buna göre bir yabancı dil öğrenilirken o dilin kültürü, yaşam biçimleri gibi olguların da birlikte öğrenilmesi gerekliliği vardır (ADOBM,2006). Bununla birlikte, yabancı dil öğretiminde erek dilin söz konusu özelliklerini öğrenmede iletişimsel yetinin kazandırılması hedeflenmektedir. İletişimsel yetiye göre, öğrenen bir dili öğrenmede gereken yetileri o dilde iletişim kurmada kullanabilir düzeye gelmelidir (Widdowson,1978). Avrupa Birliği'nin öngördüğü yabancı dil öğrenme kriterlerine dayanarak, Avrupa Dilleri İçin Ortak Başvuru Metni geliştirilmiştir. Buna göre birliğe üye olan ülkeler ile, üye olma çabalarını sürdüren ülkeler, yabancı dil öğretimi müfredatlarını ve içeriklerini burada belirtilen özelliklere dayanarak hazırlamalıdır.

Türk eğitim sistemi içerisinde öğretilecek konular da iletişimsel beceriyi kazandırmaya yönelik olarak hazırlanmaya başlamış ve öğrencilerin birden fazla yabancı dili öğrenebilmeleri adına daha erken yaşta öğretilme kararı alınmıştır. Bu bağlamda; yabancı dil öğretimini istenilen kriterlere ulaştırabilmek ve iyileştirmek adına Milli Eğitim Bakanlığı tarafından bazı düzenlemelere gidilmiştir. Buna göre; 2006 yılında ilköğretim 4. Sınıfta başlayan İngilizce ders saatleri, 2013-2014 öğretim yılı itibariyle ilkokul 2. sınıfta haftada ikişer saat olacak şekilde yeniden düzenlenmiştir. Bununla birlikte gerek yapılan değişikliklere uyum sağlamak gerekse yabancı dil öğretimini Avrupa Birliği standartlarına yaklaştırmak amacıyla İngilizce dersine ait ilk ve ortaöğretim programları Avrupa Ortak Avrupa Başvuru Metninde belirtilen standartlar çerçevesinde yeniden hazırlanmıştır ve yabancı dil öğretmen

yetiştirme programlarında müfredat ve ders içeriklerinde değişime ve gelişime gidilmiştir. Bu gelişmelerin sonucu olarak, YÖK 2006 yılında Öğretmen Yetiştirme Programlarında güncellemeye gitmiştir. Mayıs 2018 tarihinde eğitim fakültelerinde öğretmen yetiştiren 25 lisans program güncellenmiş ve Eylül 2018 tarihi itibariyle uygulamaya konmuştur (YÖK,2022).

Söz konusu programda yapılan değişiklikte V. ve VI. Yarıyılda alınan Çocuklara Yabancı Dil Öğretimi I ve Çocuklara Yabancı Dil Öğretimi II derslerinin ders içerikleri aynı kalarak ders saatinde ve kredi değerinde değişikliğe gidildiği görülmektedir. Aynı zamanda 2 saat teorik, 2 saat uygulaması olan bu dersler yeni programda 3 saat teorik olarak değiştirilmiş olup uygulama boyutu kalmamış ve ders saatinde de azalma söz konusu olmuştur.

Tablo 1. İngilizce Öğretmenliği Ders Programı ÇYD I-II (eski)

	V. yarıyıl (eski)				V. Yarıyıl (güncel)					
Kod	Dersin Adı	T	U	K	Kod	Dersin Adı	T	U	K	AKTS
A	Çocuklara Yabancı Dil Öğretimi I	2	2	3	AE	Çocuklara Yabancı Dil Öğretimi I	2	0	3	5

	VI. yarıyıl (eski)				VI.Yarıyıl (güncel)					
Kod	Dersin Adı	T	U	K	Kod	Dersin Adı	T	U	K	AKTS
A	Çocuklara Yabancı Dil Öğretimi II	2	2	3	AE	Çocuklara Yabancı Dil Öğretimi I	2	0	3	5

Aşağıda verilen ders içerikleri doğrultusunda öğretmen adaylarının İlkokul ve Ortaöğretim ilk kademe düzeyinde öğretmenlik meslek gelişimlerinin sağlanması amaçlanmaktadır.

Ders içerikleri:

AE Çocuklara Yabancı Dil Öğretimi 1

Erken yaş dil öğrenenleri (5-12 yaş) ile diğer yaşlardaki öğrenenler arasındaki farklar (dil yapısı, becerileri ve alt becerilerinin öğrenimi açısından) ve erken yaş öğrenenleri hakkında yanlış bilinenler; erken yaş öğrenenlerinin öğrenme biçemleri (görsel, işitsel ve duyuşsal) ve stratejileri (örn.: üstbiliş, biliş, sosyoduyuşsal); kelime, dil becerisi, dil yapısı öğretimi için aktiviteler (örn.: yapboz, hikâye, oyun ve benzetim), görsel-işitsel araçlar (örn.: resim, gerçek nesneler, karikatür, kukla ve şarkılar) geliştirilmesi; öğrenenlerin dil seviyelerine ve bilişsel, duyuşsal gelişimlerine uygun öğretim noktalarının seçimi, sıralaması, materyal uyarlaması ve değerlendirmesi.

AE Çocuklara Yabancı Dil Öğretimi 2

Erken öğrenen (5-12 yaş) grupları için farklı izlence türleri (hikâye temelli, içerik temelli, tema temelli, görev temelli); seçilen izlence türünde çocuk edebiyatının etkili kullanımı, sınıf yönetimi, dil sunumu ve alıştırmaları.

2018 tarihi itibariyle yenilenen bu program içeriğinde, alana yönelik alınan derslerin dışında öğrencilerin öğretmenlik mesleğini deneyimleyebildikleri ve bu deneyimler yoluyla hangi kademelere

öğretmenlik yapma konusundaki tercihini belirlemelerine olanak sağlayan derslerden biri olan öğretmenlik uygulaması da bulunmaktadır. Bu değişimin altında yatan nedenlerden biri ise uygulama derslerinin yetersizliğidir. Buna göre 1. Dönemde verilen okul deneyimi 1 dersi bütün bir dönem süresince sadece gözlem yapılmasına olanak tanımakta ve öğretmen adaylarının mikro öğretim yapabilmelerine olanak tanımamaktadır. Öğretmenlik mesleğine yönelik bu derslerin sayılarının yetersiz olduğu yönünde eleştiriler sürmektedir (Senemoğlu,1991). Bu bağlamda yeni programla birlikte sınıf içi öğretim deneyiminin iki döneme yayıldığı ve öğretmen adaylarının tecrübelerini arttırabilmelerinde daha yararlı olduğu görülmektedir. Özellikle iki dönem içerisinde farklı öğrenen gruplarına öğretim gerçekleştiren öğrenciler farklı öğrenci kademelerini de daha yakından gözlemleme ve deneyimleme şansına sahip olmaktadırlar.

Eski programda 1. dönem Okul Deneyimi, 2. dönem ise Öğretmenlik Uygulaması adı altında olan bu ders (Tablo 1), yeni programda Öğretmenlik Uygulaması 1 ve 2 (Tablo 2) olarak değiştirilmiş, ve kredileri arttırılmıştır.

Tablo 2. İngilizce Öğretmenliği Ders Programı (eski)

	VII. yarıyıl				VIII.Yarıyıl				
Kod	Dersin Adı	T	U	K	Kod	Dersin Adı	T	U	K
MB	Okul Deneyimi	1	4	3	MB	Öğretmenlik Uygulaması	2	6	5

Tablo 3. İngilizce Öğretmenliği Ders Programı (yeni)

	VII. yarıyıl					VIII.Yarıyıl					
Kod	Dersin Adı	T	U	K	AKTS	Kod	Dersin Adı	T	U	K	AKTS
MB	Öğretmenlik Uygulaması I	2	6	5	10	MB	Öğretmenlik Uygulaması	2	6	5	15

Yeni programda kredi değerinin yanı sıra ders içeriğinde de değişiklik yapılmıştır:

VII. Yarıyıl- MB Öğretmenlik Uygulaması 1

Alana özgü öğretim yöntem ve teknikleriyle ilgili gözlemler yapma; alana özgü özel öğretim yöntem ve tekniklerinin kullanıldığı bireysel ve grupla mikro-öğretim uygulamaları yapma; alana özgü etkinlik ve materyal geliştirme; öğretim ortamlarını hazırlama, sınıfı yönetme, ölçme, değerlendirme ve yansıtma yapma.

VIII. Yarıyıl- MB Öğretmenlik Uygulaması 2

Alana özgü özel öğretim yöntem ve teknikleriyle ilgili gözlem yapma; alana özgü özel öğretim yöntem ve tekniklerini kullanarak mikro-öğretim uygulamaları yapma; bir dersi bağımsız bir şekilde planlayabilme; dersle ilgili etkinlik ve materyal geliştirme; öğretim ortamlarını hazırlama; sınıfı yönetme, ölçme, değerlendirme ve yansıtma yapma (YÖK,2022).

MEB'in Eylül 2021 Tebliğler Dergisi'nde yönerge değişikliği konulu yayınlamış olduğu yönetmeliğin 4. Bölümünde, Madde 7-(1) kapsamında "Öğretmenlik uygulaması, bir yılda iki dönemden az olmamak üzere yapılır. Güz ve bahar dönemleri her bir dönem 12 (on iki) hafta olarak ve haftada 6 (altı) ders saati uygulanacak şekilde düzenlenir. Öğretmenlik uygulaması her bir dönemde 72 (yetmiş iki) saat olmak üzere toplam 144 (yüz kırk dört) ders saatinden oluşur" (MEB,2021). Bu değişiklikle birlikte öğretmenlik uygulaması dersinin saatlerinin öğretmen adaylarının mesleğe ilişkin tecrübe elde edebilmesi açısından oldukça genişletildiği görülmektedir.

Ayrıca, söz konusu Tebliğler Dergisinde öğretmenlik uygulamasının planlanması, yürütülmesi ve değerlendirilmesi başlığı altında madde 9(1) kapsamında ise; a) "İl millî eğitim müdürlüğü uygulama

koordinatörü tarafından, uygulama eğitim kurumu olarak seçilebilecek kurumların müdürleri ile iş birliği yapılarak uygulama eğitim kurumları ve her bir eğitim kurumunun tür ve derecesine göre uygulama öğrencisi kontenjanı; her bir uygulama öğretmeni başına en fazla 6 (altı), her bir uygulama öğretim elemanı başına en fazla 12 (on iki) öğrenci olacak şekilde öğretmenlik alanları itibarıyla belirlenir", ifadesi ile uygulamanın gerçekleştirileceği kurumların çeşitlendirilmesi, öğretmen adaylarının sınıf içerisinde eşit dağılımının sağlanması gibi noktalara da yer verilerek, öğretmen adaylarının daha verimli ve etkin bir biçimde öğretim gerçekleştirebilmelerine yönelik adımlar da atılmıştır. Bu bağlamda, öğretmen adaylarının uygulama kapsamında edinmiş oldukları tecrübeye dayanarak mezuniyet sonrası çeşitli kademelere hazırbulunuşluklarını sağlayacakları düşünülmektedir. Yapılan alan taraması sonucunda İngilizce öğretmenliği mezunlarının çalışmayı tercih ettiği eğitim kademesini belirlemeye yönelik çalışmaya rastlanmamıştır. Bu çalışmada öğretmen adaylarının fakültede alana yönelik aldıkları temel dersler ve öğretmenlik uygulamaları derslerini yürütürken oluşan algıları doğrultusunda hangi kademede öğretim yapmayı tercih ettiklerini belirlemek amaçlanmaktadır.

Çalışmanın problemi "İngilizce öğretmen adaylarının mezuniyet sonrası öğretim kademe tercihleri nelerdir? şeklinde belirlenmiştir.
Alt Problemler:
Araştırmanın problem sorusuna bağlı olarak aşağıdaki sorulara yanıt aranmaktadır:
1. İngilizce öğretmen adayları mezun olduktan sonra hangi kademeye öğretmenlik yapmayı tercih etmektedir?
2. İngilizce öğretmen adaylarının mezun olduktan sonra öğretmenlik yapmayı planladıkları kademeyi tercih etme nedenleri nelerdir?

YÖNTEM

Araştırma modeli

Bu çalışma nitel araştırma yöntemlerinden durum çalışması tekniğine göre desenlenmiştir. Durum çalışmasının en temel özelliği bir ya da birkaç durumun derinliğine araştırılmasıdır. Yani bir duruma ilişkin etkenler (ortam, bireyler, olaylar, süreçler, vb.) bütüncül bir yaklaşımla araştırılır ve ilgili durumu nasıl etkiledikleri ve ilgili durumdan nasıl etkilendikleri üzerine odaklanılır (Yıldırım ve Şimşek, 2011).

Katılımcılar

Araştırmanın çalışma grubunu 2021-2022 akademik yılı bahar yarıyılında Trakya Üniversitesi Eğitim Fakültesi, Yabancı Diller Eğitimi Bölümü, İngiliz Dili Eğitimi Anabilim Dalı 4-A, 4-B ve 4-C şubelerinde öğrenim gören 27 kadın 8 erkek olmak üzere toplam 35 öğretmen adayı oluşturmaktadır. Katılımcılar örnekleme yöntemlerinden kolay ulaşılabilir örnekleme modeli ile oluşturulmuştur. Öğretmen adaylarının çalışmaya katılımcı olmaları öncelikli olarak gönüllülük esasına dayanmaktadır. Öğretmen adaylarının Öğretmenlik Uygulaması I ve Öğretmenlik Uygulaması II derslerini almış olması şartı ile söz konusu çalışmaya katılımcı olarak dâhil edilmişlerdir.

Tablo 4. Katılımcıların Demografik Özellikleri Açısından Dağılımı

Cinsiyet	**Kadın**	**Erkek**	**Toplam**
	27	8	35

Veri Toplama Aracı ve Verilerin Toplanması

Araştırmanın problem ve alt-problemlerine yönelik veri toplama aracı olarak uzman görüşü alınarak araştırmacı tarafından geliştirilen iki soruluk anket formu kullanılmıştır. Anket formu googleforms üzerinden hazırlanarak kolay erişilebilirlik açısından katılımcılara elektronik ortamda ulaştırılmıştır. Veri toplama aracı demografik bilgi ve iki soruluk görüşlerini belirlemek amacıyla hazırlanmış seçeneklerden oluşan en sonunda diğer seçeneğiyle kendi görüşlerine yer vermektedir.

Veri analizi

Elde edilen veriler nitel veri analizi tekniklerinden betimsel analiz kullanılarak yorumlanmıştır. Betimsel Analiz araştırmanın kavramsal yapısının önceden net bir biçimde belirlendiği çalışmalarda kullanılır (Karasar,2007). Bu analizle veriler daha önceden belirlenen kavramsal çerçeve veya temalara göre özeti yapılır ve yorumlanır. Veriler araştırma problemine bağlı olarak belirlenen temalara göre düzenlenebileceği gibi, görüşme ve gözlem aşamalarındaki sorular ya da formata göre de düzenlenebilir (Yıldırım, ve Şimşek, 2006).

Uygulama Süreci

Uygulama 2021-2022 akademik yılı Güz döneminde Öğretmenlik Uygulaması I almış olan ve bahar döneminde Öğretmenlik Uygulaması II dersini alan öğretmen adayları ile yürütülmüştür. Öğretmenlik uygulaması bu süreçte İngiliz Dili Eğitimi Anabilim Dalı koordinatörün belirlediği Edirne il merkezinde MEB' e bağlı 5 ilkokul, 6 ortaokul ve 3 lisede, 11 öğretim elemanı ve toplam 116 öğretmen adayı ile yürütülmektedir. Anabilim dalı kararıyla Güz döneminde uygulama sürecine dahil olan öğretmen adaylarının Bahar döneminde farklı okul ve kademelerde görev almaları önerilmiş ve oy çokluğuyla kabul edilmiştir. Bu kararla farklı kurumlarda değişik öğrenci seviyelerini gözlemleyerek ve onlara öğretim yaparak mesleki tecrübelerinde daha donanımlı olacakları öngörülmüştür.

BULGULAR

Şekil 1'de çalışmanın ilk alt problemi olan "İngilizce öğretmen adayları mezun olduktan sonra hangi kademeye öğretmenlik yapmayı tercih etmektedir?" sorusuna yönelik bulgular yer almaktadır.



Şekil 1 İngilizce öğretmen adaylarının öğretim kademe tercihleri

Şekil 1'de İngilizce öğretmen adaylarından 15'i (%40) mezun olduktan sonra ortaokul kademesinde, 8'i (%22,9) ilkokul kademesinde, 7'si (%20) diğer kategorisinde ve 4'ü (%11,4) lise kademesinde, 3 ü (%5,7) ise okul öncesi kademede öğretmenlik yapmayı tercih ettiklerini belirttikleri görülmektedir.

Şekil 2'de çalışmanın ikinci alt problemi olan "İngilizce öğretmen adaylarının mezun olduktan sonra öğretmenlik yapmayı planladıkları kademeyi tercih etme nedenleri nelerdir?" sorusuna yönelik bulgular yer almaktadır.



Şekil 2 Öğretmen adaylarının mezuniyet sonrası öğretim kademesi tercih nedenleri

Şekil 2'de İngilizce öğretmen adaylarının mezun olduktan sonra öğretmenlik yapmayı planladıkları kademeyi tercih etme nedenlerini (birden çok seçenek işaretleyebildikleri) belirttikleri görüşme formunda verdiği cevaplarda "eğlenceli" teması %54,3 ve "ilgi alanı" %51,4 oranıyla en çok tercih edilen neden olarak belirtilmiştir. Sırasıyla tercih edilen temalar ise; "tecrübeli" %28,6 , "kolay" % 25,7, "daha az yorucu" %20, "daha çok iş imkanı" %17,1. Diğer seçeneğine ise "para" ve "en başta kaliteli temel ile yetişmek" (%2,9) olarak yazılmıştır.

SONUÇ, TARTIŞMA ve ÖNERİLER

Araştırma bulgularına göre İngilizce öğretmen adaylarının çoğunluğu (%40) mezun olduktan sonra ortaokul kademesinde çalışmayı tercih etmektedir. Eşit oranlarda (%22,9) ilkokul kademesi (%20) ve diğer kategorisi tercih edilmiştir. Diğer kategorisi içerisinde sırasıyla üniversite, dil kursları ve öğretmenlik dışı iş olanakları bulunmaktadır. 3. Sırada lise (%11,4) kademesi, 4. sırada ise (%5,7) okul öncesi kademede öğretmenlik yapmayı tercih ettikleri görülmektedir. Öğretmenlik uygulaması dersine ilişkin öğretmen adaylarının görüşlerinin çeşitli yönlerden incelendiği birçok çalışma alanda mevcuttur (Cebeci ve Yıldız, 2021; Kavas ve Bugay, 2009; Azar,2003; Özkan, Albayrak ve Berber, 2005; (Harmandar, Bayrakçeken, Kıncal, Büyükkasap, ve Kızılkaya, 2000; Eraslan, 2009; Brooks, 2006) ancak Öğretmen adaylarının mezuniyet sonrası kademe tercihlerinin belirlenmesine yönelik durum çalışmasına rastlanmadığından söz konusu çalışmayla benzerlik gösteren çalışma ile desteklenememektedir. Bu hususta alana yönelik geniş kapsamlı çalışmalara ihtiyaç duyulmaktadır. Bununla birlikte, öğretmen adaylarının öğretmenlik uygulamasına ilişkin görüşlerine yönelik çalışmalarda değinilen bazı ortak noktalar bulunmaktadır. Öğretmen eğitimi sürecinde öğretmen adaylarının fakültelerde aldıkları kuramsal eğitimin yanı sıra uygulama okullarında kazandıkları deneyimler çok önemli bir yer edinmektedir (Gökçe ve Demirhan, 2005).

Öğretmenlik uygulamaları öğretmenlerin hizmet öncesi eğitimlerinde almış oldukları teorik bilgi ile uygulama arasında ayrılmaz bir bütünlük olduğu anlaşılmaktadır. Bu konuya ilişkin çalışmalarda öğrencilerin uygulama derslerini yetersiz bulduklarını görüşü egemendir (Harmandar, Bayrakçeken, Kıncal, Büyükkasap, ve Kızılkaya, 2000; Gökçe ve Demirhan, 2005).

Araştırmanın ikinci bulgusuna göre İngilizce öğretmen adaylarının mezun olduktan sonra öğretmenlik yapmayı planladıkları kademeyi tercih etme nedenlerini çoğunlukla "eğlenceli" ve "ilgi alanı" teması olarak belirlenmiş. Daha az tercih edilen temalar ise; "tecrübeli, "kolay", "daha az yorucu", "daha çok iş imkanı". Diğer seçeneğine ise "para" ve "en başta kaliteli temel ile yetişmek" olarak yazılmıştır. Bu hususta öğretmen adaylarının çoğunluğunun ortaokul ve ilkokul kademesini tercih ettikleri gerçeğiyle

nedenler arasında öğrenen özellikleri bağlamında bir örtüşme söz konusudur. Çocuklara yabancı dil öğretim sürecinde ders materyali olarak oyun, şarkı ve hikayeler kullanılması (Cameron, 2001; Roth, 1998; Ersöz; 2010) ve özellikle dil bilgisel ögelerin örtük şekilde öğretilmesinin eğlenceli ve kolay olarak algılanması bağlamında öğretmen adaylarının tercih nedenleri birbirleriyle örtüşmektedir. Yeni programda Çocuklara Yabancı Dil Öğretimi dersinin uygulama saatinin azaltılmasına paralel olarak dersin mikro öğretim boyutunda da azalma söz konusudur. Bu bağlamda, Çocuklara Yabancı Dil Öğretimi ve İngilizce Dil Becerilerinin Öğretimi gibi alan derslerinde gerçekleşen ve mikroöğretim olarak adlandırılan, öğretmen adaylarına mesleğe başlamadan önce deneyim kazandıran kısa ancak etkili öğretimler de ortadan kalkmıştır. Üniversiteler bünyesinde anabilim dalları tercihen uygulama boyutunu halen yürütebilme yetisine sahip olsalar da bu uygulamaların resmi olarak kredilere yansıması çok daha güçlü ve bağlayıcı olabileceği düşünülmektedir (Yaman,2018). Bu da öğretmen adaylarının vermiş olduğu cevaplarla okul öncesi kademede öğretmenlik yapma azlığın sebebi olarak gösterilebilir. Aynı zamanda araştırmaya dahil edilen sözkonusu çalışma grubu Çocuklara Yabancı Dil Öğretimi I-II derslerinin Covid-19 pandemi sürecinde uzaktan eğitim kapsamında almış olduklarından ders içi uygulama olanağı, materyal hazırlama ve mikro-öğretim sunumları gibi olanaklardan faydalanamamışlardır. Mevcut programda öğretmenlik uygulaması yaparken ilk kez ders hazırlığı yapmış ve gerçek ortamda öğretim yapma olanağı kazanmışlardır. Bu süreçte bölüm kararıyla VII. yarıyılda Öğretmenlik uygulaması dersi kapsamında görev aldıkları uygulama okulunu VIII. yarıyılda farklı bir kademe olarak değiştirilmesi onlara öğretmenlik tecrübesi kazanması bakımından önemlidir. Bununla birlikte çalışmada belirtilen öğretmenlik uygulaması gerçekleştirilen kurumlar içerisinde (Edirne il merkezinde MEB' e bağlı 5 ilkokul, 6 ortaokul ve 3 lisede) henüz zorunlu eğitim kapsamında yer almaması sebebiyle okul öncesi eğitim kurumları kademe olarak tercih edilmemiştir.

ÖNERİLER

- Araştırmanın çalışma grubu kısıtlı olsa da kademe tercihlerinin çeşitliliği göstermektedir ki öğretmen yetiştiren eğitim fakültelerinde İngilizce öğretmenliği bölümü ilköğretim İngilizce öğretmenliği ve ortaöğretim İngilizce öğretmenliği olmak üzere ikiye ayrılması mesleki gelişim açısından önemlidir.
- Bu çalışmanın daha fazla katılımcıyla gerçekleştirilmesi önerilmektedir.

KAYNAKLAR

Avrupa Dilleri İçin Ortak Başvuru Metni (2001). Avrupa Konseyi.

Azar, A. (2003). Okul Deneyimi ve Öğretmenlik Uygulaması Derslerine İlişkin Görüşlerin Yansımaları. Milli Eğitim Dergisi, 159, 1-10

Brooks, V. (2006). A 'quiet revolution'? The impact of Training Schools on initial teacher training partnerships. Journal of Education for Teaching, 32(4), 379–393.

Cameron, L. (2001). Teaching Languages to Young Learners. Cambridge University Press.

Cebeci, N., Yıldız, I.G. (2021). Covid-19 Sürecinde Öğretmen Adaylarının Görüşleri. 3RD International Congress on Life, Social and Health Sciences in a Changing World *Proceedings Book*. ISBN: 978-605-74191-9-4.

Eraslan, A. (2009). İlköğretim Matematik Öğretmen Adaylarının 'Öğretmenlik Uygulaması' Üzerine Görüşleri. Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi (EFMED) Cilt 3, Sayı 1, Haziran 2009, sayfa 207-221.

Ersöz, A. (2010). Teaching English to Young Learners. EDM Özel Eğitim Hizmetleri Yayıncılık ve Danışmanlık. Ankara.

Gökçe, E., & Demirhan, C. (2005). Öğretmen adaylarının ve ilköğretim okullarında görev yapan uygulama öğretmenlerinin öğretmenlik uygulaması etkinliklerine ilişkin görüşleri. Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 38(1), 43-71

Harmandar, M., Bayrakçeken, S., Kıncal, R. Y., Büyükkasap, E. ve Kızılkaya, S. (2000). Kazım Karabekir Eğitim Fakültesinde Okul Deneyimi Uygulaması ve Sonuçlarının Değerlendirilmesi. Milli EğitimDergisi, 148.

Karasar, N. (2007). *Bilimsel Araştırma Yöntemi*. Ankara: Nobel Yayın.

Senemoğlu, N. (1991). A study of initial primary teacher training in England with implications for the system in Turkey Leicester: The University of Leicester: Yayınlanmamış araştırma raporu.

Kavas, B. A., Bugay, A. (2009). Öğretmen Adaylarının Hizmet Öncesi Eğitimlerinde Gördükleri Eksiklikler ve Çözüm Önerileri . *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi* Yıl 2009 (1) 25. Sayı 13.

Özkan, H. H., Albayrak, M., ve Berber, K. (2005). Öğretmen Adaylarının İlköğretim Okullarında Yaptıkları Öğretmenlik Uygulamasının Yetişmelerindeki Rolü. *Milli Eğitim Dergisi*, 33, 168.

Roth, G. (1998). Teaching Very Young Children. Selt Publishing. London.

Widdowson, H. G. (1978). Teaching Language as Communication. Oxford: Oxford University Press.

Yaman,İ. (2018). 2006 ve 2018 Ingilizce Öğretmenliği Lisans Programlari Üzerine Karşilaştirmali Bir Değerlendirme. KEV *Akademi Dergisi* Yıl: 22 Sayı: 76

Yıldırım, A., Şimşek, H. (2006). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. (6. baskı) Ankara: Seçkin Yayıncılık

Elektronik kaynaklar:

(YOK, 2022). https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Yeni-Ogretmen-Yetistirme-Lisans-Programlari/Ingilizce_Ogretmenligi_Lisans_Programi.pdf (10.03.2022 tarihinde erişilmiştir.)

A NOVEL TRIDENTATE SCHIFF BASE (ONO): SYNTHESIS, CRYSTAL STRUCTURE, SPECTROSCOPIC PROPERTIES

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ABSTRACT

Schiff bases are widely used in coordination chemistry, especially because they form complexes with toxic metals (1, 2). Most of the toxic ions play an important role in various industrial fields such as food, medicine, paper, textile, refinery, water treatment, battery manufacturing (3,4). Toxic ions are associated with serious neurodegenerative diseases such as Parkinson's disease, Alzheimer's, amyotrophic lateral sclerosis (ALS), and Wilson's disease. These elements, which are distributed to the organism at trace level, can change the characteristics of biological events such as enzyme catalysis, protein sequence, DNA synthesis, reproduction process and immune system (5,6). Antibacterial and anti-cancer studies of these Schiff bases and their metal complexes with biological activity are also included in the literature (7,8,9). In this study, a new o-hydroxy derivative Schiff base compound, which has remarkable metal binding ability under suitable conditions, was synthesized. Molecular structure and spectroscopic properties of this ligand obtained from a single crystal, elemental analysis, FT-IR, NMR and UV-Vis. and experimentally illuminated by techniques such as X-Ray diffraction. The Schiff base we synthesized is a (ONO) type trident ligand, and it is aimed to synthesize and characterize the metal complexes of these compounds and apply them in different areas.

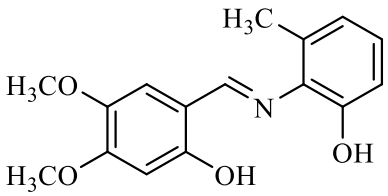


Figure 1. Tridentate Schiff base (ONO)

Keywords: Mixed Ligand, Metal Complexes, Characterization

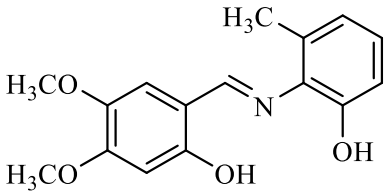
This study was carried out by Samsun Ondokuz Mayıs University.
Scientific Research Projects (BAP) are supported.
PYO.FEN.1904.21.017

YENİ ÜÇ DİŞLİ SCHIFF BAZI (ONO): SENTEZİ, KRİSTAL YAPISI VE SPEKTROSKOPİK ÖZELLİKLERİ

ÖZET

Schiff bazları koordinasyon kimyasında özellikle de toksik metallerle kompleks oluşturması nedeniyle kullanımı oldukça yaygındır (1, 2). Toksik iyonların çoğu, gıda, ilaç, kağıt, tekstil, rafineri, su arıtımı, pil üretimi gibi çeşitli endüstriyel alanlarda önemli bir rol oynar (3,4). Toksik iyonlar, Parkinson hastalığı, Alzheimer, amyotrofik lateral skleroz (ALS) ve Wilson's hastalığı gibi ciddi nörodejeneratif hastalıklarla ilişkilidir. Eser düzeyde organizmaya dağılan bu elementler enzim katalizi, protein dizisi, DNA sentezi, üreme süreci ve bağışıklık sistemi gibi biyolojik olayların karakterini değiştirebilmektedir

(5,6). Biyolojik aktiviteye sahip bu Schiff bazlarının ve onların metal komplekslerinin antibakteriyel ve anti-kanser çalışmaları da literatürde yer almaktadır (7,8,9). Bu çalışmada uygun koşullarda metal bağlama yeteneği ile dikkat çeken yeni o-hidroksi türevi Schiff bazı bileşiği sentezlendi. Tek kristali elde edilen bu ligandın moleküler yapısı ve spektroskopik özellikleri, elementel analiz, FT-IR, NMR ve UV-Vis. ve X-ışını kırınımı gibi tekniklerle deneysel olarak aydınlatıldı. Sentezlediğimiz Schiff bazı ,(ONO) tipi üç dişli bir ligand olup bu bileşiklerin metal komplekslerinin sentezi ve karakterizasyonu yapılarak farklı alanlarda uygulanması amaçlanmaktadır.



Şekil 1. Üç dişli Schiff bazı (ONO)

Anahtar Kelimeler: Schiff baz, metal kompleks, karakterizasyon

Bu çalışma Samsun Ondokuz Mayıs Üniversitesi
Bilimsel Araştırma Projeleri (Bap) tarafından desteklenmektedir.
PYO.FEN.1904.21.017

INTRODUCTION

Schiff bases are widely used in coordination chemistry, especially because they form complexes with toxic metals (Abd-Elzaher *et al*., 2016; Udhayakumari *et al*., 2020). Most of the toxic ions, food, medicine, paper, textile, refinery, water treatment, battery production plays an important role in various industrial fields such as (Botz *et al*., 2000; Shamsipur *et al*., 2019). These ions are also associated with serious neurodegenerative diseases such as Parkinson's disease, Alzheimer's, amyotrophic lateral sclerosis (ALS), and Wilson's disease. These elements, which are distributed to the organism at trace level, can change the character of biological events such as enzyme catalysis, protein sequence, DNA synthesis, reproductive process and immune system (Ahamed *et al*., 2005; Strausak *et al*., 2019). Antibacterial and anti-cancer studies of complexes are also included in the literature (Amali *et al*., 2019; Alimirzaei *et al*., 2019; Abu-Dief *et al*., 2015).

MATERIALS

2-Hydroxy 4,5-dimethoxy benzaldehyde (Aldrich brand), 2-amino-3-methylphenol (Sigma brand) as solvents, methanol, ethyl alcohol and diethyl ether were used in the synthesis of Schiff base ligands.
Devices Used: Precision balance, magnetic stirrer heater (used for synthesis processes), melting point analyzer (Stuart Brand SPM 30 model was used), Perkin Elmer Spectrum Two FT-IR Spectrophotometer (for shooting IR spectrum), UV-vis. Spectrometer Thermo Scientific, STOE IPDS II diffractometer (used in the analysis of crystal structure), Oxford Difraction SuperNova (single source at offset), AVANCE III 400MHz NaNoBay FT-NMR.

(E)-2-(((2-hydroxy-6-methylphenyl)imino)methyl)-4,5-dimethoxyphenol Synthesis of Compound (H_2L)

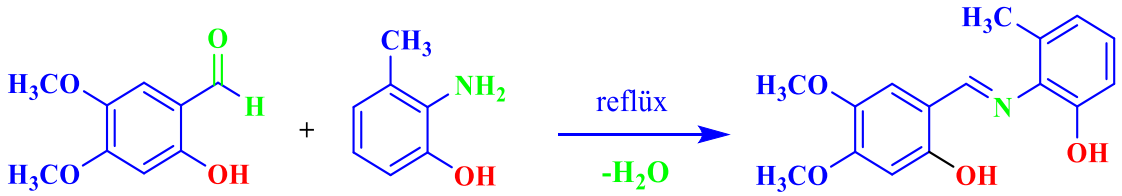


Figure 1. Synthesis reaction of H_2L compound

1.0 mmol (0.182 g) 2-hydroxy-4,5-dimethoxy benzaldehyde and 1.0 mmol (0.123 g) 2-amino-3-methylphenol compounds, each compound is dissolved in 10 mL methanol, the solutions are resolved in 50 mL glassware. The balloon was refluxed under reflux for an average of 12 hours. After the mixture was cooled to room temperature, possible impurities were removed by filtration. The solution was then allowed to crystallize at room temperature. The obtained orange colored substance was washed with diethyl ether and recrystallized in ethanol. The melting point of the compound was determined as 218-220 °C. Figure 1 shows the reaction of the synthesized compound ($C_{16}H_{17}NO_4$).

RESULTS

Infrared (IR) Spectral Analysis of H_2L Compound

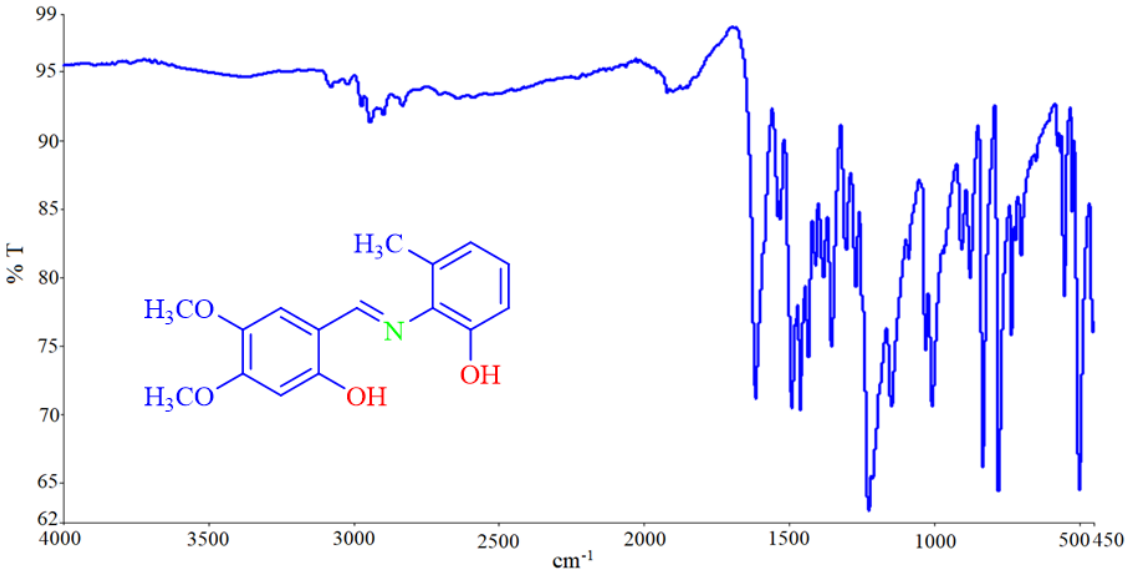


Figure 2. FT-IR spectrum of the H_2L compound in the range of 4000-450 cm^{-1}

FT-IR spectrum: 3081 (m, aromatic CH); 2941-2830 (m, aliphatic CH); 1614 (m, C=N); 1538-1488 (m, aromatic C=C); 1233 (m, aromatic C-O); 1145 (m, C-N). When the FT-IR spectrum of H_2L compound is examined, binary amine peaks in the 3300-3500 cm^{-1} region originating from the amine compound and cm^{-1} binary C-H peaks in the 2850-2700 cm^{-1} region originating from the aldehyde compound are not observed. The decrease in the intensity of the C=O peak, which is expected to be seen around 1700 cm^{-1} and its presence in the 1614 cm^{-1} region, supports the formation of the imine (-C=N-) compound. The presence of intermolecular and intermolecular hydrogen bonds prevents the OH peak from being seen clearly (Liu *et al*., 2006; Nazir *et al*., 2000). This is also supported by X-ray diffraction data.

UV-Vis. Spectral Analysis of H_2L Compound

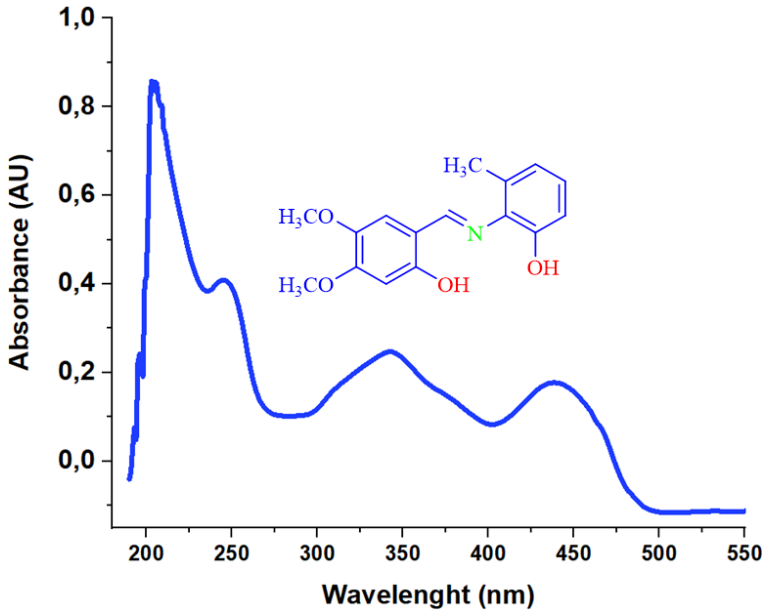


Figure 3. UV-Vis. spectrum of compound H_2L

The electronic spectrum of the synthesized compound was examined with UV-Vis. at 200-800 nm. The C=N system is a weak chromophore that absorbs in the ultraviolet field. Conjugation with phenyl groups shifts absorption to the visible region. Schiff bases are expected to make n-π* and π-π* transitions due to the C=N functional group they contain. (Hayvalı *et al*., 2003) The bands at 203 and 245 nm correspond to π → π* transitions of the aromatic rings, while the third band at 343 nm corresponds to the π → π* transitions of the C=N group. The fourth band greater than 439 nm is attributed to the n → π* transitions of the C=O group originating from the keto form of the imine compound (Belghıt *et al*., 2017; Attahir *et al*., 2021).

^{1}H-NMR and ^{13}C-NMR Spectral Analysis of H_2L Compound

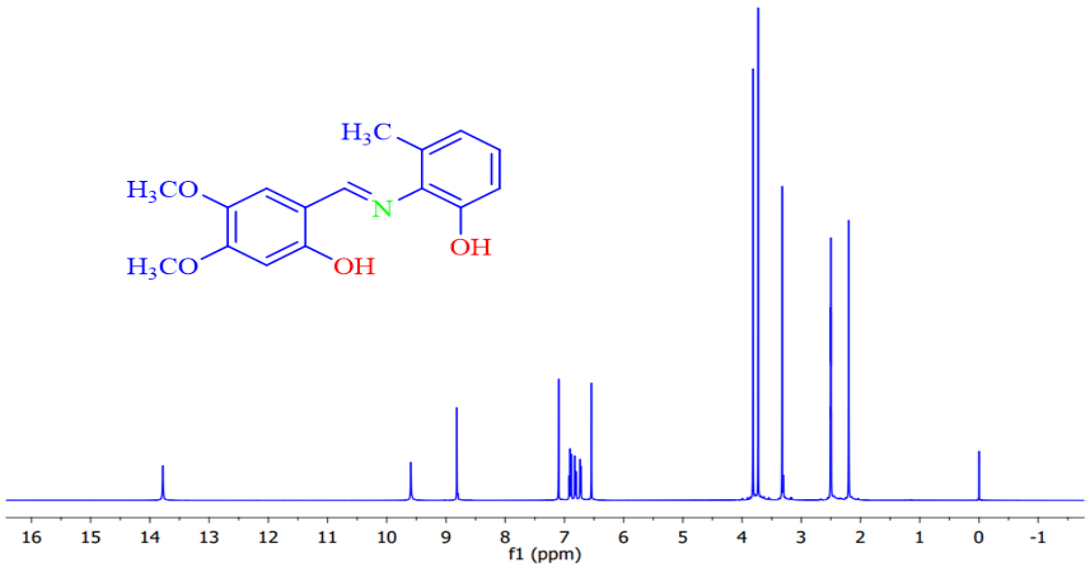


Figure 4. ^{1}H-NMR spectrum of compound H_2L in DMSO at 400 MHz

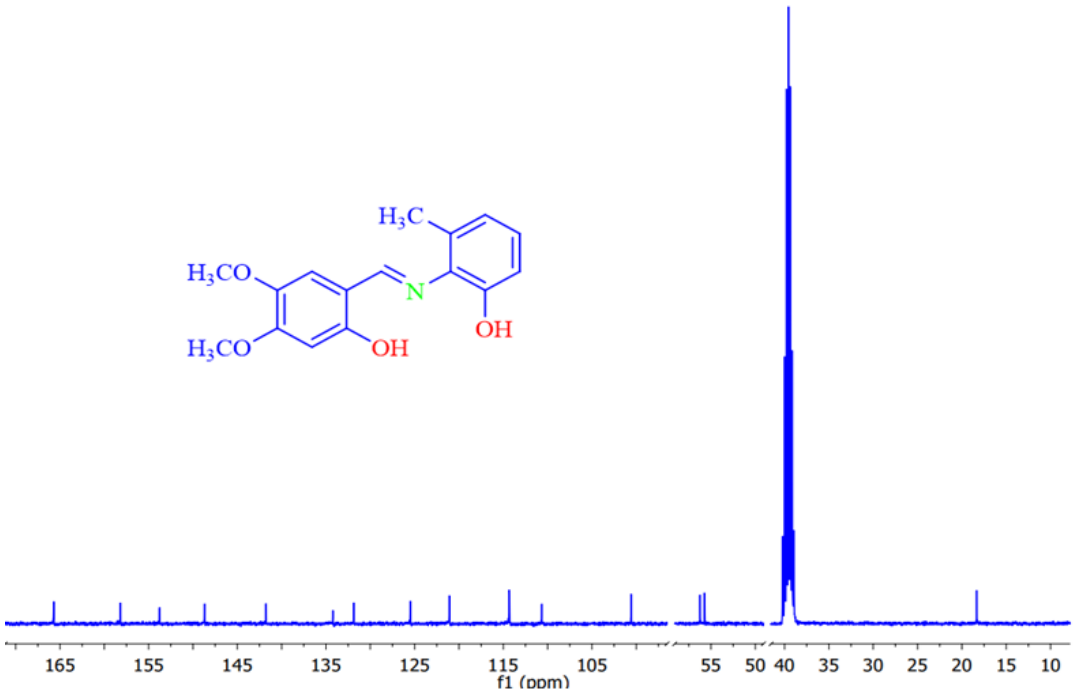


Figure 5. ^{13}C-NMR spectrum of compound H_2L in DMSO at 400 MHz

In the ^{13}C-NMR spectrum, the peak of the azomethine (-CH=N-) proton of the synthesized compound was observed at a value of 8.82 ppm, while the proton of the -OH peak (in the benzene ring containing the methoxy group (–OCH_3)) was observed at a value of 13.78 ppm. It is thought that this value originates from the intramolecular hydrogen bond (NH…O), tautomer (Jayendran *et al*., 2020). The –OH peak in the other benzene ring is at 9.59 ppm, the CH peaks attached to the aromatic ring are in the range of 6.54-7.09 ppm. The peaks belonging to the protons of the –OCH_3 groups are at 3.73-3.82 ppm, and also the peak at 2.20 ppm belongs to the protons of the -CH_3 group. The peaks originating from DMSO used as a solvent were found to be around 2.51 ppm (Çınarlı *et al*., 2011; Mohammed *et al.,* 2020).

When the ^{13}C-NMR spectrum of the synthesized compound is examined, the peak at 165.65 ppm is assigned to the carbon atom of the imine (-CH=N-); the peaks at 158.21 and 148.67 ppm are related with the carbon atoms which is attached to the -OH group. The peaks at the range of 100.58-153 refer to the carbon atoms in the aromatic ring. The peaks at 55.65 and 56.11 ppm refer to the carbon atoms in the methoxy (–OCH_3) groups, and also the peaks at the 18.39 ppm correspond to the carbon atom in the -CH_3 group. The peaks at around 39.58 ppm are used as solvents (DMSO) (Kilic *et al*., 2014; Chimmalagi *et al*., 2018).

X-Ray Diffraction Analysis of the H_2L Compound

The molecular structure of the $C_{16}H_{17}NO_4$ compound is given in Figure 6. The compound has a orthorhombic crystal system and *Pbca* space group. The number of molecules in the unit cell (Z) is eight. The data collection and refinement process details for the title compound are given in Table 1. The crystalline package structure representation and some hydrogen bonds in the structure are given in Figure 6 and Figure 7, respectively. The crystal packing of the complex is stabilized by intramolecular and intermolecular hydrogen bonds. In the crystal structure, there are O2─H2···N1 and C8─H8···O1 intramolecular hydrogen bonds; O1─H1···$O2^{i}$, C5─H5···$O2^{i}$ intermolecular hydrogen bonds. These hydrogen bonds and the electrostatic Van der Waals force of force of attraction and the crystal structure stand together. The hydrogen bond geometries (D─H, H···A, D···A bond lengths and D─H··A angle) are given in Table 2.

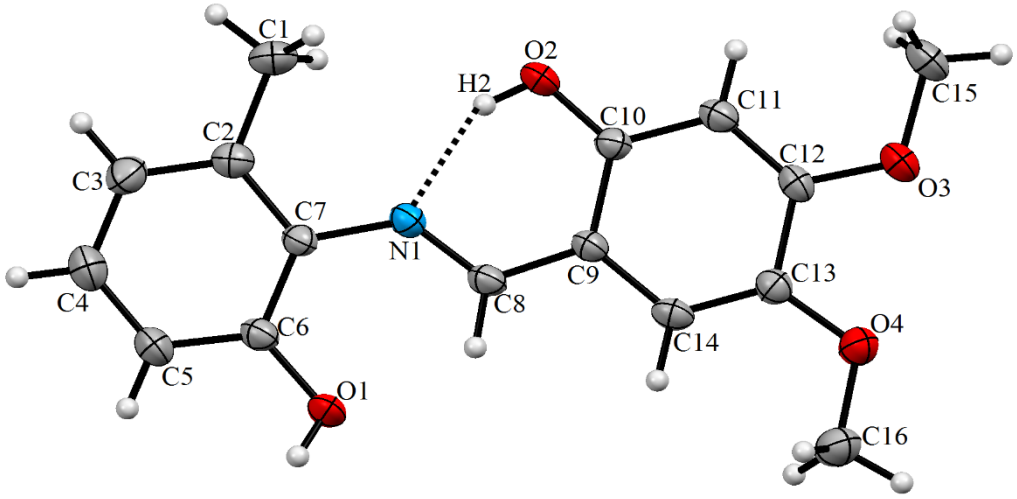


Figure 6. The asymmetric unit of $C_{16}H_{17}NO_4$ compound with 30% thermal ellipsoids probability.

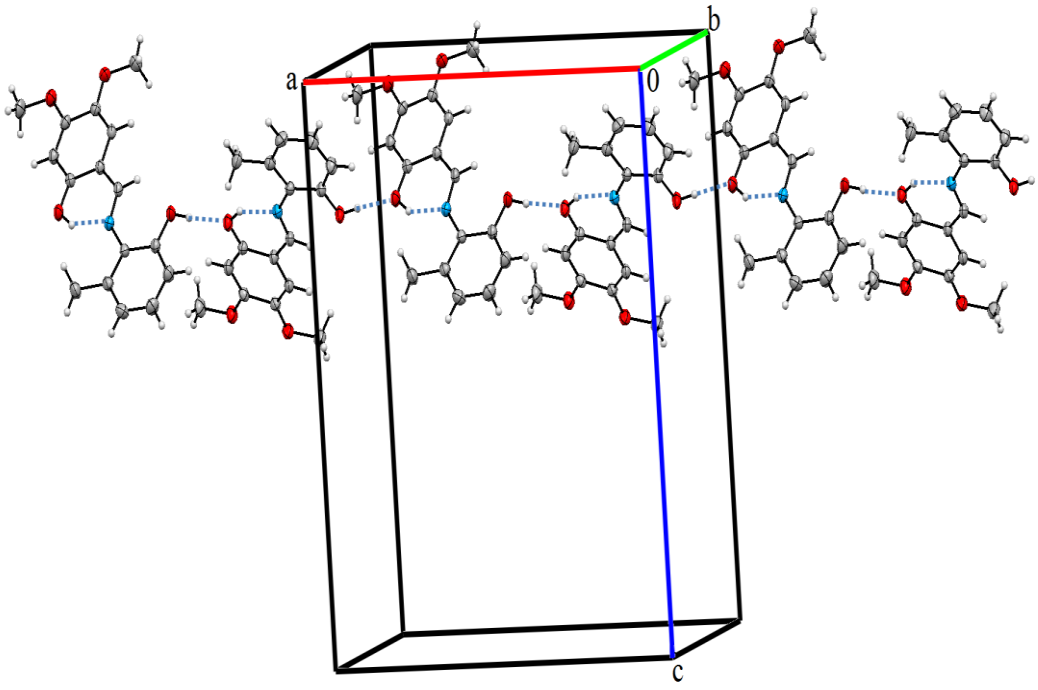


Figure 7. Intramolecular (N─H···O) and intermolecular (O─H···O) hydrogen bonds interactions that are effective in packing of the $C_{16}H_{17}NO_4$ compound

Table 1. Crystalline X-ray diffraction structure refinement data of $C_{16}H_{17}NO_4$ compound

Chemical formula	$C_{16}H_{17}NO_4$
Colour	Orange
Formula weight (a. k. b.)	287.30
Temperature (K)	296
Wavelength (Å)	0.71073 Mo-Kα
Crystal system	Orthorombic
Space group	*Pbca*
a (Å); b (Å); c (Å)	15.7757 (16); 9.2088 (8); 19.938 (2)
α (º); β (º); γ (º)	90; 90; 90
Birim hücrenin hacmi (Å^3)	2896.4 (5)
Z	8
Hes. density (mg.m^{-3})	1.318
Absorption coefficient (mm^{-1})	0.10
Crystal dimensions (mm)	0.54 × 0.32 × 0.07
Diffractometer	STOE IPDS II
h, k, l aralığı	-18→19, -11→10, -23→24
data collection interval (º)	2.0 – 26.0
Total number of reflections	11427
Number of independent reflections	2673
Number of observed reflections	1194
Number of parameters	196
R_{int}; ωR	0.114; 0.114
R[$F^2 > 2\sigma(F^2)$]	0.050
GOOF=S	0.82
T_{min}; T_{max}	0.994; 0.999
Δρmax , Δρmin (e/Å^3)	0.23; -0.25

Table 2. The hydrogen bond geometries of $C_{16}H_{17}NO_4$ compound (Å, ˚)

D—H···A	D—H	H···A	D···A	D—H···A
O2—H2···N1	0.82	1.87	2.596(3)	147
C8—H8···O1	0.93	2.16	2.786(3)	124
O1—H1···O2^i	0.82	1.77	2.585(3)	173
C5—H5···O2^i	0.93	2.60	3.242(4)	126

D: Donor; A: Acceptor. [Simmetry code: (i) *x*-1/2, *y*+1, -*z*+1/2].

DISCUSSION

In this study, the structure of the synthesized compound was investigated by single crystal X-ray diffraction method. It was seen that the crystal structures determined using the SHELXL2016/6 computer program were compatible with the structure and spectrum data of the synthesized compound.

CONCLUSION

One of the health problems is that most pathogenic organisms have become resistant to common drugs. A better understanding of the structural properties of Schiff bases and their complexes could improve biological properties leading to the design of new metallo drugs that are less toxic and more effective for therapeutic applications. Many studies in the literature show that Schiff base metal complexes have better biological activities than Schiff bases, and Schiff base metal complexes can be used in potential drugs and pharmaceutical products (Ebosie *et al*., 2021). The H_2L (ONO) type we synthesized is a tridentate ligand, and it is planned to investigate the synthesis, characterization and biological activities of metal complexes of this compound.

ACKNOWLEDGMENTS

This study was supported by Ondokuz Mayıs University with PYO.FEN.1904.21.017 project number of Scientific Research Projects (BAP).

REFERENCES

Abd-Elzaher MM, Labib AA, Mousa HA, Moustafa SA, Ali MM, El-Rashedy AA 2016. Synthesis, anticancer activity and molecular docking study of Schiff base complexes containing thiazole moiety. Beni-Suef University Journal of Basic and Applied Sciences, 5(1): 85–96.

Kilic A, Aydemir M, Durgun M, Meriç N, Ocak YS, Keles A, Temel H 2014. Fluorine/phenyl chelated boron complexes: Synthesis, fluorescence properties and catalyst for transfer hydrogenation of aromatic ketones. Journal of Fluorine Chemistry, 162: 9–16.

Abu-Dief AM, Mohamed IMA 2015. A review on versatile applications of transition metal complexes incorporating Schiff bases. Beni-Suef University Journal of Basic and Applied Sciences, 4(2):119–133.

Ahamed M, Verma S, Kumar A, Siddiqui M 2005. Environmental exposure to lead and its correlation with biochemical indices in children. Science of The Total Environment, 346(1–3): 48–55.

Amali IB, Kesavan MP, Vijayakumar V, Gandhi NI, Rajesh J, Rajagopal G 2019. Structural analysis, antimicrobial and cytotoxic studies on new metal(II) complexes containing N_2O_2 donor Schiff base ligand. Journal of Molecular Structure, 1183: 342–350.

Alimirzaei S, Behzad M, Abolmaali S, Abbasi Z 2019. Mixed-ligand copper complexes with unsymmetrical tridentate Schiff base ligands and 2,2'-bipyridine: synthesis, x-ray crystallography and antibacterial properties. Journal of Molecular Structure, 1200: 127148.

Kadafour ANW, Bala MD 2021. Structural characterization of a square planar Ni(II) complex and its application as a catalyst for the transfer hydrogenation of ketones. Journal of Coordination Chemistry, 74(17-20): 2886–2897.

Botz M, Mudder T 2000. Modeling of natural cyanide attenuation in tailings impoundments. Mining, Metallurgy & Exploration, 17:228–233.

Çınarlı A, Gürbüz D, Tavman A, Birteksöz AS 2011. Synthesis, spectral characterizations and antimicrobial activity of some Schiff bases of 4-chloro-2-aminophenol. Bulletin of the Chemical Society of Ethiopia, 25(3): 407–417.

Ebosie NP, Ogwuegbu MOC, Onyedika GO, Onwumere FC 2021. Biological and analytical applications of Schiff base metal complexes derived from salicylidene-4-aminoantipyrine and its derivatives: a review. Journal of the Iranian Chemical Society, 18: 3145–3175.

Chimmalagi GH, Kendur U, Patil SM, Gudasi KB, Frampton CS, Budri MB, Mangannavar CV, Muchchandi IS 2018. Mononuclear Co(III), Ni(II) and Cu(II)complexes oftridentate di-tert-butylphenylhydrazone: Synthesis, characterization, X-ray crystal structures, Hirshfeld surface analysis, molecular docking and in vivo anti-inflammatoryactivity. Applied Organometal Chemistry, 32(6): e4337.

Jayendran M, Begum PMS, Kurup MRP 2020. Structural, spectral and biological investigations on Cu(II) and Zn(II) complexes derived from NNO donor tridentate Schiff base: Crystal structure of a 1D Cu(II) coordination polymer. Journal of Molecular Structure, 1206: 127682.

Liu J, Wu B, Zhang B, Liu Y 2006. Synthesis and characterization of metal complexes of Cu(II), Ni(II), Zn(II), Co(II), Mn(II) and Cd(II) with tetradentate Schiff bases. Turkish Journal of Chemical, 30: 41–48.

Belghıt MY, Moussı A, Barkat D 2017. In vitro antifungal activity of some Schiffbases derived from ortho-hydroxybenzaldehyde against fusarium. Journal of Engineering Science and Technology, 12(6): 1709–1722.

Mohammed SJ, Salih AK, Rashid MAM, Omer KM, Abdalkarim KA 2020. Synthesis, spectroscopic studies and keto-enol tautomerism of novel 1,3,4-thiadiazole derivative containing 3-mercaptobutan-2-one and quinazolin-4-one moieties. Molecules, 25(22): 5441.

Nazır H, Yıldız M, Yılmaz H, Tahir MN, Ülkü D 2000. Intramolecular hydrogen bonding and tautomerism in Schiff bases. Structure of N-(2-pyridil)-2-oxo-1-naphthylidenemethylamine. Journal of Molecular Structure, 524(1–3): 241–250.

Shamsipur M, Barati A, Nematifar Z 2019. Fluorescent pH nanosensors: design strategies and applications. Journal of Photochemistry and Photobiology C: Photochemistry Reviews, 39: 76–141.

Strausak D, Mercer JF, Dieter HH, Stremmel W, Multhaup G 2001. Copper in disorders with neurological symptoms: Alzheimer's. Menkes, and Wilson diseases. Brain Research Bulletin, 55(2): 175–185.

Udhayakumari D, Inbaraj V 2020. A review on Schiff base fluorescent chemosensors for cell imaging applications. Journal of Fluorescence, 30: 1203–1223.

İÇ KONTROL KAVRAMINA İLİŞKİN 2021 YILINDA ERİŞİME AÇIK DERGİLERDE YAYIMLANAN MAKALELERİN METODOLOJİK ANALİZİ

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ÖZET

İşletmeler faaliyetlerini gerçekleştirirken üst yönetim tarafından yürütülen faaliyetlerin önceden saptanmış ölçülere ve amaçlarına uygun olarak gerçekleştirildiği ile ilgili yürütülen çalışmaları kontrol ederek faaliyetlerin hedeflenen ölçütleri sağlama durumu tespit edilmektedir. İç kontrol sistemi, işletmenin finansal raporlarının güvenirliği, yürütülen faaliyetlerinin etkililiği ve verimliliğinin ölçülmesi ve yasalar, yönetmelik ve mevzuatlara uygunluk derecesinin ölçülmesi amacıyla yönetim ve bu bölümlerde görev alan çalışanlar tarafından tasarlanan, uygulanan ve sürekliliği sağlanan bir süreçtir. İç kontrol sisteminin çalışmalarının verimlilik düzeyi doğrudan işletmenin iç denetim işlevi etkilemektedir. İç denetimin sisteminin verimlilik seviyesi aynı zamanda işletmede gerçekleştirilecek bağımsız denetim faaliyetlerinin kapsamını, hesaplanacak kontrol riskini ve yapılacak denetim planlamasını ve harcanacak emek ve zamanı da doğrudan etkilediğinden dolayı gerek işletme için gerekse bağımsız denetim faaliyetini yürüten taraf açısından önemli bir yapıdır.

Bu çalışmanın amacı özetleyici içerik analiz yöntemi kullanılarak iç kontrol kavramı ile ilgili erişime açık dergilerde yayımlanmış makalelerin metodolojik incelemesini yapmaktır. Bu bağlamda çalışmada iç kontrol kavramı ile ilgili 2021 yılı içinde yayınlanan makalelerin, konularına, standartlara ve yayınlandığı dergilere göre incelemesi gerçekleştirilmiştir. Ayrıca, incelenen çalışmaların araştırma yöntemleri ve edindikleri bulgulara tablo halinde sunularak araştırmacılar için veri seti oluşturulmuştur.

Anahtar Kelimeler: İç Kontrol, İç Denetim ve İçerik Analizi

METHODOLOGICAL ANALYSIS OF ARTICLES ABOUT INTERNAL CONTROL WHICH ARE PUBLISHED IN OPEN ACCESS JOURNALS IN 2021

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ABSTRACT

While enterprises are performing their activities, it is determined that the activities carried out in accordance with predetermined criteria and objectives are performed by the top management and whether the activities meet with the objectives is checked. Internal control system is a process designed, implemented and maintained by the management and employees working in these departments in order to measure the reliability of financial reports of the enterprise, the effectiveness and efficiency of the activities performed, and the degree compliance with the laws, regulations and legislation. The efficiency level of the activities of internal control system directly affects internal audit function of the enterprise. The efficiency level of internal audit system is also an important structure both for company and for the side implementing internal audit activities, since it directly affects the scope of independent audit activities can be performed in the enterprise, control risk to be calculated, the effort and time would be spent.

The aim of this study, is to examine articles methodologically which are published in open access journals about the concept of internal control by using summative content analysis method. On this basis, articles published about the concept of internal control are examined according to their

subjects, standards and journals which they are published. Furthermore, a data set is provided for researchers by presenting research methods of the studies examined, and finding in a tabular form.

Keywords: Internal Control, Internal Audit, Content Analysis

GİRİŞ

İç kontrol sistemi, bir işletmede faaliyetlerin etkinliği ve verimliliği, finansal raporlamanın güvenirliği, ilgili yasa ve düzenlemelere uygunluk gibi amaçlara erişmek için tasarlanan ve makul bir güvence sağlayan bir süreçtir. İnsan faktöründen tamamen etkilenen bu sistemi etkin bir şekilde oluşturmak ve verimli bir şekilde sürdürebilmek temel olarak yönetimin sorumluluğundadır. Bununla birlikte, işletmedeki tüm personelin sürece dahil edilmesi, iç kontrol sisteminin sağladığı katkının artmasına yardımcı olabilmektedir.

Bu çalışmada denetim alanında önemli bir konuma sahip olan "iç kontrol" kavramı ile ilgili olarak 2021 yılında yazılmış makaleler özetleyici içerik analizi ile incelenmiştir. Bu bağlamda çalışmanın ilk bölümünde iç kontrol sistemi ve unsurları ile ilgili olarak temel açıklamalara yer verilmiş, ardından konunun uygulamadaki görüntüsünü ortaya koymak üzere içerik analizi yöntemi kullanılarak edinilen bulgulara değerlendirilmiştir.

İÇ KONTROL KAVRAMI

İş hayatında yoğun olarak rekabet ortamında işletmelerin internet üzerinden gerçekleşen e-ticaret faaliyetlerinin yaygınlaşması ve Covid-19 salgının da etkisiyle günlük yaşamda her geçen yıl çevrim içi uygulamalar kanalıyla satış yapma yönteminin tercih edilmesinden dolayı rekabet eskiye kıyasla daha yoğun yaşanmaya başlamıştır. Rekabet ortamının yoğunlaşmasının sonucunda işletmeler kendi bünyesinde yaşanabilecek aksaklıkları en düşük seviyede tutarak bu alanlara ayıracakları bütçeleri kendi satış kanallarını genişletmeyi tercih etme olasılığının yükselmesinden dolayı işletme yönetimleri, işletme içinde yaşanabilecek herhangi bir aksaklığı engellemesi gerekmektedir. Bu aksaklıkları da engellemenin en önemli yolu iç kontrol yapılarını sağlamlaştırmasından geçmektedir.

İç Kontrol kavramıyla ilgili literatürde farklı tanımlar mevcuttur. Bu tanımlamalardan başlıcaları, Committee of Sponsoring Organizations (COSO) göre iç kontrol kavramını "*İşletmenin yönetim kurulu, yöneticileri ve diğer çalışanlarınca yürütülen faaliyetlerin etkililiği ve verimliliği, finansal raporlarının güvenilirliği ve ilgili yasa ve düzenlemelere uyumluluğu açısından işletmenin amaçlarına ulaşması noktasında makul bir güvence sağlamak için tasarlanan bir süreçtir*" olarak tanımlarken. (https://www.coso.org/documents/coso-crowe-coso-internal-control-integrated-framework.pdf). T.C. Hazine ve Maliye Bakanlığı tarafından yayımlanan İç Kontrol ve Ön Mali Kontrole İlişkin Usul ve Esaslar Yönetmeliğinde iç kontrol *" İdarenin amaçlarına, belirlenmiş politikalara ve mevzuata uygun olarak faaliyetlerin etkili, ekonomik ve verimli bir şekilde yürütülmesini, varlık ve kaynakların korunmasını, muhasebe kayıtlarının doğru ve tam olarak tutulmasını, malî bilgi ve yönetim bilgisinin zamanında ve güvenilir olarak üretilmesini sağlamak üzere idare tarafından oluşturulan organizasyon, yöntem, süreç ile iç denetimi kapsayan malî ve diğer kontroller bütününü"* olarak tanımlanmıştır.(https://www.mevzuat.gov.tr/File/GeneratePdf?mevzuatNo=9813&mevzuatTur=KurumVeKurulusYonetmeligi&mevzuatTertip=5).

Bu tanımlamalar ışığında işletmelerde kurulan ve sürdürülen iç kontrol yapısı sadece faaliyetlerin sonucu oluşturulan finansal raporlarda önemli yanlışlıkların ortaya çıkması riskini düşürmekten öte gerçekleştirilen faaliyetlerden hedeflenen verimin alınması ve içinde bulunduğu sektörün kurallarını düzenleyen yasal mevzuatlara ne şekilde uyulduğunu tespit edilmesini de içeren, çok daha geniş ve karmaşık bir görevi üstlenir.

İşletmede sürdürülen iç kontrol sisteminin işleyişinin artması sonucunda aynı zamanda işletmenin üst yönetimi ile alt yönetiminde görev alan çalışanları arasında iletişim hattı kurulmasına imkân sağlayan

iç kontrol sistemi, çalışanların görev tanımlamalarını açık şekilde belirleyerek gerçekleştirilecek işlerin doğru ve güvenilir şekilde yapılmasına da olanak sağlar. Böylece işletmede yürütülen faaliyetlerde verimlilik seviyesi artarak gerek rekabet ortamında rakiplerine karşı güçlü konuma erişmesine imkân sağlar gerekse işletmenin sürekliliği açısından büyük bir destek sağlar (Hacıhasanoğlu ve Çağlı: 2020:145).

İç kontrol sisteminin alanının genişlemesi günümüze ait olan bir olgu değildir. Tarihsel açısından değerlendirildiğinde iç kontrol yapısının kapsamı muhasebe ve denetim tarihinde yaşanan bazı olaylar ve teknolojilerden dolayı geçmişe göre genişlemiştir.

İç kontrol faaliyetlerinin kökeni yaklaşık olarak İ.Ö. 4000 yılına uzanmaktadır. Çok sayıda antik uygarlık elde ettiği kazançlarını korumak amacıyla iç denetim faaliyetlerini icra etmiştir. Uygarlıkların gelişmesi sonucunda oluşan küreselleşme iklimi ve ülke bazında yerel düzeyde ekonomik ve teknoloji alanları başta olmak üzere diğer alanların da gelişmesiyle beraber iç kontrolün yapısında belirleyici olmuştur. Sanayi devriminin ardından işletmelerin faaliyet türlerinin genişlemesi, işlemlerin daha karmaşık bir yapıya dönüşmesi, sermayenin tabana yayılması, yönetim yapılarının değişmesi sonucunda işletmenin faaliyetlerini yürütmesinin maliyetini de arttırmıştır. Bu gelişmeler sonucunda işletmeler faaliyetlerini ulusal düzeyden küresel düzeye taşımış ve 1990'lı yılların sonu 2000'li yılların başında yaşanan muhasebe ve denetim skandalları etkileri ülke sınırlarından çıkıp küresel boyuta ulaşmıştır. Skandalların ardından iç kontrol yapısının önemi ve sağlamlığı günümüzü de kapsayacak şekilde artarak devam etmiş ve bu gelişmeler doğrultusunda tarihsel olarak iç kontrol yapısının kapsamını da günümüzdeki işletmelerde görülen şekilde genişlemesine neden olmuştur (Tetik ve Karaca; 2021:201).

Bu bilgiler ışığında işletmelerde yer alan iç kontrol yapısı, tarihsel olarak elde edilen faaliyetlerden elde edilen kazançların işletmeye doğru aktarılmasından faaliyetlerin yasal yürütülen faaliyetlerden hedeflenen etkililiğin ve verimliliğin sağlanması, finansal raporlarda önemli yanlışlık riskini düşürerek işletmeyle ticari ilişkisi olan tarafların raporlara olan güveninin sağlanması, yasalar ve mevzuatlara uyum ve işletmenin kurumsal yönetim sürecini desteklemesini kapsayacak şekilde genişleyen oldukça karmaşık bir yapıya bürünmüştür.

İÇ KONTROL- BAĞIMSIZ DENETİM İLİŞKİSİ

KGK tarafından yayımlanan Kamu Gözetimi Muhasebe ve Denetim Kurumunun Teşkilat ve Görevleri Hakkında Yönetmelikliğe göre bağımsız denetim "*Finansal tablo ve diğer finansal bilgilerin, finansal raporlama standartlarına uygunluğu ve doğruluğu hususunda, makul güvence sağlayacak yeterli ve uygun bağımsız denetim kanıtlarının elde edilmesi amacıyla, denetim standartlarında öngörülen gerekli bağımsız denetim tekniklerinin uygulanarak defter, kayıt ve belgeler üzerinden denetlenmesi ve değerlendirilerek rapora bağlanması sürecidir*" (https://www.kgk.gov.tr/DynamicContentDetail/5136/Kamu-Go%CC%88zetimi-Muhasebe-ve-Denetim-Kurumunun-Tes%CC%A7kilat-ve-Go%CC%88revleri-Hakk%C4%B1nda-Yo%CC%88netmelik).

İşletmelerin bağımsız denetim sürecine dahil olmasının bir takım yararları bulunmaktadır. Bu yarar ise; (Selimoğlu, vd. 2019: 8).

- İşletmenin yönetim bölümlerine doğru bilgilerin iletilmesi,
- Yönetimin gelecek dönemlere ilişkin doğru karar alabilmesi için finansal tablolarla ilgili tahmin ve inceleme imkân tanıması,
- Finansal tabloların gerçek durumu gösterip göstermediğinin kararının verilmesi,
- İşletme yönetimi ve çalışanlarının hileli işlemleri yapmasını önlemesine yardımcı olması,
- Bağımsız denetim sürecinden geçmiş finansal tablolar sayesinde işletmenin kredi veren kuruşlardan daha düşük maliyetli finansal kaynak elde etme olanağını arttırır.
- Ortakların haklarının korunmasına yardımcı olur.

İşletmede bağımsız denetim faaliyetini yürüten denetçiler, işletmenin iç kontrol yapısı kapsamında gerçekleştirilen denetim ile genel olarak yürütülen denetim faaliyeti için bir tahminde bulunma şansını yakalarlar. İç kontrol yapısının denetimi, bağımsız denetim standartları uyarınca bağımsız denetçinin tercihine bırakılmamış, denetim süresince asgari olarak yapılması gereken denetim prosedürleri de belirlenmiştir. Bu nedenden kaynaklı işletmenin iç kontrol yapısı, bağımsız denetçi tarafından denetlenmesi zorunludur ve elde edilen kanıtlar ışığında iç kontrol yapısında belirlenen eksiklikler, hatalar ve aksaklıklar işletmenin üst yönetimine bildirmelidir. Bağımsız denetim ve iç kontrol arasındaki etkileşim sonucunda işletme için oldukça fayda sağlayacak ve gelecek dönemlerin faaliyetlerinin planlanmasında işletme yönetimine ışık tutacak bilgilerin açığa çıkması noktasında başvurulan yöntemlerden birisidir (Karakaya 2020: 12-13).

Bu bilgiler doğrultusunda, işletmede gerçekleşen faaliyetlerin sonucunda oluşturulan bilgilerin önceden saptanmış ölçütlere uygunluğunun araştırılması ve sonuçlarının ilgi duyan taraflara iletmek amacıyla tarafsızca kanıt toplayan ve kanıtların değerlendirilmesiyle bir rapora bağlanma süreci olan bağımsız denetim faaliyetinde iç kontrol yapısının genel durumu yürütülen bağımsız denetimin sonucunda verilecek görüşün türünü önemli şekilde etkileyebilir. Bu konuda bağımsız denetçinin iç kontrole ilişkin yapacakları işlemler kişinin tercihi yerine ilgili mevzuatlarca bir zorunluluk halini almış olması bağımsız denetim açısından iç kontrol kavramının öneminin vurgulamaktadır.

İÇ KONTROL- İÇ DENETİM İLİŞKİSİ

Türkiye İç Denetçiler Enstitüsüne göre iç denetim *"İç denetim, bir kurumun faaliyetlerini geliştirmek ve onlara değer katmak amacını güden bağımsız ve objektif bir güvence ve danışmanlık faaliyetidir. İç denetim, kurumun risk yönetim, kontrol ve yönetişim süreçlerinin etkililiğini değerlendirmek ve geliştirmek amacına yönelik sistemli ve disiplinli bir yaklaşım getirerek kurumun amaçlarına ulaşmasına yardımcı olur"* (https://www.tide.org.tr/page/26/Ic-Denetimin-Tanimi).

İç denetim kavramının tarihsel gelişimi açısından ele alındığında misyonundaki keskin değişim, 2000'li yılların başında yaşanan başta Enron olmak üzere bir dizi küresel muhasebe ve denetim skandallarının yaşanması ve ardından gelişen iflasların etkilerinin küresel boyuta erişmesidir. Skandallar ardından küresel yatırımcıların açısından bir işletmeye yatırım yapma kararını verirken işletmelerin kurumsallaşma düzeyleri ön plana çıkarken, işletmeler açısından hileli işlemler başta olmak üzere kurumu etkileyebilecek her türlü riskleri en aza indirmek hedefi ön plana çıkmıştır. İlgili hedefe ulaşmak için de işletmelerin bünyesindeki iç denetim birimlerinin etkililiğinin ve verimliliğinin arttırılmasını sağlayan güncel yöntemler ve anlayışların benimsenmesiyle mümkün olacaktır (Gönen ve Yurtlu: 2021:172).

İşletmelerde yer alan iç denetim faaliyetlerinin temel amacı, yönetimde görev alan çalışanların işletmenin iç kontrol yapısı ve kurumsal yönetim süreci hakkında üst yönetime tarafsız ve bağımsız görüş sunmaktır. İç denetim, kaynakların en uygun şekilde kullanılmasını, performansın arttırılmasını, yakın veya uzak çevredeki risklerin belirlenmesi ve ilgili sorunların çözülmesine yönelik faaliyetlerin desteklenmesine katkıda bulunur. Aynı zamanda iç denetim, yönetimin aldığı kararların hedeflere ulaşmada ne kadar sağlıklı olduğu sorusuna da cevap arar (Görmen; 2019:81).

İşletmedeki iç kontrol yapısından tüm çalışanların şahsi sorumluluklarının bulunmasının yanında yapının ve bileşenlerinin etkililiğinin ve verimliliğinin ölçülmesi aslen iç denetimin sorumluluğundadır. Farklı bir ifade ile iç denetimde yer alan çalışanlar işletmede yer alan iç kontrol yapısının işletme ile uyumunu değerlendirerek ilgili sorumluluğu yerine getirirler ve bu faaliyetler sonucunda, iç kontrolün etkililiği ve verimliliğine ilişkin değerlendirmenin sonuçlarını ve genel durumuyla ilgili işletme yönetimine makul bir güvence sağlarlar (Korkmaz; 2020: 187). İç kontrol sisteminin yönetime makul bir güvence sağlamasının temel nedenleri aşağıdaki gibidir (Selimoğlu vd.2019: 231):

- İnsan yargısının karar vermede kullanılmasının hata ve yanlışlıklara yol açabilmesi
- İki ya da daha çok kişinin birleşerek kontrolleri önleyebilmesi

- Yönetimin kontrolleri dikkate almama olasılığı
- Fayda- maliyet yaklaşımına dikkat edilmesi

İşletmenin bünyesinde yer alan iç denetçiler işletmenin personel yönetimini, yönetim katmanları, bilgi sistemlerini, finansal bilgileri ve bunların çıktıları da dahil olmak üzere faaliyetlerin nasıl gerçekleştiğini denetleme işini üstlenir. İç denetim üstlendiği görevlerden bunlarla sınırlı kalmayıp, işletme içinde oluşan veya oluşabilecek riskleri de üst yönetime ileterek bir danışmanlık ve güvence sunma hizmetini de sunar. Aynı zamanda iç denetim, işletmede mevcut olan iç kontrol sisteminin çalışma düzeninde yaşanabilecek aksaklığını ve etkinlik ve verimliliğini de denetleme ve üst yönetime sistemin ile ilgili rehberlik etme sorumluluğunu da üstlenir. İşletme yönetimi, iç denetim faaliyetlerinden istenilen ölçüde verim sağlayabilmesi ise doğrudan yürütülen iç denetim faaliyetlerin desteklenmesiyle bağlantılıdır. Yönetim tarafından desteklenmeyen iç denetim ve iç denetçiler faaliyetlerinde başarılı olamayacaktır (Ertuğrul; 2020: 43). Bu başarısızlıklardan elbette iç kontrol faaliyetleri de olumsuz etkileneceği gibi mevcut olan risklerinde artması ve yeni oluşabilecek risklerinde iç kontrol sisteminin işleyişini etkileyecektir.

Bu bilgiler ışığında, işletmenin bünyesinde yer alan, faaliyetlerini geliştirmek ve ona bir değer olarak katkı sağlayan bağımsız ve tarafsız güvence ve danışmanlık görevini yürüten iç denetim birimi bu işletmeye ilgili misyona erişmesi için iç kontrol yapısının genel durumu ayrıca bir öneme sahiptir. İç kontrol yapısında yaşanabilecek aksaklıklar veya eksiklikler iç denetim birimi tarafından fark edilmemesi birimin görevini eksik yapmasına neden olabileceği gibi danışmanlık ve güvence hizmet sunumu noktasında ciddi engelleyici sorunların yaşanmasına neden olabilir.

İÇ KONTROL SİSTEMİNİN UNSURLARI

Etkili iç kontroller ve kurumsal yönetim aracılığı ile finansal raporlama kalitesini arttırmak için çalışan gönüllü bir organizasyon olan Commitee of Sponsoring Organization (COSO) tarafından yayınlanan unsurlar uluslararası platformda kabul görmüştür. Söz konusu bu unsurlara ve açıklamaları kısaca şöyledir (Şavlı,2019:163-171; Selimoğlu ve Özbek, 2018:53-58):

- **Kontrol Çevresi:** Bu unsur, işletmenin yönetim kadrosunda bulunan kişilerin iç kontrol sistemine ilişkin yaklaşımı olarak ifade edilmektedir. Söz konusu bu unsur, tek başına önemli bir yanlışlığı önlememekte, belirleyememekte ya da düzeltememektedir. Buna karşın, diğer unsurların etkin ve verimli çalışması için gerekli ortamı oluşturur.

- **Risk Değerlendirme:** Bu unsur, yönetimin finansal tabloların geçerli finansal raporlama çerçevesine uygun hazırlanmasıyla ilgili risklerin belirlenmesi, öneminin öngörülmesi, gerçekleşme olasılığının değerlendirilmesi ve yönetilmesi gibi kanıtları içermektedir.

- **Kontrol Faaliyetleri:** Bu unsur, riskleri yöneten faaliyetlerin doğru ve zamanında işlediğinden emin olmayı sağlayan politika ve prosedürlerden oluşmaktadır. Bu faaliyetler, riski kabul edilebilir düzeylerde yönetmek için kullanılmalı, önleme, tespit etme ve düzeltmeye odaklanmalıdır.

- **Bilgi ve İletişim:** Bu unsur, ilişkili iç ve dış bilgilerin belirlenmesi, edinilmesi, işlenmesi ve zamanında iletilmesini içerir. Özellikle, işletme içerisinde uygun, güncel, tam ve erişilebilir bilginin olması için makul güvenceyi sağlayan iç kontrol mekanizmaları oluşturulmalıdır. İletişim ise, işletme içerisinde yüz yüze olabileceği gibi elektronik ortamda da yapılabilir.

- **İzleme:** Bu unsur, zaman içerisinde iç kontrol sisteminin performans kalitesinin değerlendirilmesi sürecini ifade eder. Yönetimin, iç kontrol sisteminin planladığı şekilde çalışıp çalışmadığını, değişen koşullara uyum gösterebilmek için güncellemelerin yapılıp

yapılmadığını izlemesi beklenir. Yönetimin, bu görevi yerine getirmemesi sisteme yeteri kadar önem vermediği algısına neden olabileceği gibi, diğer unsurları da olumsuz etkileyebilecektir.

Bu açıklamalardan da anlaşılacağı üzere, bir işletmede etkin bir iç kontrol sisteminin varlığından söz edebilmek için sistemin unsurları belirleyici olmaktadır.

İÇ KONTROL KAVRAMINA İLİŞKİN 2021 YILINDA ERİŞİME AÇIK DERGİLERDE YAYIMLANAN MAKALELERİN METODOLOJİK ANALİZİ

Araştırma kapsamında İç Kontrol Kavramı konusunda yazılan makalelerin metodolojik incelemesi yapılmıştır ve elde edilen bulgular sunulmuştur.

Araştırmanın Amacı ve Yöntemi

Bu çalışmada, 2021 yılı içinde İç Kontrol Kavramı' na ilişkin erişime açık dergilerde yayınlanan makaleler; Kapsadığı Standart", "Konu İçeriği" ve "Yayınlanan Dergiye" göre incelenerek bu konuda bilgiye ihtiyacı olan kullanıcılara yardımcı olmak amaçlanmıştır. Bu kapsamda 2021 yılı içerisinde 15 adet çalışma özetleyici içerik analiz yöntemi ile analiz edilmiştir.

Araştırma Bulguları

Bu bölümde İç kontrol Kavramı kapsamında yazılan ve yayınlanan makalelerin 2021 yılı, konulara, ilgili olduğu standarda ve yayınlanan dergiye göre sınıflandırılmıştır. İlk olarak İç Kontrol Kavramı kapsamında yazılan makalelerin yıla göre dağılımı Şekil 1' de ele alınmıştır.

Elde edilen verilere göre İç Kontrol Kavramı ile ilgili 2021 yılında 15 adet makale yayımlanmıştır. Konularına göre makalelerin dağılımı ise Tablo 1'de ele alınmıştır.

Tablo 1: Yayınlanan Makalelerin Konularına Göre Dağılımı

Konu	Frekans
İç Kontrol Kavramı ve Uygulamalarının Tarihsel Gelişimi	1
İç kontrol Kavramına İlişkin Ulusal ve Uluslararası Yapılan Düzenlemeler	1
İç Kontrol Sisteminin Etkinliği ve Durumsallık Kuramı	1
Kamu Mali Yönetiminde İç Kontrol Sistemini Belirleyen Faktörlerin Araştırılması	1
İç Kontrol Sisteminin İşletmelerin Finansal Performansına Etkisi	1
İç kontrol Odaklı Girişimcilik Eğilimlerini tespit Edebilmesine Yönelik Geçerli ve Güvenilir Bir Ölçek Geliştirmek	1
Bağımsız Denetim Kapsamında İç Kontrolün Etkileşimi	1
İç Kontrol Siteminin Kurumlar İçin Önemi	1
Suiistimal Riskleri Yönetiminde İç Kontrolün ve İç Denetim Birimlerinin Rolü	1
Muhasebe Denetiminde İç Kontrolün Önemi	1
Hastane İşletmelerinde İç Kontrol Sisteminin Değerlendirilmesi	1
Kamu Üniversitelerinde E-İç Kontrol Sistemlerinin Kullanımı	1
İç Kontrol Yapısının Hilenin Tespiti ve Önlemesinde Ortaya Çıkarmadaki Rolü	1
İşletmelerde COSO İç Kontrol Modeli ile Muhasebe Bilgi Sistemine Yönelik Uygulamaların Değerlendirilmesi	1
Türk bankacılık sektöründe iç denetim ve iç kontrol kavramı	1

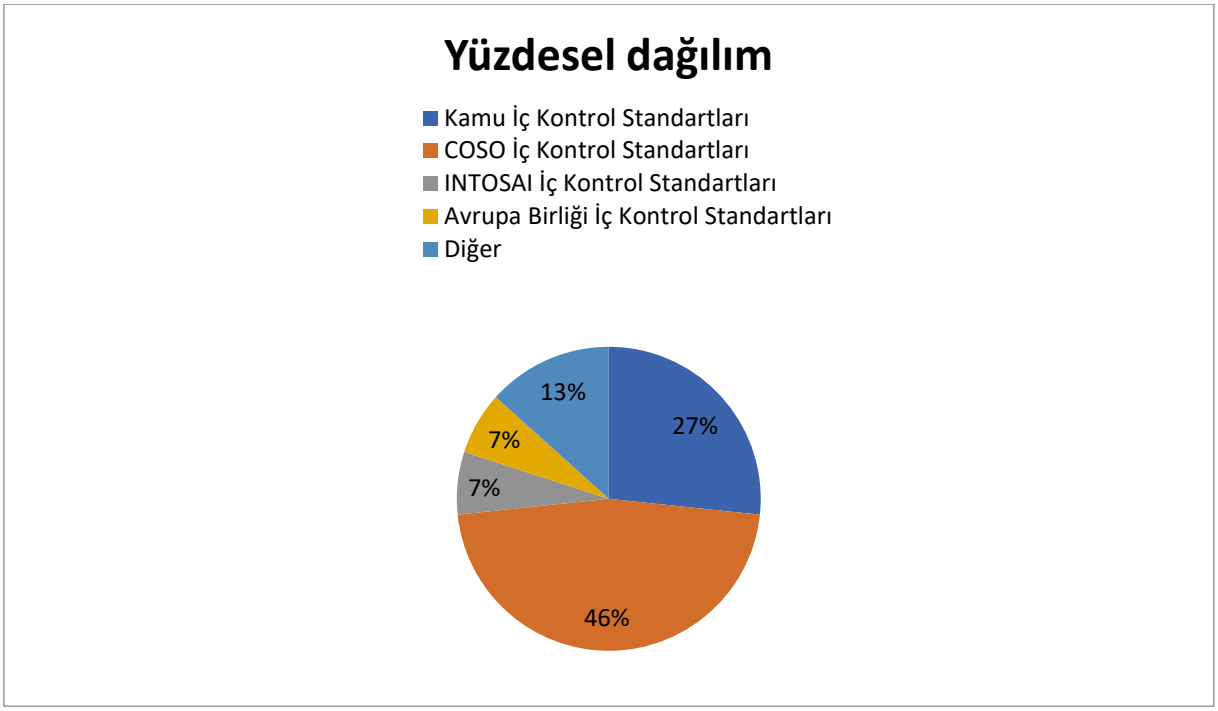
Tablo 1'de yer alan veriler değerlendirildiğinde İç Kontrol Kavramı konusunda farklı çalışmalar yapılmıştır. Standartlara göre makalelerin dağılımı Tablo 2'de ele alınmıştır.

Tablo 2. Yayınlanan Makalelerin İlgili Standarda Göre Dağılımı

İlgili Standart	Frekans
Kamu İç Kontrol Standartları	4
COSO İç Kontrol Standartları	7
INTOSAI İç Kontrol Standartları	1
Avrupa Birliği İç Kontrol Standartları	1
Diğer	2

İlgili olduğu standartlara göre dağılım incelendiğinde en fazla çalışma COSO İç Kontrol Standartları üzerine yapılmıştır. Kamu İç Kontrol Standartları üzerinde çalışmalar yapılmıştır. Şekil 1'de ise İç Kontrol kapsamında en fazla hangi standart üzerinde çalışma yapıldığı ile ilgili yüzdesel bir dağılım gösterilmiştir.

Şekil 1. Makalelerin İlgili Standarda Göre Yüzdesel Dağılımı



Yapılan çalışmalar ilgili standartlara göre yüzdesel olarak ele alındığında COSO İç Kontrol Standartları tüm makalelerin %46'sını oluşturmaktadır. Kamu İç Kontrol Standartları çalışmaların %27' sini oluşturmaktadır. Diğer çalışmalar %13 ve %7'lik pay ile başka çalışmaları da göstermektedir. Makalelerin yayınlanan dergilere göre dağılımı Tablo.3' te ele alınmıştır.

Tablo 3. Makalelerin Yayınlanan Dergilere Göre Dağılımı

Dergi Adı	Frekans
Muhasebe ve Finans Tarihi Araştırmalar Dergisi	1
Uluslararası İktisadi ve İdari Akademik Araştırmalar Dergisi	1
Sosyoekonomi Dergisi	1
Anadolu Üniversitesi Sosyal Bilimler Dergisi	1
Uluslararası İktisadi ve İdari İncelemeler Dergisi	1
Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi	1
Muhasebe ve Finansman Dergisi	1

Finans Ekonomi ve Sosyal Araştırmalar Dergisi	1
Uluslararası İktisadi ve İdari Bilimler Dergisi	1
Mehmet Akif Ersoy Üniversitesi Uygulamalı Bilimler Dergisi	1
Yönetim Bilimleri Dergisi	1
Turkish Studies - Economy	1
Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi	1
İşletme Araştırmaları Dergisi	1
TIDE Academia Research	1

İç Kontrol kavramına ilişkin yazılan makaleler toplamda 15 dergide yayımlanmıştır. Yayınlandığı dergilere göre dağılımı incelendiğinde farklı dergilerde farklı konularda çalışma yapıldığı görülmüştür.

Yayınlanan makalelerin içerik analizi ise Tablo 4' de ele alınmıştır. 2021 yılları arasında yayınlanan makalelerin amacı, yöntemi ve bulguları değerlendirilmiştir.

Tablo 4: Yayınlanan Makalelerin İçerik Analizleri

YAZAR	ARAŞTIRMA AMACI/YÖNTEMİ	ARAŞTIRMA BULGULARI
Tetik ve Karaca, 2021	Çalışmada iç kontrol kavramı ve uygulamalarının tarihi süreçteki gelişimi incelenmiştir.	İç kontrolün bugünkü kavramsal gelişimine, tarihi süreçte yaşanan önemli olayların etkisi ve farklı kavramlarla etkileşimi sonucunda ulaşılmıştır.
Çiçekay ve Demir, 2021	Çalışmada; iç kontrolün önemine ve ulusal ve uluslararası kurum ve kuruluşların iç kontrolle ilgili yaptıkları düzenlemelerin neler olduğu incelenmiştir.	İç kontrol Sitemine Yönelik Ulusal ve Uluslararası kurum ve kuruluşların kimler olduğuna değinilmiştir.
Fidan ve Tekşen, 2021	Çalışmada iç kontrol bileşenleri ile iç kontrol sisteminin etkililiği ilişkisi ile bu ilişkide durumsallık kuramı etkisi incelenmektedir.	Elde edilen bulgulara göre, iç kontrol sistemi hazırlanırken yalnızca depatrman yöneticilerinin değil tüm çalışanların tasarım sürecine dâhil edilmesi önerilmiştir
Küçükaycan ve Ağdeniz, 2021	Çalışmada kamu mali yönetiminin büyükşehir belediyelerinin iç kontrol sistemlerinin etkinliğini belirleyen faktörlerin tespit edilmesidir. Yöntemi içerik analizi ile analiz edilmiştir.	Elde edilen bulgulara göre,30 büyükşehir belediyesine ait Sayıştay 2019 yılı Denetim Raporlarındaki "İç Kontrol Sistemi Değerlendirme Prosedürleri" bilgilerinin değerlendirilmesi yapılmış ve çalışmada kullanılan faktörlerden sadece belediye başkanının siyasi ideolojisi ile iç kontrol sistemi etkinliği arasında anlamlı bir sonuç bulunmuştur.
Kanca, Çankaya ve Dinç, 2021	Çalışmada, şirketlerin iç kontrol sistemi ile finansal performans arasındaki ilişkisini tespit	Araştırma sonucunda, şirketlerin iç kontrol sistemi ile finansal performans arasında

	etmeye yöneliktir. Korelasyon ve regresyon analiz yöntemleri kullanılmıştır	pozitif yönde etkilediği ve iç kontrol unsurlarının en önemli olanları kontrol faaliyetleri ve izleme olduğu anlaşılmıştır.
Çetin ve Şallı, 2021	Araştırmada, girişimcilik kavramını iç kontrol açısından değerlendirerek bir ölçek geliştirilmesidir.	Analiz sonucunda akademisyenlerin iç kontrol odaklı girişimcilik ölçeğinin geçerli ve güvenilirliğe sahip olduğu görülmüştür.
Tez, 2021	Araştırmada, KGK tarafından yayımlanan bağımsız denetim standartları ve hükümleri açısından iç kontrol kavramı ele alınmıştır. içerik analizi yöntemi kullanılmıştır.	Elde edilen bulgulara göre, üst düzey yönetiminin iç kontrol yapısının değerlendirilmesi, iç kontrol sistemlerinin kurulması gibi konuların önemli olduğu tespit edilmiştir.
Çakalı, 2021	Araştırmada, iç kontrol sistemlerinin kurumlar için önemi ve uygulamada İngiltere'de bankacılık alanında faaliyet gösteren kurum incelenmiştir.	Araştırma sonucunda bankanın iflasına götüren etkenlerin etkin iç kontrol ve risk yönetimi sistemlerinin kurulmamış olmasıdır.
Görmen, 2021	Çalışmada, suiistimal riskleri yönetiminin tespitinde iç kontrolün ve iç denetimin önemini ortaya koymaktır.	Kurumların suiistimal risklerinin yönetilmesinde etkin bir iç denetim birimleri, iç kontrol yapısının yeterliliğini ve etkinliğini oluşabilecek suiistimalleri önleyebilmeye yardımcı olacaktır.
Savlı ve Akın, 2021	Çalışmada, Antalya ilinde sanayi bölgesinde faaliyette bulunan firmaların iç kontrol ve iç denetimi etkin bir şekilde uygulanıp uygulanmadığı araştırılmıştır. Anket yöntemi kullanılmıştır.	Elde edilen sonuçlara göre, muhasebe alanında iç kontrol ve iç denetimin firmalar açısından önemli olduğu ve daha fazla üstünde durmaları gerektiği anlaşılmıştır.
Eskin, 2021	Çalışmada, bir hastanenin süreçlerinin COSO iç kontrol modeline göre incelenmesidir.	Araştırma neticesinde hastanenin etkin bir iç kontrol sistemine sahip olmadığı anlaşılmıştır.
Sağlar ve Şen, 2021	Çalışmada, iç kontrol sisteminin kamu üniversitelerinde elektronik ortamdaki uygulama alanının yaygınlığını ve kullanımı açısından değerlendirilmesidir.	Araştırma neticesinde, kamu üniversitelerinde elektronik iç kontrol kullanımının yaygın olmadığı görülmektedir.
Türedi ve Celayir, 2021	Çalışmada, iç kontrol yapısının hilenin tespitini önlemeye ve ortaya çıkarmasındaki rolüne değinilmektedir.	Şirketlerin etkin bir iç kontrol yapısını oluşturarak hileleri önlemeye çalışmaktadır.
Çiçekay ve Demir, 2021	Çalışmada, işletme yöneticilerinin COSO iç kontrol modeli bileşenlerine uyum düzeyinin tespit edilmesi ve muhasebe bilgi sistemiyle ilgili	Elde edilen sonuçlara göre, COSO iç kontrol modeline ve muhasebe bilgi sisteminin etkinliğine yönelik ifadelerine olumsuz bir yaklaşım

	uygulamaların değerlendirilmesi amaçlanmaktadır. Anket yöntemi kullanılmıştır.	sergilemedikleri ortaya çıkmıştır.
Çendik ve Keskin, 2021	Çalışmada, Türk bankalarındaki iç kontrol sistemleri incelenmiştir.	Bankaların uygulanacak bu yeni iç sistemler yaklaşımının, doğabilecek riskleri yönetmede daha etkili olacağı ve denetim maliyetlerini azaltacağı düşünülmektedir.

Elde edilen bulgura göre 2021 yılında İç Kontrol ile ilgili toplamda 15 adet makale yazılmıştır. Makalelerin konu dağılımları incelendiğinde iç kontrol konusunda farklı makale çalışmaları yapılmıştır. Çalışmaların önemli bir bölümü COSO İç Kontrol Standartlarında çalışmalar ortaya koyarak uygulayıcılara önemli bilgiler aktarmaktadır. Yazar görüşleri ile konuya ilişkin detaylar incelenmiştir. Gerçekleştirilen çalışmalar birçok önemli dergide yayınlanmıştır. Ayrıca incelenen çalışmaların araştırma yöntemleri ve edindikleri bulgulara tablolaştırılarak konuya ilgi duyan araştırmacılar için veri seti oluşturulmuştur.

SONUÇ

İç kontrol sistemi ile belge, kayıt ve raporlama aracılığı ile sorumluluklar belirlenmekte, olası hata ve hilelerin önüne geçilebilmekte ve faaliyetlerin etkinliği ve verimliliği sağlanabilmektedir. Bu bağlamda işletme yönetimi de iç kontrol sistemini sürekli denetleyerek değerlendirme yapmalı, alınacak önlemleri tespit etmeli ve etkin bir planlama ile süreç uygulanmalıdır. Bağımsız denetçi açısından bakıldığında ise, iç kontrol süreçlerinde bazı aksaklıklar görüldüğünde üst yönetim uyarılmalıdır. Çünkü iç kontrol sistemi işletmenin önceden belirlenen hedeflerine ulaşması açısından makul bir güvence vermektedir. Ayrıca, bu sistemin işletmede yer almaması; varlık kaybı, kararların hatalı verilebilmesi, suiistimaller, gelir kaybı ve amaçlara ulaşamama gibi olumsuz sonuçları da gündeme getirebilir.

İç kontrol sistemi ile ilgili uluslararası platformda kabul görmüş COSO modeline göre, işletme faaliyetlerinin etkinliği ve verimliliği, finansal raporlamanın güvenilirliği ve mevzuata uygunluğun gerçekleştirilebilmesi için "Kontrol Ortamı", "Risk Değerlendirme", Kontrol Faaliyetleri", Bilgi ve İletişim" ve "İzleme" gibi unsurlar dikkate alınmaktadır. Bu çalışmada ise, 2021 yılları arasında İç kontrol sistemi ile ilgili erişime açık dergilerde yayınlanan makaleler araştırılmış, özetleyici içerik analizi yöntemi kullanılarak edinilen bulgular değerlendirilmiştir.

KAYNAKÇA

Çakalı, K.R. (2021). İç Kontrol Başarısızlıkları: Barings Örneği. *Finans Ekonomi ve Sosyal Araştırmalar Dergis*i, Cilt.6 Sayı.3, 433- 442.

Çendik, Y. Y. , & Anıl-Keskin, D. (2021). Türk Bankacılık Sektörünün İç Sistemlerine Eleştirel Bir Yaklaşım. *TIDE Academia Research,* 3(1), 11-40.

Çetin, M. & Şallı, D. (2021). İç Kontrol Odaklı Girişimcilik Ölçeği Geçerlik ve Güvenilirlik Çalışması, *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi,* 2021 9 (2) 325-340.

Çiçekay, H. , Demir, M. (2021). İşletmelerde COSO İç Kontrol Modeli ve Muhasebe Bilgi Sistemine Yönelik Uygulamaların Değerlendirilmesi Üzerine Bir Araştırma, *İşletme Araştırmaları Dergisi,* 13 (4), 3801-3820.

Demir, M., ve Çiçekay, H. (2021). 2. İşletmelerde İç Kontrol Sisteminin Önemi, İç Kontrol Sistemine Yönelik Ulusal ve Uluslararası Kurum ve Düzenlemeler*: Uluslararası İktisadi ve İdari Akademik Araştırmalar Dergisi,* 1(1), 9–26.

Ertuğrul, A. (2020). Sağlık Kurumlarında İç Kontrol ve İç Denetim s 39-68. Ed. Arslan, Ü ve Kayhanoğlu, S. (2020). *Denetimde Seçme Konular 4- İç Denetim İç Kontrol Sektörel Uygulamaları*. Gazi Kitapevi: Ankara.

Eskin, İ. (2021). Evaluation of The Effectıveness of The Internal Control System in Hospital Business: A Case Study. *Yönetim Bilimleri Dergisi*, 19 (39), 151- 178.

Fidan, T. & Ö. Tekşen (2021), "İç Kontrol Bileşenleri ile İç Kontrol Sisteminin Etkililiği İlişkisinde Durumsal Etkenlerin Farklılaştırıcı Etkisi: Üniversite İdari Personeli Üzerine Bir Araştırma", *Sosyoekonomi*, 29(49), 427-454.

Gönen, S ve Yurtlu, Ö. (2021). İç Denetim Faaliyetlerinin Etkinliğinin ve Verimliliğinin Sağlanmasında Kullanılan Bir Yöntem: Çevik Denetim. S 159-176. Ed: Dalkılıç, *M. INSAC Advances In Social And Education Sciences*. Duvar Kitapevi. 1. Baskı. ISBN: 978-625-7680-70-7.

Görmen, M. (2019). Değer Katan Bir İç Denetim, *Erzincan Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, Yıl 12, Sayı 1, ss.73-86.

Görmen, M. (2021). İç Denetim Bakış Açısıyla Suiistimal Riski Yönetimi. *Uluslararası İktisadi ve İdari Bilimler Dergisi,* 7 (1), 92 – 103.

Hacıhasanoğlu, T , Çağlı, T . (2020). İç Kontrol Sisteminin Kurumsallaşma Üzerine Etkisi: Devlet Üniversiteleri Üzerine Bir Araştırma. *Muhasebe ve Finans İncelemeleri Dergisi* , *3*(2) , 132 – 147

Kanca, S. , Çankaya, F.& Dinç, E.(2021). İç Kontrol Sisteminin Şirketlerin Finansal Performansına Etkisi: BIST Şirketlerinde Bir Uygulama, *Uluslararası İktisadi ve İdari İncelemeler Dergisi*, (32), 31-52.

Karakaya, G. (2020). BDS 265 Kapsamında Bağımsız Denetim ve İç Kontrol İlişkisi, *İşletme Dergisi*, 1(2), 1-14.

Korkmaz, G. (2020). İç Kontrol, Risk Yönetimi ve Kurumsal Yönetim Süreçlerinin Değerlendirilmesine Yönelik Ölçeklerin Güvenilirlik ve Geçerlilik Çalışması. *İşletme Dergisi*, 21(1). 177-201.

Küçükaycan, D. ve Ağdeniz, Ş. (2021). Türk Kamu Mali Yönetiminde İç Kontrol Sisteminin Belirleyicilerinin Araştırılması: Büyükşehir Belediyeleri Örneği. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 21(3), 827-850.

Sağlar, J. & Şen, Ö (2021). Kamu Üniversitelerinde E-İç kontrol Sistemlerinin Kullanımı Üzerine Bir Araştırma. *Turkish Studies - Economy*, 16(3), 1245-1259.

Savlı, P. & Akın, O. (2021). Muhasebe Denetiminde İç Kontrol ve İç Denetiminin Önemi: Antalya İlinde Faaliyet Gösteren Sanayi İşletmelerinde Bir Uygulama. *Mehmet Akif Ersoy Üniversitesi Uygulamalı Bilimler Dergisi,* 5 (1) , 31-58.

Selimoğlu S. ve Özbek Y. (2018), *İç Denetim (Uluslararası İç denetim Standartları ile Uyumlu),* Nobel Yayıncılık: Ankara.

Selimoğlu S., Özbirecikli M. ve Uzay Ş. (2019), *Bağımsız Denetim (Türkiye Denetim Standartları İle Uyumlaştırılmış),* Nobel Yayıncılık: Ankara.

Şavlı T. (2019), *Bağımsız Denetim Rehberi*, Huz Akademi:İstanbul.

Tetik N ve Acar H. (2021), İç Kontrol Kavramı ve Uygulamalarının Tarihsel Gelişimi, Muhasebe ve Finans Tarihi Araştırmaları Dergisi, Özel Sayı, 189-204.

Tez, B. (2021). Bağımsız Denetim Standartları Kapsamında Bağımsız Denetim ve İç Kontrolün Etkileşimi. *Muhasebe ve Finansman Dergisi* , (89) , 113- 132.

Türedi, H. & Celayir, D. (2021). Hilenin Tespiti ve Önlenmesinde İç Kontrol Yapısının Etkinliği. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, 8 (1) , 1-20

https://www.coso.org/documents/coso-crowe-coso-internal-control-integrated-framework.pdf

https://www.kgk.gov.tr/DynamicContentDetail/5136/Kamu-Go%CC%88zetimi-Muhasebe-ve-Denetim-Kurumunun-Tes%CC%A7kilat-ve-Go%CC%88revleri-Hakk%C4%B1nda-Yo%CC%88netmelik

https://www.mevzuat.gov.tr/File/GeneratePdf?mevzuatNo=9813&mevzuatTur=KurumVeKurulusYonetmeligi&mevzuatTertip=5

https://www.tide.org.tr/page/26/Ic-Denetimin-Tanim

RİSK ODAKLI İÇ DENETİM SÜRECİNE KAVRAMSAL YAKLAŞIM

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ÖZET

Tüm organizasyonlarda olduğu gibi, işletmeler de risklere maruz kalmaktadır. Risklerin beklentilerden ayrıldığı noktada tespitinin ve kontrolünün önemi ortaya çıkmaktadır. İşletme süreçlerinden ortaya çıkan risklerin, iç denetim mekanizması tarafından ele alınması konusunda ortaya atılan görüşler, işletme yönetiminin risklere yönelik odaklanmasını gündeme getirmiştir.

Risk odaklı iç denetim uygulamaları işletme tarafında ortaya çıkan risklere dikkat vererek, söz konusu risklerin işletme faaliyetlerinde yönetilebilir düzeyde olabilirliğine yönelmektedir. Detaylıca ele alındığında iç denetim mekanizmasının riske odaklanması, işletme faaliyetlerinin ve iç kontrol düzeninin denetlenmesi ve ortaya çıkan riskler hakkında yönetime danışmanlık hizmeti sunması olarak gerçekleşebilmektedir. Bu çalışmada, risk odaklı iç denetim sürecine yönelik kavramsal olarak ele alarak, işletme performansı ve başarısındaki rolüne yönelik değerlendirmeler yaparak, bu kavramın gelecekteki rolüne ışık tutmak amaçlanmaktadır.

Anahtar Kelimeler: Risk, İç Denetim, Risk Odaklı İç Denetim

CONCEPTUAL FRAMEWORK TO RISK BASED AUDIT PROCESS

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ABSTRACT

Enterprises are exposed to risks as well as all organizations. At the point where risks are separated from anticipations, the importance of detection and control emerges. The views put forward on the handling of risks arising from business processes by the internal audit mechanism brought the focus of management towards risks to the agenda.

Risk based internal audit applications pay attention to the risks that arise on the business side and focus on the possibility of such risks at a manageable level in business activities. When considered in detail, the focus of the internal audit mechanism on risk can be realized as auditing and business activities and providing consultancy services to the management about that risks that arise. In this study, it is aimed to put light on the future role of this concept by considering the risk based internal audit process conceptually and evaluating its role in business performance and success.

Keywords: Risk, Internal Audit, Risk Based Internal Audit

GİRİŞ

Günümüz işletmecilik anlayışında rekabet üstünlüğü elde edebilmenin önemli unsurlarından biri organizasyon şemasının güçlü olmasıdır. Bu şema, işletmelerde yer alan bölümleri ve alt bölümleri

göstermektedir. Özellikle üst yönetimin alacakları kararlarda isabetli bir sonuca oluşmasında danışmanlık faaliyetine gereksinim duyulmaktadır. Bu bağlamda iç denetim bir organizasyon şemasında bölüm olarak yönetime danışmanlık hizmeti sunmaktadır. Ancak iç denetimin yönetim görevinden uzak olması, görüşünü çekinmeden açıklayabilmesi durumunda etkinliği ön plana çıkabilmektedir. Söz konusu bu etkinliği arttırabilmek için günümüzde işletmelerin risk düzeylerinin belirgin hale gelmesi, risk raporlamasının yapılabilmesi ve denetim unsurlarının risklere göre şekillenmesi risk odaklı iç denetim kavramını gündeme getirmiştir.

Bu çalışmada risk odaklı iç denetim kavramı hakkında teorik açıklamalara yer verilmektir. Bu bağlamda çalışmada ilk olarak risk ve iç denetim kavramları tanıtılmış, ardından risk odaklı iç denetim kavramı açıklanmıştır.

RİSK KAVRAMI

Risk kavramı bilim dallarına göre değişik biçimlerde tanımlanmaktadır. Risk ile ilgili tüm dillerdeki ve alanlardaki tanımlara bakıldığında farklılıklar görülmesine rağmen; hepsinin ortak kanaati riskin kayba uğrama belirsizliği olmasıdır(Jones ve Dudley, 1978).

Risk terimi, sezgisel olarak, belirsizlik ve kaybı içerir. Belirsizlik, riskin en önemli özelliklerinden biri olduğundan, risk kaynaklarının araştırılması gerekmektedir. Potansiyel getirilerin ve kayıpların ölçülmesi ve ortaya çıkarılması da risk yönetimi kavramının temel bileşenleridir. Bu bağlamda, risk yönetimi faaliyetleri, bir nokta tahmini değil, potansiyel olasılıkların bir dağılım tahminini üretme rolünü içerir(Yilmaz ve Flouris,2017).

Finansal açıdan risk ise, satışlar ve satın almalar, yatırımlar ve krediler ve çeşitli diğer ticari faaliyetler dâhil olmak üzere finansal nitelikteki sayısız işlem yoluyla ortaya çıkar. Riskler; yasal işlemler, yeni projeler, birleşme ve satın almalar, borç finansmanı, maliyetler veya yönetim, paydaşlar, rakipler, yabancı hükümetler veya hava koşulları gibi birçok unsur sonucunda ortaya çıkabilir(Horcher, 2005).

Bir şirketin "doğal" risk profili, alış ve satışların standart piyasa uygulamalarına uygun olarak gerçekleştirildiği, varlıkların etkin yönetiminden kaynaklanan tekrarlayan risk olarak tanımlanmaktadır. Kurumsal risk yönetiminin amacı, doğal risk profili alternatiflerinin maliyet-fayda analizine dayalı olarak şirketin yatırımcılarına sunmayı planladığı risk profilini belirlemektir. Yani bir şirketin yöneticilerinin temel amacı, şirketin değerini maksimize etmek, diğer bir deyişle hisselerinin değerini maksimize etmektir. Risk yönetimi söz konusu olduğunda, sorumlu şirket, hisselerinin potansiyel alıcısı olan yatırımcılara taleplerine en uygun risk profilini sunmalıdır(Garcia, 2017).

Finansal açıdan oluşan risklerin üç temel kaynağı bulunmaktadır(Horcher, 2005):

1. Piyasa koşullarından arz ve talebe bağlı ortaya çıkan riskler(Faiz oranı, Kur değişimi gibi),
2. İşletmelerin faaliyetlerinden ve içinde bulunduğu çevreden kaynaklı riskler,
3. İşletmelerin kendi iç süreçlerinden, insan veya teknoloji kaynaklı oluşabilecek riskler.

İşletmelerin finansal açıdan ortaya çıkan riskleri operasyonlarını gerçekleştirmede ele almak ve bu riskleri yönetmek zorunda olduğu, dolayısıyla bütünsel açıdan değerlendirmek gerektiği ortaya çıkmaktadır.

RİSK YÖNETİMİ

Risk, hesaba katılmadığımız, hazırlıksız olduğumuz ve bireyleri, firmaları, finansal piyasaları ve genel olarak toplumu etkileyen sonuçların ve olayların doğrudan ve dolaylı olumsuz sonuçlarından

kaynaklanmaktadır. Hem dahili hem de harici olarak meydana gelen birçok nedenden kaynaklanabilir. Risk ilk etapta, sonuçlar başarısızlıkların veya yanlış değerlendirmelerin sonucudur, ikinci durumda ise bunlar kontrol edilemeyen olayların veya önleyemeyeceğimiz olayların sonuçlarıdır. Bunlar aynı zamanda çok sayıda alanla da ilgilidir ve her biri psikolojik ihtiyaçlar ve belirsizlikten kaynaklanan sorunlarla ve bunların yol açabileceği olumsuz sonuçlarla başa çıkma ihtiyacı tarafından motive edilen riskin ölçülmesi, değerlendirilmesi ve en aza indirilmesi için bir yaklaşım sağlar (Tapiero, 2004).

Risk yönetimi finansta geniş bir şekilde uygulanmaktadır. Örneğin finans, belirli bir portföydeki riskleri bir işlem ya da bir dizi işlem yoluyla veya paylaşmak ve ilgili taraflarca riski azaltmak için yapılan sözleşmeye dayalı anlaşmalar yoluyla ortadan kaldırmak için riskten korunma sorunlarıyla yoğun bir şekilde ilgilenir. Risk yönetimi, riskin etkilerini ortadan kaldırmak için finansal araçların kullanılmasından oluşur. Risklerin katlanılabilir ekonomik maliyetlere getirilmesi için opsiyonların, sözleşmelerin, takasların, sigorta sözleşmelerinin, yatırım portföyü tasarımının vb. araçların makul bir şekilde kullanılması anlamına gelebilir. Bu araçların kullanılmasının maliyeti vardır, fakat risk yönetimi, riski etkileyen çok sayıda faktörün dikkatli bir şekilde dengelenmesini, bu araçların uygulanmasının maliyetlerini ve yerine getirmek için bir ekonomik optimizasyonun gerekli olacağı tolere edilebilir risklerin) belirlenmesini gerektirir (Tapiero, 2004). Dolayısıyla bir organizasyonda riskleri belirlemek ve yönetmek oldukça önemlidir.

Organizasyonların risk yönetiminde dikkate alınması gereken en önemli hususlardan biri, bağımsız bir risk yönetimine sahip olmaktır. Yani risk yöneticisinin sahip olduğu değerli bilgilere erişimi olması ve düzeltici önlem alma yetkisine sahip olması gerekir. Ayrıca risk yönetim fonksiyonunu tek merkezden yönetmek yerine, yetkiler alt birimlere de dağıtılabilir(Chance ve Brooks, 2015).

Risklerin yönetilmesinde,

- Riskin Tanımlanması
- Risk Değerlendirmesi
- Riskin Ölçülmesi ve Sonuçlandırılması
- Riskin Raporlanması temel unsurları oluşmaktadır(Collier ve diğerleri, 2006).

Risk yönetim süreci sonucunda organizasyonların sağlayacağı yararlar şu şekildedir(Emhan, 2009).

- Riskleri çözümlemeye yönelik çalışmalar yöneticilerin fiziksel ve zihinsel olarak gelişmesine katkı sağlayacaktır,
- Gelirin artması, harcamaların azalması ile de işletme kârı artacaktır,
- Risk yönetimi kapsamında yapılan planlar, diğer departmanların da işine yarayacaktır,
- Risk yönetimi sayesinde, örgütsel etkinlik artacak ve pozitif bir imaj elde edilecektir.

Finansal anlamda risk yönetimi, firmaların karşı karşıya oldukları risklere neden dikkatli bir şekilde önem vermeleri gerektiğine dair bazı gerekçeler sunar. Bu gerekçeler(Christoffersen, 2012).

- **İflas durumu:** Yatırımcılar gelecekteki iflası önemsiz bir olasılık olarak görürlerse, bir şirketin yeniden düzenlenmesi veya kapanmasının gerçek maliyetleri, şirketin mevcut değerlemesini azaltacaktır. Böylece risk yönetimi, borç ödememe olasılığını azaltarak bir firmanın değerini artırabilir.
- **Vergiler:** Risk yönetimi, kazanç farklılıklarını azaltarak vergi yükünün hafiflemesine yardımcı olabilir. Birçok vergi sistemi, geçmiş yıllar zararların vergi avantajını açısında ileri zamana taşımaya izin vermektedir. Böylece, diğer her şey eşit olduğunda, gelecekteki vergi öncesi gelirin oynaklığını azaltmak, gelecekteki vergi ödemelerinin net bugünkü değerini düşürecek ve böylece firmanın değerini artıracaktır.

- **Sermaye yapısı ve sermaye maliyeti:** Kurumsal finans yönetiminin önemli bir kaynağı, borcu ödeyememektir. Dolayısıyla, borç/özsermaye oranı ne kadar yüksekse, firma o kadar risklidir. Bu nedenle risk yönetimi, firmanın daha yüksek bir borç-özsermaye oranına sahip olmasına izin veriyor olarak görülebilir. Bu borç finansmanı vergiler hariç maliyetleri düşükse faydalı olmaktadır. Benzer şekilde, uygun risk yönetimi, firmanın borç finansmanı yoluyla daha agresif bir şekilde genişlemesine izin verebilir.
- **İşçilik maliyetleri:** Uygun risk yönetimi, kilit personeli tutma ve işe alma maliyetlerinin azaltılmasına yardımcı olabilir.

İÇ DENETİM

İşletmelerde iç bilgi kullanıcısı olarak görülen yöneticilerin alacakları kararlarda adeta yol haritası çizen, danışmanlık görevinin üstelenen bir bölümün yer alması bağlı bulunulan işletmesinin faaliyet gösterdiği sektörde rekabet üstünlüğü sağlamasında büyük önem taşımaktadır. Özellikle teknolojideki gelişmeler ışığında büyümeye çalışan ya da faaliyet gösteren bir işletmede, insan kaynağının artmasıyla hata, hile, usulsüzlük, yolsuzluk, verimlilik ve etkinlik gibi konularda önlem alınması gereği doğmuştur. Bunun sonucunda da işletmelerde danışmanlık faaliyetinin üstlenen iç denetim bölümünün önemi ve etkinliği gündeme gelmiştir.

Literatürde iç denetim kavramı incelendiğinde farklı tanımlamalara rastlanmaktadır. Söz konusu tanımlardan bazılarına aşağıda kısaca yer verilmiştir.

İç Denetçiler Enstitüsü (IIA)' ya göre iç denetim, bir kurumun faaliyetlerini geliştirmek ve onlara değer katmak amacını güden bağımsız ve objektif bir güvence ve danışmanlık faaliyetidir. İç denetim, kurumun risk yönetim, kontrol ve yönetişim süreçlerinin etkililiğini değerlendirmek ve geliştirmek amacına yönelik sistemli ve disiplinli bir yaklaşım getirerek kurumun amaçlarına ulaşmasına yardımcı olur (www.tide.org.tr).

5018 Sayılı Kanunda İç Denetim; "Kamu idaresinin çalışmalarına değer katmak ve geliştirmek için kaynakların ekonomiklik, etkililik ve verimlilik esaslarına göre yönetilip yönetilmediğini değerlendirmek ve rehberlik yapmak amacıyla yapılan bağımsız, nesnel güvence sağlama ve danışmanlık faaliyeti" şeklinde tanımlanmıştır.

İç denetimin güvence ve danışmanlık unsurlarının yanı sıra aşağıda belirtilen unsurları da içermektedir (Özbek; 2012).

- Kurumun içine yönelik olup, risk yönetimi, kontrol ve yönetişim süreçlerinin etkinliğini değerlendirir ve geliştirir.
- Görevinin sistematik ve disiplinli bir yaklaşımla yapan bu bölüm bağlı olduğu kurumun amaçlarına ulaşmasında katkıda bulunur.
- Kurumun faaliyetlerine değer katma, geliştirme gibi özelliği olan bu bölüm aynı zamanda bağımsız ve objektif olmak zorundadır.

RİSK ODAKLI İÇ DENETİM

Risk odaklı iç denetim, denetimin etkinliğini artırmak amacıyla, işletmelerin risk düzeylerinin belirlenmesi, denetim sürecinin işletmenin risk düzeylerine göre şekillendirilmesi ve denetim kaynaklarının bu düzeye göre tahsis edilmesi esasına dayanan bir denetim yaklaşımıdır. Etkin bir iç denetim sisteminin en önemli görevlerinden biri tüm riskleri belirlemek ve olanaklar çerçevesinde azaltmak için için uygun öneriler geliştirmektir. Geleneksel anlayışta denetim faaliyeti sadece geçmiş döneme ilişkin hataların incelenmesi ve belirli bir faaliyete yönelik yürütülen çalışmalardan

oluşmaktadır. Risk odaklı denetimin gerçekleştirilmesi ise, işletmelerin gelecekte daha iyi yönetilmesi ve hataları minimize etmeye çalışmasıdır.(Keskin, 2016). Tablo 1'de geleneksel iç denetim ile risk odaklı iç denetimin karşılaştırması yer almaktadır.

Tablo 1: Geleneksel Yaklaşımın Risk Odaklı Yaklaşımla Karşılaştırılması

Denetim Süreci	**Risk Odaklı Denetim**	**Geleneksel Denetim**
Denetim Alanı	İşletmede gerçekleşen tüm işlemler	Öncelikli olarak finansal işlemler ve gerektiğinde diğer işlemler
Denetimin Amacı	Risklerin kabul edilebilir ve yönetilebilir olup, olmadığının incelenmesi	İç kontrol sisteminin etkinliğini doğrulamak ve verimliliği arttırmak.
Denetim Planı	Direkt olarak riskli alanlara yönelme.	Denetim planının hazırlanması riskli alanlarla ilgili değildir.
Örgütün Tutumu	Örgüt, denetimin tüm aşamalarıyla ilgilenir.	Örgütün denetimin tüm aşamalarıyla ilgilenmesi çok azdır. Örgüt bir bütün olarak değil, denetlenen alanla ilgilenir.
Zamanın Planlanması	Zamanın planlanması zordur. Başlangıçta yapılan plan her an değişebilir.	Denetim eskiden beri yapıldığı için kolaydır.
Çalışma Sahası	İşletmede tespit edilen bütün riskler.	Yapılan denetimin amacına bağlıdır.
Testler	Karşılaşılan risklere göre denetim testleri değişebilir	Yapılan denetimin amacına bağlıdır.

Kaynak: Usul ve Mizrahi, 2016:2

Risk odaklı iç denetim anlayışı geleneksel iç denetim faaliyetlerine göre çok daha farklı bir anlayışa sahip olup bu yaklaşımda işletmeye değer katma söz konusudur. Risk odaklı iç denetim anlayışı ile işletmeleri belirledikleri hedeften uzaklaştıran sorunları yönetmeyi ve fırsatların değerlendirilmesi amaçlanmaktadır. Ancak risk odaklı denetimden işletmelerin beklenen faydayı sağlayabilmesi için ilgili denetim altyapısının oluşturulması ve doğal olarak işletme yönetimlerinin denetim faaliyetlerine gerekli özeni ve desteği vermeleri önem taşımaktadır (Çarıkçı ve Yıldırım, 2020).

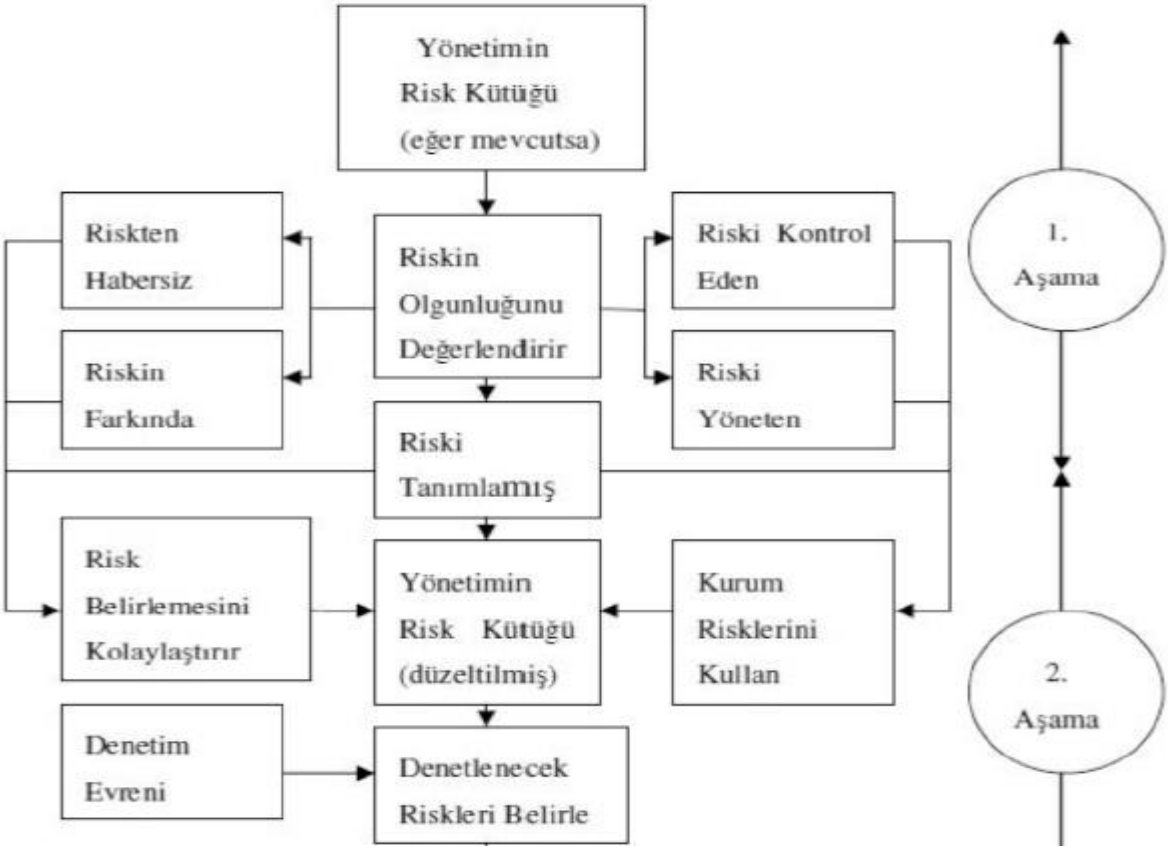
Risk odaklı iç denetim de yukarıda bahsedilen faydalara ulaşılmasında bazı engeller bulunmaktadır. Bunlar şu şekildedir; (Kışhalı ve Pehlivanlı, 2006);

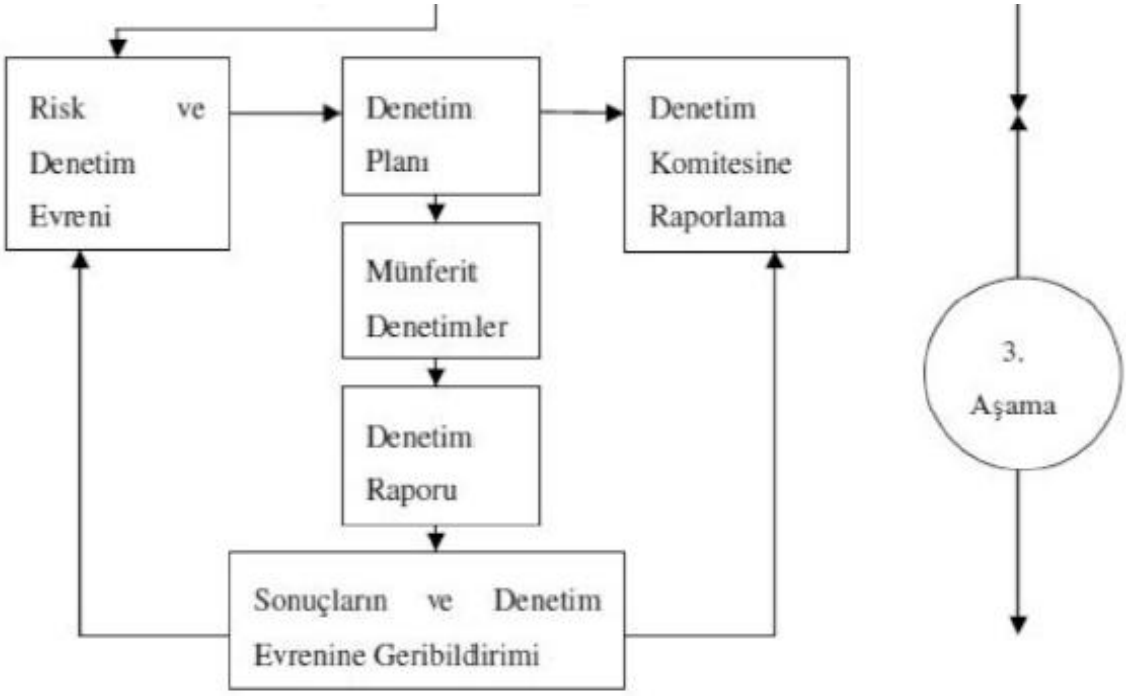
- İç denetçinin risk yönetim sistemleri hakkında bilgi ve deneyiminin yetersiz olabilmesi
- Çok uluslu şirketler gibi belli bir merkezi yapısı olmayan yapılara ilişkin denetimlerde birtakım zorluklarla karşılaşılması
- Yapılan incelemeler, sektörü etkileyen risklerin ortaya çıkarılması ve değerlendirilmesinde yetersiz kalabilmektedir,
- İşletmeler tarafından üretilen bilgi ve analizlerin yoğun kullanımı, işletmenin risk yönetim sistemine yüksek düzeyde bağımlılığa neden olabilir,
- İşletmenin sahip olduğu risklerin tümünün ölçülememe sorunu şeklindedir.

Basel komitesi tarafından, Risk Odaklı İç Denetimin kapsamı ise aşağıdaki gibi sıralanmıştır(Kışhalı ve Pehlivanlı, 2016);

- Etkin ve yeterli bir iç kontrol sisteminin olup olmadığının araştırılması ve değerlendirilmesi
- Risk ile ilgili olarak yöntem ve metodolojilerinin incelenmesi
- Elektronik bilgi sistemi ile elektronik hizmetler de kapsayacak bir şekilde yönetim ve finansal bilgi sistemlerinin revize edilmesi
- Muhasebe kayıtları ile finansal tabloların doğruluğunun ve güvenilirliğinin araştırılması
- İşletmenin risk tahmini ile ilgili olarak kendi sermayesini değerlendirme sisteminin incelenmesi
- Hem işlemlerin hem de belirli iç kontrol sistemi işleyişinin denetime tabi olması
- Yasal ve düzenleyici otoritelerin koşullarına, etik kurallara, politika ve yöntemlerin uygulanmasına uyulup uyulmadığının araştırılması
- Raporlamanın kontrol edilmesi

Risk odaklı iç denetim süreci ayrıntılı bir biçimde aşağıdaki şekilde gösterilmektedir.





Şekil 1: Risk Odaklı İç Denetim Süreci

Kaynak: Griffiths, D. (2017). Risk Based Internal Auditing - Tree Views of Implementation, http://www.internalaudit.biz ; Aktaran: Gökçen Ataman ve Yelken, 2019).

Risk odaklı iç denetim süreci yukarıdaki şekilde aşamalar halinde gösterilmiştir. Bunlar dikkate alındığı zaman risk odaklı iç denetimin yönetilmesinde aşağıda belirtilen süreç izlenebilir (Gökçen Ataman ve Yelken; 2019);

- İşletmenin alanı ile ilgili bilgi elde etmesi ve risk olgunluğunun incelenmesi,
- Ayrıntılı bir risk değerlendirilmesinin yapılıp, söz konusu bu risklerin kayıt altına alınması
- Konuya ilişkin bir plan dahilinde hazırlanması
- Yürütme evresi
- Raporlama evresi

İç Denetçiler Birliği'nin bir yayınında risk odaklı iç denetim için yedi adımlık bir süreçler dizisi önermektedir. Bunlar sırasıyla; (Thomas, 2007).

1. İşletme çevresini anlamak,
2. Ön risk değerlendirmesi yapmak,
3. 3 yıllık bir denetim planı geliştirmek,
4. İkinci risk değerlendirmesini tamamlamak,
5. İç denetim planının icra etmek,
6. Kapanış toplantısı yapmak ve

7. Raporlama ve iletişim süreçleri oluşturmak

Risk odaklı denetimde amaç, denetim kaynaklarının riskli alanları belirleyerek kaynakların etkin biçimde kullanılmasını sağlanmasıdır. Yönetim, kontrol ve risk yönetimi süreçlerinin etkinlik seviyesini en üst düzeye çıkarılmasıdır.(Çankaya, Dinç ve Kara,2012)**.** İşletmelerin bir risk yönetimi ve risk odaklı denetim anlayışı ile risklerini belirlenmesi, ölçülmesi ve yönetilerek en aza indirilmesi amaçlanmaktadır. Bunun yanı sıra şirketlerin üst kademe yönetiminin yeterliliği, risk alma durumu, işletmelerin güncel ve gelecekteki finansal durumunun değerlendirilmesi de önem taşımaktadır.

SONUÇ

Türkiye'de Temmuz 2012 tarihinde yürürlüğe giren 6102 sayılı Türk Ticaret Kanunu ile birlikte riskin erken teşhis komitesinin kurulması denetim faaliyetlerini de etkilemiştir. Bu bağlamda işletmelerin muhtemel riskleri belirlemesi, değerlendirmesi ve olanaklar çerçevesinde azaltmaya çalışması büyük önem taşımaktadır. Risk odaklı iç denetim işletmelerde risk profillerinin belirlenmesi için gerçekleştirilen ve denetimde etkinliği arttırmak amacıyla yapılan bir denetim türüdür. Bu kavram, geleneksel iç denetim kavramına bir alternatif olarak gündeme gelmiştir. Bu çalışmanın amacı, risk odaklı iç denetim kavramını tanıtmak ve geleneksel iç denetim kavramı ile olan farklılıklarını ortaya koymaktır. Konuyla ilgili yapılan literatür taramasında gerek nitel gerekse de nice araştırmaların yapıldığı görülmektedir. Bu durum denetim alanında konuya olan ilginin arttığını göstermektedir.

KAYNAKÇA

Chance, D. M., & Brooks, R. (2015). *Introduction To Derivatives And Risk Management*. Ohio: Cengage Learning.

Christoffersen, P. (2012*). Elements Of Financial Risk Management*. Academic Press.

Collier, P. M., Berry, A. J., & Burke, G. T. (2006). *Risk And Management Accounting: Best Practice Guidelines For Enterprise-Wide İnternal Control Procedures*. Oxford: Elsevier.

Çankaya, F. , Dinç, E. , Kara, M. "Etik İlkeler ve Raporlama Zamanlılığının Risk Odaklı İç Denetimin Başarısına Etkisi, *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* Cilt 9 Sayı 20 (2012): 239-264.

Çarıkçı, O. & Yıldırım, A.(2020). Risk Odaklı İç Denetimin Stratejik Yönetim Anlayışı Açısından Değerlendirilmesi. *Süleyman Demirel Üniversitesi Vizyoner Dergisi,* 11 (26), 302- 313.

Emhan, A. (2009). Risk Yönetim Süreci ve Risk Yönetmekte Kullanılan Teknikler. A*tatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 23(3), 209-220.

García, F. J. (2017). *Financial Risk Management*. Ebook: Springer International Publishing.

Gökçen Ataman B. ve Yelken, R (2019). Holdinglerde Risk Odaklı İç Denetim Yapısı ve Bir Araştırma. *Ida Academia Muhasebe ve Maliye Dergisi*, 2 (2), 155- 177.

Griffiths, D. (2017). Risk Based Internal Auditing - Tree Views of Implementation, http://www.internalaudit.biz.

Horcher, K. A. (2005). Essentials Of Financial Risk Management. New Jersey(USA): John Wiley & Sons, Inc.

Jones, R. G., & Dudley, D. A. (1978). *Essentials of Finance: Financial Management, Investments*. New Jersey: Prentice-Hall, Inc.

Keskin, D.A. (2010). İşletmelerin Sürekliliğini Sağlamada Kritik Öneme Sahip Risk Yönetimi ve Risk Odaklı Denetim Yaklaşımı. *Denetişim Dergisi*, (4) ,38-36.

Kışhalı, Y. ve Pehlivanlı, D. (2006). Risk Odaklı İç Denetim ve İMKB Uygulaması. *Muhasebe ve Finansman Dergisi*, 30, 75-87.

Özbek, Y. (2012). *Kamu İç Denetim Kalite Güvence ve Geliştirme Programı: Uluslararası İç Denetim Standartları Açısından Değerlendirme,* Pelikan Yayıncılık, Ankara.

Tapiero, C. S. (2004). *Risk And Financial Management: Mathematical And Computational Methods*. Chichester: John Wiley & Sons.

Thomas, M. (2007), ‘’The Seven-step Process to Risk-based Auditing’’, *FSA Times*, Florida,, pp.1-6

Türkiye İç Denetim Enstitüsü, https://www.tide.org.tr (Erişim Tarihi: 10.03 2022).

Usul H. ve Mizrahi R. (2016), *Risk Odaklı Denetim*, Detay Yayıncılık, Ankara.

Yilmaz, A. K., & Flouris, T. (2017). *Corporate Risk Management For International Business*. Ebook: Springer.

5018 Kamu Mali Yönetimi ve Kontrol Kanunu

SYNTHESIS OF THAZOLOL RING CONTAINING THIOUREA DERIVATIVES

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ABSTRACT

Thiazole, which is in the group of heterocyclic compounds, has an important role in drug research and development due to its broad spectrum pharmacological properties. Different biological and chemical properties of thiazole derivatives were investigated by researchers to synthesize new molecules with interesting biological profiles such as antimicrobial (Mishra et al., 2020), analgesic (Kumar & Singh, 2021), anticonvulsant (Oluwaseye et al., 2020), antioxidant (Geronikaki et al., 2013), hypolipidemic (Iqbal et al., 2012), anticancer (Nguyen et al., 2015), antitubercular (Gundlewad & Patil, 2018)activities. In this study, we synthesized N-Aryl and N-Heteroaryl substituted urea derivatives that contain naphthalene, thiazole and urea structures in the same molecule, which we think they may be important in terms biological activities. In the first step of the study, the compound 4-(naphthalen-2-yl)thiazol-2-amine (TT) was obtained from the reaction of 2-bromo-1-(naphthalen-2-yl)ethanone with thiourea (Reddy & Reddy, 2010). Then, new 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3-phenylthiourea and 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3-naphtylthiourea (TT1-TT2) derivatives were synthesized via reaction of (TT) and isothiocyanate derivatives, phenylisothiocyanate and 1-naphtylisothiocyanate. The structures of all compounds were determined using IR, ^{1}H NMR, ^{13}C NMR spectroscopy methods.

Keywords: Heterocyclic compounds, Thiazole, Urea, Bromoacetylnaphtelene

TİYAZOL HALKASI İÇEREN TİYOÜRE TÜREVLERİNİN SENTEZİ

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ÖZET

Heterosiklik bileşikler grubunda yer alan tiyazol geniş spektrumlu farmakolojik özellikleri nedeniyle ilaç araştırma ve geliştirmelerinde önemli yere sahiptir. Antimikrobiyal (Mishra, Mishra, Mujwar, Chandra, & Sachan, 2020), analjezik (Kumar & Singh, 2021), antikonvülzan (Oluwaseye, Uzairu, Shallangwa, & Abechi, 2020), antioksidan (Geronikaki, Pitta, & Liaras, 2013), hipolipidemik (Iqbal et al., 2012), antikanser (Nguyen, Mungara, Kim, Lee, & Park, 2015), antitüberküler (Gundlewad & Patil, 2018) aktiviteler gibi ilginç biyolojik profillere sahip yeni moleküller sentezlemek için tiyazol türevlerinin farklı biyolojik ve kimyasal özellikleri araştımacılar tarafından incelenmiştir. Bu çalışmada,

tarafımızdan bir dizi yeni biyolojik aktivite bakımından önemli olabileceğini düşündüğümüz naftalin, tiyazol ve üre yapısını aynı molekülde bulunduran *N*-Aril ve *N*-Heteroaril sübstitüe edilmiş üre türevleri sentezlendi. Çalışmanın ilk basamağında, 4-(naftalen-2-il)tiyazol-2-amin (TT) bileşiği, 2-bromo-1-(naftalen-2-il)etanon bileşiğinin tiyoüre ile reaksiyonundan elde edildi (Reddy & Reddy, 2010). İkinci basamakta, (TT) bileşiğinin izotiyosiyanat türevlerinden fenilizotiyosiyanat ve 1-naftilizotiyosiyanat ile reaksiyonları sonucu yeni 1-(4-(naftalen-2-il)tiyazol-2-il)-3-feniltiyoüre ve 1-(4-(naftalen-2-il)tiyazol-2-il)-3-naftiltiyoüre türevleri (TT1-TT2) sentez edildi. Bütün bileşiklerin yapıları IR, ^{1}H NMR, ^{13}C NMR spektroskopisi yöntemleri kullanılarak belirlendi.

Anahtar Kelimeler: Heterosiklik bileşikler, Tiyazol, Üre, Bromasetilnaftalen

1. INTRODUCTION

Thiazole is an important class of heterocyclic compounds with a core structure and is one of the biologically important molecules. Therefore, thiazoles and their analogs act as precursors for the synthesis of biologically active compounds. They are of great pharmaceutical importance due to their potent and diverse biological activities. Therefore, the synthesis of these compounds is of great interest (Deb et al., 2014). Thiazole has an important role in drug research and development due to its broad-spectrum pharmacological properties. Different biological and chemical properties of thiazole derivatives were investigated by researchers to synthesize new molecules with interesting biological profiles such as antimicrobial (Mishra, Mishra, Mujwar, Chandra, & Sachan, 2020), analgesic (Kumar & Singh, 2021), anticonvulsant (Oluwaseye, Uzairu, Shallangwa, & Abechi, 2020), antioxidant (Geronikaki, Pitta, & Liaras, 2013), hypolipidemic(Iqbal et al., 2012), anticancer (Nguyen, Mungara, Kim, Lee, & Park, 2015), antitubercular (Gundlewad & Patil, 2018) activities. There are many commercially available thiazoles containing drugs.

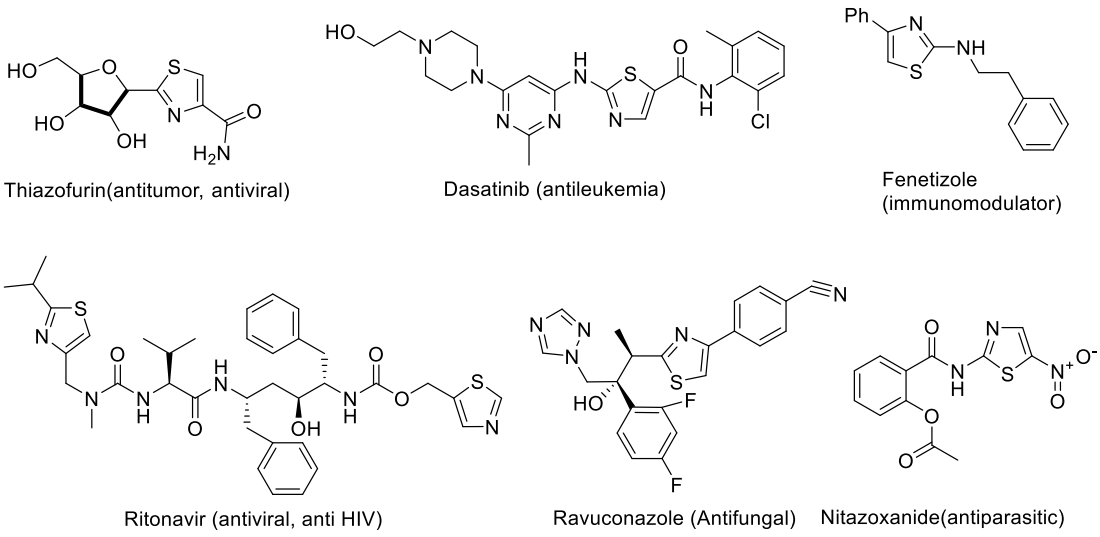


Figure1. Some commercially available thiazole ring containing drugs

Numerous biologically active natural products that bear a thiazole ring are known. One of which Thiamine, also known as vitamin B1, has a thiazole ring attached to 2-methylpyrimidine-4-amine as hydrochloride salt. In bioluminescent systems of firefly, star worm, click-beetle and railroad, there is thiazole based light emitting compound named firefly lucifer (Ram, Sethi, Nath, & Pratap, 2019)

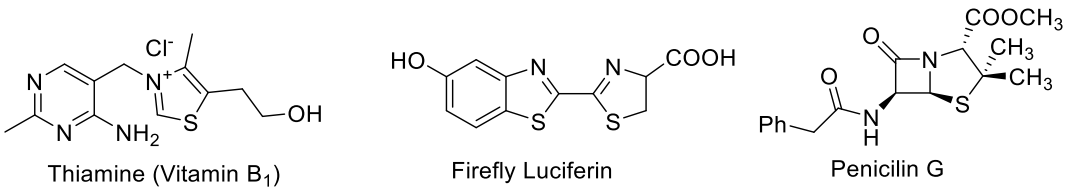


Figure 2. Some Thiazole ring containing natural products

In light of these considerations, we aimed to synthesize various thiourea derivatives bearing thiazole rings. The key starting compound 4-(naphthalen-2-yl)thiazol-2-amine (TT) was prepared in a high yield by the cyclization reaction of 2-bromo-1-(naftalen-2-il)etanon with thiourea (Scheme 1). Then, the new compounds (TT1-TT2) were synthesized from the reaction of compound (TT) with phenylisothiocyanate and 1-naphtylisothiocyanate (Scheme 2 and Scheme 3).

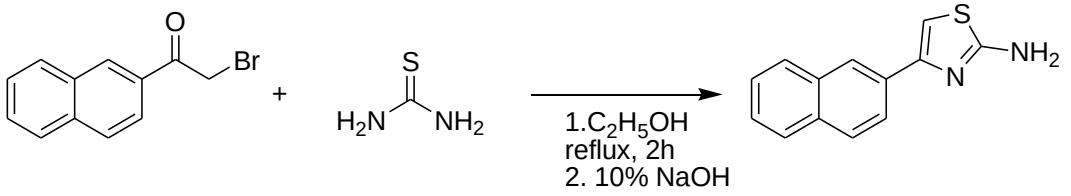
2. EXPERIMENTAL

2.1. Reagent and Materials

Chemicals and all solvents were commercially available and used without further purification. Melting points were determined on the digital melting point apparatus (Electrothermal 9100) and are uncorrected. The compounds were routinely checked for their homogeneity by TLC using DC Alufolien Kieselgel 60 F254 (Merck) and Camag TLC lamp (254/366 nm). Microanalyses were performed on a Leco CHNSO-932 Elemental Analyser and the results agreed favourably with the calculated values. The IR spectra were recorded on a Shimadzu Model 8400 FT-IR spectrophotometer. The ^{1}H and ^{13}C NMR spectra were recorded on a Bruker 400(100) MHz Ultra Shield instrument. The chemical shifts are reported in ppm from tetramethylsilane as an internal standard and are given in δ (ppm).

2.2. Synthesis of 4-(naphthalen-2-yl)thiazol-2-amine (TT)

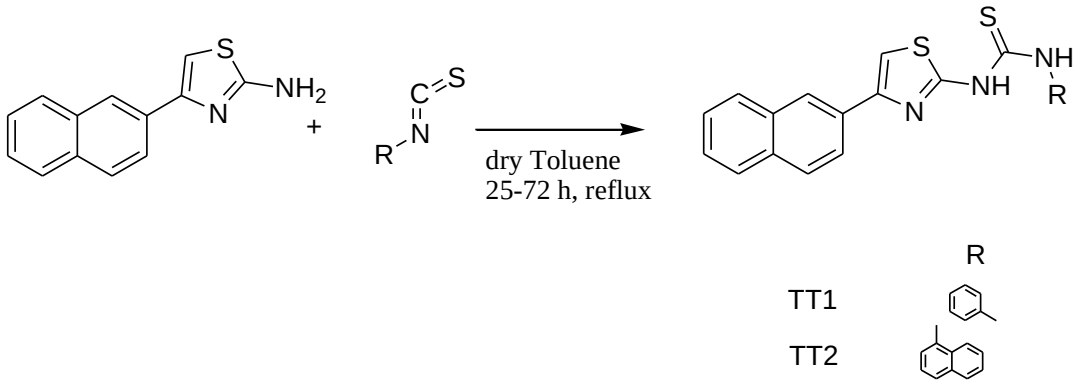
2-Bromoacetylnaphtelene (6.23 g, 0.025 mol) and thiourea (2.28 g 0.03 mol) in ethanol (20 mL) was stirred at room temperature for 15 minutes. Then reaction was refluxed at 80 °C for 2 hours. After cooling, the reaction mixture was made alkaline with 10% sodium hydroxide solution while stirring. The precipitate was filtered, washed with water purified by recrystallization in ethanol (Farag, Hassaneen, Abbas, Shawali, & Algharib, 1988).



Scheme 1. Synthetic scheme for 4-(naphthalen-2-yl)thiazol-2-amine (TT)

***2.3.** General procedure for the synthesis of thiourea derivatives*

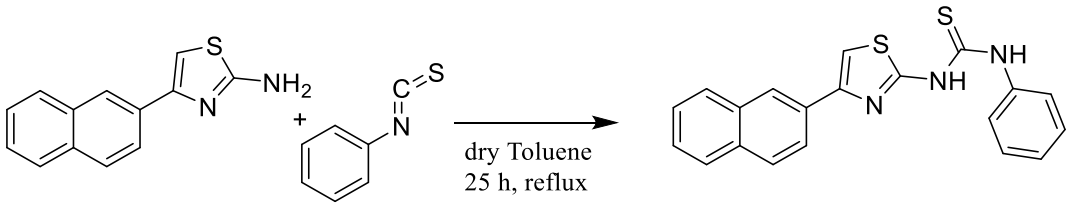
4-(Naphthalen-2-yl)thiazol-2-amine (TT) and isothiocyanate derivatives were boiled in anhydrous toluene at 120°C under reflux. The precipitate was filtered, washed with hot toluene and dried on P_2O_5.



Scheme 2. Synthetic scheme for thiourea derivatives

3260.3 (NH), 3040.1 (aromatic C-H), 2964.4 (aliphatic C-H), 1741.6-1685.7 (carbonyl's C=O), 1600.1-1580.2 (C=C and C=N), 1230.5 (thiocarbonyl C=S),

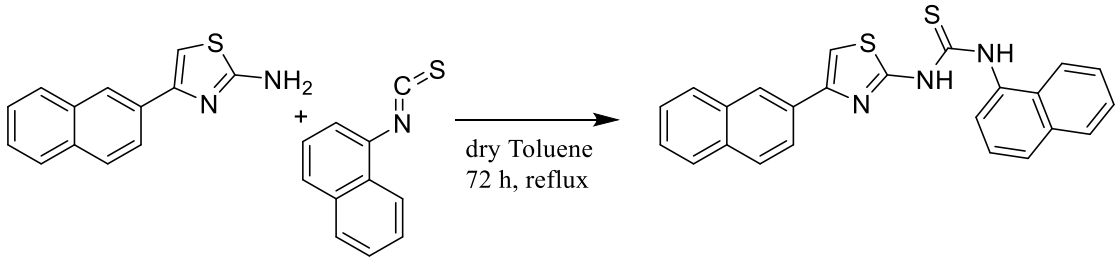
2.3.1. Synthesis of 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3-phenylthiourea (**TT1**)
Light yellow solid, yield: 33.3 %, m.p. 243-244 °C. IR (cm^{-1})-3174.6 (NH), 3018.4 (aromatic C-H), 1554.5-1510.2 (C=C and C=N), 1207.3 (thiocarbonyl C=S). ^{1}H NMR (400 MHz, DMSO) δ 8.48 (d, *J* = 48.7 Hz, 2H), 8.22 – 7.19 ppm (m, 13H). ^{13}C NMR (101 MHz, DMSO) δ 139.06, 133.54, 133.54, 133.06, 129.17, 129.17, 128.84, 128.63, 128.63, 128.22, 128.11, 127.13, 126.80, 124.79, 124.73, 124.35, 108.43, 99.99 ppm. Anal. Calcd. for $C_{20}H_{15}N_3S_2$ (361.485 g/mol): C, 66.45; H, 4.18; N, 11.62; S, 17.74. Found: C, 66.30; H, 3.95; N, 11.55; S, 17.64.



Scheme 3. Synthetic scheme for 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3-phenylthiourea(**TT1**)

2.3.2. synthesis of 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3-naphtylthiourea (TT2)

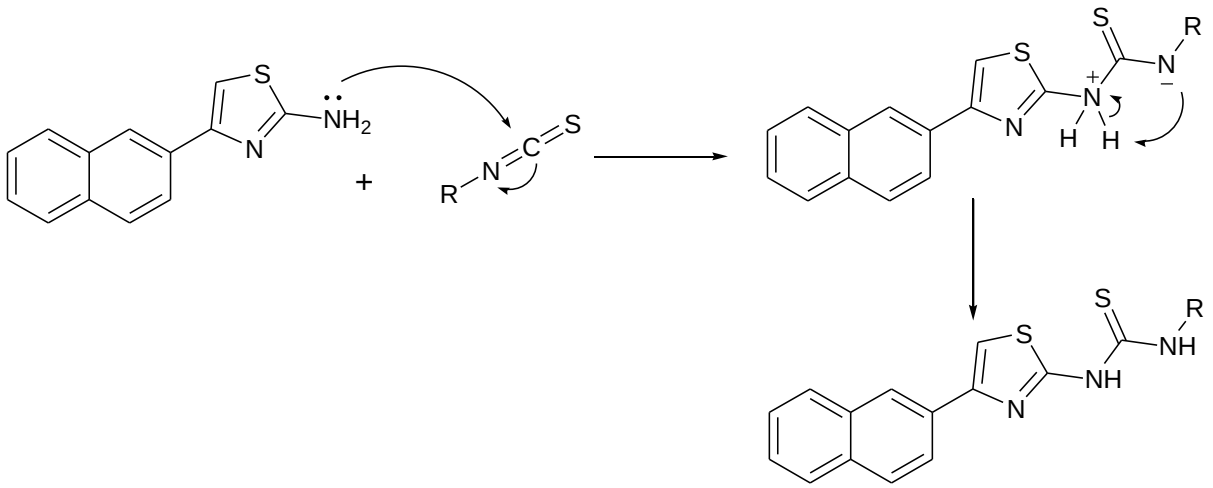
Ehite solid, yield: 43,4%; m.p. 209-210 °C. IR (cm^{-1}) 3174.6 (NH), 3018.4 (aromatic C-H), 1564.5-1510.3 (C=C and C=N), 1207.3 (thiocarbonyl C=S). ^{1}H NMR (400 MHz, DMSO) δ 9.80 (s, 1H), 8.54 (s, 1H), 8.44-7.34 ppm (m, 15H). ^{13}C NMR (101 MHz, DMSO) δ 183.33, 168.87, 135.60, 134.34, 133.52, 133.17, 130.65, 128.93, 128.57, 128.31, 128.21, 127.45, 127.12, 126.67, 126.61, 126.31, 126.13, 124.39, 123.52, 122.57, 116.66, 108.61, 103.03 ppm. Anal. Calcd. for $C_{24}H_{17}N_3S_2$ (411.544 g/mol): C, 70.04; H, 4.16; N, 10.21; S, 15.58. Found: C, 69.90; H, 4.05; N, 10.31; S, 15.48.



Scheme 4. Synthetic scheme for 1-(4-(naphthalen-2-yl)thiazol-2-yl)-3- naphthylthiourea thiourea (**TT2**)

3. Results And Discussion

In this study, 4-(naphthalen-2-yl)thiazol-2-amine (**TT**) was synthesized from 2-bromo-1-(naphthalen-2-yl)ethanone according to the literature procedures (Scheme 1) (Farag et al., 1988). The new (thiazol-2-yl)thiourea derivatives (**TT1-TT2**) were prepared from the reactions of phenyl isothiocyanate and 1-napththyl isothiocyanate with **TT** (Scheme 2 and Scheme 3). The reactions were done in toluene at 120 ^{o}C (see experimental section). All compounds were purified by recrystallization. In isothiocyanate, carbon atoms display as electrophilic site in order to be interacted with nucleophiles. Mechanism of reaction is showed below (Scheme 5). After the consecutive steps of deprotonation and protonation, ultimate thiourea derivatives has been formed. The structures of the new compounds **TT1** and **TT2** were characterized by elemental analysis, ^{1}H-NMR, ^{13}C-NMR and FT-IR spectroscopic techniques.



Scheme 5. Plausible reaction mechanism

The absorption bands at 3270.3 and 1230.5 cm^{-1} in the IR spectrum of compound (TT1) indicated the presence of NH and thiocarbonyl groups. Morever, its ^{1}H-NMR spectrum showed NH protons around 8.48 ppm and multiplet at 8.22-7.19 ppm for aromatic protons. In ^{13}C-NMR spectrum of TT1, the signal for thiocarbonyl carbon were observed at 139.06 ppm (NH-C=S). The signal related to aromatic carbons were observed in the 133.54-99.99 ppm region. The result of measurements of compound **TT2** were given in the experimental part.

Acknowledgments

This study was supported by Erciyes University Scientific Research Projects Unit with the project code FYL-2021-10823. We thank Erciyes University Scientific Research Projects Unit for supporting this research.

REFERENCES

Deb, P. K., Kaur, R., Chandrasekaran, B., Bala, M., Gill, D., Kaki, V. R., . . . Mailavaram, R. (2014). Synthesis, anti-inflammatory evaluation, and docking studies of some new thiazole derivatives. *Medicinal Chemistry Research, 23*(6), 2780-2792.

Farag, A. M., Hassaneen, H. M., Abbas, I. M., Shawali, A. S., & Algharib, M. S. (1988). Synthesis and Reactions of Some 2-Thienyl-Derivatives and 2-Thenoyl-Derivatives of Thiazole and Thiadiazoline and Their Selenium Analogs. *Phosphorus Sulfur and Silicon and the Related Elements, 40*(3-4), 243-249. doi:Doi 10.1080/03086648808072921

Geronikaki, A. A., Pitta, E. P., & Liaras, K. S. (2013). Thiazoles and Thiazolidinones as Antioxidants. *Current Medicinal Chemistry, 20*(36), 4460-4480. doi:Doi 10.2174/09298673113209990143

Gundlewad, G. B., & Patil, B. R. (2018). Synthesis and Evaluation of Some Novel 2-Amino-4-Aryl Thiazoles for Antitubercular Activity. *Journal of Heterocyclic Chemistry, 55*(3), 769-774. doi:10.1002/jhet.3098

Iqbal, A. K. M., Khan, A. Y., Kalashetti, M. B., Belavagi, N. S., Gong, Y. D., & Khazi, I. A. M. (2012). Synthesis, hypoglycemic and hypolipidemic activities of novel thiazolidinedione derivatives containing thiazole/triazole/oxadiazole ring. *European Journal of Medicinal Chemistry, 53*, 308-315. doi:10.1016/j.ejmech.2012.04.015

Kumar, G., & Singh, N. P. (2021). Synthesis, anti-inflammatory and analgesic evaluation of thiazole/oxazole substituted benzothiazole derivatives. *Bioorganic Chemistry, 107*. doi:ARTN 10460810.1016/j.bioorg.2020.104608

Mishra, I., Mishra, R., Mujwar, S., Chandra, P., & Sachan, N. (2020). A retrospect on antimicrobial potential of thiazole scaffold. *Journal of Heterocyclic Chemistry, 57*(6), 2304-2329. doi:10.1002/jhet.3970

Nguyen, M. A. T., Mungara, A. K., Kim, J. A., Lee, K. D., & Park, S. (2015). Synthesis, Anticancer and Antioxidant Activity of Novel Carbazole-based Thiazole Derivatives. *Phosphorus Sulfur and Silicon and the Related Elements, 190*(2), 191-199. doi:10.1080/10426507.2014.914933

Oluwaseye, A., Uzairu, A., Shallangwa, G. A., & Abechi, S. E. (2020). In silico study on anticonvulsant activity of isoxazole and thiazole derivatives active in subcutaneous pentylenetetrazole animal model. *Journal of King Saud University Science, 32*(1), 116-124. doi:10.1016/j.jksus.2018.03.022

Ram, V. J., Sethi, A., Nath, M., & Pratap, R. (2019). *The chemistry of heterocycles : nomenclature and chemistry of three- to- five- membered heterocycles*. Amsterdam, Netherlands ; Cambridge, MA, United States: Elsevier.

Reddy, V. M., & Reddy, K. R. (2010). Synthesis and Antimicrobial Activity of Some Novel 4-(1H-Benz[d]imidazol-2yl)-1,3-thiazol-2-amines. *Chemical & Pharmaceutical Bulletin, 58*(7), 953-956. doi:DOI 10.1248/cpb.58.953

FAR-FIELD PROPAGATION OF INCE GAUSSIAN BEAM IN ATMOSPHERE

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ABSTRACT

Ince Gaussian beams as a kind of structured light beams have gained increasing attention due to their unique properties. Accordingly, Ince Gaussian beams have become one of the beams that interest a wide range of applications namely optical communication systems. The crucial issue in these systems is the use of the atmosphere as a channel. Thus, examining the effect of the atmosphere on the propagating laser beam is really critical. Consequently, this study investigates the effect of the system parameters on mitigating the effect of the atmosphere on the Ince Gaussian beams. The atmosphere is modeled through the split-step approach. The effect of the beam waist, operating wavelength and the radius of the receiver on the intensity of the received Ince Gaussian beam is examined. The obtained results show that the Ince Gaussian beam with smaller waists resists the effect of the atmosphere more than the ones with bigger waists. Moreover, operating at higher wavelengths helps Ince Gaussian beam to keep their profiles while propagation in a strong turbulent atmosphere. We believe that the provided results will play an important role in the performance improvement of next-generation optical communication links and networks in many areas like 5G, 6G communication links, sensing applications and LIDAR technology.

Keywords: Ince Gaussian Beam, Atmosphere, Split-step, Turbulence, Free-space optical communication.

INTRODUCTION

Free-space optical (FSO) communication is one of the wireless communication techniques that use laser light in free-space to transmit data. The main features of the FSO communication over the conventional Radio Frequency (RF) communication system are the wider bandwidth, higher speed data rate, point-to-point communication with reliable channel security without interference, and less power consumption (Wang et al., 2021). These properties make FSO communication a great candidate for a wide range of applications. Despite the great advantages of FSO communication systems, the use of the atmosphere as a propagation medium limits their performance. In atmosphere, the observed temperature and wind velocity changes give rise to the refractive index changes which are known as atmospheric turbulence. These changes affect the optical beam propagating in the atmosphere by causing a temporal irradiance fluctuations and phase fluctuations. Thus, strong limitations are addressed to the propagating laser beams which degrades the performance of the FSO link (Andrew and Phillips, 2005). Therefore, profusion of studies have concentrated on improving the system performance through understanding the behavior of the laser beam propagating in atmospheric turbulence. In this context, different beam types have been studied in the literature namely Gaussian, Hypergeometric Gaussian, Hermite Gaussian, Vortex, and Airy beams (Yousefi et al., 2017- Zhang et al. 2016). Some of these studies have focused on just the propagation properties of the beam propagating in turbulent atmosphere. On the other hand, other studies have investigated not only the scintillation properties of the beams but also the system performance. Moreover, the studies presented up to now have not investigated the far-field propagation of Ince-Gaussian beam in strong atmospheric turbulence and do not study the effect of system parameters on improving the system performance. In this study, we analyze the propagation of Ince-Gaussian beam through atmospheric turbulence, and study the effect of the system parameters on the

turbulence mitigation, for the first time in the literature. A split step model is used to model the atmosphere. In this context, the provided results will pave the way to improve the communication systems used in many applications.

MATERIALS AND METHODS

The source field intensity of Ince Gaussian beam, that is shown in Figure 1, can be represented as (Bandres and Gutierrez-Vega, 2004),

$$u_s(\mathbf{s},0) = S_{nm}^{c,s}(\theta)S_{nm}^{c,s}(jp)\exp\left(-\frac{{s_x}^2+{s_x}^2}{w_s^2}\right) \quad (1)$$

where $\mathbf{s}=(s_x,s_y)$ refers to the source plan coordinates, $S_{nm}^{c,s}$ is the solution of Ince equation, θ and p represents the angular and radial elliptical coordinates of the same plane, w_s is the beam waist.

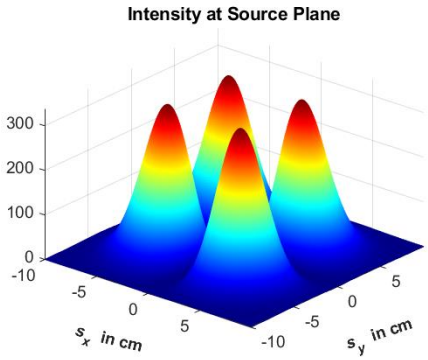


Figure 9. Ince Gaussian beam intensity at the source plane

The designed split-step model consists of two steps. The first is the free-space propagation which is controlled by the angular frequency. The second one is the replacement of the phase screens along the propagation link (z) at N intervals. These screens represent the atmospheric fluctuations effects. Accordingly, the received field can be expressed as (Andrew and Phillips, 2005, Eyyuboğlu, 2013),

$$u_r(\mathbf{r},z) = \exp(jkz)\prod_{\mathbf{i=1}}^{N}\mathbf{F^{-1}}\left\{\mathbf{F}\left[u_{r_i}(r_{x_i},r_{y_i},z_i)\exp(j\phi_i)\right]\mathbf{F}\left[-\frac{jk}{2\pi z}\exp\left(\frac{jk}{2z}({r_{x_i}}^2+{r_{y_i}}^2)\right)\right]\right\} \quad (2)$$

where $\mathbf{r}=(r_x,r_y)$ is the receiver plane coordinates, $k = 2\pi/\lambda$ is the wave number at the operating wavelength λ, F is the Fourier transform operator, F^{-1} is the inverse Fourier transform, ϕ_i refers to the phase power spectral density, in this study the modified Von-Karman spectrum is applied [2].
Thus, the averaged intensity at the receiver plan can be found by,

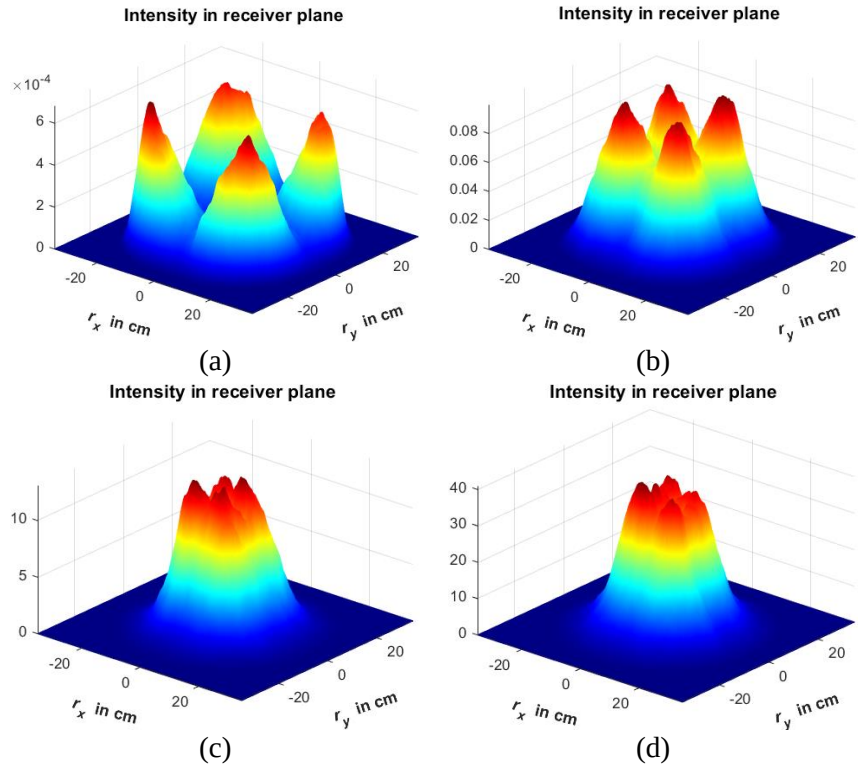
$$\langle I_r(\boldsymbol{r},L)\rangle = \frac{1}{N_r}\sum_{i=1}^{N_r}u_r(\boldsymbol{r},L)u_r^*(\boldsymbol{r},L) \quad (4)$$

where < > is the average (Andrew and Phillips, 2005, Eyyuboğlu, 2013).

RESULTS

The used split-step model is tested to cope with the constraints given in the literature and accordingly is designed to have 512 grids on the squared shape phase screens. The 5 Km propagation link is divided by 50 screens. The intensity averaging is taken over 500 simulation runs (Andrew and Phillips, 2005, Schmidt, 2010). The applied turbulence is a strong turbulence since its level is greater than one according to Rytov variance (Andrew and Phillips, 2005). In this study, the effect of beam waist, receiver radius and the operating wavelength on the received intensity is examined.

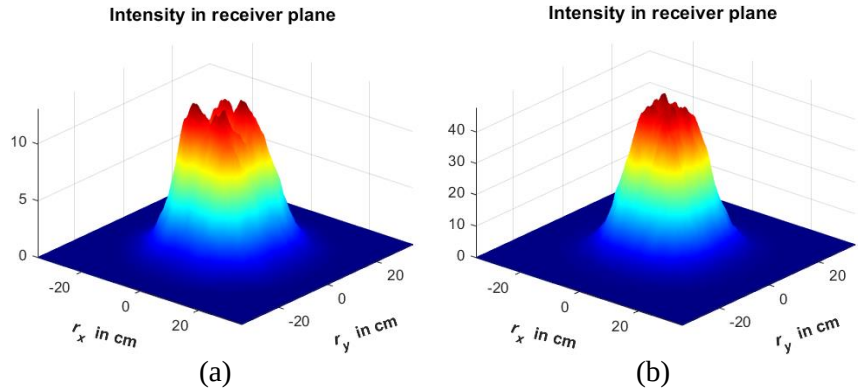
The effect of the beam waist on the intensity of Ince Gaussian beams after propagating 5 Km in strong turbulence is demonstrated in Figure 2. This figure illustrates the received Ince Gaussian beams that have different beam waists ($\boldsymbol{w_s = 1\ cm}$, $\boldsymbol{w_s = 2\ cm}$, $\boldsymbol{w_s = 5\ cm}$ and $\boldsymbol{w_s = 10\ cm}$) and operating at 1550 nm. The figure states that the received beam profile turns to a Gaussian profile as the beam waist increases.



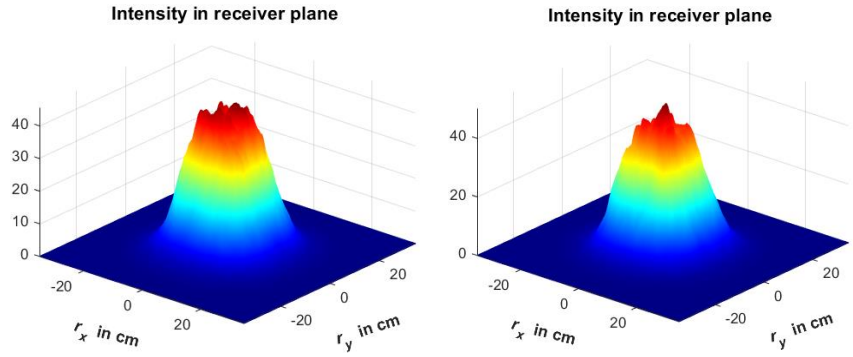
(a) (b) (c) (d)

Figure 10. The received intensity at different beam waists (a) $\boldsymbol{w_s = 1\ cm}$, (b) $\boldsymbol{w_s = 2\ cm}$, (c) $\boldsymbol{w_s = 5\ cm}$ and (d) $\boldsymbol{w_s = 10\ cm}$.

As the radius of the circular shaped receiver getting smaller the detected profile is more like its original version, as can be understood from Figure 3. The results in this figure is for Ince Gaussian with 5 cm waist, operating at 1550 nm and detected by receivers with radii $R_a = 8\ cm$, $R_a = 11\ cm$, $R_a = 14\ cm$ and $R_a = 17\ cm$.



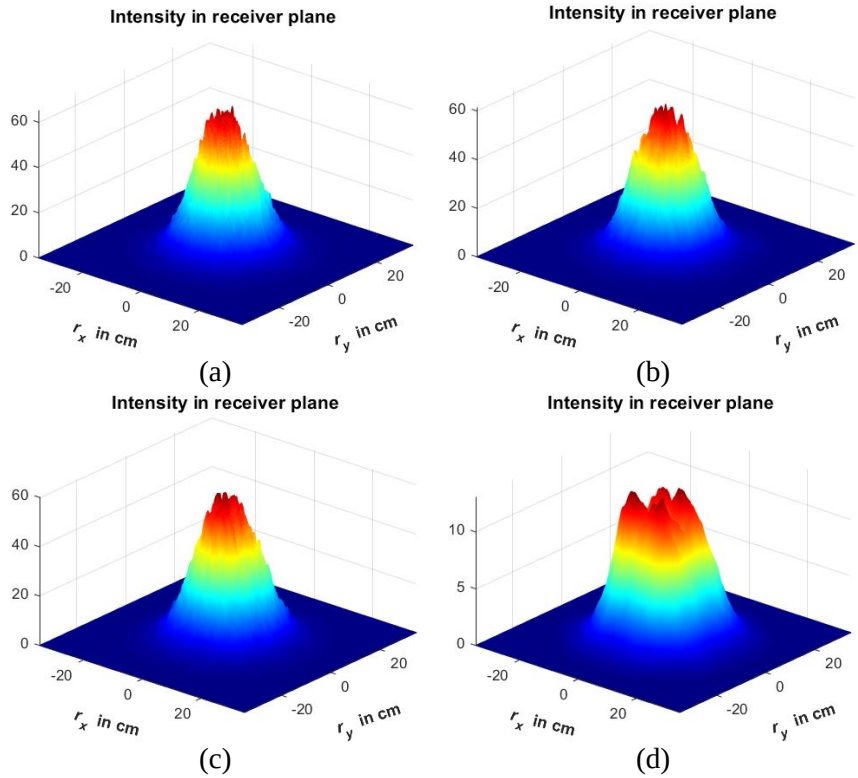
(a) (b)



(c) (d)

Figure 11. The received intensity at different receiver side length (a) $\boldsymbol{R_a = 8\ cm}$, (b) $\boldsymbol{R_a = 11\ cm}$, (c) $\boldsymbol{R_a = 14\ cm}$ and (d) $\boldsymbol{R_a = 17\ cm}$.

For Ince Gaussian beams propagating in strong turbulence for long distances, operating at higher wavelength assist the beams having smaller waists to save their profiles while propagating as can be seen in Figure 4.



(a) (b)

(c) (d)

Figure 12. The received intensity at different operating wavelengths (a) $\boldsymbol{\lambda = 632.8\ nm}$, (b) $\boldsymbol{\lambda = 780\ nm}$, (c) $\boldsymbol{\lambda = 830\ nm}$ and (d) $\boldsymbol{\lambda = 1550\ nm}$.

DISCUSSION

FSO communication systems have recently become an important technology in a tremendous range of applications due to their attractive properties. FSO communication transfer data from point to another employing an optical carrier in the near IR band. Although the FSO systems have great advantages, the use of the atmosphere as a propagating medium limits the performance of these systems. In these systems, the dependency on the weather and geographical location addresses strong limitations on the signals propagating that depredate the performance of the FSO link. Consequently, investigating the propagation of different beam types in atmosphere helps overcoming these drawbacks, which is the main

aim of the study. Since the discussed results build a strong base for understanding the behavior of Ince Gaussian beam while propagating in the optical communication link. Thus, the obtained results will help designing FSO communication link resisting the effect of atmosphere, which means in other words the improvement of the link performance.

CONCLUSION

The propagation of Ince Gaussian beam in strong turbulence is investigated using the split-step approach. The Ince Gaussian beam propagating for 5 Km in strong turbulence keeps its original profile when it has a small beam waist. Moreover, operating at higher wavelength helps the beams with small waists saving their profiles. The presented results give a great chance for the improvement of free-space optical communication systems performance in a wide range of applications.

REFERENCES

Andrew LC, Phillips RL, 2005. *Laser beam propagation through random media*, SPIE Press: Bellingham, WA.

Bandres MA, Gutierrez-Vega JC, 2004. *Ince–Gaussian beams*, Opt. Lett. 29, 144–146.

Cai Y, Chen Y, Eyyuboglu HT, Baykal Y, 2007. *Scintillation index of elliptical Gaussian beam in turbulent atmosphere*. Optics letters, 32(16), 2405-2407.

Eyyuboğlu HT, 2013. *Estimation of aperture averaged scintillations in weak turbulence regime for annular, sinusoidal and hyperbolic Gaussian beams using random phase screen*, Opt. Laser Technol. 52, 96–102.

Eyyuboğlu HT, 2013. *Scintillation behavior of Airy beam*. Optics & Laser Technology, 47, 232-236.

Schmidt JD, 2010. *Numerical simulation of optical wave propagation with examples in MATLAB*, SPIE Press: Washington, DC.

Wang J, Liu J, Li S, Zhao Y, Du J, Zhu L, 2021. *Orbital angular momentum and beyond in free-space optical communication*, Nanophotonics.

Yousefi M, Kashani FD, Golmohammady S, Mashal A, 2017. *Scintillation and bit error rate analysis of a phase-locked partially coherent flat-topped array laser beam in oceanic turbulence*. JOSA A, 34(12), 2126-2137.

Zhang Y, Ma D, Yuan X, Zhou Z, 2016. *Numerical investigation of flat-topped vortex hollow beams and Bessel beams propagating in a turbulent atmosphere*. Applied optics, 55(32), 9211-9216.

EFFECT OF Mn CONTENT AND DEPOSITION TIME ON SOME OPTICAL PARAMETERS IN ZnS THIN FILMS PREPARED BY CHEMICAL BATH DEPOSITION

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ABSTRACT

In this study, ZnS:Mn thin films were deposited with various content of Mn (9 and 10 wt.%) and different deposition times (4, 6, 8 hours) by Chemical Bath Deposition (CBD) method. The effect of Mn content and deposition time on some optical parameters in ZnS thin films were investigated. The fundamental optical parameters of ZnS: Mn thin films were determined with data of measurements of optical transmission (*T*%) and optical absorption (*A*) obtained from a UV-Vis spectrophotometer. In these measurements, the wavelength range was adjusted as 300-1100 nm. The optical transmittance (*T*%) values of ZnS:Mn were varied between 55% and 97% in the visible region (400–700 nm). The refractive index (*n*) values for Mn content 9 and 10 wt.% in ZnS:Mn thin films were calculated in the range of 1.25–2.31 and 1.20–1.82 in the visible region, respectively. The real (ε_1) and imaginary (ε_2) dielectric constants values for Mn content 9 wt.% of ZnS:Mn thin films were calculated 1.554-5.337 and 0.079-0.359, respectively. These values were determined 1.447–3.307 and 0.038–0.466, respectively for Mn content 10 wt.% of ZnS:Mn thin films. The energy band gap values (E_g) of the films were estimated between 3.41 and 3.82 eV by Tauc plots. The thicknesses of the film were calculated in the range of 71–302 nm by using weighing method. From the optical characterization, it was found that each parameter of ZnS:Mn thin films studied in this study are depend on Mn content and deposition time.

Keywords: Thin Films, Chemical Bath Deposition, Deposition Time, Optical Parameters.

INTRODUCTION

The research on semiconductor metal sulfurs has been rapidly increasing due to the superior physical and chemical features. The flexibility of the controlling the film parameters, it has many application area such as microelectronics, photo-electrochemistry, opto-electronics, and solar cells. In addition, through the previous researches on ZnS-based thin films, it was found that the preparation conditions had significant effects on the physical properties of the thin films. The variety of production methods for ZnS-based thin films in the literature can be given as followings; ultrasonic spray pyrolysis (Ozutok et al., 2012), electrochemical deposition (Zakerian et al., 2018), pulsed laser deposition (Wang, 2021), sol-gel dip coating (Sathishkumar et al., 2019), chemical bath deposition (Erken et al., 2017), radio frequency (RF) sputtering (Le Donne et al., 2017), CBD has been significantly attracting by researchers' interest, because of it is an easy and a cost-effective method for production of thin films.

The aim of this work is to determine the effect of Mn content and deposition time on the optical parameters of ZnS thin films produced by CBD method. To do so, ZnS:Mn thin films were deposited with various content of Mn (9 and 10 wt.%) and different deposition times (4, 6, 8 hours).

MATERIALS AND METHODS

ZnS:Mn thin films were prepared by CBD method. Firstly, glass substrates were cleaned for deposition and the cleaning processes were detailed by other researchers (Erken et al., 2017). Secondly, deposition

baths were preperad in the beakers and for these zinc sulfate heptahydrate **(**$ZnSO_4.7H_2O$), manganese (II) chloride dihydrate ($MnCl_2.2H_2O$), trisodium citrate dihydrate ($C_6H_5Na_3O_2.2H_2O$), NH_3/NH_4Cl buffer solution (pH=10.7), triethanolamine ($N(CH_2CH_2OH)_3$), and ultra-pure water were used. In this stage, the manganese (Mn) concentrations were taken as 9 and 10 wt.%. Finally, the cleaned glass substrates were immersed perpendicularly in the beaker containing the deposition baths. Thus, ZnS:Mn thin films were growth by CBD process. During the deposition process, the deposition time determined as 4, 6 and 8 hours for one dipping, while the deposition temperature fixed at 80 °C. The glass substrates are labelled as ZSM9 and ZSM10 for Mn content 9 and 10 wt.%, respectively.

RESULTS AND DISCUSSIONS

Film thicknesses (*t*) of ZnS:Mn thin films were determined via weighing method with the following Eqn 1.

$$t = \frac{\Delta m}{A\rho} \tag{1}$$

The film thickness values for ZSM9 thin films were calculated as 77, 119 and 302 nm for 4, 6, and 8 h, deposition times, respectively (see Fig. 1). These values were determined as 108, 71 and 220 nm for 4, 6, and 8 h, deposition times for ZSM10 thin films, respectively (see Fig. 1).

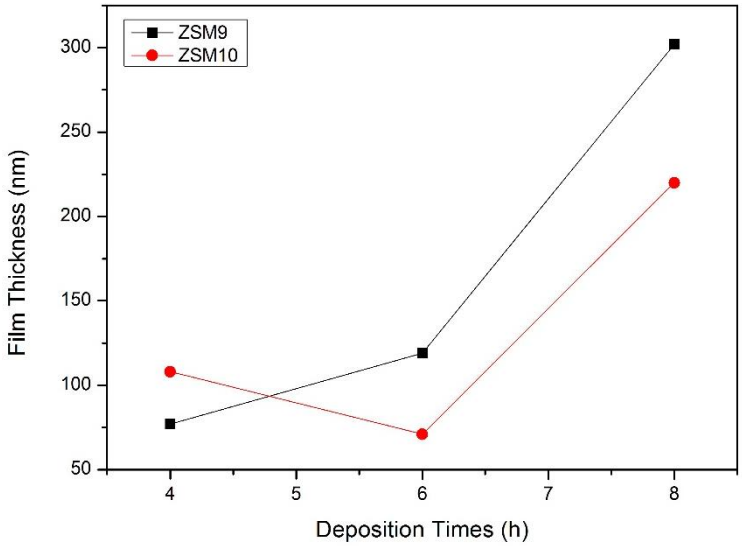

Figure 1. Variation of thickness vs deposition times graph of thin films

The fundamental optical parameters of ZnS:Mn thin films were determined with data of measurements of optical transmission (*T*%) and optical absorption (*A*) obtained from a UV-Vis spectrophotometer. In these measurements, the wavelength range was adjusted as 300–1100 nm. The variation of the *T*% and *A* values, of dependent on wavelength for the ZnS:Mn thin films for are presented in Fig. 2.

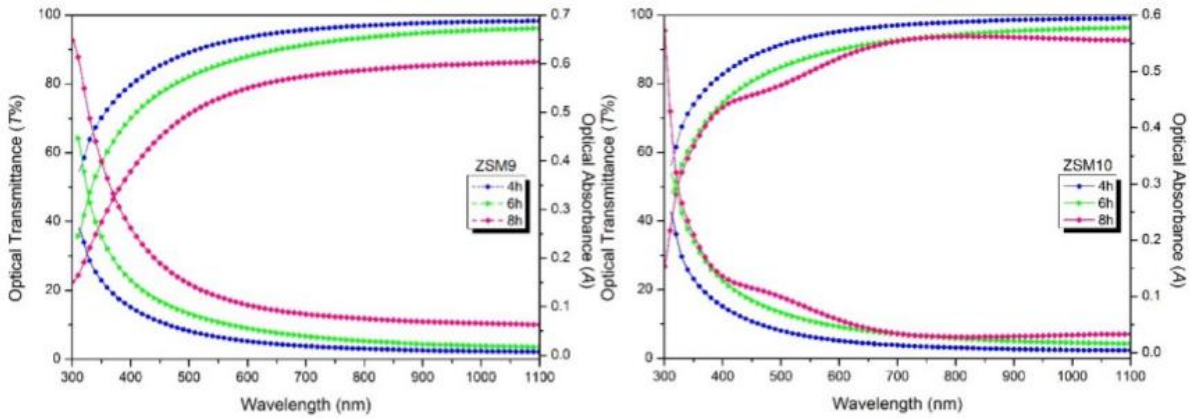

Figure 2. The change of optical transmittance and optical absorbance values for thin films

T% values of ZSM9 and ZSM10 thin films were varied between 55% and 97% for 400–700 nm in Fig. 2.. The *T*% values increased for ZSM9 and ZSM10 thin films with increasing film thickness. *A* values of thin films decrease with increasing wavelength as it is expected. Also, optical transmittance graphs support this situation. Extinction coefficient (*k*) and refractive index (*n*) values were calculated with the following Eqn. 2 and Eqn. 3.

$$k = \frac{\alpha\lambda}{4\pi} \tag{2}$$

$$n = \frac{1+R}{1-R} + \sqrt{\frac{4R}{(1-R)^2} - k^2} \tag{3}$$

where α is absorbance coefficient, *R* is reflectance values of films. Graphs of change of *k* and *n* values calculated with these equations of ZSM9 and ZSM10 thin films are given in Fig. 3 and Fig. 4., respectively.

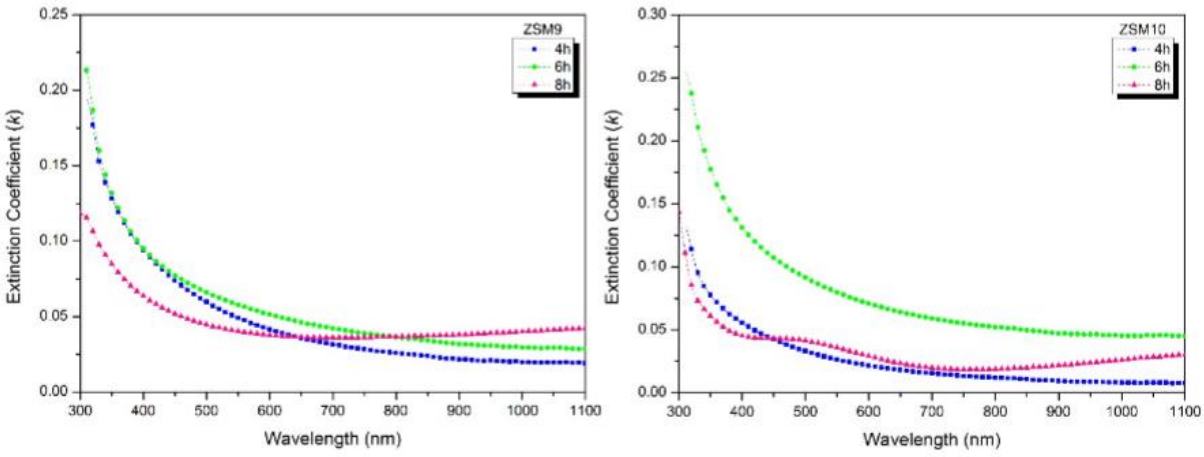

Figure 3. The change of extinction coefficient values for thin films

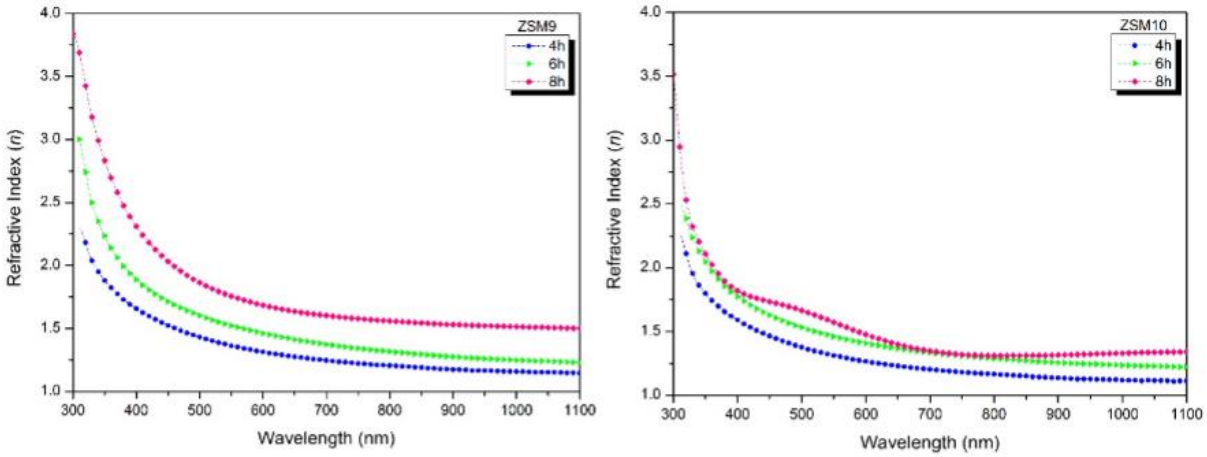

Figure 4. The change of refractive index values for thin films

In Fig. 4. is seen *n* values of ZSM9 and ZSM10 thin films decrease with increasing wavelength. Additionally, *n* values of ZSM9 and ZSM10 films for 400–700 nm are given in Table 1. The obtain finding regarding *n* values dependent on wavelength are in accordance with literature (Goudarzi et al., 2009).

Table 1. Refractive index values of films in the visible region

	Deposition times (hour)	**Refractive index (*n*) values**						
		400 nm	**450 nm**	**500 nm**	**550 nm**	**600 nm**	**650 nm**	**700 nm**
ZSM9	**4**	1.66	1.52	1.43	1.36	1.31	1.28	1.25
	6	1.89	1.71	1.60	1.52	1.46	1.41	1.37
	8	2.31	2.03	1.86	1.75	1.68	1.64	1.60
ZSM10	**4**	1.59	1.46	1.37	1.31	1.26	1.23	1.20
	6	1.77	1.63	1.53	1.46	1.41	1.37	1.34
	8	1.82	1.73	1.66	1.57	1.48	1.40	1.35

The real (ε_1) and imaginary (ε_2) dielectric constants are defined by Eqn. 4 and Eqn. 5, respectively (Erken et al., 2018).

$$\varepsilon_1 = n^2 + k^2 \tag{4}$$

$$\varepsilon_2 = 2nk \tag{5}$$

Graphs of change of ε_1 and ε_2 values calculated with these equations of ZSM9 and ZSM10 thin films are given in Fig. 5 and Fig. 6., respectively.

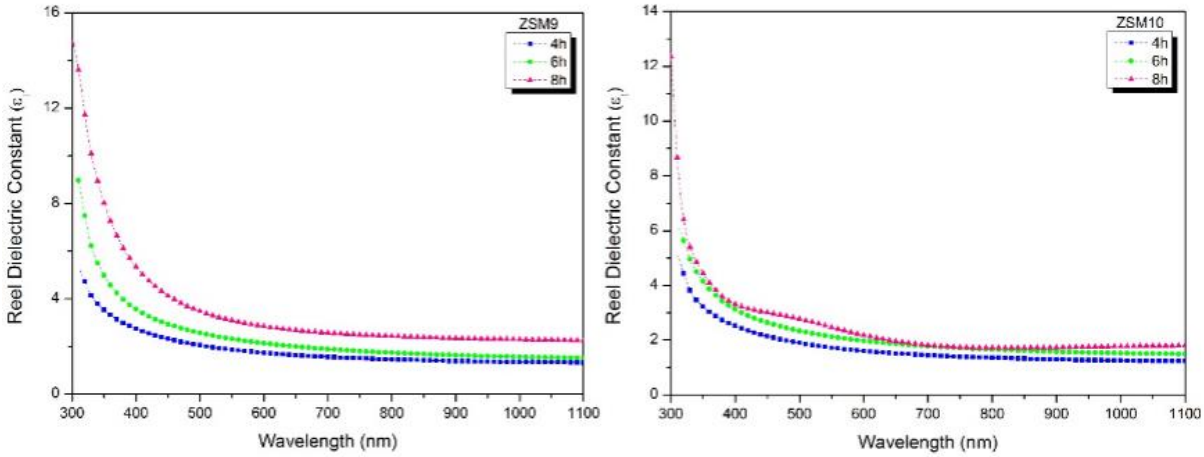

Figure 5. The change of reel dielectric constant values for thin films

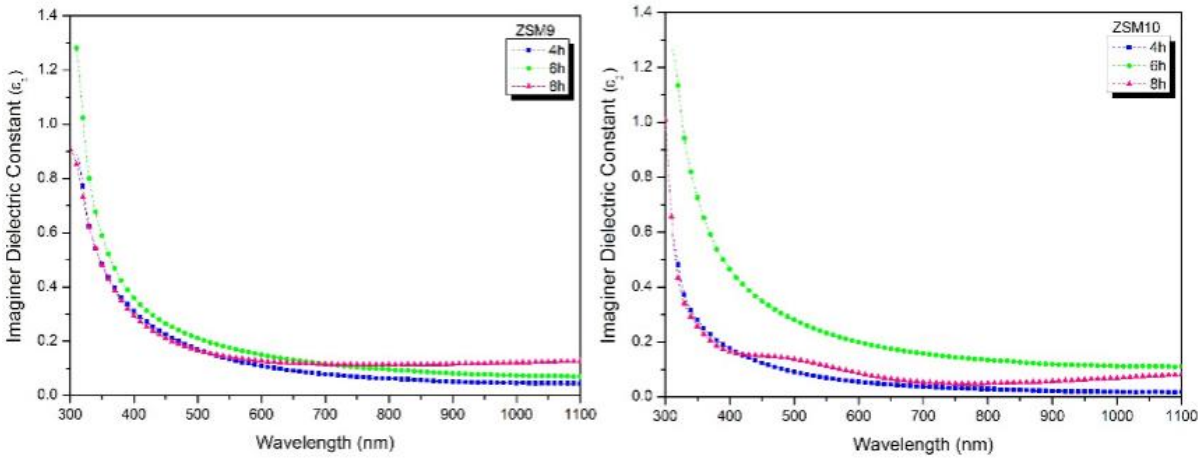

Figure 6. The change of imaginary dielectric constant values for thin films

Fig. 5 and Fig. 6 show reduced the ε_1 and ε_2 values of ZSM9 and ZSM10 thin films with the increase both wavelength and the films thickness. Also, it is seen that ε_1 and ε_2 values show similar behavior with k and n values changes. The energy band gap (E_g) values of ZnS:Mn thin films were identified by Tauc equation given below.

$$(\alpha h\nu) \propto \mathrm{A}\left(h\nu - E_g\right)^m \tag{6}$$

Tauc plots for ZSM9 and ZSM10 thin films are presented with Fig. 7. Besides, the points where the linear part of the plots cut the photon energy axis at $(\alpha h\nu)^2=0$ was determined as E_g values.

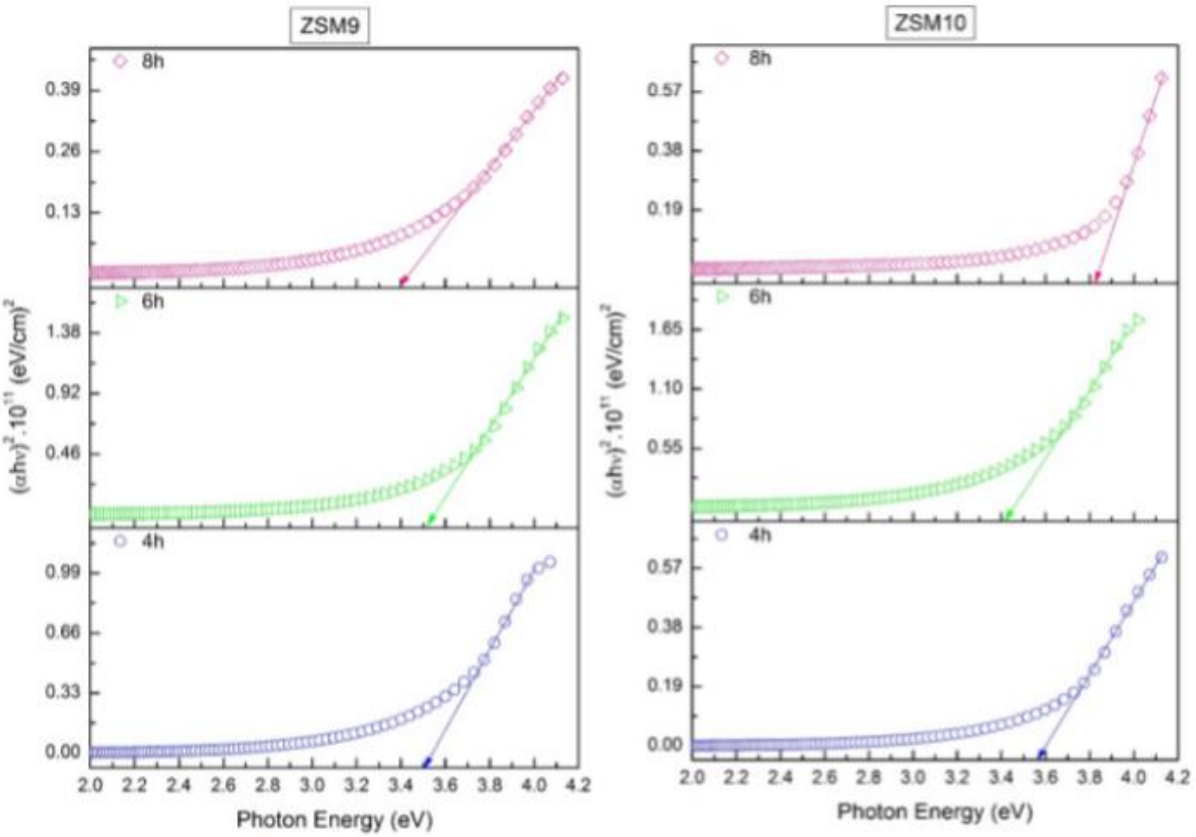

Figure 7. Tauc plots of ZSM9 and ZSM10 thin films.

The E_g values of ZSM9 and ZSM10 thin films are given in Table 2. These values are in accordance with the values reported in the literature (Gumus, 2010; Pejjai et al. 2017).

Table 2. Energy band gap values of films in the visible region

	Deposition times (hour)	**Energy band gap (E_g) values (eV)**
ZSM9	**4**	3.52
	6	3.51
	8	3.39
ZSM10	**4**	3.56
	6	3.41
	8	3.82

CONCLUSIONS

ZnS:Mn thin films were deposited with various content of Mn (9 and 10 wt.%) and different deposition times (4, 6, 8 hours) by CBD process. The effect of Mn content and deposition time on the optical parameters in ZnS thin films were investigated. The optical transmittance (*T*%) values of ZnS:Mn were varied between 55% and 97% in the visible region (400–700 nm). The refractive index (*n*) values for Mn content 9 and 10 wt.% in ZnS:Mn thin films were calculated in the range of 1.20–2.31 in the visible region. The energy band gap values (E_g) of the films were determined between 3.39 and 3.82 eV by Tauc plots. According to the results, it was found that each parameter of ZnS:Mn thin films studied in this study are depended on Mn content and deposition time.

REFERENCES

Erken O., Gunes M., Kirmizigul F., Gumus C. 2018, Investigation of properties the copper sulfide thin films prepared from different copper salts, Optik, 168;884–891.

Erken O., Gunes M., Ozaslan D., Gumus C. 2017. Effect of the deposition time on optical and electrical properties of semiconductor ZnS thin films prepared by Chemical Bath Deposition. Indian Journal of Pure and Applied Physics, 55: 471–477.

Goudarzi A., Aval G.M., Park S.S., Choi M.C., Sahraei R., Ullah M.H., Avane A., Ha C.S. 2009. Low-temperature growth of nanocrystalline Mn-doped ZnS thin films prepared by Chemical Bath Deposition and optical properties. Chemistry of Materials, 21:2375–2385.

Gumus C. 2010. Effects of annealing on optical properties of ZnS and ZnS:Mn thin films, Journal of Optoelectronics and Advanced Materials, 12:1747–1751.

Le Donne A., Cavalcoli D., Mereu R.A., Perani M., Pagani L., Acciarri M., Binetti S. 2017. Study of the physical properties of ZnS thin films deposited by RF sputtering. Materials Science in Semiconductor Processing, 71:7–11.

Ozutok F, Erturk K, Bilgin V. 2012. Growth, electrical, and optical study of ZnS:Mn thin films. Acta Physica Polonica A, 121(1):221–223.

Pejjai B., Minnam Reddy V.R., Seku K., Kotte T.R.R., Park C. 2017. Chemical bath deposition of Mn-doped ZnS thin films using greener complexing agents: Effect of Mn-doping on the optical properties, Optik, 130:608–618.

Sathishkumar M., Saroja M., Venkatachalam M. 2019. Influence of (Cu, Al) doping concentration on the structural, optical and antimicrobial activity of ZnS thin films prepared by Sol-Gel dip coating techniques, Optik, 182:774–785.

Wang C. 2021. Effect of annealing temperature on the structure and optical properties of Mn doped ZnS thin films, Journal of Modern Optics, 68(14):771–775.

Zakerian F., Kafashan H. 2018. Investigation the effect of annealing parameters on the physical properties of electrodeposited ZnS thin films. Superlattices and Microstructures, 124:92–106.

PRE-ALPHA-IRRESOLUTE TOPOLOGICAL VECTOR SPACES

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ABSTRACT

In 2016, Sabiha I. Mahmood introduced and studied a new class of generalized open sets in topological spaces namely, namely Pre-α-open sets and Pre-α-closed sets as well. Sabiha Mahmood continued using these sets to define and study a new class of functions, namely, Pre-α-continuous functions, contra Pre-α-continuous functions, Pre-α-irresolute functions and contra Pre-α-irresolute functions in topological spaces. We introduce and study a new class of topological vector spaces, namely *Pre-α-irresolute* topological vector spaces via *Pre-α-open* sets. We explore and investigate several properties and characterizations of this new notion of *Pre-α-irresolute* topological vector space.

2020 AMS Subject Classification: 54C08, 54C10, 54C30, 57N17, 57N99.

Keywords: *Pre-α-open* set, *Pre-α-closed* set, *Pre-α-irresolute* topological vector space, *Pre-α-Haudorff* , *Pre-α-compact*.

1. Introduction

The topology of material goes beyond its physical shape and geometry in that it directly affects physical properties such as electronic conduction, charge and spin transport, light transmission, and response to a magnetic field. The nontrivial aspects of topology and geometry have numerous applications in modern condensed matter physics where they play an important role in various physically and technologically interesting systems. This incipient appreciation for the importance of topology is beginning to allow researchers to engineer entirely new materials with unusual topologies that lead to either exotic or enhanced properties. Nevertheless, for most materials scientists, structural chemists, and biologists, topological methods remain obscure and unusually distant as compared to existing traditional methods. Topology is a field that studies invariance of certain properties under continuous deformation, such as stretching, bending, or twisting, of the underlying geometry. By continuous deformation we mean that nearby points on the object (e.g., a curve or a surface) remain neighbors, and no cutting or gluing is allowed. The continuous change can be continuously reverted, thus retrieving the original shape. Linear algebra is a main important part of the mathematics. It is a principal branch of mathematics that is related to mathematical structures closed under the operations of addition and scalar multiplication and that includes the theory of systems of linear equations, matrices, determinants, vector spaces, and linear transformations. Linear algebra is a mathematical discipline that deals with vectors and matrices and, more generally, with vector spaces and linear transformations. Unlike other parts of mathematics that are frequently invigorated by new ideas and unsolved problems, linear algebra is very well understood. Its value lies in its many applications, from mathematical physics to modern algebra and its usage in the engineering and medical fields such as image processing and analysis. The concept of topological vector spaces was first given by Kolmogroff in 1934. Since then, different researchers have explored many interesting and useful properties of topological vector spaces. Due to nice

properties, topological vector spaces earn a great importance and remain a topological notion in fixed point theory, operator theory, rational inequalities, etc. Now a days the researchers not only make use of topological vector spaces in other fields for developing new notions but also extend the concept of topological vector spaces with every possible way, making this field of study a more convenient and understandable. Recently, M. Khan et al. (2015) introduced the $s-topological$ vector spaces, a generalization of topological vector spaces. In 2016, Khan and Iqbal introduced the irresolute topological vector spaces which are particular brands of $s-topological$ vector spaces, but irresolute topological vector spaces are independent of topological vector spaces. Ibrahim (2017) initiated the study of $\alpha-topological$ vector spaces. Ram et al. (2018) introduced the notion of almost s-$topological$ vector spaces. In 2016, Sabiha I. Mahmood introduced and studied a new class of generalized open sets in topological spaces namely Pre-α-open sets and Pre-α-closed sets as well. Sabiha Mahmood continued using these sets to define and study a new class of functions, namely, Pre-α-continuous functions, contra Pre-α-continuous functions, Pre-α-irresolute functions and contra Pre-α-irresolute functions in topological spaces. We introduce and study a new class of topological vector spaces, namely Pre-α-$irresolute$ topological vector spaces via Pre-α-$open$ sets. We explore and investigate several properties and characterizations of this new notion of Pre-α-$irresolute$ topological vector space.

2. Pre - α - Open Sets in Topological Spaces

The (X,τ) and (Y,σ) $(or\ simply,\ X\ and\ Y)$ denote topological spaces on which no separation axioms are assumed unless explicitly stated and $f:(X,\tau)\to(Y,\sigma)$ means a mapping f from a topological space X to a topological space Y. A subset A of a topological space (X,τ) is said to be open if $A\in\tau$. A subset A of a topological space X is said to be closed if the set $X-A$ is open. The interior of a subset A of a topological space X is defined as the union of all open sets contained in A. It is denoted by $Int(A)$. The closure of a subset A of a topological space X is defined as the intersection of all closed sets containing A. It is denoted by $Cl(A)$. If U is a set and x is a point in X, then $N(x)$, and U^c denote respectively, the neighborhood system of x, and the complement of U, respectively. We start with recalling the following definitions and results [13], which are necessary for this study in the sequel.

Definition 2.1. A subset A of a topological space (X,τ) is said to be $semi$-$open$ set if $A\subseteq Cl[Int(A)]$ and a semi-closed set if $Int[Cl(A)]\subseteq A$.

Definition 2.2. A subset A of a topological space (X,τ) is said to be an α-open set if $A\subseteq Int[Cl(Int(A))]$ and an α-$closed$ set if $Cl[Int(Cl(A))]\subseteq A$.

Definition 2.3. A subset A of a topological space (X,τ) is said to be a β-open set if $A \subseteq Cl\left[Int\left(Cl(A)\right)\right]$.

Definition 2.4. A subset A of a topological space (X,τ) is called regular open $(briefly\ r\text{-}open)$ set if $A = Int\left[Cl(A)\right]$ and regular closed $(briefly\ r\text{-}closed)$ set if $A = Cl\left[Int(A)\right]$.

Definition 2.5. A subset A of a topological space (X,τ) is said to be a generalized closed $(briefly\ g\text{-}closed)$ set if $Cl(A) \subseteq U$, whenever $A \subseteq U$ and U is open in (X,τ).

Definition 2.6. A subset A of a topological space (X,τ) is said to be a b–*open* set if $A \subseteq Int\left[Cl(A)\right] \cup Cl\left[Int(A)\right]$.

Definition 2.7. A subset A of a topological space (X,τ) is said to be a pre-*open* set if $A \subseteq Int\left[Cl(A)\right]$.

Definition 2.8. Let (X,τ) be a topological space and A be a subset of X. Then

(i) The *pre-closure* of A, denoted by $pCl(A)$ is the intersection of all *pre*–*closed* subsets of X which contain A.

(ii) The *pre-intterior* of A, denoted by $pInt(A)$ is the union of all *pre*–*open* subsets of X which are contained in A.

Theorem 2.9. Let (X,τ) be a topological space and $A, B \subseteq X$. Then

(i) $Int(A) \subseteq pInt(A) \subseteq A$.

(ii) $A \subseteq pCl(A) \subseteq Cl(A)$.

(iii) A is *pre-closed* if and only if $pCl(A) = A$.

(iv) $pCl\left(pCl(A)\right) = pCl(A)$.

(v) $X - pInt(A) = pCl(X - A)$.

(vi) If $A \subseteq B$, then $pCl(A) \subseteq pCl(B)$.

(vii) $\bigcup_{\alpha\in\Lambda} pCl(U_\alpha) \subseteq pCl\left(\bigcup_{\alpha\in\Lambda} U_\alpha\right)$.

(viii) $x \in pCl(A)$ if and only if every *pre*–*open* set U containing $x, U \cap A \neq \phi$.

(ix) If V is an open set in X and A is a $pre-open$ set in X, then $V \cap A$ is a $pre-open$ set in X.

Definition 2.10. A subset A of a topological space (X,τ) is called a $pre-\alpha-open$ set if $A \subseteq Int\left[pCl\left(Int(A)\right)\right]$. The complement of a $pre-\alpha-open$ set is defined to be $pre-\alpha-closed$. The family of all $pre-\alpha-open$ $\left(resp.\ pre-\alpha-C(X,\tau)\right)$ subsets of X is denoted by $\tau^{pre-\alpha} = pre-\alpha-O(X,\tau)\left(resp.\ pre-\alpha-C(X,\tau)\right)$.

Theorem 2.11. $open\ set \Rightarrow pre-\alpha-open\ set \Rightarrow \alpha-open\ set \Rightarrow semi-open\ set$.

Theorem 2.12. The family of all $pre-\alpha-open$ sets in a topological space (X,τ) forms a topology on X.

Definition 2.13. Let (X,τ) be a topological space and A be a subset of X. Then

(i) The $pre-\alpha-closure$ of A, denoted by $p-\alpha-Cl(A)$ is the intersection of all $pre-\alpha-closed$ subsets of X which contain A.

(ii) The $pre-\alpha-interior$ of A, denoted by $p-\alpha-Int(A)$ is the union of all $pre-\alpha-open$ subsets of X which are contained in A.

Theorem 2.14. Let (X,τ) be a topological space and $A, B \subseteq X$. Then

$(\text{i})\ Int(A) \subseteq p-\alpha-Int(A) \subseteq A$.

$(\text{ii})\ A \subseteq p-\alpha-Cl(A) \subseteq Cl(A)$.

$(\text{iii})\ A$ is $pre-\alpha-closed$ if and only if $p-\alpha-Cl(A) = A$.

$(\text{iv})\ X-\left[p-\alpha-Int(A)\right] = p-\alpha-Cl(X-A)$.

(v) If $A \subseteq B$, then $p-\alpha-Cl(A) \subseteq p-\alpha-Cl(B)$.

$(\text{vi})\ p-\alpha-Cl\left[p-\alpha-Cl(A)\right] = p-\alpha-Cl(A)$.

(vii) If $A \subseteq B$, then $p-\alpha-Int(A) \subseteq p-\alpha-Int(B)$.

$(\text{viii})\ \bigcup_{\alpha\in\Lambda} p-\alpha-Cl(U_\alpha) \subseteq p-\alpha-Cl\left(\bigcup_{\alpha\in\Lambda} U_\alpha\right)$.

$(\text{ix})\ X-\left[p-\alpha-Cl(A)\right] = p-\alpha-Int(X-A)$.

$(\text{x})\ p-\alpha-Int(A\cap B) \subseteq \left[p-\alpha-Int(A)\right]\cap\left[p-\alpha-Int(B)\right]$.

(xi) $p\text{-}\alpha\text{-}Int(A)$ is the union of all $pre\text{-}\alpha\text{-}open$ subsets of A.

(xii) A is $pre\text{-}\alpha\text{-}open$ if and only if $p\text{-}\alpha\text{-}Int(A)=A$.

(xiii) $p\text{-}\alpha\text{-}Int\left[p\text{-}\alpha\text{-}Int(A)\right]=p\text{-}\alpha\text{-}Int(A)$.

(xiv) $x\in p\text{-}\alpha\text{-}Cl(A)$ if and only if for every $p\text{-}\alpha\text{-}open$ set U containing x, $U\cap A\neq\phi$.

Theorem 2.15. Let (X,τ) be a topological space. Then, every closed set is $pre\text{-}\alpha\text{-}closed$ set, but not conversely.

Theorem 2.16. Let (X,τ) be a topological space. Then every $\alpha\text{-}closed$ set is $pre\text{-}\alpha\text{-}closed$ set, but not conversely.

Definition 2.17. A subset A of a topological space (X,τ) is called a $pre\text{-}\alpha\text{-}neighbourhood$ of a point x in X if there exists a $pre\text{-}\alpha\text{-}open$ set U in X such that $x\in U\subseteq A$.

The set of all $pre\text{-}\alpha\text{-}neighbourhoods$ of an element x in X will be denoted by: $pre\text{-}\alpha\text{-}N_x=pre\text{-}\alpha\text{-}N_x(X)=\{A\subseteq X: A\ is\ a\ pre\text{-}\alpha\text{-}neighbourhood\ of\ x\}$.

Proposition 2.18. A subset A of a topological space (X,τ) is $pre\text{-}\alpha\text{--}open$ if and only if it is a $pre\text{-}\alpha\text{-}neighbourhood$ of each of its points.

Proof. If A is $pre\text{-}\alpha\text{-}open$ in X, then $x\in A\subseteq A$ for each $x\in A$. Thus A is a $pre\text{-}\alpha\text{-}neighbourhood$ of each of its points. Conversely, suppose that A is a $pre\text{-}\alpha\text{-}neighbourhood$ of each of its points. Then for each $x\in A$, there exists a $pre\text{-}\alpha\text{-}open$ set U_x in X such that $x\in U_x\subseteq A$. Hence $\bigcup_{x\in A}U_x\subseteq A$. Since $A\subseteq\bigcup_{x\in A}U_x$, therefore $A=\bigcup_{x\in A}U_x$. Thus A is a $pre\text{-}\alpha\text{-}open$ set in X, since it is a union of $pre\text{-}\alpha\text{-}open$ sets.

Definition 2.19. A mapping $f:(X,\tau)\to(Y,\sigma)$ is called $pre\text{-}\alpha\text{-}irresolute$ at a point $x\in X$ if for all $pre\text{-}\alpha\text{-}open$ subsets V in Y containing $f(x)$, there is a $pre\text{-}\alpha\text{-}open$ subset U of X such that $x\in U$ and $f(U)$ is a subset of V. The function f will be called $pre\text{-}\alpha\text{-}irresolute$ if f is $pre\text{-}\alpha\text{-}irresolute$ at each point $x\in X$.

Theorem 2.20. Let $f:(X,\tau)\to(Y,\sigma)$ be a function. Then the following statements are equivalent.

(1) f is $pre\text{-}\alpha\text{-}irresolute$.

(2) For each $x \in X$ and each $pre-\alpha-neighbourhood$ V of $f(x)$ in Y, there is a $pre-\alpha-neighbourhood$ U of x such that $f(U) \subseteq V$.

(3) The inverse image of every $pre-\alpha-closed$ subset of Y is a $pre-\alpha-closed$ subset of X.

(4) The inverse image of every $pre-\alpha-open$ subset of Y is a $pre-\alpha-open$ subset of X.

Definition 2.21. A function $f:(X,\tau)\to(Y,\sigma)$ is called $pre-\alpha-continuous$ if $f^{-1}(V)$ is $pre-\alpha-open$ set in X for every open set V in Y.

Proposition 2.22. A function $f:(X,\tau)\to(Y,\sigma)$ is called $pre-\alpha-continuous$ if and only if $f^{-1}(V)$ is $pre-\alpha-closed$ set in X for every closed set V in Y.

Definition 2.23. A function $f:(X,\tau)\to(Y,\sigma)$ is called $Pre-pre-\alpha-open$ if and only if the image set $f(U)$ is $pre-\alpha-open$ set in Y for every $pre-\alpha-open$ set U in X.

Proposition 2.24. A bijection function $f:(X,\tau)\to(Y,\sigma)$ is called $pre-\alpha-homeomorphism$ if f is $pre-pre-\alpha-open$ and $pre-\alpha-irreseolute$.

Definition 2.25. A function $f:(X,\tau)\to(Y,\sigma)$ is called perfectly $pre-\alpha-continuous$ if the inverse image $f^{-1}(V)$ of every $pre-\alpha-open$ set V of Y is both open and closed in X.

Definition 2.26. A function $f:(X,\tau)\to(Y,\sigma)$ is called strongly $pre-\alpha-continuous$ if the inverse image $f^{-1}(V)$ of every $pre-\alpha-open$ set V in Y is open set in X.

Definition 2.27. Let (X,τ) be a topological space and let $x \in X$. A subset A of X is said to be $pre-\alpha-neighborhood$ of x if there exists a $pre-\alpha-open$ set G such that $x \in G \subseteq A$.

The set of all $pre-\alpha-neighborhoods$ of $x \in X$ is called $pre-\alpha-$ neighborhood system at x and is denoted by $pre-\alpha-N(x)=\{A \subseteq X : A\ is\ an\ pre-\alpha-neighborhood\ of\ x\}$.

Remark 2.28. Every neighborhood A of $x \in X$ is $pre-\alpha-neighborhood$ of x. But in general, a $pre-\alpha-neighborhood$ A of $x \in X$ need not be a neighborhood of x in X as seen from the following example.

Remark 2.29. Let $X=\{a,b,c\}$ with topology $\tau=\{\phi,X,\{a\}\}$. Then the set $\{a,b\}$ is $pre-\alpha-neighborhood$ of point b, since the set $\{a,b\}$ is $pre-\alpha-open$. However the set $\{a,b\}$ is not a neighborhood of the point d, since there is no open set G such that $b \in G \subseteq \{a,b\}$.

Proposition 2.30. A subset A of a topological space (X,τ) is $pre-\alpha-open$ if and only if it is a $pre-\alpha-neighborhood$ of each of its points.

Proof. $\Rightarrow$: If A is $pre-\alpha-open$ in X, then $x\in A\subseteq A$ for each $x\in A$. Thus A is a $pre-\alpha-neighborhood$ of each of its points. Conversely, suppose that A is a $pre-\alpha-neighborhood$ of each of its points. Then for each $x\in A$, there exists a $pre-\alpha-open$ set U_x in X such that $x\in U_x\subseteq A$. Hence $\bigcup_{x\in A}U_x\subseteq A$. Since $A\subseteq\bigcup_{x\in A}U_x$, therefore $A=\bigcup_{x\in A}U_x$. Thus A is a $pre-\alpha-open$ set in X, since it is a union of $pre-\alpha-open$ sets .

3. Properties of pre-α-Irresolute Topolocal Vector Spaces

In this section, we define and investigate basic properties and characterizations of $pre-\alpha-irresolute$ topological vector spaces.

Definition 3.1. A topological space $(X_{(K)},\tau)$ is called $pre-\alpha-irresolute$ topological vector space $(pre-\alpha-ITVS)$ whenever the following conditions are satisfied.

(1) for each $x,y\in X$ and for each $pre-\alpha-open$ neighborhood W of $x+y$ in X, there exist $pre-\alpha-open$ neighborhoods U and V in X of x and y respectively, such that $U+V\subseteq W$.

(2) for each $x\in X$, $\lambda\in K$ and for each $pre-\alpha-open$ neighborhood W of λx in X, there exist $pre-\alpha-open$ neighborhoods U of λ in K and V of x in X, such that $U.V\subseteq W$.

Theorem 3.2. Let $(X_{(K)},\tau)$ be a $pre-\alpha-irresolute$ topological vector space. Then the following assertions are true:

(1) The (left) right translation mapping $T_x:X\to X$ defined by $T_x(y)=y+x;$ for all $x,y\in X$, is $pre-\alpha-irresolute.$

(2) The multiplication mapping $M_\lambda:X\to X$, defined by $M_\lambda(x)=\lambda x,$ for all $x\in X$, is $pre-\alpha-irresolute.$

Proof. (1) Let W be a $pre-\alpha-open$ neighborhood of $T_x(y)=x+y$. Then by definition, there exist $pre-\alpha-open$ neighborhoods U and V in X containing y and x respectively, such that $U+V\subseteq W$. This gives that $T_x(U)=U+x\subseteq U+V\subseteq W$. This proves that, $T_x:X\to X$ is $pre-\alpha-irresolute$ mapping.

(2) Let $x\in X$, $\lambda\in K$. Then $M_\lambda(x)=\lambda x$. Let W be any $pre-\alpha-open$ neighborhood W of λx. Then by definition of $pre-\alpha-ITVS$, there exist $pre-\alpha-open$ neighborhoods U in K of λ and V in X of x, such that $U.V\subseteq W$. This gives that $M_\lambda(V)=\lambda V\subseteq U.V\subseteq W$. This proves that $M_\lambda:X\to X$ is $pre-\alpha-irresolute$ mapping.

Theorem 3.3. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space. Let $A\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$. Then the following statements are true.

(1) $x+A\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$, for every $x\in X$.

(2) $\lambda A\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$, for every *non−zero* scalar $\lambda\in K$.

Proof. (1) $y\in x+A$. Then $y=x+a$ for some $a\in A$. By definition of *pre-α-irresolute* topological vector spaces, there exist *pre-α-open* sets U and V in X containing $-x$ and y respectively such that $U+V\subseteq A$. This gives $-x+V\subseteq U+V\subseteq A$. This implies $y\in V\subseteq x+A$. Therefore $y\in pre\text{-}\alpha\text{-}Int\left(x+A\right)$. Hence, $x+A=pre\text{-}\alpha\text{-}Int\left(x+A\right)$. This proves that $x+A$ is *pre-α-open* in X.

(2) Let $x\in\lambda A$. Then $x=\lambda a$ for some $a\in A$. Thus $a=\frac{1}{\lambda}x\in A$. By definition of *pre-α-irresolute* topological vector spaces, there exist *pre-α-open* sets U in K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V\subseteq A$. This implies that $a=\frac{1}{\lambda}x\in\frac{1}{\lambda}V\subseteq U.V\subseteq A$. Hence $x\in V\subseteq\lambda A$. Thus we obtain $x\in p\text{-}\alpha\text{-}Int\left(\lambda A\right)$. Therefore, it follows that $\lambda A\subseteq p\text{-}\alpha\text{-}Int\left(\lambda A\right)$. Hence, $\lambda A=p\text{-}\alpha\text{-}Int\left(\lambda A\right)$. This shows that $\lambda A\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$.

Corollary 3.4. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space. Let A be *pre-α-open* subset of X. Then the following statements are true.

(1) $x+A\subseteq p\text{-}\alpha\text{-}Cl\left[p\text{-}\alpha\text{-}Int\left(x+A\right)\right]$ for each $x\in X$.

(2) $\lambda A\subseteq p\text{-}\alpha\text{-}Cl\left[p\text{-}\alpha\text{-}Int\left(\lambda A\right)\right]$ for any non-zero scalar λ.

Theorem 3.5. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space. Let $A\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$ and B be any subset of X. Then prove that $A+B\in pre\text{-}\alpha\text{-}O\left(X,\tau\right)$.

Proof. Suppose $A\in pre\text{-}\alpha\text{-}\left(X,\tau\right)$ and $B\subseteq X$. Then, for each $b\in B$ and by Theorem 3.3 (1), we have $A+b\in pre\text{-}\alpha\text{-}\left(X,\tau\right)$. Then $A+B=\bigcup\left\{A+b:b\in B\right\}$ is a union of *pre-α-open* sets. Since arbitrary union of *pre-α-open* sets is *pre-α-open*, therefore $A+B$ is *pre-α-open* in X.

Corollary 3.6. Suppose $\left(X_{(K)},\tau\right)$ is *pre-α-irresolute* topological vector space and let $A\in pre\text{-}\alpha\text{-}\left(X,\tau\right)$. Then the set $U=\bigcup_{n=1}^{\infty}\left(nA\right)$ is *pre-α-open* in X.

Theorem 3.7. Let $\left(X_{(K)},\tau\right)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. Let $A\subseteq X$. Then prove that the following statements are true:

(1) $p\text{-}\alpha\text{-}Int(x+A)=x+p\text{-}\alpha\text{-}Int(A)$ for any $x\in X$.

(2) $pre\text{-}\alpha\text{-}Int(\lambda A)=\lambda\left[pre\text{-}\alpha\text{-}Int(A)\right]$ for non-zero scalar $\lambda\in K$.

Proof. (1) By applying Theorem 3.3 (1), $x+p\text{-}\alpha\text{-}Int(A)$ is $p\text{-}\alpha\text{-}open$. Therefore $x+p\text{-}\alpha\text{-}Int(A)\subseteq x+A$ implies $x+p\text{-}\alpha\text{-}Int(A)\subseteq p\text{-}\alpha\text{-}Int(x+A)$. Now let $z\in p\text{-}\alpha\text{-}Int(x+A)$. Then $z=x+y$ for some $y\in A$. By definition of $pre\text{-}\alpha\text{-}ITVS$, there exist $pre\text{-}\alpha\text{-}open$ sets U and V in X containing x and y respectively, such that $U+V\subseteq x+p\text{-}\alpha\text{-}Int(A)$. This gives that $z=x+y\in x+V\subseteq U+V\subseteq x+p\text{-}\alpha\text{-}Int(A)$. Therefore it follows that $p\text{-}\alpha\text{-}Int(x+A)\subseteq x+p\text{-}\alpha\text{-}Int(A)$.

(2) By Theorem 3.3(2), $\lambda\left[p\text{-}\alpha\text{-}Int(A)\right]$ is $p\text{-}\alpha\text{-}open$. Thus $\lambda\left[p\text{-}\alpha\text{-}Int(A)\right]\subseteq\lambda A$ implies that $\lambda\left[p\text{-}\alpha\text{-}Int(A)\right]\subseteq p\text{-}\alpha\text{-}Int(\lambda A)$. Next, if $y\in p\text{-}\alpha\text{-}Int(\lambda A)$, then $y=\lambda x$ for some $x\in A$. By definition of $pre\text{-}\alpha\text{-}ITVS$, there exist $pre\text{-}\alpha\text{-}open$ sets U of λ in K and V of x in X such that $U.V\subseteq p\text{-}\alpha\text{-}Int(\lambda A)$. Therefore, $y=\lambda x\in\lambda V\subseteq U.V\subseteq p\text{-}\alpha\text{-}Int(\lambda A)\subseteq\lambda A$. This implies that $x\in V\subseteq A$. Since V is $pre\text{-}\alpha\text{-}open$. Thus $x\in p\text{-}\alpha\text{-}Int(A)$. Consequently, $y=\lambda x\in\lambda\left[p\text{-}\alpha\text{-}Int(A)\right]$. Hence we conclude that $p\text{-}\alpha\text{-}Int(\lambda A)=\lambda\left[p\text{-}\alpha\text{-}Int(A)\right]$.

Theorem 3.8. Let $\left(X_{(K)},\tau\right)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. Let $A,B\subseteq X$. Then $p\text{-}\alpha\text{-}Int(A)+p\text{-}\alpha\text{-}Int(B)\subseteq p\text{-}\alpha\text{-}Int(A+B)$.

Proof. We know that $p\text{-}\alpha\text{-}Int(A)\subseteq A$ and $p\text{-}\alpha\text{-}Int(B)\subseteq B$. This implies $p\text{-}\alpha\text{-}Int(A)+p\text{-}\alpha\text{-}Int(B)\subseteq A+B$. By Theorem 3.5, $p\text{-}\alpha\text{-}Int(A)+p\text{-}\alpha\text{-}Int(B)$ is $p\text{-}\alpha\text{-}open$. This implies that $\left[p\text{-}\alpha\text{-}Int(A)\right]+\left[p\text{-}\alpha\text{-}Int(B)\right]=p\text{-}\alpha\text{-}Int\left[\left(p\text{-}\alpha\text{-}Int(A)\right)+\left(p\text{-}\alpha\text{-}Int(B)\right)\right]$ $\subseteq p\text{-}\alpha\text{-}Int(A+B)$. Hence $\left[p\text{-}\alpha\text{-}Int(A)\right]+\left[p\text{-}\alpha\text{-}Int(B)\right]\subseteq p\text{-}\alpha\text{-}Int(A+B)$.

Theorem 3.9. Let F be any $pre\text{-}\alpha\text{-}closed$ subset of a $pre\text{-}\alpha\text{-}irresolute$ topological vector space X. Then the following statements are true:

(1) $x+F\in pre\text{-}\alpha\text{-}C(X)$, for every $x\in X$.

(2) $\lambda F\in pre\text{-}\alpha\text{-}C(X)$, for each $non\text{-}zero$ scalar $\lambda\in K$.

Proof. (1) Suppose that $y\in p\text{-}\alpha\text{-}Cl(x+F)$. Consider $z=-x+y$ and let W be any $pre\text{-}\alpha\text{-}open$ set in X containing z. Then there exist $pre\text{-}\alpha\text{-}open$ sets U and V in X such that $-x\in U$, $y\in V$

and $U+V\subseteq W$. Since $y\in p\text{-}\alpha\text{-}Cl(x+F)$, $(x+F)\bigcap V\neq\phi$. So, there is an element $a\in(x+F)\bigcap V$. Thus $a\in x+F$ and $a\in V$. Hence $-x+a\in F$ and $-x+a\in U+V$. Therefore $-x+a\in F\bigcap(U+V)\subseteq F\bigcap W$. Thus $F\bigcap W\neq\phi$. Therefore $z\in p\text{-}\alpha\text{-}Cl(F)=F$. Hence $y\in x+F$. Thus $x+F=p\text{-}\alpha\text{-}Cl(x+F)$. This proves that $x+F$ is *pre-α-closed* set in X.

(2) Assume that $x\in p\text{-}\alpha\text{-}Cl(\lambda F)$. Let W be any *pre-α-open* neighborhood of $y=\frac{1}{\lambda}x$ in X. Since X is *pre-α-ITVS*, there exist *pre-α-open* sets U in K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V\subseteq W$. By hypothesis, $(\lambda F)\bigcap V\neq\phi$. Therefore, there is an element $a\in(\lambda F)\bigcap V$. Thus $a\in\lambda F$ and $a\in V$. Hence $\frac{1}{\lambda}a\in F$ and $\frac{1}{\lambda}a\in\frac{1}{\lambda}V\subseteq U.V\subseteq W$. Therefore $F\bigcap W\neq\phi$. Hence $p\text{-}\alpha\text{-}Cl(F)=F$. Thus $x\in\lambda F$ and thereby, $\lambda F=p\text{-}\alpha\text{-}Cl(\lambda F)$. Hence $\lambda F\in pre\text{-}\alpha\text{-}C(X)$.

Corollary 3.10. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space and let $A\subseteq X$. Then $p\text{-}\alpha\text{-}Cl\left[x+p\text{-}\alpha\text{-}Cl(A)\right]=x+\left[p\text{-}\alpha\text{-}Cl(A)\right]$ for each $x\in X$.

Theorem 3.11. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space and S be a subspace of X. If S contains a *non–empty* *pre-α-open* subset of X, then S is *pre-α-open* in X.

Proof. Suppose U is a *non–empty* *pre-α-open* subset of X such that $U\subseteq S$. By Theorem $3.3(1)$, for any $y\in S$, $U+y$ is a *pre-α-open* subset of X. Since S is a subspace of X, so also we have $U+y\subseteq S$ for any $y\in S$, Thus $S=\bigcup\{U+y:y\in S\}$ is *pre-α-open* in X being a union of *pre-α-open* sets.

Theorem 3.12. Let A be any subset of a *pre-α-irresolute* topological vector space X. Then the following statements are true.

(1) $x+\left[p\text{-}\alpha\text{-}Cl(A)\right]=p\text{-}\alpha\text{-}Cl(x+A)$ for any $x\in X$.

(2) $p\text{-}\alpha\text{-}Cl(\lambda A)=\lambda\left[p\text{-}\alpha\text{-}Cl(A)\right]$ for any non-zero scalar λ.

Proof. (1) By applying Theorem $3.9(1)$, $p\text{-}\alpha\text{-}Cl(A)$ is *pre-α-closed*. Hence $x+A\subseteq x+\left[p\text{-}\alpha\text{-}Cl(A)\right]$ implies $p\text{-}\alpha\text{-}Cl(x+A)\subseteq x+\left[p\text{-}\alpha\text{-}Cl(A)\right]$. For the reverse inclusion, let $z\in x+\left[p\text{-}\alpha\text{-}Cl(A)\right]$. Then $z=x+y$, for some $y\in p\text{-}\alpha\text{-}Cl(A)$. Let W be any *pre-α-open* neighborhood of z in X. Then, there exist *pre-α-open* neighborhoods U and V of x and y respectively in X such that $U+V\subseteq W$. Since $y\in p\text{-}\alpha\text{-}Cl(A)$, $A\bigcap V\neq\phi$. Consider $a\in A\bigcap V$. Then $x+a\in(x+A)\bigcap(U+V)\subseteq(x+A)\bigcap W$. Therefore we have $(x+A)\bigcap W\neq\phi$. Consequently,

$z \in p\text{-}\alpha\text{-}Cl(x+A)$. Thus $x+[p\text{-}\alpha\text{-}Cl(A)] \subseteq p\text{-}\alpha\text{-}Cl(x+A)$. Hence, $x+[p\text{-}\alpha\text{-}Cl(A)] = p\text{-}\alpha\text{-}Cl(x+A)$.

(2) By Theorem 3.9 (2), $\lambda[p\text{-}\alpha\text{-}Cl(A)]$ is $pre\text{-}\alpha\text{-}closed$. Therefore $\lambda A \subseteq \lambda[p\text{-}\alpha\text{-}Cl(A)]$ implies that $p\text{-}\alpha\text{-}Cl(\lambda A) \subseteq \lambda[p\text{-}\alpha\text{-}Cl(A)]$. Next, let $x \in p\text{-}\alpha\text{-}Cl(A)$ and let W be any $pre\text{-}\alpha\text{-}open$ neighborhood of $z = \lambda x$ in X. Then we get $pre\text{-}\alpha\text{-}open$ sets U in K containing λ and V in X containing x such that $U.V \subseteq W$. Since $x \in p\text{-}\alpha\text{-}Cl(A)$, there is an element $a \in A \cap V$ and thus $y = \lambda a \in (\lambda A) \cap (\lambda V) \subseteq (\lambda A) \cap (UV) \subseteq (\lambda A) \cap W$. Hence $(\lambda A) \cap W \neq \phi$. Therefore it follows that $z = \lambda x \in p\text{-}\alpha\text{-}Cl(\lambda A)$. Thus we obtain $\lambda[p\text{-}\alpha\text{-}Cl(A)] \subseteq p\text{-}\alpha\text{-}Cl(\lambda A)$. Hence the assertion follows.

Theorem 3.13. Let $(X_{(K)}, \tau)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. Let A and B be subsets of X. Then prove that $[p\text{-}\alpha\text{-}Cl(A)] + [p\text{-}\alpha\text{-}Cl(B)] \subseteq p\text{-}\alpha\text{-}Cl(A+B)$.

Proof. Let $x \in p\text{-}\alpha\text{-}Cl(A)$ and $y \in p\text{-}\alpha\text{-}Cl(B)$. Let W be a $pre\text{-}\alpha\text{-}open$ neighborhood of $x+y$. Then there exist $pre\text{-}\alpha\text{-}open$ neighborhoods U and V of x and y respectively, such that $U+V \subseteq W$. Since, $x \in p\text{-}\alpha\text{-}Cl(A)$, $y \in p\text{-}\alpha\text{-}Cl(B)$, there are $a \in A \cap U$ and $b \in B \cap V$. Then, $a+b \in (A+B) \cap (U+V) \subseteq (A+B) \cap W$. Hence $(A+B) \cap W \neq \phi$. This implies that $x+y \in p\text{-}\alpha\text{-}Cl(A+B)$. Therefore we conclude that $[p\text{-}\alpha\text{-}Cl(A)] + [p\text{-}\alpha\text{-}Cl(B)] \subseteq p\text{-}\alpha\text{-}Cl(A+B)$.

Theorem 3.14. Let $(X_{(K)}, \tau)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. For given $y \in X$ and $\lambda \in K$ with $\lambda \neq 0$, each translation mapping $T_y : X \to X$ defined by $T_y(x) = x+y$ and multiplication mapping $M_\lambda : X \to X$ defined by $M_\lambda(x) = \lambda x$, where $x \in X$, is $pre\text{-}\alpha\text{-}homeomorphism$ onto itself.

Proof. First, we show that $T_y : X \to X$ is $pre\text{-}\alpha\text{-}homeomorphism$. By Theorem 3.2 (1), T_y is $pre\text{-}\alpha\text{-}irresolute$. Moreover, T_y is $pre-pre\text{-}\alpha\text{-}open$ because for any $pre\text{-}\alpha\text{-}open$ U, by Theorem 3.3 (1), $T_y(U) = U+y$ is $pre\text{-}\alpha\text{-}open$. Similarly, we can prove that M_λ is $pre\text{-}\alpha\text{-}homeomorphism$.

Theorem 3.15. Let $(X_{(K)}, \tau)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. Then any $pre\text{-}\alpha\text{-}open$ subspace of X is $pre\text{-}\alpha\text{-}closed$ in X.

Proof. Let G be a $pre\text{-}\alpha\text{-}open$ subspace of X. Then by Theorem 3.3 (1), for any $x \in X-G$, $G+x$ is $pre\text{-}\alpha\text{-}open$. We also clearly have $x \in G+x \subseteq X-G$. Then, $Z = \bigcup\{G+x : x \in X-G\} = X-G$ being a union of $pre\text{-}\alpha\text{-}open$ sets is $pre\text{-}\alpha\text{-}open$. Therefore, $G = X-Z$ is $pre\text{-}\alpha\text{-}closed$.

Theorem 3.16. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space and B be a *pre-α-open* set in X, then for any subset A of X, we have $A+B=\left[p\text{-}\alpha\text{-}Cl(A)\right]+B.$

Proof. Since we know that $A\subseteq p\text{-}\alpha\text{-}Cl(A)$, so $A+B\subseteq\left[p\text{-}\alpha\text{-}Cl(A)\right]+B.$ Conversely, let $y\in\left[p\text{-}\alpha\text{-}Cl(A)\right]+B$ and write $y=x+b,$ where $x\in p\text{-}\alpha\text{-}Cl(A)$ and $b\in B.$ There exists a *pre-α-open* neighborhood V of zero such that $T_b(V)=V+b\subseteq B.$ Now, V is *pre-α-open* neighborhood of 0 in X, this gives that $-V$ is also *pre-α-open* neighborhood of 0 in X. Then $x-V$ is a *pre-α-open* neighborhood of $x.$ Since $x\in p\text{-}\alpha\text{-}Cl(A)$, so, there exists an element $a\in A\bigcap(x-V).$ We know that $y=x+b=a-a+x+b\in a+V+b\subseteq A+B.$ Therefore, $\left[p\text{-}\alpha\text{-}Cl(A)\right]+B\subseteq A+B.$ Hence, consequently we obtain $A+B=\left[p\text{-}\alpha\text{-}Cl(A)\right]+B.$

Theorem 3.17. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space. Then the scalar multiple of *pre-α-closed* set is *pre-α-closed*.

Proof. Let B be a *pre-α-closed* set in X and let $\lambda\in K-\{0\}$. Then $X-B$ is *pre-α-open* set in X. Now $M_\lambda(X-B)=\lambda(X-B)=\lambda X-\lambda B=X-\lambda B\in pre\text{-}\alpha\text{-}O(X).$ Therefore, $\lambda B\in pre\text{-}\alpha\text{-}C(X).$

Definition 3.18. A topological space (X,τ) is said to be *pre-α-compact* if every cover of X by *pre-α-open* sets of X has a finite sub cover. A subset A of X is said to be *pre-α-compact* relative to X if every cover of A by *pre-α-open* sets of X has a finite sub cover.

Theorem 3.19. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space and let A be any *pre-α-compact* set in X. Then prove that $x+A$ is *pre-α-compact* for each $x\in X$.

Proof. Let $\Omega=\{U_\alpha:\alpha\in\Lambda\}$ be a *pre-α-open* cover of $x+A.$ Then $A\subseteq\bigcup\{-x+U_\alpha:\alpha\in\Lambda\}$ and $\{-x+U_\alpha:\alpha\in\Lambda\}\subseteq pre\text{-}\alpha\text{-}O(X,\tau).$ By hypothesis, $A\subseteq\bigcup\{-x+U_\alpha:\alpha\in\Lambda_0\}$ for some finite $\Lambda_0\subseteq\Lambda.$ Whence we find that $x+A\subseteq\bigcup\{U_\alpha:\alpha\in\Lambda_0\}$. This shows that $x+A$ is *pre-α-compact*.

Theorem 3.20. Let $\left(X_{(K)},\tau\right)$ be a *pre-α-irresolute* topological vector space. The scalar multiple of *pre-α-compact* set is *pre-α-compact*.

Proof. Let A be a *pre-α-compact* subset of X. If $\lambda=0$ we are nothing to prove. Assume $\lambda\in K-\{0\}.$ Let $\Psi=\{U_\alpha:\alpha\in\Lambda\}$ be a *pre-α-open* cover of $\lambda A.$ Then $A\subseteq\left(\frac{1}{\lambda}\right)(\cup\Psi)=\left(\frac{1}{\lambda}\right)(\cup\{U_\alpha:\alpha\in\Lambda\})=\cup\left\{\left(\frac{1}{\lambda}\right)U_\alpha:\alpha\in\Lambda\right\}.$ Now since we have $\{U_\alpha:\alpha\in\Lambda\}\subseteq pre\text{-}\alpha\text{-}O(X)$ and $\left(X_{(K)},\tau\right)$ is *pre-α-ITVS*, so we obtain $\left\{\left(\frac{1}{\lambda}\right)U_\alpha:\alpha\in\Lambda\right\}\subseteq pre\text{-}\alpha\text{-}O(X,\tau),$

By hypothesis A is $pre\text{-}\alpha\text{-}compact$, therefore there exists a finite subset $\Lambda_0 \subseteq \Lambda$ such that $A \subseteq \bigcup\left\{\left(\frac{1}{\lambda}\right)U_\alpha : \alpha \in \Lambda_0\right\}$. This implies that $\lambda A \subseteq \bigcup\{U_\alpha : \alpha \in \Lambda_0\}$. Hence λA is $pre\text{-}\alpha\text{-}compact$.

Definition 3.21. A mapping $f:\left(X_{(K)},\tau_X\right)\to\left(Y_{(K)},\tau_Y\right)$ is said to be linear if $f\left(\alpha x+\beta y\right)=\alpha f\left(x\right)+\beta f\left(y\right)$, for all $x,y\in X$ and $\alpha,\beta\in K$.

Definition 3.22. A mapping $f:X\to K$ is called linear functional if $f\left(\alpha x+\beta y\right)=\alpha f\left(x\right)+\beta f\left(y\right)$, for all $x,y\in X$ and $\alpha,\beta\in K$. The kernel of f is defined by $Ker\left(f\right)=\left\{x\in X : f\left(x\right)=0\right\}$.

Theorem 3.23. Let $f:\left(X_{(K)},\tau_X\right)\to\left(Y_{(K)},\tau_Y\right)$ be a linear mapping such that f is $pre\text{-}\alpha\text{-}irresolute$ at 0. Then f is $pre\text{-}\alpha\text{-}irresolute$ on X.

Proof. Let x be any non-zero element of X and V be any $pre\text{-}\alpha\text{-}open$ set in Y containing $f\left(x\right)$. Since translation of a $pre\text{-}\alpha\text{-}open$ set in a $pre\text{-}\alpha\text{-}irresolute$ topological vector spaces is $pre\text{-}\alpha\text{-}open$, $V-f\left(x\right)$ is $pre\text{-}\alpha\text{-}open$ set in Y containing 0. Since f is $pre\text{-}\alpha\text{-}irresolute$ at 0, there exists a $pre\text{-}\alpha\text{-}open$ set U in X containing 0 such that $f\left(U\right)\subseteq V-f\left(x\right)$. Furthermore, linearity of f implies that $f\left(x+U\right)\subseteq V$. By Theorem 3.3 (1), $x+U$ is $pre\text{-}\alpha\text{-}open$ and hence f is $pre\text{-}\alpha\text{-}irresolute$ at x. By hypothesis, f is $pre\text{-}\alpha\text{-}irresolute$ at 0. This reflects that f is $pre\text{-}\alpha\text{-}irresolute$.

Corollary 3.24. Let $\left(X_{(K)},\tau\right)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. Let $f:X\to K$ be a linear functional which is $pre\text{-}\alpha\text{-}irresolute$ at 0. Then the set $F=\left\{x\in X : f\left(x\right)=0\right\}$ is $pre\text{-}\alpha\text{-}closed$.

IV. Characterizations of pre-α-Irresolute Topological Vector Spaces

In this section we give some characterizations of $pre\text{-}\alpha\text{-}irresolute$ topological vector space.

Theorem 4.1. Let $\left(X,\tau\right)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. For $x\in X$, the following assertions hold.

(1) If $U\in pre\text{-}\alpha\text{-}N\left(x\right)$, then $x\in U$.

(2) If $U\in pre\text{-}\alpha\text{-}N\left(x\right)$ and V is a neighborhood of x, then $U\bigcap V\in pre\text{-}\alpha\text{-}N\left(x\right)$.

(3) If $U\in pre\text{-}\alpha\text{-}N\left(x\right)$, then there exists $V\in pre\text{-}\alpha\text{-}N\left(x\right)$ such that $U\in pre\text{-}\alpha\text{-}N\left(y\right)$, for all $y\in V$. (4) If $U\in pre\text{-}\alpha\text{-}N\left(x\right)$ and $U\subseteq V$, then $V\in pre\text{-}\alpha\text{-}N\left(x\right)$.

(5) If $U\in pre\text{-}\alpha\text{-}N\left(0\right)$, then $\lambda U\in pre\text{-}\alpha\text{-}N\left(0\right)$ for every non-zero element $\lambda\in R$.

(6) If $U \in pre\text{-}\alpha\text{-}N(x)$ and V is a $pre\text{-}\alpha\text{-}neighborhood$ of x, then $U \cap V \in pre\text{-}\alpha\text{-}N(x)$.

(7) $U \in pre\text{-}\alpha\text{-}N(0)$ if and only if $x+U \in pre\text{-}\alpha\text{-}N(x)$.

Proof. We will prove (2), (5) and (7) while the proofs of others follow easily.

(2) If U is a $pre\text{-}\alpha\text{-}neighborhood$ of x, and V is a neighborhood of x, then there is a $pre\text{-}\alpha\text{-}open$ subset A and an open set B such that $x \in A \subseteq U$ and $x \in B \subseteq V$. Then $x \in A \cap B \subseteq U \cap V$ and $\tau \subseteq pre\text{-}\alpha\text{-}O(X,\tau)$. Thus $A \cap B \in pre\text{-}\alpha\text{-}O(X,\tau)$. Therefore $U \cap V$ is a $pre\text{-}\alpha\text{-}neighborhood$ of x.

(5) Let U be $pre\text{-}\alpha\text{-}neighborhood$ for zero. Then there exists a $pre\text{-}\alpha\text{-}open$ neighborhood V of zero such that $V \subseteq U$. Since the map $M_\lambda : X \to X$, defined by $M_\lambda(x) = \lambda x$, is $pre\text{-}\alpha\text{-}irresolute$. The inverse map $M_\lambda; X \to X$, defined by $M_\lambda(x) = \frac{1}{\lambda}x$, is also a $pre\text{-}\alpha\text{-}irresolute$. Thus M_λ is $pre\text{-}\alpha\text{-}homeomorphism$, for each $\lambda \in R - \{0\}$. Hence $M_\lambda(V) = \lambda V$ is a $pre\text{-}\alpha\text{-}open$ neighborhood of zero. Furthermore, clearly $\lambda V \subseteq \lambda U$. Thus consequently $\lambda U \in pre\text{-}\alpha\text{-}N(0)$.

(7) Suppose U is a $pre\text{-}\alpha\text{-}neighborhood$ for zero. Then there exists a $pre\text{-}\alpha\text{-}open$ neighborhood V of zero such that $V \subseteq U$. Since the map $T_x : X \to X$, defined by $T_x(y) = y + x$, is $pre\text{-}\alpha\text{-}irresolute$. The inverse map $T_x; X \to X$, defined by $T_x(y) = x - y$, is also a $pre\text{-}\alpha\text{-}irresolute$. Thus T_x is $pre\text{-}\alpha\text{-}homeomorphism$, for each $x \in X$. Hence $T_x(V) = x + V$ is a $pre\text{-}\alpha\text{-}open$ neighborhood for a point x. Clearly $x+V \subseteq x+U$. Thus $x+U \in N_x$. The converse can be proved similarly.

Definition 4.2. A subset A of a topological vector space X is called balanced if and only if $\lambda A \subseteq A$ for each $\lambda \in R$ such that $|\lambda| \leq 1$.

Definition 4.3. A subset A of a topological vector space X is called absorbing if for all $x \in X$ there exists a number $\varepsilon > 0$ such that $\lambda x \in A$ for $|\lambda| \leq \varepsilon$.

Definition 4.4. A set C of a topological vector space X is said to be convex, if and only if it contains all segments between its points: $x \in C$, $y \in C$, for $t \in [0,1]$ implies $tx + (1-t)y \in C$, or equivalently $tC + (1-t)C \subseteq C$, for all $t \in [0,1]$. A set C of a topological vector space X is said to be absolutely convex if it is both convex and balanced.

Theorem 4.5. Let $(X_{(K)}, \tau)$ be a $pre\text{-}\alpha\text{-}irresolute$ topological vector space. If a subset C of X is convex, then $p\text{-}\alpha\text{-}Cl(C)$ is also convex.

Proof. The convexity of C implies $tC+(1-t)C \subseteq C$. By Theorem 3.12 (2), and Theorem 3.13, it follows $t[p\text{-}\alpha\text{-}Cl(C)]+(1-t)[p\text{-}\alpha\text{-}Cl(C)] = [p\text{-}\alpha\text{-}Cl(tC)]+[p\text{-}\alpha\text{-}Cl[(1-t)C]] \subseteq p\text{-}\alpha\text{-}Cl[tC+(1-t)C] = p\text{-}\alpha\text{-}Cl(C)$. Thus $t[p\text{-}\alpha\text{-}Cl(C)]+(1-t)[p\text{-}\alpha\text{-}Cl(C)] \subseteq p\text{-}\alpha\text{-}Cl(C)$. Hence we conclude that $p\text{-}\alpha\text{-}Cl(C)$ is convex.

Theorem 4.6. Let $(X_{(K)},\tau)$ be a *pre-α-irresolute* topological vector space. If a subset C of X is convex, then $p\text{-}\alpha\text{-}Int(C)$ is also convex.

Proof. By Theorem 3.7 (2), and Theorem 3.8, $t[p\text{-}\alpha\text{-}Int(C)]+(1-t)[p\text{-}\alpha\text{-}Int(C)] = [p\text{-}\alpha\text{-}Int(tC)]+[p\text{-}\alpha\text{-}Int[(1-t)C]] \subseteq p\text{-}\alpha\text{-}Int[tC+(1-t)C] = p\text{-}\alpha\text{-}Int(C)$. Hence conclude that $p\text{-}\alpha\text{-}Int(C)$ is convex.

Theorem 4.7. Let $(X_{(R)},\tau)$ be a *pre-α-irresolute* topological vector space. Then the following statements are equivalent:

(a) Every *pre-α-neighborhood* U of zero is absorbing.

(b) For every *pre-α-neighborhood* U for zero, there exists a balanced set $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V \subseteq U$.

Proof. (a) Suppose U is a *pre-α-neighborhood* for zero. Then there exists a *pre-α-open* subset $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V \subseteq U$. By hypothesis X is a *pre-α-ITVS*. So there exist *pre-α-open* sets V_1 of R containing *zero* and V_2 of X containing zero such that $V_1.V_2 \subseteq V$. The set V_1 contains an open interval of the form $(-\varepsilon,\varepsilon)$ for some $\varepsilon > 0$. Therefore $tx \in V \subseteq U$ for all $t \in (-\varepsilon,\varepsilon)$ and for all $x \in V_2$. This implies U is absorbing.

(b) Let U be a *pre-α-neighborhood* of zero. By hypothesis X is a *pre-α-ITVS*. So there exist *pre-α-open* sets V_1 of R containing zero and V_2 of X containing zero such that $V_1.V_2 \subseteq U$. Then there exists $\varepsilon > 0$ such that $(-\varepsilon,\varepsilon) \subseteq V_1$. Define $W = \bigcup\{tV_2 : t \in R, |t| < \varepsilon\}$. Since tV_2 is a *pre-α-neighborhood* of zero, for $t \neq 0$ and $tV_2 \subseteq U$ for $t \in (-\varepsilon,\varepsilon)$. Thus W is a *pre-α-neighborhood* for zero and $W \subseteq U$. Now we have to show that W is balanced. Let $r \in R$ such that $|r| \leq 1$. Let $t \in (-\varepsilon,\varepsilon)$ and $x \in V_2$. Since $|rt| = |r||t| \leq t < \varepsilon$. This implies $r(tx) = (rt)x \in (-\varepsilon,\varepsilon).V_2 \subseteq W$. This shows that $rW \subseteq W$. Therefore W is balanced.

Theorem 4.8. Let X be a *pre-α-irresolute* topological vector space. Then $p\text{-}\alpha\text{-}Cl(A) = \bigcap\{A+U : U \in pre\text{-}\alpha\text{-}N(0)\}$.

Proof. Assume $x \in p\text{-}\alpha\text{-}Cl(A)$, and let U be a *pre-α-neighborhood* of zero. Then by Theorem 4.7(b), there exits a balanced neighborhood V for zero such that $V \subseteq U$. Thus $x+V$ is a *pre-α-neoghborhood* for x and $x \in p\text{-}\alpha\text{-}Cl(A)$, so $(x+V)\bigcap A \neq \phi$. Take $a \in (x+V)\bigcap A$. Then $a \in x+V$ and $a \in A$. Let $a = x+v$ for some $v \in V$. Since V is balanced, so $A-V = A+V$. Take $x = a+(-v) \in A-V$ implies $x \in A+V \subseteq A+U$. Thus $x \in A+U$, for any *pre-α-neighborhood* U of zero. Therefore we obtain $p\text{-}\alpha\text{-}Cl(A) \subseteq \bigcap\{A+U : U \in pre\text{-}\alpha\text{-}N(0)\}$. Conversely if $x \notin p\text{-}\alpha\text{-}Cl(A)$, then there exists a balanced neighborhood U for zero such that $(x+U)\bigcap A = \phi$. Thus $x \notin A-U = A+U$. It follows that $\bigcap\{A+U : U \in pre\text{-}\alpha\text{-}N(0)\} \subseteq p\text{-}\alpha\text{-}Cl(A)$. Therefore we obtain $p\text{-}\alpha\text{-}Cl(A) = \bigcap\{A+U : U \in pre\text{-}\alpha\text{-}N(0)\}$.

Theorem 4.9. Let X be a *pre-α-ITVS*. Then the following assertions are true:

(a) For every $U \in pre\text{-}\alpha\text{-}N(0)$, there exists symmetric set $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V+V \subseteq U$.

(b) For every $U \in pre\text{-}\alpha\text{-}N(0)$, there exits a *pre-α-closed* balanced set $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V \subseteq U$.

(c) For every $U \in pre\text{-}\alpha\text{-}N(0)$, there exists symmetric set $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V+V+V \subseteq U$.

Proof. (a) Assume $U \in pre\text{-}\alpha\text{-}N(0)$. By hypothesis X is a *pre-α-ITVS*. There exist *pre-α-open* neighborhoods V_1 and V_2 for zero in X such that $V_1+V_2 \subseteq U$. Let $V = V_1\bigcap(-V_1)\bigcap V_2\bigcap(-V_2)$. Then V is symmetric *pre-α-open* neighborhood of zero and $V+V \subseteq V_1+V_2 \subseteq U$.

(b) Let U be a *pre-α-neihborhood* of zero in X. By part (a) there is *pre-α-neihborhood* V for zero with $V+V \subseteq U$. By Theorem 4.7 (b) there exits *pre-α-neihborhood* W for zero which is balanced and $W \subseteq V$. By Theorem 4.8, $p\text{-}\alpha\text{-}Cl(W) \subseteq W+V \subseteq V+V \subseteq U$. This shows that U contains *pre-α-closed* neighborhood of zero.

(c) Follows easily from (a).

Definition 4.10. A topological space (X,τ) is called *pre-α-Hausdorff*, if for each two distinct points x and y in X, there exist disjoint *pre-α-open* sets U, V such that $x \in U$ and $y \in V$.

Now we give some properties of *pre-α-Hausdorff* space.

Theorem 4.11. Let X be a *pre-α-ITVS*. Then the following statements are equivalent.

(a) X is *pre-α-Hausdorff*.

(b) If $x \in X$, $x \neq 0$, then there exists $U \in pre\text{-}\alpha\text{-}N(0)$ such that $x \notin U$.

(c) If $x, y \in X$, $x \neq y$, there exists $V \in pre\text{-}\alpha\text{-}N(x)$ such that $y \notin V$.

Proof. By continuity of translation, it is sufficient to prove the equivalence between (a) and (b) only. $(a) \Rightarrow (b)$: Assume x be a non-zero vector belongs to X. Therefore there are disjoint $pre\text{-}\alpha\text{-}open$ sets $U, V \subseteq X$ such that $0 \in U$ and $x \in V$. Thus $U \in pre\text{-}\alpha\text{-}N(0), V \in pre\text{-}\alpha\text{-}N(x)$ and $x \notin U$.

$(b) \Rightarrow (a)$: Let $x, y \in X$ be such that $x - y \neq 0$. Then there exists $U \in pre\text{-}\alpha\text{-}N(0)$ such that $x - y \notin U$. By Theorem 4.9 (a), there exists $pre\text{-}\alpha\text{-}neihborhood$ W of zero such that $W + W \subseteq U$. By Theorem 4.7 (b) W can be assumed to be balanced. Let $V_1 = x + W$ and $V_2 = y + W$. We note that $V_1 \in pre\text{-}\alpha\text{-}N(x)$, $V_2 \in pre\text{-}\alpha\text{-}N(y)$ and $V_1 \cap V_2 = \phi$, since if $z \in V_1 \cap V_2$, then $z - x \in W$ and $z - y \in W$. Since W is balanced, so $-(z - x) \in W$. It follows that $x - y = (z - y) + [-(z - x)] \in W + W \subseteq U$, which is a contradiction. So we must have $V_1 \cap V_2 = \phi$. Finally, the space X is $pre\text{-}\alpha\text{-}Hausdorff$.

The following result follows from Theorem 4.11.

Corollary 4.12. Let X be a $pre\text{-}\alpha\text{-}ITVS$. Then the following statements are equivalent.

(a) X is $pre\text{-}\alpha\text{-}Hausdorff$.

(b) $\cap \{U : U \in pre\text{-}\alpha\text{-}N(0)\} = \{0\}$.

(c) $\cap \{U : U \in pre\text{-}\alpha\text{-}N(x)\} = \{x\}$.

Theorem 4.13. A $pre\text{-}\alpha\text{-}ITVS$ X is $pre\text{-}\alpha\text{-}Hausdorff$ if and only if one-point set in X is $pre\text{-}\alpha\text{-}closed$ in X.

Proof. Let $x \in X$ and $y \in X - \{x\}$. Then $y - x \neq 0$, and by assumption, there exists $U \in pre\text{-}\alpha\text{-}N(0)$ such that $y - x \notin U$. By Theorem 4.9 (b), there exists a $pre\text{-}\alpha\text{-}closed$ and balanced set $V \in pre\text{-}\alpha\text{-}N(0)$ such that $V \subseteq U$. It follows that $y - x \notin V$ that is $y - x \in X - V$. Thus $y \in (X - V) + \{x\}$. But $(X - V) + \{x\}$ is $pre\text{-}\alpha\text{-}open$, since V is $pre\text{-}\alpha\text{-}closed$, and $(X - V) + \{x\} \subseteq X - \{x\}$. This shows that $X - \{x\}$ is $pre\text{-}\alpha\text{-}open$. For the converse, let $x \in X$ and assume that $\{x\}$ is $pre\text{-}\alpha\text{-}closed$. Then by Theorem 4.8, $\{x\} = p\text{-}\alpha\text{-}Cl(\{x\}) = \cap \{U + \{x\} : U \in pre\text{-}\alpha\text{-}N(0)\} = \cap \{V : V \in pre\text{-}\alpha\text{-}N(x)\}$, where $V = U + \{x\} \in pre\text{-}\alpha\text{-}N(x)$. Then by Corollary 4.12, X is $pre\text{-}\alpha\text{-}Hausdorff$.

Since translation is a $pre\text{-}\alpha\text{-}homeomorphism$ and as a consequence of Theorem 4.13, we have the following result.

Corollary 4.14. A $pre\text{-}\alpha\text{-}ITVS$ X is $pre\text{-}\alpha\text{-}Hausdorff$ if and only if $\{0\}$ is $pre\text{-}\alpha\text{-}closed$ in X.

Theorem 4.15. Let C,K be disjoint sets in a $pre\text{-}\alpha\text{-}ITVS$ X with C $pre\text{-}\alpha\text{-}closed$, K $pre\text{-}\alpha\text{-}compact$. Then there exists $pre\text{-}\alpha\text{-}N(0)$ with $(K+U)\bigcap(C+U)=\phi$.

Proof. If $K=\phi$, there is nothing to prove. Otherwise, let $x\in K$ by the invariance with translation; we can assume $x=0$. Then $X-C$ is a $pre\text{-}\alpha\text{-}open$ set of zero. Since addition is $pre\text{-}\alpha\text{-}irresolute$ and $pre\text{-}\alpha\text{-}continuous$, by $0+0+0=0$, there is a $pre\text{-}\alpha\text{-}open$ neighborhood $U\in pre\text{-}\alpha\text{-}N(0)$ such that $3U=U+U+U\subseteq X-C$. By defining $U=U\bigcap(-U)\subseteq U$ we have that U $pre\text{-}\alpha\text{-}open$ symmetric and $3U=U+U+U\subseteq X-C$. This means that $\phi=\{3x:x\in U\}\bigcap C=\{2x:x\in U\}\bigcap\{y-x:y\in C,x\in U\}\supseteq U\bigcap(C+U)$. This concludes the proof for a single point. Sine K is $pre\text{-}\alpha\text{-}compact$, then repeating the above argument for all $x\in K$, we obtain symmetric $pre\text{-}\alpha\text{-}open$ sets V_x such that $(x+2V_x)\bigcap(C+V_x)=\phi$. The sets $\{V_x:x\in K\}$ are a $pre\text{-}\alpha\text{-}open$ covering of K, but K is $pre\text{-}\alpha\text{-}compact$. Hence there is a finite number of points $x_i\in K$, $i=1,2,...,n$, such that $K\subseteq\bigcup_{i=1}^{n}(x_i+V_{x_i})$. Define the $pre\text{-}\alpha\text{-}open$ neighborhood V of zero by $V=\bigcap_{i=1}^{n}V_{x_i}$. Then $(K+V)\bigcap(C+V)\subseteq\bigcup_{i=1}^{n}(x_i+V_{x_i}+V)\bigcap(C+V)\subseteq\bigcup_{i=1}^{n}(x_i+2V_{x_i})\bigcap(C+V_{x_i})=\phi$. This completes the proof.

Lemma 4.16. If U is a $pre\text{-}\alpha\text{-}open$ set and $U\bigcap A=\phi$, then $U\bigcap[p\text{-}\alpha\text{-}Cl(A)]=\phi$.

Proof. Suppose that there exists an $x\in U\bigcap[p\text{-}\alpha\text{-}Cl(A)]$. Then $x\in p\text{-}\alpha\text{-}Cl(A)$ and U is a $pre\text{-}\alpha\text{-}open$ neighborhood of x and $X-U$ is $pre\text{-}\alpha\text{-}closed$ set containing A, hence $p\text{-}\alpha\text{-}Cl(A)\subseteq X-U$ and $x\notin p\text{-}\alpha\text{-}Cl(A)$ which is contradiction, hence $U\bigcap[p\text{-}\alpha\text{-}Cl(A)]=\phi$.

Corollary 4.17. Let C,K be disjoint sets in a $pre\text{-}\alpha\text{-}ITVS$ X with C $pre\text{-}\alpha\text{-}closed$, K $pre\text{-}\alpha\text{-}compact$. Then there exists $U\in pre\text{-}\alpha\text{-}N(0)$ with $[p\text{-}\alpha\text{-}Cl(K+U)]\bigcap(C+U)=\phi$.

Proof. By Theorem 4.15, there exists $U\in pre\text{-}\alpha\text{-}N(0)$ such that $(K+U)\bigcap(C+U)=\phi$. $C+U=\bigcup\{y+U:y\in C\}$ is $pre\text{-}\alpha\text{-}open$ set being a union of $pre\text{-}\alpha\text{-}open$ sets. Now by Lemma 4.16, we obtain $[p\text{-}\alpha\text{-}Cl(K+U)]\bigcap(C+U)=\phi$.

Theorem 4.18. Let X be a $pre\text{-}\alpha\text{-}ITVS$. Let $f:X\to X$ be a non-zero linear map. Then $f(G)$ is $pre\text{-}\alpha\text{-}open$ in K whenever G is $pre\text{-}\alpha\text{-}open$ in X.

Proof. Let G be a nonempty $pre\text{-}\alpha\text{-}open$ set. Then one can assume that there is $x_0\in X-\{0\}$ such that $f(x_0)=1$. For any $a\in G$, it is required to show that $f(a)\in p\text{-}\alpha\text{-}Int[f(G)]$. Since

$G \notin pre\text{-}\alpha\text{-}N(a)$ by Theorem 4.1 we have $G-a \in pre\text{-}\alpha\text{-}N(0)$. By Theorem 4.7 (a) $G-a$ is absorbing, that is, absorbs x_0, namely there exists an $\varepsilon > 0$ such that $\lambda x_0 \in G-a$ whenever $\lambda \in R$ with $|\lambda| \le \varepsilon$. Now for any $\beta \in R$ with $|\beta - f(a)| \le \varepsilon$ we have $(\beta - f(a))x_0 \in G-a$, hence $f\left[(\beta - f(a))x_0\right] \in f(G-a)$. Since f is linear. This implies that $(\beta - f(a))\, f(x_0) \in f(G-a)$. So we get $(\beta - f(a))(1) \in f(G-a) = f(G) - f(a)$. This implies that $\beta \in f(G)$ and $f(a) \in [\beta-\varepsilon, \beta+\varepsilon]$. Thus $f(a) \in Int[f(G)] \subseteq p\text{-}\alpha\text{-}Int[f(G)]$; hence $f(G) = p\text{-}\alpha\text{-}Int[f(G)]$.

Lemma 4.19. [Horvath;1966]. Let X be vector space and $\phi \neq K \subseteq X$. For $a \in K$, the following statements are equivalent:

(1) a is an extreme point of K.

(2) If $x, y \in K$ are such that $a = \frac{1}{2}(x+y)$, then $a = x = y$.

(3) Let $x, y \in K$ be such that $x \neq y$, let $\lambda \in (0,1)$ and $a = \lambda x + (1-\lambda)y$. Then we have either $\lambda = 0$ or $\lambda = 1$.

Theorem 4.20. Let X be a *pre-α-ITVS* and C be a convex subset of X. Then $[p\text{-}\alpha\text{-}Int(C)] \cap (\partial C) = \phi$.

Proof. If $p\text{-}\alpha\text{-}Int(C) = \phi$, then the result is trivial. Suppose that $p\text{-}\alpha\text{-}Int(C) \neq \phi$ and $x \in p\text{-}\alpha\text{-}Int(C)$. Then there exists $V \in pre\text{-}\alpha\text{-}N(0)$ such that $x+V \subseteq C$. As the map $\Phi : \Re \to X$, where $\Phi(\mu) = \mu x$ is continuous at $\mu = 1$, for this *pre-α-Ineighborhood* $x+V$ there is an $r > 0$ such that $\mu x \in x+V$ whenever $|\mu - 1| \le r$. In particular, we have $(1+r)x \in x+V \subseteq C$ and $(1-r)x \in x+V \subseteq C$. Now consider $x = \lambda(1+r)x + (1-\lambda)(1-r)x$ and set $\lambda = \frac{1}{2}$. Consequently, we have $x = \frac{1}{2}(1+r)x + \left(1-\frac{1}{2}\right)(1-r)x$, which implies that x is not an extreme point of C.

Theorem 4.21. Let X be a *pre-α-ITVS* and W a *pre-α-neighborhood* of 0. Then there is a *pre-α-neighborhood* U of 0 such that $p\text{-}\alpha\text{-}Cl(U) \subseteq W$. Equivalently, if C is a *pre-α-closed* subset of X and x a point of X outside C then there are disjoint *pre-α-open* sets U_1 and U_2 with $x \in U_1$ and $C \subseteq U_2$.

Proof. Let x be a point outside a *pre-α-closed* set $C \subseteq X$. We will produce an *pre-α-open* set U containing x with $p\text{-}\alpha\text{-}Cl(U) \cap C = \phi$; then $U_1 = U$ and $U_2 = X - [p\text{-}\alpha\text{-}Cl(U)]$, the complement of the *pre-α-closure* of U, are disjoint *pre-α-open* sets with $x \in U_1$ and $C \subseteq U_2$, as

desired. We know that X looks the same everywhere, so we may work with $x=0$. Let W be the complement of C. Then W is a $pre\text{-}\alpha\text{-}open$ set with $0\in W$. By hypothesis X is $pre\text{-}\alpha\text{-}ITVS$. So by Theorem 4.9 (a), there exists a $pre\text{-}\alpha\text{-}open$ subset U of 0 such that $U+U\subseteq W$. This means that $U+U$ is disjoint from C. Equivalently, U is disjoint from $C-U$. For otherwise there would be an $x\in U$ which could be expressed as $c-y$ with $c\in C$ and $y\in U$, which would imply that $c=x+y\in U+U\subseteq W$ is in W. Now the set $-U$ is $pre\text{-}\alpha\text{-}open$ because the map $X\to X:$ $x\to(-1)x=-x$ is a $pre\text{-}\alpha\text{-}homeomorphism$, and hence so are all its translates $x-U$. So the set $U_2=C-U=\bigcup\{c-U:c\in C\}$ is $pre\text{-}\alpha\text{-}open$, being the union of $pre\text{-}\alpha\text{-}open$ sets. Thus we have found a $pre\text{-}\alpha\text{-}open$ set $U_1=U$ containing 0 and a $pre\text{-}\alpha\text{-}open$ set U_2, disjoint from U_1, with $C\subseteq U_2$.

Theorem 4.22. Let $\left(X_{(K)},\tau\right)$ be a $pre\text{-}\alpha\text{-}ITVS$. Then every $pre\text{-}\alpha\text{-}open$ subspace S of X is also a $pre\text{-}\alpha\text{-}ITVS$.

Proof. Let W be a $pre\text{-}\alpha\text{-}open$ neighborhood of $x+y$ in S where x,y are two distinct points in S. Since S is a $pre\text{-}\alpha\text{-}open$ subspace of X, then W is a $pre\text{-}\alpha\text{-}open$ neighborhood of $x+y$ in X, and by definition of $pre\text{-}\alpha\text{-}ITVS$, there exist $pre\text{-}\alpha\text{-}open$ neighborhoods U of x in X and V of y in X such that $U+V\subseteq W$. Then the sets $G=U\bigcap S$ and $H=V\bigcap S$ are $pre\text{-}\alpha\text{-}open$ neighborhoods of x and y in S such that $G+H\subseteq U+V\subseteq W$. Now suppose $\lambda\in K$, $x\in S$ and let W be a $pre\text{-}\alpha\text{-}open$ neighborhood of λx in S. Since S is a $pre\text{-}\alpha\text{-}open$ subspace of X, then W is a $pre\text{-}\alpha\text{-}open$ neighborhood of λx in X. Then there exist $pre\text{-}\alpha\text{-}open$ neighborhoods U of λ in K and V of y in X such that $U.V\subseteq W$. Then the set $G=U\bigcap S$ is a $pre\text{-}\alpha\text{-}open$ neighborhood of λ in K and the set $H=V\bigcap S$ is a $pre\text{-}\alpha\text{-}open$ neighborhood of x in S. Also $G.H\subseteq U.V\subseteq W$. Hence S is a $pre\text{-}\alpha\text{-}ITVS$.

Theorem 4.23. Let $\left(X_{(K)},\tau\right)$ be a $pre\text{-}\alpha\text{-}ITVS$. Then every $pre\text{-}\alpha\text{-}open$ subspace S of X is $pre\text{-}\alpha\text{-}closed$ in X.

Proof. By Theorem 3.3 (1), $S+x$ is $pre\text{-}\alpha\text{-}open$ in X. Then $Y=\bigcup\{S+x:x\in X-S\}$ being union of $pre\text{-}\alpha\text{-}open$ sets is also $pre\text{-}\alpha\text{-}open$. Thus $S=X-Y$ is $pre\text{-}\alpha\text{-}closed$.

Theorem 4.24. Suppose that $\left(X_{(K)},\tau\right)$ is a $pre\text{-}\alpha\text{-}ITVS$. If $S\subseteq X$ is a linear subspace, then so is $p\text{-}\alpha\text{-}Cl(S)$.

Proof. Let S be a linear subspace of X. Thus $S+S\subseteq S$ and for all $\lambda\in K$, $\lambda.S\subseteq S$. By Theorem 3.13, $\left[p\text{-}\alpha\text{-}Cl(S)\right]+\left[p\text{-}\alpha\text{-}Cl(S)\right]\subseteq p\text{-}\alpha\text{-}Cl(S+S)\subseteq p\text{-}\alpha\text{-}Cl(S)$. By Theorem 3.12, for every $\lambda\in K$, $\lambda\left[p\text{-}\alpha\text{-}Cl(S)\right]=p\text{-}\alpha\text{-}Cl(\lambda S)\subseteq p\text{-}\alpha\text{-}Cl(S)$. Therefore, $p\text{-}\alpha\text{-}Cl(S)$ is a linear subspace of X.

Definition 4.25. Suppose that $\left(X_{(K)},\tau\right)$ is a $pre\text{-}\alpha\text{-}ITVS$. A subset $E\subseteq X$ is said to be bounded if for every $pre\text{-}\alpha\text{-}open$ set V containing 0, there exists $s\in R$ such that for all $t>s$, $E\subseteq tV$.

Theorem 4.26. Suppose that $\left(X_{(K)},\tau\right)$ is a $pre\text{-}\alpha\text{-}ITVS$. If E is a bounded subset of X, then $p\text{-}\alpha\text{-}Cl(E)$ is bounded.

Proof. Let W be a $pre\text{-}\alpha\text{-}open$ set containing 0, then by Theorem 4.21, there exists $U\in pre\text{-}\alpha\text{-}N(0)$ such that $p\text{-}\alpha\text{-}Cl(U)\subseteq W$. Since E is bounded, so $E\subseteq tU\subseteq t\left[p\text{-}\alpha\text{-}Cl(U)\right]\subseteq tW$, for sufficiently large t. It follows that for large enough t, $p\text{-}\alpha\text{-}Cl(E)\subseteq p\text{-}\alpha\text{-}Cl(tU)\subseteq t\left[p\text{-}\alpha\text{-}Cl(U)\right]\subseteq tW$. Thus, $p\text{-}\alpha\text{-}Cl(E)$ is bounded.

Theorem 4.27. Let $\left(X,\tau\right)$ be a $pre\text{-}\alpha\text{-}ITVS$. Let V be a $pre\text{-}\alpha\text{-}open$ neighborhood of zero in X. Then for every sequence $\left\{r_n : n\in N\right\}$ of positive real numbers such that $r_n\to\infty$, $\bigcup_{n=1}^{\infty} r_nV=X$.

Proof. Let $x\in X$ and consider the sequence $\left\{\frac{x}{r^n} : n\in N\right\}$. This sequence converges to 0 by the $pre\text{-}\alpha\text{-}irresoluteness$ of the scalar multiplication $F\times X\to X$. Thus, for sufficiently large n, $\frac{x}{r^n}\in V$ i.e., $x\in r_nV$.

Theorem 4.28. Let $\left(X,\tau\right)$ be a $pre\text{-}\alpha\text{-}ITVS$. Then every $pre\text{-}\alpha\text{-}compact$ set is bounded.

Proof. Let C be a $pre\text{-}\alpha\text{-}compact$ subset of X. We need to prove that it is bounded, namely, that for every $pre\text{-}\alpha\text{-}open$ neighborhood V of 0, $K\subseteq tV$ for sufficiently large t. Let V be a $pre\text{-}\alpha\text{-}open$ neighborhood of 0, then by Theorem 4.7(b), there exists a balanced $pre\text{-}\alpha\text{-}open$ neighborhood W of 0 such that $W\subseteq V$. By Theorem 4.27, $C\subseteq\bigcup_{j=1}^{\infty} nW$. Since, C is $pre\text{-}\alpha\text{-}compact$, therefore there exists a positive integer m such that $C\subseteq\bigcup_{j=1}^{m} n_jW=n_m\bigcup_{j=1}^{m}\left(n_j/n_m\right)W\subseteq n_mW$. Thus, for all $t>n$, $C\subseteq n_mW=\left[t\left(n_m/t\right)\right]W\subseteq tW\subseteq tV$, which implies that C is bounded.

Theorem 4.29. Let $\left(X,\tau\right)$ be a $pre\text{-}\alpha\text{-}ITVS$. Then every Cauchy sequence in X is bounded.

Proof. Let $\left\{x_n : n\in N\right\}$ be a Cauchy sequence in X. Let W be a $pre\text{-}\alpha\text{-}open$ neighborhood of zero, then by Theorem 4.9 (a), there exists a $pre\text{-}\alpha\text{-}open$ neighborhood V of 0 such that $V+V\subseteq W$. By definition of a Cauchy sequence, there exists N such that for all $m,n\geq N$, $x_n-x_m\in V$ and in particular for all $n>N$, $x_n\in x_N+V$. Set $s>1$ such that $x_n\in sV$, then for all $n>N$, $x_n\in sV+V\subseteq sV+sV\subseteq sW$. Since for balanced sets $sW\subseteq tW$ for $s<t$, and since every $pre\text{-}\alpha\text{-}open$ neighborhood of zero contains a balanced neighborhood, this proves that the sequence is indeed bounded.

Definition 4.30. Let (X,τ) be a vector space over $\square$. A non-negative real-valued function p defined on X is a *pseudonorm* if it satisfies the following two conditions:

(i) $p(\lambda x)=|\lambda|p(x)$, for all $\lambda\in\square$;

(ii) $p(x+y)\leq p(x)+p(y)$, for all $x,y\in X$.

Now, we introduce the notion of locally convex *pre-α-ITVS*. Moreover, we give a necessary and sufficient condition, in terms of convex *pre-α-neighborhoods* of 0, for a *pre-α-ITVS* to be locally convex.

Definition 4.31. A *pre-α-ITVS* (X,τ) is locally convex if for all $x\in X$, every $S\in pre\text{-}\alpha\text{-}N(x)$ contains a convex set $U\in pre\text{-}\alpha\text{-}N(x)$.

Theorem 4.32. A *pre-α-ITVS* (X,τ) is locally convex if and only if every $S\in pre\text{-}\alpha\text{-}N(0)$ contains a convex set $U\in pre\text{-}\alpha\text{-}N(0)$.

Proof. The sufficiency part is trivial. Let $S\in pre\text{-}\alpha\text{-}N(x)$. Then by Theorem 4.1 (7), $S-x\in pre\text{-}\alpha\text{-}N(0)$ and by assumption, there exists a convex set $U\in pre\text{-}\alpha\text{-}N(0)$ such that $U\subseteq S-x$. Hence by Theorem 4.1 (7) again, $U+x\in pre\text{-}\alpha\text{-}N(x)$. As $U+x\subseteq S$ and as $U+x$ is convex, (X,τ) is a locally convex *pre-α-ITVS*.

Corollary 4.33. *In a locally convex pre-α-ITVS (X,τ), a pseudonorm p is pre-α-irresolute if and only if p is pre-α-irresolute at zero.*

Proof. *If p is pre-α-irresolute, then p is pre-α-irresolute at zero. Conversely, suppose p is pre-α-irresolute at 0, and let $x\in X$ and $V\in pre\text{-}\alpha\text{-}N_{\square}(p(x))$. Then by Theorem 4.1 (7), $V-p(x)\in pre\text{-}\alpha\text{-}N_{\square}(0)=pre\text{-}\alpha\text{-}N_{\square}(p(0))$ and thus $(-\varepsilon,\varepsilon)\subseteq V-p(x)$ for some $\varepsilon>0$. Clearly $(-\varepsilon,\varepsilon)$ being an open set in $\square$ is pre-α-open set in $\square$. By assumption, there exists $U\in pre\text{-}\alpha\text{-}N(0)$ such that $p(U)\subseteq(-\varepsilon,\varepsilon)$ and as $p(y)\geq 0$ for all $y\in U$, $p(U)\subseteq[0,\varepsilon)$. Then by Theorem 4.1 (7), $U+x\in pre\text{-}\alpha\text{-}N(x)$. For all $y\in U$, $0\leq p(x+y)\leq p(x)+p(y)\leq p(x)+\varepsilon$, $p(x+y)\in[0,p(x)+\varepsilon)$. Therefore it follows that $p(U+x)\subseteq V$.*

Definition 4.34. Let A be an absolutely convex subset of a vector space X. Then the functional defined by $p(x)=inf\{\lambda:\lambda>0,x\in\lambda A\}$ is called the *gauge* of A.

Lemma 4.35. [Horvath;1966]. In a vector space X, the *gauge* of an absolutely convex and absorbent subset is a *pseudonorm*.

Now, we prove a main result in which we characterize absolutely convex and absorbent *pre - α - neoghborhoods* of zero in terms of their *pre - α - irresolute gauges*.

Theorem 4.36. Let p be a *gauge* of an absolutely convex and absorbent subset U of a *pre - α - ITVS* (X,τ). Then p is *pre - α - irresolute* if and only if U is a *pre - α - neoghborhood* of zero.

Proof. If p is *pre - α - irresolute*, then as $(-1,1)$ is a *pre - α - open* set in . $V=\{x: p(x)<1\}=p^{-1}[(-1,1)]$ is a *pre - α - open* subset of X. Thus as $V\subseteq U$, $U\in$ *pre - α - N*(0). Conversely, if $U\in$ *pre - α - N*(0) and $\varepsilon>0$, then by Theorem 4.1 (5), $V=\varepsilon U\in$ *pre - α - N*(0) and $p(x)<\varepsilon$ for all $x\in V$. Thus $p(V)\subseteq(-\varepsilon,\varepsilon)$. Hence, p is *pre - α - irresolute* at zero. By Lemma 4.35, p is a *pseudonorm* and by Corollary 4.33, p is *pre - α - irresolute* at each $x\in X$. Therefore p is *pre - α - irresolute.*

ACKNOWLEDGMENT

The author is highly and greatly indebted to Prince Mohammad Bin Fahd University Saudi Arabia, for providing all necessary research facilities during the preparation of this research paper.

Conflict of Interest

The author declares that this publication is not subject to conflict of interest.

References

1. *M.E. Abd-El Monsef, S.N. El-Deeb, R.A. Mahmoud, "β-open sets and β- continuous mapping", Bull. Fac. Sci. Assiut Univ.A, 12 (1983). pp. 77 – 90.*
2. Radhi I. M. Ali, Jalal H. Hussein and Suhad K. Hameed, On Semi –Pre Irresolute Topological Vector Spaces, Diyala Journal for Pure Sciences, Vol. 14, No.3, (July 2018), 183 – 191.
3. A. Devika and R. Vani, "On $\pi g^{*}\beta$ –Closed sets in Topological Spaces", Journal of Applied & Computational Mathematics, Volume 7, Issue 3, (2018), pp. 1 – 5.
4. C. Dhanapakyam, J. Subashini, K. Indirani, On βwɡ**set and Continuity in Topological Spaces, IFRSA's International Journal of Computing, Vol. 4, Issue 3, (July 2014), pages 736 – 744. ISSN (Print):2231:2153, ISSN (Online):2230:9039.
5. Talal Al-Hawary, α –Topological Vector Spaces and α –irresolute gauges, Boletin de Matematicas 24(2), (2017), 149 – 154.
6. Talal Al-Hawary, "α –Topological Vector Spaces", Hacettepe Journal of Mathematics and Statistics", Vol. 47, No. 5, (2018), pp. 1102 – 1107.
7. A. Devika and R. Vani, "$\pi g^{*}\beta$ –Closed Sets in Topological Spaces", Journal of Applied & Computational Mathematics, Volume 7, Issue 3 (2018), pp. 1 – 5.
8. Harrivan Zikri Ibrahim, "α – topological vector spaces", Science Journal of University of Zakho, Vol. 5, No. 1(2017) pp. 107 – 111.
9. J. Hovarth, "Topological vector spaces and distributions", Addison and Wesley Publishing Comp., 1966, London.

10. Moiz ud Din Khan, S.Azam and M. S. Bosan, "$s-$topological vector spaces, Journal of Linear and Topological Algebra, 4(2) (2015), pp. 153 – 158.

11. M. Khan and M. I. Iqbal, "On irresolute topological vector spaces", Advances in Pure Mathematics, 6 (2016), pp. 105 – 112.

12. Raja M. Latif, "ωb –Topological Vector Spaces", WSEAS Transactions on Mathematics, Volume 119, 2020, Art#12, pp. 119 – 132.

13. Sabiha I. Mahmood, On Pre-α-open Sets and Contra Pre-α-continuous Functions and Contra Pre-α-irresolute Functions in Topological Spaces, Australian Journal of Basic and Applied Sciences, 10(1) January 2016, pp. 1 – 14. www.ajbasweb.com

14. Madu Ram and Shallu Sharma, "Corrigendum to: On Irresolute Topological Vector Spaces", NTMSCI 6, N. 4 (2018), pp. 40 – 44.

15. Madhu Ram, Shallu Sharma, Sahil Billawria and Amjad Hussain, "On almost $s-$topological vector spaces", Journal of Advanced Studies in Topology 9(2) (2018), pp. 139 – 146.

16. Thanjavur N. Rajesh, Tiruchirappalli V. Vijayabhathi, "On Strongly Preirresolute Topological Vector Spaces", Mathematica Bohemica, 138 (1), (2013), pp. 37 – 42.

17. Shallu Sharma, Madhu Ram and Sahil Billawria, "On Almost Pretotopological Vector Spaces", Open Access Library Journal, Volume 5, (2018), pp. 1 – 10.

18. S. Sharma, M. Ram, On $\beta-$topological vector spaces, Journal of Linear and Topological Algebra, Vol. 08, No. 01, (2019), pp. 63 – 70.

19. Shallu Sharma, Sahil Billawria, Madhu Ram, Tsering Landol, "On Almost $\beta-$topological Vector Spaces", Open Access Library Journal, Volume 6, (2019), pp. 1 – 9.

20. Stephen Willard and Raja M. Latif, "Semi –Open Sets and Regularly Closed Sets in Compact Metric Spaces", Mathematica Japonica, Vol. 46, No. 1, (1997), pp. 157 – 161.

21. S. Willard, General Topology, Addison – Wesley Publishing Co., Reading, Mass – London – Don Mills, Ont., 1970.

DAILY AVERAGE GLOBAL SOLAR IRRADIANCE ANALYSIS OF DIFFERENT LOCATIONS BASED ON MONTHS AND HOURS

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ABSTRACT

In this study, daily average global solar irradiance of Belgium and France in March and June months was investigated based on local time using Taguchi L8 orthogonal array which has three control factors and two levels for each factor. European countries, local times, and months were used as control factors. Selection of the optimum control factors for the maximum solar irradiance was implemented using analysis of Signal-to-Noise ratio. Significant levels of the optimal control factors and their percent effects on the average global solar irradiance were conducted using Analysis of Variance (ANOVA). In result of this study, the most effective control factors on the daily average global solar irradiance response were analyzed to be local time with 55.39 % effect, European country with 23.06 % effect, and month with 18.49 % effect, respectively. This study can be used as a reference to analyze daily average solar irradiance of different European countries.

Keywords: Solar irradiance, Location, ANOVA, Taguchi Method

INTRODUCTION

The importance of reviewable energy sources is increasing day by day. Especially, solar energy can be used in a lot of different areas. Therefore, daily average global solar irradiance can play important role on solar energy systems. In other word, the requirement for solar radiation information became more and more significant mainly as a outcome of the increase of solar energy applications (Mellit and Pavan, 2010). In literature, there are many studies about solar radiation. Gurlek and Sahin (2018) investigated the prediction of global solar radiation based on city of Sivas and they used artificial neural networks method. Almorox (2011) studied predicting global solar radiation based on common meteorological results in Aranjuez. Yang et al. (2001) proposed a hybrid model based on predicting global solar radiation. Mohandes et al. (1998) presented a neural network method to predict the global solar radiation data. Bahel et al. (1987) developed a correlation to predict overall daily horizontal global radiation based on months. Rehman and Mohandes (2008) reported a study regarding artificial neural network prediction of global solar radiation based on temperature and relative humidity. Besharat et al. (2013) offered the empirical models to predict global solar radiation. Meza and Varas (2000) investigated the behaviors of different empirical models according to difference among maximum and minimum temperatures. Trabea and Shaltout (2000) presented a study including correlation of global solar radiation based on meteorological parameters for country of Egypt. Ehnberg and Bollen (2005) reported a paper including simulation of global solar radiation according to cloud observations. Bakirci (2009) offered a study consisting of correlation to prediction the daily global solar radiation based on hours of bright sunshine for Turkey. Yorukoglu and Celik (2006) presented a review including the prediction of daily global solar radiation. Chegaar and Chibani (2001) reported Study including the global solar radiation estimation for Algeria. Otani et al. (1997) defined the methodology based on quantification of solar irradiance

fluctuation to investigate the a really totalized PV system. Mellit and Pavan (2010) reported a technique based on solar irradiance forecast according to artificial neural network. Muneer et al. (2007) represented a study including dissertation for solar radiation modelling. Wong and Chow (2001) developed solar radiation models for estimating the overall daily and hourly global radiation, beam radiation and diffuse radiation. Evran and Deniz (2020b) evaluated PV peak power and technology in energy output based on system loss using Taguchi L8 orthogonal array. Evran and Deniz (2020a)analyzed the influences of orientation angle and mounting position of photovoltaic modules in energy output using various longitudes using Taguchi method. As can be seen from mentioned literature review, there are a lot of studies related to solar radiation. However, studies including daily average global solar irradiation are limited. In this study, daily average global solar irradiance of Belgium and France in March and June months based on local time was analyzed using Taguchi method.

MATERIALS AND METHODS

This study focuses on analysis of daily average solar irradiance of European countries in different months based on local times. Belgium and France were considered as European countries. In location, latitude and longitude of Belgium were assumed to be 45.8 and 5 in degree, respectively whereas latitude and longitude of France were considered as 50.8 and 5 in degree, respectively. Local times were assumed to be 09:00 and 12:00. Also, months were determined as March and June. Data of daily average solar irradiance were taken from Ref. (Pvgis, 2020) and these data were shown in Table 1.

Table 2. Daily average solar irradiation

Country	Hour	Month	Daily average solar irradiation (Pvgis, 2020) W/m^2
Belgium	09:00	March	349.54
Belgium	09:00	June	472.93
Belgium	12:00	March	515.87
Belgium	12:00	June	617.23
France	09:00	March	425.85
France	09:00	June	570.69
France	12:00	March	690.29
France	12:00	June	765.35

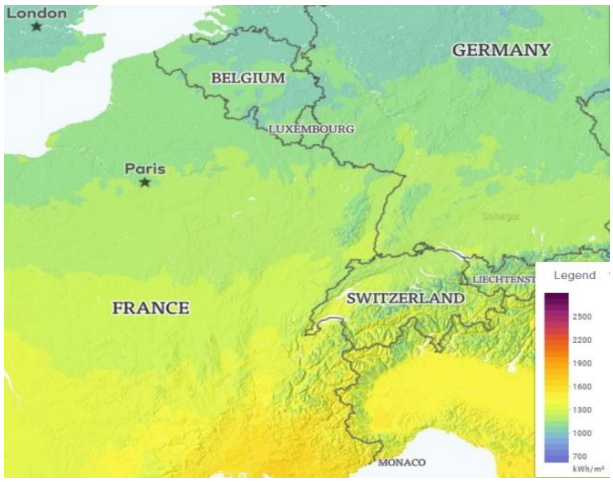

Figure 13. Global horizontal irradiation for European countries (Globalsolaratlas, 2020)

In the analysis, satellite-based database as called PVGIS-CMSAF which is one of solar radiation databases with hourly time resolution proposed by PVGIS was used (Pvgis, 2020). The angle of PV modules according to horizontal plane was 35 in degree for fixed mounting. Besides that, azimuth angle

for the PV modules based on direction due south for 0 in degree was used. Global horizontal irradiation atlas was given for European countries in Figure 1. Taguchi technique for statistical analyses was used and tests were implemented based on L8 orthogonal array design which has three control factors. Each control factor consists of two different levels. The first control factor was taken as European country. The second control factor was used to be local time. Finally, the third control factor was determined to be month. In order to obtain the maximum results for daily average solar irradiance, analysis of signal-to-noise ratio was performed using "higher is better" quality characteristic and this approach was illustrated in Equation 1 (Ross, 1996).

$$(S/N)_{HB} = -10.\log\left(n^{-1}\sum_{i=1}^{n}(y_i^2)^{-1}\right) \quad (1)$$

where, n is taken as the number of tests for daily average solar irradiance in a trial and y_i shows i^{th} data implemented. The analysis of S/N ratio was determined using statistical software as called Minitab 15. The control factors used in analysis were tabulated in Table 2.

Table 3. Control factors and levels

Control Factor	Symbol	Level	
		Level 1	Level 2
Country	A	Belgium	France
Local Time	B	09:00 am	12:00 pm
Month	C	March	June

RESULTS AND DISCUSSION

In presented study, daily average solar irradiance of Belgium and France for March and June months and their signal-to-noise ratio data were analyzed, and these results were tabulated in Table 3.

Table 4. Daily average solar irradiance and S/N ratios

Test	Designation	Results	
		Daily average solar irradiance (Pvgis, 2020) W/m^2	S/N ratio dB
1	$A_1B_1C_1$	349.54	50.8699
2	$A_1B_1C_2$	472.93	53.4959
3	$A_1B_2C_1$	515.87	54.2508
4	$A_1B_2C_2$	617.23	55.8089
5	$A_2B_1C_1$	425.85	52.5851
6	$A_2B_1C_2$	570.69	55.1280
7	$A_2B_2C_1$	690.29	56.7806
8	A_2 B_2C_2	765.35	57.6772
Overall Means ($\bar{T}_s$)		550.97	-

In order to choose the optimum levels of the control parameters, average values of raw data and their S/N ratio data for each level of all control factors were calculated. Results analyzed were tabled in Table 4.

Table 5. Response table for means and S/N ratio

Level	Means (W/m^2)		
	A	B	C
1	488.90	454.80	495.40
2	613.00	647.20	606.50

Delta	124.20	192.40	111.20
Rank	2	1	3
Level	S/N Ratio (dB)		
1	53.61	53.02	53.62
2	55.54	56.13	55.53
Delta	1.94	3.11	1.91
Rank	2	1	3

Table 4 shows that the optimum levels according to “larger is better” characteristic were obtained using the second levels of the control factors. In order word, the optimum levels for the maximum efficient were obtained at 12 o'clock noon in June month for France country. In order to see the effects of the control factors on daily average solar irradiance, average values of the S/N ratio data of the optimum control factors were evaluated and these values were plotted in Figure 2. As it can be seen in Figure 2, the increase of the levels of local time and months leads to the increase of daily average solar irradiance in Belgium and France. Also, daily average solar irradiance of France is higher than Belgium.

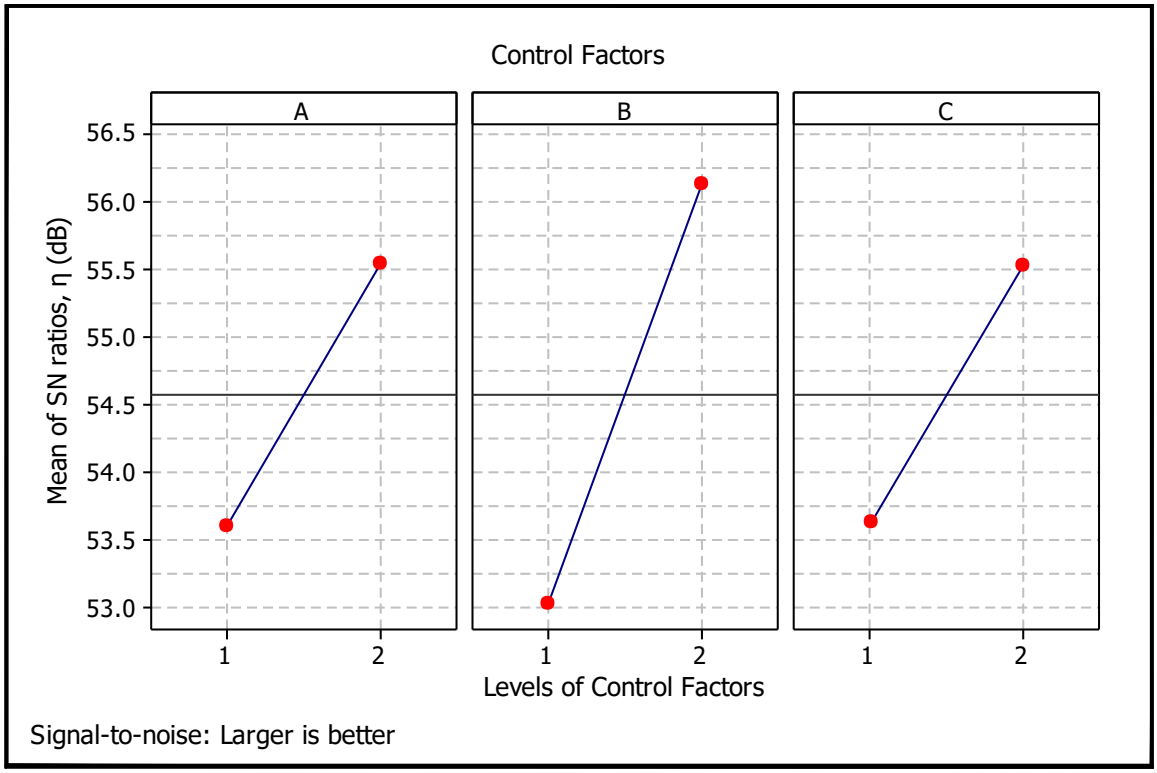

Figure 14. Effects of control factors on the response

In order to determine the level of importance of control factors and their percent effects, Analysis of Variance (ANOVA) was used. The ANOVA was carried out using significant control factors for R-Sq = 96.94 % and R-Sq (adj) = 94.64 % at level 95% confidence level. The results were given in Table 5.

Table 6. Analysis of Variance for daily solar irradiance

Source	DF	Seq SS	Adj MS	F	P	% Effect
A	1	30828	30828	30.10	0.005	23.06
B	1	74061	74061	72.31	0.001	55.39
C	1	24714	24714	24.13	0.008	18.49
Error	4	4097	1024			3.06
Total	7	133699				100

As can be seen from Table 4, local time, months, and European countries were detected to be significant control factors on the daily average because P data is smaller than 0.05 value. In addition, the percent effects of the control factors on the response were organized to be local time with 55.39 % effect, European country with 23.06 % effect, and month with 18.49 % effect, respectively. The optimum data of daily average global solar irradiance results for the maximum result was predicted using important control factors in accordance with ANOVA. The optimum data were solved using second level of control factors. The predicted mean of daily average global solar irradiance results was using Equation 2 (Ross, 1996).

$$\mu_s = \overline{A_2} + \overline{B_2} + \overline{C_2} - 2\overline{T_s} \quad (2)$$

where, $\overline{T_s}$ is organized as overall mean of daily average solar irradiance results based on L8 orthogonal array in accordance with Taguchi method and it was taken from Table 3 as 550.97 W/m^2. Also, $\overline{A_2}$= 613, $\overline{B_2}$= 647.2, and $\overline{C_1}$ = 606.5 were used as average values of daily average solar irradiance results at second level of the control factors such as A, B, and C in Table 4. Substituting the numerical data of different terms in accordance with Equation 2, and so μ_s was solved to be 764.76 W/m^2. The 95 % confidence intervals for confirmation analyses (CI_{CE}) and population (CI_{POP}) were resolved by means of Equation 3-4 (Ross, 1996) and Equation 5 (Ross, 1996).

$$CI_{CA} = \left(F_{\alpha;1;n_2} V_{error} \left[\frac{1}{n_{eff}} + \frac{1}{R}\right]\right)^{1/2} \quad (3)$$

$$CI_{POP} = \left(\frac{F_{\alpha;1;n_2} V_{error}}{n_{eff}}\right)^{1/2} \quad (4)$$

$$n_{eff} = \frac{N}{(1 + T_{DOF})} \quad (5)$$

where, α = 0.05 represents the risk and n_2 is used to be the error value based on degree of freedom and it is found to be 4 in ANOVA. Thus $F_{0.05;1;4}$ is determined to be 7.71 (Ross, 1996) according to F ratio results for the 95 % CI (α=0.05). Error value for variance in Table 5 were described as V_{error} and it is used to be 1024 value. Besides that, R is assumed to be sample size of verification tests and it is studied as 1. Sum of number of the data is indicated to be N and is used to be 8 in Table 3. Sum of degree of freedom for the important control parameters is mentioned to be T_{DOF} and it is solved as 3. n_{eff} is calculated to be 2. Therefore, CI_{CA} and CI_{POP} are calculated as± 108.8235 and ± 62.8293, respectively. The predicted confidence interval regarding confirmation test is presented (Ross, 1996):

$$\text{Mean } \mu_s - CI_{CA} < \mu_s < CI_{CA} + \text{Mean } \mu_s$$

The population according to the 95 % confidence interval is given (Ross, 1996):

$$\text{Mean } \mu_s - CI_{POP} < \mu_s < CI_{POP} + \text{Mean } \mu_s$$

The obtained results for optimal data were calculated for CI_{CA} and CI_{POP} and these results were tabulated in Table 6.

Table 7. Comparison of the optimal results

Optimal Designation	Ref. (Pvgis, 2020)	Predicted Result	Estimated Confidence Intervals for 95% Confidence Level
$A_2B_2C_2$	765.35 W/m^2	764.76 W/m^2	656.5265 < μ_s < 874.1735 for CI_{CA}
			702.5207 < μ_s < 828.173 for CI_{POP}

Predicted results were calculated using Equation 2. The average values of daily solar global irradiation results for each level of all control factors were solved. The average results were taken from Table 4. Results were compared with each other and were demonstrated in Table 7.

Table 8. Compare of the results with each other

Test	Designation	Ref. (Pvgis, 2020)	Present	± Residual
1	$A_1B_1C_1$	349.54	337.16	12.38
2	$A_1B_1C_2$	472.93	448.26	24.67
3	$A_1B_2C_1$	515.87	529.56	-13.69
4	$A_1B_2C_2$	617.23	640.66	-23.43
5	$A_2B_1C_1$	425.85	461.26	-35.41
6	$A_2B_1C_2$	570.69	572.36	-1.67
7	$A_2B_2C_1$	690.29	653.66	36.63
8	$A_2 B_2C_2$	765.35	764.76	0.59

It can be seen from Table 7 that the maximum difference was obtained for designation 7 whereas the minimum difference was calculated for designation 8.

CONCLUSION

This study deals with analysis of daily average global solar irradiance of Belgium and France in March and June months based on local time using Taguchi L8 orthogonal array which has three control factors and two levels for each factor. European countries, local times, and months were used as control factors. Latitude and longitude of Belgium were assumed to be 45.8 and 5 in degree, respectively whereas latitude and longitude of France were considered as 50.8 and 5 in degree, respectively. Therefore, longitudes of European countries were assumed to be same to see effects of latitudes. Local times were assumed to be 09:00 am and 12:00 pm. Also, months were considered as March and June. The following conclusions were drawn for this study:

- Daily average solar irradiance at 12:00 pm is higher according to 9:00 am for both Belgium and France.
- Increase of levels of months from March to June causes the increase of daily average solar irradiance for both European countries.
- Location of the countries according to latitude plays a critical role on the daily average solar irradiance.
- According to ANOVA, the percent effects of the control factors on the daily average solar irradiance were examined as local time with 55.39 % effect, European country with 23.06 % effect, and month with 18.49 % effect, respectively.
- Local time, months, and European countries were noticed to be important control factors on the daily average solar irradiance since P data is smaller than 0.05 value.
- Estimated confidence intervals for 95% confidence level were detected as $656.5265 < \mu_s < 874.1735$ for CI_{CA} and $702.5207 < \mu_s < 828.173$ for CI_{POP}
- Predicted optimum result based on Taguchi method was calculated to be 764.76 W/m^2.
- According to predicted and reference results, the maximum difference was obtained for designation 7 whereas the minimum difference was calculated for designation 8.

REFERENCES

Almorox J 2011. Estimating Global Solar Radiation from Common Meteorological Data in Aranjuez, Spain. Turkish journal of physics, 35(1):53-64.

Bahel V, Bakhsh H, Srinivasan R 1987. A Correlation for Estimation of Global Solar Radiation. Energy, 12(2):131-135.

Bakirci K 2009. Correlations for Estimation of Daily Global Solar Radiation with Hours of Bright Sunshine in Turkey. Energy, 34(4):485-501.

Besharat F, Dehghan AA, Faghih AR 2013. Empirical Models for Estimating Global Solar Radiation: A Review and Case Study. Renewable and Sustainable Energy Reviews, 21:798-821.

Chegaar M, Chibani A 2001. Global Solar Radiation Estimation in Algeria. Energy Conversion and Management, 42(8):967-973.

Ehnberg JSG, Bollen MHJ 2005. Simulation of Global Solar Radiation Based on Cloud Observations. Solar Energy, 78(2):157-162.

Evran S, Deniz O 2020a. Evaluation of Effects of Orientation Angle and Mounting Position of Pv Modules in Energy Output for Different Longitudes. International Journal of Engineering and Innovative Research, 2(1):54-60.

Evran S, Deniz O 2020b. Investigation of Peak Power and Technology of Photovoltaic in Energy Output According to System Loss. International Journal of Engineering and Innovative Research, 2(1):1-7.

Globalsolaratlas 2020. Global Solar Atlas, Available At: https://Globalsolaratlas.Info [01.01.2020].

Gurlek C, Sahin M 2018. Estimation of the Global Solar Radiation with the Artificial Neural Networks for the City of Sivas. European Mechanical Science, 2:46-51.

Mellit A, Pavan AM 2010. A 24-H Forecast of Solar Irradiance Using Artificial Neural Network: Application for Performance Prediction of a Grid-Connected Pv Plant at Trieste, Italy. Solar Energy, 84(5):807-821.

Meza F, Varas E 2000. Estimation of Mean Monthly Solar Global Radiation as a Function of Temperature. Agricultural and Forest Meteorology, 100(2):231-241.

Mohandes M, Rehman S, Halawani TO 1998. Estimation of Global Solar Radiation Using Artificial Neural Networks. Renewable Energy, 14(1):179-184.

Muneer T, Younes S, Munawwar S 2007. Discourses on Solar Radiation Modeling. Renewable and Sustainable Energy Reviews, 11(4):551-602.

Otani K, Minowa J, Kurokawa K 1997. Study on Areal Solar Irradiance for Analyzing Areally-Totalized Pv Systems. Solar Energy Materials and Solar Cells, 47(1):281-288.

Pvgis 2020. Pvgis Photovoltaic Geographical Information System, Available At: https://Ec.Europa.Eu/Jrc/En/Pvgis [01.01.2020].

Rehman S, Mohandes M 2008. Artificial Neural Network Estimation of Global Solar Radiation Using Air Temperature and Relative Humidity. Energy Policy, 36(2):571-576.

Ross PJ (1996) Taguchi Techniques for Quality Engineering. McGraw-Hill International Editions, 2nd Edition, New York, USA

Trabea AA, Shaltout MaM 2000. Correlation of Global Solar Radiation with Meteorological Parameters over Egypt. Renewable Energy, 21(2):297-308.

Wong LT, Chow WK 2001. Solar Radiation Model. Applied Energy, 69(3):191-224.

Yang K, Huang GW, Tamai N 2001. A Hybrid Model for Estimating Global Solar Radiation. Solar Energy, 70(1):13-22.

Yorukoglu M, Celik AN 2006. A Critical Review on the Estimation of Daily Global Solar Radiation from Sunshine Duration. Energy Conversion and Management, 47(15):2441-2450.

THE EFFECT OF REPEATED FRYING UNDER ATMOSPHERIC AND PRESSURIZED CONDITIONS ON THE QUALITY CHARACTERISTICS OF CHICKEN NUGGETS

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ABSTRACT

The aim of the study was to determine the effect of atmospheric and pressure frying on some quality properties of nuggets. For this purpose, nuggets were subjected to deep frying process for 5 times using olive oil in atmospheric and pressure conditions. Fried nugget samples were analyzed in terms of pH,% moisture, TBARS (thiobarbutyric acid reactive substance) and color (internal and external surface). In addition, the nuggets were tested for their instrumental texture properties. In the nugget samples, the frying factor had a significant ($P<0.05$) effect on the moisture value and a very significant ($P<0.01$) effect on the TBARS value. The% moisture values of the samples fried under pressure conditions were determined higher than the samples fried in atmospheric conditions. The pressure frying process reduced the TBARS value of the samples. The pressure frying increased the L * value of the internal surface of the nugget samples, but decreased the a * and b * values. This method resulted in an increase in L * and b * values and a decrease in a * value in the external surface ($P<0.05$). Frying repetition factor decreased the L * value in the internal and external surface and increased the a * value. In the nugget samples, pressure frying increased all parameters except adhesiveness and springeness. The frying number factor did not have any significance in all texture parameters except the adhesiveness value.

Keywords: Nugget, Frying, pressure frying, texture

GİRİŞ

Derin yağda kızartma işlemi, genellikle atmosferik koşullarda gerçekleştirilen pişirme süresinin kısalığı ve ürüne kazandırdığı duyusal özellikler nedeniyle yaygın olarak tercih edilen bir pişirme yöntemidir (Moreira, 2014). Renk, lezzet ve tekstür gibi duyusal özelliklerinden dolayı kızartılmış gıdalar tüketici tercihlerinde büyük öneme sahiptir (Dobarganes *et al.* 2000). Sıklıkla kullanılan pişirme yöntemlerinden biri olan derin yağda kızartma genellikle gıdanın 165-190 C gibi yüksek sıcaklıklardaki yağa daldırılması suretiyle gerçekleştirilen bir işlem olup, gıda ile yağ arasındaki kompleks etkileşimlerin bir sonucu olarak eş zamanlı ısı kütle transferi gerçekleşmektedir(Ziaiifar *et al.* 2008).

Kızartılmış ürünlerin içerdiği yüksek oranda yağ pek çok sağlık probleminde (obezite, hipertansiyon, kardiyovasküler hastalıklar gibi) öne çıkan risk faktörleri arasındadır (Ananey-Obiri *et al*. 2018; Yılmaz ve Aydeniz 2011). Bu problemler atmosferik kızartmaya alternatif bir kızartma yöntem gerekliliğini ortaya koymaktadır. Derin yağda kızartma atmosferik, düşük (vakum) veya yüksek basınç koşullarında yapılabilmektedir. 165-190°C gibi sıcaklıklarda gerçekleştirilen atmosferik koşullardaki kızartmada, üründe arzu edilen renk ve tekstür oluşmakta ve genellikle patates kızartması, mısır cipsleri, tatlı çörek, tempura ve balık kızartmada kullanılmaktadır (Yamsaengsung and Moreira 2002). Düşük basınç ya da vakum kızartma olarak bilinen yöntem, (<6,65 kPa) altındaki basınçlarda yaklaşık 90°C gibi sıcaklıklarda atmosferik kızartmadaki özelliklere benzer ürünler üretilebilmektedir. Yaklaşık 184 kPa basınç altında gerçkelştirilen yüksek basınçlı kızartma işlemi ise genellikle kemikli piliç ürünlerinde kullanılmaktadır. Bu işlemde yüksek basıncın etkisiyle nemli, pişmiş ve uygun çıtırlıkta et olmaktadır (Ballard and Mallikarjunan 2006; Moreira 2014). Basınçlı kızartma işlemindeki yüksek basınç etksiyle atmosferik kızartmaya göre daha sulu, yumuşak, yağ emilimi düşük ve daha iyi

tekstüre sahip olan ürünler üretilebilmektedir (Ballard and Mallikarjunan 2006; Das *et al.* 2013; Innawong *et al.* 2006).

Palm, mısır, pamuk, soya ve ayçiçek yağı kızartmada yaygın olarak tercih edilen yağlardır (Sanchez-Gimeno *et al*. 2008). Zeytinyağı ise yüksek orandaki tekli doymamış yağ asidi içeriği ve güçlü antioksidan özelliklere nedeniyle kızartma gibi pişirme işlemlerinde kullanımı avantajlı olmaktadır (Aparicio and Harwood, 2003;). Son yıllarda hızlı yemek sektörünün yaygınlaşması, işlem hızlılığı ve ürünün lezzetliği gibi özellikleri ile patates, mısır cipsi, deniz ürünleri, nugget ve köfte gibi kanatlı ve kırmızı et ürünleri gibi ürünlerin hazırlanmasında derin yağda kızartma önemli bir yöntemdir. (Gaduraju *et al*. 2015; Lawson 1995). Araştırmalarda genellikle atmosferik kızartma yöntemi kullanılmış olup, basınçlı kızartma yönteminin araştırıldığı çalışma sayısı oldukça azdır (Ballard and Mallikarjunan 2006; Erdogdu ve Dejmek 2010; Innawong *et al.* 2006). Mevcut bu araştırmada iki farklı kızartma yöntemi (atmosferik ve basınçlı kızartma) kullanılarak zeytinyağında yapılan tekrarlı kızartma işleminin nuggetların bazı fizikokimyasal (pH, nem, renk, TBARS) ve enstrümental tekstür (sertlik, yapışkanlık, kohesivlik, elastikiyet, esneklik, sakızımsılık, çiğnenebilirlik) özelliklerineetkileri araştırılmıştır.

MATERYAL VE YÖNTEM

Araştırmada nugget üretimi için tavuk eti (but eti ve göğüs eti), kızartma işlemi için ise zeytinyağı kullanılmıştır. Üretimde kullanılan tavuk eti ve kızartma yağı Erzurum piyasasından temin edilmiştir. Nugget üretimi için kullanılacak tavuk eti kıyma makinesinin 3 mm'lik aynasından geçirilerek su, galeta unu, buğday unu, soğan, baharat karışımı ve askorbik asit ile karışıtırılarak hamur elde edilmiş ve iyice yoğurulmuştur. Hamura 6×3×3 boyutlarındaki nugget kalıpları ile şekil verilerek ± 4°C'de 1 saat süreyle bekletilmiştir. Dış kaplama için nuggetlar önce yumurta akına daldırılmış sonra ekmek kırıntıları ile muamele edilerek -18°C'de kızartma işlemine kadar muhafaza edilmiştir.
Kızartma işlemi basınçlı ve atmosferik koşullarda derin yağda kızartma yapabilen bir kızartma cihazı (MARKFRY 1014 PD) ile gerçekleştirilmiştir. Atmosferik koşullarda kızartma işlemi 180°C'de 2 dak., basınçlı koşullarda ise 160 C'de 3 dak (2 bar basınç) olacak şekilde aynı yağ kullanılarak gerçekleştirilmiş ve kızartma her biri kızartma yönteminde de 5 kez tekrarlanmıştır. Her kızartma işleminden sonra yağın 25 °C'ye soğuması beklenmiş ve numune alınmıştır. Kızartma işleminde ürün yağ oranı da aynı seviyede tutulmuştur. Kızartma işlemini takiben her partiden nugget örneği alınmış ve numuneler analiz edilinceye kadar 25 °C'ye soğutulmuştur.

Nem Tayini

Homojenize edilmiş 10 g örnek 105ºC'de kurutularak darası alınan kurutma kaplarına tartıldıktan sonra 105ºC'deki etüvde sabit ağırlığa gelinceye kadar kurutulmuştur. Ağırlık kayıpları dikkate alınarak nem miktarı % olarak belirlenmiştir (Gökalp vd.2001).

pH tayini

Örneklerin pH değerlerinin belirlenmesi için 10'ar gram tartılıp üzerine 100 ml saf su ilave edilmiş ve Ultra-Turrax (IKA Werk Tp 18-10) ile 1 dak. homojenize edilmiştir. pH değerleri ölçülmeden önce pH metre (Mettler Toledo Ion S220, İsviçre) pH 4.0 ve pH 7.0'lik tampon çözeltiler kullanılarak kalibre edilmiştir (Gökalp vd 2004).

TBARS

Örneklerden 2'şer gram paralelli olarak tartılarak üzerine 12 ml TCA çözeltisi (%7,5 TCA, %0,1 EDTA) ve %0,1 Propil galat ilave edilmiş ve Ultra Turrax (IKA Werk Tp 18-10) ile 15-20 s homojenize edilmiştir. Filtre kağıdından süzülen örneklerden deney tüplerine 3 ml alınmış ve üzerine 3 ml 0,02 M TBA çözeltisinden ilave edilerek vortekslenmiştir. Deney tüpleri kaynayan su banyosunda 40 dak. bekletilmiş ve 5 dak. soğutulmuştur. Spektrofotometrede (Shimadzu Spectrophotometer UV-120-01) 532 nm'lik dalga boyunda köre karşı absorbans değeri belirlenmiştir ve TBARS değeri hesaplanmıştır (Lemon 1975).

Renk Analizi

Nugget örneklerinin renk yoğunlukları nuggetların iç ve dış kesit yüzeyinden 3 paralelli olacak şekilde Minolta (CR-200, Minolta Co, Osaka, Japan) kolorimetresi kullanılarak belirlenmiştir. L*, a* ve b* değerleri üç boyutlu renk ölçümünü esas alan Uluslararası Aydınlatma Komisyonu CIELAB (Commision Internationele de I'E Clairage) tarafından verilen kriterlere göre yapılmıştır.

Tekstür profil analizi (TPA)

Nugget örneklerinin enstrümental tekstür özellikleri (sertlik, yapışkanlık, kohesivlik, elastikiyet, esneklik, sakızımsılık, çiğnenebilirlik) tekstür profil analiz cihazı (CT3, Brookfield Engineering Laboratories, USE) kullanılarak gerçeklştirilmiştir. TPA'da ön test hızı 1 mm/s, test sonrası hızı 2 mm/s, sıkıştırma oranı %50 ve iki sıkıştırma arası 5 s olacak şekilde analiz gerçekleştirilmiştir. Tekstürel parametreler bir güç-süre grafiği kullanılarak belirlenmiştir (Bourne 1978).

İstatiksel Analizler

Araştırma tam şansa bağlı deneme planına göre kurulmuş ve analizler üç paralel üzerinden yapılmıştır. Elde edilen veriler IBM SPSS Statistics 20 paket program kullanılarak varyans analizine tabi tutulmuş ve istatistiki açıdan önemli bulunan ana varyasyon kaynaklarına ait ortalamalar Duncan çoklu karşılaştırma testi ile karşılaştırılmıştır.

SONUÇ VE TARTIŞMA

Nem miktarı, pH ve TBARS değerleri

Zeytinyağı kullanılarak üretilen nugget örneklerinde farklı kızartma yöntemleri (atmosferik ve basınçlı) ve kızartma sayısı (5 tekrar) kullanımının % nem değerleri Çizelge 1'de verilmiştir. % nem içeriği kızartma yöntemi ve kızartma sayısı faktörleri üzerinde önemli etkiye sahiptir ($P<0,05$) . Basınçlı koşullarda gerçekleştirilen kızartma işleminde nuggetların % nem içerikleri atmosferik koşullarda kızartılan örneklere göre daha yüksek bir değer vermiştir. Basınçlı kızartmada nem değerinde tespit edilen bu artışın kızartmanın daha düşük sıcaklıkta yapılmasından ileri geldiği düşünülmektedir. Nem içeriği üzerine basınçlı ve atmosferik koşullarda gerçekleştirilen kızartma işleminin etkisinin belirlendiği benzer bir çalışmada nem içerikleri sırasıyla %52,5-53,9 ile %48,5-51,3 olarak tespit edilmiştir (Das et al. 2013). Farklı basınç kaynakları (buhar ve azot) kullanılarak gerçekleştirilen basınçlı kızartma işleminde Innawong et al. (2006)%nem değerlerini buhar kullanılan kızartmada % 61,56-63,55, azot gazı kullanılan kızartmada ise % 62,06-62,91 olarak tespit etmiştir. Kızartma sayısındaki artış ile birlikte 1.kızartmada 76.20 olan %nem değeri 5. Kızartmada %69.87 'ye düşmüştür (Çizelge 1).

Çizelge 1. Kızartma yöntemi ve kızartma sayısının nuggetın bazı kimyasal özelliklerine etkileri (Ort ± SD)

	pH	Nem(%)	TBARS (µmol MDA/kg)
Kızartma Yöntemi			
Atmosferik	5.93±0.05^{a}	72.25±4.62^{b}	27.41±9.35^{a}
Basınçlı	5.94±0.06^{a}	74.22±2.70^{a}	19.72±7.08^{b}
Significance	NS	*	**
Kızartma Sayısı (KS)			
1	5.97±0.03^{a}	76.20±4.04^{a}	16.11±3.52^{b}
2	5.94±0.06^{a}	73.77±3.84^{ab}	21.42±6.05^{ab}
3	5.93±0.06^{a}	72.93±2.36^{ab}	22.53±6.40^{ab}
4	5.92±0.06^{a}	73.08±2.60^{ab}	29.31±10.71^{a}

5	5.93±0.06[a]	69.87±4.56[b]	29.74±10.85[a]
Significance	NS	*	**
KY × KS	*	NS	NS

a-c:Aynı sütunda benzer harfle ifade edilen değerler arasında Duncan çoklu karşılaştırma testine göre istatistiki açıdan fark yoktur(p›0.05). ** p <0 .01, * p < 0.05, NS: not significant

Atmosferik ve basınçlı koşullarda tekrarlı olarak (5 tekrar) zeytinyağında kızartılan nuggetların pH değerlerine ait ortalamalar Çizelge 1'de verilmiştir. Buna göre örneklerin pH değeri 5.92-5.97 arasında değişmiştir. Çizelgeden de görüldüğü üzere kızartma yöntemi ve kızartma sayısının örneklerin pH değeri üzerinde önemli bir etkisi olmamıştır (P>0,05). Kızartma yöntemi × kızartma sayısı interaksiyonu ise pH değeri üzerinde önemli bir etkiye sahip olduğu tespit edilmiştir (P‹0,05). Das et al. (2013) tarafından yapılan bir çalışmada da, derin yağda atmosferik ve basınçlı koşullarda gerçekleştirilen kızartma işlemleri arasında pH değeri açısından önemli bir farklılık olmadığı rapor edilmiştir.

Lipid oksidasyonunun önemli bir göstergesi olan TBARS, ette aroma ve kötü tat oluşumuna katkıda bulunan aldehitler gibi sekonder oksidasyon ürünlerinin bir ölçüsüdür (Hwang et al. 2011). Nuggetların TBARS değerlerine ait ortalamalar Çizelge 1'de verilmiştir. Çizelgeden de görüldüğü üzere atmosferik koşullarda gerçekleştirilen kızartma işlemi ile nuggetların TBARS değeri (27.41µmol MDA/kg), basınçlı koşullarda (19.72 µmol MDA/kg) gerçekleştirilen kızartma işlemine göre daha yüksek bir değer vermiştir (Çizelge 1). TBARS değerindeki düşüşün basınçlı kızartma işleminde oksijen mevcudiyetinin atmosferik koşullardaki kızartma işlemine göre daha düşük seviyede olmasından kaynaklandığı düşünülmektedir. Das et al. (2013) tarafından yapılan çalışmada da benzer sonuçlar belirlenmiş, kızartılmış etlerinin TBA değerleri atmosferik ve basınçlı koşullarda sırasıyla 0,35-0,56µmol MDA/kg ile 0,28-0,31 µmol MDA/kg arasında değiştiği ve basınçlı kızartmanın atmosferik kızartmaya iyi bir alternatif olabileceği belirtilmiştir. Tekrarlı kızartma işlemi nuggetların TBARS değeri üzerinde çok önemli etkiye sahip olduğu belirlenmiştir. İlk kızartma sonucunda köftelerin TBARS değeri 16.11 µmol MDA/kg olarak belirlenirken 5. kızartma sonucunda bu değer 29.74 µmol MDA/kg olarak tespit edilmiştir (P‹0,01).

3.2.Renk değerleri

Atmosferik ve basınç koşullarında tekrarlı kızartma işlemi (5 tekrar) kullanılarak üretilen nuggetların iç ve dış kesit yüzeylerine ait L*, a* ve b* değerlerine ait ortalamalar Çizelge 2'de verilmiştir. Çizelgeden de görüldüğü üzere örneklerin iç kesit yüzeyinde L*, a* ve b* değeri üzerinde çok önemli etkiye sahiptir. Basınçlı koşullarda gerçekleştirilen kızartma işlemi bu L* değerini 74.39 dan 76.99'a artırmıştır. Buna karşın a* ve b* değerini ise düşürmüştür. Innawong et al. (2006) basınçlı kızartma işleminde atmosferik kızartmaya göre a* değerinin daha yüksek olduğunu belirtmişlerdir. Konu ile ilgili bir diğer çalışmada buharla kızartılan ürünlerin L* değerinin ise azot gazı ile kızartılan ürüne göre daha düşük seviyede kaldığını bildirilmiştir (Enrıquez-Fernandez et al. 2011). Kızartma tekrar sayısı arttıkça nuggetların iç kesit yüzeyinde L* değeri azalırken a* ve b* değeri artış göstermiştir.Kızartma yöntemi ×Kızartma sayısı interaksiyonunun ise L* ve b* değeri üzerinde çok önemli (P‹0,01), a* değeri üzerinde ise önemli etkileri gözlemlenmiştir(P‹0,05).

Çizelge 2. Kızartma yöntemi ve kızartma sayısının nuggetın renk özelliklerine etkileri (Ort ± SD)

	Renk özellikleri					
	İç kesit			Dış kesit		
	L*	a*	b*	L*	a*	b*
Kızartma Yöntemi (KY)						
Atmosferik	74.39±4.26 a	-1.23±0.50^{a}	18.48±1.51 a	46.04±8.79^{a}	14.11±3.67 a	32.18±6.27 a
Basınçlı	76.99±3.25 b	-1.52±0.35^{b}	16.97±1.02 b	49.18±7.63^{b}	13.04±4.36 b	35.90±5.51 b
Significance	**	**	**	**	**	**
Kızartma Sayısı (KS)						
1	79.59±1.47 a	-1.72±0.37^{c}	16.43±0.84 b	60.68±4.02^{a}	7.40±2.65^{c}	41.22±1.49 a
2	77.33±4.34 b	-1.44±0.50^{bc}	18.18±2.41 a	50.29±4.73^{b}	13.35±3.17 b	37.04±3.55 a
3	76.67±1.65 b	-1.02±0.50^{a}	18.02±1.16 a	43.80±3.46^{c}	14.66±2.34 a^{b}	29.86±6.17 b
4	73.46±2.19 c	-1.19±0.37^{ab}	18.23±1.15 a	42.07±3.56^{c}	16.13±1.49 a	31.15±4.61 b
5	71.00±2.92 d	-1.46±0.22^{bc}	18.01±0.99 a	40.70±3.05^{c}	16.52±1.18 a	30.32±4.81 b
Significance	**	*	**	**	**	**
KY × KS	**	*	*	NS	NS	NS

a-c:Aynı sütunda benzer harfle ifade edilen değerler arasında Duncan çoklu karşılaştırma testine göre istatistiki açıdan fark yoktur(p›0.05). ** p <0 .01, * p < 0.05, NS: not significant

Köfte örneklerinin dış kesit yüzeyinde ise, parlaklığın göstergesi olan L* değeri basınçlı kızartma işleminde artmış buna karşın sarı renk yoğunluğunun göstergesi olan a* değeri ise düşmüştür. Benzer şekilde sarı renk yoğunluğunu ifade eden a* değerinde ise düşüş gözlemlenmemiştir (Çizelge2). 1. Kızartma işlemi sonucunda örneklerin L* ve b* değerleri 60.68 ve 41.22 olarak belirlenmiş, buna karşın 5.kızartma işlemi sonucunda bu değerler sırasıyla 40.70 ve 30.32 değerlerine düşmüştür. Kızartma sayısının nugget örneklerinin dış kesit yüzeyindeki a* değeri ise 7.40'dan 16.52'ye yükselmiştir.

3.3.Tekstür profil Analiz sonuçları

Farklı kızartma yöntemleri (atmosferik ve basınçlı) ve kızartma sayısı (5 tekrar) kullanılarak üretilen nugget örneklerinin tekstür profil analiz sonuçlarına ait ortalamalar Çizelge 3'de verilmiştir. Çizelgeden de görüldüğü üzere kızartma yöntemi sertlik, çiğnenenbilirlik üzerinde önemli,esneklik, kohesivlik ve sakızınsılık değerleri üzerinde ise çok önemli etki göstermiştir. Diğer yandan kızartma yönteminin yapışkanlık ve elastikiyet değerleri üzerinde herhangi bir etkisi olmamıştır. Kızartma sayısı ise sadece yapışkanlık üzerinde etki göstermiştir. Basınçlı kızartma yöntemi sertlik değeri (N) üzerinde önemli bir artışa neden olmuştur. Atmosferik kızartmada 58.32N olan sertlik değeri basınçlı

kızartmada 69.34 N olarak daha yüksek bir seviyede tespit edilmiştir(Çizelge 3.). Teruel et al. (2014) tarafından yapılan çalışmada ise vakum altında kızartma işleminde gevrekliğin arttığı rapor edilmiştir.

Çizelge 3. Kızartma yöntemi ve kızartma sayısının nuggetın tekstürel özelliklerine etkileri (Ort ± SD)

	Sertlik(N)	Yapışkanlık (mJ)	Esneklik	Kohesivlik	Elastikiyet(mm)	Sakızımsılık(N)	Çiğnenebilirlik (mJ)
Kızartma Yöntemi (KY)							
Atmosferik	58.32±18.90^{a}	0.14±0.18^{a}	0.20±0.03^{a}	0.49±0.05^{a}	6.04±1.02^{a}	29.29±10.59^{a}	177.47±72.83^{a}
Basınçlı	69.34±20.35^{b}	0.19±0.22^{a}	0.23±0.02^{b}	0.55±0.04^{b}	5.95±0.38^{a}	37.83±11.23^{b}	224.24±65.20^{b}
Significance	*	NS	**	**	NS	**	*
Kızartma Sayısı (KS)							
1	70.64±22.01^{a}	0.12±0.10^{ab}	0.23±0.02^{a}	0.54±0.03^{a}	5.84±0.31^{a}	38.75±13.18^{a}	225.78±74.75^{a}
2	68.79±23.49^{a}	0.28±0.21^{a}	0.21±0.02^{a}	0.50±0.03^{a}	6.25±1.59^{a}	34.72±12.22^{a}	216.88±89.57^{a}
3	64.01±21.01^{a}	0.12±0.22^{ab}	0.21±0.03^{a}	0.51±0.06^{a}	6.04±0.32^{a}	33.84±12.79^{a}	204.34±79.11^{a}
4	59.34±20.56^{a}	0.07±0.08^{b}	0.21±0.03^{a}	0.52±0.06^{a}	5.88±0.21^{a}	30.85±11.10^{a}	180.84±63.20^{a}
5	56.40±11.79^{a}	0.25±0.27^{a}	0.22±0.03^{a}	0.52±0.06^{a}	5.98±0.53^{a}	29.62±7.86^{a}	176.44±47.46^{a}
Significance	NS	*	NS	NS	NS	NS	NS
KY × KS	NS	NS	*	*	NS	NS	NS

a-c:Aynı sütunda benzer harfle ifade edilen değerler arasında Duncan çoklu karşılaştırma testine göre istatistiki açıdan fark yoktur(p›0.05). ** p <0 .01, * p < 0.05, NS: not significant

Yapışkanlık (mJ), sıkıştırıcı pistonu numuneden uzaklaştırmak için gerekli kuvvetin bir göstergesi olarak dikkate alınmaktadır(Andress et al. 2006). Kızartma yöntemi örneklerin yapışkanlık değeri üzerinde herhangi bir etkisi belirlenmezken, kızartma sayısına bağlı olarak bu parametre 0.07 mJ ile 0.28 mJ arasında değişiklik göstermiştir. Deformasyona maruz kalan bir örneğin geri kazanımı olarak tanımlanan esneklik (Dilber 2011) üzerinde kızartma yöntemi ile kızartma sayısı çok önemli etkide bulunmuştur (P‹0.01) (Çizelge 3). Esneklik değeri yapışkanlık ve sertlik değerinde olduğu gibi basınçlı kızartmada daha yüksek değerler göstermiştir. Kızartma sayısı arttıkça benzer şekilde esneklik değeri azalmıştır.

Kohesivlik örneğin kopmadan önceki deformasyon derecesinin bir ölçüsü olarak tanımlamaktadır (Herrero et al. 2007). Sakızımsılık (N) ise bir örneğin kopması için gereksinim duyulan enerji olarak tanımlanmaktadır. Her iki tekstür parametresi de kızartma yönteminden çok önemli seviyede (P<0,01) etkilenmiştir. Bu parametreler üzerinde kızartma sayısının herhangi bir etkisi belirlenemeiştir. Kızartma sayısı ise çok önemli bir etkide bulunmuştur. Basınçlı kızartma atmosferik koşullardaki kızartma işlemine göre daha yüksek sonuçlar vermiştir (Çizelge 3). Das et al. (2013) tarafından yapılan

çalışmada da basınçlı ve atmosferik kızartma işleminin kohesivlik üzerinde etkili olmadığı bildirilmiştir. Numunenin parçalara ayrılıp yutmaya hazır duruma getirilmesi için gerekli enerjiyi ifade eden bir parametre olan çiğnenebilirlik (mJ) değerlerine ait sonuçlar Çizelge 3'te verilmiştir. Çizelgeden de görüldüğü üzere kızartma yöntemimin çiğnenebilirlik üzerinde herhangi önemli bir etkisi olmuş ve atmosferik kızartma bu değeri düşürmüştür (Çizelge 3).

SONUÇ

Sonuç olarak basınçlı kızartmanın ürün renk özellikleri ve lipid oksidasyonu açısından atmosferik kızartmaya göre daha iyi sonuçlar verdiği, bu yöntemin bazı tekstürel parametreleri geliştirdiği ve bu sonuçlardan dolayı basınçlı kızartma ile zeytinyağının kızartmada alternatif bir uygulama olabileceği ancak konu ile ilgili daha detaylı çalışmalara da ihtiyaç olduğu kanaatine varılmıştır.

TEŞEKKÜR

Bu çalışma Atatürk Üniversitesi Bilimsel Araştırma Projeleri birimi tarafından BAP 2015/408 no'lu proje kapsamında desteklenmiştir.

KAYNAKÇA

Andrés-Bello, A., García-Segovia, P., Martínez-Monzó, J., 2011. Vacuum frying: an alternative to obtain high-quality dried products. Food Engineering Reviews, 3(2), 63.

Ballard, T.S., Mallikarjunan, P., 2006. The effect of edible coatings and pressure frying using nitrogen gas on the quality of breaded fried chicken nuggets. Journal of Food Science, 71(3), 259-264.

Bourne, M.C., 1978. Texture Profile Analysis. Food Technology, 32:62-72p.

Das, R., Pawar, D.P., Modi, V.K., 2013. Quality characteristics of battered and fried chicken: Comparison of pressure frying and conventional frying. Journal of Food Science and Technology, 50(2), 284-292.

Devseren, E., Tomruk, D., Koç, M., Kaymak-Ertekin, F., 2016. Vakum altında kızartma işleminin gıda ve kızartma yağı kalitesi üzerine etkisi. Akademik Gıda , 14(1), 43-53.

Dobarganes, C., Márquez-Ruiz, G., Velasco, J., 2000. Interactions between fat and food during deep-frying. European Journal of Lipid Science and Technology, 102(8-9), 521-528.

Enríquez-Fernández, B.E., Álvarez de la Cadena y Yañez, L., Sosa-Morales, M.E., 2011. Comparison of the stability of palm olein and a palm olein/canola oil blend during deep-fat frying of chicken nuggets and French fries. International Journal of Food Science and Technology, 46(6), 1231-1237.

Erdoğdu, F., Dejmek, P., 2010. Patateslerin yüksek basınçlı kızartması sırasında ısı transfer katsayısının belirlenmesi. Gıda mühendisliği dergisi , 96(4), 528-532.

Fellows, P.J., 2009. Food processing technology: principles and practice. Elsevier.

Gökalp, H.Y., Kaya M., Tülek, Y. Ve Zorba, Ö., 2004. Et Ürünleri İşleme Mühendisliği (5. Baskı). Atatürk Üniversitesi, Ziraat Fakültesi, Yay. No:70, Erzurum. 468.

Herrero, A.M., Ordóñez, J.A., de Avila, R., Herranz, B., De la Hoz, L., Cambero, M. I., 2007. Breaking strength of dry fermented sausages and their correlation with texture profile analysis (TPA) and physico-chemical characteristics. Meat science, 77(3), 331-338.

Innawong, B., Mallikarjunan, P., Marcy, J., Cundiff, J., 2006. Pressure conditions and quality of chicken nuggets fried under gaseous nitrogen atmosphere. Journal of Food Processing and Preservation, 30(2), 231-245.

Lawson, H., 1995. Deep fat frying. In food oils and fats (pp. 66-115). Springer, Boston, MA.

Lemon, D.W.,1975. An Improved TBA Test for Rancidty New Series Circular. No:51.

Moreira, R. G.,2007. Departman of Biolojical and Agricultural Engineering, Texas A&M Universitesy, College Station, TX, USA.Deep-fat frying, 210-237.

Moreira, R.G., 2014. Vacuum frying versus conventional frying–An overview. European Journal of Lipid Science and Technology, 116(6), 723-734.

Yamsaengsung, R., Moreira, R.G., 2002. Derin yağda kızartma sırasında taşınım olaylarının modellenmesi ve yapısal değişiklikler: Bölüm I: Model geliştirme. Gıda Mühendisliği Dergisi, 53(1), 1-10.

Yılmaz, E., Aydeniz, B., 2014. Farklı doğal antioksidanların kızartma süresince yer fıstığı yağının fiziksel özellikleri üzerine etkileri. Academic Food Journal. 12(1).

Ziaiifar, A.M., Achir, N., Courtois, F., Trezzani, I., Trystram, G., 2008. Review of mechanisms, conditions, and factors involved in the oil uptake phenomenon during the deep-fat frying process. International Journal of Food Science & Technology, 43(8), 1410-1423.

ON RESULTS DIVISIBILITY AND MULTIPLIERS OF REGULAR MATRICES OF ORDER *nth*

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ABSTRACT

In this study, the existing properties of division defined in matrices are used [4]. It is investigated whether some known properties on the field of real numbers also exist in matrices. Here, at the beginning, examples are given by studing with second order matrices. Then, examples of third order matrices are given. How many different divisibility matrices can a regular matrix $A=\left[a_{ij}\right]_n$ of nth order be arrive at? An answer to a question is sought. Shortly, for the given four regular matrices $G \neq T$ and $R \neq Z$,

$$\frac{G}{R} = A$$
$$\vdots$$
$$\frac{T}{Z} = A.$$

Thus, it is concluded that the process of reaching the same matrix by dividing different matrices, which are regular squares, can be done with at least two groups of matrices. It is concluded that there are multiple ways to arrive at the same regular matrix. Since determining the number of these is a separate issue, no study has been done on it. The question in the literature about the existence of more has been resolved. The definition of division operation in matrices is given [3,4]. With the contribution of the Gaussian Elimination method, some results are obtained.. From the multiplication process in the literature;

$$TZ = W$$

It has been investigated how the information that the obtained W matrix is obtained by multiplying other matrices, and how the results are obtained in division. In the $TZ = W$ multiplier operation, it is concluded that there is more than one Z regular matrix when the Regular T matrix is kept constant. This adds new developments to matrix theory. Just as a regular matrix has two different factors, a regular matrix is also obtained by dividing four different matrices by two. The Gaussian Elisian method is very important in obtaining the results.

Keywords: Matrix Division, Operation of Division in Matrices, Matrix Theory, Different Divisors of a Regular Matrix, Factors of a Regular Matrix, Different Multipliers of a Regular Matrix.

INTRODUCTION

The following example is given to recall some of the well-known properties of multiplication in matrices.

Example 1. Let $T_1 = \begin{bmatrix} 1 & 3 \\ 2 & 6 \end{bmatrix}$ and $Z_1 = \begin{bmatrix} 2 & -4 \\ -5 & 1 \end{bmatrix}$ matrices be given.

$$\begin{bmatrix} 1 & 3 \\ 2 & 6 \end{bmatrix}\begin{bmatrix} 2 & -4 \\ -5 & 1 \end{bmatrix} = \begin{bmatrix} -13 & -1 \\ -26 & -2 \end{bmatrix} = W$$

The resulting matrix W is also obtained by multiplying the matrices $T_2=\begin{bmatrix}5 & 1\\ 4 & 7\end{bmatrix}$ and $Z_2=\begin{bmatrix}-\frac{65}{31} & -\frac{5}{31}\\ -\frac{78}{31} & \frac{6}{31}\end{bmatrix}$, which are different from T_1 and Z_1.

$$\begin{bmatrix}5 & 1\\ 4 & 7\end{bmatrix}\begin{bmatrix}-\frac{65}{31} & -\frac{5}{31}\\ -\frac{78}{31} & \frac{6}{31}\end{bmatrix}=\begin{bmatrix}-13 & -1\\ -26 & -2\end{bmatrix}$$

Let C be a field and $M_n(C)=\left\{[a_{ij}]_n \middle| a_{ij}\in C, n\in \mathbb{Z}^+\right\}$. Is there a matrix $\exists A,B\in M_n(C)$ for $\forall W\in M_n(C)$ such that, $AB=W$? Also, are these A,B matrices unique? This question is a topic worth researching for many years.

If $B|W$ then $\exists A\in M_n(C)$ such that,

$$BA=W$$

Except for special cases in matrix multiplication, $AB\neq BA$. In this study, special cases were not taken into account.

Definition 1. Let C be a field and $M_n(C)=\left\{[a_{ij}]_n \middle| a_{ij}\in C, n\in \mathbb{Z}^+\right\}$. A rational matrix is defined by

$$-: M_n(C)\times M_n(C)\to M_n(C)$$

$$(B,F)\to \frac{F}{B}:=\left[\frac{\left({}_B^F i_j\right)_{ji}}{|B|}\right]_{n\times n}.$$

The $\left[\left({}_B^F i_j\right)_{ji}\right]_n$ matrix obtained here is the *column co-divisor matrix* of the F matrix on the B matrix [4].

The $\left[\left({}_B^F i_j\right)_{ji}\right]_n$ matrix is the determinant of the matrix obtained by writing the ith column of the F matrix into the jth column of the B matrix [2,3,4].

There is no commutation feature in the division operation in matrices. In general,

$$\frac{F}{B}\neq\frac{B}{F}.$$

Example 2. Let $B=\begin{bmatrix}3 & 2\\ 1 & 4\end{bmatrix}$ and $F=\begin{bmatrix}6 & 4\\ 3 & 9\end{bmatrix}$ matrices be given.

$$\frac{F}{B}=\begin{bmatrix}\frac{23}{42} & \frac{1}{21}\\ -\frac{1}{14} & \frac{3}{7}\end{bmatrix}, \frac{B}{F}=\begin{bmatrix}\frac{9}{5} & -\frac{1}{5}\\ \frac{3}{10} & \frac{23}{10}\end{bmatrix}.$$

$$BA=F \Rightarrow \frac{F}{B}=A \wedge AB=G \Rightarrow \frac{G}{A}=B$$

From the expression given above, if for the regular matrix F or for the matrix G, are the matrices A and B only one? Therefore, the interesting subject was examined and the ground is prepared.

ON MULTIPLIER OF REGULAR SQUARE MATRICES

Can the factors of every regular square matrix be several? In other words, Are there different D, E, F and B matrices such that

$$\frac{D}{E}=A \Rightarrow D=EA$$
$$\vee$$
$$\frac{F}{B}=A \Rightarrow F=BA.$$

Lemma 1. Let the matrices . B, D, E and F be different matrices belonging to the set $M_n(C)$. For a constant $A \in M_n(C)$ matrix,

$$\frac{F}{B}=\frac{D}{E}=A.$$

Proof. Let the second order square matrices $B=\begin{bmatrix}b_{11} & b_{12}\\ b_{21} & b_{22}\end{bmatrix}$, $D=\begin{bmatrix}d_{11} & d_{12}\\ d_{21} & d_{22}\end{bmatrix}$, $E=\begin{bmatrix}e_{11} & e_{12}\\ e_{21} & e_{22}\end{bmatrix}$ and $F=\begin{bmatrix}f_{11} & f_{12}\\ f_{21} & f_{22}\end{bmatrix}$ be given.

From the equations $\frac{F}{B}=A$ and $\left[I_2\middle|\frac{F}{B}\right]=\left[I_2|A\right]$,

$$\left[\begin{matrix}b_{11} & b_{12}\\ b_{21} & b_{22}\end{matrix}\middle|\begin{matrix}f_{11} & f_{12}\\ f_{21} & f_{22}\end{matrix}\right] \sim$$

$$\sim\left[\begin{matrix}1 & 0\\ 0 & 1\end{matrix}\middle|\begin{matrix}\frac{b_{12}f_{21}-f_{11}b_{22}}{b_{11}b_{22}-b_{12}b_{21}} & \frac{b_{12}f_{22}-f_{12}b_{22}}{b_{11}b_{22}-b_{12}b_{21}}\\ \frac{b_{11}f_{22}-f_{12}b_{21}}{b_{11}b_{22}-b_{12}b_{21}} & \frac{b_{11}f_{22}-f_{12}b_{21}}{b_{11}b_{22}-b_{12}b_{21}}\end{matrix}\right]$$

is obtained. The solutions of the B matrix,

$$b_{11}=\begin{cases}\dfrac{b_{21}f_{11}-cb_{12}b_{21}}{f_{21}-cb_{22}}, & b_{22}\neq 0\wedge f_{21}-cb_{22}\neq 0\\ & \wedge\dfrac{b_{21}f_{11}-cb_{12}b_{21}}{f_{21}-cb_{22}}\neq\dfrac{b_{12}b_{21}}{b_{22}}\\ \dfrac{b_{21}f_{11}-cb_{12}b_{21}}{f_{21}}, & b_{12}\neq 0\wedge b_{21}\neq 0\\ & \wedge f_{21}\neq 0\wedge b_{22}=0\\ ?\setminus\left\{\dfrac{b_{12}b_{21}}{b_{22}}\right\}, & b_{22}\neq 0\wedge f_{21}-cb_{22}=0\\ & \wedge b_{21}f_{11}-cb_{12}b_{21}=0\\ ?, & b_{12}\neq 0\wedge b_{21}\neq 0\wedge f_{21}=0\\ & \wedge b_{21}f_{11}-cb_{12}b_{21}=0\\ \text{no solution}, & \text{otherwise}\end{cases}$$

$$,b_{12}=\begin{cases}\dfrac{b_{21}f_{11}-cb_{12}b_{21}}{f_{21}-cb_{22}}, & b_{21}\neq 0\wedge f_{21}-ab_{21}\neq 0\\ & \wedge\dfrac{b_{22}f_{11}-ab_{11}b_{22}}{f_{21}-ab_{21}}\neq\dfrac{b_{11}b_{22}}{b_{21}}\\ \dfrac{b_{22}f_{11}-ab_{11}b_{22}}{f_{21}}, & b_{11}\neq 0\wedge b_{22}\neq 0\\ & \wedge f_{21}\neq 0\wedge b_{21}=0\\ ?\setminus\left\{\dfrac{b_{12}b_{21}}{b_{22}}\right\}, & b_{12}\neq 0\wedge -b_{21}f_{22}+db_{22}=0\\ & \wedge -f_{12}+db_{12}=0\\ ?, & b_{11}\neq 0\wedge b_{22}\neq 0\wedge b_{12}=0\\ & \wedge f_{21}=0\wedge b_{11}f_{22}-db_{11}b_{22}=0\\ \text{no solution}, & \text{otherwise}\end{cases}$$

$$b_{21}=\begin{cases}\dfrac{b_{22}f_{11}-db_{11}b_{22}}{f_{21}-db_{12}}, & b_{12}\neq 0\wedge -f_{12}+db_{12}\neq 0\\ & \wedge\dfrac{b_{22}f_{11}-db_{11}b_{22}}{f_{12}-db_{12}}\neq\dfrac{b_{11}b_{22}}{b_{12}}\\ \dfrac{b_{11}f_{22}-db_{11}b_{22}}{f_{21}}, & b_{11}\neq 0\wedge b_{22}\neq 0\\ & \wedge f_{12}\neq 0\wedge b_{12}=0\\ ?\setminus\left\{\dfrac{b_{11}b_{22}}{b_{12}}\right\}, & b_{12}\neq 0\wedge -b_{11}f_{22}+db_{11}b_{22}=0\\ & \wedge -f_{12}+db_{12}=0\\ ?, & b_{11}\neq 0\wedge b_{22}\neq 0\wedge b_{12}=0\\ & \wedge f_{12}=0\wedge b_{11}f_{22}-db_{11}b_{22}=0\\ \text{no solution}, & \text{otherwise}\end{cases}$$

$$,b_{22}=\begin{cases}\dfrac{b_{12}f_{22}-bb_{12}b_{21}}{f_{12}-bb_{11}}, & b_{11}\neq 0\wedge -f_{12}+bb_{11}\neq 0\\ & \wedge\dfrac{b_{12}f_{22}-bb_{12}b_{21}}{f_{12}-bb_{11}}\neq\dfrac{b_{12}b_{21}}{b_{11}}\\ \dfrac{b_{12}f_{22}-bb_{12}b_{21}}{f_{12}}, & b_{12}\neq 0\wedge b_{21}\neq 0\\ & \wedge f_{12}\neq 0\wedge b_{11}=0\\ ?\setminus\left\{\dfrac{b_{12}b_{21}}{b_{11}}\right\}, & b_{11}\neq 0\wedge -b_{12}f_{22}+bb_{12}b_{21}=0\\ & \wedge -f_{12}+bb_{11}=0\\ ?, & b_{12}\neq 0\wedge b_{21}\neq 0\wedge b_{11}=0\\ & \wedge f_{12}=0\wedge b_{12}f_{22}-bb_{12}b_{21}=0\\ \text{no solution}, & \text{otherwise}\end{cases}$$

A similar situation is obtained using equations $\dfrac{D}{E}=A$ and $\left[I_2\middle|\dfrac{D}{E}\right]=\left[I_2\middle|A\right]$.

$$\left[\begin{matrix}e_{11} & e_{12}\\ e_{21} & e_{22}\end{matrix}\middle|\begin{matrix}d_{11} & d_{12}\\ d_{21} & d_{22}\end{matrix}\right]\sim$$

$$\sim\begin{bmatrix} 1 & 0 & \dfrac{e_{12}d_{21}-d_{11}e_{22}}{e_{11}e_{22}-e_{12}e_{21}} & \dfrac{e_{12}d_{22}-d_{12}e_{22}}{e_{11}e_{22}-e_{12}e_{21}} \\ 0 & 1 & \dfrac{e_{11}d_{22}-d_{12}e_{21}}{e_{11}e_{22}-e_{12}e_{21}} & \dfrac{e_{11}d_{22}-d_{12}e_{21}}{e_{11}e_{22}-e_{12}e_{21}} \end{bmatrix}$$

$$e_{11}=\begin{cases} \dfrac{e_{21}d_{11}-ce_{12}e_{21}}{d_{21}-ce_{22}}, & e_{22}\neq 0\wedge d_{21}-ce_{22}\neq 0 \\ & \wedge\dfrac{e_{21}d_{11}-ce_{12}e_{21}}{d_{21}-ce_{22}}\neq\dfrac{e_{12}e_{21}}{e_{22}} \\ \dfrac{e_{21}d_{11}-ce_{12}e_{21}}{d_{21}}, & e_{12}\neq 0\wedge e_{21}\neq 0 \\ & \wedge d_{21}\neq 0\wedge e_{22}=0 \\ ℝ\setminus\left\{\dfrac{e_{12}e_{21}}{e_{22}}\right\}, & e_{22}\neq 0\wedge d_{21}-ce_{22}=0 \\ & \wedge e_{21}d_{11}-ce_{12}e_{21}=0 \\ ℝ, & e_{12}\neq 0\wedge e_{21}\neq 0\wedge e_{22}=0 \\ & \wedge d_{21}=0\wedge e_{21}d_{11}-ce_{21}e_{12}=0 \\ \text{no solution}, & \text{otherwise} \end{cases}$$

$$e_{12}=\begin{cases} \dfrac{e_{22}d_{11}-ae_{11}e_{22}}{d_{21}-ae_{21}}, & e_{21}\neq 0\wedge d_{21}-ae_{21}\neq 0 \\ & \wedge\dfrac{e_{22}d_{11}-ae_{11}e_{22}}{d_{21}-ae_{21}}\neq\dfrac{e_{11}e_{22}}{e_{21}} \\ \dfrac{e_{22}d_{11}-ae_{11}e_{22}}{d_{21}}, & e_{11}\neq 0\wedge e_{22}\neq 0 \\ & \wedge d_{21}\neq 0\wedge e_{21}=0 \\ ℝ\setminus\left\{\dfrac{e_{11}e_{22}}{e_{21}}\right\}, & e_{21}\neq 0\wedge d_{21}-ae_{21}=0 \\ & \wedge e_{22}d_{11}-ae_{11}e_{22}=0 \\ ℝ, & e_{11}\neq 0\wedge e_{22}\neq 0\wedge e_{21}=0 \\ & \wedge d_{21}=0\wedge e_{22}d_{11}-ae_{21}e_{22}=0 \\ \text{no solution}, & \text{otherwise} \end{cases}$$

$$e_{21}=\begin{cases} \dfrac{e_{11}d_{22}-de_{11}e_{22}}{d_{21}-de_{12}}, & e_{12}\neq 0\wedge -d_{12}+de_{12}\neq 0 \\ & \wedge\dfrac{e_{11}d_{22}-de_{11}e_{22}}{d_{21}-de_{12}}\neq\dfrac{e_{11}e_{22}}{e_{12}} \\ \dfrac{e_{11}d_{22}-de_{11}e_{22}}{d_{12}}, & e_{11}\neq 0\wedge e_{22}\neq 0 \\ & \wedge d_{12}\neq 0\wedge e_{12}=0 \\ ℝ\setminus\left\{\dfrac{e_{11}e_{22}}{e_{12}}\right\}, & e_{12}\neq 0\wedge -e_{11}d_{22}+de_{11}e_{22}=0 \\ & \wedge -d_{12}+de_{12}=0 \\ ℝ, & e_{11}\neq 0\wedge e_{22}\neq 0\wedge e_{12}=0 \\ & \wedge d_{12}=0\wedge e_{11}d_{22}-de_{11}e_{22}=0 \\ \text{no solution}, & \text{otherwise} \end{cases}$$

$$e_{22}=\begin{cases} \dfrac{e_{12}d_{22}-be_{12}e_{21}}{d_{12}-be_{11}}, & e_{11}\neq 0\wedge -d_{12}+be_{11}\neq 0 \\ & \wedge\dfrac{e_{12}d_{22}-be_{12}e_{21}}{d_{12}-be_{11}}\neq\dfrac{e_{12}e_{21}}{e_{11}} \\ \dfrac{e_{12}d_{22}-be_{12}e_{21}}{d_{12}}, & e_{12}\neq 0\wedge e_{21}\neq 0 \\ & \wedge d_{12}\neq 0\wedge e_{11}=0 \\ ℝ\setminus\left\{\dfrac{e_{12}e_{21}}{e_{11}}\right\}, & e_{11}\neq 0\wedge -e_{12}d_{22}+be_{12}e_{21}=0 \\ & \wedge -d_{12}+be_{11}=0 \\ ℝ, & e_{11}\neq 0\wedge e_{21}\neq 0\wedge e_{11}=0 \\ & \wedge d_{12}=0\wedge e_{12}d_{22}-be_{12}e_{21}=0 \\ \text{no solution}, & \text{otherwise} \end{cases}$$

Example 3. Let $A=\begin{bmatrix}3 & 2\\ 1 & 5\end{bmatrix}$ and $B=\begin{bmatrix}1 & 2\\ 2 & 3\end{bmatrix}$ matrices be given. The matrix $F=\begin{bmatrix}f_{11} & f_{12}\\ f_{21} & f_{22}\end{bmatrix}$ is obtained from equation $\left[I_2\middle|\frac{F}{B}\right]=\left[I_2\middle|A\right]$. Thus,

$$F=\begin{bmatrix}5 & 12\\ 9 & 19\end{bmatrix}\Rightarrow BA=F\ .$$

Moreover, from matrices $A=\begin{bmatrix}3 & 2\\ 1 & 5\end{bmatrix}$, $E=\begin{bmatrix}3 & 1\\ 4 & 2\end{bmatrix}$ and $\frac{D}{E}=A$, $\left[I_2\middle|\frac{D}{E}\right]=\left[I_2\middle|A\right]$,

$$D=\begin{bmatrix}d_{11} & d_{12}\\ d_{21} & d_{22}\end{bmatrix}=\begin{bmatrix}10 & 11\\ 14 & 18\end{bmatrix}$$

$$EA=\begin{bmatrix}3 & 1\\ 4 & 2\end{bmatrix}\begin{bmatrix}3 & 2\\ 1 & 5\end{bmatrix}=\begin{bmatrix}10 & 11\\ 14 & 18\end{bmatrix}.$$

Result. Let an $A\in M_n(C)$ matrix be given. There are at least B, D, E and F different matrices that satisfy the $\frac{F}{B}=\frac{D}{E}=A$ equality.

Example 4. . Let $A=\begin{bmatrix}1 & 2 & 3\\ 3 & 2 & 2\\ 4 & 1 & 1\end{bmatrix}$, $B=\begin{bmatrix}2 & 1 & 3\\ 1 & 1 & 2\\ 4 & 3 & 3\end{bmatrix}$ and $F=\begin{bmatrix}17 & 9 & 11\\ 12 & 6 & 7\\ 25 & 17 & 21\end{bmatrix}$ matrices be given.

$$BA=\begin{bmatrix}1 & 2 & 3\\ 3 & 2 & 2\\ 4 & 1 & 1\end{bmatrix}\begin{bmatrix}2 & 1 & 3\\ 1 & 1 & 2\\ 4 & 3 & 3\end{bmatrix}=\begin{bmatrix}17 & 9 & 11\\ 12 & 6 & 7\\ 25 & 17 & 21\end{bmatrix},$$

By a similar process the following is obtained.

$$A=\begin{bmatrix}1 & 2 & 3\\ 3 & 2 & 2\\ 4 & 1 & 1\end{bmatrix},D=\begin{bmatrix}28 & 15 & 16\\ 27 & 16 & 17\\ 20 & 11 & 13\end{bmatrix}E=\begin{bmatrix}1 & 5 & 3\\ 1 & 6 & 2\\ 2 & 2 & 3\end{bmatrix}$$

$$EA=\begin{bmatrix}1 & 2 & 3\\ 3 & 2 & 2\\ 4 & 1 & 1\end{bmatrix}\begin{bmatrix}1 & 5 & 3\\ 1 & 6 & 2\\ 2 & 2 & 3\end{bmatrix}=\begin{bmatrix}28 & 15 & 16\\ 27 & 16 & 17\\ 20 & 11 & 13\end{bmatrix}.$$

RESULTS

i. The result obtained with two regular square matrices, whose matrices are subjected to division, is also obtained with the division of at least two different matrices corresponding to the same matrix.

ii. The factors of a regular matrix are at least two.

DISCUSSION

Information about other properties of multiple matrices corresponding to the same matrix is limited. By discussion, new features are open to exploration. For example, it is known that the numbers 2 and 3 are prime, since $6=(2).(3)$ in real numbers. The existence of such a situation in matrices is the subject of discussion.

CONCLUSION

The multiple factors of each regular matrix and the detection of the existence of equivalent matrices in rational matrices are brought to the literature.

REFERENCES

Rafael Bru,, Maria T. Gassó,, Isabel Giménez, and José A. Scott, (2015). The Hadamard Product of a Nonsingular
General H-Matrix and Its Inverse Transpose Is Diagonally Dominant, Hindawi Publishing Corporation Journal of Applied Mathematics Volume, Article ID 264680, 6 pages.

Keles, H., (2010). The Rational Matrices, New Trends in Nanotechnology and Nonlinear Dynamical Systems**,**
Ankara, paper58**.**

Keleş, H., (2018). ON MATRIX DIVISION AND RATIONAL MATRICES, SOI: 1.1/IM DOI: 10.15863/IM,
International Scientific Journal Intelligent Mathematics, 1(7).

Keleş, H., (2015). Lineer Cebire Giriş-I-, Bordo yayınları, Trabzon, Turkiye.

James A. Mingo and Mihai Popa, (2019). Freeness and The Partial Transposes of Wishart Random Matrices, Canad.
J. Math. Vol. 71 (3), pp. 659–681, http://dx.doi.org/10.4153/CJM-2018-002-2 ©Canadian Mathematical Society.

ON THE RELATIONSHIP BETWEEN TRANSPOSE AND DIVISION

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ABSTRACT

Transpose of an nth order square matrix, in short, is the operation of transforming the rows of the given matrix into columns. Many new approaches that this provides to the science of mathematics are known. Obtaining new features with addition, subtraction and even multiplication operations and the division operation defined in matrices attract attention. This study formed part of the study of this situation. Rather, it İs studied whether the known properties in multiplication are provided for division. The validity of the provided features was discussed under which conditions. These features have been determined. Examples are given for features that do not. Some of the obtained properties bring different solutions to the solution of linear equation systems, which are encountered in the literature and are more used. This led us to examine the relationship between the defined division operation and transpose. It is possible to give new definitions, lemmas and theorems. It was explained that the given definition, lemma, theorem and properties are valid under the studied conditions and will bring new solutions to science, and therefore to humanity, with many additional hypotheses. The article is divided into two parts. In the first part, known features are investigated. In the second part, new approaches to linear systems are discussed.

Keywords: Matrix Division, Operation of Division in Matrices, Matrix Theory, Transpose.

INTRODUCTION

Let F be a field and $M_n(F) = \left\{ [a_{ij}]_n \,\middle|\, a_{ij} \in F, n \in \mathbb{Z}^+ \right\}$. Let A^T denote the transpose of $A \in M_n(F)$.

Let A and B be two regular square matrices of order n. The determinant of the new matrix obtained by writing the ith row of the matrix A on the j th row of the matrix B is called the *co-divisor by row* of the matrix A by the row on the matrix B. It is denoted by $\underset{ij}{AB}$. Their number is n^2. The matrix co-divisor by row is $\left[\left(\underset{ij}{AB} \right)_{ij} \right]$.

Example 1. Let $A = \begin{bmatrix} 1 & 3 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 4 & 7 \end{bmatrix}$ be regular matrices. Matrix of co-divisors by row of matrix A on matrix B is $\left[\left(\underset{ij}{AB} \right)_{ij} \right]$.

$$\underset{11}{AB} = \begin{vmatrix} 1 & 3 \\ 4 & 7 \end{vmatrix} = -5,\ \underset{12}{AB} = \begin{vmatrix} 2 & 1 \\ 1 & 3 \end{vmatrix} = 5.\ \underset{21}{AB} = \begin{vmatrix} 2 & 5 \\ 4 & 7 \end{vmatrix} = -6,\ \underset{22}{AB} = \begin{vmatrix} 2 & 1 \\ 2 & 5 \end{vmatrix} = 8.$$

$$\left[\left(\underset{ij}{AB} \right)_{ij} \right] = \begin{bmatrix} -5 & 5 \\ -6 & 8 \end{bmatrix}.$$

Likewise, the matrix of rows co-dividing matrix B over matrix A is matrix $\left[\left(\underset{ij}{BA} \right)_{ij} \right]$.

$$\underset{11}{BA} = \begin{vmatrix} 2 & 1 \\ 2 & 5 \end{vmatrix} = 8,\ \underset{12}{BA} = \begin{vmatrix} 1 & 3 \\ 2 & 1 \end{vmatrix} = -5.\ \underset{21}{BA} = \begin{vmatrix} 4 & 7 \\ 2 & 5 \end{vmatrix} = 6,\ \underset{22}{BA} = \begin{vmatrix} 1 & 3 \\ 4 & 7 \end{vmatrix} = -5.$$

$$\left[\left(\underset{ij}{BA}\right)_{ij}\right]=\begin{bmatrix}8 & -5\\ 6 & -5\end{bmatrix}.$$

For the two matrices satisfying the above conditions, the matrix division is also given by $\frac{A}{B}:=\frac{1}{|B|}\left[\left({}_{B}^{A}i_{j}\right)_{ji}\right]$ [1,2,3].

ON THE RELATIONSHIP BETWEEN TRANSPOSE AND DIVISION

In the first part of this section, similar properties of the transpose according to the multiplication operation are examined. Secondly, it is investigated whether the transpose provides some of its properties compared to the division operation.

For $A,B\in M_n\left(F\right)$ square regular matrices

$$\left(\frac{A}{B}\right)^T\neq\frac{A^T}{B^T}.$$

Example 2. For matrices $A=\begin{bmatrix}1 & 3\\ 2 & 5\end{bmatrix}$ and $B=\begin{bmatrix}2 & 1\\ 4 & 7\end{bmatrix}$ given in Example 1 above,

$$\left(\frac{A}{B}\right)^T=\begin{bmatrix}\frac{1}{2} & 0\\ \frac{8}{5} & -\frac{1}{5}\end{bmatrix},$$

$$A^T=\begin{bmatrix}1 & 2\\ 3 & 5\end{bmatrix} \text{ and } B^T=\begin{bmatrix}2 & 4\\ 1 & 7\end{bmatrix}$$

$$\frac{A^T}{B^T}=\begin{bmatrix}-\frac{1}{2} & -\frac{3}{5}\\ \frac{1}{2} & \frac{4}{5}\end{bmatrix}.$$

Lemma 1. Let be a regular matrix A. Then,

$$\left(\frac{I_n}{A}\right)^T=\frac{I_n}{A^T}.$$

Proof. Let a regular matrix $A=\begin{bmatrix}a_{11} & a_{12}\\ a_{21} & a_{22}\end{bmatrix}$ be given.

$$\left(\frac{I_2}{A}\right)^T=\begin{bmatrix}\frac{a_{22}}{a_{11}a_{22}-a_{12}a_{21}} & -\frac{a_{21}}{a_{11}a_{22}-a_{12}a_{21}}\\ -\frac{a_{12}}{a_{11}a_{22}-a_{12}a_{21}} & \frac{a_{11}}{a_{11}a_{22}-a_{12}a_{21}}\end{bmatrix}=\frac{I_2}{A^T}.$$

The following lemma is given which simply explains the relationship between the row co-divisors matrix and the transpose.

Lemma 2. Let F be a field, $M_n(F)=\left\{[a_{ij}]_n \middle| a_{ij}\in F, n\in \mathbb{Z}^+\right\}$ and $A,B\in M_n(F)$. Then,

$$\frac{1}{|A|}\left[\left(\underset{ij}{BA}\right)_{ij}\right]=\left(\frac{B^T}{A^T}\right)^T.$$

Proof. The proof of Lemma 1 is given for $n=2$. Let the matrices $A=\begin{bmatrix} a_{11} & a_{12}\\ a_{21} & a_{22}\end{bmatrix}$ and $B=\begin{bmatrix} b_{11} & b_{12}\\ b_{21} & b_{22}\end{bmatrix}$ be given.

$$\left[I_2\middle|\frac{B^T}{A^T}\right]=\left[\begin{array}{cc|cc} 1 & 0 & \dfrac{a_{22}b_{11}-a_{21}b_{12}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{22}b_{21}-a_{21}b_{22}}{a_{11}a_{22}-a_{12}a_{21}}\\ 0 & 1 & \dfrac{a_{11}b_{12}-a_{12}b_{11}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{11}b_{22}-a_{12}b_{21}}{a_{11}a_{22}-a_{12}a_{21}}\end{array}\right]$$

$$\frac{B^T}{A^T}=\begin{bmatrix} \dfrac{a_{22}b_{11}-a_{21}b_{12}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{22}b_{21}-a_{21}b_{22}}{a_{11}a_{22}-a_{12}a_{21}}\\ \dfrac{a_{11}b_{12}-a_{12}b_{11}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{11}b_{22}-a_{12}b_{21}}{a_{11}a_{22}-a_{12}a_{21}}\end{bmatrix}$$

$$\left(\frac{B^T}{A^T}\right)^T=\begin{bmatrix} \dfrac{a_{22}b_{11}-a_{21}b_{12}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{11}b_{12}-a_{12}b_{11}}{a_{11}a_{22}-a_{12}a_{21}}\\ \dfrac{a_{22}b_{21}-a_{21}b_{22}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{11}b_{22}-a_{12}b_{21}}{a_{11}a_{22}-a_{12}a_{21}}\end{bmatrix}=\frac{1}{|A|}\left[\left(\underset{ij}{BA}\right)_{ij}\right].$$

Theorem 1. Let F be a field, $M_n(F)=\left\{[a_{ij}]_n \middle| a_{ij}\in F, n\in \mathbb{Z}^+\right\}$ and $A,B\in M_n(F)$. Then,

$$\frac{A}{B}=\frac{B^T}{A^T}.$$

Proof. The proof of the theorem was obtained from Lemma 2 and [2].

Theorem 2. Let F be a field, $M_n(F)=\left\{[a_{ij}]_n \middle| a_{ij}\in F, n\in \mathbb{Z}^+\right\}$ and $A,B\in M_n(F)$. Then, solution of the linear matrix equation $XA=B$;

$$X=\left(\frac{B^T}{A^T}\right)^T.$$

Proof. . For $A=[a_{ij}]_n$, $X=[x_{ij}]_n$, $B=[B_{ij}]_n$ matrices,
For $n=2$, the proof of the lemma is given.

$$A=\begin{bmatrix} a_{11} & a_{12}\\ a_{21} & a_{22}\end{bmatrix}, X=\begin{bmatrix} x_{11} & x_{12}\\ x_{21} & x_{22}\end{bmatrix}, B=\begin{bmatrix} b_{11} & b_{12}\\ b_{21} & b_{22}\end{bmatrix}$$

$$\left[\begin{array}{cc|cc} a_{11} & a_{21} & b_{11} & b_{21}\\ a_{12} & a_{22} & b_{12} & b_{22}\end{array}\right]\sim\left[\begin{array}{cc|cc} 1 & 0 & \dfrac{a_{22}b_{11}-a_{21}b_{12}}{a_{11}a_{22}-a_{12}a_{21}} & \dfrac{a_{22}b_{21}-a_{22}b_{21}}{a_{11}a_{22}-a_{12}a_{21}}\\ 0 & 1 & -\dfrac{a_{12}b_{11}-a_{11}b_{12}}{a_{11}a_{22}-a_{12}a_{21}} & -\dfrac{a_{12}b_{21}-a_{11}b_{22}}{a_{11}a_{22}-a_{12}a_{21}}\end{array}\right]$$

$$X^T = \begin{bmatrix} \dfrac{a_{22}b_{11} - a_{21}b_{12}}{a_{11}a_{22} - a_{12}a_{21}} & \dfrac{a_{22}b_{21} - a_{22}b_{21}}{a_{11}a_{22} - a_{12}a_{21}} \\ -\dfrac{a_{12}b_{11} - a_{11}b_{12}}{a_{11}a_{22} - a_{12}a_{21}} & -\dfrac{a_{12}b_{21} - a_{11}b_{22}}{a_{11}a_{22} - a_{12}a_{21}} \end{bmatrix}.$$

RESULTS

While the solution of the equation $AX = B$ is always sought in the literature, the solution of the equation $XA = B$ is introduced to the literature from now on.

DISCUSSION

The determination of the relationship between the equations $AX = B$ and $XA = B$ is open to debate.

CONCLUSION

With matrix transformations, further studies can be brought to the literature. Transformations, matrix division, and the trap triple are open to study.

REFERENCES

Rafael Bru,, Maria T. Gassó,, Isabel Giménez, and José A. Scott, (2015). The Hadamard Product of a Nonsingular
General H-Matrix and Its Inverse Transpose Is Diagonally Dominant, Hindawi Publishing Corporation Journal of Applied Mathematics Volume, Article ID 264680, 6 pages.

Keles, H., (2010). The Rational Matrices, New Trends in Nanotechnology and Nonlinear Dynamical Systems**,**
Ankara, paper58**.**

Keleş, H., (2018). ON MATRIX DIVISION AND RATIONAL MATRICES, SOI: 1.1/IM DOI: 10.15863/IM,
International Scientific Journal Intelligent Mathematics, 1(7).

Keleş, H., (2015). Lineer Cebire Giriş-I-, Bordo yayınları, Trabzon, Turkiye.

James A. Mingo and Mihai Popa, (2019). Freeness and The Partial Transposes of Wishart Random Matrices, Canad.
J. Math. Vol. 71 (3), pp. 659–681, http://dx.doi.org/10.4153/CJM-2018-002-2 ©Canadian Mathematical Society.

İSLAM FIKHINA GÖRE NECİS VEYA HARAM MADDE İÇEREN GIDALARIN İSTİHÂLE AÇISINDAN DEĞERLENDİRİLMESİ

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ÖZET

Yapmış olduğumuz bu çalışmamızda, insanoğlunun tükettiği entüstriyel gıdalarda kullanılan İslam Dininin haram ya da şüphe ile baktığı gıdalar ile helal gıdaların birlikte kullanılmasına İslam Hukukunun nasıl bir çerçevede ele alındığı incelenmiştir. İstihale; haram bir maddenin temiz olan bir gıda ile kullanılması sonucu yapı değişimine uğrayarak, helal hale gelip gelmeyeceği durumu ifade eder. Klasik Fıkıh kaynaklarında verilen istihale örnekleri dönemin imkanları ile incelenip değerlendirilmiştir. Günümüzde gıda ve daha birçok endüstriyel alanda jelatin kullanımı yaygındır. Jelatin hayvansal kaynaklı olarak üretilir ve çoğunlukla domuzdan elde edilir. Makalemizde dört mezhebin istihaleye yaklaşımları incelenmiştir. Ayrıca günümüz gelişen şartlar altında Çağdaş alimlerimizin istihaleyi nasıl değerlendirdikleri ve bu konuda en önemli sorun olan jelatinin istihaleye uğrayıp uğramadığı ile ilgili görüşler beyan edilecektir.

Anahtar Kelimeler: İstihale, Jelatin, Gıda Katkı Maddesi.

THE EVALUATION OF FOOD CONTAINING NAJIS OR HARAM MATERIALS ACCORDING TO ISLAMIC FIKH IN TERMS OF ISTIHALAH

ABSTRACT

In this study has been examined how the Islamic Law is handling in the context of the use of halal foods and foods that are considered haram or suspicious by the religion of Islam, which are used in industrial foods consumed by human beings. İstihale; It means whether a haram substance will become halal by changing the structure or after changing the structure as a result of using with a clean food with this new situation that has emerged. The examples of istihal given in classical Fiqh sources were examined and evaluated with the possibilities of the period with some examples. Today, the use of gelatin in food and many other industrial areas is common. Gelatin is produced from animal origin and mostly made from pork. In our article, the approaches of the four Mezhab to istihad examined. In addition, under today's developing conditions, opinions will be expressed about how our contemporary scholars evaluate istihala and whether gelatin, which is the most important problem in this regard, has been scalded.

Keywords: İstihale, Gelatin, Food Additive.

İSTİHALE VE BUNA DAİR FIKHÎ YORUMLAR

Haram ya da necis olan gıda katkı maddelerinin, temiz maddelerle birlikte kullanıldığında haram olan bir maddenin sonucunun belirlenmesinde yani ilk baştaki hükmünün değişip değişmediği hususunda ölçüt kabul edilen istihale konusu işlenip, mezhep imamlarının ve çağdaş fıkıhçılarımızın görüşlerine yer verilecektir.

1. İstihale

İstihale kelimesinin kökü havvele'dir. Havvelenin manası ise "bir şeyin değişmesi, dönüşmesi, kendisinden olmayandan ayrılması, yer değiştirmesi" anlamlarına gelmektedir. İstihale mastar olarak şu anlama gelmektedir, bir şeyin nitelik bakımından geri dönüşü olmayacak bir şekilde değişmesi, "bir

şeyin bir sıfattan başka bir sıfata dönüşmesi", bulunduğu yerden başka bir yere sevk edilmesi, gibi anlamlara gelir.[176]

İstihale kelimesine lugat âlimlerinin verdiği manaya gelince, "yapı ve vasıfların değişmesi, bir şeyin bulunduğu durumdan başka bir duruma dönüşmesi, bilinen halden farklı bir hale geçmesi" gibi manalarda kullanılır. İstihale geçiren bir şey için "müstehil oldu" kelimesiyle eski durumuna geri dönmesinin olanaksız/ imkansız olduğu anlamında kullanılmaktadır.[177]

İstihalenin terim anlamı ise; gıdalarda pis bir şeyin kullanılması haram olan bir şeyin özünün kendisinden başka isim, sıfat ve nitelik açısından tamamıyla başka bir maddeye dönüşmesi manalarına gelmektedir. Bu değişimi "kimyasal değişme ve dönüşme" olarak isimlendirenler de vardır.[178] Bu değişim neticesinde ilk başta necis bir madde temiz olma vasfını kazanırken, haram olan bir ürün de helal vasfını kazanabilir. Şu örnekler verilebilir, şarabın sirkeye dönüşmesi, misk ahusunun kanı miske dönüşünce temiz sayılması gibidir. Aynı şekilde necis bir topak altüst hale getirilmekle, necis bir zeytinyağı da sabun yapılmakla temiz bir hale gelebilmektedir.[179]

Haram ve necis olan bir maddenin özelliklerinin ya da dış görünüşünün değişmesi genel itibariyle istihale olarak kabul edilmemektedir. İstihaleye dönüşen bir maddenin, istihaleden önceki özelliklerinin değişip yeni özelliklerinin daha çok ön planda olması vurgulanır. Bu özelliklerin haricinde olan "ateşte kızartmak, öğütmek, parçalara ayırmak, unu hamur haline getirerek şekil değiştirmek, necis susamdan yağ çıkarmak ve mekan değişikliği" istihale olarak nitelendirilemez.[180]

İstihale, üretim aşamasında, gıdaların helal ve haram olarak nitelendirilmesinde önemli bir kavramdır. Netice olarak istihale, bir maddeye helâl ya da haram hükmünü verebilmemizde sebep olan bir koşulun değişip söz konusu olan maddenin yapısının değişmesidir.[181] İstihalenin temel mantığı, Allah, bir maddenin haram ya da pis olmasını bünyesinde barındırdığı yapısal duruma bağladığı fikridir. Maddenin ayn'ın da meydana gelen dönüşüm, necaset özelliğin de dönüşmesini zorunlu kılmaktadır. Bu sebepten dolayı günümüz bazı bilginlere göre istihale kavramı, bazı gıdalara eklenen ve kaynağı itibariyle haram ya da necis gıda katkı maddelerinin caiz olup olmadıklarının belirlenmesinde önem teşkil etmektedir.[182]

1. 1. İslam Fıkhında İstihale Örnekleri

Fıkıh metinlerinde yer verilen istihale örnekleri herhangi bir müdahale olmadan doğal olaylar çerçevesinde meydana gelen durumlarla ilgilidir.[183]"Geyik kanının misk olması, hamr'ın kendiliğinden ya da herhangi bir araç ile sirkleşmesi, kendiliğinden ölmüş bir hayvan, domuz veya köpeğin tuz gölüne düşüp tuza dönüşmesi, tezeğin yanarak kül olması, pis yağın sabun yapılması, lağım karışan çamurun

[176] Yahya Şenol, *Kur' an ve Sünnet Işığında Helal Gıda,* s. 91.
[177] Abdurrahman Candan, " 'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", *Diyanet Dergisi*, Cilt. 53, Sayı. 1, 4 Mayıs 2017, s. 104.
[178] Şenol, *Kur' an ve Sünnet Işığında Helal Hıda,* s. 92.
[179] Hamdi Döndüren, Kur' an ve Sünnete Göre Helal-Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür), *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam fıkhı Açısından Helal Gıda- Gıdalardaki Katkı Maddeleri- Sempozyumu,* Bursa-2009, s. 67.
[180] Candan, " 'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", s. 105.
[181] Naim Deniz Ayaz, Adem Yıldırım, "Helâl Gıda İle İlgili Temel Kavramlar ve Çalışma Alanları," *Disiplinler Arası Yaklaşımla Helâl Ürün ve Hizmetler 2,* Ankara-2018, Grafiker yayınları, 1. Baskı, s. 23-24.
[182] Talip Türcan (editör), *İslam Hukuku, El Kitabı*, Grafiker Yayınları, 5. Baskı, Ankara-2017, s.775.
[183] Candan, " 'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", s. 105.

kuruyup eserinin kaybolması, necasetin toprağa karışıp zamanla içinde kalıntılarının kaybolması gibi örnekler verilmiştir".[184]

Başka bir kaynakta ise örnekler şu şekilde geçer:

-"Pis suların istihale yoluyla temiz hale gelmesi,

-Hayvan derilerinin tabaklanarak istihaleye uğraması,

-İçkinin istihaleye uğraması,

-Pis yağların istihaleye uğraması,

-Topraklaşma ve tuzlaşma,

-Yakılmak yöntemiyle bazı maddelerin istihaleye uğraması,

-Kanın istihaleye uğraması".[185]

I. Ulusal Helal ve Sağlıklı Gıda Kongresi'nde, Gıda Katkı Maddeleri: Sorunlar ve Çözüm Önerilerinde geçen istihale örnekleri ise;

a) Şarabın içine dökülecek buğday henüz şişmemiş durumda ise, üç defa yıkamakla temiz hale gelir. Ancak her defasında kurutmak gerekir. Bunun sonucunda içkinin tat ve kokusu kalmamışsa buğday temiz sayılır.

b) Un, içki dökülerek hamur haline getirilirse yıkamakla temiz olmaz. Ancak hamurun içine sirke dökülerek karıştırılır ve renk, koku, tat olarak içkinin kalıntısı kalmazsa hamur temizlenmiş sayılır.

c) Bir çorbaya içki dökülse, sonradan üzerine sirke koyulsa, eğer çorba ekşilikte sirke gibi olsa temizlenmiş olur.

d) Domuz veya eşek, tuz gölüne düşmüş ve orada tuz haline gelmiş olsalar, Ebu Hanife (699/ 767) ve imam Muhammed'e (749/805) göre bu tuz temiz sayılır. Ebu Yusuf ise (731/ 798) aksi görüştedir.

e) Misk ahusunun kanı miske dönüşürse temizleniş sayılır.

f) Bir yığın gübre toprak kesilse, tezek yanıp kül olsa, pis bir toprak altüst edilmekle, dinen necis sayılan bir zeytinyağı sabun haline getirilmekle temiz olur.

g) Kuzu veya oğlak eşek sütü, domuz sütü veya pis bir sıvı ya da şarap içerse o kuzunun eti haram değildir. Çünkü o pis sıvı istihaleye uğrar ve yok olur (istihlak).[186]

1. 2. Dört Mezhebe Göre İstihale

Necis bir maddenin istihale sonucunda temiz hale gelmesi ve önceki hükmünün aksine farklı bir hüküm ortaya çıkması, mezhep taraftarlarınca uyuşmazlığa sebep olmuştur.[187]Bu başlık altında dört mezhebe göre istihaleyi ve günümüz fıkıhçılarının tespitleri ele alınacaktır.

[184] Şenol, *Kur' an ve Sünnet Işığında Helal Gıda,* s. 93.
[185] Candan, "'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", s. 107-108-109-110-111-112.
[186] Fatih Gültekin (Editör), Gıda Katkı Maddeleri: Sorunlar ve Çözüm Önerileri, *I. Ulusal Helal ve Sağlıklı Gıda Kongresi*, İstihale Örneklerinin Katkı Maddelerine Yönelik Değerlendirilmesi, Ankara-2011, s. 104.
[187] Şenol, *Kur' an ve Sünnet Işığında Helal Gıda*, s. 94.

1. 2. 1. Hanefi Mezhebi'nde İstihale

Hanefi mezhebi literatüründe, istihale kavramına diğer mezheplere göre daha çok yer verilmiştir.[188] Hanefiler istihale meselesinde mahiyet ve vasıf değişimi üzerinde durmuşlardır. Bu iki farklı değişim Hanefi mezhebine göre temize dönüşümde mihenk taşı olarak görülmüştür. Mahiyet değişimi ile istihale, madde helale dönüştürürken, vasıf değişimiyle beraber böyle bir durumdan bahsedilemez. "Şarabın sirkeye dönüşmesi, tuz gölüne düşen eşeğin tuza dönüşmesi, gübrenin yakılarak küle dönüşmesi" benzeri örneklerde yapı değişikliğinin meydana geldiği ve bu maddelerin temiz vasfını kazandığı kabul edilmektedir.[189] Ancak ekmeğin doğranması, buzun erimesi, odunun kırılması ve şekerin erimesi gibi örnekler vasıf değişimine örnektir bunların mahiyetinde bir değişiklik meydana gelmez. Şarabın sirkeye dönüşmesi örneğinde dayandıkları delil: Hanefi âlimlerine göre hamr sirkeye dönüşünce yeni bir madde olmuş olur. Şarap özelliklerini artık bünyesinde barındırmaz. Peygamberimiz (SAV) şöyle buyurmuştur: "Herhangi bir deri tabakalandığında temiz olur. Hamrın sirkeye dönüşerek helal olması gibi". Yani bozuk bir cevherin iyileştirilmesi örneğindeki gibidir. Hamrın Sirkeye dönüştürme işlemi şarap olma vasfını ortadan kaldırır. Bunun insan müdahalesi ya da kendiliğinden meydana gelmesi sonucu etkilemez.[190]

"Necis bir şıra veya şarap, içine herhangi bir pislik düşüp dağıldıktan sonra sirkeye dönüşmekle, yine pis olan bir süt peynir yapılmakla veya pis bir buğday öğütülmekle, unundan ekmek yapılmakla ya da pis bir susam, yağı çıkarılmakla temiz olmaz. Çünkü bu katılan necis maddelerde bir değişim, istihale söz konusu değildir. Nedeni şu ki, pis sütün yoğurda dönüşmesi örneğinde sütü pis yapan madde fermantasyon geçirmiş olmaz. Bu örneklerde istihale söz konusu değildir".[191]

1. 2. 2. Şafii Mezhebi'nde İstihale

İmam Şafii'ye (ö. 204/ 820) göre kur' an ve sünnette açıkça belirtilenler dışındakiler, pis olan maddeler istihale yoluyla temiz hale gelmiş olmaz. Pislik maddenin 'ayn' ına geçtiği zaman farklı yollarla temiz olamaz. Yalnızca nasta verilen istihale örnekleri bu açıklamanın dışındadır.

Şafii fıkıhçılar, rivayetlerde yer alan dış müdahale olmaksızın sirkeye dönüşen hamrın, kandan dönüşen misk ahusu ve ölü hayvan derisinin genel kaidenin haricinde olduğunu ifade etmişlerdir.[192]

İmam Şafii' ye göre şarabın içine herhangi bir şey katılarak ve onu güneşte bekleterek ya da ateşte kaynatarak sirke yapmak uygun değildir.[193]

Şafii fakihlerine göre, aynı pis olan bir madde istihale yoluyla tahir olamaz. Peygamberimiz (sav) pislik yemeyi adet haline getirmiş olan hayvanların yenmesini ve sütlerini içmeyi yasakladı. Çünkü bu hayvanlar pislik yerler. Eğer istihale yoluyla temiz hale gelmiş olsalardı onu yasaklamazdı.[194]

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[188] Kâşif Hamdi Okur,"İstihale", TDV İslam Ansiklopedisi, https://islamansiklopedisi.org.tr /istihale-fıkıh, Erişim Tarihi, 29.12.2021.
[189] Türcan, *İslam Hukuku El Kitabı*, s. 775.
[190] Döndüren, "Kur' an ve Sünnete Göre Helal-Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür)", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu*, Bursa-2009, s. 68.
[191] Şenol, *Kur' an ve Sünnet Işığında Helal Gıda*, s. 97.
[192] Candan, " 'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", s. 107.
[193] Döndüren, "Kur' an ve Sünnete Göre Helal-Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür*)", VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu*, 1-4 Haziran, Bursa-2009, s. 68.
[194] Salih Şengezer, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", s. 84.

Hamrın içine tuz, soğan, sirke, ekmek gibi maddeler koymakla sirkeye dönüşse de temizlenmiş sayılamaz. Zira içerisindeki pislik hala oradadır. Bununla birlikte içine atılan şeyler pisliğe karıştığı için onlarda pis olmuş olur.

Hz. Peygamberimiz (sav), Ebu Talha'nın birkaç yetime miras kalan hamrın sirkeye dönüştürülüp dönüştürülmeyeceğini sorması üzerine "Hayır, onları dökün" yanıtını vererek şarabın sirkeye dönüştürülmesini yasaklamıştır. Yalnız içkiye, herhangi bir müdahale olmadan kendiliğinden sirkeleşirse o zaman temiz hale gelmiş olur.[195]

1. 2. 3. Maliki Mezhebi'nde İstihale

Maliki mezhebi, Hanefilere yakın bir görüş beyan etmişlerdir. Onlara göre aynı pis olan bir maddenin istihaleye dönüşmesi, ister müdahaleyle isterse kendiliğinden olsun şarabın sirkeye dönüşmesi durumunda temiz hale geleceğini söylemişlerdir. "Zira şeriatın necaset vasfını hakikati üzerine terettüp ettirdiği ayn değişmiştir, böylelikle onun yok olmasıyla hükümde yok olur".[196]

Maliki mezhebinin önde gelen âlimlerinden İbni Rüşd' ün (ö. 520/1198) "el- beyan ve' t-Tahsil" adlı kitabındaki bilgilere göre bu mezhepte pis olan maddelerin istihale yoluyla temiz olmasına çoğunlukta "mekruh" denildiği görülmektedir. "İbn Rüşd bir şeyin sıfatının değişmesiyle hükmün de değişeceğini, dolayısıyla kıyas yoluyla istihale geçiren necis maddenin temiz olacağını düşünmektedir".[197]

Maliki mezhebi fakihlerine göre, şarap taşlaştığında ya da taşlaştırıldığında ayn'ındaki sarhoş edicilik özelliği ortadan kaybolduğu için temiz olmuş olur.[198]

1. 2. 4. Hanbelî Mezhebi'nde İstihale

Hanbelî mezhebi de, Şafiilere yakın bir görüş ifade etmişlerdir. Onlara göre kendiliğinden dönüşen şarap sirkesinin dışında istihalenin temizleme vasıtası kabul edilemeyeceğini beyan etmişlerdir. "Yanıp küle dönüşen necasetler, tuzlaya düşüp tuza dönüşen domuz, necasetlerin duman ve buharları temiz kabul edilemez. Bu meselede şarabın sirkeye dönüşerek, ölü hayvan derisinin tabaklanarak ve pislikle beslenen hayvanların belirli bir süreyle bir yerde tutularak temizlenmesi örneklerine kıyas edilerek necasetlerin istihale yoluyla temizlenebileceği sonucu çıkabilse de mezhebin zahir görüşü, bunların temizlenmeyeceği yönündedir. Ahmed b. Hanbelî'n (ö. 855), içinde domuz eti bulunan bir tandırda pişen ekmeğin yenmesini yasak gördüğü rivayet edilmiştir".[199]

Hanbelî fakihlerinden olan el Buhûtî (ö.1051/1641) şunları söylemiştir: Bir pislik istihale ya da ateşle tahir olmaz. Şöyle ki pis bir ters pistir, pis bir yağdan yapılmış olan sabun pistir, aynı şekilde bir köpek tuz gölüne düşüp tuz olsa veya bir sabun tankına düşse de sabun olsa durum değişmez. "Fakat kendisinden insan yaratılmış alaka ve kendiliğinden sirkeye dönüşmüş olan şarap müstesnadır. Şöyle ki alakanın necaseti alakaya dönüşmesiyle gerçekleşti, bu hali gidince aslına döndü, şarabın pisliği ise sonradan kazandığı sarhoş ediciliği kesindir ki, bu da geriye başka bir necaset kalmaksızın ortadan kalktı, böylece temiz olması gerekti".[200]

Mezhebin önde gelen âlimlerinden olan İbn Teymiye (ö.728/1328), el- Buhuti' den farklı bir görüş beyan etmiştir. İbn Teymiye, istihaleyi kabul eden ve etmeyenlerin dayanaklarını verdikten sonra

[195] Şenol, *Kur' an ve Sünnet Işığında Helal Gıda*, s. 100-101.
[196] Şengezer, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", s. 84.
[197] Şenol, *Kur' an ve Sünnet Işığında Helal Gıda*, s. 97.
[198] Şengezer, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", s. 84.
[199] Şenol, *Kur' an ve Sünnet ışığında helal gıda,* s. 102-103.
[200] Şengezer, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", s. 85.

"kesin doğru olan budur" diyerek istihaleyi, temizlik yani pis bir maddenin istihaleyle temiz olduğunu belirtmiştir.[201]

Sonuç olarak Hanefi mezhebi fakihlerinin çoğu necis maddelerin tümünün istihale yolu ile temiz olacağını savunmaktadırlar. Maliki mezhebi fakihleri de Hanefi fakihleriyle aynı görüşü savunmaktadırlar. Şafii ve Hanbelî âlimlerinin çoğu nasta belirtilenlerin haricinde istihale ile necis maddelerin temiz olamayacağını belirtmişlerdir.

1. 3. Çağdaş Âlimlerin İstihaleye Yaklaşımları

Günümüzde istihale, kaynağı yönüyle helal sayılmayan bazı gıda katkı maddelerinin istihale geçirmek şartıyla, ilaç, kozmetik ve gıda sanayilerinde kullanılıp kullanılmayacağına dair sorunların çözümü için bir çerçeve oluşturur. Çünkü günümüzde bu alanlarda hayvan kaynaklı gıda katkı maddelerinin kullanımı artmıştır. Özellikle yenmesi haram olan domuz etinin haricinde domuz kemiği, derisi ve yağı gibi hayvan kaynaklı gıdalardan üretilen gıda katkı maddeleri çok fazladır. Bilhassa jelatin, tek başına bir sorun oluşturur. Çağdaş bazı âlimler necis olan bazı gıda katkı maddelerin değişim geçirmek yönüyle yapı değişikliğine uğradığını, bundan dolayı bu çeşit gıdaların yenmesinin ya da kullanılmasının caiz olduğuna cevaz verirken, diğer âlimler ise istihalenin meydana gelmediğini bu yüzden de dinen kullanılmasının caiz olmadığını savunmuşlardır.[202]

Arap âlimlerinden olan *Yusuf el- Karadâvî***,** özellikle domuzun istihale yoluyla helal olup olmayacağı hakkında şu görüşü beyan etmiştir:

Karadâvî, Biyokimya uzmanlarının görüşlerini temel alarak, domuz kemiğinden üretilen jelâtinin geçerli bir kimyasal dönüşüm meydana geldiğini ve faydalanılmasının caiz olduğunu savunmuştur. Aynı zamanda diş macunu, sabun gibi domuz katkısı yer alan gıdalarda kimyasal değişim meydana geldiği için bu gıdaları kullanmakta sorun olmadığını beyan etmiştir.

Karadâvî bu çerçevede, kimya uzmanlarının istihale geçirerek kullanılabilecek duruma gelen domuz kaynaklı gıdaların envanterini (döküman) çıkarmak yönüyle bilhassa Avrupa'da ki Müslümanlara yardımcı olmalarını önermektedir.

El-Munazzametü'l İslâmiyye li' l-Ulûmi't-Tıbbiye teşkilatının, domuz kaynaklı gıdalara istihalenin uygulanması ile ilgili maddeler yer almaktadır. Öneri kararlarının sekizinci maddesinde, jelâtinin, temiz olmayan hayvanların deri, kemik ve bağırsaklarının istihale aracılığıyla meydana geldiği için temiz görüleceği ve kullanılıp yenilebileceği beyan edilmektedir.[203]

*Ali el-Karadağı ve Ali Yusuf Muhammedi***'**nin ortak çalışmalarında yer alan bilgiye göre, "…bu necaset, haramlık gibi şer'i vasıfların eşyanın hakikatine ve asıl vasıfların taalluk etmesindendir. Bu hakikatler ve vasıflar değiştiğinde, şer'i vasıflar da değişir. Bu durumda o hakikate münasip olan hüküm verilir. Bundan dolayıdır ki Hanefiler 'meyve suyu temizdir. Şarap olunca necis olur. Sirkeye dönüşünce de temiz olur' derler. Aynı şekilde 'Bir ayn'ın istihaleye uğraması, vasfın (nitelik) istihaleye uğramasını izler'"demektedirler. Jelatin ile ilgili, alanlarında Müslüman uzmanların, kaynağı ne olursa olsun, kemiğin ve derinin nitelik ve yapı bakımından kendisinden başka bir maddeye dönüşerek tam olarak istihalenin gerçekleştiğini, bu nedenden ötürü, zararı tespit edilmedikçe, jelatinin hüküm olarak temiz ve kullanılmasının helal olduğunu ifade etmişlerdir.[204]

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[201] Şenol, *Kur' an ve sünnet ışığında helal gıda,* s. 103.
[202] Türcan, *İslam Hukuku El kitabı*, s. 775.
[203] Kaşif Hamdi Okur, "İslam Hukuku Açısından Helal ve Haram Olan Gıdalar ve Bazı Güncel Meseleler", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu,* 3-4 Haziran, Bursa-2009, s. 55.
[204] Şengezer, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", s. 86.

Hamdi Döndüren; jelâtinle ilgili şöyle bir değerlendirmede bulunmuştur: "Bu katkı maddesi et ve deri sanayisinin bir yan ürünü olarak üretilir. Bu yüzden batı ülkelerinde üretim kaynaklarının başında domuz derisi ve domuz kemikleri gelir. Ayrıca küçük ve büyük baş hayvan artıklarında da elde edilir. Bu yüzden jelâtin ve benzeri gıda katkı maddelerinin İslam'a göre eti yenen hayvansal ürünlerden üretilmesi yoluna gidilmelidir. Günümüzde Müslüman ve Yahudilerin tüketimine sunulmak üzere uygun hayvanlar ve balıktan üretilmiş jelâtinler de bulunur. Bitkisel kaynaktan elde edilmiş jelâtinler yoktur"[205] ifadesini kullanarak jelâtinin laboratuar ortamında incelenmesini ve istihalenin gerçekleşip gerçekleşmediğini tespit edilmesini beyan etmiştir.[206]

Orhan Çeker, istihale hakkında ki görüşlerini şu şekilde beyan etmiştir; "…İstihale de gerçekten kimyasal bir değişimdir, doğrudur, ama fıkıh kitaplarımızın istihaleye bu helale dönüşmüştür, dediği her kimyasal olay istihale değildir. Örnekler veriyorum. Mesela; şarabın sirkeye dönüşmesi kimyasal bir olaydır, doğru. Tezeğin yakılarak kül haline getirilmesi kimyasal bir olaydır. Sütün yoğurt yapılması, peynir yapılması kimyasal bir olaydır. Eşeğin tuz gölüne düşerek tuz haline gelmesi kimyasal bir olaydır. Trigliseritin monogliserit haline getirilmesi kimyasal bir olaydır; ama şarabın sirkeye dönüşmesine, evet diyoruz, helaldir. Tezeğin küle dönüşmesiyle, tezek necis olmaktan temiz hale gelir, doğrudur fakat sütün yoğurt olması, peynir olması kimyasal bir olay olmasına rağmen, helal kılıcı bir istihale değildir. Eşeğin tuz gölüne düşerek tuz haline gelmesi yine temiz, helal hale getirir onu, doğrudur.

O zaman bizim burada, yapacağımız şey şu: Her istihaleye bu helale dönüşmüştür demek yanlış olduğuna göre, hangi istihale ya da hangi kimyasal olay, necisi ya da haramı helale çevirir".[207]

Domuz içinde şunları belirtmektedir; "domuz konusuna özel bir yer ayırmamız gerekir. Helal alternatifi madde varken istihale geçirmiş (kimyasal değişikliğe uğramış) olsa bile domuz mamülü maddeye izin verilmemelidir. Domuz yasağı etiyle sınırlı değildir. Domuz, ayni olarak da necistir. Dolayısıyla her şeyiyle haramdır. Helallik sadece zaruret halinde ve zaruret ölçüsünde olabilir. Ayrıca şunu da belirtelim ki domuz gıda alternatifi olmayan hayvan değildir. Bu çerçevede oluşan bir sektör vardır. Hem Müslümanlar hem batılılar buna yönelik bir takım tedbirler geliştirmeye çalışmaktadır. Bunu desteklemek, bu konuda çaba sarf etmek ve bu yöndeki alternatiflerin oluşturulmasını sağlamak da bizim görevimizdir. Domuz, biz Muhammed ümmetinin imtihanıdır ve işin taabbüdilik (kulluk ve ibadet) yönü vardır. İmtihan konusunda Hz. Salih (a.s) kavminin deve ile Yahudilerin cumartesi yasağı ve iç yağı ile imtihanı ne ise bizim de imtihanımız domuz iledir".[208]

VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısında *Yunus Apaydın* müzakerecilerin değerlendirilmesi oturumunda istihaleyle ilgili şunları beyan etmiştir; "istihaleden, dönüşümden bahsedildi. Öyle bir noktaya gelebiliriz ki, bilim bize 'dönüşüme uğrayan şeyin, artık dönüşümden önceki şey olmadığını' ispatlayabilir ve dönüşümden sonra ona farklı bir ad verilebilir. Biz de bilimin bize sunduğu bu veriye dayanarak, değişime uğrayan bu şeyin, dönüşümünden sonra artık haram değil diyebiliriz".[209] Orhan çeker 'İslam Hukuku Açısından Karışımlarda İstihlak' başlıklı makalesinde, Yunus Apaydın'ın bu sözleri için şöyle bir yorum getirmiştir. İstihale ve istihlak'ı ideal bir çözüm değil

[205] Döndüren, "Kur' an ve Sünnete Göre Helal- Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür)", s. 71.
[206] Döndüren, "Kur' an ve Sünnete Göre Helal- Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür)", s. 73.
[207] Orhan Çeker, "Müzakerecilerin Değerlendirilmesi", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu*), s. 109.
[208] Orhan Çeker, "İstihale", *1. Ulusal Helal ve Sağlıklı Gıda Kongresi*, Gıda Katkı Maddeleri: Sorunlar ve Çözüm Önerileri, Ankara- 2011, s. 21.
[209] Yunus Apaydın, "Müzakerecilerin Değerlendirilmesi", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı maddeleri) Sempozyumu*, s. 114.

ara çözüm olarak görür. Bu gibi çözüm önerilerine siyaset-i şeriyye gereği ihtiyatlı yaklaşılması gerektiğini düşünür, din ve dindarlık siyaseti gereği mesafeli durmak ve bunlara alternatif çözümler üretilmesi gerektiği düşüncesindedir. Yani istihale ve istihlak ideal bir çözüm değil bir ara çözümdür.[210]

Abdülaziz Bayındır ise; Jelâtinle ilgili istihalenin meydana geldiğini kabul etmiştir. Bu konuda şu hadis-i şerif rivayetini vermektedir; "Peygamberimiz öldürülmüş bir koyun görüyor. Bunun derisini niye almadınız diyor. Öldü ya Rasulullah denince; onun yemesi haramdır, diyor." Bu rivayete dayanarak Domuz etini yemek haramdır ancak derisi tabakalanmışsa kullanılabilir ifadelerini kullanmıştır. Ayrıca H. Hüsnü Gündüz' ün jelâtinle ilgili kimyasal değişim gerçekleştiğine dair ifadelerini dayanak alarak, "deride kimyasal değişim oluyor ve yeni bir madde doğuyor" gibi ifadelerle görüşünü beyan etmiştir.[211]

Recep Çiğdem de; "istihale ile ilgili kısaca şunu söyleyeyim: bizim daha önceden gerçekten istihale diye fıkıh kitaplarında gördüğümüz şeylerin gerçekten istihale olmadığını, bir şey tuz gölüne düştüğünde tuz olmadığını, şaraba tuz katıldığında sirkeye dönüşmediğini öğrenmiş olduk. Fakihler o günün şartlarına göre, kendi bilgi ve tecrübelerine göre, öyle değerlendiriyorlardı. En azından o yargılara varıyorlardı. Biz de bu yargılara varırken ister istemez bilim adamlarından faydalanmamız gerekiyor. Örneğin bilim adamı bize, bu istihale sonucu ana özelliklerini kaybetmiş yeni bir madde oluşmuş demişse, biz de ona göre fetvamızı oluşturabileceğiz". Yani hayvan kökenli bir maddeye helal denilebilmesi o maddenin gerçekten kimyasal değişim geçirip geçirmediğine bağlıdır. Bunu da işin uzmanlarına bırakmaktadır.[212]

Halit Çalış; "…İstihalenin helal gıda elde etme yöntemi olarak benimsenmesi halinde, 'insan sağlığı açısından zararlı etkiler meydana getirmemek şartıyla istihaleye tabi tutulan her gıda helaldir' şeklinde bir sonuç ortaya çıkacaktır. Şahsen ben, istihalenin bir yöntem olarak işletilemeyeceği kanaatindeyim. İstihale, karşı karşıya kalınan somut meselede, şayet nesne önceki özelliğini ve mahiyetini yitirmiş, yeni bir hal almışsa, onun mubah olduğunu söylememizi mümkün kılan bir değişim olgusudur".[213]

Naim Deniz Ayaz ile Adem Yıldırım; Türk Gıda Kodeksinin, gıda katkı maddesi yönetmeliğinde katkı maddeleri tanımlarında geçen "gıdanın karakteristik bileşeni olarak kullanılmayan" cümlesi, katkı maddesinin bir gıda içinde kendi özelliklerini göstermemesi gerekir. Bundan dolayı, gıda katkı maddesi tanımında yer alan gıda bileşenlerinin istihale çerçevesinde olması gerekir. Çünkü istihale ve istihlak birbirinden farklı da olsa birbiriyle yakın ilişki içerisindedirler. Dolayısıyla istihale içerisinde yer alan gıdaların hassasiyeti olanlar nezdinde kullanılmasında bir mahzur bulunmamaktadır.[214]

Yahya Şenol bu konuyu doktora çalışmasında ayrıntılı bir şekilde yer verdikten sonra istihale konusunda vardığı sonuç şöyledir: "Hanefi, Maliki, Zahiri, Şia ve Zeydiye mezhebi mensupları gibi biz de bir maddenin istihale sonucu tamamen başka bir maddeye dönüşmesi halinde hükmünün değişeceğini

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[210] Murat Şimşek, "İslam Hukuku Açısından Karışımlarda İstihlak (Yoğaltım)", *Uluslararası 2. Helal ve Sağlıklı Gıda Kongresi*, 7-10 Kasım 2013, Konya, s. 413.

[211] Abdülaziz Bayındır, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri) Sempozyumu*, 2-4 Haziran, 2009-Bursa, s. 126-127.

[212] Recep Çiğdem, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri) Sempozyumu*, s. 129.

[213] Halit Çalış, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri)Sempozyumu*, s. 136.

[214] Ayaz, Yıldırım, "Helâl Gıda İle İlgili Temel Kavramlar Ve Çalışma Alanları", *Disiplinler Arası Yaklaşımla Helâl ürün ve Hizmetler 2*, Ankara-2018, Grafiker Yayınları, 1. Baskı, s. 26.

düşünüyoruz. …Demek ki bir maddenin istihale suretiyle helal iken harama veya haram iken helale dönüşmesi ayetlere ve hadislere göre uygundur. …İstihalenin gerçekleşmesi için necis maddenin element veya kimyasal köklere ayrılması ve açığa çıkan maddelerin öncekinden vasıf olarak tamamen farklı olması gerekir. …İstihale sonucu oluşan yeni maddenin aslının pis olması, hükmünün değişmesine engel değildir. Önemli olan, ilk maddenin pis veya temiz olması değil, eldeki son maddenin niteliğidir. Dolayısıyla son maddenin pis olduğuna dair herhangi bir delil bulunmadıkça kural olarak onun mubah olduğuna hükmedilmelidir.[215]

SONUÇ

Klasik Fıkıh âlimlerimiz istihaleyi tespit metotları söz konusu gıdalarda tat, renk, koku gibi özelliklerin değişmesine bakılarak hüküm beyan etmişlerdir. Günümüz gelişmiş laboratuvar ortamında bahsi geçen gıda katkı maddeleri içerik analizleri yapılarak çıkan sonuca göre değerlendirme yapılabilir.

Netice olarak istihale ile ilgili yapılacak olan çalışmaları fıkıhçılar ile kimyagerler biyokimya laboratuvar ortamında ortak çalışmalar yürütülebilmelidir. Ancak unutulmamalıdır ki domuz menşeli jelatin gibi gıda katkı maddesi istihale ile kimyasal değişime uğrayarak özünü kaybetse dahi bu ideal çözüm olarak görülmemelidir. Çünkü bu şekilde hareket edilirse Allah'ın haram kıldığı domuz üreticiliğinin önü açılmış olacaktır.

İstihale, tek başına helal kılıcı bir yöntem olarak görülmemelidir. Zaruri durumlarda ara çözüm olarak kullanılabilir. Fakat şu da var ki jelatin gibi bir ürünün alternatifleri mevcutken domuzdan üretilen jelatinin istihale ile tahir olduğunu söyleyip tüketilmesinin önünün açılması ayrı bir tartışma konusudur.

KAYNAKÇA:

Apaydın, Yunus, "Müzakerecilerin Değerlendirilmesi", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı Açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu*, Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş, 3-4 Haziran 2009, Bursa, Emin Yayınları.

Ayaz, Naim Deniz, Yıldırım, Adem, "Helâl Gıda ile İlgili Temel Kavramlar ve Çalışma Alanları", *Disiplinler Arası Yaklaşımla Helâl Ürün ve Hizmetler 2*, Editörler: Naim Deniz Ayaz, Adem Yıldırım, Ayten Erol, Fatıma Zeynep Belen, Ankara-2018, Grafiker Yayınları.

Bayındır, Abdülaziz, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri) Sempozyumu*, Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş, 3-4 Haziran 2009, Bursa, Emin Yayınları.

Candan, Abdurrahman, " 'Doğrulanabilirlik' İlkesi Açısından Fıkıh Literatüründeki İstihale Örnekleri ve Güncel Bazı Tespitler", *Diyanet İlmi Dergi*, Cilt: 53, Sayı: 1, ocak-şubat-mart 2017.

Cıbız, Yunus Naci, "İslam Hukukunda İstihlak ve Hükümleri", *Sosyal Bilimler Dergisi*, Editör; Taner Namlı, Sayı: 9, Yıl. 5, Yalova- 2015.

Çalış, Halit, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri) Sempozyumu*,

[215] Şenol, *Kur' an ve sünnet ışığında Helal Gıda,* s. 113- 124.

Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş, 3-4 Haziran 2009, Bursa, Emin Yayınları.

Çeker, Orhan, "Müzakerecilerin Değerlendirilmesi", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu*, Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş, 3-4 Haziran 2009, Bursa, Emin Yayınları.

Çeker, Orhan, "İstihale", Gıda Katkı Maddeleri: Sorunlar ve Çözüm Önerileri, *1. Ulusal Helal ve Sağlıklı Gıda Kongresi,* Editör; Fatih Gültekin, 19-20 Kasım, Ankara-2011.

Çiğdem, Recep, "Konunun Tartışılması", *VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (gıdalardaki katkı maddeleri) Sempozyumu,* Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş 3-4 Haziran 2009, Bursa, Emin Yayınları.

Döndüren, Hamdi, "Gıda Katkı Maddeleri ve İstihlak", *1. Ulusal Helal ve Sağlıklı Gıda Kongresi*, Editör; Fatih Gültekin, 19-20 Kasım, Ankara-2011.

Döndüren, Hamdi, "Kur' an ve Sünnete Göre Helal-Haram Gıdalar ve Kimyasal Değişim (İstihale ve Tegayyür*)", VI. İslam Huku.ku Anabilim Dalı Koordinasyon Toplantısı ve İslam Fıkhı açısından Helal Gıda (Gıdalardaki Katkı Maddeleri) Sempozyumu,* Editörler; Ali kaya, Abdurrahim Kozalı ve M. Salih Kumaş,1-4 Haziran, Bursa-2009.

Gültekin, Fatih (Editör), I. Ulusal Helal ve Sağlıklı Gıda Kongresi, Gıda Katkı Maddeleri: Sorunlar ve Çözüm Önerileri, İstihale Örneklerinin Katkı Maddelerine Yönelik Değerlendirilmesi, Ankara, 2011.

Okur, Kâşif Hamdi, "İstihale", TDV İslam Ansiklopedisi, https://*islamansiklopedisi*.org.tr /istihale-fıkıh, Erişim tarihi; 29.12.2021

Şenol, Yahya, *Kuran ve Sünnet Işığında Helal Gıda,* Süleymaniye Vakfı Yayınları, 2. baskı, 2015-İstanbul.

Şengezer, Salih, "Katkı Maddelerinin Gıdaların ve İlaçların Hükmüne Etkisi", Diyanet İşleri Yüksek Kurulu Yayınlanmamış Uzmanlık Tezi, Ankara, 2015.

Şimşek, Murat, "İslam Hukuku Açısından Karışımlarda İstihlak (Yoğaltım)", *Uluslararası 2. Helal ve Sağlıklı Gıda Kongresi,* 7-10 Kasım, 2013, Konya.

Türcan (editör), Talip, *İslam Hukuku, El Kitabı*, Grafiker Yayınları, 5. Baskı, Ankara-2017.

ALMOST SEMI*ALPHA-TOPOLOGICAL VECTOR SPACES

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ABSTRACT

In 2014, A. Robert and S. Pious Missier intoduced a new class of sets called semi*α-closed sets and semi*α-open sets in topological spaces and studied some basic properties and characteristics of these sets. The purpose of the present paper is to introduce the new class of semi*α-topological vector spaces. We study several basic and fundamental properties of semi*α-topological vector spaces and investigate their relationships with certain existing spaces. Along with other results, we prove that transformation of an open (resp. closed) set in a semi*α-topological vector space is semi*α-open $\left(\text{resp. semi}^*\alpha\text{-closed}\right)$. In addition, some important and useful characterizations of semi*α-topological vector spaces are established. We also introduce the notion of almost semi*α-topological vector spaces and present several general properties of almost semi*α-topological vector spaces.

2010 AMS Subject Classification: **54C08, 54C10, 54C30**

Keywords and Phrases: semi*α-open set, semi*α-closed set, semi*α-topological vector space, almost semi*α-topological vector space

I. INTRODUCTION

Topology is an umbrella term that includes several fields of study including point set topology, algebraic topology, and differential topology. In 1934, Kolmogroff [10] introduced and the notion of topological vector spaces and studied the display between algebraic and topological vector spaces. Afterwards, many researchers and mathematicians have made significant investigations in the field of topological vector spaces. Topological vector spaces are now a prominent and fundamental notion in operator theory. Topological vector spaces are now a prominent and fundaments notion in operator theory, fixed point theory, variational inequalities, vector equilibrium properties, etc. The researchers not only make use of topology vector spaces in other fields to develop new concepts but also stretch and extend this notion every possible way to make this field of study a more convenient and understandable. Ibrahim [6] initiated the study of α–topological vector spaces. Sharma and Ram [18] introduced and studied the $\beta-$topological vector spaces. Introducing new versions of open sets in a topological space which may acquire either weaker or stronger properties is often studied. The first attempt was done by Levine [12], where he introduced the concepts of semi-open set, semi-closed set

and semi-continuity of a function. A subset O of a space X is semi-open if $O \subseteq Cl\left[Int(O)\right]$. Equivalently, O is semi-open if there exists an open set G in X such that $G \subseteq O \subseteq Cl(G)$. A subset F of X is semi-closed if its complement $X-F$ is semi-open in X. The semi-closure of a subset A of X denoted by $sCl(A)$ is defined to be the intersection of all semi-closed sets containing A. A subset A of a space X is called an α-*open* set if $A \subseteq Int\left[Cl\left(Int(A)\right)\right]$. The complement of an α-*open* set is called an α-*closed* set in X. The α-*closure* of a subset A of X denoted by $\alpha Cl(A)$ is defined to be the intersection of all α-*closed* sets containing A. A subset A of a space X is called α-*closed* if and only if $\alpha Cl(A) = A$. In 2014, A. Robert and S. Pious Missier intoduced a new class of sets called semi$^*\alpha$-closed sets and semi$^*\alpha$-open sets in topological spaces and studied some basic properties and characteristics of these sets. The purpose of the present paper is to introduce the new class of semi$^*\alpha$-topological vector spaces. We study several basic and fundamental properties of semi$^*\alpha$-topological vector spaces and investigate their relationships with certain existing spaces. Along with other results, we prove that transformation of an open (resp. closed) set in a semi$^*\alpha$-topological vector space is semi$^*\alpha$-open $\left(\text{resp. semi}^*\alpha\text{-closed}\right)$. In addition, some important and useful characterizations of semi$^*\alpha$-topological vector spaces are established. We also introduce the notion of almost semi$^*\alpha$-topological vector spaces and present several general properties of almost semi$^*\alpha$-topological vector spaces.

2. Basic Properties and Applications of Semi$^*\alpha$-Open Sets

In this section, we shall define the concept of *semi*$^*\alpha$*-closed* and *semi*$^*\alpha$*-open* set and determine their connection to the classical closed sets and open sets. We shall also define and characterize the concepts of *semi*$^*\alpha$*-open* sets.

Definition 2.1. Let (X,τ) be a topological space. Then $A \subseteq X$ is said to be generalized closed $(briefly\ g\text{-}closed)$ if $Cl(A) \subseteq U$ whenever $A \subseteq U$ and U is open in X. A subset A of X is called a generalized open $(briefly\ g\text{-}open)$ set if its complement $A^c = X - A$ is g-*closed* in X.

Definition 2.2. Let (X,τ) be a topological space. Then the generalized closure of A is defined as the intersection of all g-*closed* sets in X containing A and is denoted by $Cl^*(A)$. The generalized interior of A is defined as the union of all g-*open* subsets of A and is denoted by $Int^*(A)$.

Definition 2.3. Let (X,τ) be a topological space. Then $A \subseteq X$ is said to be semi α-*open* $(resp.\ s^*\alpha\text{-}open)$ if there is an α-*open* set U in X such that $U \subseteq A \subseteq Cl(U)$ $\left(resp.\ U \subseteq A \subseteq Cl^*(U)\right)$ or equivalently if $A \subseteq Cl\left[Int\left(Cl\left(Int(A)\right)\right)\right]$

$\left(resp.\ A \subseteq Cl^*\left(\alpha Int\left(A\right)\right)\right)$. The class of all *semi*α-open* sets in $\left(X,\tau\right)$ is denoted by $S^*\alpha\text{-}O\left(X,\tau\right)$.

Theorem 2.4. In any topological space $\left(X,\tau\right)$,

$\left(i\right)$ Every open set is *semi*α-open.*

$\left(ii\right)$ Every *α-open* set is *semi*α-open.*

$\left(iii\right)$ Every *semi*α-open* set is *semi-open* set.

Definition 2.5. The complement of a *semi*α-open* is called *semi*α-closed* $\left(\text{briefly } S^*\alpha\text{-}closed\right)$.The class of all *semi*α-closed* sets in $\left(X,\tau\right)$ is denoted by $S^*\alpha\text{-}C\left(X,\tau\right)$.

Theorem 2.6. Arbitrary intersection of *semi*α-closed* sets in $\left(X,\tau\right)$ is also *semi*α-closed*.

Definition 2.7. Let $\left(X,\tau\right)$ be a topological space and $A \subseteq X$. We define the *semi*α-closure* of A to be the intersection of all $S^*\alpha\text{-}closed$ sets containing A which is denoted by $S^*\alpha\text{-}Cl\left(A\right) = \text{I}\left\{B : A \subseteq B \text{ and } B \in S^*\alpha\text{-}C\left(X,\tau\right)\right\}$. We note that $S^*\alpha\text{-}Cl\left(A\right)$ is the smallest $S^*\alpha\text{-}closed$ set containing A.

Definition 2.5. Let $\left(X,\tau\right)$ be a topological space and $A \subseteq X$. We define the $sem\ i^*\alpha\text{-}interior$ of A to be the union of all $S^*\alpha\text{-}open$ sets contained in A and is denoted by $S^*\alpha\text{-}Int\left(A\right) = \text{U}\left\{B : B \subseteq A \text{ and } B \in S^*\alpha\text{-}O\left(X,\tau\right)\right\}$. A point $x \in X$ is said to be a $S^*\alpha\text{-}interior$ point of A if there exists a $S^*\alpha\text{-}open$ set U such that $x \in U \subseteq A$.

Definition 2.6. Let N be a subset of a topological space $\left(X,\tau\right)$ and let $x \in X$. Then N is called a $S^*\alpha$-neighborhood of x, if there exists a $S^*\alpha$-open set U containing x such that $x \in U \subseteq N$.

Definition 2.7. let A be a subset of a topological space $\left(X,\tau\right)$. A point $x \in A$ is said to be a $S^*\alpha\text{-}limit$ point of A if for each $S^*\alpha\text{-}open$ set U containing x, $U \text{ I } \left(A - \left\{x\right\}\right) \neq \phi$. The set of all $S^*\alpha\text{-}limit$ points of A is called the $S^*\alpha\text{-}derived$ set of A and is denoted by $S^*\alpha\text{-}D\left(A\right)$.

Theorem 2.8. For subsets A, B of a space X, the following statements hold:

$\left(1\right)$ $S^*\alpha\text{-}D\left(A\right) \subseteq D\left(A\right)$, where $D\left(A\right)$ is the derived set of A;

$\left(2\right)$ if $A \subseteq B$, then $S^*\alpha\text{-}D\left(A\right) \subseteq S^*\alpha\text{-}D\left(B\right)$;

$(3)\ [S^*\alpha\text{-}D(A)]\cup[S^*\alpha\text{-}D(B)]=S^*\alpha\text{-}D(A\cup B)$;

$(4)\ S^*\alpha\text{-}D(A\cap B)\subseteq[S^*\alpha\text{-}D(A)]\cap[S^*\alpha\text{-}D(B)]$;

$(5)\ [(S^*\alpha\text{-}D(S^*\alpha\text{-}D(A)))-A]\subseteq S^*\alpha\text{-}D(A)$;

$(6)\ S^*\alpha\text{-}D[A\cup(S^*\alpha\text{-}D(A))]\subseteq[A\cup(S^*\alpha\text{-}D(A))]$.

Proof. (1) It suffices to observe that every open set is a $S^*\alpha$-*open* set.

(2) obvious.

$(3)\ [S^*\alpha\text{-}D(A)]\cup[S^*\alpha\text{-}D(B)]=S^*\alpha\text{-}D(A\cup B)$ is a modification of the standard proof for D, where open sets are replaced by $S^*\alpha$-*open* sets.

$(4)\ S^*\alpha\text{-}D(A\cap B)\subseteq[S^*\alpha\text{-}D(A)]\cap[S^*\alpha\text{-}D(B)]$ follows by (2).

(5) If $x\in[S^*\alpha\text{-}D(S^*\alpha\text{-}D(A))-A]$ and U is a $S^*\alpha$-*open* set containing x, then $U\cap[(S^*\alpha\text{-}D(A))-\{x\}]\neq\phi$. Let $y\in U\cap[(S^*\alpha\text{-}D(A))-\{x\}]$. Then, since $y\in S^*\alpha\text{-}D(A)$ and $y\in U$, so $U\cap[A-\{y\}]\neq\phi$. Let $z\in U\cap[A-\{y\}]$. Then, $z\neq x$ for $z\in A$ and $x\notin A$. Hence, $U\cap[A-\{x\}]\neq\phi$. Therefore, $x\in S^*\alpha\text{-}D(A)$.

(6) Let $x\in S^*\alpha\text{-}D[A\cup(S^*\alpha\text{-}D(A))]$. If $x\in A$, the result is obvious. So, let $x\in[(S^*\alpha\text{-}D(A\cup S^*\alpha\text{-}D(A)))-A]$. Then for $S^*\alpha$-*open* set U containing x, $U\cap[(A\cup(S^*\alpha\text{-}D(A)))-\{x\}]\neq\phi$. Thus, $U\cap[A-\{x\}]\neq\phi$ or $U\cap[(S^*\alpha\text{-}D(A))-\{x\}]\neq\phi$. Now, it follows similarly from (5) that $U\cap[A-\{x\}]\neq\phi$. Hence, $x\in S^*\alpha\text{-}D(A)$. Therefore, in any case, $S^*\alpha\text{-}D[A\cup(S^*\alpha\text{-}D(A))]\subseteq[A\cup(S^*\alpha\text{-}D(A))]$.

Theorem 2.9. For any subset A of a space X, $S^*\alpha\text{-}Cl(A)=A\cup[S^*\alpha\text{-}D(A)]$.

Proof. Since $S^*\alpha\text{-}D(A)\subseteq S^*\alpha\text{-}Cl(A)$, $A\cup[S^*\alpha\text{-}D(A)]\subseteq S^*\alpha\text{-}(A)$. On the other hand, let $x\in S^*\alpha\text{-}(A)$. If $x\in A$, then the proof is complete. If $x\notin A$, each $S^*\alpha$-*open* set U containing x intersects A at a point distinct from x; so $x\in S^*\alpha\text{-}D(A)$. Thus, $S^*\alpha\text{-}Cl(A)\subseteq[A\cup(S^*\alpha\text{-}D(A))]$, which completes the proof.

Corollary 2.10. A subset A of X is $S^*\alpha$-*closed* if and only if it contains the set of all of its $S^*\alpha$-*limit* points.

Theorem 2.11. For subsets A, B of a space X, the following statements are true:

(1) $S^*\alpha\text{-}Int(A)$ is the largest $S^*\alpha$-*open* set contained in A;

(2) A is $S^*\alpha$-*open* if and only if $A = S^*\alpha\text{-}Int(A)$;

(3) $S^*\alpha\text{-}Int\left[S^*\alpha\text{-}Int(A)\right] = S^*\alpha\text{-}Int(A)$;

(4) $S^*\alpha\text{-}Int(A) = \left[A - \left(S^*\alpha\text{-}D(X-A)\right)\right]$;

(5) $\left[X - \left(S^*\alpha\text{-}Int(A)\right)\right] = S^*\alpha\text{-}Cl(X-A)$;

(6) $\left[X - \left(S^*\alpha\text{-}Cl(A)\right)\right] = S^*\alpha\text{-}Int(X-A)$;

(7) $A \subseteq B$, then $S^*\alpha\text{-}Int(A) \subseteq S^*\alpha\text{-}Int(B)$.

(8) $\left[S^*\alpha\text{-}Int(A)\right] \cup \left[S^*\alpha\text{-}Int(B)\right] \subseteq S^*\alpha\text{-}Int(A \cup B)$;

(9) $S^*\alpha\text{-}Int(A \cap B) = \left[S^*\alpha\text{-}Int(A)\right] \cap \left[S^*\alpha\text{-}Int(B)\right]$;

(10) A is $S^*\alpha$-*open* if and only if for every $x \in A$, there exists a basic $S^*\alpha$-*open* open set B containing x such that $B \subseteq A$.

(11) $x \in S^*\alpha\text{-}Int(A)$ if and only if there exists a $S^*\alpha$-*open* set O containing x such that $O \subseteq A$.

Proof. (4) If $x \in \left[A - \left(S^*\alpha\text{-}D(X-A)\right)\right]$, then $x \notin S^*\alpha\text{-}D(X-A)$ and so there exists a $S^*\alpha$-*open* set U containing x such that $U \cap (X-A) = \phi$. Then, $x \in U \subseteq A$ and hence $x \in S^*\alpha\text{-}Int(A)$, that is, $\left[A - \left(S^*\alpha\text{-}D(X-A)\right)\right] \subseteq S^*\alpha\text{-}Int(A)$. On the other hand, if $x \in S^*\alpha\text{-}Int(A)$, then $x \notin S^*\alpha\text{-}D(X-A)$. Since $S^*\alpha\text{-}Int(A)$ is $S^*\alpha$-*open* and $\left[\left(S^*\alpha\text{-}Int(A)\right) \cap (X-A)\right] = \phi$. Hence, $S^*\alpha\text{-}Int(A) = \left[A - \left(S^*\alpha\text{-}D(X-A)\right)\right]$.

(5) $X - \left[S^*\alpha\text{-}Int(A)\right] = X - \left[A - \left(S^*\alpha\text{-}D(X-A)\right)\right] = (X-A) \cup \left[S^*\alpha\text{-}D(X-A)\right] = S^*\alpha\text{-}Cl(X-A)$.

Theorem 2.12. Let (X, τ) be a topological space and $A, B \subseteq X$. Then the following statements are true.

(1) $x \in S^*\alpha\text{-}Cl(A)$ if and only if for every $S^*\alpha$-*open* subset U containing x, $U \cap A \neq \phi$.

(2) $A \subseteq B$ implies that $S^*\alpha\text{-}Cl(A) \subseteq S^*\alpha\text{-}Cl(B)$.

(3) A is $S^*\alpha$-*closed* if and only if $S^*\alpha\text{-}Cl(A) = A$.

(4) $S^*\alpha\text{-}Cl\left[S^*\alpha\text{-}Cl(A)\right] = S^*\alpha\text{-}Cl(A)$.

(5) $\left[S^*\alpha\text{-}Cl(A)\right] \cup \left[S^*\alpha\text{-}Cl(B)\right] = S^*\alpha\text{-}Cl(A \cup B)$.

Definition 2.13. Let (X,τ) be a topological space. Then a point $x \in X$ is called the $\delta-$cluster point of $A \subseteq X$ if $AI\ Int\left[Cl(U)\right] \neq \phi$ for every open set U of X containing x. The set of all cluster points of A is called the $\delta-$cluster points of A, denoted by $\delta Cl(A)$. A subset $A \subseteq X$ is called $\delta-$closed if $A = \delta Cl(A)$.

Definition 2.14. Let (X,τ) be a topological space and $A \subseteq X$. Then A is called $\delta-$open set if its complement $X-A$ is $\delta-$closed in X. The collection of all $\delta-$open sets in a topological space (X,τ) forms a topology τ_δ on X, weaker than τ and the class of all regular open sets in τ forms an open basis for τ_δ.

Definition 2.15. Let X be a vector space over the field K, where $K = ¡$ *or* £ with standard topology. Let τ be a topology on X such that the following conditions are satisfied:

(1). For each $x, y \in X$ and each open set $W \subseteq X$ containing $x+y$, there exist open sets U and V in X containing x and y respectively, such that $U+V \subseteq W$,

(2). For each $\lambda \in$ K, $x \in X$ and each open set $W \subseteq X$ containing λx, there exist open sets U in K containing λ and V in X containing x such that $U.V \subseteq W$.

Then the pair $\left(X_{(K)},\tau\right)$ is called a topological vector space.

3 Properties of Sem i*α-Topological Vector Spaces

Definition 3.1. Let X be a vector space over the field K, where $K = ¡$ *or* £ with standard topology. Let τ be a topology on X such that the following conditions are satisfied:

(1). For each $x, y \in X$ and each open set $W \subseteq X$ containing $x+y$, there exist $S^*\alpha$-open sets U and V in X containing x and y respectively, such that $U+V \subseteq W$,

(2). For each $\lambda \in$ K, $x \in X$ and each open set $W \subseteq X$ containing λx, there exist $S^*\alpha$-open sets U in K containing λ and V in X containing x such that $U.V \subseteq W$. Then the pair $\left(X_{(K)},\tau\right)$ is called a $S^*\alpha$-topogical vector space.

Example 3.2. Let $X = ¡$ be the vector space of real numbers over the field $K = ¡$, where $X = K = ¡$ is endowed with standard topology. Then $\left(X_{(K)},\tau\right)$ is a $S^*\alpha$-topogical vector space.

Obviously. every topological vector space is a $S^*\alpha$-topogical vector space but the converse is not always true. The following is an example of $S^*\alpha$-topogical vector spaces which is not a topological vector space.

Example 3.3. Consider the field $K = ¡$ with standard topology. Let $X = ¡$ be endowed with the topology $\tau = \{\phi, D, ¡\}$, where D denoted the sets the set of irrational numbers. We show that $\left(X_{(¡)}, \tau\right)$ is a $S^*\alpha$-*TVS*. For this purpose, we have to prove the following:

(1) Let $x, y \in X$. If $x + y$ is rational, then the only open set in X containing $x + y$ is $¡$. So, there is nothing to prove.

If $x + y$ is irrational, then for open neighborhood $W = D$ of $x + y$ in X, we have following cases:

Case (i). If both x and y are irrational, we can choose $S^*\alpha$-open sets $U = \{x\}$ and $V = \{y\}$ in X such that $U + V \subseteq W$.

Case (ii). If one of x or y is rational, say y. Then, for the selection of $S^*\alpha$-open sets $U = \{x\}$ and $V = \{p, y\}$ in X, where $p \in D$ such that $p + x \in D$, we have $U + V \subseteq W$.

This proves the first condition of the definition of $S^*\alpha$-topologoical vector space.

(2) Let $\lambda \in R$ and $x \in X$. If λx is rational, then verification is straightforward.

Suppose λx is irrational. Let $W = D$ be an open neighborhood of λx. Then the following cases arise:

Case (i). If λ and x are irrational, then, choose $S^*\alpha$-open sets $U = \left[(\lambda - \varepsilon, \lambda + \varepsilon) \cap Q\right] \cup \{\lambda\}$ in $¡$ and $V = \{x\}$ in X, we have $U.V \subseteq W$.

Case (ii). If λ is rational and x is irrational, then for the selection of $S^*\alpha$-open sets $U = (\lambda - \varepsilon, \lambda + \varepsilon) \cap Q$ in $¡$ and $V = \{x\}$ in X, we have $U.V \subseteq W$.

Case (iii). Finally, suppose λ is irrational and x is rational. Then for the choice of $S^*\alpha$-open sets, take $U = (\lambda - \varepsilon, \lambda + \varepsilon) \cap D$ in $¡$ and $V = \{x, p\}$ in X, where the selection of $p \in D$ is such that pq is irrational for each $q \in U$. Then we obtain $U.V \subseteq W$.

Hence $\left(X_{(¡)}, \tau\right)$ is a $S^*\alpha$-topological vector space.

Theorem 3.4. Let A be any open subset of a $S^*\alpha$-topogical vector space $\left(X_{(K)}, \tau\right)$. Then the following statements are true:

(1). $x + A \in S^*\alpha\text{-}O(X)$ for each $x \in X$,

(2). $\lambda.A \in S^*\alpha\text{-}O(X)$ for each non-zero scalar λ.

Proof. (1). Let $y \in x + A$. Then there exists an $a \in A$ such that $y = x + a$. Hence, $a = (-x) + y \in A$. Since A is open set in X. Thus there exist $S^*\alpha$-open sets $U, V \in S^*\alpha\text{-}O(X)$ containing $-x$ and y, respectively such that $U + V \subseteq A$. Therefore, $-x + V \subseteq A \Rightarrow V \subseteq x + A \Rightarrow y \in S^*\alpha\text{-}Int(x + A) \Rightarrow$

$x+A \subseteq S^*\alpha\text{-}Int(x+A)$. Hence, $x+A = S^*\alpha\text{-}Int(x+A)$. This proves that $x+A$ is a $S^*\alpha$-open set in X.

(2). Let $x \in \lambda A$. Then $x = \lambda a$ for some $a \in A$. Hence $a = \left(\frac{1}{\lambda}\right)x \in A$ and A is an open set in X. So by the definition of $S^*\alpha$-topological vector spaces, there exists $S^*\alpha$-open sets U in K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V \subseteq A$. Whence we find that $x \in V \subseteq \lambda.A$. This shows that $x \in S^*\alpha\text{-}Int(\lambda A)$. Since $x \in \lambda.A$ was arbitrary, it follows that $\lambda.A = S^*\alpha\text{-}Int(\lambda.A)$. Thus, $\lambda.A \in S^*\alpha\text{-}O(X)$.

Corollary 3.5. Let A be any non-empty open subset of a $S^*\alpha$-topological vector space X. Then the following statements are true:

(i). $x+A \subseteq Int\left[Cl\left(Int(x+A)\right)\right]$ for each $x \in X$.

(ii). $\lambda.A \subseteq Int\left[Cl\left(Int(\lambda.A)\right)\right]$ for each non-zero scalar λ.

Corollary 3.6. If U is any non-empty open set and B is any set in an $S^*\alpha$-topological vector space X, then $B+U \in S^*\alpha\text{-}O(X)$.

Theorem 3.7. Let (X,τ) be an $S^*\alpha$-topological vector space and let F be a closed subset of X. Then the following statements are true:

(1). $x+F \in S^*\alpha\text{-}C(X)$ for each $x \in X$,

(2). $\lambda F \in S^*\alpha\text{-}C(X)$ for each non-zero scalar λ.

Proof. (1). Suppose that $y \in S^*\alpha\text{-}Cl(x+F)$. Consider $z = -x+y$ and let W be any open set in X containing z. Then there exists $S^*\alpha$-open sets U and V in X such that $-x \in U$, $y \in V$ and $U+V \subseteq W$. Since $y \in S^*\alpha\text{-}Cl(x+F)$, $(x+F) \cap V \neq \phi$. So, there is $a \in (x+F) \cap V$. Now, $-x+a \in F \cap (U+V) \subseteq F \cap W \Rightarrow F \cap W \neq \phi \Rightarrow z \in Cl(F) = F \Rightarrow y \in x+F$. It follows that $x+F = S^*\alpha\text{-}Cl(x+F)$. This proves that $x+F$ is $S^*\alpha$-closed set in X.

(2). Assume that $x \in S^*\alpha\text{-}Cl(\lambda.F)$ and let W be any open set in X containing $\frac{1}{\lambda}x$. Since X is $S^*\alpha$-topogical vector space, there exist $S^*\alpha$-open sets U in K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V \subseteq W$. Since $x \in S^*\alpha\text{-}Cl(\lambda.F)$, there exists $a \in V \cap (\lambda.F)$. This implies that $\frac{1}{\lambda}a \in \left(\frac{1}{\lambda}\lambda F\right) \cap (U.V) \subseteq F \cap W \Rightarrow F \cap W \neq \phi \Rightarrow \frac{1}{\lambda}x \in Cl(F) = F \Rightarrow x \in \lambda F$. It proves that λF is $S^*\alpha$-closed in X.

Theorem 3.8. Let A and B be any subsets of a $S^*\alpha$-topogical vector space X. Then $[S^*\alpha\text{-}Cl(A)]+[S^*\alpha\text{-}Cl(B)] \subseteq Cl(A+B)$.

Proof. Let $z \in [S^*\alpha\text{-}Cl(A)]+[S^*\alpha\text{-}Cl(B)]$. Then $z = x+y$ for some $x \in S^*\alpha\text{-}Cl(A)$ and $y \in S^*\alpha\text{-}Cl(B)$. Let W be any open neighborhood of z in X. By definition of $S^*\alpha$-topogical vector spaces, there exist $S^*\alpha$-open sets U and V in X containing x and y respectively, such that $U+V \subseteq W$. Since $x \in S^*\alpha\text{-}Cl(A)$ and $y \in S^*\alpha\text{-}Cl(B)$, there are $a \in A \cap U$ and $b \in B \cap V \Rightarrow a+b \in (A+B) \cap (U+V) \subseteq (A+B) \cap W \Rightarrow (A+B) \cap W \neq \phi$ and hence $z \in Cl(A+B)$. It follows that $[S^*\alpha\text{-}Cl(A)]+[S^*\alpha\text{-}Cl(B)] \subseteq Cl(A+B)$.

Theorem 3.9. Let A and B be any subsets of an $S^*\alpha$-topogical vector space X. Then $A+Int(B) \subseteq S^*\alpha\text{-}Int(A+B)$.

Proof. Let $z \in A+Int(B)$ be arbitrary. Then $z = x+y$ for some $x \in A$ and $y \in Int(B)$. This results in $-x+z \in Int(B)$ and consequently by definition of $S^*\alpha$-*TVS*, there exist $S^*\alpha$-open sets U and V in X containing $-x$ and z respectively, such that $U+V \subseteq Int(B)$. In particular, $-x+V \subseteq Int(B) \Rightarrow V \subseteq x+Int(B) \subseteq A+B$. Since $V \in S^*\alpha\text{-}O(X)$, $z \in V \subseteq S^*\alpha\text{-}Int(A+B) \Rightarrow z \in S^*\alpha\text{-}Int(A+B)$. Thus $A+Int(B) \subseteq S^*\alpha\text{-}Int(A+B)$.

4 Characterizations of $S^*\alpha$-Topological Vector Spaces

Theorem 4.1. Let A be any subset of an $S^*\alpha$-topogical vector space X. Then the following assertions are true:

(1). $S^*\alpha\text{-}Cl(x+A) \subseteq x+Cl(A)$ for each $x \in X$.

(2). $x+S^*\alpha\text{-}Cl(A) \subseteq Cl(x+A)$ for each $x \in X$.

(3). $x+Int(A) \subseteq S^*\alpha\text{-}Int(x+A)$ for each $x \in X$.

(4). $Int(x+A) \subseteq x+S^*\alpha\text{-}Int(A)$ for each $x \in X$.

Proof. (1). Let $y \in S^*\alpha\text{-}Cl(x+A)$ and consider $z = -x+y$ in X. Let W be any open set in X containing z. Since X is a $S^*\alpha$-topogical vector space, there exist $S^*\alpha$-open sets U and V in X containing $-x$ and y respectively, such that $U+V \subseteq W$. Since $y \in S^*\alpha\text{-}Cl(x+A)$, there is $a \in (x+A) \cap V$. Then it follows that $-x+a \in (-x+x+A) \cap (U+V) = A \cap (U+V) \subseteq A \cap W$ showing that $A \cap W \neq \phi$ and hence $z \in Cl(A)$. That is, $y \in x+Cl(A)$. Therefore, $S^*\alpha\text{-}Cl(x+A) \subseteq x+Cl(A)$.

(2). Let $z \in x+S^*\alpha\text{-}Cl(A)$. Then $z = x+y$ for some $y \in S^*\alpha\text{-}Cl(A)$. Let W be an open neighborhood of $x+y$ in X. Since X is $S^*\alpha$-topogical vector space, there exist $S^*\alpha$-open sets U and V in X containing x and y respectively, such that $U+V \subseteq W$. Since $y \in S^*\alpha\text{-}Cl(A)$,

$A \cap V \neq \phi$. So, there is $a \in A \cap V$ and thus $x+a \in (x+A) \cap (U+V) \subseteq (x+A) \cap W$. Hence we have $(x+A) \cap W \neq \phi$. Therefore it implies $z \in Cl(x+A)$. This proves the assertion.

(3). Let $y \in x+int(A)$. Then $y = x+a$ for some $a \in Int(A)$ and hence there exist $S^*\alpha$-open sets U and V in X containing $-x$ and y respectively, such that $U+V \subseteq Int(A)$. Now, $-x+V \subseteq U+V \subseteq Int(A) \subseteq A$ implies that $V \subseteq x+A$. Since V is $S^*\alpha$-open set in X containing y, we must have $y \in S^*\alpha\text{-}Int(x+A)$. Thus $x+Int(A) \subseteq S^*\alpha\text{-}Int(x+A)$.

(4). Let $z \in Int(x+A)$. Then $z = x+y$ for some $y \in A$. Since X is $S^*\alpha$-topogical vector space, there exist $S^*\alpha$-open sets U and V in X containing x and y respectively, such that $x+V \subseteq U+V \subseteq Int(x+A) \subseteq x+A$ implies that $x+V \subseteq x+S^*\alpha\text{-}Int(A)$. Since $z = x+y \in x+V$, so $z \in x+S^*\alpha\text{-}Int(A)$. Thus $Int(x+A) \subseteq x+S^*\alpha\text{-}Int(A)$.

Theorem 4.2. Let A be any subset of a $S^*\alpha$-topogical vector space X. Then the following assertions are true:

(a). $S^*\alpha\text{-}Cl(\lambda.A) \subseteq \lambda.Cl(A)$ for each non-zero scalar λ,

(b). $\lambda.[S^*\alpha\text{-}Cl(A)] \subseteq Cl(\lambda.A)$ for each non-zero scalar λ,

(c). $\lambda.Int(A) \subseteq S^*\alpha\text{-}In(\lambda.A)$ for each non-zero scalar λ,

(d). $Int(\lambda.A) \subseteq \lambda.[S^*\alpha\text{-}Int(A)]$ for each non-zero scalar λ,

Proof. (a). Assume that $x \in S^*\alpha\text{-}Cl(\lambda A)$ and let W be any open set in X containing $\frac{1}{\lambda}x$. Since X is a $S^*\alpha$-topogical vector space, there exist $S^*\alpha$-open sets U in K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V \subseteq W$. Since $x \in S^*\alpha\text{-}Cl(\lambda A)$, there exists $a \in V \cap (\lambda A)$. This implies that $\frac{1}{\lambda}a \in \left(\frac{1}{\lambda}\lambda A\right) \cap (U.V) \subseteq A \cap W \Rightarrow A \cap W \neq \phi \Rightarrow \frac{1}{\lambda}x \in Cl(A) \Rightarrow x \in \lambda.Cl(A)$. It proves that $S^*\alpha\text{-}Cl(\lambda.A) \subseteq \lambda.Cl(A)$.

(b). Suppose that $B = \lambda A$ and $\lambda^* = \frac{1}{\lambda}$. Then, by (a), it follows that $S^*\alpha\text{-}Cl(\lambda^* B) \subseteq \lambda^*.Cl(B)$ $\Rightarrow S^*\alpha\text{-}Cl\left(\frac{1}{\lambda}\lambda A\right) \subseteq \frac{1}{\lambda}.Cl(\lambda A) \Rightarrow \lambda.[S^*\alpha\text{-}Cl(A)] \subseteq Cl(\lambda.A)$.

(c). Let $y = \lambda x$ for any $x \in Int(A)$. Then $x = \frac{1}{\lambda}y \in Int(A)$. Since X is $S^*\alpha$-topogical vector space. So there exist $S^*\alpha$-open sets U in K containing $\frac{1}{\lambda}$ and V in X containing y such that $U.V \subseteq Int(A)$. Then it implies that $x = \frac{1}{\lambda}y \in \frac{1}{\lambda}V \subseteq U.V \subseteq Int(A) \subseteq A \Rightarrow y \in V \subseteq \lambda.A$. Since V is $S^*\alpha$-open set. Hence $y \in S^*\alpha\text{-}Int(\lambda A)$. Therefore it follows that $\lambda.Int(A) \subseteq S^*\alpha\text{-}In(\lambda.A)$.

(d). Suppose that $B=\lambda A$ and $\lambda^{*}=\frac{1}{\lambda}$. Then by (c), it follows that $\lambda^{*}\left[Int(B)\right]\subseteq S^{*}\alpha\text{-}Int\left(\lambda^{*}.B\right)$ $\Rightarrow \frac{1}{\lambda}\left[Int(\lambda.A)\right]\subseteq S^{*}\alpha\text{-}Int(A)\Rightarrow Int(\lambda.A)\subseteq\lambda.\left[S^{*}\alpha\text{-}Int(A)\right]$.

Theorem 4.3. Let A be any subset of a $S^{*}\alpha$-topogical vector space X. Then $S^{*}\alpha\text{-}Cl\left[x+Cl(A)\right]\subseteq x+Cl(A)$ for each $x\in X$.

Proof. Assume $y\in S^{*}\alpha\text{-}Cl\left[x+Cl(A)\right]$. Consider $z=-x+y$ and let W be an open neighborhood of $z\in X$. Then there exist $S^{*}\alpha$-open neighborhoods U and V of $-x$ and y in X respectively, such that $U+V\subseteq W$. Then $-x+V\subseteq U+V\subseteq W \Rightarrow V\subseteq x+W$. Since $y\in S^{*}\alpha\text{-}Cl\left[x+Cl(A)\right]$, we have $V\,\mathrm{I}\left[x+Cl(A)\right]\neq\phi$, which implies that $(x+W)\,\mathrm{I}\left[x+Cl(A)\right]\neq\phi$ $\Rightarrow W\,\mathrm{I}\,Cl(A)\neq\phi$. Since W is open, $W\,\mathrm{I}\,A\neq\phi$. Hence $z\in Cl(A)$, that is $-x+y\in Cl(A) \Rightarrow y\in x+Cl(A)$. Consequently, $S^{*}\alpha\text{-}Cl\left[x+Cl(A)\right]\subseteq x+Cl(A)$.

Theorem 4.4. Let A be any subset of a $S^{*}\alpha$-topogical vector space X. Then prove that $x+Int(A)\subseteq S^{*}\alpha\text{-}Int\left[x+S^{*}\alpha\text{-}Int(A)\right]$ for each $x\in X$.

Proof. Let $y\in x+Int(A)$. Then $y=x+a$ for some $a\in Int(A)$. As a result of this, we get $S^{*}\alpha$-open sets U and V in X containing $-x$ and y respectively, such that $U+V\subseteq Int(A)$. Now $-x+V\subseteq U+V\subseteq Int(A)\subseteq S^{*}\alpha\text{-}Int(A) \Rightarrow V\subseteq x+S^{*}\alpha\text{-}Int(A)$. Since V is $S^{*}\alpha$-open set in X such that $y\in V$, we have that $y\in S^{*}\alpha\text{-}Int\left[x+S^{*}\alpha\text{-}Int(A)\right]$ proving that $x+Int(A)\subseteq S^{*}\alpha\text{-}Int\left[x+S^{*}\alpha\text{-}Int(A)\right]$.

Definition 4.5. Let B be a subset of a space X. A collection $\{U_i : i\in I\}$ of $S^{*}\alpha$-open sets of X is called a $S^{*}\alpha$-open cover of B if $B\subseteq\bigcup_{i\in I}U_i$. A topological space X is said to be $S^{*}\alpha$-compact if every $S^{*}\alpha$-open cover of X has a finite subcover. A subset B of X is said to be $S^{*}\alpha$-compact Relative to X if every cover of X by $S^{*}\alpha$-open sets of X has a finite subcover.

Theorem 4.6. Let A be any $S^{*}\alpha$-compact set in a $S^{*}\alpha$-topogical vector space X. Then $x+A$ is compact, for each $x\in X$.

Proof. Let $\Psi=\{U_i : i\in I\}$ be an open cover of $x+A$. Then $A\subseteq\bigcup_{i\in I}(-x+U_i)$. By hypothesis and Theorem 3.2, $A\subseteq\bigcup_{i\in I_0}(-x+U_i)$ for some finite subset I_0 of I. Whence we find that $x+A\subseteq\bigcup_{i\in I_0}U_i$. Hence $x+A$ is compact.

Theorem 4.7. Let X be an $S^{*}\alpha$-topological vector space. Then scalar multiple of any $S^{*}\alpha$-compact subset of X is compact.

Proof. Suppose that A is a $S^{*}\alpha$-compact set in X. Let λ be any scalar. If $\lambda=0$, we are done. Assume that $\lambda\neq 0$. We have to show that $\lambda.A$ is compact. Let $\Psi=\{U_i : i\in I\}$ be any open cover

of $\lambda.A$. Then $\lambda.A \subseteq \mathrm{U}\{U_i : i \in I\} \Rightarrow A \subseteq \frac{1}{\lambda}.\mathrm{U}\{U_i : i \in I\} \Rightarrow A \subseteq \mathrm{U}\left\{\frac{1}{\lambda}U_i : i \in I\right\}$. Since U_i is open in X, so by Theorem 3.2, $\frac{1}{\lambda}U_i$ is $\mathrm{S}^*\alpha$-open set in X. Consequently, $\left\{\frac{1}{\lambda}U_i : i \in I\right\}$ is an $\mathrm{S}^*\alpha$-open cover of A. But A is $\mathrm{S}^*\alpha$-compact, there exists a finite subset I_0 of I such that $A \subseteq \mathrm{U}\left\{\frac{1}{\lambda}U_i : i \in I_0\right\}$. It implies that $\lambda.A \subseteq \mathrm{U}\{U_i : i \in I_0\}$. Hence $\lambda.A$ is $\mathrm{S}^*\alpha$-compact.

Definition 4.8. A mapping $f : X \to Y$ from a topological vector space X to a topological vector space Y is called $\mathrm{S}^*\alpha$-continuous if for each $x \in X$ and each open set V in Y containing $f(x)$, there exists an $\mathrm{S}^*\alpha$-open set U in X containing x such that $f(U) \subseteq V$.

Equivalently a mapping $f : X \to Y$ is said to be $\mathrm{S}^*\alpha$-continuous if the inverse image of every open set of Y is an $\mathrm{S}^*\alpha$-open set in X.

Theorem 4.9. Let X be a $\mathrm{S}^*\alpha$-topogical vector space. Then the following assertions hold:

(1). The translation mapping $T_x : X \to Y$ defined by $T_x(y) = x + y$, for each $y \in X$ (*where x is any fixed element of* X), is $\mathrm{S}^*\alpha$-continuous.

(2). The multiplication mapping $M_\lambda : X \to Y$ defined by $M_\lambda(x) = \lambda x$, for each $x \in X$ ($\lambda \neq 0$ is a fixed scalar), is $\mathrm{S}^*\alpha$-continuous.

Proof. (1). Let $y \in X$ be an arbitrary element. Let W be any open neighborhood of $x + y$ in X. Then by the definition of $\mathrm{S}^*\alpha$-topogical vector space, there exist $U, V \in \mathrm{S}^*\alpha\text{-}O(X)$ such that $x \in U$, $y \in V$ satisfying $U + V \subseteq W$. Consequently, $T_x(V) \subseteq W$. This proves that T_x is $\mathrm{S}^*\alpha$-continuous.

(2). Let $x \in X$ and W be any open neighborhood of $M_\lambda(x)$. By definition of $\mathrm{S}^*\alpha$-topogical vector space, there exist $\mathrm{S}^*\alpha$-open sets U in the field K containing λ and V in X containing x such that $U.V \subseteq W$. This gives $\lambda V \subseteq U.V \subseteq W \Rightarrow M_\lambda(V) \subseteq W$ and hence M_λ is $\mathrm{S}^*\alpha$-continuous.

Theorem 4.10. Let X be an $\mathrm{S}^*\alpha$-topological vector space and Y be a topological vector space over the same field K. Let $f : X \to Y$ be a linear map such that f is continuous at 0. Then f is $\mathrm{S}^*\alpha$-continuous everywhere.

Proof. Let x be any non-zero element of X and V be any open set in Y containing $f(x)$. Since translation of an open set in a topological vector space is open, $V - f(x)$ is open set in Y containing 0. Since f is continuous at 0, there exists an open set U in X containing 0 such that $f(U) \subseteq V - f(x)$. Furthermore, linearity of f implies that $f(x + U) \subseteq V$. By theorem 3.4, $x + U$

is $S^*\alpha$-open and hence f is $S^*\alpha$-continuous at x. By hypothesis, f is $S^*\alpha$-continuous at 0. This reflects that f is $S^*\alpha$-continuous.

Corollary 4.11. Let X be an $S^*\alpha$-topological vector space over the field K. Let $f: X \to K$ be a linear functional which is continuous at 0. Then the set $F = \{x \in X : f(x) = 0\}$ is $S^*\alpha$-closed.

5 Almost Sem i*α-Topological Vector Spaces

In this section, we define almost $S^*\alpha$-topological vector spaces and investigate their relationships with certain other types of spaces. Some general properties of almost $S^*\alpha$-topological vector spaces are also discussed.

Definition 5.1. Let X be a vector space over the field K, where $K = R \text{ or } C$ with standard topology. Let τ be a topology on X such that the following conditions are satisfied:

(1). For each $x, y \in X$ and each regular open set $W \subseteq X$ containing $x+y$, there exist $S^*\alpha$-open sets U and V in X containing x and y respectively such that $U+V \subseteq W$, and

(2). For each $x \in X$ and every $\lambda \in K$ and each regular open set $W \subseteq X$ containing λx, there exist $S^*\alpha$-open sets U in K containing λ and V in X containing x such that $U.V \subseteq W$. Then the pair $(X_{(K)}, \tau)$ is called an almost $S^*\alpha$-topological vector space (written in short, $S^*\alpha$-*TVS*).

Theorem 5.2. Let A be any δ-open subset of an almost $S^*\alpha$-topological vector space X. Then the following statements are true:

(1). $x + A \in S^*\alpha\text{-}O(X)$ for each $x \in X$

(2). $\lambda A \in S^*\alpha\text{-}O(X)$ for each non-zero scalar λ.

Proof. (1). Let $y \in x + A$. Then $y = x + a$ for some $a \in A$. Since A is δ-open set in X, there exists a regular open set W in X such that $a \in W \subseteq A$. This implies that $-x + y \in W$. Since X is an almost $S^*\alpha$-topological vector space, there exist $S^*\alpha$-open sets U and V in X such that $-x \in U$, $y \in V$ and $U + V \subseteq W \Rightarrow U + V \subseteq A \Rightarrow -x + V \subseteq A \Rightarrow V \subseteq x + A$. Since V is $S^*\alpha$-open. Therefore $y \in S^*\alpha\text{-}Int(x + A)$. This shows that $x + A = S^*\alpha\text{-}Int(x + A)$. Hence $x + A \in S^*\alpha\text{-}O(X)$.

(2). Let $x \in \lambda A$ be an arbitrary element. Since A is δ-open set in X, there exists a regular open set W in X such that $\frac{1}{\lambda} x \in W \subseteq A$. By definition of almost $S^*\alpha$-topological vector spaces, there exist $S^*\alpha$-open sets U in the topological field K containing $\frac{1}{\lambda}$ and V in X containing x such that $U.V \subseteq W$. Then $\frac{1}{\lambda} V \subseteq U.V \subseteq W \subseteq A$ implies that $x \in V \subseteq \lambda A$. Since V is $S^*\alpha$-open.

Therefore $x \in S^*\alpha\text{-}Int(\lambda A)$ and hence $\lambda A = S^*\alpha\text{-}Int(\lambda A)$. Thus λA is $S^*\alpha$-open in X; that is, $\lambda A \in S^*\alpha\text{-}O(X)$.

Corollary 5.3. For any δ-open set A in an almost $S^*\alpha$-topological vector space X, the following statements are valid:

(1). $x + A \subseteq Cl\left[Int(X + A)\right]$ for each $x \in X$,

(2). $\lambda A \subseteq Cl\left[Int(\lambda A)\right]$ for each non-zero scalar λ.

Theorem 5.4. Let A be any δ-open set in an almost $S^*\alpha$-topological vector space X. Then $A + B \in S^*\alpha\text{-}O(X)$ for any subset $B \subseteq X$.

Proof. Follows directly from Theorem 5.2.

Theorem 5.5. Let B be any δ-closed closed set in an almost $S^*\alpha$-topological vector space X. Then the following statements are true:

(1). $x + B \in S^*\alpha\text{-}C(X)$ for each $x \in X$,

(2). $\lambda B \in S^*\alpha\text{-}C(X)$ for each non-zero scalar λ.

Proof. (1). We need to show that $x + B = S^*\alpha\text{-}Cl(x + B)$. For, let $y \in S^*\alpha\text{-}Cl(x + B)$ be an arbitrary element. Fix $z = -x + y$. Let W be any δ-open set in X containing z. By definition of δ-open sets, there is a regular open set G in X such that $z \in G \subseteq W$. Then there exist $U, V \in S^*\alpha\text{-}O(X)$ such that $-x \in U$, $y \in V$ and $U + V \subseteq G$. Since $y \in S^*\alpha\text{-}Cl(x + B)$, then by definition, $(x + B) \cap V \neq \phi$. Let $a \in (x + B) \cap V$. Then $-x + a \in B \cap (-x + V) \subseteq B \cap (U + V) \subseteq B \cap G \subseteq B \cap W$. This shows that $B \cap W \neq \phi$. Thus $z = -x + y \in \delta Cl(B)$. Since B is δ-closed set, we have $z = -x + y \in B$. This implies $y \in x + B$. Therefore $x + B = S^*\alpha\text{-}Cl(x + B)$. Hence $x + B \in S^*\alpha\text{-}C(X)$.

(2). We have to prove that $\lambda B = S^*\alpha\text{-}Cl(\lambda B)$. For, let $x \in S^*\alpha\text{-}Cl(\lambda B)$ be arbitrary and let W be any δ-open set in X containing $\lambda^{-1}x$. By definition, there is a regular open set G in X such that $\lambda^{-1}x \in G \subseteq W$. Then there exist $S^*\alpha$-open sets U containing λ^{-1} in topological field K and V containing x in X such that $U.V \subseteq G$. Since $x \in S^*\alpha\text{-}Cl(\lambda B)$, then there is some $a \in (\lambda B) \cap V$. Now $\lambda^{-1}a \in B \cap \left(\lambda^{-1}.V\right) \subseteq B \cap (U.V) \subseteq B \cap G \subseteq B \cap W$. This implies that $B \cap W \neq \phi$. Therefore $\lambda^{-1}x \in \delta Cl(B) = B$. This shows that $x \in \lambda B$. Hence $\lambda B = S^*\alpha\text{-}Cl(\lambda B)$. Thus $\lambda B \in S^*\alpha\text{-}C(X)$.

Theorem 5.6. Let A be a subset of an almost $S^*\alpha$-topological vector space X. Then the following assertions hold:

(1). $x+S^*\alpha\text{-}Cl(A)\subseteq\delta Cl(x+A)$ for each $x\in X$,

(2). $\lambda\left[S^*\alpha\text{-}Cl(A)\right]\subseteq\delta Cl(\lambda A)$ for each non-zero scalar λ.

Proof. (1). Let $z\in x+S^*\alpha\text{-}Cl(A)$. Then $z=x+y$ for some $y\in S^*\alpha\text{-}Cl(A)$. Let W be an open set in X containing z, then $z\in W\subseteq Int\left[Cl(W)\right]$. Since X is an almost $S^*\alpha$-topological vector space, then there exist $U,V\in S^*\alpha\text{-}O(X)$ containing x and y respectively such that $U+V\subseteq Int\left[Cl(W)\right]$. Since $y\in S^*\alpha\text{-}Cl(A)$, then there is some $a\in A\cap V$. As a result, $x+a\in(x+A)\cap(U+V)\subseteq(x+A)\cap Int\left[Cl(W)\right]$. This implies $(x+A)\cap Int\left[Cl(W)\right]\neq\phi$. Thus $z\in\delta Cl(x+A)$. Therefore it follows that $x+S^*\alpha\text{-}Cl(A)\subseteq\delta Cl(x+A)$.

(2). Let $x\in S^*\alpha\text{-}Cl(A)$ and let W be an open set in X containing λx. Then $\lambda x\in W\subseteq Int\left[Cl(W)\right]$, so there exist $S^*\alpha$-open sets U containing λ in topological field K and V containing x in X such that $U.V\subseteq Int\left[Cl(W)\right]$. Since $x\in S^*\alpha\text{-}Cl(A)$, then there is some $b\in A\cap V$. Therefore it follows that $\lambda b\in(\lambda A)\cap(\lambda V)\subseteq(\lambda A)\cap(U.V)\subseteq(\lambda A)\cap Int\left[Cl(W)\right]\Rightarrow(\lambda A)\cap Int\left[Cl(W)\right]\neq\phi$. This implies that $\lambda x\in\delta Cl(\lambda A)$. Consequently, it shows that $\lambda\left[S^*\alpha\text{-}Cl(A)\right]\subseteq\delta Cl(\lambda A)$.

Theorem 5.7. Let A be a subset of an almost $S^*\alpha$-topological vector space X. Then the following statements are true:

(1). $S^*\alpha\text{-}Cl(x+A)\subseteq x+\delta Cl(A)$ for each $x\in X$,

(2). $S^*\alpha\text{-}Cl(\lambda A)\subseteq\lambda\left[\delta Cl(A)\right]$ for each non-zero scalar λ.

Proof. (1). Let $y\in S^*\alpha\text{-}Cl(x+A)$ and let W be an open set in X containing $-x+y$. Since X is an almost $S^*\alpha$-topological vector space and $W\subseteq Int\left[Cl(W)\right]$, there exist $S^*\alpha$-open sets U and V in X such that $-x\in U$, $y\in V$ and $U+V\subseteq Int\left[Cl(W)\right]$. Since $y\in S^*\alpha\text{-}Cl(x+A)$, there is some $a\in(x+A)\cap V$ and hence $-x+a\in A\cap(U+V)\subseteq A\cap Int\left[Cl(W)\right]\Rightarrow A\cap Int\left[Cl(W)\right]\neq\phi\Rightarrow-x+y\in\delta Cl(A)\Rightarrow y\in x+\delta Cl(A)$. Thus $S^*\alpha\text{-}Cl(x+A)\subseteq x+\delta Cl(A)$.

(2). Let $x\in S^*\alpha\text{-}Cl(\lambda A)$ and W be an open set in X containing $\lambda^{-1}x$. So there exist $S^*\alpha$-open sets U in topological field K containing λ^{-1} and V in X containing x such that $U.V\subseteq Int\left[Cl(W)\right]$.

As $x\in S^*\alpha\text{-}Cl(\lambda.A),(\lambda.A)\cap V\neq\phi$. Let $z\in(\lambda A)\cap V$. Then we have $\lambda^{-1}z\in A\cap\left(\lambda^{-1}V\right)\subseteq A\cap(U.V)\subseteq A\cap Int\left[Cl(W)\right]\Rightarrow A\cap Int\left[Cl(W)\right]\neq\varphi$. Therefore $\lambda^{-1}x\in\delta Cl(A)$ and hence $x\in\lambda\left[\delta Cl(A)\right]$. Thus $S^*\alpha\text{-}Cl(\lambda A)\subseteq\lambda\left[\delta Cl(A)\right]$.

Theorem 5.8. Let A be an open set in an almost $S^*\alpha$-topological vector space X. Then the following assertions hold:

(1). $S^*\alpha\text{-}Cl(x+A)\subseteq x+Cl(A)$ for each $x\in X$,

(2). $S^*\alpha\text{-}Cl(\lambda A)\subseteq\lambda\left[Cl(A)\right]$ for each non-zero scalar λ.

Proof. (1). Let $y\in S^*\alpha\text{-}Cl(x+A)$ and let W be an open set in X containing $-x+y$. Since X is an almost $S^*\alpha$-topological vector space and $W\subseteq Int\left[Cl(W)\right]$, there exist $S^*\alpha$-open sets U and V in X such that $-x\in U$, $y\in V$ and $U+V\subseteq Int\left[Cl(W)\right]$. Since $y\in S^*\alpha\text{-}Cl(x+A)$, there is some $a\in(x+A)\cap V$. Now $-x+a\in A\cap(-x+V)\subseteq A\cap(U+V)\subseteq A\cap Int\left[Cl(W)\right]\Rightarrow A\cap Int\left[Cl(W)\right]\neq\phi$ $\Rightarrow A\cap Cl(W)\neq\phi$. Since A is open, $A\cap W\neq\phi$. Therefore it follows that $-x+y\in Cl(A)$; that is, $y\in x+Cl(A)$. Thus it shows that $S^*\alpha\text{-}Cl(x+A)\subseteq x+Cl(A)$.

(2). Let $y\in S^*\alpha\text{-}Cl(\lambda A)$ and W be an open set in X containing $\lambda^{-1}y$. Then there exist $S^*\alpha$-open sets U in topological field K containing λ^{-1} and V in X containing y such that $U.V\subseteq Int\left[Cl(W)\right]$. As $y\in S^*\alpha\text{-}Cl(\lambda A)$, there is some $b\in(\lambda A)\cap V$. Thus we obtain $\lambda^{-1}b\in A\cap\left(\lambda^{-1}V\right)\subseteq A\cap(U.V)\subseteq A\cap Int\left[Cl(W)\right]\Rightarrow A\cap Int\left[Cl(W)\right]\neq\varphi\Rightarrow A\cap Cl(W)\neq\varphi$. Since A is open, so $A\cap W\neq\phi$. Therefore it follows that $\lambda^{-1}y\in Cl(A)\Rightarrow y\in\lambda\left[Cl(A)\right]$. Consequently, we obtain $S^*\alpha\text{-}Cl(\lambda A)\subseteq\lambda\left[Cl(A)\right]$.

Theorem 5.9. Let A and B be subsets of an almost $S^*\alpha$-topological vector space X. Then

$S^*\alpha\text{-}Cl(A)+S^*\alpha\text{-}Cl(B)\subseteq\delta Cl(A+B)$.

Proof. Let $x\in S^*\alpha\text{-}Cl(A)$ and $y\in S^*\alpha\text{-}Cl(B)$. Let W be an open neighborhood of $x+y$ in X. Since $W\subseteq Int\left[Cl(W)\right]$ and $Int\left[Cl(W)\right]$ is regular open, there exist $U,V\in S^*\alpha\text{-}O(X)$ such that $x\in U$, $y\in V$ and $U+V\subseteq Int\left[Cl(W)\right]$. Since $x\in S^*\alpha\text{-}Cl(A)$ and $y\in S^*\alpha\text{-}Cl(B)$, there are $a\in A\cap U$ and $b\in B\cap V$. Then $a+b\in(A+B)\cap(U+V)\subseteq(A+B)\cap Int\left[Cl(W)\right]\Rightarrow$ $(A+B)\cap Int\left[Cl(W)\right]\neq\phi$. Thus $x+y\in\delta Cl(A+B)$; That is, $S^*\alpha\text{-}Cl(A)+S^*\alpha\text{-}Cl(B)\subseteq\delta Cl(A+B)$.

Theorem 5.10. Let A be any subset of an almost $S^*\alpha$-topological vector space X. Then the following assertions are true:

(1). $\delta Int(x+A)\subseteq x+S^*\alpha\text{-}Int(A)$ for each $x\in X$,

(2). $x+\delta Int(A)\subseteq S^*\alpha\text{-}Int(x+A)$ for each $x\in X$,

Proof. (1). Let $y\in\delta Int(x+A)$. We know that $\delta Int(x+A)$ is δ–open. Then for each $y\in\delta Int(x+A)$, there exist a regular open set W in X such that $y\in W\subseteq\delta Int(x+A)$. Since

$y \in \delta Int(x+A) \subseteq (x+A)$, $y = x+a$ for some $a \in A$. Since X is an almost $S^*\alpha$-topological vector space, then there exist $S^*\alpha$-open sets U and V in X containing x and a respectively such that $U+V \subseteq W$. Thus it follows that $x+V \subseteq W \subseteq \delta Int(x+A) \subseteq x+A$. Hence we have $V \subseteq (-x)+x+A = A$. Since V is $S^*\alpha$-open, then $V \subseteq S^*\alpha\text{-}Int(A)$ and therefore $a \in S^*\alpha\text{-}Int(A)$ $\Rightarrow$ $-x+y \in S^*\alpha\text{-}Int(A)$ $\Rightarrow$ $y \in x+S^*\alpha\text{-}Int(A)$. It shows that $\delta Int(x+A) \subseteq x+S^*\alpha\text{-}Int(A)$.

(2). Let $y \in x+\delta Int(A)$. Then there exists a regular open set W in X such that $-x+y \in W \subseteq \delta Int(A) \subseteq A$. By definition of almost $S^*\alpha$-topological vector spaces, there exist $S^*\alpha$-open sets U and V in X containing $-x$ and y respectively, such that $U+V \subseteq W$. Thus $-x+V \subseteq U+V \subseteq W \Rightarrow V \subseteq x+W \subseteq x+A$. Sine V is $S^*\alpha$-open set. Thus, $y \in S^*\alpha\text{-}Int(x+A)$. Hence it follows that $x+\delta Int(A) \subseteq S^*\alpha\text{-}Int(x+A)$.

Theorem 5.11. Let A be a subset of an almost $S^*\alpha$-topological vector space X. Then the following assertions are true:

(1). $\delta Int(\lambda A) \subseteq \lambda\left[S^*\alpha\text{-}Int(A)\right]$, for any nonzero scalar λ.

(2). $\lambda\left[\delta Int(A)\right] \subseteq S^*\alpha\text{-}Int(\lambda A)$, for each nonzero scalar λ.

Proof. (1). Let $y \in \delta Int(\lambda A)$. Then there exists a regular open set W in X such that $y \in W \subseteq \delta Int(\lambda.A)$. Then $y = \lambda a$ for some $a \in A$. By definition of almost $S^*\alpha$-topological vector spaces, there exist $S^*\alpha$-open sets U in the topological field K containing λ and V in X containing a respectively, such that $U.V \subseteq W$. Now $y = \lambda a \in \lambda V \subseteq U.V \subseteq W \subseteq \delta Int(\lambda A) \subseteq \lambda A$ $\Rightarrow$ $a \in V \subseteq A$. Since V is $S^*\alpha$-open set in X. Hence $a \in S^*\alpha\text{-}Int(A)$ $\Rightarrow$ $y = \lambda a \in \lambda\left[S^*\alpha\text{-}Int(A)\right]$. Therefore it shows that $\delta Int(\lambda A) \subseteq \lambda\left[S^*\alpha\text{-}Int(A)\right]$,

(2). Let $y \in \lambda\left[\delta Int(A)\right]$. Then $y = \lambda a$ for some $a \in \delta Int(A)$ and $\delta Int(A)$ is δ-open in X. Thus there exists a regular open set W in X such that $a = \lambda^{-1} y \in W \subseteq \delta Int(A)$. By definition of almost $S^*\alpha$-topological vector spaces, there exist $S^*\alpha$-open sets U in topological field K containing λ^{-1} and V in X containing y respectively such that $U.V \subseteq W$. Now $a = \lambda^{-1} y \in \lambda^{-1} V \subseteq U.V \subseteq W$ $\subseteq \delta Int(A) \subseteq A$ $\Rightarrow$ $y \in V \subseteq \lambda A$. Since V is $S^*\alpha$-open set. It follows that $y \in S^*\alpha\text{-}Int(\lambda A)$. Therefore it shows that $\lambda\left[\delta Int(A)\right] \subseteq S^*\alpha\text{-}Int(\lambda A)$,

Theorem 5.12. Let X be an almost $S^*\alpha$-topological vector space. Then the following assertions are true:

(1). The translation mapping $T_x : X \to X$ defined by $T_x(y) = x+y$, $\forall x, y \in X$, is almost $S^*\alpha$-continuous.

(2). The multiplication mapping $M_\lambda : X \to X$ defined by $M_\lambda(y) = \lambda x, \ \forall x \in X,$ is almost $S^*\alpha$-continuous, where λ is non-zero fixed scalar in K.

Proof. (1). Let $y \in X$ be an arbitrary element. Let W be any regular open set in X containing $T_x(y)$. Then, by definition of almost $S^*\alpha$-topological vector spaces, there exist $S^*\alpha$-open sets U in X containing x and V in X containing y such that $U+V \subseteq W$. This results in $x+V \subseteq W \Rightarrow T_x(V) \subseteq W$. This indicates that T_x is almost $S^*\alpha$-continuous at y and hence T_x is almost $S^*\alpha$-continuous.

(2). Let $x \in X$ and W be any regular open set in X containing x. Then there exist $S^*\alpha$-open sets U in the topological field K containing λ and V in X containing x such that $U.V \subseteq W$. This gives that $\lambda V \subseteq W$. This means that $M_\lambda(V) \subseteq W$ showing that M_λ is almost $S^*\alpha$-continuous at x. Since $x \in X$ was an arbitrary element, it follows that M_λ is almost $S^*\alpha$-continuous.

Theorem 5.13. Let X be an almost $S^*\alpha$-topological vector space. Then the mapping $\psi : X \times X \to X$ defined by $\psi(x,y) = x+y, \ \forall (x,y) \in X \times X,$ is almost $S^*\alpha$-continuous.

Proof. Let $(x,y) \in X \times X$ and let W be any regular open set in X such that $\psi(x,y) = x+y \in W$. Then there exist $S^*\alpha$-open sets U and V in X such that $x \in U, \ y \in V$ and $U+V \subseteq W$. Since $U \times V$ is $S^*\alpha$-open in $X \times X$ (with respect to the product topology) such that $(x,y) \in U \times V$ and $\psi(U \times V) = U+V \subseteq W$. It follows that ψ is almost $S^*\alpha$-continuous at (x,y). Since (x,y) is an arbitrary element, ψ is almost $S^*\alpha$-continuous.

Theorem 5.14. Let X be an almost $S^*\alpha$-topological vector space. Then the mapping $\psi : K \times X \to X$ defined by $\psi(\lambda, x) = \lambda x,$ for each $(\lambda,x) \in K \times X,$ is almost $S^*\alpha$-continuous.

Proof. Let $\lambda \in K, \ x \in X$ be arbitrary. Let W be any regular open set in X containing λx. Then, there exist $S^*\alpha$-open sets U in the topological field K containing λ and V in X containing x such that $U.V \subseteq W$. Since $U \times V$ is $S^*\alpha$-open in $K \times X$ containing (λ,x) and $\psi(U \times V) = U.V \subseteq W$. It follows that ψ is almost $S^*\alpha$-continuous at (λ,x) and hence ψ is almost $S^*\alpha$-continuous.

6 Conclusions

Topological vector spaces are a fundamental notion and play an important role in various advanced branches of mathematics like fixed point theory, operator theory, etc. This paper expounds $S^*\alpha$-topological vector spaces and the almost $S^*\alpha$-topological vector spaces which are basically generalizations of topological vector spaces. This paper makes us familiar with $S^*\alpha$-topological vector spaces as well as with the origin of almost $S^*\alpha$-topological vector spaces and the elementary concepts that are used to develop the theory of almost $S^*\alpha$-topological vector spaces. We investigate several new properties and characterizations of $S^*\alpha$-topological vector spaces and almost $S^*\alpha$-topological vector spaces. We explore some more basic features of

$S^*\alpha$-topological vector spaces and almost $S^*\alpha$-topological vector spaces and interprets their relationships with some well-known existing spaces.

ACKNOWLEDGMENT

The author is highly and gratefully indebted to Prince Mohammad Bin Fahd University, Al Khobar, Saudi Arabia, for providing necessary research facilities during the preparation of this paper.

REFERENCES

[1] Radhi I. M. Ali, Jalal H. Hussein and Suhad K. Hameed, On Semi-Pre Irresolute Topological Vector Spaces, Diyala Journal for Pure Sciences, Vol. 14, No.3, (July 2018), 183 – 191.

[2] C. Dhanapakyam, J. Subashini, K. Indirani, On βwg^{**}set and Continuity in Topological Spaces, IFRSA's International Journal of Computing, Vol. 4, Issue 3, (July 2014), pages 736 – 744. ISSN (Print):2231:2153, ISSN (Online):2230:9039.

[3] Talal Al-Hawary, α-Topological Vector Spaces and α-irresolute gauges, Boletin de Matematicas 24(2), (2017), 149 – 154.

[4] Talal Al-Hawary, "α-Topological Vector Spaces", Hacettepe Journal of Mathematics and Statistics", Vol. 47, No. 5, (2018), pp. 1102 – 1107.

[5] J. Hovarth, "Topological vector spaces and distributions", Addison and Wesley Publishing Comp., 1966, London.

[6] Harrivan Zikri Ibrahim, "α-topological vector spaces", Science Journal of University of Zakho, Vol. 5, No. 1(2017) pp. 107 – 111.

[7] Saeid Jafari, M. Lellis Thivagar and Nirmala Rebecca Paul, Remarks on $\%_\alpha$-Closed Sets, International Mathematical Forum, Vol. 5, 2010, No. 24, Pages 1167 – 1178.

[8] Moiz ud Din Khan, S.Azam and M. S. Bosan, "s – topological vector spaces, Journal of Linear and Topological Algebra, 4(2) (2015), pp. 153 – 158.

[9] M. Khan and M. I. Iqbal, "On irresolute topological vector spaces", Advances in Pure Mathematics, 6 (2016), pp. 105 – 112.

[10] A.N. Kolmogorov, Zur Normierbarkeit eines allgemeinen topologischen linearen R¨aumes, Studia Math. 5 (1934), 29–33; English translation in V.M. Tikhomirov (Ed.), "Selected Works of A.N. Kolmogorov. Vol. I: Mathematics and Mechanics,", Kluwer, Dordrecht– Boston– London, 1991, pp. 183–186.

[11] Raja M. Latif, "ωb-Topological Vector Spaces", WSEAS Transactions on Mathematics, Volume 119, 2020, Art#12, pp. 119 – 132.

[12] Norman Levine, Semi-Open Sets and Semi-Continuity in Topological Spaces, The Americal Mathematical Monthly, Vol. 70, No. 1 (Jan., 1963), pp. 36 – 41.

[13] Thanjavur N. Rajesh, Tiruchirappalli V. Vijayabhathi, "On Strongly Preirresolute Topological Vector Spaces", Mathematica Bohemica, 138 (1), (2013), pp. 37 – 42.

[14] Madu Ram and Shallu Sharma, "Corrigendum to: On Irresolute Topological Vector Spaces", NTMSCI 6, N. 4 (2018), pp. 40 – 44.

[15] Madhu Ram, Shallu Sharma, Sahil Billawria and Amjad Hussain, "On almost s−topological vector spaces", Journal of Advanced Studies in Topology 9(2) (2018), pp. 139 – 146.

[16] A. Robert and S. Pious Missier, Between α-closed Sets and Semi α-closed Sets, International Journal of Modern Engineering Research (IJMER), Vol. 4, Iss. 6, (June 14), pp. 34 – 41.

[17] Shallu Sharma, Madhu Ram and Sahil Billawria, "On Almost Pretotopological Vector Spaces", Open Access Library Journal, Volume 5, (2018), pp. 1 – 10.

[18] S. Sharma, M. Ram, On β−topological vector spaces, Journal of Linear and Topological Algebra, Vol. 08, No. 01, (2019), pp. 63 – 70.

[19] Shallu Sharma, Sahil Billawria, Madhu Ram, Tsering Landol, "On Almost β−topological Vector Spaces", Open Access Library Journal, Volume 6, (2019), pp. 1 – 9.

[20] Stephen Willard and Raja M. Latif, "Semi−Open Sets and Regularly Closed Sets in Compact Metric Spaces", Mathematica Japonica, Vol. 46, No. 1, (1997), pp. 157 – 161.

[21] S. Willard, General Topology, Addison – Wesley Publishing Co., Reading, Mass – London – Don Mills, Ont., 1970.

gp^*-COMPACTNESS IN TOPOLOGICAL SPACES

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ABSTRACT

In 2013, P. Jayakumar, K. Mariappa and S. Sekar introduced and studied properties of a new class of sets in topological spaces namely gp^*-closed sets and gp^*-open sets. We will extend the concept of compactness via gp^*-open sets by introducing gp^*-compactness in topological spaces and will investigate their relationships among them as well as their characterizations by making use of generalized mappings including gp^*-continuous functions and gp^*-irresolute functions. The objective of this paper is to introduce the new concepts called gp^*-compact space, gp^*-Lindelof space, countably gp^*-compact space, almost gp^*-compact space, and mildly gp^*-compact space in topological spaces and investigate fundamental properties and characterizations of these new notions in topological spaces.

2020 AMS Subject Classification. Primary: 54B05, 54D20, 54D30.

Key Words and Phrases: Topological space, gp^*-closed set, gp^*-open set, gp^*-compact space, gp^*-Lindelof space, countably gp^*-compact space, almost gp^*-compact space, mildly gp^*-compact space

1. INTRODUCTION

The concept of supra topology was introduced by A. S. Mashhour et al [20] in the year 1983. They studied s-continuous functions and s^*-continuous functions. In 2008, R. Devi et al [8] introduced the concept of supra α-open sets and supra α-continuous mappings. Jamal M. Mustafa [24] studied supra b-compact and supra b-Lindelof spaces. Vidyarani et al [40] introduced the concept of supra N-compact, countably supra N-compact, supra N-Lindelof and investigated their relationships using the concept of continuity. In 2013, Missier and Rodrigo [22] introduced new class of sets in general topology called α-open (supra α-open) sets. In 2019, Amir A. Mohammed and Beyda S. Abdullah [23] introduced a new class of open sets in a topological space called *ii-open* sets and investigated its fundamental properties and studied some properties and several characterizations of this class including the relation of

ii-*open* sets with many other classes of open sets. They showed that the family of ii-*open* subsets of a topological space (X,τ) forms a topology on X which is finer than τ. In 2013, P. Jayakumar, K. Mariappa and S. Sekar [11] introduced and studied properties of a new class of sets in topological spaces namely gp^*-closed sets and gp^*-open sets. We will extend the concept of compactness via gp^*-open sets by introducing gp^*-compactness in topological spaces and will investigate their relationships among them as well as their characterizations by making use of generalized mappings including gp^*-continuous functions and gp^*-irresolute functions. The objective of this paper is to introduce the new concepts called gp^*-compact space, gp^*-Lindelof space, countably gp^*-compact space, almost gp^*-compact space, and mildly gp^*-compact space in topological spaces and investigate fundamental properties and characterizations of these new notions in topological spaces

2. PRELIMINARIES

The (X,τ) and (Y,σ) $(or\ simply, X\ and\ Y)$ denote topological spaces on which no separation axioms are assumed unless explicitly stated and $f:(X,\tau)\to(Y,\sigma)$ means a mapping f from a topological space X to a topological space Y. A subset A of a topological space (X,τ) is said to be open if $A\in\tau$. A subset A of a topological space X is said to be closed if the set $X-A$ is open. The interior of a subset A of a topological space X is defined as the union of all open sets contained in A. It is denoted by $Int(A)$. The closure of a subset A of a topological space X is defined as the intersection of all closed sets containing A. It is denoted by $Cl(A)$. If U is a set and x is a point in X, then $N(x)$, and U^c denote respectively, the neighborhood system of x, and the complement of U, respectively. We start with recalling the following definitions and results $[11]$, which are necessary for this study in the sequel.

Definition 2.1. A subset A of a topological space (X,τ) is said to be *semi-open* set if $A\subseteq Cl[Int(A)]$ and a semi-closed set if $Int[Cl(A)]\subseteq A$.

Definition 2.2. A subset A of a topological space (X,τ) is said to be an α-open set if $A\subseteq Int[Cl(Int(A))]$ and an α-*closed* set if $Cl[Int(Cl(A))]\subseteq A$.

Definition 2.3. A subset A of a topological space (X,τ) is said to be a generalized closed $(briefly\ g\text{-}closed)$ set if $Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is open in (X,τ).

Definition 2.4. A subset A of a topological space (X,τ) is said to be *pre-open* set if $A\subseteq Int[Cl(A)]$.

Definition 2.5. A subset A of a topological space (X,τ) is said to be a generalized pre-closed $(briefly\ gp\text{-}closed)$ set if $pCl(A)\subseteq U$, whenever $A\subseteq U$ and U is open in (X,τ). The complement of a gp-*closed* set is called a gp-*open* set.

Definition 2.6. A subset A of a topological space (X,τ) is said to be a generalized pre-closed set (briefly pg-closed) set if $pCl(A)\subseteq U$, whenever $A\subseteq U$ and U is pre-open in (X,τ). The complement of a pg-closed set is called a pg-open set.

Definition 2.7. A subset A of a topological space (X,τ) is called a generalized pre-closed set (briefly g*-closed) if $Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is g-open in X. The complement of a g*-closed set is called a g*-open set.

Definition 2.8. A subset A of a topological space (X,τ) is called a generalized pre-closed set (briefly g*p-closed) if $pCl(A)\subseteq U$, whenever $A\subseteq U$ and U is g-open in X. The complement of a g*p-closed set is called a g*p-open set.

Definition 2.9. A subset A of a topological space (X,τ) is called a generalized pre-closed set (briefly strongly g-closed) if $Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is g-open in X. The complement of a strongly g-closed set is called a strongly g-open set.

Definition 2.10. A subset A of a topological space (X,τ) is called a generalized pre-closed set (briefly αg-closed) if $\alpha Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is open in X. The complement of a αg-closed set is called a αg-open set.

Definition 2.11. A subset A of a topological space (X,τ) is called a generalized pre-closed set (briefly g#-closed) if $Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is αg-open in (X,τ). The complement of a g#-closed set is called a g#-open set.

Definition 2.12. A subset A of a topological space (X,τ) is called gp*-closed if $Cl(A)\subseteq U$, whenever $A\subseteq U$ and U is gp-open in X. We denote the family of all gp*-closed sets in X by gp*-C(X,τ).

Definition 2.13. A subset A of a topological space (X,τ) is called gp*-open set if and only if A^c is gp*-closed in X. We denote the family of all gp*-open sets in X by gp*-O(X, τ).

Theorem 2.14. Let (X,τ) be a topological space. Then, every closed set is gp*-*closed* set.

Proof. Let A be a closed set in (X,τ). Let $A \subseteq H$ and H is gp-open. Since A is closed, so $Cl(A) \subseteq H$. Hence A is gp*-*closed*.

The converse of above theorem need not be true as seen from the following example.

Example 2.15. Let $X = \{a,b,c\}$ with topology $\tau = \{X, \phi, \{a\}, \{c\}, \{a,c\}, \{b,c\}\}$. The $\{a,b\}$ is gp*-*closed* set but not a closed set.

Definition 2.16. The union of (respectively intersection) of all gp*-open (respectively gp*-closed) sets, each contained in (respectively containing) a set A of X is called the gp*-interior (respectively gp*-closure) of A, which is denoted by gp*-$Int(A)$ (*respectively* gp*-$Cl(A)$).

Theorem 2.17. The arbitrary intersection of any family of gp*-*closed* sets is a gp*-*closed* set.

Proof. Let $\Gamma = \{A_i : i \in I\}$ be a family of gp*-*closed* sets in a topological space (X,τ). Let U be a gp-*open* set in X such that $A_i \subseteq U$ for each $i \in I$. Then $Cl(A) \subseteq U$ for each $i \in I$. This implies that $Cl(\bigcap_{i\in I} A_i) \subseteq \bigcap_{i\in I} Cl(A_i) \subseteq U$. Thus $Cl(\bigcap_{i\in I} A_i) \subseteq U$. Hence $\cap\Gamma = \bigcap_{i\in I} A_i$ is gp*-*closed*.

Theorem 2.18. The arbitrary union of any family of gp*-*open* sets is a gp*-*open* set.

Proof. The proof is easy by using complements and Theorem 2.17.

Theorem 2.19. Let (X,τ) be a topological space and $A, B \subseteq X$. Then the following assertions are true.

(1) gp*-$Int(A)$ is the union of all gp*-*open* subsets of A.

(2) A is gp*-*open* if and only if gp*-$Int(A) = A$.

(3) $A \subseteq$ gp*-$Cl(A) \subseteq Cl(A)$.

(4) $Int(A) \subseteq$ gp*-$Int(A) \subseteq A$.

(5) If $A \subseteq B$, then gp*-$Cl(A) \subseteq$ gp*-$Cl(B)$.

(6) A is gp^*-*closed* if and only if gp^*-$Cl(A) = A$.

(7) gp^*-$Cl[gp^*$-$Cl(A)] = gp^*$-$Cl(A)$.

(8) If $A \subseteq B$, then gp^*-$Int(A) \subseteq gp^*$-$Int(B)$.

(9) gp^*-$Int[gp^*$-$Int(A)] = gp^*$-$Int(A)$.

(10) $X - [gp^*$-$Int(A)] = gp^*$-$Cl(X - A)$.

(11) $X - [gp^*$-$Cl(A)] = gp^*$-$Int(X - A)$.

(12) $x \in gp^*$-$Cl(A)$ if and only if for every gp^*-*open* set U containing x, $U \cap A \neq \phi$.

(13) $\bigcup_{\lambda \in \Lambda} gp^*$-$Cl(U_\lambda) \subseteq gp^*$-$Cl(\bigcup_{\lambda \in \Lambda} U_\lambda)$.

(14) gp^*-$Int(A \cap B) \subseteq [gp^*$-$Int(A)] \cap [gp^*$-$Int(B)]$.

Definition 2.20. A subset A of a topological space (X, τ) is called a gp^*-*neighbourhood* of a point x in X if there exists a gp^*-*open* set U in X such that $x \in U \subseteq A$.

The set of all gp^*-*neighbourhoods* of an element x in X will be denoted by: gp^*-$N_x = gp^*$-$N_x(X) = \{A \subseteq X : A \text{ is a } gp^*\text{-neighbourhood of } x\}$.

Proposition 2.21. A subset A of a topological space (X, τ) is gp^*-*open* if and only if it is a gp^*-*neighbourhood* of each of its points.

Proof. If A is gp^*-*open* in X, then $x \in A \subseteq A$ for each $x \in A$. Thus A is a gp^*-*neighbourhood* of each of its points. Conversely, suppose that A is a gp^*-*neighbourhood* of each of its points. Then for each $x \in A$, there exists a gp^*-*open* set U_x in X such that $x \in U_x \subseteq A$. Hence $\bigcup_{x \in A} U_x \subseteq A$. Since $A \subseteq \bigcup_{x \in A} U_x$, therefore $A = \bigcup_{x \in A} U_x$. Thus A is a gp^*-*open* set in X, since it is a union of gp^*-*open* sets.

Definition 2.22. A mapping $f : (X, \tau) \to (Y, \sigma)$ is called gp^*-*irresolute* at a point $x \in X$ if for all gp^*-*open* subsets V in Y containing $f(x)$, there is a gp^*-*open* subset U of X such that $x \in U$ and $f(U)$ is a subset of V. The function f will be called gp^*-*irresolute* if f is gp^*-*irresolute* at each point $x \in X$.

Theorem 2.23. Let $f : (X, \tau) \to (Y, \sigma)$ be a function. Then the following statements are equivalent.

(1) f is gp*-*irresolute.*

(2) For each $x \in X$ and each gp*-*neighbourhood* V of $f(x)$ in Y, there is a gp*-*neighborhood* U of x such that $f(U) \subseteq V$.

(3) The inverse image of every gp*-*closed* subset of Y is a gp*-*closed* subset of X.

(4) The inverse image of every gp*-*open* subset of Y is a gp*-*open* subset of X.

Definition 2.24. A function $f:(X,\tau)\to(Y,\sigma)$ is called gp*-*continuous* if $f^{-1}(V)$ is gp*-*open* set in X for every open set V in Y.

Proposition 2.25. A function $f:(X,\tau)\to(Y,\sigma)$ is called gp*-*continuous* if and only if $f^{-1}(V)$ is gp*-*closed* set in X for every closed set V in Y.

Definition 2.26. A function $f:(X,\tau)\to(Y,\sigma)$ is called *Pre*-gp*-*open* if and only if the image set $f(U)$ is gp*-*open* set in Y for every gp*-*open* set U in X.

Proposition 2.27. A bijection function $f:(X,\tau)\to(Y,\sigma)$ is called gp*-*homeomorphism* if f is *pre*-gp*-*open* and gp*-*irreseolute.*

Definition 2.28. A function $f:(X,\tau)\to(Y,\sigma)$ is called perfectly gp*-*continuous* if the inverse image $f^{-1}(V)$ of every gp*-*open* set V of Y is both open and closed in X.

Definition 2.29. A function $f:(X,\tau)\to(Y,\sigma)$ is called strongly gp*-*continuous* if the inverse image $f^{-1}(V)$ of every gp*-*open* V in Y is open in X.

3. gp*-COMPACT SPACES

Definition 3.1. A collection $\{A_i : i \in I\}$ of gp*-*open* sets in a topological space (X,τ) is called a gp*-*open* cover of a subset B of X if $B \subseteq \mathrm{U}\{A_i : i \in I\}$ holds.

Definition 3.2. A topological space (X,τ) is called gp*-*compact* if every gp*-*open* cover of X has a finite subcover.

Definition 3.3. A subset B of a topological space (X,τ) is said to be gp*-*compact* relative to (X,τ) if, for every collection $\{A_i : i \in I\}$ of gp*-*open* subsets of X such that $B \subseteq \mathrm{U}\{A_i : i \in I\}$ there exists a finite subset I_0 of I such that $B \subseteq \mathrm{U}\{A_i : i \in I_0\}$.

Definition 3.4. A subset B of a topological space (X,τ) is said to be gp*-*compact* if B is gp*-*compact* as a subspace of X.

Definition 3.5. Every gp*-*compact* space is compact.

Proof. Let $\{A_i : i \in I\}$ be an open cover of (X,τ). Since every open set in X is gp*-*open* in X. So $\{A_i : i \in I\}$ is a gp*-*open* cover of (X,τ). Since (X,τ) is gp*-*compact*, gp*-*open* cover $\{A_i : i \in I\}$ of (X,τ) has a finite sub cover say $\{A_i : i = 1,2,3,...,n\}$ for X. Hence (X,τ) is a compact space.

Definition 3.6. Every gp*-*closed* subset of a gp*-*compact* space (X,τ) is gp*-*compact* relative to X.

Proof. Let A be a gp*-*closed* subset of a topological space (X,τ). Then A^c is gp*-*open* in (X,τ). Let $\Gamma = \{A_i : i \in I\}$ be a gp*-*open* cover of A by gp*-*open* subsets of (X,τ). Then $\Gamma^* = \Gamma \cup \{A^c\}$ is a gp*-*open* cover of (X,τ). That is $X = \left(\bigcup_{i\in I} A_i\right) \cup A^c$. By hypothesis, (X,τ) is a gp*-*compact* space and hence Γ^* is reducible to a finite subcover of (X,τ) say $X = \left(\bigcup_{i\in I_0} A_i\right) \cup A^c$ for some finite subset I_0 of I. But A and A^c are disjoint. Hence $A \subseteq \cup\{A_i : i \in I_0\}$. Thus gp*-*open* cover $\Gamma = \{A_i : i \in I\}$ of A contains a finite subcover. Hence A is gp*-*compact* relative to (X,τ).

Theorem 3.7. A gp*-*continuous* image of a gp*-*compact* space is compact.

Proof. Let $f : (X,\tau) \to (Y,\sigma)$ be a gp*-*continuous* mapping from a gp*-*compact* topological space (X,τ) onto a topological space (Y,σ). Let $\Gamma = \{A_i : i \in I\}$ be an open cover of Y. Therefore $f^{-1}(\Gamma) = \{f^{-1}(A_i) : i \in I\}$ is a gp*-*open* cover of X, as f is gp*-*continuous*. Since X is gp*-*compact*, the gp*-*open* cover $f^{-1}(\Gamma) = \{f^{-1}(A_i) : i \in I\}$ of X, has a finite subcover say $\{f^{-1}(A_i) : i = 1,2,3,...,n\}$. Therefore $X = \bigcup_{i=1}^{n} f^{-1}(A_i)$, which implies $Y = f(X) = \bigcup_{i=1}^{n} A_i$. That is $\{A_i : i = 1,2,3,...,n\}$ is a finite subcover of $\Gamma = \{A_i : i \in I\}$. Hence (Y,σ) is compact.

Theorem 3.8. Suppose that a function $f : (X,\tau) \to (Y,\sigma)$ is gp*-*irresolute* and a subset S of X is gp*-*compact* relative to (X,τ), then the image $f(S)$ is gp*-*compact* relative to (Y,σ).

Proof. Let $\Gamma=\{A_i : i\in I\}$ be a collection of gp*-*open* subsets of (Y,σ), such that $f(S)\subseteq \mathbf{U}\{A_i : i\in I\}$. Since f is gp*-*irresolute.* So $S\subseteq \mathrm{U}\{f^{-1}(A_i) : i\in I\}$, where $\{f^{-1}(A_i) : i\in I\}\subseteq$ gp*-$O(X,\tau)$. Since S is gp*-*compact* relative to (X,τ), there exists a finite sub collection $\{f^{-1}(A_1), f^{-1}(A_2),\ldots, f^{-1}(A_n)\}$ such that $S\subseteq \mathrm{U}\{f^{-1}(A_1), f^{-1}(A_2),\ldots, f^{-1}(A_n)\}$. That is $f(S)\subseteq \mathbf{U}\{A_1,A_2,...,A_n\}$. Hence $f(S)$ is gp*-*compact* relative to (Y,σ).

Theorem 3.9. Suppose that a mapping $f:(X,\tau)\to(Y,\sigma)$ is strongly gp*-*continuous* mapping from a compact space (X,τ) onto a topological space (Y,σ). Then (Y,σ) is gp*-*compact*.

Proof. Let $\{A_i : i\in I\}$ be a gp*-*open* cover of (Y,σ). Since f is strongly gp*-*continuous*, $\{f^{-1}(A_i) : i\in I\}$ is an open cover of (X,τ). Again, since (X,τ) is compact, the open cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=i=1,2,3,...,n\}$. Thus $\{A_1,A_2,...,A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is gp*-*compact*.

Theorem 3.10. Suppose that a mapping $f:(X,\tau)\to(Y,\sigma)$ is perfectly gp*-*continuous* mapping from a compact space (X,τ) onto a topological space (Y,σ). Then (Y,σ) is gp*-*compact*.

Proof. Let $\{A_i : i\in I\}$ be a gp*-*open* cover of (Y,σ). Since f is perfectly gp*-*continuous*, $\{f^{-1}(A_i) : i\in I\}$ is an open cover of (X,τ). Again, since (X,τ) is compact, the open cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_1, A_2,\ldots, A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is gp*-*compact*.

Theorem 3.11. Suppose that a function $f:(X,\tau)\to(Y,\sigma)$ is a gp*-*irresolute* mapping from a gp*-*compact* space (X,τ) onto a topological space (Y,σ). Then (Y,σ) is gp*-*compact*.

Proof. Let $f:(X,\tau)\to(Y,\sigma)$ be a gp*-*irresolute* mapping from a gp*-*compact* space (X,τ) onto a topological space (Y,σ). Let $\{A_i : i\in I\}$ be a gp*-*open* cover of (Y,σ). Then $\{f^{-1}(A_i) : i\in I\}$ is a gp*-*open* cover of (X,τ), since f is gp*-*irresolute*. As (X,τ) is gp*-*compact*, the gp*-*open* cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_1, A_2, \ldots, A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is gp*-*compact*.

Theorem 3.12. If (X,τ) is compact and every gp*-*closed* set in X is also closed in X, then (X,τ) is gp*-*compact*.

Proof. Let $\{\mathrm{A_i} : \mathrm{i}\in \mathrm{I}\}$ be a gp*-*open* cover of X. Since every gp*-*closed* set in X is also closed in X. Thus $\{X-A_i : i\in I\}$ is a closed cover of X and hence $\{\mathrm{A_i} : \mathrm{i}\in \mathrm{I}\}$ is an open cover of X. Since (X,τ) is compact. So there exists a finite subcover $\{A_i : i=1,2,3,...,n\}$ of $\{\mathrm{A_i} : \mathrm{i}\in \mathrm{I}\}$ such that $X=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. Hence (X,τ) is gp*-*compact*.

Theorem 3.13. A topological space (X,τ) is gp*-*compact* if and only if every family of gp*-*closed* sets of (X,τ) having finite intersection property has a nonempty intersection.

Proof. Suppose (X,τ) is gp*-*compact*. Let $\{A_i : i\in I\}$ be a family of gp*-*closed* sets with finite intersection property. Suppose $\mathrm{I}_{i\in I} A_i=\phi$, then $X-\mathbf{I}(\{A_i : i\in I\})=X$. This implies $\mathbf{U}\{(X-A_i) : i\in I\}=X$. Thus the cover $\{(X-A_i) : i\in I\}$ is a gp*-*open* cover of (X,τ). Then as (X,τ) is gp*-*compact*, the gp*-*open* cover $\{(X-A_i) : i\in I\}$ has a finite sub cover say $\{(X-A_i) : i=1,2,3,...,n\}$. This implies that $X=\mathrm{U}\{(X-A_i) : i=1,2,3,...,n\}$ which implies $X=X-\mathrm{I}\{A_i : i=1,2,3,...,n\}$, which implies $X-X=X-[X-\mathrm{I}\{A_i : i=1,2,3,...,n\}]$, which implies $\phi=\mathrm{I}\{A_i : i=1,2,3,...,n\}$. This disproves the assumption. Hence $\mathrm{I}\{A_i : i\in I\}\neq\phi$.

Conversely, suppose (X,τ) is not gp*-*compact*. Then there exits a gp*-*open* cover of (X,τ) say $\{G_i : i\in I\}$ having no finite subcover. This implies for any finite subfamily $\{G_i : i=1,2,3,...,n\}$ of $\{G_i : i\in I\}$, we have $\mathrm{U}\{G_i : i=1,2,3,...,n\}\neq X$, which implies $X-(\mathrm{U}\{G_i : i=1,2,3,...,n\})\neq X-X$, therefore $\mathrm{I}\{X-G_i : i=1,2,3,...,n\}\neq\phi$. Then the family

$\{X - G_i : i \in I\}$ of gp*-*closed* sets has a finite intersection property. Also by assumption I $\{X - G_i : i \in I\} \neq \phi$ which implies $X - (\mathrm{U}\{G_i : i \in I\}) \neq \phi$, so that $\mathrm{U}\{G_i : i \in I\} \neq X$. This implies $\{G_i : i \in I\}$ is not a cover of (X, τ). This disproves the fact that $\{G_i : i \in I\}$ is a cover for (X, τ). Therefore a gp*-*open* cover $\{G_i : i \in I\}$ of (X, τ) has a finite sub cover $\{G_i : i = 1,2,3,...,n\}$. Hence (X, τ) is gp*-*compact*.

Theorem 3.14. Let A be a gp*-*compact* set relative to a topological space X and B be a gp*-*closed* subset of X. Then $A \mathrm{I}\ B$ is gp*-*compact* relative to X.

Proof. Let A be gp*-*compact* relative to X. Let $\{A_i : i \in I\}$ be a cover of $A \mathrm{I}\ B$ by gp*-*open* sets in X. Then $\{A_i : i \in I\} \mathrm{U} \{B^C\}$ is a cover of A by gp*-*open* sets in X, but A is gp*-*compact* relative to X, so there exists a finite subset $I_0 = \{i_1, i_2, i_3, \ldots, i_n\} \subseteq I$ such that $A \subseteq (\mathrm{U}\{A_{i_k} : k = 1, 2, 3, \ldots, n\}) \mathrm{U}\, B^C$. Then $A \mathrm{I}\ B \subseteq \mathrm{U}\{A_{i_k} \mathrm{I}\ B : k = 1, 2, 3, \ldots, n\} \subseteq \mathrm{U}\{A_{i_k} : k = 1,2,3,...,n\}$. Hence $A \mathrm{I}\ B$ is gp*-*compact*.

Theorem 3.15. Suppose that a function $f : (X, \tau) \to (Y, \sigma)$ is gp*-*irresolute* and a subset B of X is gp*-*compact* relative to X. Then $f(B)$ is gp*-*compact* relative to Y.

Proof. Let $\{A_i : i \in I\}$ be a cover of $f(B)$ by gp*-*open* subsets of Y. Since f is gp*-*irresolute*. Then $\{f^{-1}(A_i) : i \in I\}$ is a cover of B by gp*-*open* subsets of X. Since B is gp*-*compact* relative to X, $\{f^{-1}(A_i) : i \in I\}$ has a finite sub cover say $\{f^{-1}(A_1), f^{-1}(A_2), \ldots, f^{-1}(A_n)\}$ for B. Then it implies that $\{A_i : i = 1,2,3,...,n\}$ is a finite subcover of $\{A_i : i \in I\}$ for $f(B)$. So $f(B)$ is gp*-*compact* relative to Y.

Definition 3.16. Let (X, τ) be a topological space and let E be a subset of X. Let $\tau_E^{gp^*} = \{A \mathrm{I}\ E : A \in \text{gp*-}O(X, \tau)\}$. Then $(E, \tau_E^{gp^*})$ is a topological space.

Theorem 3.17. Let (X, τ) be a topological space and let E be a subset of X. Then $(E, \tau_E^{gp^*})$ is compact if and only if for any gp*-*open* cover Γ of E has a finite subcover of E.

Proof. Suppose E is compact. Let $\Gamma \subseteq \text{gp*-}O(X, \tau)$ such that $E \subseteq \mathrm{U}\Gamma$. Let $\Gamma_E = \{A \mathrm{I}\ E : A \in \Gamma\}$. Then $E = \mathrm{U}\Gamma_E$ and $\Gamma_E \subseteq \tau_E^{gp^*}$. By hypothesis, there exists a finite subset $\Gamma_E^* = \{A_i \mathrm{I}\ E : i = 1,2,3,...,n\} \subseteq \Gamma_E$ such that $E = \mathrm{U}\Gamma_E^*$. Then $\Gamma^* = \{A_i : i = 1,2,3,...,n\} \subseteq \Gamma$ and $E \subseteq \mathrm{U}\Gamma^*$.

Conversely, let $\Upsilon = \{A_i \text{ I } E : i \in I\} \subseteq \tau_E^{gp^*}$ such that $E = \text{U}\Upsilon$. Then $\Upsilon^* = \{A_i : i \in A\}$ is a gp^*-*open* covering of E. By hypothesis, there exists $\Upsilon^{**} = \{A_i : i = 1,2,3,...,n\}$ a finite subset of Υ^* such that $E \subseteq \text{U}\Upsilon^{**}$. Then $\Upsilon^{\#} = \{A_i \text{ I } E : i = 1,2,3,...,n\}$ is a finite subset of Υ such that $E = \text{U}\Upsilon^{\#}$. This proves that $\left(E, \tau_E^{gp^*}\right)$ is compact.

4. COUNTABLY gp^*-COMPACT SPACES

In this section, we present the concept of countably gp^*-*compactness* and its properties.

Definition 4.1. A topological space (X, τ) is said to be countably gp^*-*compact* if every countable gp^*-*open* cover of X has a finite sub cover.

Theorem 4.2. If (X, τ) is a countably gp^*-*compact* space, then (X, τ) is countably compact.

Proof. Let (X, τ) be a countably gp^*-*compact* space. Let $\{A_i : i \in I\}$ be a countable open cover of (X, τ). Since $\tau \subseteq gp^*\text{-}O(X, \tau)$. So $\{A_i : i \in I\}$ is a countable gp^*-*open* cover of (X, τ). Since (X, τ) is countably gp^*-*compact*, therefore countable gp^*-*open* cover $\{A_i : i \in I\}$ of (X, τ) has a finite sub cover say $\{A_i : i = 1, 2, 3, \ldots, n\}$ for X. Hence (X, τ) is a countably compact space.

Theorem 4.3. If (X, τ) is countably compact and every gp^*-*closed* subset of X is closed in X, then (X, τ) is countably gp^*-*compact*.

Proof. Let (X, τ) be a countably compact space. Let $\{A_i : i \in I\}$ be a countable gp^*-*open* cover of (X, τ). Since every gp^*-*closed* subset of X is closed in X. Thus every gp^*-*open* set in X is open in X. Therefore $\{A_i : i \in I\}$ is a countable open cover of (X, τ). Since (X, τ) is countably compact, so countable open cover $\{A_i : i \in I\}$ of (X, τ) has a finite sub cover say $\{A_i : i = 1,2,3,...,n\}$ for X. Hence (X, τ) is a countably gp^*-*compact* space.

Theorem 4.4. Every gp^*-*compact* space is countably gp^*-*compact*.

Proof. Let (X, τ) be a gp^*-*compact* space. Let $\{A_i : i \in I\}$ be a countable gp^*-*open* cover of (X, τ). Since (X, τ) is gp^*-*compact*, so gp^*-*open* cover $\{A_i : i \in I\}$ of (X, τ) has a finite sub cover say $\{A_i : i = 1,2,3,...,n\}$ for (X, τ). Hence (X, τ) is countably gp^*-*compact* space.

Theorem 4.5. Let $f:(X,\tau)\to(Y,\sigma)$ be a gp*-*continuous* onjective mapping. If X is countably gp*-*compact* space, then (Y,σ) is countably compact.

Proof. Let $f:(X,\tau)\to(Y,\sigma)$ be a gp*-*continuous* mapping from a countably gp*-*compact* space (X,τ) onto a topological space (Y,σ). Let $\{A_i : i\in I\}$ be a countable open cover of Y. Then $\{f^{-1}(A_i) : i\in I\}$ is a countable gp*-*open* cover of X, as f is gp*-*continuous*. Since X is countably gp*-*compact*, the countable gp*-*open* cover $\{f^{-1}(A_i) : i\in I\}$ of X has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $Y=f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_i : i=1,2,3,...,n\}$ is a finite sub cover of $\{A_i : i\in I\}$ for Y. Hence Y is countably compact.

Theorem 4.6. Suppose that a mapping $f:(X,\tau)\to(Y,\sigma)$ is perfectly gp*-*continuous* mapping from a countably compact space (X,τ) onto a topological space (Y,σ). Then (Y,σ) is countably gp*-*compact*.

Proof. Let $\{A_i : i\in I\}$ be a countable gp*-*open* cover of (Y,σ). Since f is perfectly gp*-*continuous*, $\{f^{-1}(A_i) : i\in I\}$ is a countable open cover of (Y,σ). Again, since (X,τ) is countably gp*-*compact*, the countable open cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_1,A_2,\ldots,A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is countably gp*-*compact*.

Theorem 4.7. Suppose that a mapping $f:(X,\tau)\to(Y,\sigma)$ is strongly gp*-*continuous* mapping from a countably compact space (X,τ) onto a topological space (Y,σ). Then (Y,σ) is countably gp*-*compact*.

Proof. Let $\{A_i : i\in I\}$ be a countable gp*-*open* cover of (Y,σ). Since f is strongly gp*-*continuous*, $\{f^{-1}(A_i) : i\in I\}$ is a countable open cover of (X,τ). Again, since (X,τ) is countably compact, the countable open cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Therefore $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_1,A_2,...,A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is countably gp*-*compact*.

Theorem 4.8. The image of a countably gp*-*compact* space under a gp*-*irresolute* mapping is countably gp*-*compact*.

Proof. Suppose that a mapping $f:(X,\tau)\to(Y,\sigma)$ is a gp*-*irresolute* mapping from a countably gp*-*compact* space (X,τ) onto a topological space (Y,σ). Let $\{A_i : i\in I\}$ be a countable gp*-*open* cover of (Y,σ). Then $\{f^{-1}(A_i) : i\in I\}$ is a countable gp*-*open* cover of (X,τ), since f is gp*-*irresolute*. As (X,τ) is countably gp*-*compact*, the countable gp*-*open* cover $\{f^{-1}(A_i) : i\in I\}$ of (X,τ) has a finite sub cover say $\{f^{-1}(A_i) : i=1,2,3,...,n\}$. Then it follows that $X=\mathrm{U}\{f^{-1}(A_i) : i=1,2,3,...,n\}$, which implies $f(X)=\mathrm{U}\{A_i : i=1,2,3,...,n\}$, so that $Y=\mathrm{U}\{A_i : i=1,2,3,...,n\}$. That is $\{A_1,A_2,\ldots,A_n\}$ is a finite subcover of $\{A_i : i\in I\}$ for (Y,σ). Hence (Y,σ) is countably gp*-*compact*.

Theorem 4.9. Let (X,τ) be a topological space and $x\in X$. A point $x\in X$ is said to be gp*-*limit* point of $A\subseteq X$ provided that every gp*-*neighbourhood* of x contains at least one point of A different from x.

Theorem 4.10. Every infinite subset of a gp*-*compact* space has a gp*-*limit* point.

Proof. Let A be an infinite subset of a gp*-*compact* space (X,τ). Suppose that A has not a gp*-*limit* point. Then for each $x\in X$, there exists a gp*-*open* set G_x containing at most one point of A. Now, the collection $\Lambda=\{G_x : x\in X\}$ forms a gp*-*open* cover of X. As X is gp*-*compact*, then there exist $x_1, x_2, \cdots, x_n$ in X such that $X=\bigcup_{i=1}^{i=n}G_{x_i}$. Therefore X has at most n points of A. This implies that A is finite. But this contradicts that A is infinite. Thus A has a gp*-*limit* point.

5. gp*-LINDELOF SPACES

In this section, we concentrate on the concept of gp*-*Lindelöf* space and its properties.

Definition 5.1. A topological space (X,τ) is said to be gp*-*Lindelöf* space if every gp*-*open* cover of X has a countable subcover.

Definition 5.2. Every gp*-*Lindelöf* space (X,τ) is *Lindelöf* space.

Proof. Let (X,τ) be a gp*-*Lindelöf* space. Let $\{A_i : i\in I\}$ be an open cover of (X,τ). Since $\tau\subseteq$ gp*-$O(X,\tau)$. Therefore $\{A_i : i\in I\}$ is a gp*-*open* cover of (X,τ). Since (X,τ) is

gp*-*Lindelöf* space. So there exists a countable subset I_0 of I such that $\{A_i : i \in I_0\}$ is a gp*-*open* subcover of (X, τ). Hence (X, τ) is a *Lindelöf* space.

Theorem 5.3. Every gp*-*compact* space is gp*-*Lindelöf*.

Proof. Let (X, τ) be a gp*-*compact* space. Let $\{A_i : i \in I\}$ be a gp*-*open* cover of (X, τ). Since (X, τ) is gp*-*compact* space. Then $\{A_i : i \in I\}$ has a finite sub cover say $\{A_i : i = 1,2,3,...,n\}$. Since every finite subcover is always countable subcover and therefore $\{A_i : i = 1,2,3,...,n\}$ is a countable subcover of $\{A_i : i \in I\}$. Hence (X, τ) is gp*-*Lindelöf* space.

Theorem 5.4. Every gp*-*closed* subset of a gp*-*Lindelöf* space is gp*-*Lindelöf*.

Proof. Let F be a gp*-*closed* subset of X and $\{G_i : i \in I\}$ be gp*-*open* cover of F. Then F^c is gp*-*open* and $F \subseteq \cup\{G_i : i \in I\}$. Hence $X = (\cup\{G_i : i \in I\}) \cup F^c$. Since X is gp*-*Lindelöf*, then $X = (\cup\{G_i : i \in I_0\}) \cup F^c$ for some countable subset I_0 of I. Therefore $F \subseteq \cup\{G_i : i \in I_0\}$. Thus F is gp*-*Lindelöf*.

Theorem 5.5. Let A be a gp*-*Lindelöf* subset of X and B be a gp*-*closed* subset of X. Then $A \cap B$ is gp*-*Lindelöf*.

Proof. Let $\{G_i : i \in I\}$ be a gp*-*open* cover of $A \cap B$. Then $A \subseteq (\bigcup_{i \in I} G_i) \cup B^c$. Since A is gp*-*Lindelöf*, then there exists a countable subset I_0 of I such that $A \subseteq (\bigcup_{i \in I_0} G_i) \cup B^c$. Therefore $A \cap B \subseteq \bigcup_{i \in I_0} G_i$. Thus $A \cap B$ is gp*-*Lindelöf*.

Theorem 5.6. A topological space (X, τ) is gp*-*Lindelöf* if and only if every collection of gp*-*closed* subsets of X satisfying the countable intersection property, has, itself, a non-empty intersection.

Necessity: Let $\Lambda = \{F_i : i \in I\}$ be a collection of gp*-*closed* subsets of X which has the countable intersection property. Assume that $\bigcap_{i \in I} F_i = \phi$. Then $X = \bigcup_{i \in I} F_i^c$. Since X is gp*-*Lindelöf*, then there exists a countable subset I_0 of I such that $X = \bigcup_{i \in I_0} F_i^c$. Therefore, $\bigcap_{i \in I_0} F_i = \phi$ contradicts that Λ has the countable intersection property. Thus Λ has, itself, a non-empty intersection.

Sufficiency: Let $\{G_i : i \in I\}$ be a gp*-*open* cover of X. Suppose $\{G_i : i \in I\}$ has no countable subcover. Then $X - \bigcup_{i \in J} G_i \neq \phi$, for any countable subset J of I. Now, $\bigcap_{i \in J} G_i^c \neq \phi$ implies that $\{G_i^c : i \in I\}$ is a collection of gp*-*closed* subsets of X which has the countable intersection property. Therefore $\bigcap_{i \in I} G_i^c \neq \phi$. Thus $X \neq \bigcup_{i \in I} G_i$ contradicts that $\{G_i : i \in I\}$ is a gp*-*open* cover of X. Hence X is gp*-*Lindelöf*.

Theorem 5.7. A gp*-*continuous* image of a gp*-*Lindelöf* space is a *Lindelöf* space.

Proof. Let $f : (X, \tau) \to (Y, \sigma)$ be a gp*-*continuous* mapping from a gp*-*Lindelöf* space X onto a topological space Y. Let $\{A_i : i \in I\}$ be an open cover of Y. Then $\{f^{-1}(A_i) : i \in I\}$ is a gp*-*open* cover of X, as f is gp*-*continuous*. Since X is gp*-*Lindelöf* space, the gp*-*open* cover $\{f^{-1}(A_i) : i \in I\}$ of X has a countable subcover say $\{f^{-1}(A_i) : i \in I_0\}$ for some countable set $I_0 \subseteq I$. Therefore $X = \mathrm{U}\{f^{-1}(A_i) : i \in I_0\}$, which implies $f(X) = \mathrm{U}\{A_i : i \in I_0\}$, then $Y = \mathrm{U}\{A_i : i \in I_0\}$. That is $\{A_i : i \in I_0\}$ a countable subcover of $\{A_i : i \in I\}$ for Y. Hence (Y, σ) is a *Lindelöf* space.

Theorem 5.8. The image of a gp*-*Lindelöf* space under a gp*-*irresolue* mapping is gp*-*Lindelöf* space.

Proof. Suppose that a mapping $f : (X, \tau) \to (Y, \sigma)$ is a gp*-*irresolue* mapping from a gp*-*Lindelöf* space (X, τ) onto a topological space (Y, σ). Let $\{B_i : i \in I\}$ be a gp*-*open* cover of (Y, σ). Since f is gp*-*irresolue*. Therefore $\{f^{-1}(B_i) : i \in I\}$ is a gp*-*open* cover of (X, τ). As (X, τ) is gp*-*Lindelöf* space, the gp*-*open* cover $\{f^{-1}(B_i) : i \in I\}$ of (X, τ) has a countable subcover say $\{f^{-1}(B_i) : i \in I_0\}$ for some countable set $I_0 \subseteq I$. Therefore $X = \mathrm{U}\{f^{-1}(B_i) : i \in I_0\}$, which implies $f(X) = \mathrm{U}\{B_i : i \in I_0\}$, so that $Y = \mathrm{U}\{B_i : i \in I_0\}$. That is $\{B_i : i \in I_0\}$ a countable subcover of $\{B_i : i \in I\}$ for Y. Hence (Y, σ) is a gp*-*Lindelöf* space.

Theorem 5.9. If (X, τ) is gp*-*Lindelöf* space and countably gp*-*compact* space, then (X, τ) is gp*-*compact* space.

Proof. Suppose (X, τ) is gp*-*Lindelöf* space and countably gp*-*compact* space. Let $\{A_i : i \in I\}$ be a gp*-*open* cover of (X, τ). Since (X, τ) is gp*-*Lindelöf* space, $\{A_i : i \in I\}$ has a countable subcover say $\{A_i : i \in I_0\}$ for some countable set $I_0 \subseteq I$. Therefore $\{A_i : i \in I_0\}$

is a countable gp*-*open* cover of (X,τ). Again, since (X,τ) is countably gp*-*compact* space, $\{A_i : i \in I_0\}$ has a finite subcover and say $\{A_i : i = 1,2,3,...,n\}$. Therefore $\{A_i : i = 1,2,3,...,n\}$ is a finite subcover of $\{A_i : i \in I\}$ for (X,τ). Hence (X,τ) is a gp*-*compact* space.

Theorem 5.10. If a function $f:(X,\tau)\to(Y,\sigma)$ is gp*-*irresolue* and a subset A of X is gp*-*Lindelöf* relative to X, then $f(A)$ is gp*-*Lindelöf* relative to Y.

Proof. Let $\{B_i : i \in I\}$ be a cover of $f(A)$ by gp*-*open* subsets of Y. By hypothesis, f is gp*-*irresolue* and so $\{f^{-1}(B_i) : i \in I\}$ is a cover of A by gp*-*open* subsets of X. Since A is gp*-*Lindelöf* relative to X, $\{f^{-1}(B_i) : i \in I\}$ has a countable subcover say $\{f^{-1}(B_i) : i \in I_0\}$ for A, where I_0 is a countable subset of I. Now $\{B_i : i \in I_0\}$ is a countable subcover of $\{B_i : i \in I\}$ for $f(A)$. So $f(A)$ is gp*-*Lindelöf* relative to Y.

6. ALMOST gp*-COMPACT SPACES

Definition 6.1. A topological space (X,τ) is called almost gp*-*compact* (*resp. almost* gp*-*Lindelöf*) provided that every gp*-*open* cover of X has a finite (resp. countable) sub-collection, the gp*-*closure* of whose members cover X.

The proofs of the following four propositions are straightforward and therefore will be omitted.

Proposition 6.2. Every almost gp*-*compact* space is almost gp*-*Lindelöf* space.

Proposition 6.3. Every gp*-*compact* space (*resp.* gp*-*Lindelöf space*) is almost gp*-*compact* (*resp. almost* gp*-*Lindelöf*).

Proposition 6.4. Any finite (resp. countable) topological space (X,τ) is almost gp*-*compact* (*resp. almost* gp*-*Lindelöf*).

Proposition 6.5. A finite (resp. countable) union of almost gp*-*compact* (*resp. almost* gp*-*Lindelöf*) subsets of (X,τ) is almost gp*-*compact* (*resp. almost* gp*-*Lindelöf*).

Definition 6.6. A subset E of (X,τ) is called gp*-*clopen* provided that it is gp*-*open* and gp*-*closed*.

Theorem 6.7. Let F be a gp*-*clopen* subset of an almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$ space (X,τ). Then F is almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$.

Proof. Let F be a gp*-*clopen* subset of an almost gp*-*compact* space X and $\{G_i : i \in I\}$ be a gp*-*open* cover of F. Then F^c is gp*-*open* and $X \subseteq (\mathrm{U}\{G_i : i \in I\}) \mathrm{U} F^c$. Since X is almost gp*-*compact*, then there exists a finite subset I_0 of I such that $X = (\mathrm{U}\{\text{gp*-}Cl(G_i) : i \in I_0\}) \mathrm{U} F^c$. Thus it follows that $F \subseteq \mathrm{U}\{\text{gp*-}Cl(G_i) : i \in I_0\}$. Hence F is almost gp*-*compact*.

The proof is similar in the case of almost gp*-*Lindelöf*.

Theorem 6.8. If A is an almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$ subset of (X,τ) and B is a gp*-*clopen* subset of X, then $A \mathrm{I}\ B$ is almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$.

Proof. Let $\Lambda = \{G_i : i \in I\}$ be a gp*-*open* cover of $A \mathrm{I}\ B$. Then $A \subseteq (\mathrm{U}\{G_i : i \in I\}) \mathrm{U} B^c$. Since A is almost gp*-*compact*, then there exists a finite subset I_0 of I such that $A \subseteq (\mathrm{U}\{\text{gp*-}Cl(G_i) : i \in I_0\}) \mathrm{U} B^c$. Hence $A \mathrm{I}\ B \subseteq \mathrm{U}\{\text{gp*-}Cl(G_i) : i \in I_0\}$. Thus $A \mathrm{I}\ B$ is almost gp*-*compact*.

The proof is similar in the case of almost gp*-*Lindelöf*.

Theorem 6.9. Let a mapping $f : (X,\tau) \to (Y,\sigma)$ be gp*-*irresolute*. Suppose that A is almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$ subset of X. Then $f(A)$ is almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$.

Proof. Suppose that $\{G_i : i \in I\}$ is gp*-*open* cover of $f(A)$. Then $f(A) \subseteq \mathrm{U}\{G_i : i \in I\}$. Now $A \subseteq \mathrm{U}\{f^{-1}(G_i) : i \in I\}$. Since f is gp*-*irresolute*, then $\{f^{-1}(G_i) : i \in I\}$ is a gp*-*open* cover of A. By hypothesis, A is almost gp*-*compact*, then there exists a finite subset I_0 of I such that $A \subseteq \mathrm{U}\{\text{gp*-}Cl[f^{-1}(G_i)] : i \in I_0\}$. Since f is gp*-*irresolute*, then $\text{gp*-}Cl(f^{-1}(G_i)) \subseteq f^{-1}[\text{gp*-}Cl(G_i)]$, for all $i \in I_0$. Hence it follows that $f(A) \subseteq \bigcup_{i \in I_0} f[f^{-1}(\text{gp*-}Cl(G_i))] \subseteq \bigcup_{i \in I_0} \text{gp*-}Cl(G_i)$, which implies that $f(A) \subseteq \bigcup_{i \in I_0} \text{gp*-}Cl(G_i)$. Thus $f(A)$ is almost gp*-*compact*.

The proof is similar in the case of almost gp*-*Lindelöf*.

Theorem 6.10. Let $f:(X,\tau)\to(Y,\sigma)$ be a gp*-*open* bijective mapping and (Y,σ) is almost gp*-*compact*. Then (X,τ) is almost compact.

Proof. Let $\{G_i : i\in I\}$ be an open cover of X. Then $f(X)=f(\bigcup_{i\in I}G_i)$. Therefore $Y=\bigcup_{i\in I}f(G_i)$. Now, Y is almost gp*-*compact*, then there exists a finite subset I_0 of I such that $Y=\bigcup_{i\in I_0}$ gp*-$Cl[f(G_i)]$. Since f is gp*-*open* bijective mapping, then f is gp*-*closed* mapping. Therefore, we have gp*-$Cl[f(G_i)]\subseteq f[Cl(G_i)]$, for all $i\in I_0$. Thus $Y\subseteq\bigcup_{i\in I_0}f[Cl(G_i)]\subseteq f[\bigcup_{i\in I_0}Cl(G_i)]$, which implies that $X=f^{-1}(Y)\subseteq\bigcup_{i\in I_0}Cl(G_i)$. Thus $X=\bigcup_{i\in I_0}Cl(G_i)$. Hence X is almost compact.

Theorem 6.11. If every collection of gp*-*closed* subsets of (X,τ), satisfying the finite (resp. countable) intersection property, has, itself, a non-empty intersection, then X is almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$.

Proof. Let $\{G_i : i\in I\}$ be a gp*-*open* cover of X. Suppose $\{G_i : i\in I\}$ has no finite sub collection such that the gp*-*closure* of whose members cover X. Then $X-\bigcup_{i=1}^{i=n}$ gp*-$Cl(G_i)\neq\phi$, for any $n\in N$. Therefore $X-\bigcup_{i=1}^{i=n}G_i\neq\phi$. Now, $\bigcap_{i=1}^{n}G_i^c\neq\phi$ implies $\{G_i^c : i\in I\}$ is a collection of gp*-*closed* subsets of X which has the finite intersection property. Thus $\bigcap_{i\in I}G_i^c\neq\phi$ implies $X\neq\bigcup_{i\in I}G_i$. But this is a contradiction. Hence X is almost gp*-*compact*.

A similar proof is given in the case of *almost* gp*-*Lindelöf*.

7. MILDLY gp*-COMPACT SPACES

Definition 7.1. A topological space (X,τ) is called mildly gp*-*compact* $(resp.\ mildly$ gp*-*Lindelöf*$)$ provided that every gp*-*clopen* cover of X has a finite (resp. countable) subcover.

Definition 7.2. Every mildly gp*-*compact* space is mildly gp*-*Lindelöf*.

Proof. It is straightforward.

Theorem 7.3. Every almost gp*-*compact* $(resp.\ almost$ gp*-*Lindelöf*$)$ space (X,τ) is mildly gp*-*compact* $(resp.\ mildly$ gp*-*Lindelöf*$)$.

Proof. Let $\Lambda=\{H_i : i\in I\}$ be a gp*-*clopen* cover of (X,τ). Since (X,τ) is almost gp*-*compact*, then there exists a finite subset I_0 of I such that $X=\bigcup_{i\in I_0}$ gp*-$Cl(H_i)$. Now, gp*-$Cl(H_i)=H_i$. Thus (X,τ) is mildly gp*-*compact*.

A similar proof is given when (X,τ) is *almost* gp*-*Lindelöf*.

Corollary 7.4. Every gp*-*compact* $(resp.$ gp*-*Lindelöf*$)$ space is mildly gp*-*compact* $(resp.$ *mildly* gp*-*Lindelöf*$)$.

Theorem 7.5. If F is a gp*-*clopen* subset of a mildly gp*-*compact* $(resp.$ *mildly* gp*-*Lindelöf*$)$ space X, then F is mildly gp*-*compact* $(resp.$ *mildly* gp*-*Lindelöf*$)$.

Proof. Let F be a gp*-*clopen* subset of X and $\{G_i : i\in I\}$ be a gp*-*clopen* cover of F. Then F^c is a gp*-*clopen* set and $F\subseteq\bigcup_{i\in I}G_i$. Therefore $X=(\bigcup_{i\in I}G_i)\cup F^c$. Since X is mildly gp*-*compact*, then there exists a finite subset I_0 of I such that $X=(\bigcup_{i\in I_0}G_i)\cup F^c$. So $F\subseteq(\bigcup_{i\in I_0}G_i)$. Hence F is mildly gp*-*compact*.

The proof is similar in a case of mildly gp*-*Lindelöf*.

Theorem 7.6. If A is a mildly gp*-*compact* $(resp.$ *mildly* gp*-*Lindelöf*$)$ subset of X and B is a gp*-*clopen* subset of X, then $A\cap B$ is mildly gp*-*compact* $(resp.$ *mildly* gp*-*Lindelöf*$)$.

Proof. Let $\Lambda=\{G_i : i\in I\}$ be a gp*-*clopen* cover of $A\cap B$. Then $A\subseteq(\bigcup_{i\in I}G_i)\cup B^c$. Since A is mildly gp*-*compact*, then there exists a finite subset I_0 of I such that $A\subseteq(\bigcup_{i\in I_0}G_i)\cup B^c$. Therefore $A\cap B\subseteq\bigcup_{i\in I_0}G_i$. Thus $A\cap B$ is mildly gp*-*compact*.

The proof is similar in case of mildly gp*-*Lindelöf*.

Theorem 7.7. If $f:(X,\tau)\to(Y,\sigma)$ is a gp*-*open* bijective mapping and (Y,σ) is mildly gp*-*compact*, then (X,τ) is mildly compact.

Proof. Let $\{G_i : i\in I\}$ be a clopen cover for X. Then $f(X)=f(\bigcup_{i\in I}G_i)$. Hence $Y=\bigcup_{i\in I}f(G_i)$. Since f is gp*-*open* bijective mapping, then f is gp*-*closed*. Therefore $\{f(G_i) : i\in I\}$ is a gp*-*clopen* cover of X. Since Y is mildly gp*-*compact*, then there exists

a finite subset I_0 of I such that $Y = \bigcup_{i \in I_0} f(G_i)$. Therefore $X = \bigcup_{i \in I_0} G_i$. Thus X is mildly compact.

Proposition 7.8. A subset A of (X, τ) is mildly compact $(resp.\ mildly\ Lindelöf)$ if and only if (X, τ_A) is mildly compact $(resp.\ mildly\ Lindelöf)$.

8 Conclusions

We have used gp^*-*open* sets to introduce the new concepts of notions in topological spaces namely gp^*-*compact* space, countably gp^*-*compact* space, gp^*-*Lindelöf* space, almost gp^*-*compact* space, and mildly gp^*-*compact* space and have investigated several properties and characterization of these new concepts.

ACKNOWLEDGEMENT

The author is highly and gratefully indebted to Prince Mohammad Bin Fahd University, Saudi Arabia, for providing research facilities during the preparation of this research paper.

References

[1] Ghufran A. Abbas and Taha H. Jasim, On Supra α – Compactness in Supra Topological Spaces, Tikrit Journal of Pure Science, Vol. 24(2) (2019), 91 – 97.

[2] Beyda S. Abdullah, and Amir A. Mohammed, On Standard Concepts Using ii-Open Sets, Open Access Library Journal, 2019, Volume 6, e5604, 1 – 12. ISSN Online: 2333 – 9721, ISSN Print: 2333 – 9705.

[3] Baravan A. Asaad and Alias B. Khalaf, On P_S – Compact Space, International Journal Scientific & Engineering Research, Volume 7, Issue 8, August 2016, 809 – 815.

[4] S. Balasubramanian, C. Sandhya and P.A.S. Vyjayanthi, On ν – Compact spaces, Scientia Magna, 5(1) (2009), 78-82.

[5] Miguel Caldas, Saeid Jafari, and Raja M. Latif, b – Open Sets and A New Class of Functions, Pro Mathematica, Peru, Vol. 23, No. 45 – 46, pp. 155 – 174, (2009).

[6] Sakkraiveeranam Chandrasekar, Velusamy Banupriya and M. Suresh, $\theta g^*\alpha$-Closed Sets in Topological Spaces, International Journal of Pure and Applied Mathematics, (In Press).

[7] Sakkraiveeranam Chandrasekar, Velusamy Banupriya and Jeyaraman Suresh Kumar, Properties and Applications of $\theta g^*\alpha$-Closed Sets in Topological Spaces, Journal of New Theory, Number: 18, (2017), Pages: 1 – 11.

[8] R. Devi, S. Sampathkumar and M. Caldas, On supra α-open sets and S-continuous mappings, General Mathematics, 16 (2), (2008), 77 – 84.

[9] W. Dunham, A New Closure Operator for non T1 topology, Kyuungpook Math. J., 22(1982), pp. 55 -60.

[10] H. Z. Hdeib, ω-closed mappings, Rev. Colomb. Mat., 16 (1-2) (1982), 65–78.

[11] P. Jayakumar, K. Mariappa and S. Sekar, On Generalized gp^*-Closed Set in Topological Spaces, Int. Journal of Math. Analysis, Vol. 7, 2013, no. 33, pp. 1635 – 1645.

[12] M. Khan, T. Noiri and M. Hussain, On s*g-closed sets and s*-normal spaces, CODEN, JNSMAC (April & October 2008) 48, pp. 31 – 41.

[13] K. Krishnaveni and M. Vigneshwaran, Some Stronger forms of supra bTμ - continuous function, Int. J. Mat. Stat. Inv., 1(2), (2013), 84 – 87.

[14] K. Krishnaveni, M. Vigneshwaran, bTμ- compactness and bTμ - connectedness in supra topological spaces, European Journal of Pure and Applied Mathematics, Vol. 10, No. 2, 2017, 323 – 334 ISSN 1307-5543 – www.ejpam.com.
[15] Raja M. Latif, Supra-R-Compactness and Supra-R-Connectedness, International Journal of Recent Trends in Engineering and Research, Volume 04, Issue 01, (2018), Pages 426 – 443.
[16] Raja M. Latif, Supra-I-Compactness and Supra-I-Connectedness, International Journal of Mathematics Trends and Technology, Volume 53, Number 7 (2018), pages 525 – 537.
[17] N. Levine, Semi-open sets and semi-continuity in topological spaces, Amer. Math. Monthly, 70(1963), 36 – 41.
[18] Sabiha I. Mahmood and Jumana S. Tareq, On $S^*g-\alpha-Open$ Sets in Topological Spaces, Ibn Al-Haitham Journal for Pure and Applied Sciences, Vol. 27 (3), (2014), 542 – 555.
[19] A. S. Mashhour, M. E. Abd El-Monsefand S. N. El-Deed, On Precontinuous and weak precontinuous Mappings, Proc. Math. Phys. Soc. Egypt, 53 (1982), pp. 47 – 53.
[20] A. S. Mashhour, A. A. Allam, F. S. Mohamoud and F. H. Khedr, On supra topological spaces, Indian J. Pure and Appl. Math., No.4, 14(1983), 502 – 510.
[21] Shadya M. Mershkhan and Baravan A. Asaad, Some Properties of P_p-Compact Spaces, General Letters in Mathematics, Vol. 7, Sep. 2019, pp. 13 – 23.
[22] S. Pious Missier and P. Anbarasi Rodrigo, Some Notions of Nearly Open Sets in Topological Spaces, Intenational Journal of Mathematical Archive, 4(12) (2013) 12 – 18.
[23] Amir A. Mohammad and Beyda S. Abdullah, ii-Open Sets in Topological Spaces, International Mathematical Forum, Vol. 14, 2019, no. 1, 41 – 48.
[24] Jamal M. Mustafa, supra b-compact and supra $b-Lindelöf$ spaces, Journal of Mathematics and Applications, No36, (2013), 79 – 83.
[25] O. Njastad, Some Classes of Nearly Open sets, Pacific J. Math., 15(3), (1965), pp. 961 – 970.
[26] T. Noiri and O. R. Sayed, On Ω closed sets and Ωs closed sets in topological spaces, Acta Math, 4(2005), 307 – 318.
[27] Hakeem A. Othman and Md. Hanif Page, On an $Infra-\alpha-Open$ Sets, Global Journal of Mathematical Analysis, 4(3) (2016) 12 – 16.
[28] P. G. Patil, w - compactness and w - connectedness in topological spaces, Thai. J. Mat., (12), (2014), 499 - 507.
[29] A. Robert and S. Pious Missier, On Semi*-Connected and Semi*-Compact Spaces, International Journal of Modern Engineering Research, Vol. 2, Issue 4, July – Aug. 2012, pp. 2852 – 2856.
[30] A. Robert and S. Pious Missier, A New Class of Nearly Open Sets, Intenational Journal of Mathematical Archive, 3(7) (2012) 2575 – 2582.
[31] A. Robert and S. Pious Missier, Compactness and Compactness via Semi-Star-Alpha-Open Sets, International Journal of Mathematics Trends and Technology, Volume 12, Number 1, Aug. 2014, pp. 1- 7.
[32] O. R. Sayed, Takashi Noiri, On supra b – open set and supra b – continuity on topological spaces, European Journal of pure and applied Mathematics, 3(2) (2010), 295 –302.
[33] O. R. Sayed and T. Noiri, Supra b-irresoluteness and supra b-compactness on topological space, Kyungpook Math. J., 53(2013), 341 – 348.
[34] T. Selvi and A. Punitha Dharani, Some new class of nearly closed and open sets, Asian Journal of Current Engineering and Maths, 1:5 Sep Oct (2012) 305 – 307.
[35] T. M. Al-Shami, Supra semi-compactness via supra topological spaces, Journal of Taibah University for Science, 2018, VOL. 12, NO. 3, 338–343.

[36] L. A. Steen and J. A. Seebach Jr, Counterexamples in Topology, Holt, Rinenhart and Winston, New York 1970.
[37] N. V. Velicko, H-closed topological spaces, Amer. Math. Soc. Transl., 78(2) (1968), 103 – 118.
[38] L. Vidyarani and M. Vigneshwaran, On Supra N-closed and sN-closed sets in Supra Topological Spaces, International Journal of Mathematical Achieve, Vol-4, Issue-2, (2013), 255 – 259.
[39] L. Vidyarani and M. Vigneshwaran, Some forms of N-closed maps in Supra Topological spaces, IOSR Journal of Mathematics, Vol-6, Issue-4, (2013), 13 – 17.
[40] L. Vidyarani and M. Vigneshwaran, Supra N-compact and Supra N-connected in SupraTopological spaces, Global Journal of Pure and Applied Mathematics. Volume 11, Number 4 (2015), pp. 2265-2277.
[41] Albert Wilansky, Topology for Analysis, Devore Pblications, Inc, Mineola New York. (1980).
[42] Stephen Willard, General Topology, Reading, Mass.: Addison Wesley Pub. Co. (1970).
[43] Stephen Willard and Raja M. Latif, Semi-Open Sets and Regularly Closed Sets in Compact

SEMI - REGULAR *-MAPPINGS IN TOPOLOGICAL SPACES

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ABSTRACT

In 2020, C. Reena and R. Krishnaveni introduced a new class of sets, namely semi - regular *-open sets and presented a characterization of it. In this paper, we introduce a new class of sets, namely semi - regular *-closed sets, as the complement of semi - regular *-open sets in a topological space. We introduce semi - regular *-continuous function, semi - regular *-irresolute function, semi - regular *-open function, semi - regular *-closed function, Pr e - semi - regular *-open function, and Pr e - semi - regular *-closed function, and investigate properties and characterizations of these new types of mappings in topological spaces.

Mathematics Subject Classification (2020): 54C05, 54C08, 54C10.

Keywords and Phrases: Topological space, semi - regular *-open set, semi - regular *-closed set, semi - regular *-interior set, semi - regular *-closure set, semi - regular *-continuous function, semi - regular *-irresolute function, semi - regular *-open function, semi - regular *-closed function, pre - semi - regular *-open function, pre - semi - regular *-closed function.

1. INTRODUVTION

Introducing new versions of open sets in a topological space which may acquire either weaker or stronger properties is often studied. The first attempt was done by Levine [12], where he introduced the concepts of semi-open set, semi-closed set, and semi-continuity of a function. In 2020, C. Reena and R. Krishnaveni introduced a new class of sets, namely semi - regular *-open sets and presented a characterization of it. In this paper, we introduce a new class of sets, namely semi - regular *-closed sets, as the complement of semi - regular *-open sets in a topological space. We introduce semi - regular *-continuous function, semi - regular *-irresolute function, semi - regular *-open function, semi - regular *-closed function, Pr e - semi - regular *-open function, and

Pre-semi-regular*-closed function, and investigate properties and characterizations of these new types of mappings in topological spaces.

2. BASIC PROPERTIES AND APPLICATIONS OF sr*-OPEN SETS

In this section, we shall define the concept of semi-regular*-open set and determine its connection to the classical open set and characterize the concepts of semi-regular*-open sets.

Definition 2.1. A subset A of a topological space (X,τ) is named *semi-open* set if $A \subseteq Cl[Int(A)]$. The complement of *semi-open* set is called *semi-closed* set.

Definition 2.2. A subset A of a topological space (X,τ) is generalized closed (*briefly* g*–closed*) set if $Cl(A) \subseteq U$ whenever $A \subseteq U$ and U is open in X.

Definition 2.3. If A is a subset of a space X, the generalized closure of A is defined as the intersection of all g*–closed* sets in X containing A and is denoted by $Cl^*(A)$.

Definition 2.4. A subset A of a topological space (X,τ) is named *semi***-open* set if $A \subseteq Cl^*[Int(A)]$. The complement of *semi***-open* set is called *semi***-closed* set.

Definition 2.5. A subset A of a topological space (X,τ) is named *pre-open* set if $A \subseteq Int[Cl(A)]$. The complement of *pre-open* set is called *pre-closed* set.

Definition 2.6. A subset A of a topological space (X,τ) is named α*-open* set if $A \subseteq Int[Cl(Int(A))]$. The complement of α*-open* set is called α*-closed* set.

Definition 2.7. A subset A of a topological space (X,τ) is named β*-open* set if $A \subseteq Cl[Int(Cl(A))]$. The complement of β*-open* set is called β*-closed* set.

Definition 2.8. A subset A of a topological space (X,τ) is named *regular-open* set if $A = Int[Cl(A)]$. The complement of *regular-open* set is called *regular-closed* set.

Definition 2.9. A subset A of a topological space (X,τ) is named *regular***-open* set if $A = Int[Cl^*(A)]$. The complement of *regular***-open* set is called *regular***-closed* set.

Definition 2.10. A subset A of a topological space (X,τ) is called a *semi-regular*-open* (*briefly* sr*-*open*) set if there is a *regular*-open* set U in X such that $U \subseteq A \subseteq Cl(U)$.

Definition 2.11. A subset A of a topological space (X,τ) is called a *semi-regular*-open* set in X if there is a *regular*-open* set U in X such that $U \subseteq A \subseteq Cl(U)$.

Theorem 2.12. A subset A of a topological space (X,τ) is *semi-regular*-open* set in X if $A \subseteq Cl\left[Int\left(Cl^*(A)\right)\right]$.

Notation. The class of all *semi-regular*-open* (*resp. semi-regular*-closed*) sets in (X,τ) is denoted by sr*-$O(X,\tau)$ $\left(\text{resp.sr}^*\text{-}C(X,\tau)\right)$.

Theorem 2.13. Every open (*resp. closed*) set in a topological space (X,τ), is *semi-regular*-open* (*resp. semi-regular*-closed*) set in (X,τ).

Theorem 2.14. If $\{A_\alpha : \alpha \in I\}$ is a collection of *semi-regular*-open* sets in X, then $\bigcup_{\alpha\in I} A_\alpha$ is also *semi-regular*-open* in X.

Theorem 2.15. The arbitrary intersection of any family of sr*-*closed* sets is a sr*-*closed* set.

Proof. The proof is easy by using complements and Theorem 2.14.

Definition 2.16. Let (X,τ) be a topological space and $B \subseteq X$. We define the semi-regular*-closure of B to be the intersection of all sr*-closed sets containing B which is denoted by sr*-$Cl(B) = \cap\{A: B \subseteq A \text{ and } A \in \text{sr}^*\text{-}C(X,\tau).\}$. We note that sr*-$Cl(B)$ is the smallest sr*-*closed* set containing B.

Definition 2.17. Let (X,τ) be any topological space and B be a subset of X. A point p of X is called a sr*-*interior* point of B, if there exists a sr*-*open* set G such that $p \in G \subseteq B$. The set of all *semi-regular*-interior* points of B is said to be *semi-regular*-interior* of B (briefly sr*-Int(B)) and it is defined by sr*-$Int(B) = \cup\{A: A \subseteq B \text{ and } A \in \text{sr}^*\text{-}O(X,\tau)\}$.

Definition 2.18. Let ¥ be a subset of a topological space (X,τ) and let $x \in X$. We say that ¥ is sr*-*neighborhood* of x, if there is an sr*-*open* set U such that $x \in U \subseteq$ ¥.

Proposition2.19. If U and V are sets in a topological space (X,τ), then

(1) $\mathrm{sr}^*\text{-}Int(\phi)=\phi.$

(2) $\mathrm{sr}^*\text{-}Int(X)=X.$

(3) $\mathrm{sr}^*\text{-}Int(U)\subseteq U.$

(4) $U\subseteq V\Rightarrow \mathrm{sr}^*\text{-}Int(U)\subseteq \mathrm{sr}^*\text{-}Int(V).$

Proposition2.11. Let G be any subset of a topological space (X,τ). Then $x\in \mathrm{sr}^*\text{-}Cl(A)$ if and only if for every $\mathrm{sr}^*\text{-}open$ set U containing x, $U \cap G\neq\phi.$

Proposition2.12. For any subset U of topological space (X,τ), $\mathrm{sr}^*\text{-}Int(U)\subseteq U\subseteq \mathrm{sr}^*\text{-}Cl(U).$

Definition 2.13. Let A be a subset of a topological space (X,τ). A point $x\in A$ is said to be an $\mathrm{sr}^*\text{-}limit$ point of A if for each $\mathrm{sr}^*\text{-}open$ set U containing x, $U \cap (A-\{x\})\neq\phi.$ The set of all $\mathrm{sr}^*\text{-}limit$ points of A is called the $\mathrm{sr}^*\text{-}derived$ set of A and is denoted by $\mathrm{sr}^*\text{-}D(A)$.

Theorem 2.14. For any subset A of a topological space X, $\mathrm{sr}^*\text{-}Cl(A)=A\cup[\mathrm{sr}^*\text{-}D(A)]$.

Proof. Since $\mathrm{sr}^*\text{-}D(A)\subseteq \mathrm{sr}^*\text{-}Cl(A)$. $A\cup[\mathrm{sr}^*\text{-}D(A)]\subseteq \mathrm{sr}^*\text{-}Cl(A)$. On the other hand, let $x\in \mathrm{sr}^*\text{-}Cl(A)$. If $x\in A$, then the proof is complete. If $x\notin A$, each $\mathrm{sr}^*\text{-}open$ set U containing x intersects A at a point distinct from x, so $x\in \mathrm{sr}^*\text{-}D(A)$. Thus, $\mathrm{sr}^*\text{-}Cl(A)\subseteq[A\cup(\mathrm{sr}^*\text{-}D(A))]$, which completes the proof.

Corollary 2.15. A subset A of a space X is $\mathrm{sr}^*\text{-}closed$ if and only if it contains the set of all of its $\mathrm{sr}^*\text{-}limit$ points.

Theorem 2.16. For subsets A, B of a space X, the following statements are true:

(1) $\mathrm{sr}^*\text{-}Int(A)$ is the largest $\mathrm{sr}^*\text{-}open$ set contained in A;

(2) A is $\mathrm{sr}^*\text{-}open$ if and only if $A=\mathrm{sr}^*\text{-}Int(A)$.

(3) $\mathrm{sr}^*\text{-}Int[\mathrm{sr}^*\text{-}Int(A)]=\mathrm{sr}^*\text{-}Int(A)$;

(4) $\text{sr}^*\text{-}Int(A) = [A - (\text{sr}^*\text{-}D(X - A))]$;

(5) $[X - (\text{sr}^*\text{-}Cl(A))] = \text{sr}^*\text{-}Int(X - A)$;

(6) $[X - (\text{sr}^*\text{-}Int(A))] = \text{sr}^*\text{-}Cl(X - A)$;

(7) $[\text{sr}^*\text{-}Int(A)] \cup [\text{sr}^*\text{-}Int(B)] \subseteq \text{sr}^*\text{-}Int(A \cup B)$;

(8) $\text{sr}^*\text{-}Int(A \cap B) = [\text{sr}^*\text{-}Int(A)] \cap [\text{sr}^*\text{-}Int(B)]$;

Proof. (4) If $x \in [A - (\text{sr}^*\text{-}D(X - A))]$, then $x \notin \text{sr}^*\text{-}D(X - A)$ and so there exists an sr^*-*open* set U containing x such that $U \cap (X - A) = \phi$. Then, $x \in U \subseteq A$ and hence $x \in \text{sr}^*\text{-}Int(A)$, that is, $[A - (\text{sr}^*\text{-}D(X - A))] \subseteq \text{sr}^*\text{-}Int(A)$. On the other hand, if $x \in \text{sr}^*\text{-}Int(A)$, then $x \notin \text{sr}^*\text{-}D(X - A)$ since $\text{sr}^*\text{-}Int(A)$ is sr^*-*open* and $[(\text{sr}^*\text{-}Int(A)) \cap (X - A)] = \phi$. Hence, $\text{sr}^*\text{-}Int(A) = [A - (\text{sr}^*\text{-}D(X - A))]$.

(6) $X - [\text{sr}^*\text{-}Int(A)] = X - [A - (\text{sr}^*\text{-}D(X - A))] = (X - A) \cup [\text{sr}^*\text{-}D(X - A)] = \text{sr}^*\text{-}Cl(X - A)$.

Theorem 2.17. Let (X, τ) be a topological space and $A, B \subseteq X$. Then the following statements are true:

(1) $x \in \text{sr}^*\text{-}Cl(A)$ if and only if for every sr^*-*open* subset U containing x, $U \cap A \neq \phi$.

(2) $A \subseteq B$ implies that $\text{sr}^*\text{-}Cl(A) \subseteq \text{sr}^*\text{-}Cl(B)$.

(3) A is sr^*-*closed* if and only if $\text{sr}^*\text{-}Cl(A) = A$.

(4) $\text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Cl(A)] = \text{sr}^*\text{-}Cl(A)$.

(5) $[\text{sr}^*\text{-}Cl(A)] \cup [\text{sr}^*\text{-}Cl(B)] = \text{sr}^*\text{-}Cl(A \cup B)$.

(6) $\text{sr}^*\text{-}Int(X - A) = X - [\text{sr}^*\text{-}Cl(A)]$.

(7) $\text{sr}^*\text{-}Cl(X - A) = X - [\text{sr}^*\text{-}Int(A)]$.

Definition 2.18. $\text{sr}^*\text{-}Bd(A) = A - [\text{sr}^*\text{-}Int(A)]$ is said to be the sr^*-*border* of A.

Theorem 2.19. For a subset A of a space X, the following statements hold:

(1) $Bd(A) \subseteq \text{sr}^*\text{-}Bd(A)$ where $Bd(A)$ denotes the border of A;

(2) $A = \text{sr}^*\text{-}Int(A) \cup \text{sr}^*\text{-}Bd(A)$;

(3) $[\text{sr}^*\text{-}Int(A)] \cap [\text{sr}^*\text{-}Bd(A)] = \phi$;

(4) A is an sr^*-*open* set if and only if $\text{sr}^*\text{-}Bd(A) = \phi$;

(5) $\text{sr}^*\text{-}Bd[\text{sr}^*\text{-}Int(A)] = \phi$;

(6) $\text{sr}^*\text{-}Int[\text{sr}^*\text{-}Bd(A)] = \phi$;

(7) $\text{sr}^*\text{-}Bd[\text{sr}^*\text{-}Bd(A)] = \text{sr}^*\text{-}Bd(A)$;

(8) $\text{sr}^*\text{-}Bd(A) = A \cap [\text{sr}^*\text{-}Cl(X - A)]$;

(9) $\text{sr}^*\text{-}Bd(A) = \text{sr}^*\text{-}D(X - A)$.

Proof. (6) If $x \in \text{sr}^*\text{-}Int[\text{sr}^*\text{-}Bd(A)]$, then $x \in \text{sr}^*\text{-}Bd(A)$. On the other hand, since $\text{sr}^*\text{-}Bd(A) \subseteq A$, $x \in \text{sr}^*\text{-}Int[\text{sr}^*\text{-}Bd(A)] \subseteq \text{sr}^*\text{-}Int(A)$. Therefore, we get $x \in [\text{sr}^*\text{-}Int(A)] \cap [\text{sr}^*\text{-}Bd(A)]$, which contradicts (3). Thus, $\text{sr}^*\text{-}Int[\text{sr}^*\text{-}Bd(A)] = \phi$.

(8) $\text{sr}^*\text{-}Bd(A) = A - [\text{sr}^*\text{-}Int(A)] = A - [X - (\text{sr}^*\text{-}Cl(X - A))] = A \cap [\text{sr}^*\text{-}Cl(X - A)]$.

(9) $\text{sr}^*\text{-}Bd(A) = A - [\text{sr}^*\text{-}Int(A)] = A - [A - (\text{sr}^*\text{-}D(X - A))] = \text{sr}^*\text{-}D(X - A)$.

Definition 2.20. $\text{sr}^*\text{-}Fr(A) = [\text{sr}^*\text{-}Cl(A)] - [\text{sr}^*\text{-}Int(A)]$ is said to be the sr^*-*frontier* of A.

Theorem 2.21. For a subset A of a space X, the following statements hold:

(1) $Fr(A) \subseteq \text{sr}^*\text{-}Fr(A)$ where $Fr(A)$ denotes the frontier of A;

(2) $\text{sr}^*\text{-}Cl(A) = [\text{sr}^*\text{-}Int(A)] \cup [\text{sr}^*\text{-}Fr(A)]$;

(3) $[\text{sr}^*\text{-}Int(A)] \cap [\text{sr}^*\text{-}Fr(A)] = \phi$;

(4) $\text{sr}^*\text{-}Bd(A) \subseteq \text{sr}^*\text{-}Fr(A)$;

(5) $\text{sr}^*\text{-}Fr(A) = [\text{sr}^*\text{-}Bd(A)] \cup [\text{sr}^*\text{-}D(A)]$;

(6) A is an sr*-*open* set if and only if $\text{sr}^*\text{-}Fr(A) = \text{sr}^*\text{-}D(A)$;

(7) $\text{sr}^*\text{-}Fr(A) = [\text{sr}^*\text{-}Cl(A)] \cap [\text{sr}^*\text{-}Cl(X - A)]$;

(8) $\text{sr}^*\text{-}Fr(A) = \text{sr}^*\text{-}Fr(X - A)$;

(9) $\text{sr}^*\text{-}Fr(A)$ is sr*-*closed*;

(10) $\text{sr}^*\text{-}Fr[\text{sr}^*\text{-}Fr(A)] \subseteq \text{sr}^*\text{-}Fr(A)$;

(11) $\text{sr}^*\text{-}Fr[\text{sr}^*\text{-}Int(A)] \subseteq \text{sr}^*\text{-}Fr(A)$;

(12) $\text{sr}^*\text{-}Fr[\text{sr}^*\text{-}Cl(A)] \subseteq \text{sr}^*\text{-}Fr(A)$;

(13) $\text{sr}^*\text{-}Int(A) = A - [\text{sr}^*\text{-}Fr(A)]$.

Proof. (2) $[\text{sr}^*\text{-}Int(A)] \cup [\text{sr}^*\text{-}Fr(A)] =$
$\text{sr}^*\text{-}Int(A) \cup [(\text{sr}^*\text{-}Cl(A)) - (\text{sr}^*\text{-}Int(A))] = \text{sr}^*\text{-}Cl(A)$
(3) $[\text{sr}^*\text{-}Int(A)] \cap [\text{sr}^*\text{-}Fr(A)] = [\text{sr}^*\text{-}Int(A)] \cap [(\text{sr}^*\text{-}Cl(A)) - (\text{sr}^*\text{-}Int(A))] = \phi$.

(5) *Since* $[\text{sr}^*\text{-}Int(A)] \cup [\text{sr}^*\text{-}Fr(A)] = [\text{sr}^*\text{-}Int(A)] \cup [\text{sr}^*\text{-}Bd(A)] \cup [\text{sr}^*\text{-}D(A)]$,
$\text{sr}^*\text{-}Fr(A) = [\text{sr}^*\text{-}Bd(A)] \cup [\text{sr}^*\text{-}D(A)]$.

(7) $\text{sr}^*\text{-}Fr(A) = [\text{sr}^*\text{-}Cl(A)] - [\text{sr}^*\text{-}Int(A)] = [\text{sr}^*\text{-}Cl(A)] \cap [\text{sr}^*\text{-}Cl(X - A)]$.

(9) $\text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Fr(A)] = \text{sr}^*\text{-}Cl[(\text{sr}^*\text{-}Cl(A)) \cap (\text{sr}^*\text{-}Cl(X - A))] \subseteq$
$\text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Cl(A)] \cap \text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Cl(X - A)]$
$= [\text{sr}^*\text{-}Cl(A)] \cap [\text{sr}^*\text{-}Cl(X - A)] = \text{sr}^*\text{-}Fr(A)$. Hence $\text{sr}^*\text{-}Fr(A)$ is sr*-*closed*.

(10) $\text{sr}^*\text{-}Fr[\text{sr}^*\text{-}Fr(A)] = \text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Fr(A)] \cap \text{sr}^*\text{-}Cl[X - (\text{sr}^*\text{-}Fr(A))] \subseteq$
$\text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Fr(A)] = \text{sr}^*\text{-}Fr(A)$.

(12) $\text{sr}^*\text{-}Fr[\text{sr}^*\text{-}Cl(A)] = \text{sr}^*\text{-}Cl[\text{sr}^*\text{-}Cl(A)] - \text{sr}^*\text{-}Int[\text{sr}^*\text{-}Cl(A)] =$
$[\text{sr}^*\text{-}Cl(A)] - [\text{sr}^*\text{-}Int(\text{sr}^*\text{-}Cl(A))] \subseteq [(\text{sr}^*\text{-}Cl(A)) - (\text{sr}^*\text{-}Int(A))] = \text{sr}^*\text{-}Fr(A)$.

(13) $A - [\text{sr}^*\text{-}Fr(A)] = A - [(\text{sr}^*\text{-}Cl(A)) - (\text{sr}^*\text{-}Int(A))] = \text{sr}^*\text{-}Int(A)$.

3 – 8: CHARACTERIZATIONS OF MAPPINGS

The purpose of this part is to introduce sr*-*continuous*, sr*-*irresolute*, sr*-*open*, sr*-*closed*, *pre*-sr*-*open*, and *pre*-sr*-*closed* functions and explore properties and characterizations of these functions.

3. sr*-CONTINUOUS FUNCTIONS

The purpose of this section is to investigate the properties and characterizations of sr*-*continuous* functions.

Definition 3.1. A function $f:(X,\tau)\to(Y,\sigma)$ is said to be sr*-*continuous* if $f^{-1}(V)\in$ sr*-$O(X,\tau)$ for every $V\in\sigma$.

Theorem 3.2. Let $f:(X,\tau)\to(Y,\sigma)$ be a function. Then the following statements are equivalent:

(1) f is sr*-*continuous*.

(2) The inverse image of each closed set in Y is an sr*-*closed* set in X;

(3) sr*-$Cl\left[f^{-1}(V)\right]\subseteq f^{-1}\left[Cl(V)\right]$, for every $V\subseteq Y$;

(4) $f\left[\text{sr*-}Cl(U)\right]\subseteq Cl\left[f(U)\right]$, for every $U\subseteq X$;

(5) For any point $x\in X$ and any open set V of Y containing $f(x)$, there exists $U\in$ sr*-$O(X,\tau)$ such that $x\in U$ and $f(U)\subseteq V$;

(6) sr*-$Bd\left[f^{-1}(V)\right]\subseteq f^{-1}\left[\text{sr*-}Bd(V)\right]$, for every $V\subseteq Y$;

(7) $f\left[\text{sr*-}D(U)\right]\subseteq Cl\left[f(U)\right]$, for every $U\subseteq X$;

(8) $f^{-1}\left[Int(V)\right]\subseteq$ sr*-$Int\left[f^{-1}(V)\right]$, for every $V\subseteq Y$;

Proof. $(1)\Rightarrow(2)$: Let $F\subseteq Y$ be closed. Since f is sr*-*continuous*, $f^{-1}(Y-F)=X-f^{-1}(F)$ is sr*-*open*. Therefore, $f^{-1}(F)$ is sr*-*closed* in X.

$(2)\Rightarrow(3)$: Since $Cl(V)$ is closed for every $V\subseteq Y$, then $f^{-1}\left[Cl(V)\right]$ is sr*-*closed*. Therefore $f^{-1}\left[Cl(V)\right]=\text{sr*-}Cl\left[f^{-1}\left(Cl(V)\right)\right]\supseteq\text{sr*-}Cl\left[f^{-1}(V)\right]$.

$(3)\Rightarrow(4)$: Let $U\subseteq X$ and $f(U)=V$. Then sr*-$Cl\left[f^{-1}(V)\right]\subseteq f^{-1}\left[Cl(V)\right]$. Thus sr*-$Cl(U)\subseteq\text{sr*-}Cl\left[f^{-1}\left(f(U)\right)\right]\subseteq f^{-1}\left[Cl\left(f(U)\right)\right]$ and $f\left[\text{sr*-}Cl(U)\right]\subseteq Cl\left[f(U)\right]$.

$(4)\Rightarrow(2)$: Let $W\subseteq Y$ be a closed set, and $U=f^{-1}(W)$. Then $f\left[\text{sr}^*\text{-}Cl(U)\right]\subseteq Cl\left[f(U)\right]$ $=Cl\left[f\left(f^{-1}(W)\right)\right]\subseteq Cl(W)=W$. Thus $\text{sr}^*\text{-}Cl(U)\subseteq f^{-1}\left[f\left(\text{sr}^*\text{-}Cl(U)\right)\right]\subseteq f^{-1}(W)=U$. So U is sr^**-closed*.

$(2)\Rightarrow(1)$: Let $V\subseteq Y$ be an open set. Then $Y-V$ is closed. Then $f^{-1}(Y-V)=X-f^{-1}(V)$ is sr^**-closed* in X and hence $f^{-1}(V)$ *is* sr^**-open in* X.

$(1)\Rightarrow(5)$: Let $f:(X,\tau)\to(Y,\sigma)$ be sr^**-continuous*. For any $x\in X$ and any open set V of Y containing $f(x)$, $U=f^{-1}(V)\in\text{sr}^*\text{-}O(X,\tau)$, and $f(U)=f\left[f^{-1}(V)\right]\subseteq V$.

$(5)\Rightarrow(1)$: Let $V\in\sigma$. We prove $f^{-1}(V)\in\text{sr}^*\text{-}O(X,\tau)$. Let $x\in f^{-1}(V)$. Then $f(x)\in V$ and there exists $U\in\text{sr}^*\text{-}O(X,\tau)$ such that $x\in U$ and $f(x)\in f(U)\subseteq V$. Hence $x\in U\subseteq f^{-1}\left[f(U)\right]\subseteq f^{-1}(V)$. It shows that $f^{-1}(V)$ is an sr^**-neighborhood* of each of its points. Therefore $f^{-1}(V)\in\text{sr}^*\text{-}O(X,\tau)$.

$(6)\Rightarrow(8)$: Let $V\subseteq Y$. Then by hypothesis, $\text{sr}^*\text{-}Bd\left[f^{-1}(V)\right]\subseteq f^{-1}\left[Bd(V)\right]$

$\Rightarrow f^{-1}(V)-\left[\text{sr}^*\text{-}Int\left(f^{-1}(V)\right)\right]\subseteq f^{-1}\left[V-Int(V)\right]=f^{-1}(V)-f^{-1}\left[Int(V)\right]$

$\Rightarrow f^{-1}\left[Int(V)\right]\subseteq\text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$.

$(8)\Rightarrow(6)$: Let $V\subseteq Y$. Then by hypothesis, $f^{-1}\left[Int(V)\right]\subseteq\text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$

$\Rightarrow f^{-1}(V)-\left[\text{sr}^*\text{-}Int\left(f^{-1}(V)\right)\right]\subseteq f^{-1}(V)-f^{-1}\left[Int(V)\right]=f^{-1}\left[V-Int(V)\right]$

$\Rightarrow\text{sr}^*\text{-}Bd\left[f^{-1}(V)\right]\subseteq f^{-1}\left[Bd(V)\right]$.

$(1)\Rightarrow(7)$: It is obvious, since f *is* sr^**-continuous* and by (4) $f\left[\text{sr}^*\text{-}Cl(U)\right]\subseteq Cl\left[f(U)\right]$ for each $U\subseteq X$. So $f\left[\text{sr}^*\text{-}D(U)\right]\subseteq Cl\left[f(U)\right]$.

$(7)\Rightarrow(1)$: Let $U\subseteq Y$ be an open set, $V=Y-U$ and $f^{-1}(V)=W$. Then by hypothesis $f\left[\text{sr}^*\text{-}D(W)\right]\subseteq Cl\left[f(W)\right]$. Thus $f\left[\text{sr}^*\text{-}D\left(f^{-1}(V)\right)\right]\subseteq Cl\left[f\left(f^{-1}(V)\right)\right]\subseteq Cl(V)=V$. Then $\text{sr}^*\text{-}D\left[f^{-1}(V)\right]\subseteq f^{-1}(V)$ and $f^{-1}(V)$ *is* sr^**-closed*. Therefore, f is sr^**-continuous*.

$(1)\Rightarrow(8)$: Let $V\subseteq Y$. Then $f^{-1}\left[Int(V)\right]$ is sr^**-open in* X. Thus $f^{-1}\left[Int(V)\right]=$ $\text{sr}^*\text{-}Int\left[f^{-1}\left(Int(V)\right)\right]\subseteq\ \text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$. Therefore $f^{-1}\left[Int(V)\right]\subseteq\text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$.

$(8) \Rightarrow (1)$: Let $V \subseteq Y$ be an open set. Then $f^{-1}(V) = f^{-1}\left[Int(V)\right] \subseteq \text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$. Therefore, $f^{-1}(V)$ *is* sr*-*open*. Hence f *is* sr*-*continuous*.

In the next Theorem, $\#\,\text{sr}^*\text{-}c$. denotes the set of points x of X for which a function $f:(X,\tau)\to(Y,\sigma)$ is not sr*-*continuous*.

Theorem 3.3. $\#\,\text{sr}^*\text{-}c$. is identical with the union of the sr*-*frontiers* of the inverse images of sr*-*open* sets containing $f(x)$.

Proof. Suppose that f is not sr*-*continuous* at a point x of X. Then there exists an open set $V \subseteq Y$ containing $f(x)$ such that $f(U)$ is not a subset of V for every $U \in \text{sr}^*\text{-}O(X,\tau)$. containing x. Hence, we have $U \cap f^{-1}\left(X - f^{-1}(V)\right) \neq \phi$ for every $U \in \text{sr}^*\text{-}O(X,\tau)$ containing x. It follows that $x \in \left[\text{sr}^*\text{-}Cl\left(X - f^{-1}(V)\right)\right]$. We also have $x \in f^{-1}(V) \subseteq \text{sr}^*\text{-}Cl\left[f^{-1}(V)\right]$. This means that $x \in \text{sr}^*\text{-}Fr\left[f^{-1}(V)\right]$. Now, let f be sr*-*continuous* at $x \in X$ and $V \subseteq Y$ any open set containing $f(x)$. Then, $x \in f^{-1}(V)$ is an sr*-*open* set of X. Thus. $x \in \text{sr}^*\text{-}Int\left[f^{-1}(V)\right]$ and therefore $x \notin \text{sr}^*\text{-}Fr\left[f^{-1}(V)\right]$ for every open set V containing $f(x)$.

Remarks 3.4. (1) Every sr*-*continuous* function is continuous, but the converse may not be true.

(2) If a function $f:(X,\tau)\to(Y,\sigma)$ is sr*-*continuous* and a function $g:(Y,\sigma)\to(Z,\vartheta)$ is sr*-*continuous*, then $gof:(X,\tau)\to(Z,\vartheta)$ is sr*-*continuous*.

(3) If a function $f:(X,\tau)\to(Y,\sigma)$ is sr*-*continuous* and a function $g:(Y,\sigma)\to(Z,\vartheta)$ is continuous, then $gof:(X,\tau)\to(Z,\vartheta)$ is sr*-*continuous*.

(4) Let (X,τ) and (Y,σ) be topological spaces. If $f:(X,\tau)\to(Y,\sigma)$ is a function, and one of the following

(a) $f^{-1}\left[Int(B)\right] \subseteq \text{sr}^*\text{-}Int\left[f^{-1}(B)\right]$ for each $B \subseteq Y$.

(b) $\text{sr}^*\text{-}Cl\left[f^{-1}(B)\right] \subseteq f^{-1}\left[Cl(B)\right]$ for each $B \subseteq Y$.

(c) $f\left[\text{sr}^*\text{-}Cl(A)\right] \subseteq Cl\left[f(A)\right]$ for each $A \subseteq X$ holds, then f is continuous.

Lemma 3.5. Let $A \subseteq Y \subseteq X$, Y is sr*-*open* in X and A is sr*-*open* in Y. Then A is sr*-*open* in X.

Proof. Since A is sr*-*open* in Y, there exists an sr*-*open* set $U \subseteq X$ such that $A = Y \cap U$. Thus A being the intersection of two sr*-*open* sets in X, is sr*-*open* in X.

Theorem 3.6. Let $f:(X,\tau)\to(Y,\sigma)$ be a mapping and $\{U_i : i\in I\}$ be a cover of X such that $U_i\in \text{sr}^*\text{-}O(X,\tau)$ for each $i\in I$. Then prove that f is sr^**-continuous*.

Proof. Let $V\subseteq Y$ be an open set, then $\left(f|U_i\right)^{-1}(V)$ is sr^**-open* in U_i for each $i\in I$. Since U_i is sr^**-open* in X for each $i\in I$. So by Lemma 3.5, $\left(f|U_i\right)^{-1}(V)$ is sr^**-open* in X for each $i\in I$. But, $f^{-1}(V)=\text{U}\left\{\left(f|U_i\right)^{-1}(V) : i\in I\right\}$, then $f^{-1}(V)\in \text{sr}^*\text{-}O(X,\tau)$ because $\text{sr}^*\text{-}O(X,\tau)$ is closed under union. This implies that f is sr^**-continuous*.

4. sr*-IRRESOLUTE FUNCTIONS

In this section, the functions to be considered are those for which inverses of sr^**-open* sets are sr^**-open*. We investigate some properties and characterizations of such functions.

Definition 4.1. Let (X,τ) and (Y,σ) be topological spaces. A function $f:(X,\tau)\to(Y,\sigma)$ is called sr^**-irresolute* if the inverse image of each sr^**-open* set of Y is an sr^**-open* set in X.

Theorem 4.2. Let $f:(X,\tau)\to(Y,\sigma)$ be a function between topological spaces. Then the following statements are equivalent:

(1) f is sr^**-irresolute;*

(2) the inverse image of each sr^**-closed* set in Y is an sr^**-closed* set in X*;*

(3) $\text{sr}^*\text{-}Cl\left[f^{-1}(V)\right]\subseteq f^{-1}\left[\text{sr}^*\text{-}Cl(V)\right]$ for every $V\subseteq Y$*;*

(4) $f\left[\text{sr}^*\text{-}Cl(U)\right]\subseteq \text{sr}^*\text{-}Cl\left[f(U)\right]$ for every $U\subseteq X$*;*

(5) $f^{-1}\left[\text{sr}^*\text{-}Int(B)\right]\subseteq \text{sr}^*\text{-}Int\left[f^{-1}(B)\right]$ for every $B\subseteq Y$.

Theorem 4.3. Prove that a function $f:(X,\tau)\to(Y,\sigma)$ is sr^**-irresolute* if and only if for each point p in X and each sr^**-open* set B in Y with $f(p)\in B$, there is an sr^**-open* set A in X such that $p\in A$, $f(A)\subseteq B$.

Proof. Necessity. Let $p\in X$ and $B\in \text{sr}^*\text{-}O(Y,\sigma)$ such that $f(p)\in B$. Let $A=f^{-1}(B)$. Since f is sr^**-irresolute*, A is sr^**-open* in X. Also $p\in f^{-1}(B)=A$ as $f(p)\in B$. Thus we have $f(A)=f\left[f^{-1}(B)\right]\subseteq B$.

Sufficiency. Let $B\in \text{sr}^*\text{-}O(Y,\sigma)$, and $A=f^{-1}(B)$. We show that A is sr^**-open* in X. For this let $x\in A$. It implies that $f(x)\in B$. Then by hypothesis, there exists $A_x\in \text{sr}^*\text{-}O(X,\tau)$

such that $x \in A_x$ and $f(A_x) \subseteq B$. Then $A_x \subseteq f^{-1}[f(A_x)] \subseteq f^{-1}(B) = A$. Thus $A = \cup\{A_x : x \in A\}$. It follows that A is sr*-*open* in X. Hence f is sr*-*irresolute.*

Definition 4.4. Let (X, τ) be a topological space. Let $x \in X$ and $N \subseteq X$. We say that N is an sr*-*neighborhood* of x if there exists an sr*-*open* set M of x such that $x \in M \subseteq N$.

Theorem 4.5. Prove that a function $f : (X, \tau) \to (Y, \sigma)$ is sr*-*irresolute* if and only if for each x in X, the inverse image of every sr*-*neighborhood* of $f(x)$, is an sr*-*neighborhood* of x.

Proof. Necessity. Let $x \in X$ and let B be an sr*-*neighborhood* of $f(x)$. Then there exists $U \in$ sr*-$O(Y, \sigma)$ such that $f(x) \in U \subseteq B$. This implies that $x \in f^{-1}(U) \subseteq f^{-1}(B)$. Since f is sr*-*irresolute*, so $f^{-1}(U) \in$ sr*-$O(X, \tau)$. Hence $f^{-1}(B)$ is an sr*-*neighborhood* of x.

Sufficiency. Let $B \in$ sr*-$O(Y, \sigma)$. Put $A = f^{-1}(B)$. Let $x \in A$. Then $f(x) \in B$. But then, B being sr*-*open* set, is an sr*-*neighborhood* of $f(x)$. So by hypothesis, $A = f^{-1}(B)$ is a sr*-*neighborhood* of x. Hence by definition, there exists $A_x \in$ sr*-$O(X, \tau)$ such that $x \in A_x \subseteq A$. Thus $A = \cup\{A_x : x \in A\}$. It follows that A is an sr*-*open* set in X. Therefore f is sr*-*irresolute.*

Theorem 4.6. Prove that a function $f : (X, \tau) \to (Y, \sigma)$ is sr*-*irresolute* if and only if for each x in X and each sr*-*neighborhood* U of $f(x)$, there is an sr*-*neighborhood* V of x such that $f(V) \subseteq U$.

Proof. Necessity. Let $x \in X$ and let U be an sr*-*neighborhood* of $f(x)$. Then there exists $O_{f(x)} \in$ sr*-$O(Y, \sigma)$ such that $f(x) \in O_{f(x)} \subseteq U$. It follows that $x \in f^{-1}[O_{f(x)}] \subseteq f^{-1}(U)$. By hypothesis, $f^{-1}[O_{f(x)}] \in$ sr*-$O(X, \tau)$. Let $V = f^{-1}(U)$. Then it follows that V is an sr*-*neighborhood* of x and $f(V) = f[f^{-1}(U)] \subseteq U$.

Sufficiency. Let $B \in$ sr*-$O(Y, \sigma)$. Put $O = f^{-1}(B)$. Let $x \in O$. Then $f(x) \in B$. Thus B is an sr*-*neighborhood* of $f(x)$. So by hypothesis, there exists an sr*-*neighborhood* V_x of x such that $f(V_x) \subseteq B$. Thus it follows that $x \in V_x \subseteq f^{-1}[f(V_x)] \subseteq f^{-1}(B) = O$. Since V_x is an sr*-*neighborhood* of x, so there exists an $O_x \in$ sr*-$O(X, \tau)$ such that $x \in O_x \subseteq V_x$. Hence $x \in O_x \subseteq O$, $O_x \in$ sr*-$O(X, \tau)$. Thus $O = \cup\{O_x : x \in O\}$. It follows that O is sr*-*open* in X. Therefore, f is sr*-*irresolute.*

Theorem 4.7. Prove that a function $f : (X, \tau) \to (Y, \sigma)$ is sr*-*irresolute* if and only if $f[$sr*-$D(A)] \subseteq f(A) \cup [$sr*-$D(f(A))]$, for all $A \subseteq X$.

Proof. Necessity. Let $f:(X,\tau)\to(Y,\sigma)$ be sr*-*irresolute*. Let $A\subseteq X$, and $a_0\in \text{sr}^*\text{-}D(A)$. Assume that $f(a_0)\notin f(A)$ and let V denote an sr*-*neighborhood* of $f(a_0)$. Since f is sr*-*irresolute*, so by Theorem 4.6, there exists an sr*-*neighborhood* U of a_0 such that $f(U)\subseteq V$. From $a_0\in \text{sr}^*\text{-}D(A)$, it follows that $U\cap A\neq\phi$; there exists, therefore, at least one element $a\in U\cap A$ such that $f(a)\in f(A)$ and $f(a)\in f(V)$. Since $f(a_0)\notin f(A)$, we have $f(a)\neq f(a_0)$. Thus every sr*-*neighborhood* of $f(a_0)$ contains an element of $f(A)$ different from $f(a_0)$, consequently, $f(a_0)\in \text{sr}^*\text{-}D[f(A)]$. This proves necessity of the condition.

Sufficiency. Assume that f is not sr*-*irresolute*. Then by Theorem 4.6, there exists an $a_0\in X$ and an sr*-*neighborhood* V of $f(a_0)$ such that every sr*-*neighborhood* U of a_0 contains at least one element $a\in U$ for which $f(a)\notin V$. Put $A=\{a\in X: f(a)\notin V\}$. Then $a_0\notin A$ since $f(a_0)\in V$, and therefore $f(a_0)\notin A$; also $f(a_0)\notin \text{sr}^*\text{-}D[f(A)]$ since $V\cap(V-\{f(a_0)\})=\phi$. Therefore, $f(a_0)\in f[\text{sr}^*\text{-}D(A)]-[f(A)\cup(\text{sr}^*\text{-}D(f(A)))]\neq\phi$, which is a contradiction to the given condition. The condition of the Theorem is therefore sufficient, and the theorem is proved.

Theorem 4.8. Let $f:(X,\tau)\to(Y,\sigma)$ be a one-to-one function. Then f is sr*-*irresolute* if and only if $f[\text{sr}^*\text{-}D(A)]\subseteq \text{sr}^*\text{-}D[f(A)]$, for all $A\subseteq X$.

Proof. Necessity. Let f be sr*-*irresolute*. Let $A\subseteq X$, $a_0\in \text{sr}^*\text{-}D(A)$ and V be an sr*-*neighborhood* of $f(a_0)$. Since f is sr*-*irresolute*, so by Theorem 4.6, there exists an sr*-*neighborhood* U of a_0 such that $f(U)\subseteq V$. But $a_0\in \text{sr}^*\text{-}D(A)$; hence there exists an element $a\in U\cap A$ such that $a\neq a_0$; then $f(a)\in f(A)$ and since f is one to one, $f(a)\neq f(a_0)$. Thus every sr*-*neighborhood* V of $f(a_0)$ contains an element of $f(A)$ different from $f(a_0)$; consequently $f(a_0)\in \text{sr}^*\text{-}D[f(A)]$. We have therefore $f[\text{sr}^*\text{-}D(A)]\subseteq \text{sr}^*\text{-}D[f(A)]$.

Sufficiency. Follows from Theorem 4.7.

5 sr*-OPEN FUNCTIONS

The purpose of this section is to investigate some characterizations of sr*-*open* mappings.

Definition 5.1. Let (X,τ) and (Y,σ) be topological spaces. A function $f:(X,\tau)\to(Y,\sigma)$ is called sr*-*open* if for every open set G in X, $f(G)$ is an sr*-*open* set in Y.

Theorem 5.2. Prove that a mapping $f:(X,\tau)\to(Y,\sigma)$ is sr*-*open* if and only if for each $x\in X$, and $U\in\tau$ such that $x\in U$, there exists a sr*-*open* set $W\subseteq Y$ containing $f(x)$ such that $W\subseteq f(U)$.

Proof. Follows immediately from Definition 5.1.

Theorem 5.3. Let $f:(X,\tau)\to(Y,\sigma)$ be sr*-*open*. If $W\subseteq Y$ and $F\subseteq X$ is a closed set containing $f^{-1}(W)$, then there exists an sr*-*closed* $H\subseteq Y$ containing W such that $f^{-1}(H)\subseteq F$.

Proof. Let $H=Y-f(Y-F)$. Since $f^{-1}(W)\subseteq F$, we have $f^{-1}(Y-F)\subseteq(Y-W)$. Since f is sr*-*open*, then H is sr*-*closed* and $f^{-1}(H)=X-f^{-1}\left[f(X-F)\right]\subseteq X-(X-F)=F$.

Theorem 5.4. Let $f:(X,\tau)\to(Y,\sigma)$ be an sr*-*open* function and let $B\subseteq Y$. Then $f^{-1}\left[\text{sr*-}Cl\left(\text{sr*-}Int\left(\text{sr*-}Cl(B)\right)\right)\right]\subseteq Cl\left[f^{-1}(B)\right]$.

Proof. $Cl\left[f^{-1}(B)\right]$ is closed in X containing $f^{-1}(B)$. By Theorem 5.3, there exists an sr*-*closed* set $B\subseteq H\subseteq Y$ such that $f^{-1}(H)\subseteq Cl\left[f^{-1}(B)\right]$. Thus, $f^{-1}\left[\text{sr*-}Cl\left(\text{sr*-}Int\left(\text{sr*-}Cl(B)\right)\right)\right]\subseteq f^{-1}\left[\text{sr*-}Cl\left(\text{sr*-}Int\left(\text{sr*-}Cl(H)\right)\right)\right]\subseteq f^{-1}[H]\subseteq Cl\left[f^{-1}(B)\right]$.

Theorem 5.5. Prove that a function $f:(X,\tau)\to(Y,\sigma)$ is sr*-*open* if and only if $f\left[Int(A)\right]\subseteq\text{sr*-}Int\left[f(A)\right]$, *for all* $A\subseteq X$.

Proof. Necessity. Let $A\subseteq X$ and $x\in Int(A)$. Then there exists $U_x\in\tau$ such that $x\in U_x\subseteq A$. So $f(x)\in f(U_x)\subseteq f(A)$. and by hypothesis, $f(U_x)\in\text{sr*-}O(Y,\sigma)$. Hence $f(x)\in\text{sr*-}Int\left[f(A)\right]$. Thus $f\left[Int(A)\right]\subseteq\text{sr*-}Int\left[f(A)\right]$.

Sufficiency. Let $U\in\tau$. Then by hypothesis, $f\left[Int(U)\right]\subseteq\text{sr*-}Int\left[f(U)\right]$. Since $Int(U)=U$ as U is open. Also, $\text{sr*-}Int\left[f(U)\right]\subseteq f(U)$. Hence $f(U)=\text{sr*-}Int\left[f(U)\right]$. Thus $f(U)$ is sr*-*open* open in Y. So f is sr*-*open*.

Remark 5.6. The equality may not hold in the preceding Theorem.

Theorem 5.7. Prove that a function $f:(X,\tau)\to(Y,\sigma)$ is sr*-*open* if and only if $Int\left[f^{-1}(B)\right]\subseteq f^{-1}\left[\text{sr*-}Int(B)\right]$, for all $B\subseteq Y$.

Proof. Necessity. Let $B \subseteq Y$. Since $Int\left[f^{-1}(B) \right]$ is open in X and f is sr*-*open*, $f\left[Int\left(f^{-1}(B) \right) \right]$ is sr*-*open* in Y. Also we have $f\left[Int\left(f^{-1}(B) \right) \right] \subseteq f\left[f^{-1}(B) \right] \subseteq B$. Hence, $f\left[Int\left(f^{-1}(B) \right) \right] \subseteq$ sr*-$Int(B)$. Therefore $Int\left(f^{-1}(B) \right) \subseteq f^{-1}\left[\text{sr*-}Int(B) \right]$.

Sufficiency. Let $A \subseteq X$. Then $f(A) \subseteq Y$. Hence by hypothesis, we obtain $Int(A) \subseteq Int\left[f^{-1}\left(f(A) \right) \right] \subseteq f^{-1}\left[\text{sr*-}Int\left(f(A) \right) \right]$. Thus $f\left[int(A) \right] \subseteq$ sr*-$Int\left[f(A) \right]$, for all $A \subseteq X$. Hence, by Theorem 5.5, f is sr*-*open.*

Theorem 5.8. Let $f:(X,\tau) \to (Y,\sigma)$ be a mapping. Then a necessary and sufficient condition for f to be sr*-*open* is that $f^{-1}\left[\text{sr*-}Cl(B) \right] \subseteq Cl\left[f^{-1}(B) \right]$ for every subset B of Y.

Proof. Necessity. Assume f is sr*-*open*. Let $B \subseteq Y$. Let $x \in f^{-1}\left[\text{sr*-}Cl(B) \right]$. Then $f(x) \in$ sr*-$Cl(B)$. Let $U \in \tau$ such that $x \in U$. Since f is sr*-*open*, then $f(U)$ is an sr*-*open* set in Y. Therefore, $B \cap f(U) \neq \phi$. Then $U \cap f^{-1}(B) \neq \phi$. Hence $x \in Cl\left[f^{-1}(B) \right]$. We conclude that $f^{-1}\left[\text{sr*-}Cl(B) \right] \subseteq Cl\left[f^{-1}(B) \right]$.

Sufficiency. Let $B \subseteq Y$. Then $(Y-B) \subseteq Y$. By hypothesis, $f^{-1}\left[\text{sr*-}Cl(Y-B) \right] \subseteq Cl\left[f^{-1}(Y-B) \right]$. This implies that $X - Cl\left[f^{-1}(Y-B) \right] \subseteq X - f^{-1}\left[\text{sr*-}Cl(Y-B) \right]$. Therefore $X - Cl\left[X - f^{-1}(B) \right] \subseteq f^{-1}\left[Y - \left(\text{sr*-}Cl(Y-B) \right) \right]$. This implies that $Int\left[f^{-1}(B) \right] \subseteq f^{-1}\left[\text{sr*-}Int(B) \right]$. Now form Theorem 5.7, it follows that f is sr*-*open*.

6. sr*-CLOSED FUNCTIONS

In this section, we introduce sr*-*closed* functions and study certain properties and characterizations of these types of functions.

Definition 6.1. A mapping $f:(X,\tau) \to (Y,\sigma)$ is called sr*-*closed* if the image of each closed set in X is an sr*-*closed* set in Y.

Theorem 6.2. Prove that a mapping $f:(X,\tau) \to (Y,\sigma)$ is sr*-*closed* if and only if sr*-$Cl\left[f(A) \right] \subseteq f\left[Cl(A) \right]$ for each $A \subseteq X$.

Proof. Necessity. Let f be sr*-*closed* and let $A \subseteq X$. Then $f(A) \subseteq f\left[Cl(A) \right]$ and $f\left[Cl(A) \right]$ is an sr*-*closed* set in Y. Thus sr*-$Cl\left[f(A) \right] \subseteq f\left[Cl(A) \right]$.

Sufficiency. Suppose that $\text{sr}^*\text{-}Cl\left[f(A)\right] \subseteq f\left[Cl(A)\right]$, for each $A \subseteq X$. Let $A \subseteq X$ be a closed set. Then $\text{sr}^*\text{-}Cl\left[f(A)\right] \subseteq f\left[Cl(A)\right] = f(A)$. This shows that $f(A)$ is an $\text{sr}^*\text{-}closed$ set. Hence f is $\text{sr}^*\text{-}closed$.

Theorem 6.3. Let $f:(X,\tau)\to(Y,\sigma)$ be $\text{sr}^*\text{-}closed$. If $V \subseteq Y$ and $E \subseteq X$ is an open set containing $f^{-1}(V)$, then there exists an $\text{sr}^*\text{-}open$ set $G \subseteq Y$ containing V such that $f^{-1}(G) \subseteq E$.

Proof. Let $G = Y - f(X-E)$. Since $f^{-1}(V) \subseteq E$, we have $f(X-E) \subseteq Y-V$. Since f is $\text{sr}^*\text{-}closed$, then G is an $\text{sr}^*\text{-}open$ set and also $f^{-1}(G) = X - f^{-1}\left[f(X-E)\right] \subseteq X-(X-E) = E$.

Theorem 6.4. Suppose that $f:(X,\tau)\to(Y,\sigma)$ is an $\text{sr}^*\text{-}closed$ mapping. Then $\text{sr}^*\text{-}Int\left[\text{sr}^*\text{-}Cl\left(f(A)\right)\right] \subseteq f\left[Cl(A)\right]$ for every subset A of X.

Proof. Suppose f is an $\text{sr}^*\text{-}closed$ mapping and A is an arbitrary subset of X. Then $f\left[Cl(A)\right]$ is $\text{sr}^*\text{-}closed$ in Y. Then $\text{sr}^*\text{-}Int\left[\text{sr}^*\text{-}Cl\left(f\left(Cl(A)\right)\right)\right] \subseteq f\left[Cl(A)\right]$. But also $\text{sr}^*\text{-}Int\left[\text{sr}^*\text{-}Cl\left(f(A)\right)\right] \subseteq \text{sr}^*\text{-}Int\left[\text{sr}^*\text{-}Cl\left(f\left(Cl(A)\right)\right)\right]$. So $\text{sr}^*\text{-}Int\left[\text{sr}^*\text{-}Cl\left(f(A)\right)\right] \subseteq f\left[Cl(A)\right]$.

Theorem 6.5. Let $f:(X,\tau)\to(Y,\sigma)$ be an $\text{sr}^*\text{-}closed$ function, and $B, C \subseteq Y$.

Proof. (1) If U is an open neighborhood of $f^{-1}(B)$, then there exists an $\text{sr}^*\text{-}open$ neighborhood V of B such that $f^{-1}(B) \subseteq f^{-1}(V) \subseteq U$.

(2) If f is also onto, then if $f^{-1}(B)$ and $f^{-1}(C)$ have disjoint open neighborhoods, so have B and C.

Proof. (1) Let $V = Y - f(X-U)$. Then $V^c = Y - V = f\left(U^c\right)$. Since f is $\text{sr}^*\text{-}closed$, so V is an $\text{sr}^*\text{-}open$ set. Since $f^{-1}(B) \subseteq U$, we have $V^c = f\left(U^c\right) \subseteq f\left[f^{-1}\left(B^c\right)\right] \subseteq B^c$. Hence, $B \subseteq V$, and thus V is an $\text{sr}^*\text{-}open$ neighborhood of B. Further $U^c \subseteq f^{-1}\left[f\left(U^c\right)\right] = f^{-1}\left(V^c\right) = \left[f^{-1}(V)\right]^c$. This proves that $f^{-1}(V) \subseteq U$.

(2) If $f^{-1}(B)$ and $f^{-1}(C)$ have disjoint open neighborhoods M and N, then by (1), we have $\text{sr}^*\text{-}open$ neighborhoods U and V of B and C respectively such that $f^{-1}(B) \subseteq f^{-1}(U) \subseteq \text{sr}^*\text{-}Int(M)$ and $f^{-1}(C) \subseteq f^{-1}(V) \subseteq \text{sr}^*\text{-}Int(N)$. Since M and N are disjoint, so are $\text{sr}^*\text{-}Int(M)$ and $\text{sr}^*\text{-}Int(N)$, hence so $f^{-1}(U)$ and $f^{-1}(V)$ are disjoint as well. It follows that U and V are disjoint too as f is onto.

Theorem 6.6. Prove that a surjective mapping $f:(X,\tau)\to(Y,\sigma)$ is sr^*-*closed*, if and only if for each subset B of Y and each open set U in X containing $f^{-1}(B)$, there exists an sr^*-*open* set V in Y containing B such that $f^{-1}(V)\subseteq U$.

Proof. Necessity. This follows from (1) of Theorem 6.5.

Sufficiency. Suppose F is an arbitrary closed set in X. Let y be an arbitrary point in $Y-f(F)$. Then $f^{-1}(y)\subseteq X-f^{-1}[f(F)]\subseteq(X-F)$ and $(X-F)$ is open in X. Hence by hypothesis, there exists an sr^*-*open* set V_y containing y such that $f^{-1}(V_y)\subseteq(X-F)$. This implies that $y\in V_y\subseteq[Y-f(F)]$. Thus $Y-f(F)=\mathrm{U}\{V_y : y\in Y-f(F)\}$. Hence $Y-f(F)$, being a union of sr^*-*open* sets, is sr^*-*open*. Thus its complement $f(F)$ is sr^*-*closed*. This shows that f is sr^*-*closed*.

Theorem 6.7. Let $f:(X,\tau)\to(Y,\sigma)$ be a bijection. Then the following are equivalent:

(a) f is sr^*-*closed*.

(b) f is sr^*-*open*.

(c) f^{-1} is sr^*-*continuous*.

Proof. $(\mathrm{a})\Rightarrow(\mathrm{b})$: Let $U\in\tau$. Then $X-U$ is closed in X. By (a), $f(X-U)$ is sr^*-*closed* in Y. But $f(X-U)=f(X)-f(U)=Y-f(U)$. Thus $f(U)$ is sr^*-*open* in Y. This shows that f is sr^*-*open*.

$(\mathrm{b})\Rightarrow(\mathrm{c})$: Let $U\subseteq X$. be an open set. Since f is sr^*-*open*. So $f(U)=(f^{-1})^{-1}(U)$ is sr^*-*open* in Y. Hence f^{-1} is sr^*-*continuous*.

$(\mathrm{c})\Rightarrow(\mathrm{a})$: Let A be an arbitrary closed set in X. Then $X-A$ is open in X. Since f^{-1} is sr^*-*continuous*, $(f^{-1})^{-1}(X-A)$ is sr^*-*open* in Y. But $(f^{-1})^{-1}(X-A)=f(X-A)=Y-f(A)$. Thus $f(A)$ is sr^*-*closed* in Y. This shows that f is sr^*-*closed*.

Remark 6.8. A bijection $f:(X,\tau)\to(Y,\sigma)$ may be open and closed but neither sr^*-*open* nor sr^*-*closed*.

7. PRE-sr^*-OPEN FUNCTIONS

The purpose of this section is to introduce and discuss certain properties and characterizations of *pre*-sr^*-*open* functions.

Definition 7.1. Let (X,τ) and (Y,σ) be topological spaces. Then a function $f:(X,\tau)\to(Y,\sigma)$ is said to be *pre-*sr^**-open* if and only if for each $A\in \mathrm{sr}^*\text{-}O(X,\tau)$, $f(A)\in \mathrm{sr}^*\text{-}O(Y,\sigma)$.

Theorem 7.2. Let $f:(X,\tau)\to(Y,\sigma)$ and $g:(Y,\sigma)\to(Z,\mu)$ be any two *pre-*gsg*-open* functions. Then the composition function $g\circ f:(X,\tau)\to(Z,\mu)$ is a *pre-*sr^**-open* function.

Proof. Let $U\in \mathrm{sr}^*\text{-}O(X,\tau)$. Then $f(U)\in \mathrm{sr}^*\text{-}O(Y,\sigma)$. Since f is *pre-*sr^**-open*. But then $g(f(U))\in \mathrm{sr}^*\text{-}O(Z,\mu)$ as g is *pre-*sr^**-open*. Hence, $g\circ f$ is *pre-*sr^**-open*.

Theorem 7.3. Prove that a mapping $f:(X,\tau)\to(Y,\sigma)$ is *pre-*sr^**-open* if and only if for each $x\in X$ and any $U\in \mathrm{sr}^*\text{-}O(X,\tau)$ such that $x\in U$, there exists $V\in \mathrm{sr}^*\text{-}O(Y,\sigma)$ such that $f(x)\in V$ and $V\subseteq f(U)$.

Proof. Routine.

Theorem 7.4. Prove that a mapping $f:(X,\tau)\to(Y,\sigma)$ is *pre-*sr^**-open* if and only if for each $x\in X$ and for any sr^**-neighborhood* U of x in X, there exists a sr^**-neighborhood* V of $f(x)$ in Y such that $V\subseteq f(U)$.

Proof. Necessity. Let $x\in X$ and let U be an sr^**-neighborhood* of x. Then there exists $W\in \mathrm{sr}^*\text{-}O(X,\tau)$ such that $x\in W\subseteq U$. Then $f(x)\in f(W)\subseteq f(U)$. But $f(W)\in \mathrm{sr}^*\text{-}O(Y,\sigma)$ as f is *pre-*sr^**-open*. Hence $V=f(W)$ is a sr^**-neighborhood* of $f(x)$ and $V\subseteq f(U)$.

Sufficiency. Let $U\in \mathrm{sr}^*\text{-}O(X,\tau)$ and let $x\in U$. Then U is an sr^**-neighborhood* of x. So by hypothesis, there exists an sr^**-neighborhood* $V_{f(x)}$ of $f(x)$ such that $f(x)\in V_{f(x)}\subseteq f(U)$. It follows at once that $f(U)$ is an sr^**-neighborhood* of each of its points. Therefore $f(U)$ is sr^**-open*. Hence f is *pre-*sr^**-open*.

Theorem 7.5. Prove that a function $f:(X,\tau)\to(Y,\sigma)$ is *pre-*sr^**-open* if and only if $f[\mathrm{sr}^*\text{-}Int(A)]\subseteq \mathrm{sr}^*\text{-}Int[f(A)]$, for all $A\subseteq X$.

Proof. Necessity. Let $A\subseteq X$ and $x\in \mathrm{sr}^*\text{-}Int(A)$. Then there exists $U_x\in \mathrm{sr}^*\text{-}O(X,\tau)$ such that $x\in U_x\subseteq A$. So $f(x)\in f(U_x)\subseteq f(A)$ and by hypothesis, $f(U_x)\in \mathrm{sr}^*\text{-}O(Y,\sigma)$. Hence $f(x)\in \mathrm{sr}^*\text{-}Int[f(A)]$. Thus $f[\mathrm{sr}^*\text{-}Int(A)]\subseteq \mathrm{sr}^*\text{-}Int[f(A)]$.

Sufficiency. Let $U \in \text{sr}^*\text{-}O(X,\tau)$. Then by hypothesis, $f\left[\text{sr}^*\text{-}Int(U)\right] \subseteq \text{sr}^*\text{-}Int\left[f(U)\right]$. Since $\text{sr}^*\text{-}Int(U) = U$ as U is sr^*-*open*. Also $\text{sr}^*\text{-}Int\left[f(U)\right] \subseteq f(U)$. Hence $f(U) = \text{sr}^*\text{-}Int\left[f(U)\right]$. Thus $f(U)$ is sr^*-*open* in Y. So f is *pre*-sr^*-*open*.

We remark that the equality does not hold in Theorem 7.5 as the following example shows.

Example 7.6. Let $X = Y = \{1,2\}$. suppose X is anti-discrete and Y is discrete. Let $f = Id.$, $A = \{1\}$. Then $\phi = f\left[\text{sr}^*\text{-}Int(A)\right] \neq \text{sr}^*\text{-}Int\left[f(A)\right] = \{1\}$.

Theorem 7.7. Prove that a function $f:(X,\tau) \to (Y,\sigma)$ is *pre*-sr^*-*open* if and only if $\text{sr}^*\text{-}Int\left[f^{-1}(B)\right] \subseteq f^{-1}\left[\text{sr}^*\text{-}Int(B)\right]$, for all $B \subseteq Y$.

Proof. Necessity. Let $B \subseteq Y$. Since $\text{sr}^*\text{-}Int\left[f^{-1}(B)\right]$ is sr^*-*open* in X and f is *pre*-sr^*-*open*, $f\left[\text{sr}^*\text{-}Int\left(f^{-1}(B)\right)\right]$ sr^*-*open* in Y. Also we have $f\left[\text{sr}^*\text{-}Int\left(f^{-1}(B)\right)\right] \subseteq f\left[f^{-1}(B)\right] \subseteq B$. Hence, $f\left[\text{sr}^*\text{-}Int\left(f^{-1}(B)\right)\right] \subseteq \text{sr}^*\text{-}Int(B)$. Therefore $\text{sr}^*\text{-}Int\left[f^{-1}(B)\right] \subseteq f^{-1}\left[\text{sr}^*\text{-}Int(B)\right]$.

Sufficiency. Let $A \subseteq X$. Then $f(A) \subseteq Y$. Hence by hypothesis, we obtain $\text{sr}^*\text{-}Int(A) \subseteq \text{sr}^*\text{-}Int\left[f^{-1}\left(f(A)\right)\right] \subseteq f^{-1}\left[\text{sr}^*\text{-}Int\left(f(A)\right)\right]$. This implies that $f\left[\text{sr}^*\text{-}Int(A)\right] \subseteq f\left[f^{-1}\left(\text{sr}^*\text{-}Int\left(f(A)\right)\right)\right] \subseteq \text{sr}^*\text{-}Int\left[f(A)\right]$. Thus $f\left[\text{sr}^*\text{-}Int(A)\right] \subseteq \text{sr}^*\text{-}Int\left[f(A)\right]$, for all $A \subseteq X$. Hence, by Theorem 7.5, f is *pre*-sr^*-*open*.

Theorem 7.8. Prove that a mapping $f:(X,\tau) \to (Y,\sigma)$ is *pre*-sr^*-*open* if and only if $f^{-1}\left[\text{sr}^*\text{-}Cl(B)\right] \subseteq \text{sr}^*\text{-}Cl\left[f^{-1}(B)\right]$, for every subset B of Y.

Proof. Necessity. Let $B \subseteq Y$ and let $x \in f^{-1}\left[\text{sr}^*\text{-}Cl(B)\right]$. Then $f(x) \in \text{sr}^*\text{-}Cl(B)$. Let $U \in \text{sr}^*\text{-}O(X,\tau)$ such that $x \in U$. By hypothesis, $f(U) \in \text{sr}^*\text{-}O(Y,\sigma)$ and $f(x) \in f(U)$. Thus $f(U) \cap B \neq \phi$. Hence $U \cap f^{-1}(B) \neq \phi$. Therefore, $x \in \text{sr}^*\text{-}Cl\left[f^{-1}(B)\right]$, So we obtain $f^{-1}\left[\text{sr}^*\text{-}Cl(B)\right] \subseteq \text{sr}^*\text{-}Cl\left[f^{-1}(B)\right]$.

Sufficiency. Let $B \subseteq Y$. Then $(Y - B) \subseteq Y$. By hypothesis, $f^{-1}\left[\text{sr}^*\text{-}Cl(Y-B)\right] \subseteq \text{sr}^*\text{-}Cl\left[f^{-1}(Y-B)\right]$. This implies that $X - \left[\text{sr}^*\text{-}Cl\left(f^{-1}(Y-B)\right)\right] \subseteq X - f^{-1}\left[\text{sr}^*\text{-}Cl(Y-B)\right]$. Hence $X - \text{sr}^*\text{-}Cl\left[X - f^{-1}(B)\right] \subseteq f^{-1}\left[Y - \left(\text{sr}^*\text{-}Cl(Y-B)\right)\right]$.

Then this implies that $\text{sr}^*\text{-}Int\left[f^{-1}(B)\right] \subseteq f^{-1}\left[\text{sr}^*\text{-}Int(B)\right]$. Now by Theorem 7.7, it follows that f is *pre*-sr^*-*open*.

Theorem 7.9. Let $f:(X,\tau)\to(Y,\sigma)$ and $g:(Y,\sigma)\to(Z,\mu)$ be two mappings such that $gof:(X,\tau)\to(Z,\mu)$ is sr^*-*irrsolute*. Then

(1) If g is a *pre*-sr^*-*open* injection, then f is sr^*-*irrsolute*.

(2) If f is a *pre*-sr^*-*open* surjection, then g is sr^*-*irrsolute*.

Proof. (1) Let $U \in \text{sr}^*\text{-}O(Y,\sigma)$. Then $g(U) \in \text{sr}^*\text{-}O(Z,\mu)$ since g is *pre*-sr^*-*open* Also gof is sr^*-*irrsolute*. Therefore, we have $(gof)^{-1}\left[g(U)\right] \in \text{sr}^*\text{-}O(X,\tau)$. Since g is an injection, so we have : $(gof)^{-1}\left[g(U)\right] = \left(f^{-1}og^{-1}\right)\left[g(U)\right] = f^{-1}\left[g^{-1}\left(g(U)\right)\right] = f^{-1}(U)$. Consequently $f^{-1}(U)$ is sr^*-*open* in X. This proves that f is sr^*-*irrsolute*.

(2) Let $V \in \text{sr}^*\text{-}O(Z,\mu)$. Then $(gof)^{-1}(V) \in \text{sr}^*\text{-}O(X,\tau)$ since gof is sr^*-*irrsolute*. Also f is *pre*-sr^*-*open*, $f\left[(gof)^{-1}(V)\right]$ is sr^*-*open* in Y. Since f is surjective, we note that $f\left[(gof)^{-1}(V)\right] = \left[fo(gof)^{-1}\right](V) = \left[fo\left(f^{-1}og^{-1}\right)\right](V) = \left[\left(fof^{-1}\right)og^{-1}(V)\right] = g^{-1}(V)$. Hence g is sr^*-*irrsolute*.

8. PRE-sr^*-CLOSED FUNCTIONS

In this last section, we introduce and explore several properties and characterizations of *pre*-sr^*-*closed* functions.

Definition 8.1. A function $f:(X,\tau)\to(Y,\sigma)$ is said to be *pre*-sr^*-*closed* if and only if the image set $f(A)$ is sr^*-*closed* for each sr^*-*closed* subset A of X.

Theorem 8.2. The composition of two *pre*-sr^*-*closed* mappings is a *pre*-sr^*-*closed* mapping.

Proof. The straightforward proof is omitted.

Theorem 8.3. Prove that a mapping $f:(X,\tau)\to(Y,\sigma)$ is *pre*-sr^*-*closed* if and only if $\text{sr}^*\text{-}Cl\left[f(A)\right] \subseteq f\left[\text{sr}^*\text{-}Cl(A)\right]$ for every subset A of X.

Proof. Necessity. Suppose f is a *pre*-sr^*-*closed* mapping and A is an arbitrary subset of X. Then $f\left[\text{sr}^*\text{-}Cl(A)\right]$ is sr^*-*closed* in Y. Since $f(A) \subseteq f\left[\text{sr}^*\text{-}Cl(A)\right]$, we obtain $\text{sr}^*\text{-}Cl\left[f(A)\right] \subseteq f\left[\text{sr}^*\text{-}Cl(A)\right]$.

Sufficiency. Suppose F is an arbitrary $\text{sr}^*\text{-}closed$ set in X. By hypothesis, we obtain $f(F) \subseteq \text{sr}^*\text{-}Cl[f(F)] \subseteq f[\text{sr}^*\text{-}Cl(F)] = f(F)$. Hence $f(F) = \text{sr}^*\text{-}Cl[f(F)]$. Thus $f(F)$ is $\text{sr}^*\text{-}closed$ in Y. It follows that f is $pre\text{-}\text{sr}^*\text{-}closed$.

Theorem 8.4. Let $f:(X,\tau)\to(Y,\sigma)$ be a $pre\text{-}\text{sr}^*\text{-}closed$ function, and $B,C \subseteq Y$.

(1) If U is an $\text{sr}^*\text{-}open$ neighborhood of $f^{-1}(B)$, then there exists an $\text{sr}^*\text{-}open$ neighborhood V of B such that $f^{-1}(B) \subseteq f^{-1}(V) \subseteq U$.

(2) If f is also onto, then if $f^{-1}(B)$ and $f^{-1}(C)$ have disjoint $\text{sr}^*\text{-}open$ neighborhoods, so have B and C.

Proof. (1) Let $V = Y - f(X-U)$. Then $V^c = Y - V = f(U^c)$. Since f is $pre\text{-}\text{sr}^*\text{-}closed$, so V is $\text{sr}^*\text{-}open$. Since $f^{-1}(B) \subseteq U$, we have $V^c = f(U^c) \subseteq f[f^{-1}(B^c)] \subseteq B^c$. Hence, $B \subseteq V$, and thus V is a $\text{sr}^*\text{-}open$ neighborhood of B. Further $U^c \subseteq f^{-1}[f(U^c)] = f^{-1}(V^c) = [f^{-1}(V)]^c$. This proves that $f^{-1}(V) \subseteq U$.

(2) If $f^{-1}(B)$ and $f^{-1}(C)$ have disjoint $\text{sr}^*\text{-}open$ neighborhoods M and N, then by (1), we have $\text{sr}^*\text{-}open$ neighborhoods U and V of B and C respectively such that $f^{-1}(B) \subseteq f^{-1}(U) \subseteq \text{sr}^*\text{-}Int(M)$ and $f^{-1}(C) \subseteq f^{-1}(V) \subseteq \text{sr}^*\text{-}Int(N)$. Since M and N are disjoint, so are $\text{sr}^*\text{-}Int(M)$ and $\text{sr}^*\text{-}Int(N)$, and hence so $f^{-1}(U)$ and $f^{-1}(V)$ are disjoint as well. It follows that U and V are disjoint too as f is onto.

Theorem 8.5. Prove that a surjective mapping $f:(X,\tau)\to(Y,\sigma)$ is $pre\text{-}\text{sr}^*\text{-}closed$ if and only if for each subset B of Y and each $\text{sr}^*\text{-}open$ set U in X containing $f^{-1}(B)$, there exists an $\text{sr}^*\text{-}open$ set V in Y containing B such that $f^{-1}(V) \subseteq U$.

Proof. Necessity. This follows from (1) of Theorem 8.4.

Sufficiency. Suppose F is an arbitrary $\text{sr}^*\text{-}closed$ set in X. Let y be an arbitrary point in $Y - f(F)$. Then $f^{-1}(y) \subseteq X - f^{-1}[f(F)] \subseteq (X-F)$ and $(X-F)$ is $\text{sr}^*\text{-}open$ in X. Hence by hypothesis, there exists an $\text{sr}^*\text{-}open$ set V_y containing y such that $f^{-1}(V_y) \subseteq (X-F)$. This implies that $y \in V_y \subseteq [Y - f(F)]$. Thus $Y - f(F) = \text{U}\{V_y \mid y \in Y - f(F)\}$. Hence $Y - f(F)$, being a union of $\text{sr}^*\text{-}open$ sets is $\text{sr}^*\text{-}open$. Thus its complement $f(F)$ is $\text{sr}^*\text{-}closed$. This shows that f is $\text{sr}^*\text{-}closed$.

Theorem 8.6. Let $f:(X,\tau)\to(Y,\sigma)$ be a bijection. Then the following are equivalent:

(1) f is $pre\text{-}\text{sr}^*\text{-}closed$.

(2) f is *pre* - sr* -*open.*

(3) f^{-1} is sr*-*irresolute.*

Proof. $(1)\Rightarrow(2)$: Let $U\in$ sr*-$O(X,\tau)$. Then $X-U$ is sr*-*closed* in X. By (1), $f(X-U)$ is sr*-*closed* in Y. But $f(X-U)=f(X)-f(U)=Y-f(U)$. Thus $f(U)$ is sr*-*open* in Y. This shows that f is *pre* - sr* -*open.*

$(2)\Rightarrow(3)$: Let $A\subseteq X$. Since f is *pre* - sr* -*open*, so by Theorem 7.8, $f^{-1}\left[\text{sr*-}Cl(f(A))\right]\subseteq \text{sr*-}Cl\left[f^{-1}(f(A))\right]$. It implies that $\text{sr*-}Cl\left[f(A)\right]\subseteq f\left[\text{sr*-}Cl(A)\right]$.

Thus $\text{sr*-}Cl\left[\left(f^{-1}\right)^{-1}(A)\right]\subseteq\left(f^{-1}\right)^{-1}\left[\text{sr*-}Cl(A)\right]$, for all $A\subseteq X$. Then by Theorem 4.8, it follows that f^{-1} is sr*-*irresolute.*

$(3)\Rightarrow(1)$: Let A be an arbitrary sr*-*closed* set in X. Then $X-A$ is sr*-*open* in X. Since f^{-1} is sr*-*irresolute*, $\left(f^{-1}\right)^{-1}(X-A)$ is sr*-*open* in Y. But $\left(f^{-1}\right)^{-1}(X-A)=f(X-A)=Y-f(A)$. Thus $f(A)$ is sr*-*closed* in Y. This shows that f is *pre* - sr* -*closed*.

ACKNOWLEDGEMENT

The author is highly and gratefully indebted to Prince Mohammad Bin Fahd University, Al Khobar, Saudi Arabia, for providing all necessary research facilities during the preparation of this research paper.

REFERENCES

[1] S.P. Arya and M. Deb, On θ-continuous mappings, Math. Student 42(1974), 81-89.

[2] M. Caldas, M. Ganster, D.N. Georgious, S. Jafari and T. Noiri, On θ - semipen sets and separation axioms in topological spaces, Carpathian J. Math., 24 (2008), No. 1, 13 – 22.

[3] E. Ekici, (δ-pre,s)-continuous functions, Bulletin of the Malaysian Mathematical Sciences Society, Second Series 27(2004), no. 2, 237 – 251.

[4] E. Ekici, On δ-semiopen sets and a generalization of functions, Bol. Soc. Mat. (38) vol. 23 (1-2) (2005), 73-84.

[5] M. Ganster, T. Noiri, I.L. Reilly, Weak and strong forms of θ-irresolute functions, J. Inst. Math. Comput. Sci. 1(1) (1988), 19-29.

[6] Saeid Jafari, Some properties of θ-continuous functions, Far East J. Math. Sci. 6(5) (1998), 689-696.

[7] Javier A. Hassan, and Mhelmar A. Labendia, θ_s - open sets and θ_s - continuity of mapps in the product space, Journal of Mathematics and Computer Science, 25 (2022), 182 – 190.

[8] A. Kilicman, Z. Salleh, Some results on (δ-pre,s)-continuous functions, International Journal Math. Mat. Sci. 2006(2006), 1-11.

[9] Raja M. Latif, On Characterizations of Mappings, Soochow Journal of Mathematics, Volume 19, No.4, (1993), pp. 475 – 495.

[10] Raja Mohammad Latif, Theta – ω – Mappings in Topological Spaces, WSEAS Transactions on Mathematics, Volume 19, 2020, Art.#18, pp. 186 – 207. (Scopus Indexed) (www.scopus.com)

[11] Raja Mohammad Latif, Properties of Theta – Continuous Functions in Topological Spaces, (MACISE 2020: International Conference on Mathematics and Computers in Science and Engineering (MACISE) Madrid Spain 18 – 20 January 2020), (2020), Volume 1, pages 81 – 90. (Scopus Indexed) (www.scopus.com)

[12] N. Levine, Semi-open sets and semi-continuity in topological spaces, Amer. Math. Monthly, 70 (1963), 36 – 41.

[13] M. Lellis Thivagar, Nirmala Rebecca Paul and Saeid Jafari, On New Class of Generalized Closed Sets, Annals of the University of Craiova, Mathematics and Computer Sciwnce Series, Vulume 38 (3), (2011), pp. 84 – 93.

[14] P.E. Long, L.L. Herrington, The τ_θ -topology and faintly continuous functions, Kyungpook Math. J. 22(1982), 7-14.

[15] T. Noiri, S. Jafari, Properties of (θ,s)-continuous functions, Topology and its Applications, 123(1) (2002), 167-179.

[16] T. Noiri, On δ-continuous functions, J. Korean Math. Soc., 16 (1980), 161-166.

[17] C. Reena and R. Krishnaveni, A New Class of Nearly Open sets in Topological Spaces, International Journal of Mathematics Trends and Technology (IJMTT)-ICIMCEH 2020, pp. 8 - 13.

[18] M. Saleh, On θ-closed sets and some forms of continuity, Archivum Mathematicum (On BRNO) 40 (2004), 383 – 393.

[19] M. Saleh, On super and δ-continuities, Mathematics and Mathematics Education, World Scientific, 2002, 281-291.

[20] N. V. Velicko, H-closed topological spaces. Mat. Sb. 70 (1966), 98 – 112, English transl., in Amer. Math. Soc. Transl. (2) 78 (1968), 103 – 118.

[21] Albert Wilansky, Topology for Analysis, Devore Pblications, Inc, Mineola New York. (1980).

[22] Stephen Willard, General Topology, Reading, Mass.: Addison Wesley Pub. Co. (1970).