

**4th INTERNATIONAL NEW YORK  
CONFERENCE ON  
EVOLVING TRENDS IN  
INTERDISCIPLINARY RESEARCH &  
PRACTICES**

**May 2-4, 2021  
Manhattan, New York City**

**Editors  
Dr. Adam Andani Mohammed  
Ekaterina Lomia**

***FULL TEXTS BOOK***

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# FULL TEXTS BOOK

## Editors

Dr. Adam Andani Mohammed

Ekaterina Lomia

By

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# **Conference Identification**

## **CONFERENCE NAME**

4th INTERNATIONAL NEW YORK CONFERENCE  
ON EVOLVING TRENDS IN INTERDISCIPLINARY  
RESEARCH & PRACTICES

## **DATE AND PLACE**

May 2-4, 2021  
Manhattan, New York City

## **ORGANIZATION**

IKSAD - Institute of Economic Development and Social  
Research  
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## **PARTICIPANT COUNTRIES**

United States of America, Azerbaijan, Iraq, Mexico, Poland, Pakistan,  
Bulgaria, Nigeria, Algeria, Israel, Georgia, India, Kazakhstan, Moldova,  
Portugal, Iran, Ukraine, Malaysia, Lithuania, Hungary

(94)

Turkey (50)

***NUMBER OF ACCEPTED PAPERS: 144***

***NUMBER OF REJECTED PAPERS: 36***

## **EVALUATION PROCESS**

All applications have undergone a double-blind peer review  
process

## **CONFERENCE LANGUAGES**

English, Russian and Turkish

## **PRESENTATION**

Oral Presentation/ Virtual

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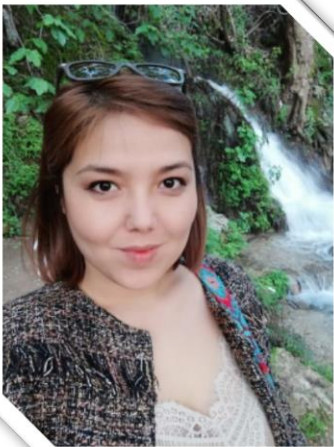


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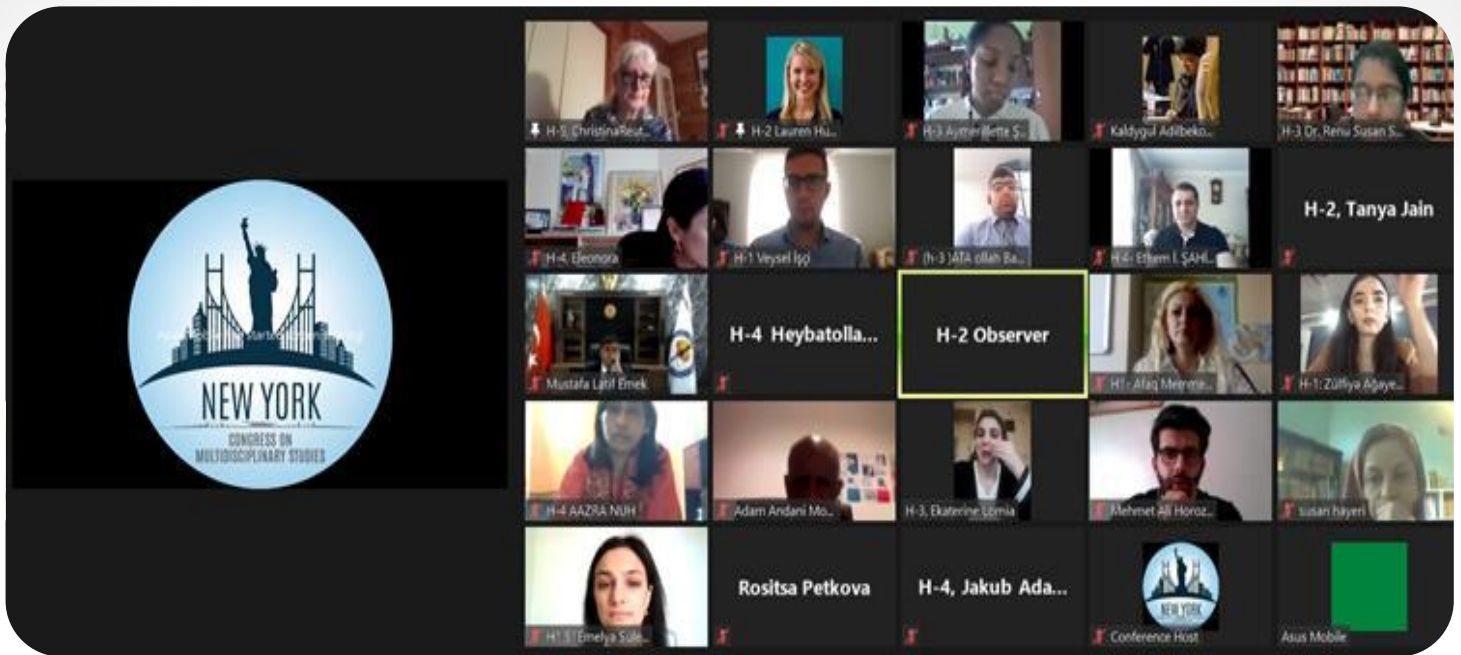


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# CONFERENCE GALLERY



## COMPARING THE HEBREW BIBLE TO TURKIC LITERATURES

### • WHY?

We start this study with the assumption that the collection of texts known as the Hebrew Bible can be viewed as an important part of Hebrew national literature and that some parallels do exist between this collection and other national literatures.

Discovering similar ideas and values between the Bible and national literatures is important for appreciating cultural diversity and enhancing friendship between people who belong to different ethnic and religious groups.



- Oud guitar is a wooden stringed musical instrument
- Oud guitars are made by craftsmen
- Design and manufacturing should be done based on engineering calculations
- Design engineering is crucial for the musical instruments

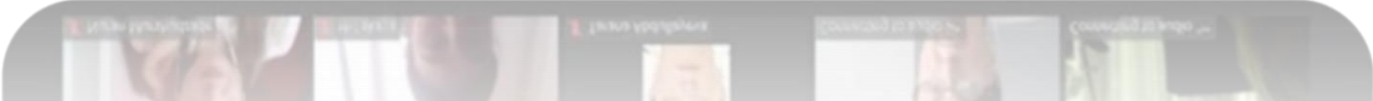
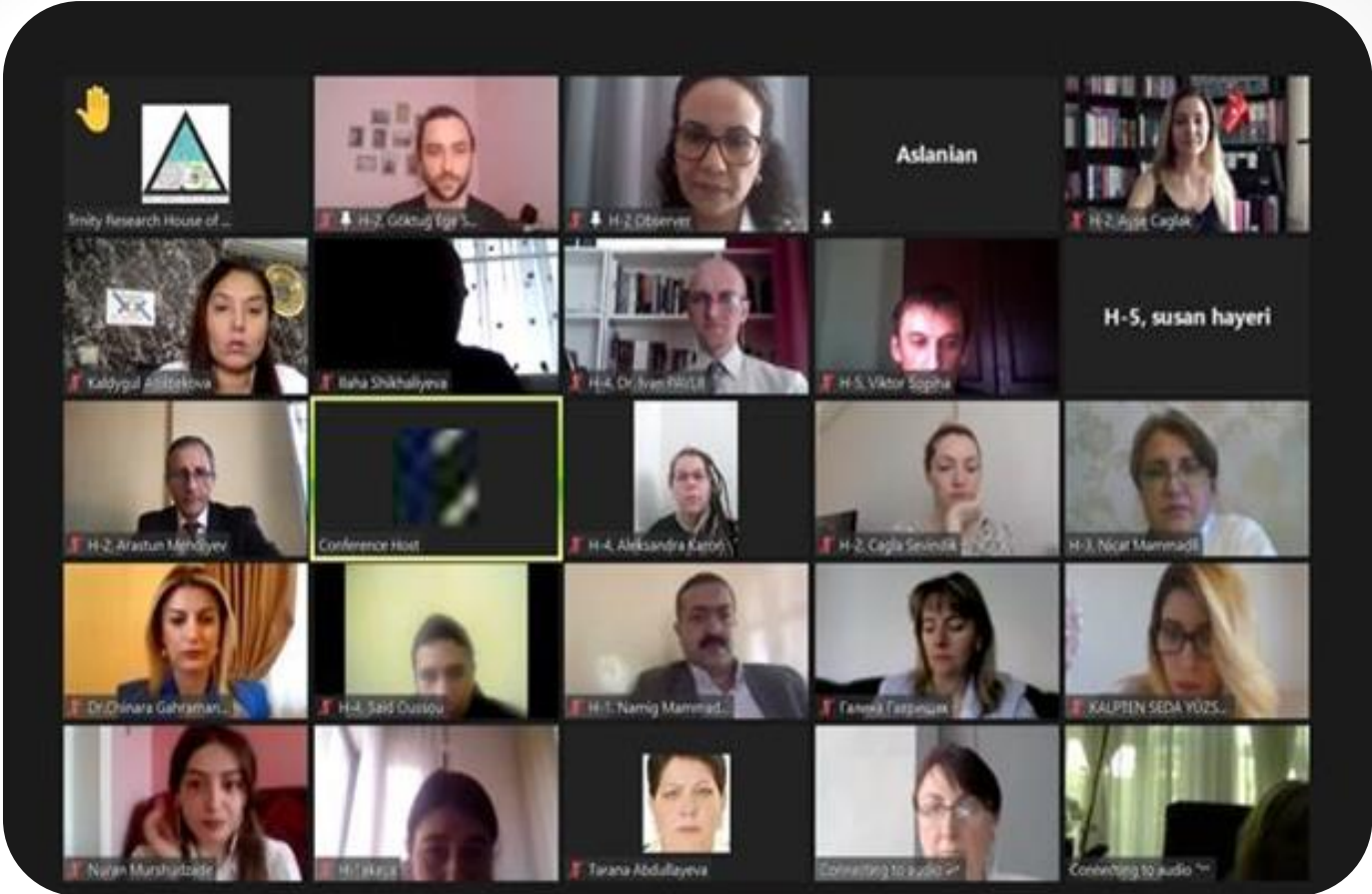


Figure 1. An oud guitar



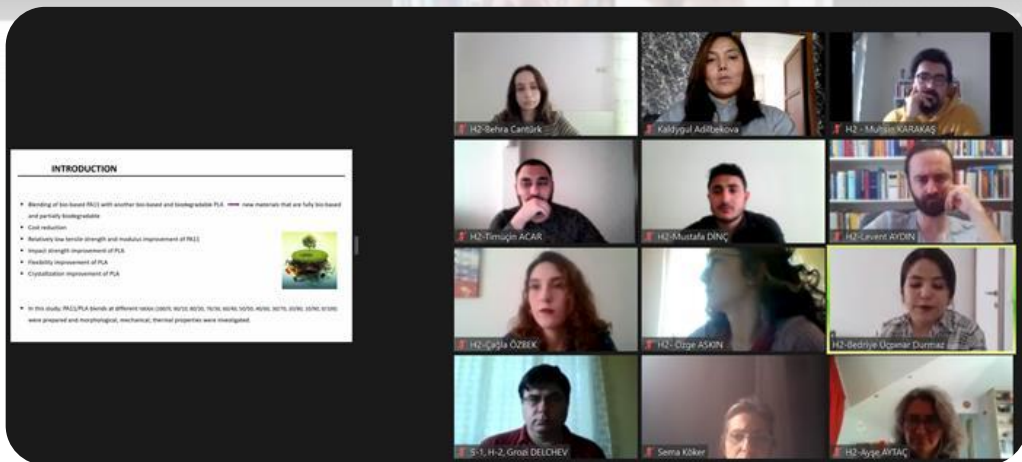


# CONFERENCE GALLERY

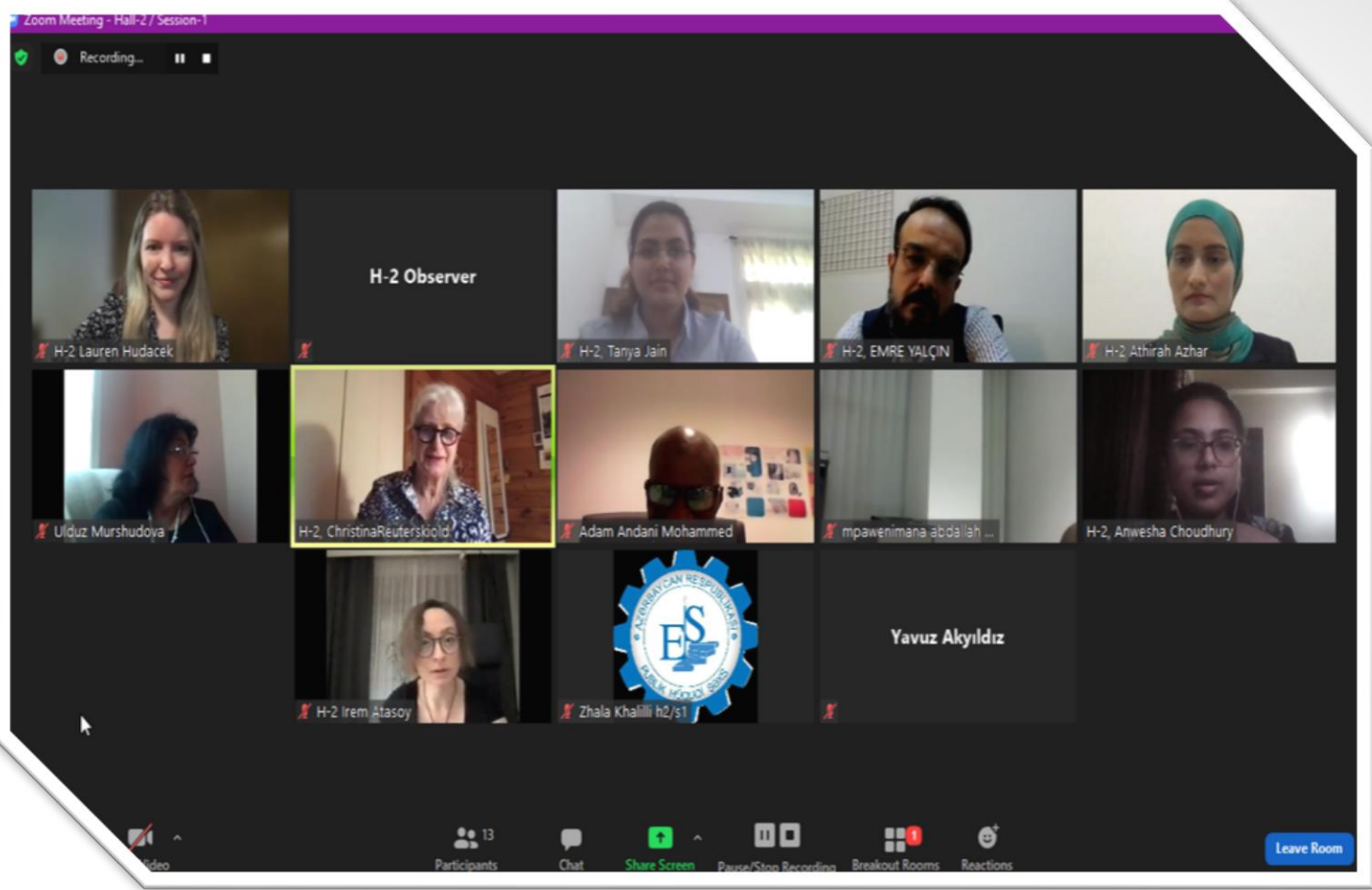


# CONFERENCE GALLERY

- It is possible to reduce the salt content by using carrageenan in cheeses that may contain high amounts of salt. Thus, a more beneficial product can be obtained in terms of health.
- It enables the production of better quality ice cream in terms of physical and sensory aspects by decreasing melting rate, increasing viscosity, reducing formation of ice crystals and strengthening cutting-thinning behaviors.







# THE HEBREW BIBLE AND TURKIC LITERATURES: SOME PARALLELS

ASSIST. PROF. DR. IVAN PAVLII  
NY CONFERENCE 2021



Abbasova Almara

Abbasova Almara



*Meeting ID: 846 1233 9502*

*Passcode: 040404*

**4th INTERNATIONAL NEW YORK CONFERENCE ON  
EVOLVING TRENDS IN INTERDISCIPLINARY  
RESEARCH & PRACTICES**



**CONFERENCE  
PROGRAM**

**May 2-4, 2021  
Manhattan, New York City**



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- ❖ The Zoom application can be used without registration.
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- ❖ 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.

**Points to Take into Consideration**  
**TECHNICAL INFORMATION**

- ◆ Make sure your computer has a microphone and is working.
- ◆ 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.

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02.05.2021 | SESSION-1 | HALL-1



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Dr. Monika Jaworska-Wędzińska**

Authors	Affiliation	Presentation title
<b>Nargiz Ibrahimova</b>		SMART HOME TECHNOLOGY
<b>Nesij ÜNAL Tuğrul OKTAY</b>	<i>TUSAŞ Erciyes University, Turkey</i>	A NOVEL SYSTEM FOR FIGHTER AIRCRAFT CONCEPTUAL DESIGN AND ANALYSIS
<b>Fatima Tayeboun Amine Guerinik</b>	<i>Djillali Liabes University, Algeria</i>	DETECTION OF AIR POLLUTION BY OPTICAL STATES OF TMM IN ONE-DIMENSIONAL PHOTONIC CRYSTAL
<b>Nesij ÜNAL Tuğrul OKTAY</b>	<i>TUSAŞ Erciyes University, Turkey</i>	"ANALYZING THE EFFECTS OF AIRFOIL SELECTION TO THE LIFT COEFFICIENT AND DRAG COEFFICIENT (C L and C D ) OF THE AIRCRAFT"
<b>Monika Jaworska- Wędzińska Iga Jasińska</b>	<i>University of Technology and Humanities, Radom, Poland</i>	ASSESSMENT OF DURABILITY OF CEMENT COMPOSITES WITH THE USE OF WASTE FROM COAL COMBUSTION WITH THE USING STATISTICAL METHODS USING THE GIBBS TRIANGLE FOR MIXTURES
<b>Prof. Nəbiyev Rasim Nəsi oğlu Abdullayev Anar Arif oğlu</b>	<i>Azerbaijan National Aviation Academy, Azerbaijan</i>	CREATION OF CONVERTIBLE-TYPE UNMANNED AERIAL VEHICLES
<b>Gül Yakalı Günseli Turgut Cin</b>	<i>Izmir Katip Celebi University, Turkey Akdeniz University, Turkey</i>	INVESTIGATION OF THE CHARGE TRANSFER PROPERTY OF HOLE TRANSPORT MATERIAL SCHIFF BASE DERIVATIVE FROM THE MARCUS ELECTRON THEORY AND DENSITY FUNCTIONAL THEORY FOR OLED DEVICES: STRUCTURE-PROPERTY RELATIONSHIP
<b>MSc. Çağlar EKER Assoc. Prof. Dr. Abdullah ÖZKAN Dr. Vildan ÖZKAN</b>	<i>Iskenderun Technical University, Turkey</i>	USING PERLITE AS ADDITIVE IN WATER-BASED DRILLING FLUID
<b>Res. Assist. Habibe Elif GÜLŞEN AKBAY Halil KUMBUR</b>	<i>Mersin University, Turkey</i>	MECHANIC AND THERMAL PRE-TREATMENT OF FRUIT WASTE AND SEWAGE SLUDGE MIXTURE BEFORE THE ANAEROBIC FERMENTATION PROCESS TO INCREASE THE SOLUBLE ORGANIC MATTER RATIOS
<b>Batur Alp Akgül Prof. Dr. Muhammet Fatih Hasoğlu Asst. Prof. Dr. Bülent Haznedar Mustafa Ersan Çinkılıç Abdurrahman Yaşar</b>	<i>Hasan Kalyoncu University, Turkey Gaziantep University, Turkey Kocaeli University, Turkey</i>	DESIGN AND DEVELOPMENT OF EMBEDDED REAL-TIME VEHICLE/PERSONNEL TRACKING AND SECURITY SYSTEM WITH A NEW APPROACH TO OUTDOOR MAPPING USING INTERNET OF THINGS: AN IMPLEMENTATION STUDY
<b>Prateek Mangal Anupama Rajesh</b>	<i>Amity University, India</i>	ASSESSING THE ROLE OF BIG DATA IN SMART CITIES AND SMART CITY PROJECT ACTIONS
<b>Prof. Dr. Tayfun UYGUNOĞLU Sevcan BARLAS ÖZGÜVEN</b>	<i>Afyon Kocatepe University, Turkey</i>	THE EFFECT OF NANOCAPSULATED PHASE-CHANGING MATERIALS ON TEMPERATURE-DEPENDENT VISCOSITY IN CEMENT-BASED MORTARS

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.



02.05.2021 | SESSION-1 | HALL-2



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Assoc. Prof. Dr. Grozi Delchev**

Authors	Affiliation	Presentation title
Bedriye Ucpinar Durmaz Ayse Aytac	Kocaeli University, Turkey	POLY(LACTIC ACID)/POLYAMIDE 11 BIO-BASED POLYMER BLENDS
Hulya Sema Koker Bedriye Ucpinar Durmaz Hulya Yavuz Ersan Ayse Aytac	Hacettepe University, Turkey Kocaeli University, Turkey	POLYETHYLENE/SODIUM CASEINATE/SORBITOL BLEND FILMS PRODUCED BY EXTRUSION
Timuçin Acar Muhsin Karakaş Akın Oktav	Abdullah Gul University, Turkey Alanya Alaaddin Keykubat University, Turkey	TUNING THE STRUCTURAL EIGENFREQUENCIES OF AN OUD GUITAR BY USING DIFFERENT BRACE PATTERNS ON THE SOUNDBOARD
Behra Cantürk	Adana Alparslan Turkes Science and Technology University, Turkey	MODELLING CONSIDERATIONS FOR METAL ORGANIC FRAMEWORKS: PARTIAL CHARGE ASSIGNMENT METHODS
Mustafa Dinç Turan Sargın Levent AYDIN	İzmir Katip Çelebi University, Turkey	NONLINEAR MULTIPLE NEURO-REGRESSION MODELING, OPTIMUM DESIGN and ANALYSIS of the ROCKET's DIFFERENT SUB-UNITS
Lect. Dr. Çağla ÖZBEK Prof. Dr. Nuray GÜZELER	Toros University, Turkey Cukurova University, Turkey	UTILIZATION AND EFFECTS OF CARRAGEENAN IN MILK AND MILK PRODUCTS
Prof. Dr. Nuray GÜZELER Lect. Dr. Çağla ÖZBEK	Cukurova University, Turkey Toros University, Turkey	METHODS USED TO IMPROVE THE RHEOLOGICAL PROPERTIES OF SOFT CHEESES
Assoc. Prof. Dr. Grozi Delchev	Trakia University, Bulgaria	STABILITY VALUATION OF SOME ANTIBROADLEAVED HERBICIDES FOR GRAIN YIELDS OF DURUM WHEAT (TRITICUM DURUM DESF.)
Asst. Prof. Murat Yorulmaz Özge Aşkın	Maritime Business Administration, Kocaeli, Turkey	GREEN PORT PERFORMANCE CRITERIA AND EVALUATION OF PORT MANAGERS ACCORDING TO THE PERSPECTIVE
Assoc. Prof. Dr. Seyithan SEYDOSOGLU Prof. Dr. Kağan KOKTEN	Siirt University, Turkey	Multipurpose Lactobacillus divergens as a Potential Biofactory for Advanced Applications

(All speakers required to be connected to the session 10 min before the session starts)

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Meeting ID: 846 1233 9502

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02.05.2021 | SESSION-1 | HALL-3



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: Asst. Prof. Dr. Fatih Taş

Authors	Affiliation	Presentation title
<b>Barış SEVER</b>	<i>Izmir Tepecik Training and Research Hospital, Turkey</i>	"APPROACH TO FETAL ANTERIOR ABDOMINAL WALL DEFECTS (CANTRELL PENTALOGY AND OEIS COMPLEX)"
<b>Oktay K. Gasymov Sefa Celik</b> <b>Gulshen Agaeva Sevim Akyuz</b> <b>Serda Kecel-Gunduz</b> <b>Niftali M. Qocayev</b> <b>Ayşen E. Ozel</b> <b>Ulker Agaeva</b> <b>Matanat Bakhishova</b> <b>Jamil A. Aliyev</b>	<i>ANAS, Azerbaijan</i>	CATIONIC PENTAPEPTIDE, GLU-GLN-ARG-PRO-ARG, AND ITS D-ISOMER ANALOGS: THEORETICAL AND STRUCTURAL STUDIES FOR POTENTIAL ANTI-CANCER AND NOVEL ANTI-COVID-19 APPLICATIONS
<b>Sukriye KARADAYI</b>	<i>Altınbas University, Turkey</i>	INVESTIGATION OF THE MICROBIOLOGICAL QUALITY OF READY-TO-EAT FOODS AND THEIR POTENTIAL FOR FOOD POISONING
<b>Aşkın KARADUMAN</b>	<i>Ankara Hacı Bayram Veli University, Turkey</i>	AN OVERVIEW OF HEALTH SERVICES OFFERED IN TURKEY
<b>Asst. Prof. Dr. Fatih Taş</b> <b>Res. Asst. Fırat Aşır</b> <b>Fikri Erdemci</b> <b>Dr. Mustafa Maraşlı</b> <b>Prof. Dr. Engin Deveci</b>	<i>Dicle University, Turkey</i>	IMMUNOHISTOCHEMICAL EXPRESSION OF IL-6 IN PLACENTAS WITH COVID-19
<b>Berkay Eren PEHLIVANOĞLU</b> <b>Sefa Haktan HATIK</b>	<i>Istanbul Rumeli University, Turkey</i> <i>Sinop University, Turkey</i>	THE STATUS OF CHIROPRACTIC PROFESSION IN REPUBLIC OF TURKEY
<b>Sibel Orhan</b> <b>Muhammet Gümüş</b>	<i>Namık Kemal University, Turkey</i> <i>Cumhuriyet University, Turkey</i>	KNOWLEDGE AND APPLICATION OF HEALTHCARE EMPLOYEES DURING COVID-19 PANDEMIC PROCESS AND REVIEW OF CITRUS LEVELS
<b>Neslihan DERELİ</b>	<i>Universidad Azteca, Mexico</i>	INVESTIGATION OF THE RELATIONSHIP BETWEEN BANKRUPTCY PROBABILITY AND SYSTEMATIC RISK AND DETERMINATION OF THE EFFICIENT MODELS PREDICTING BANKRUPTCY: AN EMPIRICAL APPLICATION

(All speakers required to be connected to the session 10 min before the session starts)

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02.05.2021 | SESSION-1 | HALL-4



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Penbe Merve Korkmaz**

Authors	Affiliation	Presentation title
Jaiyeoba-Ojigho Jennifer Efe Oladipo Gabriel Sunday Oyakhire Micheal Omonkheoa	University of PortHarcourt, Nigeria	IRISPRINTS AND FINGERPRINTS AMONG NIGERIANS : THE PATH FORWARD
Lect. Elif Üner Dr. Lect. Ayşe DOST	Rumeli University, Turkey Medipol University, Turkey	Examination of the Relationship Between Health Literacy Level and Quality of Life in University Students During the COVID-19 Pandemic
Shai Moshel Shmuel Klang Yaniv Kotler	Meuhedet Health Services, Tel Aviv, Israel	Evaluation of Performance and Adherence to IFR 300 Kit for Predicting the Response to TNF $\alpha$ Blockers in Biologics-Naïve Rheumatoid Arthritis Patients: Prospective Cohort Study from Israel
Manasi, K. Andzel W. Marshall, T. Koc, T. Spaccarotella K. Milbrook, R.	Kean University, NJ, USA	LIFESTYLE BEHAVIORS AND EFFECT OF COVID-19
Lect. Sümeyye BARUT	Firat University, Turkey	BIRTH PERCEPTIONS OF MIDWIFERY STUDENTS AND ITS RELATION WITH PREMENSTRUAL SYNDROME
Onur DOĞAN Ahmet Mahmut KILIÇ	Gumushane University, Turkey Cukurova University, Turkey	THE EFFECTS OF INDUSTRY 4.0 ON OCCUPATIONAL HEALTH AND SAFETY: A SAMPLE APPLICATION
Assist. Prof. Serdar BABACAN	Harran University, TURKEY	A new concept in interdisciplinary research and practice: "Forensic Anatomy in Medicolegal Investigations"
Ejime Agbonifo-Chijiokwu Eze Nwangwa	Delta State University, Nigeria	ASSOCIATION OF SOCIOECONOMIC STATUS AS AN INDICATORS FOR ABDOMINAL OBESITY IN MULTIPAROUS WOMEN
Merve Turkay Meftun Akgün	Health Sciences Institute, Turkey	THE EFFECT OF ABDOMINAL AROMATHERAPY MASSAGE ON GASTROINTESTINAL SYMPTOMS OF PATIENTS FED WITH A NASOGASTRIC TUBE IN INTENSIVE CARE UNIT
Penbe Merve Korkmaz Hülya Demir Erdem Tezcan	Istanbul Gedik University, Turkey Yeditepe University, Turkey	HEALTH EFFECTS OF CARTHAMUS TINCTORIUS (SAFFLOWER) PLANT AND DEVELOPMENT OF STERILIZATION PROTOCOL OF ITS SEEDS

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02.05.2021 | SESSION- 1 | HALL- 5

New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

## MODERATOR: Prof. Istrati Valeriu

Authors	Affiliation	Presentation title
Inga Miron Vladimir Bernic Elena Bucata	National Agency for Public Health, Republic of Moldova	MONITORING AND EVALUATION OF SURFACE WATER QUALITY USED FOR DRINKING PURPOSES IN THE REPUBLIC OF MOLDOVA
Cazac Victor Russu Eugeniu Cecan Tatiana	State University of Medicine and Pharmacy "Nicolae Testemitanu", Chisinau, Moldova	THE VALUE OF INFECTIOUS FACTOR IN REACTIVE ARTHRITIS
Gloden Raz Raukhberger Hana Assist. Prof. Oxana Sarbu Assoc. Prof. Larisa Rotaru	State University of Medicine and Pharmacy "Nicolae Testemitanu", Chisinau, Moldova	A COMPARATIVE STUDY OF THE QUALITY OF LIFE IN MEN AND WOMEN WITH GOUT ASSOCIATED WITH CARDIOVASCULAR PATHOLOGY
Ecaterina Caliga Assist. Prof. Oxana Sarbu Prof. Istrati Valeriu	State University of Medicine and Pharmacy "Nicolae Testemitanu", Chisinau, Moldova	THE ROLE OF CLIMATE FACTORS IN THE OCCURRENCE OF ACUTE CORONARY SYNDROME
Tovkach Yu.V. Andreea Gitu Abo Afash Mai	Bukovinian State Medical University, Ukraine State University of Medicine and Pharmacy, Republic of Moldova	The errors and impediments in the diagnosis of pulmonary tuberculosis
Iryna IVASYUK Roksolana MIZUN	Vasyl Stefanyk Precarpathian National University, Ukraine	SPERMATOGENESIS DISORDERS IN ACUTE TESTIAL INJURY
Valeria Frunze Dr. Elena Deseatnicova Liliana Groppa	State Medical and Pharmaceutical University Nicolae Testemitanu Republic of Moldova	Thyroid gland pathology in rheumatoid arthritis
G. Sarnickaitė Lect. Asta Markauskienė Vilniaus Kolegija Lect. Kristina Žukienė	University of Applied Sciences, Lithuania	THE RELATION BETWEEN PELVIC POSTURE AND LOWER BACK PAIN

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Meeting ID: 846 1233 9502

Passcode: 040404

03.05.2021 | SESSION-1 | HALL-1



New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>



Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

MODERATOR: **Dr. Namig Mammadov**

Authors	Affiliation	Presentation title
Albina Chingiz Heshimova	<i>Azerbaijan Tourism and Management University, Azerbaijan</i>	"DEVELOPMENT OF THE CONCEPT OF DEVELOPMENT OF SERVICES MARKET IN THE REPUBLIC OF AZERBAIJAN AND DIRECTIONS OF ITS IMPLEMENTATION"
Sevinj ALIYEVA	<i>Azerbaijan Customs Academy, Azerbaijan</i>	FACTORS IN COMPANIES' DECISIONS ON OUTSOURCING: AN EMPIRICAL STUDY IN TURKEY
Kamala ABBASOVA	<i>Azerbaijan University, Azerbaijan</i>	Autism is not a deficiency or a disease, it is just a DIFFERENCE
Vafa AHMADOVA	<i>Azerbaijan University, Azerbaijan</i>	SEMANTIC APPROACHES TO LEXICAL MATCHING
Assist. Prof. Dr. Saban Onur VIGA	<i>Istanbul Esenyurt University, Turkey</i>	ARE CRYPTOCURRENCIES THE BEST MILKYWAY TO REACH MONEY?
Dr. Aysun Kaya Deniz	<i>Istanbul Gelişim University, Turkey</i>	EXPERIENCE ECONOMY IN THE AGE OF DIGITAL CONSUMPTION
Doç. Dr. Güray ALPAR Dr. Gökberk DURMAZ	Strategic Thinking Institute ASBÜ Siyasal Bilgiler Fakültesi, Uluslararası İlişkiler Bölümü	RÜYALARI ÇALINAN İNSANLARIN ÜLKESİ: MOZAMBİK
Hande Haykır Nurperihan Tosun	<i>Sivas Cumhuriyet University, Turkey</i> <i>Social Sciences Institute, Turkey</i>	A STUDY ON THE FACTORS AFFECTING PHYSICIANS' PRESCRIBING DECISIONS
Ömer Faruk Dumlu Taşkın Kılıç Nurperihan Tosun	<i>Ordu University, Turkey</i> <i>Social Sciences Institute, Turkey</i> <i>Social Sciences Institute, Turkey</i>	EVALUATION OF EMERGENCY SERVICE ADMISSIONS
Dr. Namig Mammadov	<i>Azerbaijan National Academy of Sciences, Azerbaijan</i>	ANALYSIS OF THE 2002 PARLIAMENTARY ELECTIONS IN TURKEY

(All speakers required to be connected to the session 10 min before the session starts)

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Meeting ID: 846 1233 9502

Passcode: 040404

03.05.2021 | SESSION-1 | HALL-2



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Samira KHADHRAOUI ONTUNC**

Authors	Affiliation	Presentation title
Dr. Erkan DEMİRTAŞ	Ministry of National Defence, Turkey	A GENERAL CLASSIFICATION STUDY FOR MOBILE MUSIC APPLICATIONS
Muhammad Suleman Nasir	Gomal University, Pakistan	THE RIGHTS OF SENIOR CITIZENS AND THEIR STATUS IN ISLAMIC SOCIETY: IN THE LIGHT OF ISLAMIC TEACHINGS AND SEERAT UN NABI (SAW)
Emmanuel Oluwole Adeyemi	University of Ibadan, Nigeria	HUMAN AND ANIMAL BORDER: EXAMINING TORTOISE IN FOLKLORE, MATERIALITY AND CONTEMPORARY CULTURE
Göktuğ Ege SAĞLAM Arş. Gör. Ayşe ÇAĞLAK	Hitit Üniversitesi, Turkey	MAQAMIC, FORM AND HARMONIC ANALYSIS OF THE WALTZ PIECE FROM FIKRET AMIROV'S 12 MINIATURES FOR PIANO
Res. Assist. Çağla Sevindik Assoc. Prof. Selçuk Bora Çavuşoğlu	Istanbul Okan University, Turkey Istanbul University Cerrahpasa, Turkey	Digitalization and Post-digitalization in Sports
Ufuk Eren-Vapur Tulay Ozcan	Nisantasi University, Turkey Bursa Uludag University, Turkey	CULTURE SELECTION IN YOGHURT PRODUCTION IN ACCORDANCE WITH THE EXPECTATIONS OF THE PRODUCERS AND CONSUMERS
Musa Mursaguliyev Saadat Aliyeva	"Keshikchidagh" State historical and cultural reserve "Avey" State historical and cultural reserve, Azerbaijan	OUR HISTORICAL AND ARCHITECTURAL MONUMENTS EXPOSED TO ENEMY EFFECTS
Emmanuel Oluwole Adeyemi	University of Ibadan, Nigeria	SEX TRAFFICKING: THE BOOMING ENTERPRISE BETWEEN NIGERIA AND EUROPE
Asst. Prof. Dr. Suzan URGAN	19 Mayıs University, Samsun, Turkey	REFLECTION OF CONSCIENTIOUS INTELLIGENCE AND ORGANIZATIONAL BEHAVIOR: 2020 IZMIR EARTHQUAKE CASE STUDY
Assoc. Prof. Dr. Arastun MEHDIYEV	Azerbaijan State Pedagogical University, Azerbaijan	THE IMPACT OF THE OIL STRATEGY ON THE GEOPOLITICAL POSITION OF AZERBAIJAN

(All speakers required to be connected to the session 10 min before the session starts)

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03.05.2021 | SESSION-1 | HALL-3



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Dr. Chinara Gahramanova**

Authors	Affiliation	Presentation title
Remzi Aktay	MEB, Turkey	MMR Encryption Algorithm As An Alternative Encryption Algorithm to RSA Encryption Algorithm
Dr. İlahə ŞİXƏLİYEVƏ	Baku State University, Azerbaijan	ALİ TƏHSİL SİSTEMİNDƏ MONİTORİNG, QIYMƏTLƏNDİRMƏ VƏ ATTESTASIYNIN HƏYATA KEÇİRİLMƏSİ MEXANİZMLƏRİ
Şəhla HÜSEYNOVA Nicat HÜSEYNOV	Baku State University, Azerbaijan	SAĞLAMLIQ İMKANLARI MƏHDUD UŞAQLARIN İNKLÜZİV TƏHSİLİNİN TƏŞKİLİ İSTİQAMƏTLƏRİ
Dr. İbrahimova Khoshgadam	Azerbaijan State Pedagogical University, Azerbaijan	CHARACTERISTICS OF USING METHODS FOR TRAINING STUDENTS' SCIENTIFIC SKILLS IN TRAINING
Assoc.prof. Tarana Abdullayeva Sabina ALLAHYAROVA	Azerbaijan State Pedagogical University, Azerbaijan	OPPORTUNITIES TO USE HEURYST TEACHING METHODS AS MODERN INNOVATIVE EDUCATION TECHNOLOGY
Günəl İSRAFİLOVA	Azerbaijan State Pedagogical University, Azerbaijan	DİDACTİC GAMES İN PRIMARY SCHOOL
Asst. Prof. Dr. Ulviyya Hajiyeva	Azerbaijan State Pedagogical University, Azerbaijan	Lexical Rhetorical Devices in the Azerbaijani and English Languages
Dr. Mirvari Gasimova	Azerbaijan State Pedagogical University, Azerbaijan	Stylistic differentiation and use of antonyms
Nuran Murshudzadeh	Azerbaijan State Pedagogical University, Azerbaijan	CRITICAL THINKING IMPACT ON EDUCATION IN AZERBAIJAN
Dr. Chinara Gahramanova	Azerbaijan State University of Economics, Azerbaijan	MOUNTAIN IMAGE IN TURKISH EPICS

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Meeting ID: 846 1233 9502

Passcode: 040404

03.05.2021 | SESSION-1 | HALL-4



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **KALDYGUL ADILBEKOVA**

Authors	Affiliation	Presentation title
Said Oussou	University of Moulay Ismail, Morocco	THE CORRELATION BETWEEN MOROCCAN LANGUAGE TEACHERS' PROFESSIONAL AUTONOMY READINESS AND YEARS OF TEACHING EXPERIENCE
Aleksandra Karoń	Adam Mickiewicz University, Poznań, Poland	PREVENTION OF THE DEVELOPMENT OF MATH ANXIETY - A PEDAGOGICAL EXPERIMENT
Assist. Prof. Dr. Tarık BAŞAR Assoc. Prof. Dr. İlky AŞKIN TEKKOL	Kırşehir Ahi Evran University, Turkey Kastamonu University, Turkey	AN INVESTIGATION THE RELATION BETWEEN PRESERVICE TEACHERS' EMOTIONAL LITERACY LEVELS AND THEIR COMMUNICATION SKILL LEVELS
Assist. Prof. Dr. Ivan Pavlii	Yeditepe University, Turkey	THE HEBREW BIBLE AND TURKIC LITERATURES: SOME PARALLELS
Shalala SEYİDOVA	Azerbaijan State Pedagogical University, Azerbaijan	PSYCHOLOGICAL REQUIREMENTS FOR THE USE OF COMPUTER TECHNOLOGY IN THE EDUCATIONAL ACTIVITIES OF YOUNG STUDENTS
KALPTEN SEDA YÜZSEVEN	TC. Yıldız Teknik Üniversitesi, Turkey	AWARENESS OF CLASSROOM TEACHERS RELATED TO MATHEMATICAL MODELING AND REVIEW OF MATHEMATICS COURSES
Assoc. Prof. Dr. Gayatree Mishra	Presidency College, Bangalore, India	English Language Education in India-(Country of Multilingualism and Linguistic Diversity)
Almara ABBASOVA	Azerbaijan State Pedagogical University, Azerbaijan	CONTINUATION OF TOPICS AND LANGUAGE OF TEXTBOOKS IN MODERN APPROACHES IN SECONDARY SCHOOLS
Vusala Tagizade	Baku State University, Azerbaijan	The role of M. Shahtakhtli's publicistic works in the formation of the national ideals of Azerbaijani people
Iurii Ganushchak	Adam Mickiewicz University in Poznan, Poland	INTERPERSONAL RELATIONS IN POLISH IT CORPORATIONS AND ITS IMPACT ON POLISH LANGUAGE
Abdullayeva Jamila Novruz Mahmudova Sabina Araz	Azerbaijan State Pedagogical University	APPLICATIONS OF VECTOR AND COORDINATE METHOD IN SCHOOL MATHEMATICS COURSE

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03.05.2021 | SESSION- 1 | HALL- 5

New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

## MODERATOR: Asst. Prof. Dr. G Lalitha Kumari

Authors	Affiliation	Presentation title
Susan Hayeri Yazdi Lobat Taghavi	Islamic Azad University, Iran	A review of modeling the effects of climate change on the quality and quantity of groundwater
Seyed Pouya Hosseini Saadi Biglari	Isfahan University of Technology, Iran	PREDICTING SUITABLE HABITATS OF ASTRAGALUS GOSSYPINUS IN WESTERN RANGELAND OF ISFAHAN PROVINCE, IRAN
Viktor SOPIHA Halyna HAVRYSHCHAK	Ternopil Volodymyr Hnatiuk National Pedagogical University, Ukraine	INNOVATIVE TECHNOLOGIES FOR OCCUPATIONAL HEALTH AND SAFETY IN HOTEL AND RESTAURANT COMPLEXES
Asst. Prof. Y. Surekha Asst. Prof. Dr. G Lalitha Kumari Assoc. Prof. Dr. K. Koteswara Rao Asst. Prof. N Ramesh Babu	Prasad V Potluri Siddhartha Institute of Technology, India	The Role of Internet of Things and Machine learning in Environmental Forecasting - Proposed Method
Assoc. Prof. Dr. K. Koteswara Rao Asst. Prof. Y. Surekha Asst. Prof. Dr. G Lalitha Kumari Asst. Prof. N Ramesh Babu	Prasad V Potluri Siddhartha Institute of Technology, India	Machine Learning and IoT Technologies for Environmental Issues- Research Perspectives
Asst. Prof. Dr. G Lalitha Kumari Asst. Prof. Y. Surekha Assoc. Prof. Dr. K. Koteswara Rao Asst. Prof. N Ramesh Babu	Prasad V Potluri Siddhartha Institute of Technology, India	Systematic Survey of Mutation Testing –Rookies vantage point
Asst. Prof. N Ramesh Babu P. Lavanya Asst. Prof. Dr. G Lalitha Kumari Asst. Prof. Y. Surekha	Prasad V Potluri Siddhartha Institute of Technology, India	AN ELECTRONIC SECURITY SYSTEM TO SAFEGAURD THE CHILD FROM DELETERIOUS OBJECTS USING DEEP LEARNING XCEPTION MODEL
Gargi BA Hiranmayi Guntur Zoya Urooj Maab Selva Kumar	BMS College of Engineering, India	Business Model for Strategic Marketing
Ali Raji Davood Mostofinejad Mohammadreza Eftekhar	Isfahan University of Technology, Iran	Experimental determination of bond properties of glass fabric reinforced cementitious matrix (FRCM) with single-lap direct-shear tests

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04.05.2021 | SESSION-1 | HALL-1

New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

## MODERATOR: Prof. Hajer Huseynova

Authors	Affiliation	Presentation title
Assoc. prof. Dr. Afag Mammadova	Baku State University, Azerbaijan	RELIGIOUS OLD TURKIC TERMS IN TRANSLATION OF THE QURAN INTO KHWAREZM TURKIC
Dr. Veysel İşçi	Harran University, Turkey	REPRESENTING SCOTLAND AS THE OTHER IN 18th CENTURY BRITISH TRAVEL WRITING
Lect. Balayeva Pustakhanim	Azerbaijan State Pedagogical University, Azerbaijan	IMPROVING THE DIRECTION AND MECHANISMS FOR THE RECRUITMENT OF TEACHERS IN EDUCATIONAL INSTITUTIONS
Assoc. Prof. Mert Karabey	Ankara University State Conservatory, Turkey	WOMEN COMPOSERS AND MUSICIANS FROM THE RENAISSANCE TO THE BAROQUE PERIOD
Şahaliyeva Matanat Kurban	Azerbaijan Academy of Sciences, Azerbaijan	FROM SOUTH AZERBAIJAN POETS IN XIX CENTURY: A GLIMPSE OF SUFISM IN THE WORKS OF EBULGASIM NEBATI
Emelya Shakhvat gizi Suleymanova	Nakhchivan University, Azerbaijan	THE ROLE OF EXAMPLES OF ORAL FOLK LITERATURE IN THE HISTORY OF SCHOOL AND EDUCATION DEVELOPMENT IN AZERBAIJAN
Nurlana İMANOVA	Baku Higher Oil School, Azerbaijan	RESEARCH IN THE FIELD OF PSYCHOLINGUISTICS IN AZERBAIJANI LINGUISTICS
Prof. Hajer Huseynova	Azerbaijan State Pedagogical University, Azerbaijan	METHODS OF WORD CREATION AND FORMATION
Asst. Prof. Maya Katenova	KIMEP University, Kazakhstan	Attitude toward CSR: A Case Study of Kazakhstan
Gunel Ahmadova	Azerbaijan National Academy of Sciences, Azerbaijan	POSTMODERN CHARACTERISTICS OF YUSIF SAMADOGLU'S NOVEL EXECUTION DAY
Ağayeva Zülfiye Ekrem kızı	Baku State University, Azerbaijan	COMMONLY USED VERBS IN "ET-TOHFET UZ-ZEKIYYE FIL-LUGAT-IT TURKEY" AND THE AZERBAIJANI LANGUAGE

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04.05.2021 | SESSION-1 | HALL-2



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Assoc. Prof. Christina Reuterskiöld**

Authors	Affiliation	Presentation title
Lauren Hudacek Assoc. Prof. Ikuko Acosta Assoc. Prof. Christina Reuterskiöld	New York University, USA	Self-Generated Images Supporting Personal Event Narratives from Children with DLD: An Online Mixed-Methods Study Across Disciplines
Zhala Khalilli	Azerbaijan National Academy of Sciences, Azerbaijan	THE MOTIF OF NAMING AND NAMES SEEN IN DREAMS IN TURKISH HEROIC EPICS
Anwasha Choudhury Tanya Jain Samiksha Jain	Amity University, India	Effect of Spiritual Experiences and self consciousness on Quality of Life: A Comparative Analysis
Emre Yalçın	Kafkas University, Turkey	THE TURKISH AUDIENCE'S PURSUIT OF THE PLATONIC REALITY AND BERKUN OYA'S AESTHETICS: AN ANALYSIS OF THE DRAMATIC STRUCTURE AND SOCIAL EFFECT OF "BİR BAŞKADIR"
Assist. Prof. İrem Atasoy	Istanbul University, Turkey	HOW CAN NOTHING BE SOMETHING? A MULTIMODAL ANALYSIS OF THE SHORT FILM ZERO
Murshudova Ulduz Bashir	Azerbaijan National Academy, Azerbaijan	WOMEN IN AZERBAIJAN AND NORTH AMERICAN INDIAN FOLKLORE: COMPARATIVE ANALYSIS
Adam Andani MOHAMMED Mpawenimana Abdallah SAIDI	Universiti Malaysia Sarawak UNIMAS, Malaysia	DOMESTIC VIOLENCE AND WELLBIENG OF WOMEN: A CASE STUDY ON LIVED EXPERIENCES OF BATTERED WIVES IN TAMALE, NORTHERN GHANA
Dr. akram mohammed yahya Dr. mohammed malallah	University of Mosul, Iraq	Rare archaeological and human finds discoveries mixed with the bodies and blood of innocent martyrs in the old city of Mosul
Adam Andani MOHAMMED & Athirah Binti AZHAR	Universiti Malaysia Sarawak, Malaysia	SOCIAL WORK AND SUSTAINABLE DEVELOPMENT GOALS: ROLE OF SOCIAL WORKERS IN IMPROVING WELBEING FOR RESIDENTS OF NURSING HOMES IN MALAYSIA

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Meeting ID: 846 1233 9502

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04.05.2021 | SESSION-1 | HALL-3



New York Local Time: 08:30–11:00



Ankara Local Time: 15:30–18:00

MODERATOR: **Ekaterine Lomia**

Authors	Affiliation	Presentation title
<b>Dr.Seyedmohammad Seyedi Asl</b> <b>Dr. Hazar Leylanoğlu</b> <b>Ataollah Bahremani</b>	<i>Ankara Hacı Bayram University, Turkey</i> <i>Ankara University, Turkey</i>	BORDER SECURITY IN CENTRAL ASIA AFTER 1991; CASE OF STUDY KYRGYZSTAN – UZBEKISTAN
<b>Aymerillette ŞEN</b> <b>Prof. Dr. A. Poyraz GÜRSON</b>	<i>Social Sciences Institute, Kocaeli, Turkey</i>	The African Union History in the Context of International Relations Debates
<b>Mehmet Ali Horozoğlu</b> <b>Assoc. Prof. Selçuk Bora Çavuşoğlu</b>	<i>Karamanoglu Mehmetbey University, Turkey</i> <i>Istanbul University-Cerrahpasa, Turkey</i>	Mesut Ozil Transfer of Fenerbahçe Sports Club from Corporate Image Window
<b>Loid Karchava</b> <b>Ekaterine Lomia</b>	<i>Georgian Technical University, Georgia</i> <i>Caucasus International University, Georgia</i>	PECULIARITIES OF GEORGIAN-TURKISH COOPERATION IN THE REGIONAL AND GLOBAL CONTEXT
<b>Dr. Mehmet Erkan Soykan</b>	<i>Kayseri University, Turkey</i>	RELATIONSHIP BETWEEN PRICE-EARNING RATIO AND STOCK PRICE (RETURNS) IN SELECTED SECTOR OF BORSA ISTANBUL
<b>Dr. Nesrin AKKOR</b>	<i>Kırklareli University, TURKEY</i>	THE TAX ON WEALTH OF 11 NOVEMBER 1943, THE SCOPE AND APPLICATION OF THE TAX
<b>Asst. Prof. Dr. Renu Susan Samuel</b>	<i>St. Peter's College, India</i>	THE EFFECTS OF HDFC BANK MERGER ON THEIR EMPLOYEE PERFORMANCE
<b>Samir İsayev</b>	<i>The Azerbaijan Higher Military Academy</i>	MILITARY SECURITY: THE ROLE OF MILITARY FORCE AND OPPORTUNITIES OF DIPLOMACY
<b>AAZRA NUH</b> <b>Dr. Amalendu Paul</b>	<i>Rabindra Bharati University, India</i>	IMPACT OF RABINDRASANGEET ON PROBLEM BEHAVIOURS OF SPECIAL NEEDS INDIVIDUALS

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04.05.2021 | SESSION- 1 | HALL- 4

New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

## MODERATOR: Assoc. Prof. Eleonora TANKOVA

Authors	Affiliation	Presentation title
Heybatollah Najandimanesh	Allameh Tabataba'i University, Iran	Access to Vaccine for Covid-19 as a Human Right
Reza Reyhani-e-Kolaachaahi	University of Guilan-Rasht-IR Iran	Turkish foreign policy stability in Bulgaria: An energy-based analysis
Youssef Ibrahim al-Fadel Badlihasham Mohd Nasir	Universiti Teknologi Malaysia	SPIRITUAL IMPACT OF THE COVIDS-19 UPON THE CONGREGATIONAL PRAYER IN MASJIDIL HARAM MECCA
Róbert G. Zimányi	University of Physical Education, Hungary	POSITIVE DISCRIMINATION AT COMPETITIVE AND RECREATIONAL SPORTS
Muhammad Ishlaahuddin Jumat Badlihasham Nasir	Universiti Teknologi Malaysia	Da'wah Effort and Contribution of Ustaz Abdul Rahman Harun (1911-1989) Towards the Muslim Community of Singapore
Jakub Adamczewski	Adam Mickiewicz University in Poznan, Poland	ENVIRONMENTAL PSYCHOLOGY AND EDUCATION HOW THE URBAN CITY PLANNING CAN CHANGE OUR SCHOOLS?
Assoc. Prof. Eleonora TANKOVA Anna NEDYALKOVA	Varna Free University, Bulgaria	TRANSNATIONAL ASPECTS OF THE TRANSITION TO THE CIRCULAR ECONOMY MODEL
Assoc. Prof. Eleonora TANKOVA Assoc. Prof. Rositsa PETKOVA-SLIPETS Vanya IVANOVA	Varna Free University, Bulgaria	BLACK SEA POLLUTION AND TECHNOLOGIES FOR MAKING THE SEA CLEANER
Iya Elkamali	Odesa I. I. Mechnikov National University, Ukraine	IRAN'S NUCLEAR PROGRAM: THE FUTURE OF JCPOA

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Meeting ID: 846 1233 9502

Passcode: 040404

04.05.2021 | SESSION- 1 | HALL- 5



New York Local Time: 08:<sup>30</sup>–11:<sup>00</sup>



Ankara Local Time: 15:<sup>30</sup>–18:<sup>00</sup>

MODERATOR: Assoc. Prof. Oryslava Ivantsiv

Authors	Affiliation	Presentation title
Carla Santos Cristina Dias	<i>New University of Lisbon, Portugal</i>	READING AND INTERPRETING STATISTICAL DATA PRESENTED IN GRAPHS
Vikas Poply	<i>K.L.P. College, India</i>	ANALYSIS OF NANOFUID FLOW WITH CHEMICAL REACTION OVER A STRETCHING SURFACE
Assoc. Prof. Svitlana Tarasova	<i>V. N. Karazin Kharkiv National University, Ukraine</i>	LINGUIST AS A COMIC LANGUAGE IDENTITY
Assist. Prof. Behzad Moeini Sam Sara Mohammadi Avandi Anis Mohammadi Avandi	<i>Islamic Azad University, Iran</i>	THE IMMORTALS AND THEIR NAME
Assist. Prof. Behzad Moeini Sam Sara Mohammadi Avandi Anis Mohammadi Avandi	<i>Islamic Azad University, Iran</i>	VENERATION POSTURE AT DARIUS' RELIEF IN PERSEPOLIS
Lect. G.M.Sembiyeva	<i>Korkyt Ata Kyzylorda State University, Kazakhstan</i>	Empirical comparison of the results of the Kazakh -and Russian-language version of the methodology
Lect. Martynova I. E.	<i>Kharkiv National University of Construction and Architecture, Ukraine</i>	EXTRACURRICULAR WORK AS A FORM OF STUDENT ORGANIZATION
Assist. Prof. A.G.Priya Varshini Dr. T.Aparnaa Dr. V.Sangavi Dr. E.Gokulapriya	<i>Dr.Mahalingam College of Engineering and Technology, India</i>	SOFTWARE EFFORT ESTIMATION USING ENSEMBLE MACHINE LEARNING APPROACH
Assoc. Prof. Oryslava Ivantsiv	<i>Ternopil Volodymyr Hnatiuk National Pedagogical University, Ukraine</i>	GENRE PARAMETERS OF CORPORATE PRESS RELEASES

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**4th INTERNATIONAL NEW YORK CONFERENCE ON  
EVOLVING TRENDS IN INTERDISCIPLINARY RESEARCH & PRACTICES**

FULL TEXTS BOOK

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**4th INTERNATIONAL NEW YORK CONFERENCE ON  
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# NON-LINEAR MULTIPLE NEURO-REGRESSION MODELING, OPTIMUM DESIGN, AND ANALYSIS OF THE ROCKET'S DIFFERENT SUB-UNITS

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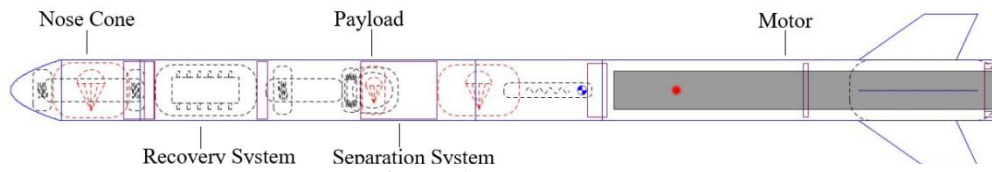
## Abstract

Rockets are widely used in aerospace and defense with their speed and improved mechanical properties. Another essential feature is that rockets' mechanical properties and skills can be improved act upon their works. Structural properties can be increased to a higher level by design methods and manufacturing methods, and many parameters in the rocket modeling process, and each of these parameters affects structural properties. In this study, the effects of significant design variables on rocket modeling were investigated. The study was conducted in two stages as simulation and design optimization. In the first part, the scenarios were determined by using the Design of Experiment (DoE) approach in order for the data collection. These scenarios were carried out through the OpenRocket simulator. MacroRecorder app was used to speed up to process applied tries on the OpenRocket, and the output such as apogee and ground hit velocity were recorded. In the second part, different mathematical models were created to define the phenomena using non-linear multiple neuro-regression modeling. The coefficient of determination ( $R^2$ ), adjusted coefficient of determination ( $R^2_{\text{adjusted}}$ ) also  $R^2_{\text{training}}$  and  $R^2_{\text{testing}}$  values were calculated for each model to see how well the models define the phenomena. As a design-oriented solution, the values of the process parameters for ground hit velocity values have been optimized based on stochastic optimization algorithms. The results show an increase in the rocket modeling process efficiency.

**Keywords:** Optimal Design, Stochastic Optimization, Sub-Units of The Rocket.

## INTRODUCTION

Rocket science is a combination of top rings of many disciplines and many technologies. So it is a costly, dangerous, and complicated science. However, with more explicit materials and techniques, rocket science brought a less payload to shorter distances than commercial/military rockets developed and was called 'model rocketry.' Model aviation science, pyrotechnic materials, and modern rocket technologies are the cornerstones of this model science. Model rocketry became a safer and more attractive science by establishing an authoritarian institution (National Association of Rocketry - NAR) in 1957. We can see a sample model rocket in Figure 1.



**Figure 1 Model Rocket**

### **Parts of the model rocket**

The nose cone is the first component that meets the air in model rockets. Thanks to its shape, it can reduce the drag of the rocket. In addition to this primary purpose of the model, rockets send the necessary equipment to the target point. These equipment are called payloads, and they have various tasks. Scientific research tools or experimental equipment are often used as a payload. The body ensures the integrity of the rocket and includes most equipment. For the rocket to complete its mission successfully, the placement and integration of these types of equipment must be done correctly. The motors serve to deliver the payload to the desired location. To put it simply, the motors operate with the discharge of gases with high temperature and pressure in a closed environment. The motor does not need speed to start up. Rocket motors can move the rocket with high acceleration and reach very high speeds. We can see the main parts of the model rocket in Table 1.

**Table 1** Parts of model rocket

- 1.Nose cone
- 2.Payload
- 3.Body
- 4.Rocket Motor
- 5.Fixed Fins
- 6.Recovery System
- 7.Separation System

### **Design of the Model Rocket**

Design is always a process that should be carried out systematically. The primary purpose of product design is to reach a capability that is not already possessed due to need. Rocket design can also be evaluated from this perspective. However, the materials are not any products, and they are high quality and energetic materials. The environment is not sea level, but every environment from deep seas to distant stars.

Therefore, errors must be eliminated in the initial stages while designing. The best way to do this is to learn and store any available information and used in design before starting design. This information includes design requirements, capabilities, geometric criteria, fuel science, thermodynamics, etc. covers many topics.

During the design process, the subsystems of the design should be researched separately. However, these subsystems cannot be considered independently while designing. The output of a subsystem may be the input of another subsystem, or a subsystem may restrict

another subsystem. For example, the engine's temperature is a warning for other systems, and how it affects the engine's environment should be considered at every stage.

In this study, TEKNOFEST medium-altitude rocket competition criteria are taken as reference values. TEKNOFEST is a technology festival that was organized for the first time in January 2017 in Turkey. It is organized under the Technology Team Foundation (T3 Foundation) leadership and the Republic of Turkey Ministry of Industry and Technology. The model rocket competition organized within the scope of this festival consists of 3 different categories. There are different design criteria for model rockets to be designed in each category.

## **MATERIALS AND METHODS**

Since the type of material to be used directly affects flight performance, the selection of the material from which the rocket will be produced has been an essential step in rocket design. The choice of material to be used should be made by considering factors such as the rocket's height, the external forces it will be exposed to, the rocket integration strategy, and the rocket mounting strategies of the rocket systems. Aluminum, carbon fiber, and fiberglass are commonly preferred structural body materials in model rockets. Each material has different advantages and disadvantages in the rocket industry. Considering all these advantages and disadvantages, it was decided as fiberglass for the material of the rocket that will reach an altitude of 3000 m.

### **Regression Analysis**

Regression analysis is a technique used to look at the purposeful relationship among variables and form a predictive modeling technique that investigates the connection. The regression approach is used to study modifications in the established variable with adjustments in the independent variables in different phrases; this approach is used for estimating, finding, and modeling the causative results to the relationships among the variables. It has extensive applications in much subject research. In regression analysis, the independent variable represents the inputs that make the changes in the dependent variable, and the dependent variable represents the output based on the values of the independent variable.

The regression technique can be categorized into two parts. These are linear regression and non-linear regression. While linear regression is used to investigate the linear relationship between the independent and dependent variable, Non-linear regression is used to investigate the non-linear relationship among the variables.

The problem is first modeled by way of the use of the proper model. For modeling the problem, polynomial, trigonometric, logarithmic, and rational forms may be selected. After the modeling operation, the coefficient of determination value ( $R^2$ ) is calculated to peer how near the equipped version outcomes to the experimental statistics (Nagelkerke et al., 1991). Therefore, its miles crucial to boom  $R^2$  value by changing model types or degrees of the model. However, this does not mean that increasing the degree of the model usually will increase the  $R^2$  value and also decrease. The aim is to make  $R^2$  value exceed 0.85, and the  $R^2$  is calculated.

The increased  $R^2$  value is not enough to recall good modeling. The central concept of the determination of  $R^2$  value is identifying the physical phenomena as actual as feasible. Because of that,  $R^2_{\text{adjusted}}$  ( $R^2_{\text{adj}}$ ) needs to be calculated to test the model's suitability.

### **Design of Experiment (DoE)**

DOE is a helpful tool for finding new processes, learning more about the existing processes, and optimizing them for an excellent performance. Replication, randomization, and blocking are the fundamental principles of statistical methods in DOE. Replication is the experiment's repetition to achieve a more accurate result and to reduce the experimental error. Randomization identifies the random order in which the experiment runs are to be carried out. Blocking is intended to isolate a known systematic bias effect and inhibit the main effects from being obscured (Aydin et al., 2020).

The design of experiment has a look at may be accomplished by way of the usage of alternative methods, including Box Banken, Taguchi, General Factorial, D-Optimal, etc. By specifying all factors, levels, and responses, each method offers an exclusive variety of test situations. In this study, D-Optimal method was chosen.

### **Optimization**

Optimization may be defined as making something the best as a whole lot as viable by using any to be had assets. With optimization via the usage of the mathematical feature, outcomes can be maximized or minimized with recognize to the desired scenarios by way of changing with design parameters (Ozturk et al., 2018).

To make optimization research associated with a subject, we must first have a specific information set is composed of parameters referred to as design variables. After that, with recognition to regression analysis type, the mathematical model referred to as 'Objective Function' of the problem has to be defined. After that, by using the objective function, the problem can be minimized or maximized by optimization methods.

### **Differential Evolution Algorithms (DE)**

Differential Evolution is an iterative optimization method, and it presents alternative answers for the complex machining problems that are primarily based on a genetic algorithm in phrases of its operation. The Differential Evolution is a populace-based, totally derivative-free stochastic optimization method, and the purpose is to analyze the best method to all of the problem's constraints (Aydin et al., 2020).

Differential Evolution algorithm considers a set of the solution instead of a single solution at each iteration. It is expensive in terms of calculation due to this. Using DE is efficient to find the global optimum of the objective function. However, it does not guarantee to find the global optima.

### **OpenRocket**

OpenRocket is a theoretical design and simulation program. It is enabling us to access critical data before the production process of the rocket prevents problems that may occur during and after the production process. Open Rocket provides design for many fields such as amateur rocketry, model rocketry, and high power rocketry. We can change all dimensions on the rocket separately and instantly observe the results of these changes on the flight graph.

### **Problem Definition**

Optimization means improving the performance of a system, process, or product to get the maximum help from the system. For this purpose, the data obtained using the mathematical program and experimental methods, optimization process in this study has been realized. This study aims to determine the model rocket sizes suitable for the desired reference values by the optimization methods. The effects of the data obtained as a result of

optimization on the flight profile were investigated. The determined results are stated in the Result and Discussion section.

#### **Determination of Outputs**

The values in Teknofest mid-altitude rocket competition are based on determining the outputs. These restrictions are as follows:

- 2400 m < Apogee < 3600 m,
- Max ground hit velocity 9 m / s,

Thus, the output used in optimization is determined as the rocket's ground hit velocity with the apogee of the rocket. Firstly, a simulation was made with the values given in Table 2 concerning previous studies. When the data was entered into OpenRocket, and the flight was analyzed, it was observed that only the apogee was not within the desired range of the outputs obtained. The optimization process will be started to ensure that all of these values are within the desired value ranges. Before using the Design of Experiment, which is the first step for optimization, there are two things that we need to determine before we can use this application, they are an essential index for each input and maximum and minimum values depending on this important index, and if necessary, medium values.

#### **Determining the Importance Indexes of Inputs**

While determining the importance indexes of the inputs, the 'Weighted Decision Matrix' method was used. While determining the importance index, the effect of inputs on the outputs was taken into consideration.

**Table 2** Inputs values of the first try

1	Nose length	225 mm
2	Nose wall thickness	6 mm
3	Power variable	5 mm
4	Middle body length	1000 mm
5	Middle body wall thickness	6 mm
6	Payload weight	4500 gr
7	Motor body wall thickness	6.5 mm
8	Motor body weight	2200 gr
9	Fin wall thickness	5.5 mm
10	Fin location	0 mm
11	Fin bottom edge length	250 mm
12	Fin top edge length	150 mm
13	Fin height	120 mm
14	Fin position	-50 mm

### Determining the Limits of Inputs

While determining the maximum and minimum values of the inputs, the previous test values and whether the outputs obtained under these values are within the desired limits; in addition, it was assessed whether the rocket's flight profile had been damaged or not. In addition, another main factor is manufacturability for this part.

With the Design of Experiment 12, it was learned how many trials should be made using which values. For this, respectively, a new design was created, and D-Optimal was chosen, as seen in Figure 2

**Figure 2** Screenshot of input entrance page from Design of Experiment

We can see the obtained with 505 rows and exported as an excel file in Figure 3.

#### Optimal (Custom) Design

A flexible design structure to accommodate custom models, categoric factors, and irregular (constrained) regions. Runs are determined by a selection criterion chosen during the build.

Categoric factors: 14 (2 to 30)  Horizontal  Vertical

	Name	Units	Type	Levels	L[1]	L[2]	L[3]
A [Categoric]	A		Nominal	3	Level 1 of A	Level 2 of A	Level 3 of A
B [Categoric]	B		Nominal	3	Level 1 of B	Level 2 of B	Level 3 of B
C [Categoric]	C		Nominal	3	Level 1 of C	Level 2 of C	Level 3 of C
D [Categoric]	D		Nominal	3	Level 1 of D	Level 2 of D	Level 3 of D
E [Categoric]	E		Nominal	3	Level 1 of E	Level 2 of E	Level 3 of E
F [Categoric]	F		Nominal	3	Level 1 of F	Level 2 of F	Level 3 of F
G [Categoric]	G		Nominal	3	Level 1 of G	Level 2 of G	Level 3 of G
H [Categoric]	H		Nominal	3	Level 1 of H	Level 2 of H	Level 3 of H
J [Categoric]	J		Nominal	3	Level 1 of J	Level 2 of J	Level 3 of J
K [Categoric]	K		Nominal	2	Level 1 of K	Level 2 of K	
L [Categoric]	L		Nominal	2	Level 1 of L	Level 2 of L	
M [Categoric]	M		Nominal	2	Level 1 of M	Level 2 of M	
N [Categoric]	N		Nominal	2	Level 1 of N	Level 2 of N	
O [Categoric]	O		Nominal	2	Level 1 of O	Level 2 of O	

	Factor 1 AA	Factor 2 BB	Factor 3 CC	Factor 4 DD	Factor 5 EE	Factor 6 FF	Factor 7 GG
1	Level 1 of A	Level 1 of B	Level 3 of C	Level 2 of D	Level 2 of E	Level 1 of F	Level 2 of G
2	Level 1 of A	Level 3 of B	Level 3 of C	Level 2 of D	Level 1 of E	Level 3 of F	Level 2 of G
3	Level 2 of A	Level 2 of B	Level 2 of C	Level 1 of D	Level 1 of E	Level 1 of F	Level 1 of G
4	Level 3 of A	Level 2 of B	Level 2 of C	Level 3 of D	Level 1 of E	Level 3 of F	Level 2 of G
5	Level 2 of A	Level 2 of B	Level 3 of C	Level 1 of D	Level 1 of E	Level 3 of F	Level 3 of G
6	Level 2 of A	Level 1 of B	Level 1 of C	Level 3 of D	Level 3 of E	Level 3 of F	Level 1 of G
7	Level 3 of A	Level 3 of B	Level 3 of C	Level 3 of D	Level 2 of E	Level 1 of F	Level 2 of G
8	Level 1 of A	Level 3 of B	Level 1 of C	Level 2 of D	Level 3 of E	Level 1 of F	Level 1 of G
9	Level 3 of A	Level 1 of B	Level 3 of C	Level 1 of D	Level 3 of E	Level 3 of F	Level 2 of G
10	Level 2 of A	Level 3 of B	Level 3 of C	Level 2 of D	Level 1 of E	Level 3 of F	Level 1 of G
11	Level 3 of A	Level 2 of B	Level 1 of C	Level 2 of D	Level 1 of E	Level 3 of F	Level 1 of G
12	Level 3 of A	Level 2 of B	Level 1 of C	Level 2 of D	Level 3 of E	Level 2 of F	Level 2 of G
13	Level 2 of A	Level 1 of B	Level 3 of C	Level 1 of D	Level 2 of E	Level 2 of F	Level 1 of G
14	Level 2 of A	Level 3 of B	Level 1 of C	Level 2 of D	Level 2 of E	Level 3 of F	Level 3 of G
15	Level 3 of A	Level 3 of B	Level 2 of C	Level 2 of D	Level 1 of E	Level 2 of F	Level 1 of G
16	Level 1 of A	Level 2 of B	Level 2 of C	Level 2 of D	Level 1 of E	Level 1 of F	Level 1 of G
17	Level 2 of A	Level 2 of B	Level 3 of C	Level 2 of D	Level 2 of E	Level 3 of F	Level 2 of G
18	Level 3 of A	Level 1 of B	Level 3 of C	Level 3 of D	Level 2 of E	Level 3 of F	Level 1 of G
19	Level 1 of A	Level 3 of B	Level 2 of C	Level 3 of D	Level 1 of E	Level 3 of F	Level 3 of G
20	Level 2 of A	Level 1 of B	Level 2 of C	Level 2 of D	Level 2 of E	Level 2 of F	Level 1 of G
21	Level 1 of A	Level 2 of B	Level 2 of C	Level 3 of D	Level 3 of E	Level 3 of F	Level 1 of G

**Figure 3** Screenshot of the obtained table from Design of Experiment

Then all values are written instead. For Excel values, the Level 3 value, shown in Table 3, has been written instead of Level 2.



**Table 3** Input levels and level values

	Input name	Level 1	Level 2	Level 3
1	Nose length (mm)	100	225	350
2	Nose wall thickness (mm)	2	-----	10
3	Power variable	0.3	0.5	0.7
4	Middle body length (mm)	750	-----	1200
5	Middle body wall thickness (mm)	2	6	10
6	Payload weight (gr)	4000	-----	5000
7	Motor body wall thickness (mm)	3	6.5	10
8	Total weight of the motor system (gr)	1500	-----	3000
9	Fin wall thickness (mm)	4	-----	8
10	Fin location (mm)	-100	0	100
11	Fin bottom edge length (mm)	100	250	400
12	Fin top edge length (mm)	0	150	300
13	Fin height (mm)	90	120	150
14	Fin position (mm)	-100	-50	0

Also, the final data table was obtained, and simulations were started.

The 505 trial data series obtained with the Design of Experiment program was tested on the OpenRocket with the help of the bot system, and the outputs of all trials were recorded for use in optimization. After that, an excel file with input-output values was created. The experimental part of this study was completed with the acquisition of data. In the numerical section, these steps are defined as follows:

1. Define the Objective Function, Design Variables, and Constraints
2. Modeling of the problem
3. Optimization

First, regression analysis was performed. The data in this analysis were obtained from the simulation result. In regression analysis, the objective function, design variables, and constraints of this study are given in Table 4.

**Table 4** Objective function, design variables and constraint of the process

Objective Function	Abs[AP-3000]		
Design Variables	NL,NWT,PV,MBL,MBWT,PW,MOWT,TWMS,FL,FT,FBEL,FTEL,FH,FP		
Constraint	$3 < GHV < 9$	$1 < MBWT < 11$	$-120 < FL < 120$
	$90 < NL < 380$	$3000 < PW < 7000$	$90 < FBEL < 450$
	$1 < NWT < 11$	$2 < MBWT < 12$	$0 < FTEL < 330$
	$0.2 < PV < 0.9$	$1300 < TWMS < 3300$	$75 < FH < 180$
	$650 < MBL < 1400$	$3 < FT < 9$	$-120 < FP < 20$

The  $R^2$  and  $R^2_{adj}$  values were calculated for each model. Then models with a value above 0.85 were selected. The next phase of the study started with an appropriate model. All of the data obtained up to this step was used for modeling.

**Models**

Second-Order Multiple Non-Linear ( SON ) form and Third Order Multiple Non-Linear ( TON ) form are given in Table 5.

**Table 5** Forms of different multiple regression models

Model Name	Nomenclature	Formula
Second order multiple nonlinear	SON	$Y = \sum_{k=1}^{14} \sum_{j=1}^{14} (a_j x_j x_k) + \sum_{i=1}^{14} (a_i x_i) + c_1$
	TON	$Y =$
Third order multiple nonlinear		$\sum_{l=1}^{14} \sum_{m=1}^{14} \sum_{p=1}^{14} (\beta_l x_l x_m x_p) + \sum_{k=1}^{14} \sum_{j=1}^{14} (a_j x_j x_k) + \sum_{i=1}^{14} (a_i x_i) + c_2$

At this point, 80% of the obtained data selected randomly. Using chosen data, a training model occurs, and  $R^2_{training}$  value is calculated for this model. After that, 20% of the data is applied in the training model, and outputs are calculated.

20% of the data calculated by training model and outputs of original data and correlation between them and the coefficient of determination value between these outputs is named

$R^2_{\text{testing}}$ . The main objective is obtain  $R^2_{\text{testing}}$  value as high as possible. This numerical method is called neuro regression. The higher  $R^2_{\text{testing}}$  value examines that the model created using a specific part of the data for the same problem provides physical phenomena for the remaining data.

## RESULT AND DISCUSSION

In this study, simulation was performed for each of the 505 scenarios obtained due to the design on OpenRocket. In order to increase the accuracy of the data, it was more logical to do these try by a macro program. Thus, the human error rate is minimized in the processing of the data into the program. However, a few randomly selected scenarios were repeated to check the values.

In this context, many different regression models have been created for AP and GHV. Among the created models, the ones with greater  $R^2_{\text{training}}$  and  $R^2_{\text{testing}}$  values were selected to identify the system more appropriately, as seen in Table 6.

**Table 6** Model type and coefficient and determination values for output

Outputs	Model	$R^2_{\text{training}}$	$R^2_{\text{testing}}$
AP	TON	<b>0.999</b>	<b>0.999</b>
GHV	SON	<b>0.995</b>	<b>0.999</b>

The extended forms of the outputs AP and GHV are given in Appendix.

In this study, the optimization operation has been done for output to find the optimum design parameters of the model rocket to provide the constraints. The optimization process is systematically and sequentially performed, as mentioned in the method section. The optimization process was done separately for the problems specified in the problem definition section and all of the constraints.

After optimization operation, the input values found as ;

- NL – 100 mm
- NWT – 0.975 mm
- PV – 0.521
- MBL – 1070 mm
- MBWT – 6.02 mm
- PW – -4858 gr
- MBWT – 8 mm
- TWMS – 1500 gr
- FT – 8 mm
- FL – 85.77 mm
- FBEL – 194 mm
- FTEL – 104.93 mm
- FH – 90 mm
- FP – -79.2 mm

Output values for given input values; •Apogee = 2897 m •Ground Hit Velocity = 7.28 m/s

## CONCLUSION

In this study, the effects of different rocket parameters were investigated. All parameters were kept constant except for these 14 parameters. The data used in the study were

obtained as a result of experiments formed by using the design of simulation study. By giving different values to the rocket parameters, the flight profile was obtained under stable weather conditions. As a result, it was observed that 14 inputs affect output. This study also proposed that different regression models can identify the engineering problem and suggested that it can also be used to obtain flight profiles. In addition to multiple regression analysis, all data is divided into two sets, such that 80% and 20% of the given data and the first portion of the data is used for training; the second portion is for testing to enrich the study. The data were divided into training and testing data. By using 80% of the data training model was created. Then, 20% data were put in the training model, and  $R^2$  values were calculated. In the engineering approach, when  $R^2$  values are bigger than 0.85, the results are suitable for real-life applications. Modeling results indicate that more than one regression model can define an engineering problem. When  $R^2$  is less than 0.85, we can say that this model is not sufficient to describe the engineering problem. At this point, the model is needed to change. The same procedure was made for AP and GHV values; then, appropriate models were selected. As a result of this study, it has been observed that the values in the flight profile can be brought to the desired range under suitable conditions.

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## **PREVENTION OF THE DEVELOPMENT OF MATH ANXIETY - A PEDAGOGICAL EXPERIMENT**

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### **Abstract**

Mathematics is an important part of our lives. Just like knowing a foreign language, mathematics opens up the possibility of working in various professions and a better understanding of reality. Math anxiety (mathematical phobia) is what can close many career paths and cause a misunderstanding of some processes, e.g. in nature, in the development of technology, etc.

In my PhD thesis, I describe the various reasons for emergence of a mathematical phobia and the consequences of math anxiety. I have designed a pedagogical experiment and one of its goals is to prevent the development of math anxiety. The pedagogical experiment is intended for children aged 6-10 and is compatible with what is taught in Polish schools. This experiment consists in implementation of done daily, short tasks that build mathematical competences (e.g. spatial orientation, employing algorithms, etc.) without using the numerical notation.

The philosophical justification for the experiment lies in the philosophy of Ludwig Wittgenstein, his perception of language both in the initial phase of his creativity and in later works. On the one hand, it is his understanding of a language as a precise, logic-based tool that describes reality. This corresponds to the characteristics of the language of mathematics (formal language). On the other hand, it is the fact that language is changeable and flexible, people give it rules is not overlooked (people make the rules of the language-games). This makes it possible to consider mathematics as one of the languages (separate from ethnic or natural languages). This made it possible to note mathematic communication and mathematical culture, which are important in a deep understanding of mathematics (in other words, it helps to recognize mathematical communication and a mathematical culture in education which are important in a deep understanding of mathematics).

Expanding their understanding of mathematics is a hope for children who are afraid of numerical notation, math lessons, and are not sure of their strength in mathematics. The experiment is underway.

**Keywords:** math anxiety, experiment, education, pedagogy, math

### **INTRODUCTION**

Mathematics accompanies us from an early age. It is one of the school disciplines, but, importantly, it accompanies our everyday life: from paying in a shop to serious questions about the nature of reality. Most people will agree that having math skills is important. Of course, there are objective obstacles to acquiring them, such as dyscalculia. But what about math anxiety?

Many researchers emphasize the fact that math anxiety is a serious human problem (Luttenberger et al., 2018), which may have many consequences in their future: it affects the choice of the field of study or work (Luttenberger et al., 2018, Tashana et al., 2021). Fear of mathematics is a type of phobia: strictly speaking, it is a mathematical phobia. Like any other type of phobia, it can be associated with somatic sensations, such as a headache or a rapid heartbeat (Luttenberger et al., 2018). Mathematics is part of both science and culture. With mathematics, we can understand reality better (for reality is mathematical or can be described with mathematics). Also in everyday life, mathematics is present in various forms: from simple ones, e.g. counting money, to complex ones, such as constructing electronic devices or building safe houses. All this influences the fact that fear of mathematics has a heterogeneous etiology and its development is influenced by many factors.

Among the causes of the emergence and development of a mathematical phobia are, for example, poor mathematical skills, genetic causes and socio-cultural factors (Ramirez et al., 2018). Math anxiety is a complex phenomenon that can bring important consequences (like what has already been mentioned giving up certain professions). Therefore, it would be better to prevent the development of a mathematical phobia than to deal with its negative consequences. In order to consider the prevention of the occurrence of the phenomenon of mathematical phobia, it is necessary to pay attention to which neuronal and emotional areas are affected by the fear of mathematics.

First of all, math anxiety affects the working memory. At the cognitive level, anxiety is linked to working memory impairment in general (Tashana et al., 2021). When a student is worried about a situation related to, for example, a math lesson, it will be difficult for him to focus on making calculations (Beilock et al., 2015; Justicia-Galiano et al., 2017; Skagerlund et al., 2019). Moreover, working memory is related to the regulation of emotions (Jesielska et al., 2015; Coifman et al., 2021). This is very important thing in times of tension and stress. Mathematics is a specific field of knowledge, which is accompanied by unambiguous results and the need to be focused and systematic, and this requires emotional maturity and can arouse difficult emotions.

Second, success in mathematics is influenced not only by numeracy skills, but also by a deeper understanding of the essence of mathematics, its concepts, etc. Mathematical communication is helpful in developing these skills (Lomibao et al., 2016). It also involves discussing during solving math problems, looking for the best solutions, etc.

Another important aspect that is worth paying attention to is faith in one's own abilities and a realistic approach to one's mathematical skills (Tashana et al., 2021). This can be referred to as a mathematical self-awareness. Thanks to mathematical self-awareness, the student can build knowledge about himself/herself in contact with mathematics, assess his chances and take up challenges. Building such an image of oneself should be a part of mathematics education.

Attitudes towards mathematics are associated with many cultural and family aspects: stereotypes, parents' approach to mathematics, etc. However, the factors mentioned here are the ones that are worth paying the most attention to in the context of the pedagogical experiment that will be described beneath.

## **MATERIALS AND METHODS**

The pedagogical experiment being described here is in progress, therefore only the most important theoretical and methodological assumptions of this project could be presented. The pedagogical experiment was designed to test the following hypotheses:

### Hypothesis 1:

The negative effects of math reluctance and math anxiety can be minimized if, in the process of shaping mathematical competences, elements of logic, analytical thinking, computer programming and similar activities that do not require the use of numerical notation are implemented.

The philosophical foundation of the experiment is the assumption that mathematics is one of the languages we use. Obviously, the language of mathematics (formal language) cannot be understood as the natural language of one of the ethnic languages. The language of mathematics, understood as a special type of language, is the recognition that a formal language can be learned like a foreign language: it is a tool that describes the world and broadens our ability to understand reality. The philosophy of Ludwig Wittgenstein is the inspiration and justification for such a thinking. In his early work (Wittgenstein, 2012), he understood language as a precise tool limited by the rigid laws of logic. This notion is similar to the language of mathematics. Then he understood language more flexibly: as a larger collection of many “language games” where the only limitation is that they must be useful in communication with other people (Wittgenstein, 2000). The rest of the rules of these games are up to the people involved. Thus, the language of mathematics can be understood as one of the language games which rules are rigidly defined.

The assumption that is in line with the project is the prevention of fear of mathematics by building good emotional associations with mathematics and deepening the understanding of what mathematics does, and what is its subject (the mathematical culture, the beauty of mathematics).

The experiment is conducted online. An individual approach is applied to each of the respondents. The study group was selected from among children aged 6-10 years in home schooling. It seemed that it would be easier to give individual tasks to children who learn outside the classroom, but in practice, children who study at school will be admitted to the research too.

The procedure of the pedagogical experiment is as follows. Before starting the experiment, parents and children completed questionnaires concerning the child's attitude to science, and not only to mathematics. The questions also concerned the cognitive activities that the child likes. Those children who generally liked educational activities, books, storytelling, riddles, puzzles, but did not like math lessons (discouragement, impatience, etc.) were invited to the research. The researcher talks to parents and children who have qualified for the experiment. Learns more about children's interests and how they react to success or failure in learning, how they react to stress and fatigue. The researcher observes educational mathematics and other (including language) activities to learn about children's reactions to various situations and the way in which they deal with their problems.

During the experiment there are 6 sets of daily tasks for each child (one set per month). The scope of the tasks is in line with what is taught in the Polish school. The sets form a

whole, like a book. It is a story about a space travel, in which the main character is a specific child (there are also some comics about the adventures of the child). Tasks include activities that involve manipulating objects (for example, organizing collections), logical puzzles, code messages, and manipulating algorithms (for example, simple tasks that require precise use of predefined pictograms). The individual skills and interests of the child are used, for example, for someone who likes drawing there are more tasks of the kind. For someone who likes to write there are more storytelling tasks. The premise is to build a good emotional attitude to perform tasks. In addition to building good associations with mathematics and deepening mathematical knowledge (mathematical culture, the language of mathematics), working memory, perceptiveness and concentration are also practiced. Working memory research has been going on for many years, and working memory is not a simple, uniform structure (Chai et al., 2018), but it can be pointed out that working memory is an important element of learning, including learning maths: one takes part in manipulating information and correcting current thinking errors (Jesielska et al., 2015), and this is very useful when dealing with a mathematical problems. Due to the fact that the experiment covers everyday work, it supports regularity, patience and persistence. These personality traits are useful in solving math problems. Moreover, the tasks are structured in such a way that the child uses his/her imagination and is creative, and this may lead them to find various forms of solving a problem. It is also beneficial in math education.

The questionnaire that parents and children complete before the experiment will be repeated every two months. The goal is to find out if child's attitude towards math has changed. If the children's attitudes towards maths are more positive after the experiment and if they have a greater sense of self-efficacy, the experiment can be repeated with more children. The question is, will a change in attitude affect academic performance? There appears to be a correlation between these factors, but this should be further investigated.

## **RESULTS**

The pedagogical experiment is ongoing, and therefore the results can only be initially predicted. If the hypothesis is confirmed, an individual learning path that uses logic, cryptography, analytical thinking, working memory support and computer programming can build good associations with mathematics (reducing discouragement or fear of mathematics). This path could be used in schools as an early intervention or prevention of fear of mathematics.

## **DISCUSSION**

As noted above, the fear of mathematics is a complex problem that has its negative consequences. Moreover, the problem of mathematical phobia can be described as a "generational problem" because teachers or parents who are afraid of mathematics may pass on their negative experiences to the next generation. Math anxiety, which affects some teachers in early childhood education, is not a country-specific problem. But as an example of the impact of fear of mathematics among teachers in early childhood education, Polish research will be given. The study was conducted using the Polish adaptation of the AMAS questionnaire, and 857 students of pedagogy and other faculties who will not become a teacher in early childhood education took part in it. The results showed that pedagogy students show a greater fear of mathematics than students of other faculties. These results are not typical for Poland and were in line with similar measurements carried out in the USA (Szczygieł et al., 2016). It can be assumed that "transferring fear" on next generations is not an



imaginary problem, but another challenge to cope. Perhaps early intervention and prevention of fear of mathematics will change something in this matter. But the attitude to mathematics is influenced by many factors, not only as obvious as mathematical skills, but also seemingly distant from mathematics: self-confidence or emotional regulation.

Just as there are many factors that influence the development of a mathematical phobia, there are many ideas for the prevention of math anxiety. Among the studies on the prevention of fear of mathematics and the reduction of an already existing mathematical phobia, there are studies that use the mindfulness techniques, reducing stress related to mathematics (Tashana et al., 2021). The introduction of communication (agreeing mathematical concepts, discussions) is beneficial in reducing the fear of mathematics, additionally writing is recommended, which helps to deepen the understanding of mathematical concepts and is also beneficial in activating shy students (Limibao et al., 2016). Expressive writing can also help to combat math phobia, which can reduce fear of math and promote better math scores among students who suffer from math phobia (Park et al., 2014).

The atmosphere in which to learn math is not without significance. Positive emotions related to mathematics, self-confidence, positive empowerment of the student: these are all factors that build self-confidence in contacts with mathematics (Luttenberger et al., 2018; Tashana et al., 2021). Mindfulness techniques are also used to reduce the fear of mathematics (Samuel et al., 2021). Interestingly, there are indications that mindfulness may have a beneficial effect on working memory (Jha et al., 2019), which, as already mentioned, is an important element of cognitive processes, including mathematics education (Jesielska et al., 2015; Klados et al., 2015; Klados et al., 2019).

When building positive associations with math and science in general, make sure your students have a realistic view of their skills. Low self-esteem and seeing mistakes as failures can contribute to the development of a mathematical phobia. One idea for reducing the tensions associated with science is to introduce knowledge about the biographies of famous scientists into education, but without skipping difficult moments in their careers (Lin-Siegler et al., 2016). This allows students to understand that no one is a born scientist, it all depends on motivation and hard work, and the lack of success at a moment does not necessarily have to last during later learning.

All these examples show how important it is to reduce the math anxiety and to prevent mathematical phobia. They also show what was mentioned earlier: the fear of mathematics is a complex phenomenon, so we can use various tools to fight it: draw from psychology, focus on emotions, use writing, communication, verbalization of fear, etc.

## **CONCLUSION**

In the pedagogical experiment described above focusing on abandoning the stereotype that some people are good at mathematics and others are humanists is of importance. It is a holistic view of mathematics as an exemplification of a way of thinking that can also be found in other areas of knowledge: computer programming and even analytical philosophy. If the pedagogical experiment brings positive results, i.e. contributes to changes in attitudes towards mathematics for the better, it can be continued and extended. It will be possible to investigate exactly whether there is a correlation between change in those attitude and academic performance.

## **ACKNOWLEDGEMENTS**

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## **ANALYSIS OF THE 2002 PARLIAMENTARY ELECTIONS IN TURKEY**

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### **Abstract**

The 2002 elections were held in the context of the political tension that followed the February 28 events in Turkey and the economic crisis that followed it. According to the election results, the JDP (Justice and Development Party- AK Parti) won 363 seats with 10.8 million votes (34.3 percent). The second party represented in parliament was the RPP (RPP-CHP), which won 6.1 million votes (19.4 percent) and 178 seats in parliament. Other parties were not represented in parliament because they failed to cross the 10 percent threshold. In this election, the Democratic Left Party (DLP) lost 20 per cent of votes from the previous election and gained only 1.22 per cent. The Nationalist Movement Party (NMP) lost 10 percent of the votes and received only 8.36 per cent of the votes. By the Supreme Election Commission (SEC) the JDP's single party government was formed under the chairmanship of Abdullah Gul, because R. T. Erdogan's candidacy was rejected. However, shortly after the RPP supported amendment to the constitution and the subsequent election in Siirt, Erdogan was elected MP and formed new government. In the political life of Turkey following the 2002 elections, the political parties represented in the parliament along with the JDP were the RPP, the NMP and the PDP. Other opposition parties failed to pass a 10 per cent barrier in any election. As a result of analysis and comparison of various sources, it was decided that although the proportional electoral system and the D'Hondt method applied in Turkey since 1961 is one of the fairest methods, there are a number of problems in the application of this system. The most important of these is the election barrier. For example, in the parliamentary elections held on November 3, 2002, the turnout of a total of 41.4 mln. voters' was 79.1 percent, of which 31.5 million votes were considered valid. At this point, the fact that about 10 million votes were considered invalid or did not participate in the elections is also of interest. This can also be considered an indication of problems with voter education.

**Keywords:** Turkey, parliamentary elections, 2002, elections, JDP, election threshold

### **Introduction**

Elections in Turkey has had and continues to have a serious impact on the country's political system, the coming to power of parties, the formation and collapse of governments. The transition to a multi-party system in Turkey is considered one of the most important historical turning points in the country's history. Although the organization and implementation of this system is an important democratic step, it has brought with it a number of political and socio-economic problems. Political problems are associated with the instability of coalition governments and the political system, regular military coups, and socio-economic problems with the difficulty of integrating the country into foreign markets and the global economy, with the negative impact of inflation and economic crises on living standards.

The Justice and Development Party (JDP, Adalet ve Kalkinma Partisi- AK Parti), which

came to power in Turkey, is one of the most complex and controversial periods in the country's history since 2002. In this article we will analyze the factors which affected to the result of the 2002 elections in Turkey.

**How the JDP came to power?**

On June 22, 2001, the Constitutional Court's decision to close the Virtue Party (VP) brought political upheaval. The government's biggest ally continued to be in the Democratic Left Party (DLP, Demokratik Sol Parti), and problems continued. In such a situation, the VP's "innovative" wing, Tayyip Erdogan, and his supporters' move to a new political organization soon led to the creation of a political alternative that would mark the country's politics. The JDP was organized on August 14, 2001. The emergence of the JDP as an independent and powerful political alternative was due to the fragmentation within the VP. It comes from a class and political line representing the "innovative flow" within the party, "inside the population," and expresses a philosophical and political "separation" from the white-haired. R. T. Erdogan has drawn attention as a political alternative with his charismatic personality, municipal work and ability to speak political slogans. This alternative seemed to be a candidate for power in the early elections, as a force aimed at increasing public protests against military bureaucracy and politicization after each revolution and memorandum. The 2002 elections were held in the context of the political tension that followed the February 28 events in Turkey and the economic crisis that followed it. In these elections, the DLP lost 20 per cent of votes from the previous election and gained only 1.22 per cent. The Nationalist Movement Party (NMP, Milliyetçi Hareket Partisi- MHP) lost 10 percent of the votes and received only 8.36 per cent of the votes (T.C. Resmi Gazete, 10 Kasım 2002, sayı-24932). By the Supreme Election Commission (SEC) the JDP's single party government was formed under the chairmanship of Abdullah Gul, because R. T. Erdogan's candidacy was rejected. "A moderate Islamic party is set to form Turkey's first single party government in 15 years after overnight results revealed it had won a clear majority of seats in the national assembly...The AKP is the first Islamic party to win a majority in the assembly since the foundation of the Turkish republic in 1923. But the size of its mandate may be of concern to the powerful and firmly secular military, which forced a pro-Islamic government from power in 1997"- the Guardian wrote. (Islamic party wins Turkish general election. Erişim: <https://www.theguardian.com/world/2002/nov/04/2> Erişim tarihi:8.04.2021)

However, shortly after the RPP supported amendment to the constitution and the subsequent election in Siirt, Erdogan was elected MP and formed new government. In the political life of Turkey following the 2002 elections, the political parties represented in the parliament along with the JDP were the Republican People's Party (RPP, Cumhuriyet Halk Partisi- CHP), the NMP and the PDP. Other opposition parties failed to pass a 10 per cent barrier in any election. This is a clear example of a sharp decline in their image within the population. In almost all the parliamentary and municipal elections in Turkey since 2002, the JDP has managed more than 40 per cent of the votes so far.

In general, there are a number of factors that make the JDP come to power in Turkey in 2002 as a result of the elections. Of these, the electoral system of the country, as well as political and economic factors, occupy the most important place. First, let's look at political

factors.

### **Political factors**

In the 1990s and at the beginning of the 21st century, Turkey had a very intense political atmosphere. As a first indicator of political tension in the country, frequent government crises can be a clear indication. As a whole, given the fact that 12 government cabinets are in power in the country over the 10 years covering 1989-1999, the picture of the period is quite clear. Such a situation has created an interest in the new political party, which represents the interests of the majority of the population, while seriously damaging the credibility of existing political parties and movements among the population.

First of all, it is worth noting that by the 1980 military coup in Turkey, political movements and parties were banned and their activities severely damaged. This process continued until 1987, and the political ban was lifted by a referendum that year. As a result, Bulent Ejevit, Alparslan Turkesh, Suleyman Demirel and Najmaddin Erbakan returned to the political arena. B. Ejevit was the leader of the DLP, A. Turkesh NMP, S. Demirel True Path Party (TPP, Doğru Yol Partisi- DYP), and N. Erbakan the Welfare Party.

In the early 1990s, a period of intense struggle in Turkey's political life began again. In the 1991 parliamentary elections, the TPP came to the first place with 27 per cent of the vote (178 MPs) and the Motherland Party (MLP, Anavatan Partisi- ANAP) came in second with 115 seats (T.C. Resmi Gazete, 17 Kasım 1991, sayı-21054). The TPP formed a coalition government with the Social Democratic Populist Party (SDPP, Sosyaldemokrat Halkçı Parti-SHP), which received 20 per cent of the votes (88 MPs), and the TPP leader, S. Demirel, became prime minister. In June 1992, a decree that banned the restoration of closed political parties by their former names, still in force on September 12 1980, was abolished. As a result, Deniz Baikal and his supporters, who were in the SDPP ranks, withdrew from the party and resumed the RPP in September 1992.

After Turgut Ozal's death, in May 1993, S. Demirel was elected President, and Tansu Chiller party leader. In June 1993, Demirel entrusted the organization of the 50th government to T. Chiller. This government existed until October 1995. In October 1995, the TPP and the RPP formed a coalition government, but the government resigned following the December elections in that year (1995 Türkiye genel seçimleri. Erişim: [tr.wikipedia.org/wiki/1995\\_Türkiye\\_genel\\_seçimleri](http://tr.wikipedia.org/wiki/1995_Türkiye_genel_seçimleri). Erişim tarihi: aprel- 2019). In these elections, the N. Erbakan's Party- the Welfare Party gaining 158 seats with 21.3 per cent was in the first place. The TPP took 2nd place with 135 seats, the MLP gained 132 seats, DLP 76 seats, and RPP 49 seats (T.C. Resmi Gazete, 3 Ocak 1996, sayı-22512 (Mükerrer)) Despite the establishment of the TPP - MLP coalition after the elections, this government also has a short life span. Following this, the WP established the 54th government with the TPP (1996, 28 June 1997, 30 June).

It is important to mention postmodern coup, when discussing the political landscape of the 1990s. The coup began with the February 28 decision of the National Security Council (NSC, Milli Güvenlik Kurulu - MGK), which resulted in the overthrow of the WP - TPP

coalition that came to power in 1996 (Özipek, 2014: 672). The decisions made by the Council to civilian members have led to the overthrow of the WP - TPP coalition. The February 28 intervention of the Army, known as the "postmodern coup". This political process resulted with serious economic and political shaking in Turkey. Then, in July 1997, President S. Demirel entrusted the creation of the 55th government to the head of MLP, Masoud Yilmaz. On July 12, a coalition government was formed with the MLP-DLP-DTP (Democratic Turkey Party- Demokrat Türkiye Partisi, DTP), where M. Yilmaz was prime minister. This government remained in power until January 1999. The 56th government in power from January 1999 to May 1999 was headed by the DLP Secretary General Bulent Ejevit (56. Türkiye hükümeti. Erişim: tr.wikipedia.org/wiki/56.\_Türkiye\_Hükûmeti. Erişim tarihi: aprel-2019).

As a result of the parliamentary elections held in April 1999, the DLP failed to win a majority for forming the government alone. Therefore, the DLP, along with the MLP and the NMP, formed a coalition government. This government was also headed by B. Ejevit and remained in power until 2002. The coming of a coalition of parties with different political and ideological views was an indication of a dramatic picture of the situation in the country. As a result of internal controversy, a significant number of DLP MPs have moved to other parties, making it the fourth largest party in parliament. All this resulted in the appointment of new parliamentary elections on July 31, 2002, to November 3 of the same year. In those elections, the JDP won and formed its own single party government. At a huge celebration at party headquarters, R.T. Erdogan, said: "We will not spend our time dizzy with victory. We will build a Turkey where common sense prevails". In later interviews, he sought to calm the public and the markets with pledges of support for secularism, Turkey's bid to join the EU and an International Monetary Fund austerity program. "We have no intention to challenge the world," Mr. Erdogan told Dow Jones Newswires. "Under our government, Turkey will be in harmony with the world". (Islamic party wins Turkish general election. Erişim: <https://www.theguardian.com/world/2002/nov/04/2> Erişim tarihi:8.04.2021)

As it can be seen from the above, in the 1990s, none of the existing parties in Turkey could form a single party government. The coalition governments did not stay in power for a long time.

### **Economic factors**

Economic factors also play a crucial role in the JDP's coming to power. In general, the end of the last century can be characterized by the state of Turkish economy, high inflation, and unsuccessful government policies in this area. In the late 1990s, the Turkish economy had reached its peak. Thus, inflation in the 1970s at 20 percent per annum increased by 35-40 percent in the early 1980s, by 60-65 per cent at the end of the 1980s and by 80 per cent in 1998 (Ertuğrul, Selçuk. 2001:1)

In general, the economic crisis in the Turkish economy can be divided into two periods according to the characteristics (İbiş, 2013: 24; Türkiye'nin Dış Borçlarının Analizi (1980–2012) Erişim:www.avekon.org/papers/483.pdf: 312-313)

1) Crisis of the 1980s, 2) Crisis after the 1980s.

The crises of the 1980s were largely due to the domestic development of the country and had organizational and structural features. These emerged in the form of balance of payments, shortage, black market crises, and the role of the banking sector and capital flows was negligible.

Since the 1980s, crises have become more of a financial crisis, largely due to the influence of external factors, in the form of liquidity or currency crises. When compared, it is likely that these crises have a wider impact and deeper impact on the economy. The main reasons for the crisis are capital flows and the banking sector, which is under the control of external factors. While domestic borrowing has been managed within a level that can be managed in the past, it has risen to an unmanageable level in the later period. Although Turkey's foreign trade deficit existed in both periods, in the first period it was caused by organizational and structural reasons and in the II period due to external influences.

In May 1999, the 57th government was formed by a coalition of the DLP, the NMP and the MLP, with the appointment of Bulent Ejevit, the Prime Minister, MP and former leader of the DLP, which remained in power until November 18, 2002. The two major economic crises that severely shook Turkey in 1999 and 2001 revealed the failure of the coalition government during the so-called "Anasol-M" government. The 2001 crisis is said to be caused by a serious dispute ("constitutional throw") between President A. N. Sesar and Prime Minister B. Ejevit at the NSC meeting (Rakamlarla 28 Şubat raporu.2014: 27). This crisis has come into history as "Black Wednesday" and is the biggest economic crisis in Turkey's history. On February 25, 2001, the stock exchange fell 7500 per cent overnight. The US dollar rose from 695,000 to 900,000 TL, the exchange rate reached 40 per cent within 10 days, with 18,000 bank employees and about 1 million people unemployed (Dikkaya ve Özyakışır, 2014: 749). The currency reserve fell by \$ 5.36 billion between February 16 - 23. The loss in the banking sector amounted to \$ 47.2 billion, reaching 32 per cent of its national income in 2001 (Üzümcü, Dikkaya ve Özyakışır, 2014: 732). All of this had a negative impact on the population and companies. Adding to the public dissatisfaction, massive economic shocks, and poverty created by the February 28 process of political constraints implied the collapse of the coalition government. In this process, the invitation of assistant to the World Bank President Kemal Dervish by B. Ejevit to the country and his appointment as Minister of Economy on March 3, 2001, would be an important step in finding a way out of the crisis. However, the Dervish Reforms were not enough to restore the dramatic economic and political stability that had been dramatically broken.

### **Electoral System of Turkey**

Turkey's election system has also had a significant impact on the JDP's coming to power. According to this system, which has been in use in Turkey since 1961 and is called D'Hondt. The method described is named after Belgian mathematician Victor D'Hondt, who described the methodology in 1878. Under the d'Hondt method, named after its Belgian inventor, Victor d'Hondt, the average is determined by dividing the number of votes by the number of seats plus one. Thus, after the first seat is awarded, the number of votes won by that party is divided by two (equal to the initial divisor plus one), and similarly for the party awarded the second

seat, and so on (Plurality and majority systems <https://www.britannica.com/topic/election-political-science/Plurality-and-majority-systems> - 12.07.2020). The d'Hondt system was implemented in Turkey since 1961; This is the system that is still in effect today (Article 25 of Deputy Election Law dated 30.5.1961 and numbered 306 article 32 / II, Article 34 / III dated 10.6.1983 and numbered 2839). (TÜRK, 2006 :91; MİLLETVEKİLİ SEÇİMİ KANUNU, 10 Haziran 1983, Kanun No: 2839, <http://www.anayasa.gen.tr/2839sk.htm>)

The D'Hondt method is a highest averages method for allocating seats, and is thus a type of party-list proportional representation. Proportional representation systems aim to allocate seats to parties approximately in proportion to the number of votes received. For example, if a party wins one-third of the votes then it should gain about one-third of the seats. In general, exact proportionality is not possible because these divisions produce fractional numbers of seats. But as a result, the D'Hondt method ensures that the parties' seat allocations, which are of whole numbers, are as proportional as possible. The D'Hondt method minimizes the number of votes that need to be left aside so that the remaining votes are represented exactly proportionally. Only the D'Hondt method (and methods equivalent to it) minimizes this disproportionality.

For example, 230,000 voters decide the disposition of 8 seats among 4 parties. Since 8 seats are to be allocated, each party's total votes are divided by 1, then by 2, 3, and 4 (and then, if necessary, so on). The 8 highest entries, range from 100,000 down to 25,000. For each, the corresponding party gets a seat.

**Table 1. According D'Hondt method disposition of 8 seats among 4 parties (example)**

Round (1 seat per round)	1	2	3	4	5	6	7	8	Seats won (bold)
<b>Party A quotient</b>	100.000	50.000	50.000	33.333	33.333	25.000	25.000	25.000	<b>4</b>
<b>seats after round</b>	1	1	2	2	3	3	3	4	
<b>Party B quotient</b>	80.000	80.000	40.000	40.000	26.667	26.667	26.667	20.000	<b>3</b>
<b>seats after round</b>	0	1	1	2	2	2	3	3	
<b>Party C quotient</b>	30.000	30.000	30.000	30.000	30.000	30.000	15.000	15.000	<b>1</b>
<b>seats after round</b>	0	0	0	0	0	1	1	1	
<b>Party D quotient</b>	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	<b>0</b>
<b>seats after round</b>	0	0	0	0	0	0	0	0	

**Source:** TÜRK, 2006 :90.

The D'Hondt System is divided into three groups: the country or regional and without threshold (KÖKER:13 Mart 2018; Türkiye'de 1946'dan bugüne seçim sistemleri:14.11.2017).

1. Without threshold: Here, without any other criteria, distribution is made according to the number of votes obtained by division:
2. Regional threshold: A threshold is determined as the number of votes, rate or decimal unit for a party to issue a deputy in each election and the parties below it is not included in the calculation.
3. Country threshold: Parties whose country's voting rate is below a certain level and the new arrangement (2018) are not able to issue deputies.



### **What is the Electoral Threshold?**

The electoral threshold, or election threshold, is the minimum share of the primary vote which a candidate or political party requires to achieve before they become entitled to any representation in a legislature. This limit can operate in various ways. For example, in party-list proportional representation systems an electoral threshold requires that a party must receive a specified minimum percentage of votes (e.g. 5%), either nationally or in a particular electoral district, to obtain any seats in the legislature. In electoral systems such as first past the post, there is no election threshold. This is because candidates only need to win the most number of votes in their respective constituency, not a specific percentage of the total vote. However, there are other electoral systems which do require successful candidates to receive a minimum percentage of the total vote. One such example is in party list proportional representation systems where the seats won by a party in a legislature are proportional to their total share of the vote (Election Threshold // <https://www.polyas.com/election-glossary/election-threshold>) Countries such as Turkey, which employs this system, require parties to achieve a minimum of 10% of the total vote share in order to gain seats in the Grand National Assembly. Hasdemir regarding the application of the election threshold writes (Hasdemir: 256): On the rationale, although it is stated that the threshold was put in order to be "proportional to their size" of the "representation in the legislature" of political parties, Orhan Aldıkaçtı, President of the Constitutional Commission, clarified the purpose of the threshold: "What was our purpose from this threshold? Our aim for this threshold is not to eliminate political parties, my friends ... The problem is to ensure that they are represented in the Legislative Assembly, to prevent small parties and, to the extent possible, to represent large parties in parliament. " If we correct the language of the quotation, what is meant by this threshold is to prevent the representation of small parties in the parliament, to ensure the representation of large parties, and if we think together with the statements in the Justification - thus "stability in state activities" will be realized.

TÜRK arguing that (TÜRK, 2006 :99), Law numbered 2839 dated 10.6.1983, which introduced various measures as a reaction to the generally unstable governments of the 1961 Constitution period, during which the d'Hondt system was implemented with a simple election environmental threshold, except for the 1961 National Assembly general elections. The Election Law stipulated that the d'Hondt system should be implemented across the country with 10% threshold and election threshold with simple election threshold (art.33 / I, 34 / II - III). MİLLETVEKİLİ SEÇİMİ KANUNU,10 Haziran 1983, Kanun No: 2839, <http://www.anayasa.gen.tr/2839sk.htm>. This is the highest threshold in the world (second is Kyrgyzstan-9, third Liechtenstein-8, then - Kazakhstan-7 %) In most countries this is 3 % (e.g. Italy, Spain, Greece, Georgia, etc.) or 5 % (e.g. Belgium, Germany, Russia, etc.) In Turkey the 1969-1979 elections were held without threshold (Hasdemir: 255-256). The 1983-1991 elections were held with double threshold. With the Law numbered 4439 dated 23.11.1995 and the provisional article added to the Law No. 2839, the environmental threshold was determined as 10% in the general election of the 20th term deputy (art. 3)(TÜRK, 2006 :97) In all elections held since 1995, the country level threshold implemented (Hasdemir: 255-256; TUNCER, 2006:176; KÖKER:13 Mart 2018).

### **How 10 percent barrier (threshold) affected to the election November 3, 2002 in Turkey?**

2002 general elections, only Justice and Development Party (JDP) and the Republican People's Party (RPP) could enter the Parliament, with the result that the JDP with the 34% vote share opportunities represented by 66% in the Parliament by winning, the RPP with 19% voting rate was represented at the Assembly with 32%. However, this difference mentioned here in terms of representation is not the characteristic of the electoral system; caused by threshold implementation (YILDIZ, 2018:123).

- A total of 41.4 million voter turnout rate was 79.1 percent, of which 31.5 million were considered valid (approximately 10 million votes invalid because of either not valid or not participated in election = 25 percent) (2002 Genel Seçim Sonuçları)
- According to the results of the election, the JDP won 363 seats, receiving 10.8 million votes (34.3 percent). The second party represented in the parliament was the RPP, with 178 seats in parliament, gaining 6.1 million voters (19.4 percent).
- Other parties were not represented in parliament because they could not pass the 10 percent barrier. Thus, in the 2002 elections, the total number of votes of the parties not represented in the parliament was 45.3 percent. In other words, of the 14.3 million voters who votes were generally considered to be valid, could not be elected to parliament.
- These means that JDP gain the power 25 percent of all voters

### **Conclusion**

Summarizing the aforementioned, it can be said that 2002 may mark the beginning of a new and important stage in the history of modern Turkey in terms of laying the foundations of the JDP's single party government. Since that date, almost all of the parliamentary and municipal elections in Turkey have won more than 40 per cent of the vote, and the JDP has so far dominated the country. The main factors that led to JDP's coming to power in Turkey for the first time were political, economic problems and the country's electoral system. Thus, in the 1990s, all governments in Turkey were formed on the basis of a coalition of various political parties. These coalitions were not able to gain sufficient popularity due to their short-term and often fragmented nature. Another factor that increased political tension was the ongoing financial and economic crises. Of these, the 2001 crisis has shaken Turkey more and has led to significant financial losses. All this prepared a favorable ground for JDP to come to power. Under these conditions, the electoral system of the country also played an important role as one of the most important factors determining the JDP's victory in the elections. As a result of election system with the 10 per cent barrier for the country, JDP came to power with 34.3 per cent of the vote. More than 45 per cent of the voters in the voting could not be elected to the parliament. In other words, the JDP won the absolute majority by winning 363 seats with 10.4 million votes of 41.4 million eligible voters.

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## **YEŞİL LİMAN PERFORMANS KRİTERLERİ VE YÖNETİCİLERİN BAKIŞ AÇILARINA GÖRE DEĞERLENDİRİLMESİ**

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### **Özet**

Limanlar çevreye ve doğal kaynaklara verdikleri zararları azaltmak adına yeşil liman olma yolunda girişimlerde bulunmaktadır. Bir limanın yeşil liman olabilmesi için liman içi ve dışı yapılan operasyonların temelinde çevre duyarlılığının olması, doğal kaynak korunması, denizdeki ekosisteminin korunması, kirliliğinin azaltılması ve yenilenen teknolojiye ayak uydurması gerekir. Limanlar bu özellikleri; yasal zorunluluk, rakip limanların önüne geçme ve liman çevresindeki toplumsal baskılar nedeniyle edinmektedirler. Dünya denizcilik sektöründe liman alanlarındaki kirliliği azaltmak ve sürdürülebilirliği sağlamak amacıyla çeşitli uluslararası sözleşmeler, çevresel mevzuatlar ve politikalar mevcut olup aynı zamanda yeni gelişmeler de yaşanmaktadır. Yeşil liman sürdürülebilir çevre duyarlılığının artmasına yönelik tüm liman operasyonlarının ve işletme çalışmalarının entegre edilmesi olarak kısaca tanımlanabilir. Bu kapsamda çalışmanın amacı, diğer tüm yasal düzenlemelerin haricinde gönüllük esasına dayanan yeşil liman kavramı ve yeşil liman performans kriterlerinin yöneticilerin bakış açısına göre değerlendirilmesidir. Yeşil liman performans kriterleri açısından Marmara Bölgesi özelinde baş ana kriter belirlenmiş, bu kriterlerden yola çıkılarak hazırlanan 10 soru ile yeşil liman performans kriterleri yönetici bakış açılarına göre değerlendirilmiştir. Bu çalışma nitel araştırma yöntemi olgu bilim deseninde, içerik ve betimsel analizi teknikleri kullanılarak yapılmış ve çalışmanın verileri ise yapılandırılmış görüşme ve doküman incelemesi teknikleri ile elde edilmiştir. Araştırma bulguları, katı akıt yönetiminde oldukça ilerleyen Türk limanlarının, özellikle gürültü ve CO<sub>2</sub> \ sera gazı emisyonu hususlarında Avrupa ve Dünya yeşil liman uygulamalarının gerisinde kaldıklarını ve gelişen teknolojiye ayak uydurulması ile birlikte fosil yakıtlı ekipman kullanımının azaldığını ve elektrikli ekipman kullanımının arttığını göstermektedir.

**Anahtar Kelimeler:** Yeşil Liman, Sürdürülebilirlik, Liman İşletmeleri, Liman Yöneticileri

## **GREEN PORT PERFORMANCE CRITERIA AND EVALUATION OF PORT MANAGERS ACCORDING TO THE PERSPECTIVE**

### **Abstract**

Ports are making attempts to become green ports in order to reduce the damage they cause to the environment and natural resources. In order for a port to be a green port, it is necessary to have environmental awareness, protect natural resources, protect the ecosystem in the sea, reduce pollution and keep up with the renewed technology at the basis of the operations carried out in and out of the port. Ports have these features; legal obligation,

avoiding rival ports and social pressures around the port. There are various international conventions, environmental regulations and policies in order to reduce pollution in port areas and ensure sustainability in the world maritime sector, and new developments are also taking place. Green port can be defined briefly as the integration of all port operations and management activities aimed at increasing environmental awareness. In this context, the aim of the study is to evaluate the green port concept and green port performance criteria based on volunteering, based on the managers' perspective, apart from all other legal regulations. In terms of green port performance criteria, the main criteria specific to the Marmara Region was determined, and the green port performance criteria were evaluated according to the manager's point of view with 10 questions prepared based on these criteria. This study was obtained by using qualitative research method, content and descriptive analysis in the phenomenology pattern model, and the data of the study was obtained by structured interview and document analysis methods. Research findings show that Turkish Ports, which are very advanced in solid fuel management, are behind the European and world green port practices, especially in terms of noise and CO<sub>2</sub> / greenhouse gas emissions, and that the use of fossil fuelled equipment has decreased and the use of electrical equipment has increased with keeping pace with the developing technology.

**Keywords:** Green Port, Sustainability, Port Business, Port Managers.

## GİRİŞ

Sürdürülebilirlik, çevre dengesi ve ekonomik gelişmeyi birlikte inceleyip, hem kaynakların etkin kullanıp çevreye önem vermek hem de günümüz ihtiyaçlarını karşılarken gelecek nesilleri de düşünen bir form olduğu söylenebilir. Sürdürülebilirlikte ortam, ekonomi ve toplum bileşeni olarak birbirinden ayırmak değil birbirleriyle ilişkilendirmek gerekir. Denizcilik sektöründe zamana ve teknolojiye ayak uyduran limanlar sürdürülebilir liman olarak adlandırılabilir. Limanlar çevreye ve doğal kaynaklara verdikleri zararları azaltmak ve sürdürülebilirlik adına yeşil liman olma yolunda girişimlerde bulunmaktadır. Yeşil liman gönüllülük esasınca sürdürülebilir çevre duyarlılığının artmasına yönelik tüm liman operasyonlarının ve işletme çalışmalarının entegre edilmesidir. (Ateş ve Akın, 2014) Bir limanın yeşil liman olabilmesi için liman içi ve dışı yapılan operasyonların temelinde çevre duyarlılığının olması, doğal kaynak korunması, denizdeki ekosisteminin korunması, kirliliğinin azaltılması ve yenilenen teknolojiye ayak uydurması gerekir. Limanlar bu özellikleri; yasal zorunluluk, rakip limanların önüne geçme ve liman çevresindeki toplumsal baskılar nedeniyle edinmektedirler.

Dünya ticaretinin artması ile birlikte denizcilik işletmeleri arasında ve özellikle liman işletmelerinde yoğun rekabet yaşanmaktadır. Son yıllarda sürdürülebilirlik bakış açısıyla liman işletmeleri değerlendirildiğinde en çok karşılaşılan kavram yeşil liman politikası olmaktadır. Yeşil liman politikasında sosyal hayata karşı duyarlılığın artırılması ve güncel teknoloji ile enerji verimliliği yüksek ekipman kullanılması en önemli iki kriter olarak gösterilebilir. Yeşil liman anlayışını benimseyen limanlarda, çevre duyarlılığını arttıracak politikaların izlendiği açıktır. Bu özellik gerek liman çalışanlarına gerek ise liman müşterilerine veya tedarikçilerine de dâhil tüm paydaşlarına yansır. Bu özelliğin liman çevresindeki gürültü, hava, deniz çevre kirliliğinin azaltılması, yenilenebilir kaynak kullanılması ve limanların çevreye oluşturdukları zararın azaltılması konusunda yaraları bulunur (Port of Long Beach, 2005). Dünyada isteğe bağlı olan yeşil liman olma kavramı Türkiye'deki bazı limanlar tarafından bir prestij artırma kaynağı, çevreye verilen zararın azaltılması ve rakip limanların önüne geçme isteğiyle benimsendiğiyle karşılaşmaktayız (Köseoğlu ve Solmaz, 2019). Limanlar yeşil liman olma kriterlerini taşımak zorunda değildirler. Türkiye'de yeşil liman sertifikası, Türk Standartları Enstitüsü ile Ulaştırma ve

Altyapı Bakanlığı tarafından imzalanan protokol çerçevesinde yapılan denetimlerin ardından verilmektedir.

Yeşil liman sertifikası için işletmelerin öncelikle işletme izin belgesine sahip olması ve OHSAS 18001, ISO 9001 ve ISO 14001 kalite sistemlerine sahip olması, ek olarak sürdürülebilir bir entegre yönetim sistemi oluşturmuş olması gerekmektedir. (TSE, 2015). Türkiye’de mevcut durumda 12 liman yeşil liman sertifikasına sahip iken 2019 yılı itibariyle Limaş, Hopaport, Limak ve Mardaş Limanı, Ulaştırma ve Altyapı Bakanlığı Yeşil-Eko Liman şartları ve ölçütlerini yerine getirdiği için sertifikalandırılmıştır (Türklim, 2019). Dünya ticaretinin büyümesinde en büyük payı deniz ticaretinin almasıyla kara ve deniz bağlantısı olan limanların yoğunluğu artmaktadır. Artan yoğunluk beraberinde birçok zararlı bileşeni de getirmektedir. Belirtilen zararlı bileşenler gerek gemilerden gerek ise liman içi faaliyetlerden kaynaklı olabilmektedir. Bunların sonucunda, gemilerden kaynaklı sintine atıkları, katı atıklar, yağ atıkları, deniz biyolojisinin zarar görmesi, balast suları, gürültü kirliliği, hava kirliliği, liman operasyonlarında ortaya çıkan toz, CO2 salınımı gibi zararlı etkiler ortaya çıkmaktadır. Dünya ticaretin büyük çoğunluğu deniz yoluyla yapılmaktadır ve bu denizcilik işletmelerinde ve deniz ticareti trafiğinde yoğunluğa sebep olmaktadır. Bu olay deniz işletmeciliğinden kaynaklı olan hava, gürültü gibi kirliliklerin azaltılıp azaltılamayacağını düşündürmektedir. Dünya denizcilik sektöründe liman alanlarındaki kirliliği azaltmak ve sürdürülebilirliği sağlamak amacıyla çeşitli uluslararası sözleşmeler, çevresel mevzuatlar ve politikalar mevcut olup aynı zamanda yeni gelişmeler de yaşanmaktadır. Yeşil liman sürdürülebilir çevre duyarlılığının artmasına yönelik tüm liman operasyonlarının ve işletme çalışmalarının entegre edilmesi olarak kısaca tanımlanabilir. Bu araştırma yeşil limanın performans kriterleri ve liman yöneticilerinin bu kriterlere olan farkındalıklarını ölçülmeye yönelik bir çalışmadır. Bu çalışmanın amacı, diğer tüm yasal düzenlemelerin haricinde gönüllük esasına dayanan yeşil liman kavramı ve yeşil liman performans kriterlerinin yöneticilerin bakış açısına göre değerlendirilmesidir. Yeşil liman performans kriterleri açısından Marmara Bölgesi özelinde baş ana kriter belirlenmiş, bu kriterlerden yola çıkılarak hazırlanan 10 soru ile yeşil liman performans kriterlerinin yönetici bakış açılarına göre değerlendirilmiştir. Araştırma kapsamında değerlendirilen yeşil liman performansı; hava kirliliği, sıvı kirliliği, katı atık kirliliği yönetimi, deniz biyolojisinin korunması ve operasyonel risk ve gürültü kirliliği kriterleri olarak Bucak ve Kuleyin (2016)’in çalışmasından alınmıştır.

Hava kirliliği, uluslararası ticaretinin gelişmesi, dünya nüfus artışı ve sanayinin büyümesine bağlı olarak kentleşme oranlarının yükselişi ile nüfusun yoğun bulunduğu yerlerde önemli bir problem haline dönüşmektedir. Hava kirliliği; atmosferde bulunan kirletici olarak adlandırılan maddelerin canlı sağlığına ve çevresine zarar verebilecek sürede havada kalmasıdır. Hava kirliliğine neden olan kaynaklar; yangınlar, fırtınalar, volkanik patlamalar gibi doğal kaynaklar olabildiği gibi insan faaliyetlerinden kaynaklı yapay kaynakların da hava kirliliğinin oluşmasında payı oldukça büyüktür. Hava kirliliği konusunda yapay kaynaklar doğal kaynaklara göre daha fazla etki göstermektedir. Yapay kaynaklardan başlıca; motorlu taşıtlardan kaynaklı kirli hava salınımı, sanayi ve fabrika bacalarından çıkan kirli hava ve evlerimizde ısınma amacıyla kullandığımız yakıtlardan oluşan kirli hava olarak sıralayabiliriz. (Saraç, 2011) Motorlu taşıt sınıflarında gemiler diğer taşıtlara oranla havaya yaydıkları egzoz gazları sebebiyle daha fazla hava kirliliğine sebep olmaktadır. Böylelikle gemiler dünya üzerinde hava kirliliğine yol açan kaynaklar sıralamasında başı çekmektedir. Ayrıca kuru veya dökme yük operasyonları ve depolama işlemleri, liman inşaat çalışmaları ve kara yolu trafiği sebebiyle ortaya çıkan toz ve is gibi faktörler de bu kriter içerisinde değerlendirilebilir.

Sıvı kirliliğine, limanlarda neden olabilecek temel bileşenler; gemilerden kaynaklı balast suları, sintine suları ve evsel atık sularıdır. Bunlardan farklı olarak güvertenin yıkanması işlemi sonucunda güverteden çıkan yağlı ve deterjanlı suyun denize karışması, gemide yapılan

boya ve raspa işlemlerinin yapılması, yakıt alımı veya tanker sıvı yük operasyonları sırasında oluşan kazalar sonucu yakıtın denize karışması gibi durumlar liman ve çevresinde deniz kirliliğine neden olmaktadır. Bu durumlara karşılık liman işletmelerinin aldıkları tedbirler bulunur. Gemilerden kaynaklı sintine atıkları, pissu atıkları, kirli balastlar, zehirli sıvılar gibi maddeler liman tarafından atık alımı tesislerinde depolanmak ve işlem görmek üzere alınır. Fakat yapılan araştırmalar sonucu ülkemizdeki limanların bu işlemleri yapma konusunda yetersiz ve geri kaldığı gözlemlenmiştir.

Katı atık kirliliği yönetimi, liman sahasında oluşabilen her türlü katı atıklar, gemilerden gelen çöpler, deniz taraması sonucunda çıkan atıklar ve yük operasyonları sırasında oluşan atıkların (Akın, 2020) yönetimini kapsar. Liman yönetiminde katı atık sisteminin kurulması, liman bölgelerinde operasyon ve gemiler tarafından ortaya çıkan katı atıkların azaltılmasında önemli rol oynar. Katı atıkların kaynağa dönüşümünden yok edilmesine kadar olan bütün işlemleri ve bu atıkların bir kaynak olarak kullanılmasını içeren faaliyetler bütünüdür. Katı atık yönetiminde; atık miktarının azaltılması, geri dönüştürülen atıklar ve çevreye zararı olmadan bertaraf edilmesi şeklinde üç temel aşamadan söz edilebilir. Katı atıkların yönetilmesi konusunda yeşil limanlarda sıfır atık projesi uygulanmaktadır.

Deniz biyolojisinin korunması, denizlerdeki biyolojik canlı çeşitliliğin yok olmasını önlemek ve bu sayede veri sağlamak için ortaya çıkmış bir yaklaşımdır. Deniz biyolojisi oşinografi, hücresel biyoloji, ekoloji, kimya, jeoloji, meteoroloji, fiziksel oşinografi, moleküler biyoloji ve zooloji ve yeni deniz koruma biyolojisi bilimi, deniz ekolojisi, botanik, genetik, balıkçılık biyolojisi, ekonomi ve hukuk gibi birçok uzun süredir devam eden bilimsel disiplinden yararlanmaktadır (Marine Bio, 2015). Limanların öncelikle inşaat aşamasından başlayan süreçleri, gerek alt ve üst yapı işlemleri gerekse deniz dolguları ve dip taramaları gibi işlemlerle denizlerdeki ekosistemin zara görmesine sebep olabilmektedirler (Boran ve Alkan, 2018)

Operasyonel risk ve gürültü kirliliği ise liman faaliyetlerinde gerçekleşen işlemler kapsamındadır. Liman sahasında depolanan tehlikeli yükler büyük risk oluşturmaktadır. Kimyasal madde kaynaklı iş kazalarının büyük bir çoğunluğu depolama merkezleri ve liman kaynaklıdır. Ulusal Yangından Korunma Derneği (NFPA) raporuna göre ABD'de gerçekleşen depolama tesislerinden kaynaklanan yangın kazaları tüm kazaların %13'ünü oluşturmaktadır. Depolama tesislerinin neden olduğu yangın kazaları ise 69.980.000 dolara mal olmuştur (Bernechea ve Viger, 2013). Genel anlamda, artan kara yolu ve demir yolu trafiği nedeniyle oluşan olumsuzluklar, liman operasyonları sırasında meydana gelen gürültü ve titreşimler limanların yarattığı ek çevre sorunları olarak ele alınabilmektedir. Gürültünün kaynağında azaltılması, gerekli iş güvenliği ölçümlerinin yapılması tespit ve önlem hususunda önem arz etmektedir. Limanlarda iş makinelerinin hareketleri sonucu ortaya çıkan diğer bir gürültü kaynağı zemin iyileştirmelerine bağlı olarak azaltılmaktadır.

## **YÖNTEM**

Bu çalışma nitel araştırma yönteminde olgu bilim deseni kullanılarak yapılmıştır. Olgu bilim deseninde belirli bir olguya yönelik kişisel algıların veya görüşün ortaya çıkarılmasını ve bu görüşlerin yorumlanması amaçlanır. (Yıldırım ve Şimşek, 2008). Çalışmanın verileri yapılandırılmış görüşme ve doküman incelemesi teknikleri ile elde edilmiştir. Yapılandırılmış görüşme tekniği için sorular önceden hazırlanmış, katılımcılar ve görüşme planı önceden belirlenmiştir. Literatür incelemesi ile oluşturulan 15 soruluk taslak görüşme formu, kapsam ve içerik açısından, Kocaeli Üniversitesi Denizcilik Fakültesi Denizcilik İşletmeleri Yönetimi Bölümünde alanında uzman bir öğretim üyesi ile değerlendirilmiş ve fikir birliği ile 10 soru

olarak belirlenmiştir. Doküman incelemesi kısmında ise liman işletmelerinin web siteleri ve ilgili raporlar incelenmiştir.

Araştırmada veri toplamak için Marmara Bölgesinde faaliyet gösteren dokuz liman işletmesinde çalışan farklı pozisyondaki yöneticiler seçilmiştir. Yöneticileri kendi aralarında, çalıştıkları limanın yeşil liman olup olmamasına göre yeşil katılımcı (YK) ve gri katılımcı (GK) olarak iki farklı kategoriye ayrılmıştır. Çalışmaya sektörde deneyimli ve alanında uzman toplamda 15 kişi katılmış olup katılımcıların demografik özellikleri Tablo 1’de verilmiştir.

**Tablo 1. Katılımcıların Özellikleri**

Katılımcıların Cinsiyeti		Katılımcıların Sektör Deneyimi	
Kadın	2	1 ila 5	2
Erkek	13	5 ila 10	6
Katılımcıların Öğrenim Durumu		11 ila 15	6
Ön Lisans	2	15 ila 20	1
Lisans	13	Katılımcıların Pozisyonu	
Katılımcıların Yaşı		İSG uzmanı	2
25 ila 30	2	Çevre Mühendisi	4
30 ila 40	10	Şef	2
40 ila 50	3	Vardiya Amiri	3
Katılımcıların Kategorisi		Operasyon Müdürü	3
YK	7	Planlama Departman Yöneticisi	1
GK	8	Operasyon Müdür Yardımcısı	1

Bu çalışmadan yola çıkarak bulunan veriler, içerik analiz ve betimsel analiz tekniği aracılığıyla yorumlanmıştır. Betimsel analiz, detaylı analize gerek olmayan verilerin düzenlenmesine uygulanırken, içerik analizi eldeki verilerin detaylı analiz edilmesini ve bu verileri ifade eden tema ve kavramlara ulaşılmasını sağlar (Yıldırım ve Şimşek, 2008). Görüşme formlarından elde edilen veriler ile kodlar oluşturulmuş ve derinlemesine incelenerek var olan tüm bilgiler (demografik özellikler, yeşil liman kategorisindeki bir limanda yönetici olup olmama vb.) önceden belirlenmiş şekilde sınıflandırılmış ve yorumlanmıştır.

## BULGULAR

Araştırma kapsamında katılımcılara yöneltilen sorular ve verdikleri cevaplara göre yapılan kodlamalar ve karşılaştırmalar, sırasıyla aşağıda verilmiştir.

**Soru 1:** Yeşil liman sürdürülebilirlik, deniz-çevre bilinci vb. konularda çalışanlarınıza eğitimler veriliyor mu?



**Tablo 2.** Birinci Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Deniz-Çevre Eğitimleri	Çevresel atık yönetimi, geri dönüşümün önemi ve sürdürülebilirliği, doğal kaynakların kullanımı ve deniz kirliliği konularında belli periyotlarda eğitimler uygulamalı tatbikatlar gerçekleştirilmekte olup kontrolü sağlanmaktadır.	7	8

Gerek yeşil katılımcı (YK) gerekse gri katılımcı (GK) olsun liman çalışanlarına deniz- çevre bilinci gibi konularda eğitim verdikleri ve konuyu önemsedikleri görülmüştür, cevaplarda tüm çalışanların çevre bilinci konusunda eğitildikleri ifade edilmiştir.

**Soru 2:** Enerji verimliliğini arttırmak için gerek ofis binalarında gerek elleçleme ekipmanlarında standartlarınız nelerdir?

**Tablo 3.** İkinci Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Enerji Verimliliği	Ekipmanlarda bulunan bazı özellikler sayesinde enerji sarfiyatının dizginlenmesinin sağlanmaktadır.	-	2
	Fosil yakıt tüketimini azaltmak amacıyla elektrikli ekipmanların kullanmak, led ışıklandırma, enerji verimliliği yüksel iklimlendirme, daha az enerji harcayan veya yenilenebilir enerji kullanmak vb.	6	6
	Ulusal / Uluslararası standartlara uygun olarak enerji verimliliği uygulamaları denetlenmektedir.	1	

Yeşil katılımcı (YK) veya gri katılımcı (GK) yöneticiler, enerji tasarrufu konusunda çalışmalarının olduğunu ifade etmişleridir. Bu hususta bazı limanlar bireysel önemlerini almışlar ve yasal düzenlemelere uymuşlardır. Konuyla alakalı enerji tasarruflu cihaz kullanımı, fosil yakıt tüketimini azaltmak konusunda fikir birliği mevcuttur.

**Soru 3:** Liman içi ve çevresindeki gürültünün azaltılmasına dair yapılan faaliyetler nelerdir?

**Tablo 4.** Üçüncü Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Gürültü	Çevre bakanlığının uygulamaları ile gürültü ölçümleri yapılmaktadır ama bazı yüklerin özelliği gereği ya da araç trafiği kaynaklı gürültünün azaltılması pek mümkün gözükmemektedir.	-	2

Faaliyetleri	Gürültü eğitimleri düzenli aralıklarla yapılmakta olup mevzuat sınır değerleri içerisindedir.	6	
	Gürültü konusunda çevre izin ve lisans muafiyeti mevcuttur ancak gürültünün olası sonuçlarına karşı iş sağlığı ve güvenliği konusunda iş yeri ortam ölçümleri yapıp takibi sağlanmaktadır.	1	4
	Gürültüyü azaltmak ve önlemek adına tedbirler alınmıştır. (Liman sınırları gürültüyü absorbe eden duvarlar ile çevirmek, sınırlar gürültüyü kesen özel tür ağaçlar ile donatmak, araçların geri vites sesleri beyaz gürültü ile değiştirmek, tesisi içinde klakson kullanımı yasaklamak vb.)	-	2

Gürültü konusunda yeşil katılımcıların (YK) gri katılımcılara (GK) göre çok daha hassas olduklarını söylemek doğru olacaktır. Gri katılımcılara gelindiğinde ise ölçümlerin olmadığı olsa dahi bazı katılımcı limanlar için gürültünün azaltılmasının mümkün olmadığı görülmüştür.

**Soru 4:** Herhangi bir kaza sonucu denize petrol dökülmesi karşısında izlediğiniz yol nedir?

**Tablo 5.** Dördüncü Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ila YK Bakış Açılarına Göre Petrol Dökülmesi Bakış Açısı	Deniz kirliliği durumlarında acil durum planlarına göre müdahalede etmek, bu kapsamda yasal mevzuat gereği seviye 1,2,3 seviye durumlarında müdahalede bulunabilecek anlaşmalı ise deniz temizlik şirketini haberdar etmektir. İlgili kurumlar bilgilendirilmelidir.	4	6
	Liman başkanlığı ve il/ilçe belediyesi, sahil güvenlik teşkilatıyla birlikte bu iş için hazırda bekleyen özel ekiple ve kılavuzluk imkânlarıyla, petrol kirliliğini önlemeye dair plana göre müdahale edilmektedir.	1	3
	Ulusal ve uluslararası yönetmelik ve standartlar kapsamında ilerlemektedir.	1	-

Anket verilerinden bir kaza sonucu denize petrol dökülmesi karşısında her limanın hazırlıklı olduğu söylemek mümkündür. Konuyla alakalı yasal düzenlemelere göre izlenecek yollar, bilgilendirilecek kurumlar ve birimler bellidir. Terminallerde düzenli periyotlarla tatbikatların yapıldığı bilgisine ulaşılmıştır.

**Soru 5:** Operasyon altında bulunan bir geminin balast suyu değişimi işleminde belirlediğiniz kurallar nelerdir?

**Tablo 6.** Beşinci Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Balans Suyu Değişimi	Balast Suyu Yönetimi Planı Hazırlama Kılavuzu gerekliliklerini karşılayacak biçimde olmalıdır. Kurallar hale hazırda liman başkanlıklarınca belirlenmiştir.	3	5
	İç sularda olduğumuzdan balast değişim yapılmasına müsaade edilmemektedir, kendi mevcutları ile dengeleme yapmaktadırlar.	2	1
	Balast suyu yönetim planına uygun olarak balast değişimi sırasında 24 saat önce değişim yapacak tarafın bildirim yapması, yasal şartlar ve izinler sonucunda balast suyu değişim işlemini gerçekleştirmektedir.	-	2
	Operasyon süresi boyunca iskelede bulunan personel balast verilmesi sırasında deniz yüzeyini kontrol eder. Herhangi bir kirlilik tespit edilmesi halinde operasyon durdurulabilir.	2	

Balast suyunun denize dökülmesi başkadır aynı zamanda balast suyunun liman yönetimi tarafından alınması başkadır. Soru gemi operasyon anında balast suyu değişimi olarak sorulmuştur ancak anket cevaplarında farklı algıların olduğu görülmüştür.

**Soru 6:** Limanınızın CO2 emisyonunu azaltmak adına yürüttüğünüz faaliyetler nelerdir?

**Tablo 7.** Altıncı Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre C02 Emisyonu Faaliyetleri	Sera gazı ölçümleri, ISO14064 kapsamında yapılmaktadır. Daha az enerji tüketen karbon salınımı daha az olan teknolojiler tercih edilmektedir.	5	
	Yenilenebilir enerji kaynaklarına yatırımlar yapılmakta, binaların ısınma ve soğuması elektrik enerjisiyle sağlanmakta ve saha-rıhtım vinçleri elektrik ile çalışmaktadır.	2	7
	Limanda taşıma işi yapan taşeron firmanın kullandığı araçların egzoz-emisyon ölçümleri kontrol edilmekte, belli bir yaşın üzerinde araç kullanmalarına müsaade edilmemektedir. Bu şartlar sözleşmelerde belirtilmektedir.		1

Konuyla alakalı olarak enerji tasarruflu ve elektrikli makina kullanımının artırılması bununla beraber yenilenebilir enerji kaynakları kullanımının artırılması oldukça dikkat çekicidir. Sera gazı ölçümü konusunda çoğunlukla yeşil katılımcıların uluslararası standartlara uygunluğu söz konusudur ancak Yeşil havalimanı sertifikasyonunda olduğu gibi her yıl sera gazının izlenmesi, doğrulanması ve raporlanması konusunda gereklilik bulunmamaktadır

**Soru 7:** Liman katı atık yönetim planında nelere dikkat ediyorsunuz?

**Tablo 8.** Yedinci Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Katı Atık Yönetimi	Atık Yönetim Planı çerçevesinde atık yönetimi uygulamak, geçici atık depolama alanında biriktirilmekte ve lisanslı firmalara bertaraf/geri dönüşüme göndermek ve sıfır atık sistemi kullanılmaktadır.	2	6
	Atıkların kaynağında sınıfına göre ayrı olarak toplanabilmesi ve herhangi bir reaksiyona neden olmayacak şekilde depolanması, alınması ve kaynağında azaltılması sağlamaktadır.	4	1
	Yönetmelik ve uluslararası standartlar kapsamında gerekli olan şeyleri yerine getirmektedir.	-	2

Katı atık yönetimi konusunda da ister yeşil katılımcı (YK) ister gri katılımcı (GK) cevaplarına bakılırsa katı atık yönetiminde belirli bir planları olduğu görmek mümkündür. Buna göre atıklar geçici depolanır, sınıflandırılır, ayrıştırılır, geri dönüşüme yollarır. Katı atık yönetimi konusunda Türk Limanlarının ilerleme kaydettiğini söylemek doğru bir yaklaşım olacaktır.

**Soru 8:** Katı atık kirliliği yönetiminde hiyerarşik düzeniniz nasıl? (Atık üretiminin önlenmesi, oluşan atığın olumsuz etkisini azaltmak vb.)

**Tablo 9.** Sekizinci Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ile YK Bakış Açılarına Göre Katı Atık Hiyerarşi Düzeni	Katı atık yönetiminde; atık miktarının azaltılması, geri kazanımı ve zararsız bertaraf edilmesi şeklinde 3 temel ilke uygulanmaktadır.	5	7
	Katı atıkların yok denecek kadar az ürettiğimizi düşünülmektedir. Katı atık istasyonlarımızla oluşan atıkların muhafazası sağlanarak çevreye olumsuz etkisi sınıflandırılmaktadır.	-	1
	Tüm katı atıklar geri dönüşüme gönderilmekte ya da imha edilmek üzere yetkili kuruluşlara gönderilmektedir.	2	

Katı atık yönetimin hiyerarşik tablosunda genel olarak limanlar atıkların azaltılması, geri kazanımı olması ve bertaraf edilmesi şeklindeki ilkeleri uyguladıkları görülmüştür. Hemen her limanın atıkların yok edilmesi ve geri dönüşümü konusunda anlaşmış olduğu firmaların olduğu anlaşılmaktadır.

**Soru 9:** Denizlerdeki biyolojik çeşitliliğin korunmasına dair herhangi bir politikanız mevcut mudur?

**Tablo 10.** Dokuzuncu Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ila YK Bakış	Bilinen kadarıyla direkt bu konuyla ilişkili yok ancak yeşil, çevreci ve eko sisteme zarar vermeden onunla uyumlu bir şekilde hareket edilmektedir.	4	1
Açılımlarına Göre	Liman Başkanlığı yönetmelikleri doğrultusunda hareket edilmektedir.	1	1
Biyolojik Çeşitlilik	Limanın mevcut çevre politikamız içerisinde biyolojik çeşitliliğin korunmasına dair ek maddeler yer almakta ve uygulanmaktadır.	2	6

Denizlerdeki biyolojik çeşitliliğin korunmasına dair bilinç bazı limanlarda mevcut olup bazılarında mevcut değildir. Anket verilerine göre politikanın varlığı ile limanların yeşil liman olup olmaması hususunda anlamlı ilişki bulunamamıştır. Deniz koruması ile alakalı yasal düzenlemeler takip edilirken, anket verilerinde, limanların kendi çevre politikalarında konuya dair ek maddeler bulunduğu da gözlemlenmiştir.

**Soru 10:** Tarama işlemleri (kazı, çıkarma, toprak malzemesinin atılması vb.) sırasında deniz çevresine ve yaşamına zarar vermemek adına dikkat ettiğiniz unsurlar nelerdir?

**Tablo 11.** Onuncu Soru İçin Katılımcıların Cevaplarının Karşılaştırılması

Tema Kategoriler	Kodlar	Katılımcılar	
		YK	GK
GK ila YK Bakış	Şu ana kadar limanlarda herhangi bir tarama faaliyeti yapılmamıştır.	4	1
Açılımlarına Göre Tarama İşlemleri	ÇED kararına istinaden dip tarama malzemesinin çevresel çevresel yönetimi yönetmeliğine göre yapılmış ve flora fauna etkisi değerlendirilmiştir.	3	7

Bazı yeşil katılımcılarda (YK) dip taraması mevcutken bazılarında daha önce hiç yapılmamıştır. Aynı zamanda çoğunlukla gri katılımcıların (GK) dip taramasına oldukça önem verdikleri Tablo 11’de açıkça görülmektedir.

### TARTIŞMA VE SONUÇ

Limanlar küresel ekonomi için önemli bir yere sahiptir. Deniz ticaretinin ucuz ve tercih edilen bir taşıma yöntemi olduğu düşünüldüğünde oldukça kazançlı yatırımlar olduğu da söylemek yanlış olmayacaktır. Limanların şehirlerin içlerinde kaldıklarını, gürültü, kirlilik, trafik vb. konularda çevreyi oldukça etkiledikleri gerçeğinden yola çıkarak, yeşil limanların hem ekonomik, hem sosyal hem de çevresel sürdürülebilirlik açısından çok önemli oldukları söylemek yanlış olmayacaktır.

Bu çalışmada yeşil liman performans kriterleri ayrıntılı olarak açıklamış ve bu performans kriterleri kapsamında liman yöneticilerine yöneltilen sorular doğrultusunda bakış açıları değerlendirilmiştir. Analiz bulguları değerlendirildiğinde, genel olarak yeşil ve gri yönetici katılımcıların çevre konusunda çalışanlarına düzenli eğitimler verdikleri tespit edilmiştir bu durumun oldukça önemli olduğu söylenebilir. Anket sonuçlarında beklenildiği üzere yeşil limanların daha çevreci ve uluslararası standartları daha çok takip ettiği sonucuna

varılmış, yeşil liman yöneticilerinin bu konuyu daha titizlikle takip ettiği fark edilmiştir. İlk kriter olan katı akıt yönetiminde oldukça ilerleyen Türk Limanlarının atıkları depolama, bertaraf ve geri dönüşümü gibi konularda lisanslı firmalarla çalıştıkları gözden kaçmamaktadır. Gelişen teknolojiye ayak uydurulması ile birlikte fosil yakıtlı ekipman kullanımının azalması ve elektrikli ekipman kullanımının arttığı ve her iki grup yöneticilerinde bunu desteklediği anket bulgularında da görülmüş ayrıca her terminalin kendi çevre politikalarının olduğu ve ilgili kriterlere ait kendi çevre politikalarının da bulunduğu saptanmıştır.

Görüşme yapılan limanlardaki altı farklı liman yöneticisi, gürültü kriterini mevzuat çerçevesinde yönettiklerini belirtmiş, iki liman yöneticisi gürültü kriterini liman bazında aldıkları önlemlerle engellemeye yönelmiş, diğer beş liman yöneticisi ise gürültü kriteri için çevre ve lisans muafiyetinin söz konusu olduğunu belirtmiştir. Yeşil liman olan Avrupa limanları için böyle bir muafiyet söz konusu değildir hatta uluslararası yeşil liman ölçütlerine bakıldığında, Köseoğlu ve Solmaz (2019)'a göre gürültü kriteri, Avrupa limanlarının önem sıralamasında ilk üç sırada yerini almaktadır.

Balast suyu kriteri incelendiğinde; Gemilerin Balast Suları ve Birikintilerinin Kontrol ve Yönetimi Uluslararası Konvansiyonu, 2004 Kural B-1 ve beraberindeki kılavuzların gereklerine uygun olarak hazırlanmaktadır. Balast Suyu Yönetimi Planı (BSYP) hazırlama kılavuzunun karar MEPC 127(53) (G4) gereklerini karşılayacak şekilde olmalıdır. Bu kılavuza göre; “en yakın kıyıdan mümkün olduğunca uzakta en az 50 deniz mili mesafede ve 200 metre derinlikteki suda yapılmalıdır” (BSYP, 2021). Liman yöneticilerinden alınan cevaplara göre, sekiz liman yöneticisi Balast Suyu Yönetimi Planı Hazırlama Kılavuzunca belirlenen husularda izin verirken diğer üç farklı liman yöneticisi limanlarında ballast suyu boşaltımına izin vermediklerini, bir diğer dört yöneticisi ise operasyonel durumlarda izin verebildiklerini belirtmiştir.

Denizde oluşabilecek her türlü petrol ve sıvı sızıntısına karşı da terminallerde çeşitli periyotlarda tatbikatlar yapıldığı ve yöneticilerin sızıntı konusunda hassas oldukları gözlemlenmiş ayrıca yeşil liman olsun ya da olmasın liman yöneticilerin gerekli gördüğü durumlarda dip taramalarının yapıldığı görülmüştür.

Sera gazı \ CO2 kriteri açısından; dünyadaki yeşil liman uygulamalarıyla bakıldığında sera gazı ve CO2 emisyonunun azaltılması zorunlu olduğunu söyleyebiliriz ancak ülkemizde yasal zorunluluk mevcut değildir. Sera gazı ölçümü konusunda çoğunlukla yeşil katılımcıların uluslararası standartlara uygunluğu söz konusudur ancak her yıl sera gazının izlenmesi, doğrulanması ve raporlanması konusunda gereklilik bulunmadığından gereken hassasiyet gösterilmediği vurgulanmıştır.

Tüm bunlardan yola çıkarak sektör yöneticilerine öneri olarak, katı atık yönetime vermiş oldukları önemi gürültü yönetimi ve CO2 \ sera gazı emisyonu konularına da vermeleri ve Avrupa standartlarını örnek almaları gerektiği söylenebilir. Bununla beraber yöneticiler, fosil yakıt tüketimi ve atıkların geri dönüşümü kavramını yönetimsel ilke olarak edinmeli ve liman çalışanlarının eğitimi ve bilgilendirilmesi konusuna hassasiyet göstermeleri ve liman ve çevre konularındaki sosyal sorumluluk projelerine ön ayak olmalıdırlar.

Araştırmanın Marmara Bölgesinden seçilen az sayıda liman yöneticileriyle ve belirlenen beş yeşil liman performans kriterlere göre limanların değerlendirilmiş olması, çalışmanın kısıtları olarak değerlendirilebilir. Bu konuda çalışmak yapmak isteyen araştırmacılar, öncelikle katılımcı sayılarını arttırılabilirler, farklı bölgelerden liman işletmeleri seçilebilirler, sıvı, Ro-Ro terminalleri gibi farklı türdeki terminallere göre de araştırma yapabilirler. Bununla beraber çalışmada seçilen performans kriterlerine de yeni kriter eklenebilir ve derinlemesine incelemeler yapılabilir.

Literatürdeki çalışmalardan ve bu çalışmanın bulgularından yola çıkarak da Türk limanlarının Avrupa standartlarının altında kaldığını söylemek doğru olacaktır. Yeşil liman yöneticileri uluslararası standartlar konusunda daha hassas olsalar dahi çalışmanın geneline bakıldığında

yöneticilerin gerekli özenin gösterilmediği tespit edilmiştir. Yeşil liman prosedürlerini korumak ve uygulamak yalnız liman yöneticilerinin ya da limanların değil denizcilik sektöründeki tüm paydaşların da sorumluluğundadır. Yeşil liman kavramı gönüllülük esasına dayanan bir prestij kaynağı olup, diğer sektörlerle çevre bilinci ile alakalı örnek bir projedir. Bu nedenle yeşil liman ile alakalı konularda devlet otoritesinin daha aktif olması, teşviklerle veya cezai yaptırımlarla desteklemesi önem arz etmektedir. Yönetici farkındalığıyla beraber liman işletmeleri, rekabet avantajını arttırmak, maliyetleri düşürmek ve bir sosyal sorumluluk olarak değerlendirilebilecek yeşil liman olgusunun denizcilik sektöründe önümüzdeki yıllarda daha çok tartışılacağı söylenebilir.

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## **POLY (LACTIC ACID)/POLYAMIDE 11 BIO-BASED POLYMER BLENDS**

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### **Abstract**

In recent years, increasing environmental concern due to the damages of plastic waste has encouraged the use of biodegradable polymers produced from renewable resources. Since biopolymers exhibit relatively low properties compared to synthetic polymers and are expensive, their properties and performance/cost ratios need to be improved. By blending biodegradable and bio-based polymers, efforts are made to obtain new biomaterials, reduce material prices and improve properties. Within the scope of this study, Polyamide 11/Poly (lactic acid) (PA11/PLA) blends will be prepared. PA11 is a bio-based and biocompatible thermoplastic polymer produced from castor oil. It draws attention to its properties such as high impact strength, flexibility, wide service temperature. When all these features of PA11 are desired to be utilized, compared to other petroleum and biodegradable plastic materials, its high cost and non-biodegradability give rise to the idea of blending it with different biopolymers. Similar to PA11, PLA is produced from renewable resources and is also biodegradable. In addition to its features such as biocompatibility and easy biodegradability, PLA has a very high modulus and tensile strength compared to PA11. However, PLA has disadvantages such as ductility and low impact strength. As can be seen, these features, which are weak in PLA, are more developed in PA11. With the preparation of PA11/PLA blends, it is aimed to overcome these disadvantages of PLA and to improve the relatively low tensile strength and modulus of PA11. PA11/PLA blends in different ratios were prepared by extrusion/injection molding method and their mechanical, thermal and morphological properties were investigated. Tensile test results showed that with the addition of PA11, PLA changes from brittleness to ductility without much compromise in strength and modulus. Young's modulus and Shore D hardness of PA11 gradually increased with the addition of PLA. In addition, the thermal strength of PLA has been improved with the addition of PA11. Morphological analysis showed that although all compounds are immiscible, they also exhibit self-compatibilization behavior.

**Keywords:** Polyamide 11, Poly(lactic acid), bio-based blends, mechanical properties

### **INTRODUCTION**

Nowadays, bio-based polymers obtained from renewable resources have attracted great attention. Bio-based polymers are seen as an alternative to petroleum-derived polymers because of the finite oil resources and the harmful effects of synthetic polymers on the environment. Among the various bio-based polymers, poly(lactic acid) (PLA) is an often preferred useful aliphatic polyester (Stoclet, Seguela, and Lefebvre 2011; Walha et al. 2018). PLA is a bio-based and biodegradable thermoplastic produced from the fermentation of corn



or sugarcane. It can be processed by methods such as extrusion, injection, film-forming, fiber spinning which is used in many applications such as packaging, medical, textile, automotive and electronics (Patel et al. 2014).

Polyamide 11 (PA11), another bio-based polymer, is produced from castor oil and is a semi-crystalline thermoplastic. Although PA11 is bio-based and biocompatible, it cannot be biodegradable. However, they still have less harmful environmental effects than petroleum-derived polyamides and polymers. It has superior properties such as high impact strength, flexibility (> 200%), acceptable tensile strength (25-45 MPa), good dimensional stability, high crystallization and thermal stability. PA11 exhibits high chemical resistance against fuel, oils, gases, solvents and industrial liquids and it is also low density (1.03-1.05 g/cm<sup>3</sup>). With all these properties, PA11 is expensive compared to other petroleum and bio-derived plastic materials and is non-biodegradable. In this case, blending PA11 with cheaper and biodegradable polymers can expand its use and improve its properties (Heshmati 2017; Patel et al. 2014). At this point, PLA emerges as a suitable alternative for blending with PA11. PLA has a very high modulus (2.5-4 GPa) and tensile strength (50-70 MPa) compared to PA11. However, PLA has disadvantages like brittleness (2-6% elongation) and low impact strength and low crystallization rate (Heshmati 2017; Stoclet, Seguela, and Lefebvre 2011). As can be seen, these features, which are weak in PLA, are more developed in PA11. With the preparation of PA11 / PLA blends, it is expected that these disadvantages of PLA will be overcome, and the relatively low tensile strength and modulus of PA11 will improve. In addition, due to the presence of polar functional groups in polyamides and polyesters, PA11 and PLA have the potential to interact during blending (Fakirov, Evstatiev, and Petrovich 1993). Thus, a completely bio-based material with advanced properties will be obtained.

The current study presents the preparation and characterization of PA11/PLA blends at various blending ratios. The mechanical (tensile, impact, hardness), thermal, morphological properties of the blends were discussed within the scope of the study.

## **MATERIALS AND METHODS**

### **Materials**

Pellets of PA11 (Rilsan-BESNO P40 TL) were supplied from Arkema. This PA11 grade has relative density of 1.04 g/cm<sup>3</sup> and 181 °C melting temperature. Another polymer, PLA (Ingeo-2003 D) was purchased from NatureWorks (USA) with 1.24 g/cm<sup>3</sup> density and 155 °C melting temperature.

### **Preparation of blends**

Before processing, polymers were dried under vacuum at 80 °C for all night. The PA11 and PLA were compounded by using a laboratory scale co-rotating twin-screw extruder (Xplore 15 ml Micro-compounder). The extruder barrel was kept under nitrogen atmosphere to avoid oxidation and hydrolytic degradation during the compounding. The extrusion parameters were: screw speed 75 rpm, 3 min residence time and barrel temperature 210 °C. The polymer and blend melts were injection molded by using a laboratory scale injection molding machine (Xplore 12 ml Micro-injection Molder). The mold and melt temperatures were 30 °C and 210 °C respectively and 10 bars injection pressure. As a result of the molding, tensile and impact test specimens in accordance with ISO 527 and ISO 180 standards were obtained. The compositions of the studied PA11/PLA blends are 100/0, 90/10, 80/20, 70/30, 60/40, 50/50, 40/60, 30/70, 20/80, 10/90, 0/100.

## **Characterization**

Tensile properties of injection-molded specimens were carried out at room temperature on an Instron universal testing machine according to ISO 527 standard. The crosshead speed was 5 mm/min. The five specimens were tested and the averages and standard deviations of Young's modulus, tensile strength and elongation at break were calculated and reported.

Notched Izod impact test was conducted by using an impact tester (Instron, Ceast-9050) according to ISO 180 standard. The five specimens were tested, and the averages and standard deviations of impact strength were calculated and reported.

The hardness values of the specimens were measured according to ISO 868 standard with Zwick Shore Durometer device and Shore D hardness scale. Measurements were taken from 5 different points on samples with a thickness of 4 mm. The hardness value of the sample was calculated as the average of these measurements.

The thermal stabilities of the specimens were determined by thermogravimetric analysis (TGA). TGA was performed from 25 °C to 600 °C, with a heating rate of 10 °C/min under nitrogen atmosphere in Mettler Toledo TGA 1 Instrument. The 5% weight loss ( $T_{d5}$ ) and maximum degradation temperature ( $T_{max}$ ) and the residual weight at 600 °C were reported.

The morphologies of selected specimen's impact fractured surfaces were examined using a scanning electron microscope (QUANTA 400F Field Emission SEM). Before the measurement sample surfaces were coated with gold.

## **RESULTS AND DISCUSSION**

### **Tensile test**

Tensile strength, elongation and modulus values obtained from the tensile test are given in Figure 1 as a function of PLA weight ratio. According to the tensile test results, neat PLA exhibits a typical brittle structure with high modulus and tensile strength, low elongation. It can be seen that PA11 has lower but moderate tensile strength and modulus, higher elongation value compared to PLA. With the addition of PA11 to PLA, there has been a transition from brittle behavior to ductility without much compromise in strength and modulus. Mechanical properties of polymer blends are generally affected by blending ratios, processing conditions, compatibility and miscibility levels of the polymers. It is known from various literature studies that PA11 and PLA are immiscible. Therefore, it is expected that the mechanical properties of PA11/PLA blends will be between these two polymers (Stoclet, Seguela, and Lefebvre 2011; Walha et al. 2016). Neat PA11 has a tensile strength of about 44 MPa and PLA 57 MPa. It is seen that PA11/PLA blends prepared in different ratios generally exhibit tensile strength values among neat polymers. On the other hand, 80/20 PA11/PLA blend exhibited the highest tensile strength as 59.9 MPa above neat PLA. This increment can be assigned to the self-compatibilization of PA11 and PLA. The tensile strength of neat PA11 increased up to 50% PLA loading, but in samples containing 60-70% PLA, there was a decrease of approximately 6-14% compared to PA11. Interfacial interactions of the two polymers were weakened with the increasing amount of PLA.

The elongation at break of PA11 is 205% and that of PLA is 6%. Similar to the tensile strength, the elongation of PA11 increased with the addition of PLA up to 50%. Among the blends, 70/30 has the highest elongation as 314%. In general, in studies where PA11/PLA

blends were prepared, elongation values exhibited values between PLA and PA11 and no result was found that exceeded neat PA11. The elongation increases observed in this study are thought to be related to the self-compatibilization behavior of PA11 and PLA. On the other hand, it is known that PA11 used in the study contains plasticizer. It can be assumed that the plasticizer used here also acts as a plasticizer for low levels of PLA, increasing the elongation values.

From the module graph, it is seen that the 350 MPa modulus of pure PA11 gradually increases with the addition of PLA. Pure PLA has a modulus of elasticity of 4010 MPa. All modulus values were observed between PA11 and PLA.

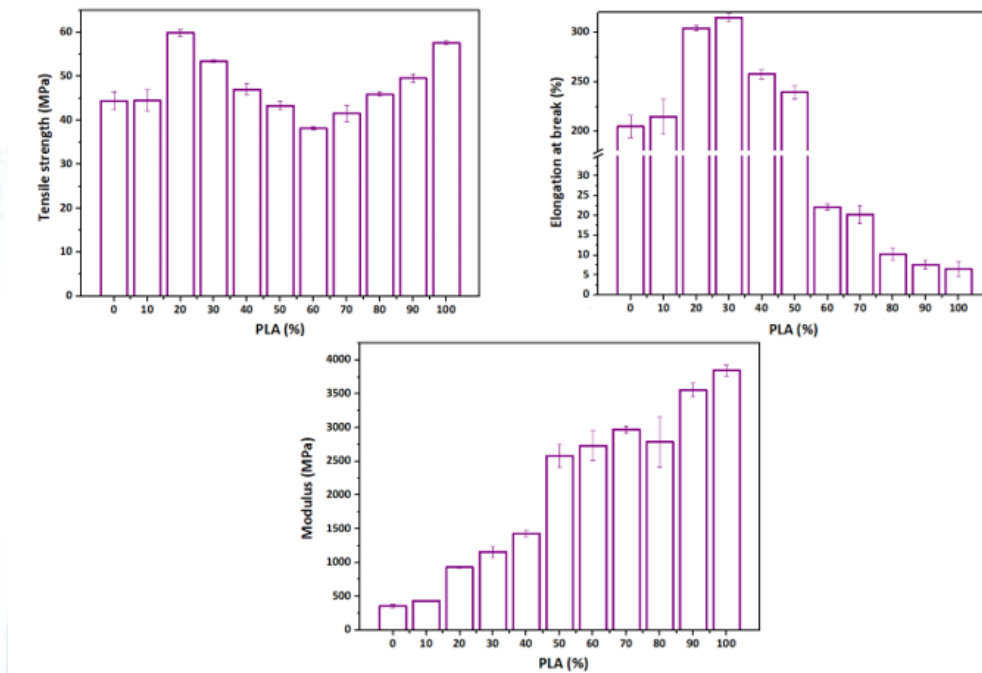
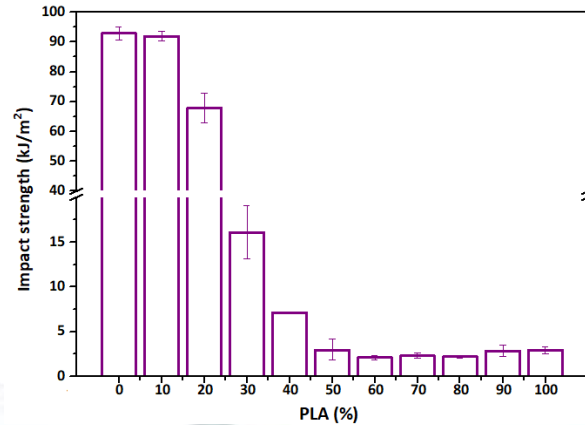


Figure 1. Tensile test results of the blends

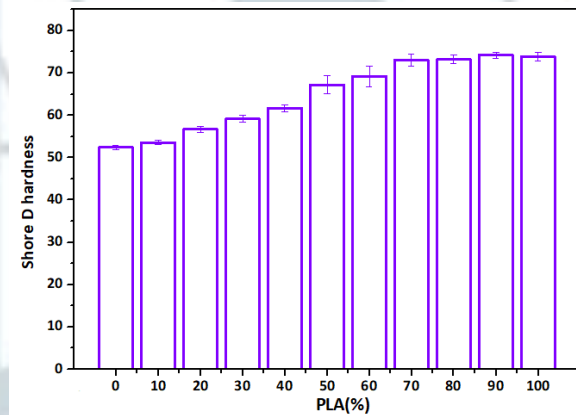
### Impact Strength and Shore D Hardness

Notched Izod impact test was applied on neat polymers and PA11/PLA blends and impact strength results are given in Figure 2. Neat PA11 and 90/10 blend were not broken by the Izod impact test. With the increasing amount of PLA, the impact strength of PA11 decreased significantly. 40/60, 30/70, 20/80 PA11/PLA blends had lower impact strength than PLA. The impact strength of immiscible polymer blends is affected by blend morphology and the degree and efficiency of interfacial compatibility and efficiency (Patel et al. 2014). The decrease observed here was due to the lack of effective compatibility of the PA11/PLA blends.



**Figure 2.** Izod impact strength of the blends

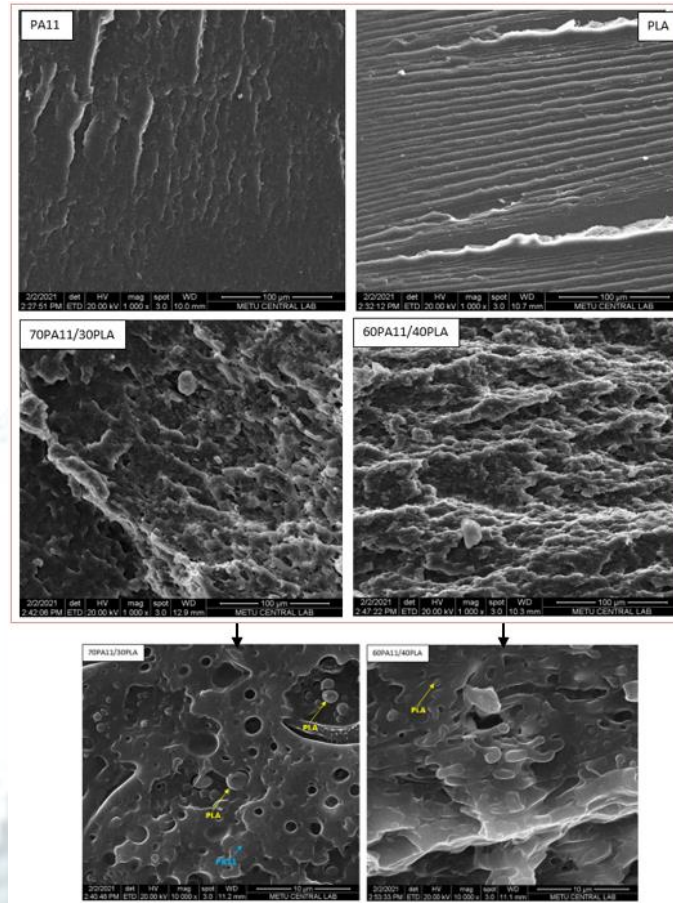
Shore D hardness values of the samples can be seen in Figure 3. The hardness of pure PLA is 73 Shore D, and that of pure PA11 is 52 Shore D. As the amount of PLA added to PA11 increased, the hardness values gradually increased. From 70% PLA content, the mixtures reached almost the same hardness value as pure PLA.



**Figure 3.** Shore D hardness of the blends

### Morphological Properties

SEM images of cryo-fractured surfaces on neat PA11, impact fractured surfaces of PLA and blends are reported in Figure 4. Images showed that neat PA11 surfaces were smooth with localized ductility. On the other hand, deep and large parallel cracks seen on the surface of neat PLA indicate a brittle surface morphology. Cracks advanced rapidly under impact and no signs of plastic deformation. Morphology of 70/30 PA11/PLA blend consists of PLA globules dispersed in the PA11 matrix. Also, there are some voids and pull out of PLA. But, the size of PLA globules is quite small. This is due to the low inter- facial free energy which indicates the small compatibility. As the PLA content increased to 40%; phase separation, PLA globules and voids decreased. This can be attributed to the self-compatibilization of PA11 and PLA.



**Figure 4.** SEM images of the PA11, PLA, 70/30 and 60/40 blends (1000x and zoomed 10000x)

### Thermogravimetric Analysis (TGA)

The thermal degradation behavior of neat polymers and PA11/PLA blends were examined by TGA and the results are given in Table 1. Neat PA11 exhibited two-step degradation, the first to be attributable to the plasticizer in its structure and the second to the main degradation of the polyamide. The first degradation step occurred in the range of 245-320 °C and there was weight loss of approximately 7%. The second step main degradation started around 426 °C. It can be said that PA11 exhibits good thermal stability like PA6, PA66 and PA12. on the other hand, neat PLA exhibited a single step degradation starting at 320 °C. Three-step TGA curves were obtained showing the degradation of each component by blending the two polymers. The first step shows the plasticizer degradation of PA11, the second step PLA degradation, and the third step the PA11 main degradation. When Table 1 was examined, it was seen that the first step degradation of PA11 ( $T_{d5}$ ) shifted to higher temperatures with the addition of PLA. Looking at the PLA degradation step, it was observed that as the amount of PA11 in the blend increased, the thermal stability of PLA improved. This can be assigned to the ‘labyrinth effect’ of the PA11 phase, which acts as an insulating barrier that can inhibit the volatilization of the PLA phase (Izzo Renzi et al. 2016). Also, residual weight at 600 °C increased with blending. 60/40 PA11/PLA blend exhibited maximum residual weight as 4.3%.

**Table 1.** The thermal parameters of neat polymers and blends from thermogravimetric analysis (TGA)

Sample	T <sub>d5</sub> (°C)	T <sub>max-1</sub> (°C)	T <sub>max-2</sub> (°C)	T <sub>max-3</sub> (°C)	Char residue (600 °C)
PA11	270.7	278.7	-	449.8	0.82
90/10	263.6	265.3	354.2	462.0	1.3
80/20	284.6	267.7	354.2	464.5	1.25
70/30	289.2	269.3	353.8	458.6	1.81
60/40	294.6	257.7	342.9	451.9	4.30
50/50	311.4	-	349.8	455.3	3.34
40/60	321.9	-	353.8	454.8	3.21
30/70	319.0	-	347.5	449.4	3.87
20/80	328.2	-	356.7	452.3	2.73
10/90	325.3	-	357.2	451.1	2.61
PLA	301.4	-	347.1	-	1.25

## CONCLUSION

In this study, full bio-based PA11/PLA blends were prepared by melt-mixing method and characterized with mechanical, thermal, and morphological analysis. The elongation at break and impact strength of PLA improved with the blending of PA11. Also, the tensile strength and Young's modulus of PA11 increased with the addition of PLA. Thermal stability of polymers improved by blending. Morphological analysis and all results demonstrated that PA11 and PLA exhibit self-compatibility behavior.

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## **SPORDA DİJİTALLEŞME VE SONRASI**

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### **Özet**

Teknolojinin gelişmesi ve hızlı değişimleri karşılıklı etkileşime girerken, teknolojinin varlığı 21. yüzyılda hızlı ve köklü değişikliklere neden olmuştur. Ekonomi, kültür ve siyasette olduğu gibi sporda da meydana gelen değişiklikler, bireylerin algı, beklenti ve bakış açılarını derinden etkilemektedir. Yaşanan bu değişimler farklı dönemlerde doğan insanların farklı kişilik, bakış açısı ve değerlere sahip olmasını sağlamıştır. Dolayısıyla bu da sporda dönüşümlere neden olmuştur. Bu gelişime öncülük eden çok önemli bir unsur vardır; dijitalleşme. Hayatın her alanında kolaylık getirerek yaşamı iyileştiren ve hızlandıran dijitalleşme süreci, spor dünyasında da gözle görülür etkilere sahiptir. İletişim teknolojilerinin gelişmesi ve değişen jenerasyonla birlikte, terminolojik tabirle dijital yerliler, ortaya yeni platformların çıkmasına katkıda bulunmuşlardır. Dijitalleşme ile birlikte spor dünyası farklı dinamikler kazanarak bilgisayar ortamları ve oyunlarında yaşanan artışla geleneksel spordan e-spor gibi dijital ortamlara geçiş başlamıştır. Fiziksel çabadan çok zihinsel becerilerin öne çıktığı bu dijital spor dünyasında fark yaratan nokta belirlenen yöntem ve oyun süresince ortaya konan akıldır.

Spor ve oyun sektörü arasındaki bağlantıyı doğru çözümlmek, dijitalleşmenin her iki alanda ne boyutta etkin olduğunu araştırmak gerekmektedir. Bu çalışmanın amacı dijitalleşmeyle birlikte değişen spor anlayışını jenerasyonlar üzerinden ortaya koymaktır. Bu araştırma için doküman analizi tekniği kullanılmıştır.

Araştırmanın analizi sonucunda toplumun dijitalleşmesi ile birlikte kuşakların sosyal yönden alışkanlıklarında farklılıklar gözlemlenmiştir. Z kuşağının teknolojik imkanların yoğun olduğu bir ortamda büyümüş olması, oyun oynama biçiminin değişmesine yol açmıştır. Yeni spor dallarından spor organizasyonlarına kadar birçok alanda dijitalleşme ve dijital dönüşüm örnekleri hayat bulmaya başlamıştır. Özellikle pandemi sürecinde kalabalık ortamdaki uzak durmak isteyen kişiler için spor etkinliklerinin dijital olarak evlere girmesi, orijinal atmosferi yaşatmak adına çözüm yolu olmuştur.

**Anahtar Kelimeler:** Dijitalleşme, Sporda Dijitalleşme, Sporda Dijital Dönüşüm, Jenerasyon

## **DIGITALIZATION AND POST-DIGITALIZATION IN SPORTS**

### **Abstract**

Technology has a huge impact on rapid and radical changes in the development of itself in the 21st century. Advancements in economy and culture as well as in sports, deeply affect the expectations and perspectives of individuals. These shifts have enabled people born in different periods to have distinct personalities, perspectives and values. There is a very important factor to lead this development; digitalization. With the development of communication technologies and the changing generation, digital natives in terminological terms have contributed to the emergence of new platforms. With digitalization, the world of sports has gained different dynamics, and with the increase in computer environments and games, the transition from traditional sports to digital environments has started. The point that makes the difference in this new sports activity, where mental abilities are more prominent than physical effort, is the mindset during the game.

It is necessary to interpret the relationship between sports and game sectors correctly and to examine how effective digitalization is in these two areas. The purpose of this study is to reveal the understanding of the sports that develop with digitalization in terms of generations. Document analysis technique was used for this research.

As a result of the analysis of the research, differences were observed in the habits of the generations in terms of social with the digitalization of society. The fact that generation z grew up in an environment with intense technological possibilities has led to a change in the way of playing games. Examples of digitalization and digital transformation have begun to come to life in many areas from new sports to sports organizations. Especially for people who want to stay away from the crowded environment during the pandemic process, the digital entry of events into homes has been the solution to maintain the original atmosphere.

**Keywords:** Digitalization, Digitalization of Sports, Digital Transformation in Sports, Generation

### **GİRİŞ**

İlk Olimpiyat Oyunları MÖ 776'da Yunanistan'ın Olympia kentinde yapıldığından beri bir alan olarak spor, ihtişam ve kahramanlıkla dolu güçlü bir gelenek biriktirmiştir. O zamanlar koşu, uzun atlama, gülle atma, cirit, boks, Amerikan güreşi (pankrasyon) ve binicilik etkinlikleri gibi temel spor dalları vardı. Bugün ise 8 binden fazla yerli spor dalı bulunmaktadır (Liponski, 2003).

Suits (1988) sporu, "Belirli şekillerde kurumsallaştırılmış basit atletik oyunlar" olarak tanımlamıştır. Guttmann ise (1988), modern sporların oluşumundaki anahtar kriterin "Düzenli olarak gerçekleşen turnuvaları yönetmek ve kuralları güncellemek için bürokratik bir organizasyonun gerçekleşmesi" olarak belirtir.

Literatürde sporun nasıl tanımlanması gerektiğiyle ilgili genel bir kavram birliği olmamasına rağmen ortak bir tanım olarak, 'rekabet edebilirlik, fiziksellik ve önceden tanımlanmış kuralların uygunluğuna göre gerçekleşen etkinliklerdir' denilebilir (Wright, 2009). Sporun uzun tarihi, onun bir oyun faaliyetinden kodlanmış, stratejiye dayalı ve çoğu durumda ticarileştirilmiş profesyonel bir organizasyona evrimini örneklemiştir (Baca, 2015).



Link ve Lames'a (2014) göre, Almanya'da 1960'larda araştırma alanı olarak ortaya çıkan spor bilimi, spor psikolojisi, spor yönetimi, spor ekonomisi, spor sağlığı ve spor bilişimi gibi alt dalları olan disiplinler arası bir alandır (Baca 2015). Ortak tema, sporun sadece başka bir organizasyon türü olarak görülmesinden çok, özel ilgi gerektiren kendine özgü bir bağlam olarak tanınmasıdır (Loy, 1968).

Son yıllarda spor büyük bir gelişmeye tanık olmuştur; o da dijitalleşmedir (Davenport, 2014). Bu gelişmeyle birlikte günümüzde dijital teknolojilerin sporda kullanımı daha da yaygın hale gelmiştir. Dijitalleşme 'e-spor' gibi yeni spor faaliyetlerinin yaratılmasında öncü olmuştur (Boyle ve ark., 2003). Tüm bu gelişmeler spor sahasının doğasına derin etkiler yaratmıştır. Bu durum İsveç e-Spor Derneği'nin, İsveç Spor Konfederasyonu üyeliğine başvurmasından da açıkça görülmektedir. Özetle bilgi teknolojisinin ve buna bağlı olarak sporda artan dijitalleşmenin, sporun işleyiş şeklini önemli ölçüde değiştireceği görülmektedir (Krzanich 2016).

Spor bilimcileri sporun uzun ve zengin tarihi göz önüne alındığında sporun doğası hakkında fikir vermeyi amaçlamıştır. Loy, sporu tanımlarken bir oyun oluşumuyla karşılaştırmış ve sporun birçok yönden oyuna benzer olduğu sonucuna varmıştır. Hem spor hem de oyun fiziksel beceri, strateji ve şans gerektirir. Ancak Loy'un (1968) belirttiği gibi spor ve oyun arasındaki en önemli ayrım ise, yüksek düzeyde sistematik eğitim gerektiren sporda 'fiziksel yetenek' gösterme çabasıdır. Belirtilen ortak yönlerden dolayı spor oyunun temelini oluşturur. Başka bir deyişle "oyun bir oluşken, spor örnek alınan bir kalıptır" (Xiao ve ark., 2017).

Yaşanan bu değişimler, farklı dönemlerde doğan insanların farklı kişilik, bakış açısı ve değerlere sahip olmasını sağlamıştır. Ekonomi, kültür ve siyasette meydana gelen değişiklikler bireylerin algı, beklenti ve bakış açılarını derinden etkilemiştir. Bu etkileşimler sonucunda kuşakların dönem sınırları işaretlenmiş ve özellikleri belirlenmiştir. Eski neslin yerini alan her genç nesil, kendi karakteristik özelliği ve değer yargılarıyla birlikte gelmiştir. Aynı olaylardan etkilenecek zamanla birlikte seyahat eden nesiller, tarih boyunca bireylerin psikolojisini anlamak ve davranışlarını kontrol altında tutmak için incelenmiştir. Günümüzde nesiller üzerinde bu kadar çok araştırmanın yapılmasının ana nedeni bireyler üzerinde yaşanan değişimlerin, etkilerini daha net görme isteği olmuştur (Berkup, 2014).

### **Teknoloji Kuşakları**

Çeşitli bilimlerden multidisipliner bir kavram olarak incelenen 'kuşak' ve 'kronolojik sınıflandırma' terimi, temelde "bir grup insanın bir dizi doğum günü" olarak tanımlanır (Jopling, 2004). Jenerasyon için yapılan bir diğer tanımlama, "aynı yaş grubuna ait olan, yaşamlarını şekillendirebilecekleri yıllarda benzer deneyimleri yaşayan veya buna göre yaşayacak olan kuşaklar veya gruplardır" (Hung ve ark., 2008). Farklı tanımlardan yola çıkarak nesil terimi, belli bir süre içinde doğmuş, büyüyen ve yaşamını sürdüren aynı zamanda meydana gelen olaylardan etkilendikleri için ortak niteliklere ve düşünceye sahip oldukları varsayılan insan grupları olarak adlandırılabilir. Bu tanımdan da anlaşılacağı üzere nesil kavramı ile ilgili önemli olan nokta, söz konusu grup üyelerinin tarihin belirli bir döneminde hangi olaylardan etkilendikleri ve olayların üzerlerinde bıraktığı izlenimlerdir

(Berkup, 2014). Dolayısıyla nesillerin karakterlerini çözümleyebilmek için yaşanan olayları anlayabilmek gerekir.

İkinci dünya savaşından kısa süre sonra dünyaya gelen ve 1946-1964 yılları arasında kapsayan Baby Boomers (bebek patlaması) kuşağı sınıflandırılan nesiller arasında en geniş nesil olduğu kabul edilmektedir. Sayıları fazla olduğu için toplumu şekillendiren kuşak olarak da tanımlanır. Prensky (2001) bu nesli ‘dijital göçmenler’ olarak adlandırmakta ve ‘dijital yerliler’ olarak bahsettiği sonraki nesiller ile iletişim kurmak için bu dili öğrenmeleri gerektiğini vurgulamaktadır.

1965-1979 yılları arasında doğduğu kabul edilen X kuşağı üyeleri, geleneklere sadık kalan önceki nesiller ile yeni nesil teknoloji arasında bir geçiş kuşağı olarak kabul edilmektedir. Watergate Skandalı, Vietnam Savaşı, Elvis Presley’in ölümü, John Lennon Suikastı ve ilk AIDS vakaları gibi olaylar karakterlerini şekillendirmede etkisi olmuştur. Aynı zamanda bu dönem, Berlin Duvarı’nın çöküşü, Körfez Savaşı ve bu savaşın televizyonda canlı olarak yayınlanmasını sağlayacak hızla gelişen bir teknolojiye sahip olmuştur. Değişen dünya nedeniyle çeşitliliklere tahammül etmeyi öğrenen ve kendilerinden sonraki kuşaklara oranla daha sınırlı bir ortamda büyüdükçe daha fazla üretkenlik kazanan X’ler, karşılaştıkları olayları kolayca analiz edebilen bireylerden oluşmaktadır.

1980 ve 1994 yılları arasında doğduğu kabul edilen Y jenerasyonu, dünyanın ilk teknolojik ve küresel neslidir. Milenyum, dijital jenerasyon, trophy kids, jenerasyon www, net jenerasyonu gibi farklı isimlerle de adlandırılmışlardır (Jain ve Pant, 2012). Diğer nesillerden farklı olarak en ayırt edici özellikleri teknoloji ile birlikte yaşamalarıdır. Bu nedenle ‘teknolojik nesil’ olarak tanımlanır. Küreselleşmenin ilk kuşağı olarak Y’leri önemli ölçüde etkileyen olay, bilgi ve iletişim teknolojilerinin hızla ilerlemesi olmuştur. Bu temel dinamiklere ek olarak Y’lerin karakter oluşumunda rol oynayan olaylar Sovyetler Birliği’nin dağılması, Prenses Diana’nın ölümü, 11 Eylül ve benzeri terörist saldırıları, Ortadoğu’da meydana gelen savaş ve ırkçılıktır (Berkup, 2014). Değişim hızının farkında olup (Buckley ve Beu, 2001), bu hıza yetişebilen hatta isteyen bir nesildir. Y kuşağı öncesinin büyük çoğunluğu, sonraki nesillerin teknolojiyi iş, oyun ve eğitim için kullanma şeklini garipsemektedir. Y kuşağı ise kendinden önceki nesilleri yeni teknolojiye ve değişime dirençli olarak görmektedir (Venter, 2017). Bu bireyler video oyunları ve internet gibi dijital mecraları deneyimleyerek büyümüşlerdir. Y kuşağının, önceki nesillerden farklı olan kendi etkileşim tarzları vardır. Bu kuşak cep telefonları, bloglar, Facebook veya YouTube gibi çeşitli dijital cihazlar ve sosyal ağlar aracılığıyla herhangi bir zamanda ve herhangi bir yerden aile ve arkadaşlarıyla sürekli bağlantı kurmayı severler (Black, 2010).

1995 yılından itibaren doğan bireylerden oluşan Z kuşağı, internetin çocukları, dijital nesil, iGen, dijital yerliler gibi kavramlarla tanımlanmaktadır (Levickaite, 2010). ‘Dijital yerliler’ terimi, önceki nesillerden farklı olarak Z kuşağı üyelerinin teknolojiye alışkın olmak yerine teknolojinin içinde doğduğunu ifade etmektedir. Z’lerden önceki nesil özellikle Y kuşağı teknolojinin içinde doğmadılar, ancak daha sonra aktif bir şekilde kullanmaya alışmışlardır. Z kuşağından önce teknolojiyle tanışan nesiller ‘dijital göçmenler’ olarak adlandırılırken, teknolojinin içinde doğan ve onu hayatın bir parçası olarak gören Z kuşağı ise ‘dijital yerliler’ olarak adlandırılmaktadır (Prensky, 2001).

Z Kuşağının en ayırt edici özellikleri güven, özgürlük, bireysellik, teknolojiye bağımlılık ve çabukluktur. Bu kuşak ile ebeveynleri olan X jenerasyonu arasında teknolojiden yararlanma açısından büyük bir fark vardır. Hızla gelişen dünyayı anlamaya ve içinde büyümeye çalışan Z kuşağının üyeleri geleceğin neslidir. Z kuşağı ile ilgili yaşlarının küçük olması, kişiliklerinin olgunlaşmaması ve gelecek yıllarda onları hangi olayların etkileyeceğinin bilinmemesi gibi değerlendirmelerde bulunulmuştur.

Apple firmasının diğerleri gibi olmayan sürekli gelişmiş ürünlerinin tanıtımı, 2004 yılında pazara çıkan Facebook, milyonlarca kullanıcının kullandığı Twitter ve özellikle gençlerin kullandığı Instagram, TikTok ve Snapchat gibi diğer sosyal mecralar hayatın önemli bir parçası haline gelmiştir. Tekno-küresel bir dünyada doğan Z kuşağı bireyleri, dünyanın herhangi bir yerinde herhangi bir kişiyle saniyeler içinde iletişime geçip bilgi paylaşabilmektedir. Teknoloji bağımlısı olarak da adlandırılabilir bu kuşak internet teknolojilerine hakim olarak internet tabanlı oyunlar oynamakta, internet ortamında sosyalleşmekte ve 7/24 online olmayı sevmektedir. Teknolojiyi olağan yaşamın bir parçası olarak algılayan bu neslin üyeleri internette gereksinim duyulan her türlü bilgiye erişmektedir. Teknolojinin ilerlemesinin yarattığı etkiyle her şeyin çabuk ve hızlıca gerçekleşmesini isteyen bu kuşak, tıpkı Y nesli gibi sabırsız ve dikkat süreleri kısadır. Ayrıca internet aracılığıyla sosyalleşme, hızlı tüketim, etkileşim, verimlilik, memnuniyetsizlik, sonuç odaklı ve özgüvenli olmaları belirgin özelliklerindedir. İnternet teknolojisinin bu nesle kazandırdığı olumlu özelliklerden biri de aynı anda birçok konuya ilgi duyabilmeleridir (Berkup, 2014).

Her yeni teknoloji, insanların iletişim veya etkileşim kurma şeklini değiştirmiştir (Duck ve McMahan, 2009). Her nesil iletişim kurmak için farklı türde teknolojiler kullanmış ve alışkın olduklarından farklı iletişim yollarını kolay kolay benimsememişlerdir (Venter, 2017). Prensky'ye (2001) göre dijital neslin beyin yapıları, her daim teknolojilere maruz kalmaları nedeniyle değişime uğramıştır. Dolayısıyla bilgiyi önceki nesillerden farklı düşünmüş ve işlemişlerdir (Black, 2010).

Sporun başarısının önemi dijital dünyada da kendini göstermektedir. Sporun dijital dünyaya evrilmesiyle bir oyun kültürü oluşmuş ve bu yeni oluşumda başarılı olmak, bireylerin oyunda geçirdiği zamanın artmasıyla ilişkilendirilmiştir. Bireyler başarı seviyelerini tanımlarken oyunda geçirdikleri süreyi ve yoğunluğu baz almışlardır (Binark, 2007).

Taylor (2012) ve Witkowski (2012a, 2012b) geleneksel sporlar ve e-sporun alanını ve var olan gri alanlarını tanımlarken e-sporadaki fiziksel yaklaşım üzerine yorumlar yapmıştır. İki bilim insanına göre, poker ve satranç popüler rekabetçi oyunlardır ancak fiziksel çaba gerektirmez. Spor, e-sporu da kapsayacak şekilde genişledikçe sporun yaygın tanımlarının çoğu sorgulanmaktadır. Geleneksel sporlar genellikle atletik veya fiziksel hünlerle ilişkilendirilirken, rekabete dayanan video oyunları bu ilişkiyi sorgulamaktadır (Summerley, 2020). Ancak hem geleneksel hem de e-spor seçkin profesyonelleri küresel olarak izleyicilerin keyif aldığı geniş arenalarda rekabet etmek için bir araya getirmektedir (Geoghegan ve Wormald, 2018).

Uluslararası e-Spor Federasyonu genel sekreteri Alex Lim, "Algı her şeydir. Bir nesil arka bahçede top oynayarak büyürken, sonraki nesiller birçok oyun içerisinden tercih yaparak büyümüştür. Çoğu insanın bir dizi şeyi yeniden tanımladığını kabul ettiği dijital bir kültürde

yaşıyoruz, spor da bunlardan biridir” söyleminde bulunarak geleneksel sporun teknolojinin gelişmesiyle dijital evrildiğini vurgulamıştır (<https://qualitance.com/blog/proofs-esports-industry-booming/>).

## **SONUÇ**

İnternetin başlangıcından bu yana kişilerarası iletişim değişikliğe uğramış, yüz yüze iletişim bilgisayar aracılı iletişime taşınmıştır. Bilgisayar kullanıcıları çoğunlukla Y ve Z kuşağı gibi daha genç insanlardan oluşmaktadır. Bu nesiller iletişim için dijital etkileşimli teknolojileri, kendilerinden önceki nesillere göre daha rahat kullanmaktadır. Y kuşağından önceki nesiller ise yüz yüze iletişime değer vermektedir. Fakat iletişim yollarının farklılığı nesiller arasında çatışmalara neden olmaktadır (Venter, 2017).

Gelişen teknolojiyle beraber spor dünyasında yaşanan değişimler, Z kuşağı olarak adlandırılan neslin spor yapma alışkanlıklarını da etkilemiştir. Teknolojinin içinde doğan ve dijital yerliler olarak tanımlanan bu kuşak geleneksel spordan ziyade dijital oyunlarla farklı bir noktaya gelmiştir. Özellikle pandemi döneminde bu dijital spor mecrası Z kuşağının sosyalleşme alanına dönüşmüştür.

Tüm spor karşılaşmaları yapay savaşlar ve kurgusal çatışmalardır ve en yüksek seviyede ilgi ve tutku yaratmak için tasarlanarak oluşturulmuştur (Esslin, 2001). Tutkuyla beraber keyif ve coşku da sporun öncül duygu durumlarından. Belirli kurallar dahilinde bedenin de aktif olmasıyla oyun ve eğlencenin birleştirilerek, sonucunda taraflara belirli ödüllerin verildiği çeşitli spor dalları oluşturulmuştur (Kaplan, 2016). Fiziksel olarak çaba sarf edilmediği için geleneksel spor kavramından farklı olduğu düşünülen ve bu sebeple bir sportif aktivite olarak tanımlanamayacağına dair görüşleri beraberinde getiren e-Spor, dijital oyunlar çerçevesinde yapılan turnuvalar ve verilen ödüllerle kurumsal olarak gelişmekte ve final karşılaşmalarının çevrimiçi olarak yüz milyondan fazla izlenmesiyle (CNBC, 2019), geleneksel sporlar için düşündürücü bir unsur haline gelmiştir.

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## **PECULIARITIES OF GEORGIAN-TURKISH COOPERATION IN THE REGIONAL AND GLOBAL CONTEXT**

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### **Abstract**

Turkey was one of the first countries to recognize Georgia's independence on December 16, 1991, after the disintegration of the Soviet Union. Diplomatic relations between the neighboring countries began on May 21, 1992, one year later. After Turkey recognized Georgia as an independent state, the relations between the two countries have successfully developed in all the fields of strategic cooperation: political, trade-economic, and cultural-humanitarian. Turkey has been Georgia's largest trade partner and hugely has supported Georgia's Euro-Atlantic aspirations. Special attention should be paid to the cooperation, which has not only a regional but also global nature. The big projects such as the Baku-Tbilisi-Ceyhan oil pipeline, the Baku-Tbilisi-Erzurum gas pipeline, and the Baku-Tbilisi-Kars railway were implemented with the joint efforts of Azerbaijan, Turkey, and Georgia. Realization of these big projects has taken the formats of cooperation between the two countries to a qualitatively new and the highest level of development.

This article examines the growing cooperation between Georgia and Turkey after Georgia's independence.

**Keywords:** Turkey, Georgia, strategic partnership, economy, energy policy.

### **Retrospective Analysis of Georgian-Turkish Relations Since 1991**

Turkey is situated at the intersection of the Balkans, Caucasus, Middle East, and the eastern Mediterranean. It is among the largest countries of the region of population and territory, and its land area is greater than that of any European state. The country is bounded on the north by the Black Sea, on the northeast by Georgia and Armenia, on the east by Azerbaijan and Iran, on the southeast by Iraq and Syria, on the southwest and west by the Mediterranean Sea and the Aegean Sea, and on the northwest by Greece and Bulgaria. Turkey is surrounded by the sea on three sides, is also a mixture of Eastern and Western civilizations. It is a democratic, secular, constitutional republic ruled by Recep Tayyip Erdogan. Erdogan's name is linked with modern Turkey's Europeanization, and this is the country's integration into the wider European family of loud statements. According to the central intelligence agency of the Federal Government of the US, Turkey, which really has the right to become one of the dominant, accountable, and most importantly, an independent actor among the other leading political players of the world.

The Republic of Turkey is one of the most valuable and reliable regional partners of Georgia, which contributes to the long-term peace and future development of the country.

Official Ankara openly expresses his support to Georgia about the occupied regions of the country. It shares the US and EU positions on Georgia's territorial integrity and sovereignty and condemns Russia's aggressive foreign policy towards Tbilisi. Ankara makes a significant contribution to Georgia's Euro-Atlantic integration and hugely contributes to strengthening the Georgian army. Turkey also supported Georgia in the aftermath of September 11, 2001, when the Russian Federation directly accused the Georgian government of protecting Chechen terrorist groups in the Pankisi Gorge.

Thus, from the very first years of gaining independence, Turkey supports the economic development of Georgia and welcomes the country's aspiration towards European and Euro-Atlantic integration (**Vindimian, 2010: 8**). Ankara is particularly interested in achieving long-lasting peace and stability in the Black Sea region. Under the leadership of Turkey, the Black Sea Economic Cooperation Organization (BSEC) was formed on June 25, 1992, with the unification of eleven countries. The main goal of the organization was political and economic integration and harmonious relations among the countries of the Black Sea region (**BSEC, 2018**).

BSEC was supposed to contribute to the peaceful settlement of Georgia's ethnic conflicts, but the Turkish government failed to do so, partly because of the complex nature of the Georgian conflicts. The situation was especially complicated by the factor of the Commonwealth of Independent States Commonwealth of Independent States (CIS), through which Russia maintained direct and indirect influence over the post-Soviet space. In Western scientific circles, CIS was an attempt to restore the Soviet Union by Kremlin.

It is known that Georgia joined the CIS in 1993 under increasing pressure from Moscow. Consequently, Russia, has in fact, "legalized" its peacekeeping contingent in Georgia. Thus, all efforts of Turkey in the context of Georgia's territorial integrity ended in vain. Back in 1992-1993, the Turkish government actively supported Georgia's territorial integrity. It is known that Vladislav Ardzinba visited Turkey several times during the war in Abkhazia, but the Turkish government did not welcome him (**Manchkhashvili, 2013**). If before the collapse of the Soviet Union, Turkey considered Georgia to be exclusively under Russian influence and avoided interfering in Georgia's "internal affairs", Following the collapse of the Soviet Union, Ankara radically changed its foreign policy course towards its neighboring independent state and began to set up diplomatic relations with Tbilisi.

Morover, it is also important to mention the "double standards" of the Republic of Turkey towards the Abkhaz region and ethnic Abkhazians. Turkey has always had a special loyalty to the Abkhazians, which has been repeatedly expressed in trade and economic relations between Istanbul and the de facto government of Abkhazia. Although, supporting Georgia's territorial integrity, Turkey did not recognize Abkhazia as an independent state, on the other hand, in an informal format, it maintained an active cooperation with Sokhumi in a trade and economic context, that was, of course, an illegal act. (**Topuridze, 2015**) Furthermore, there are more ethnic Abkhazians living in Turkey today than in Abkhazia itself. Despite the above-mentioned, relations among the Republic of Turkey and Georgia's breakaway region of Abkhazia, Turkey, and Georgia continue to pursue mutually beneficial partnerships.

Turkey played a crucial role and did its utmost to provide that Georgia would perform the transit function of natural resources. The project was crucial to Georgia's security and, for Georgia, to some extent; it meant a "release" from Russian economic and political pressure. Although Georgia maintained good neighborly relations with Armenia, Georgia and Turkey jointly stood against their common enemy-Russia.

Georgian-Turkish relations entered an active phase during the presidency of Suleyman Demirel. During this period, more than 70 agreements were signed among the neighboring countries in the fields of trade, transport development, infrastructure modernization-construction, energy pipelines, and so on. Steel materials and agricultural products were exported from Georgia to Turkey, and various products and construction materials were

imported from Turkey to Georgia (**Beridze, 2017: 77**). Due to the difficult economic conditions in Georgia in the 1990s, the country was supplied with electricity from Turkey. During the winter, 300 million kilowatts of electricity was supplied to Georgia by Turkey, based on an agreement between the two countries.

In 1994, while visiting Georgia, Suleyman Demirel stated that;

Turkey has always supported and defended the principles of protecting its international borders in the South Caucasus, which is the main criterion for achieving stability in the Caucasus region in the long-term perspectives since it is home to various ethnic groups. At the same time, economic cooperation between the countries of the region is of great importance for the establishment of peace and stability in the region. Hopefully, our relations will turn the Black Sea into a Sea of friendship and prosperity. (**Parliamentary Committee on Foreign Relations of Georgia, 2008 p. 2**)

The positive dynamics of relations between Georgia and Turkey could be explained by several factors. On the one hand, Georgia had an important place for Turkey to connect with the Turkic-speaking countries in Central Asia. A clear illustration of the mentioned was The Sarpi checkpoint, which has become the only corridor and commercial location connecting Turkey with the Turkic-speaking republics. Furthermore, as mentioned above, Georgia viewed Turkey as the only way to defend itself from the Russian political, economic, and military pressure. Furthermore, NATO member state support for Georgia was of great importance to the country and saw Turkey as a "window to Europe" (**Aras, 2011: 53-68**).

As mentioned above, from Georgia's perspective, Turkey could play an important role in supporting Georgia's membership in the European Union and NATO. Shevardnadze's government made every effort to become a key country in transporting energy resources from the South Caucasus to the European market. The trade and economic relations between Georgia and Turkey deserve special attention. Turkey has become Georgia's second trade partner, and it was interested in further strengthening trade relations with Georgia since it was a small but stable market for Turkish products (**Jandieri, 2016: 5-6**). In the second half of the 1990s, through Turkish company TAV, the airports of Tbilisi and Batumi were reconstructed, which later became a hub connecting the European and Asian cultures and made traveling in Europe and Asia through Georgia more comfortable (**Jandieri, 2016: 5**). Turkish Airlines have connected Tbilisi to Western European countries using Turkey's largest cities, Istanbul and Ankara, laying the groundwork for new opportunities for economic development.

In the late 1990s, the Turkish government declared that energy projects in the region involving Georgia was vital to the country, and deepening economic relations with Georgia would become one of the priorities for Turkish foreign policy. In 1998, Turkish Prime Minister Mesut Yilmaz paid an official visit to Tbilisi, emphasized that Turkey stood by Georgia on the path to prosperity and economic growth, and expressed readiness to further deepening and improving mutually beneficial cooperation with Tbilisi. Soon, a Georgian government delegation led by President Eduard Shevardnadze visited Ankara as well.

According to Georgian expert Mamuka Areshidze, Turkey's growing cooperation with Georgia is linked to the weakening of Russia's interests in the South Caucasus. After Turkey could not pursue its geopolitical interests in the North Caucasus, due to Russia's fierce resistance there, Turkey moved to the South Caucasus, where it seeks to balance Russia in the region by involving Georgia in the transportation of Caspian energy to the European market. "NATO's member state and historical player in the Caucasus – Turkey, is the main threat to Russia's presence in the region," said the expert (**Areshidze, 2015: 145-146**).

Special attention should be paid to the military cooperation between Georgia and Turkey (**Arshakyan, 2015: 123**). Military-technical cooperation between Tbilisi and Ankara reached its peak during the rule of Suleyman Demirel when Turkey provided material and technical assistance to Georgia in many directions (**Uslu, 2003: 164-187**). Georgia has benefited from several Turkish-initiated grant projects, including a \$5 million grant to build



and repair military facilities and modernize the Georgian Military Academy (**Гаджиев, 2001: 463**). Georgian military forces served in the very first NATO peacekeeping mission - "Kosovo Forces" - KFOR – together with the Turkish contingent. President Shevardnadze has consistently estimated Georgian-Turkish relations as a “strategic partnership” and helped to maintain a positive dynamic in relations with Turkey (**Ministry of Defense of Georgia, 2018**).

The Baku-Tbilisi-Ceyhan Pipeline transports crude oil from the Azerbaijanian oil fields in the Caspian Sea to Turkey's Mediterranean port of Ceyhan via Georgia. From Ceyhan, the crude oil is then shipped to European countries and to global oil markets. 3.9 billion dollars was spent on the construction of the Baku-Tbilisi-Ceyhan Pipeline. About 15.000 people were employed during the construction. Almost 70% of BTC costs were funded by third parties, including the International Finance Corporation (IFC), the European Bank for Reconstruction and Development, export credit agencies of seven countries, and a syndicate of 15 banks. (see the map 1). The construction of the Baku-Tbilisi-Ceyhan Pipeline began in 2002 and was completed in 2006. Almost at the same time, the construction of the Baku Tbilisi-Erzurum (BTE) gas pipeline was launched, which runs parallel to the Baku-Tbilisi-Ceyhan Pipeline. This pipeline transports natural gas from the Shah Deniz gas field to Turkey. The Baku-Tbilisi-Erzurum (BTE) gas pipeline is the first gas pipeline running from the Caspian region to the Western world without relying on the Russian Gazprom. These energy projects have strengthened relations between neighboring countries and have increased their geopolitical importance (see map 2) (**Modebadze and Sayin, 2014: 362**).

Along with the Baku-Tbilisi-Ceyhan oil and Baku-Tbilisi Erzurum gas pipelines, special attention should be paid to the Baku-Tbilisi-Kars railway, which was launched in reverse mode on December 4, 2020, and for the first time in history, provided the transportation of export cargo from Turkey to China via Georgia. (See map3). A 42-carriage train from the Turkish city of Istanbul to the Chinese province of Xi'an will cover 8,700 kilometers in 12 days and pass through the territory of 7 countries. This, in turn, gives the countries involved in the project a new, unique opportunity for greater economic profits and global trade between Europe and Asia. Activation of the railway corridor "... is very important in the future not only for the further development of our country's transit function but also for easier entry of Georgian export products to China and entry into the Chinese market since China is our number one export partner"- stated Natia Turnava, Minister of Economy and Sustainable Development of Georgia (**PTN, 2020**).

Under Michael Saakashvili, Turkey maximum facilitated Georgia's accession to NATO, which was reaffirmed during the Turkish President's visit to Georgia in March 2006. Ahmed Nejet Sezer declared that Turkey supports Georgia's territorial integrity and welcomes any step taken by the country towards NATO membership. Yet, in 2000 Turkish then-President Suleyman Demirel initiated Caucasus Stability Pact to strengthen regional security. The initiation included a 3 + 3 + 2 format involving three countries in the South Caucasus (Georgia, Armenia, and Azerbaijan), three major countries bordering the region, (Turkey, Russia, and Iran), as well as the European Union and the United States. The idea, which was even endorsed by the then President of Armenia Robert Kocharian, did not be implement due to Russia's skepticism towards the Turkish format.

Turkish President Recep Tayyip Erdogan introduced The second security format during his official visit to Russia on August 11, 2008. “The Caucasus Security Platform” was based on the 3 + 2 format, with the involvement of the three countries of the South Caucasus (Georgia, Armenia, and Azerbaijan), including Turkey and Russia, but excluding the United States, the European Union and Iran. This format failed to implement due to several subjective or objective arguments. The Georgian side refused to start a negotiation with the "occupant" country (Russia) and Armenia did not approve the idea as well. Yerevan opposed the exclusion of Iran from the security platform; the same view was shared by the US. The collapse of these formats shows how differently the three countries of the South Caucasus

understand the security and the challenges connected with it. Another issue is Russia's position, which directly or indirectly rejects Turkey's "interference in its backyard".

Unlike the United States and the West, which have strongly condemned Russia's military intervention in Georgia and directly blamed Russia for the war and its subsequent escalation, Turkey chose for a more diplomatic policy on the issue. The Turkish President stated that although Turkey supports Georgia's territorial integrity and stable coexistence between the countries of the Black Sea region, it cannot ignore Russia as Turkey's first trading partner; an important and accountable country (Vindimian, 2010: 5). This position is not surprising, since Russia supplies Russia with 2/3 of its energy and Ankara has billion-dollars of trade and economic relations with Moscow. Considering the abovementioned, it is clear that Turkey was acting to achieve its national interests.

On December 11, 2020, Turkish President Recep Tayyip Erdogan initiated the creation of another platform in the South Caucasus, which aims to enhance cooperation between Turkey, Georgia, Azerbaijan, Russia, and Iran. The President of Turkey believes that the so-called "Six Format" will significantly contribute to the rapprochement and stable development of the countries in the region. Erdogan welcomes Armenia's involvement in the initiative and believes that it will be a great opportunity to start a qualitatively new phase in relations between Ankara and Yerevan after resolving the Nagorno-Karabakh conflict (DAILY SANAH, 2020).

### **Conclusion**

Thus, since 1991, Georgian-Turkish relations have been characterized by positive dynamics, both regionally and globally. The Turkish government is trying its best to set up a firm partnership with Georgia. One of the main determinants of this can be considered the favorable geographical location of Georgia. The establishment of a high degree of partnership and trust between neighboring countries were conditioned by the implementation of large-scale oil and natural gas projects, which gave Georgia special weight on an international arena.

Although many scholars believe that the second phase of Saakashvili's presidency was more like an authoritarian regime than a democratic one, it is believed that at the initial stage he made a significant contribution to bringing the country closer to the Western World and presenting Georgia to the international arena from a completely different perspective. According to Saakashvili, Turkey would become a "new window" for Georgia.

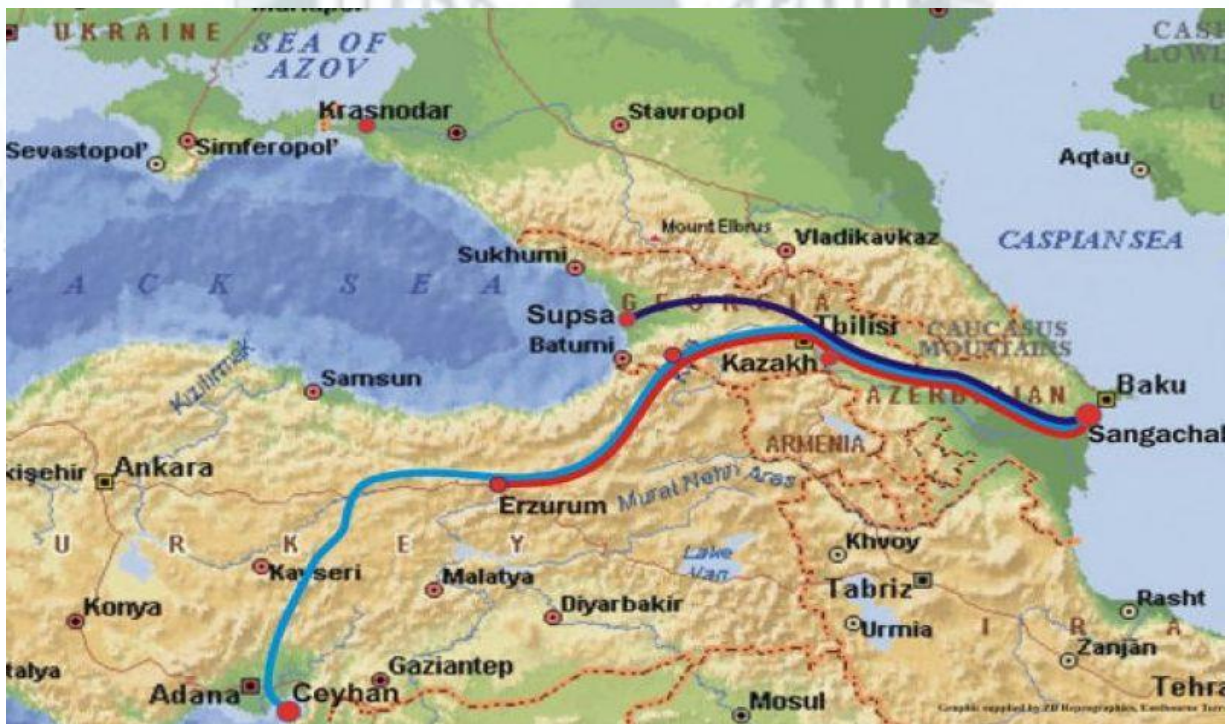
Georgia's special attitude towards Turkey has also been reflected in the national security concept of the country, which emphasized that Georgia saw Turkey as a central partner in the Black Sea region. Turkey, in its part, has been promoting lasting peace, stability, and security in the South Caucasus region, and has offered the West a "Black Sea regional cooperation project", which has been approved by the United States. Turkey actively continued to provide financial and moral support to Georgia following the Russian-Georgian war. The Russian factor has put the economic relations between the two countries in a more active phase. After the extremely deteriorating relations with Russia and the closure of the Russian market for Georgia, the diversification of the Georgian market became critically important for Tbilisi. Since November 2008, a free trade regime was launched between Turkey and Georgia and Ankara has become the main trade partner of Tbilisi.

## Turkish-Georgian Projects

Map 1. Baku-Tbilisi-Ceyhan oil pipeline<sup>1</sup>



Map 2. Baku-Tbilisi-Erzurum gas pipeline<sup>2</sup>



1 Source: Baku-Tbilisi-Jeyhan oil pipeline. Available from:  
<http://www.wermac.org/misc/pipelines.html>

Map 3. Baku-Tbilisi-Kars railway project <sup>3</sup>



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2 Source: Baku-Tbilisi-Erzurum gas pipeline. Available:

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3 Source: Baku-Tbilisi-Kars railway project. Available: <https://eurasian-research.org/publication/recent-developments-in-the-baku-tbilisi-kars-railway-project/>

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## **CRITICAL THINKING IMPACT ON EDUCATION IN AZERBAIJAN**

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### **Abstract**

This article explains the importance of critical thinking in education and the impact of use of it on students' improvement in Azerbaijan. There is new future significant and innovative skills appear year by year. One of them is critical thinking ability that is vital stage in learning and teaching. According to Meyer (1976) the aim of education is to nurture the individual, to help, to realize the full potential that already exists inside him or her. There has always been a strand of educational thought that held that the strengthening of the child's thinking should be the chief business of the schools and not just an incidental outcome – if it happened at all (Lipman, 2003). This study reveals the positive effects, benefits of the critical thinking and the technics how to improve it critical thinking more widely. In 2006 the government of the Republic of Azerbaijan enacted new National Curriculum which started to be implemented in schools all over the country in 2008. The new National Curriculum was developed in order to meet as fully as possible the increasing demands for high-level skills, creativity, abilities of critical thinking and life-long learning which was brought by the changes in the modern Azerbaijani society. This article explains what happened after critical thinking came out with National Curriculum Program into Azerbaijan education and caused some changes. This research shows the result of critical thinking on education in Azerbaijan.

**Keywords:** Critical thinking, analyzing, problem solving, decision making, reasoning.

### **Introduction**

“We cannot solve our problems with the same thinking we used when we created them”.

Albert Einstein

### **Critical Thinking**

Critical thinking is the ability to think clearly and rationally about what to do or what to believe. It includes the ability to engage in reflective and independent thinking. (philosophy.hku.hk) Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.( Michael Scriven & Richard Paul, 1987)

Every business, at every career level, from entry-level associates to top executives, requires critical thinking skills. Good critical thinkers can solve problems both individually and collaboratively. Critical thinking can help with issues like process inefficiencies, management, finances and education.

## **Critical Thinkers**

These are only a few of the critical thinkers that have influenced our modern lives: Albert Einstein, Henry Ford, Marie Curie, and Sigmund Freud. Critical thinkers are actively seeking to further their skills and participate in autonomous self-learning. Since they can achieve new levels of self-improvement and self-actualization, they make some of the best leaders. What are the most crucial defining characteristics of effective critical thinkers? Effective critical thinkers don't believe anything they hear. They never stop asking questions and enjoy investigating all sides of a problem as well as the deeper truth hidden inside all types of data. As a result, logical thinkers are also natural problem solvers. 16 characteristics of critical thinkers are the following: (Deep Patel, p1-3)

1. Observation  
Careful observation includes our ability to document details, and to collect data through our senses. Our observations will eventually lead to insight and a deeper understanding of the world.
2. Curiosity  
Curiosity is a core trait of many successful leaders. Instead of taking everything at face value, a curious person will wonder why something is the way it is.
3. Objectivity  
Good critical thinkers focus on facts, and on the scientific evaluation of the information at hand. Objective thinkers seek to keep their emotions (and those of others) from affecting their judgment.
4. Introspection  
This is the art of being aware of your thinking - or, to put it another way, thinking about how you think about things. This is your ability to examine your inner-most thoughts, feelings and sensations. Introspection is closely related to self-reflection, which gives your insight into your emotional and mental state.
5. Analytical thinking  
The best analytical thinkers are also critical thinkers, and vice versa. The ability to analyze information is key when looking at any almost anything, whether it is a contract, report, business model or even a relationship.
6. Identifying biases  
Critical thinkers challenge themselves to identify the evidence that forms their beliefs and assess whether or not those sources are credible. Doing this helps you understand your

own biases and question your preconceived notions. When looking at information, ask yourself who the information benefits. Does the source of this information have an agenda? Does the source overlook or leave out information that doesn't support its claims or beliefs?

**7. Determining relevance**

One of the most difficult parts of thinking critically is figuring out what information is the most relevant, meaningful and important for your consideration. In many scenarios, you'll be presented with information that may seem valuable, but it may turn out to be only a minor data point to consider. Consider if a source of information is logically relevant to the issue being discussed. Is it truly useful and unbiased, or is it merely distracting from a more pertinent point?

**8. Inference**

Information doesn't always come with a summary that spells out exactly what it means. Critical thinkers need to assess the information and draw conclusions based on raw data. Inference is the ability to extrapolate meaning from data and discover potential outcomes when assessing a scenario.


**9. Compassion and empathy.**

Having compassion and empathy may seem like a negative for critical thinkers. After all, being sentimental and emotional can skew our perception of a situation. Without compassion, we would view all information and situations from the viewpoint of cold, heartless scientific facts and data. Not everything we do is about detached data and information, it's also about people.

**10. Humility**

When you have humility, you are aware of your flaws, but also your strengths, and this is an important element in critical thinking and being willing to stretch and open your mind. When you have intellectual humility, you're open to other people's viewpoints, you recognize when you're wrong and you're willing to challenge your own beliefs when necessary.



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11. Willing to challenge the status quo. Critical thinkers are looking for smart, thoughtful answers and methods that take into account all the current and relevant information and practices available.
12. Open-mindedness Critical thinkers don't jump to conclusions. They approach a question or situation with an open mind and embrace other opinions and views.
13. Aware of common thinking errors. They are aware of common logical fallacies, which are errors in reasoning that often creep into arguments and debates.
14. Creative thinking Effective critical thinkers are also largely creative thinkers. Creative thinkers reject standardized formats for problem solving they think outside the box. They have a wide range of interests and adopt multiple perspectives on a problem.
15. Effective communicators An effective critical thinker must be able to relay his or her ideas in a compelling way and then absorb the responses of others.
16. Active listeners They are also careful to engage in active listening and really hear others' points of view. Instead of being a passive listener during a conversation or discussion, they actively try to participate.

### **Critical thinking and education**

One of the most important goals of education is to create well-informed learners, which means that students should be able to comprehend important, useful, beautiful, and strong ideas. Another goal is to develop learners who are eager to think critically and analytically, to apply what they have learned to improve their own lives and to contribute to their community, culture, and civilization. Any university student who succeeds is expected to be an excellent critical thinker. A critical thinker is someone who is capable of thinking at a higher level. Students are encouraged to think critically so that their thoughts can improve their lives and the lives of those around them.

Critical thinking enables students to:

- think about and evaluate their own thinking and behavior on issues related to health education, physical education, and home economics
- make reasonable and defensible decisions about issues related to individual and community well-being

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- challenge and take action (individually and collectively) to address social, cultural, economic, and political inequalities
- understand the role and significance of the movement culture and its influence on our daily lives and the lives of people in our community.( <https://health.tki.org.nz/>)

In order to help their students to develop critical-thinking skills and to take critical action, teachers need to:

- have a sound knowledge base from which to support students as they delve more deeply into content
- remain open to challenge by students, not representing themselves as the sole source of knowledge
- encourage students to look at the big picture by engaging them in critical-thinking processes that have relevance beyond the classroom
- be prepared to listen to voices that originate in the classroom and to use students' personal experiences as starting points for gathering information
- encourage students to question and challenge existing beliefs, structures, and practices
- avoid offering 'how to do it' approaches
- encourage students to be sensitive to the feelings of others
- provide opportunities for inquiry by giving students time for planning, processing, and debriefing
- structure lessons so that students can work safely and co-operatively and develop creative forms of shared responsibility
- encourage students to take critical action. When students learn to use democratic processes inside the classroom, they can transfer these to situations outside the classroom. (Smyth 2000, p 507.)

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## PERLİTİN SU BAZLI SONDAJ AKIŞKANLARINDA KATKI MADDESİ OLARAK KULLANILMASI

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### Özet

Son yıllarda gelişen teknolojilerin kullanılması ve çevre korumaya yönelik yasal düzenlemelerin getirdiği yeni yükümlülüklerle çözüm bulma arayışına paralel olarak kara ve deniz sondajlarında önemli bir maliyet artışının olduğu görülmektedir.

Kayaç ve kırıntılarının yüzeye taşınması, yer altı basıncının kontrol edilmesi, sondaj kuyusunun denge ve desteğinin sağlanması, kuyu tabanının temizlenmesi, matkap ile sondaj dizisinin soğutulması ve yağlanması, göçme ve oyuk oluşumuna engel olmak için geçirimsiz bir pastanın oluşturulması, yüksek basınçlı formasyonların kontrol edilmesi, dizi ve koruma borularının taşınması ve korozyona karşı koruyuculuk gibi görevleri olan ve sondaj faaliyetlerinin önemli bir maliyet kalemini oluşturan sondaj akışkanının özelliklerinin iyi ayarlanması başarılı bir sondaj operasyonu için oldukça önemlidir.

Bu çalışmada; sondaj operasyonlarında çevre dostu özelliği nedeniyle oldukça yoğun olarak kullanılan su bazlı sondaj akışkanına ham perlit eklenerek, akışkanın özelliklerinin iyileştirilmesi amaçlanmıştır.

Bu amaçla farklı oranlarda (% 0.5, 1, 2, 3, 4 ve 5 k/h) ham perlit eklenerek hazırlanan sondaj akışkanı numunelerinin; plastik viskozite (PV), görünür viskozite (AV), kopma (akma) noktası (YP), jel mukavemeti (10 saniye, 10 dakika) gibi reolojik özellikleri ile sıvı kaybı ve kek kalınlığı gibi filtrasyon özellikleri Amerikan Petrol Enstitüsü (API) standartlarına uygun olarak incelenmiştir.

Gerçekleştirilen bu çalışmada; spud çamur reolojik ve filtrasyon özelliklerinin sonuçları ile farklı oranlarda ham perlit katkılı olarak elde edilen çamurun reolojik ve filtrasyon özelliklerinin sonuçları karşılaştırılmıştır. Karşılaştırma neticesinde; plastik viskozite, görünür viskozite, kopma noktası, 10 saniye ve 10 dakika, kek kalınlığı değerlerinin sırasıyla, % 58.3, % 60.6, % 66.6, % 18.18, % 15.38, %14.8 oranında arttığı tespit edilmiştir. Bunların yanı sıra; sıvı kaybı değerinin ise % 14.5 oranında azaldığı bulunmuştur.

**Anahtar Kelimeler:** Su bazlı sondaj çamuru, Ham perlit, Reolojik ve Filtrasyon özellikler, API standartları.

## USING PERLITE AS ADDITIVE IN WATER-BASED DRILLING FLUID

### Abstract

In recent years, it has been observed that there has been a significant cost increase in offshore and onshore drilling in parallel with the use of developed technologies and the search for a solution to the new obligations imposed by legal regulations on environmental protection.

It is very important for a successful drilling operation to adjust the properties of the drilling fluid, which has functions such as carrying the protection pipes and protecting against corrosion, controlling underground pressure, ensuring the balance and support of the drilling well, cleaning the bottom of the well, cooling and lubricating the drilling string with a drill, forming an impermeable paste to prevent collapse and pitting, controlling high pressure formations, carrying protection pipes and protecting against corrosion and constitutes an important cost item of drilling activities.

In this study; It is aimed to improve the properties of the water-based drilling fluid, which is used extensively in drilling operations due to its environmental friendliness, by adding raw perlite.

For this purpose; rheological and filtration properties such as plastic viscosity (PV), apparent viscosity (AV), rupture point (YP), gel strength (10 seconds, 10 minutes), fluid loss and cake thickness of drilling fluid samples prepared by adding raw perlite in different proportions (% 0.5, 1, 2, 3, 4 and 5 w/v) were examined in accordance with American Petroleum Institute (API) standards.

In this work carried out; The results of the rheological and filtration properties of spud sludge and the rheological and filtration properties of the sludge obtained by adding raw perlite in different proportions were compared. As a result of comparison; It was determined that PV, AV, YP, 10 seconds and 10 minutes, cake thickness values increased by respectively 58.3%, 60.6%, 66.6%, 18.18%, 15.38%, 14.8%. Besides these; it was found that the value of fluid loss decreased by 14.5%.

**Keywords:** Water-based drilling mud, Raw perlite, Rheological and Filtration properties, API standarts.

### 1.GİRİŞ

Eski zamanlarda günümüzde de olduğu gibi içme suyu amaçlı birçok kuyu kazılmıştır. Bu kuyular kazılırken sert formasyonları yumuşatmak amacıyla su dökülerek formasyon yumuşatılmış ve kuyuda biriken kırıntıları işçilerin bir kova yardımıyla yüzeye taşınması ile ilk sondaj sıvısı kullanımı gerçekleşmiştir (Özüdoğru ve Babür, 2001). Zamanla sondaj sırasında delinen killi formasyonlardan suya karışan killilerle oluşan çamurun, sondajı olumlu yönde etkilediği gözlemlenmiş ve sondaj çamuru ortaya çıkmıştır (Ersoy, 2008).

Sondaj çamuru kullanılacağı formasyondaki bazı temel görevleri yerine getirmesi için geliştirilmiştir. Bu görevler; kırıntıların yeryüzüne taşınması, geçirimsiz bir pastanın oluşumu, göçme ve oyuk oluşumuna engel olma, kuyu tabanının temizlenmesi, yüksek basınçlı formasyonları kontrol etme, dizi ve koruma boruları ağırlığının taşınmasında yardımcı olma, korozyona karşı koruma, matkap ile sondaj dizisini soğutmak ve yağlamak gibi önemli görevlerdir. Kullanılacak sondaj çamuru, bu görevleri yerine getirebilmesinin yanı sıra kolay uygulanabilir, çevre dostu ve ekonomik olmalıdır.

Sondaj çamurları; Su Bazlı, Organik Bazlı, Hava Bazlı olmak üzere 3 gruba ayrılır (Amanullah ve diğerleri, 2011). Sondaj operasyonlarının yaklaşık % 80'inde, diğer çamur türleri ile kıyaslandığında daha ekonomik olan su bazlı sondaj çamurları kullanılmaktadır. Su bazlı sondaj çamurları; su, bentonit ve baritin yanı sıra çeşitli katkı maddeleri veya kimyasalların belirli oranlarda birbiri ile karıştırılmasıyla elde edilir (William ve diğerleri, 2014).

Yüksek kaliteli bir sondaj sıvısının, sondaj işlemlerini daha kolay ve uygun maliyetli hale getirdiği bilinmektedir. Bu amaçla, sondaj sıvılarının ilgili özelliklerini iyileştirmek için, genellikle polimerler, cevherler ve nano malzemeler gibi katkı maddeleri farklı konsantrasyonlarda ve tane boyutlarında kullanılmaktadır (Amanullah ve Yu, 2005).

Literatürde bazı endüstriyel minerallerin sondaj sıvısının reolojik özelliklerini iyileştirmek için çamur katkı maddesi olarak kullanıldığı ancak yine de istenilen noktaya henüz varılamadığı tespit edilmiştir. Dolayısıyla; nano ve mikro boyutlu maddeler eklenerek sondaj çamurlarının özelliklerinin daha da iyileştirilmesine yönelik çalışmaların devam ettiği görülmüştür (Özkan ve Özkan, 2019; Singh ve Ramadan, 2010; Özkan ve Kaplan., 2019; Bicerano, 2009; Özkan, ve ark., 2018a; Bageri ve ark., 2018; Özkan, ve ark., 2018b; Özkan, ve ark., 2017a; Özkan, ve ark., 2017b;).

Bu çalışmada perlitin farklı tanecik boyutunda ve farklı konsantrasyonlarda (% k / h) eklenmesiyle elde edilen sondaj çamurlarının; plastik viskozitesi, görünür viskozitesi, jel mukavemeti gibi reolojik özellikleri FANN 35 viskometre cihazı ve su kaybı ile sondaj çamuru kek kalınlığı ise Amerikan Petrol Enstitüsü (API) sıvı kaybı test ekipmanları kullanılarak, API standartlarına göre detaylı bir şekilde analiz edilmiştir (API 13B-1, 2009; API 13 A, 2010).

## 2.MATERYAL VE YÖNTEM

### 2.1 Materyal

Çalışma kapsamında kullanılmak üzere Türkiye Petrolleri Anonim Ortaklığı'dan (TPAO) Bentonit ve Barit, Genper Madencilik SA. TİC. LTD. ŞTİ.'den de (GENPER) katkı maddesi olarak ham perlit temin edilmiştir.

Perlit, obsidiyenin hidrasyonu sonucu oluşan, nispeten yüksek su içeriğine sahip asidik karakterli volkanik bir camdır. Bir sondaj sıvısında perlitin varlığı, filtre keki oluşumunu kolaylaştırabilir ve sondaj sırasında (genişlemesi nedeniyle) sızdırmazlık özelliğini artırabilir. Perlitin başka bir kullanım alanı derin sondajlarda çimentolama işlemini kolaylaştırıcı katkı maddesi olarak kullanılmasıdır (Tablo 1).

Tablo 1: Perlitin fiziksel ve kimyasal özellikleri

Özellik	Değerler
Renk	Gri, gri tonları ve siyah
Yumuşama	870 - 1100 °C
Ergime noktası	1310 - 1380 °C
pH	6,5 - 8,0
Ağırlık	2,0 - 2,4 g/cm <sup>3</sup>
SiO <sub>2</sub> (%)	71,0 - 72,0
Al <sub>2</sub> O <sub>3</sub> (%)	13,1 - 13,5
Na <sub>2</sub> O (%)	3,3 - 3,5
K <sub>2</sub> O (%)	5,5 - 5,7
CaO (%)	1,0 - 1,3

Fe <sub>2</sub> O (%)	1,0 - 1,1
MgO (%)	0,1 - 0,2
TiO (%)	0 - 0, 1

## 2.2. Su Bazlı Sondaj Çamuru

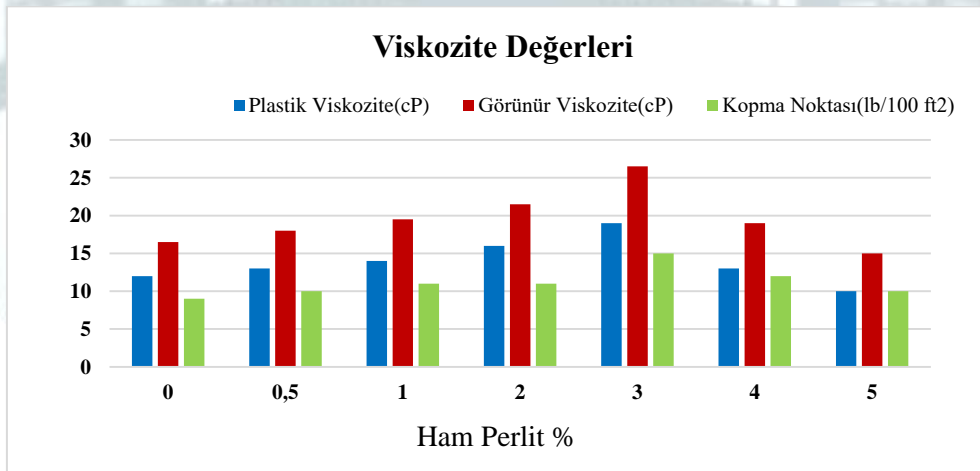
Su bazlı çamurları hazırlanırken 500 g su, 31.25 g bentonit ve 14.25 g barit 15 dakika boyunca yüksek hızlı mikser ile karıştırılmıştır. Daha sonra ham perlit 0.5, 1, 2, 3, 4 ve 5 oranlarında (% k/h) ayrı ayrı sondaj çamurlarına eklenmiş ve karıştırılarak iyice homojenize edilmiştir. Daha sonra hazırlanan sondaj çamurları 16 saat boyunca oda sıcaklığında ve atmosferik basınçta bekletilerek yaşlandırma işlemine tabi tutulmuşlardır.

Elde edilen sondaj çamurlarının plastik viskozite, görünür viskozite, jel mukavemeti gibi reolojik özellikleri FANN 35 viskometre cihazı ve su kaybı ile sondaj çamuru kek kalınlığı Amerikan Petrol Enstitüsü (API) sıvı kaybı test ekipmanları kullanılarak, API standartlarına göre detaylı bir şekilde analiz edilmiştir (API 13B-1, 2009; API 13 A, 2010).

## 3. BULGULAR VE TARTIŞMA

### 3.1 Perlit Eklenen Su Bazlı Sondaj Çamurunun Reolojik Özellikleri

Her sıvının olduğu gibi sondaj çamurlarının da bir viskozitesi vardır ve viskozite; akışkanın akmaya karşı gösterdiği direnç olarak tanımlanır. Viskozite ve sondaj sıvısının yukarıya doğru olan hızı, sondaj sıvısının matkabin etrafındaki kesintileri uzaklaştırmadaki ve yukarıya doğru delikte hareket ettirmedeki kabiliyetini belirleyen en önemli faktörlerdir (Baryy ve diğerleri, 2015). Fann viskometresinin 300 rpm ve 600 rpm kadran okumaları ile görünür viskozite (AV), plastik viskozite (PV) ve akma sınırı (kopma noktası) (YP) hesaplanmaktadır. Yapılan çalışma sonucunda sondaj çamurunun viskozite değerleri Şekil 1'de gösterilmiştir.

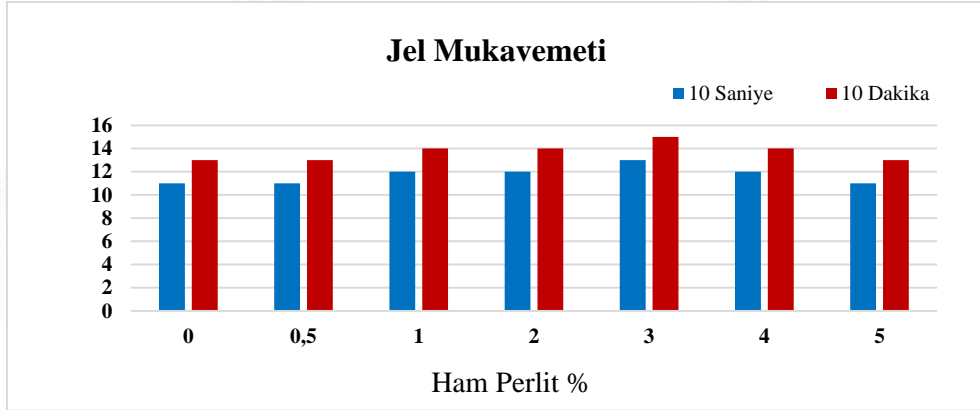


Şekil 1. Perlit Katkılı Su Bazlı Sondaj Çamurunun Viskozite Değerleri

Şekil 1 incelediğinde sondaj çamuruna orantılı eklenen perlitin % 3' e kadar PV, AV ve YP değerlerini sırasıyla % 58.3, % 60.6 ve % 66.6 oranında iyileştirdiği görülmektedir. Çamur viskozitesi ile doğrudan ilişkisi olan sondaj çamuru hidrostatik basıncını geliştirmek için, çamurun uygun bir viskozitede olması gerekmektedir (Bayat ve diğerleri, 2019). Aksi takdirde yüksek viskozite değerine sahip sondaj çamuru, çamur pompasında aşırı basınca, düşük viskoziteli sondaj çamuru ise derin sondajlar için düşük hidrostatik basınca neden olacağından dolayı tercih edilmemektedir (Piroozian ve diğerleri, 2012). Normal şartlardaki

bir sondaj çamurunun plastik viskozitesinin 18-29 cP değerleri arasında olması gerektiği (Aftab ve diğerleri, 2016) göz önüne alınırsa çalışmamızda elde ettiğimiz sonuçların bu tarz sıkıntılarını giderilmesine yönelik yarar sağlayacağı tespit edilmiştir.

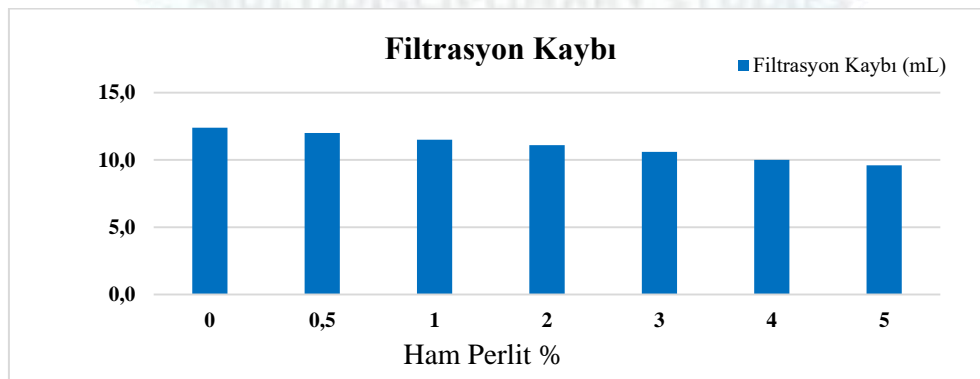
Jel mukavemeti hareketsiz haldeki bir sondaj akışkanının kuyudaki kırıntıları yüzdürme yeteneğidir. Çamur hareketsiz kaldığında jel kuvveti artar. Kopma noktasına benzer şekilde jel mukavemeti de çamurun içindeki katı partiküller arasındaki elektrokimyasal çekim kuvvetinden kaynaklanmaktadır. Durağan haldeki çamurda oluşan jel yapısının gelişimini etkileyen kuvvetlerin statik koşullar altında ölçülmesine ait sonuçlar Şekil 2’ de gösterilmiştir.



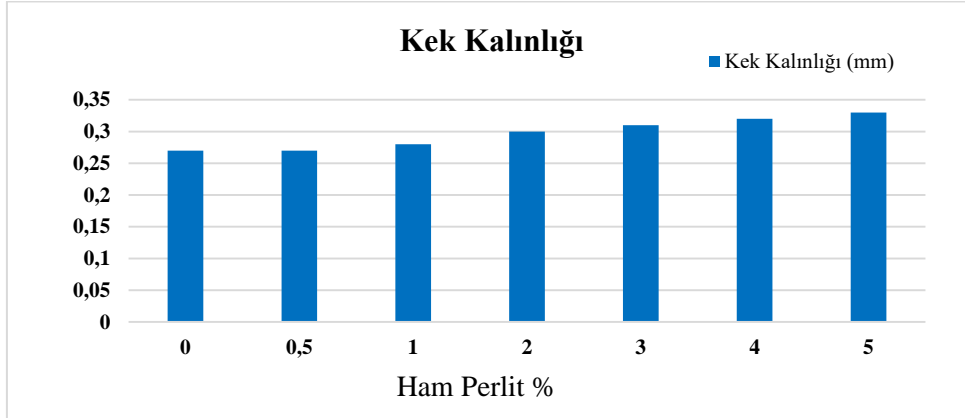
Şekil 2. Perlit Katkılı Su Bazlı Sondaj Çamurunun Jel Mukavemeti Değerleri

Perlit katkılı sondaj çamurunun jel mukavemeti incelendiğinde jel mukavemeti ( 10 saniye, 10 dakika ) değerlerinde % 3’ e kadar orantılı bir şekilde artış gözlemlenmektedir. Genel olarak sondaj sırasında jel mukavemetinin artışı istenmeyecek bir durum olsa da elde edilen bu sonuçlar referans değerlerinden (10 s için 15, 10 dk için 31 ) düşük olduğu için sondaj çamuruna olumsuz yönde bir etkisi olmayacağı tespit edilmiştir.

Çamurun hidrostatik basıncı formasyon basıncından büyük olduğunda, çamur geçirgen zonlarda sıvı kısmını formasyona verirken katı kısmı geçirgen zon yüzeyinde birikerek çamur keki oluşturur bu olaya filtrasyon denir. Genellikle formasyon yüzeyinde ince ve geçirimsiz kek oluşturmak istenir. Bu olay dizi sıkışması, kuyu stabilitesi, üretken zonların kirlenmesi ve kuyu logunun doğru değerlendirilmesi bakımından çok önemlidir (Saboori ve diğerleri, 2012). Çalışmamız sonucunda elde edilen sonuçlar ( Şekil 3 ve 4 ) incelendiğinde perlit miktarının artmasıyla filtrasyon kaybının azaldığı kek kalınlığının ise arttığı görülmektedir. Perlit ilavesinin sondaj çamuru filtrasyon kaybını % 14.5 azalttığı ve kek kalınlığını % 14.8 arttırması kuyu stabilitesinin sağlanması adına olumlu yönde etki ettiği tespit edilmiştir.



Şekil 3. Perlit Katkılı Su Bazlı Sondaj Çamurunun Filtrasyon Kaybı Değerleri



Şekil 4. Perlit Katkılı Su Bazlı Sondaj Çamurunun Kek Kalınlığı Değerleri

## SONUÇ

Bu çalışmada; perlitin su bazlı sondaj çamuruna 1, 2, 3, 4 ve 5 % (k/h) oranlarında eklenmesi sonucu reolojik ile filtrasyon özelliklerindeki olası değişimler araştırılmıştır. Perlitin su bazlı sondaj çamurlarına eklenmesi ile hazırlanan sondaj çamurlarının plastik viskozite, görünür viskozite, kopma noktası, jel mukavemeti (10 s ve 10 dk), filtrasyon kaybı ve kek kalınlığı analizleri API standartlarına göre detaylı şekilde analiz edilmiştir. Çalışma sonucunda elde edilen verilen ışığında perlit eklenmiş sondaj çamurunun, spud (perlit eklenmemiş) çamura kıyasla;

- ✓ Plastik viskozite değerinin % 58.3;
- ✓ Görünür viskozite değerinin % 60.6;
- ✓ Kopma noktası değerinin % 66.6;
- ✓ 10 s değerinin % 18.18;
- ✓ 10 dk değerinin % 15.38;
- ✓ Kek kalınlığı değerini % 14.8 oranında arttırdığı,
- ✓ Filtrasyon kaybı değerinin de % 14.5 oranında azaldığı görülmüştür.

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## **THE IMPACT OF THE OIL STRATEGY ON THE GEOPOLITICAL POSITION OF AZERBAIJAN**

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### **Abstract**

The development prospects of Azerbaijan, that entered the period of independence with a deep socio-economic crisis, mainly depended on the flexible and efficient usage of rich fuel and energy resources. Therefore, at that time, negotiations with leading Western oil companies on the exploration of hydrocarbon fields in the Caspian Sea were intensive.

After the signing on September 20, 1994, the "Contract of the Century" between SOCAR and oil companies representing the United States, Great Britain, Norway, Turkey, Russia and Saudi Arabia, it received more international attention. In the subsequent period, Japanese, Indian and Hungarian companies had also received a share in the agreement. The agreement paved the way for the development of relations with the countries represented in the consortium.

Considering the oil strategy of the Azerbaijani government, one can observe not only its economic goals, but also its geopolitical aspects.

First of all, successively concluded agreements gradually covered a wide geographical area, various states and geographic region, from the United States and Canada to China, Malaysia and Japan, from Great Britain, France and Norway to Turkey, Iran and Saudi Arabia. According to experts, initiative of Azerbaijan to cooperate with these countries, "the strong partnership in the field of energy security has radically changed the geopolitical and geo-economic situation in the region."

By involving the leading countries of the world and the countries of the region in the agreements on the exploration of the Caspian oil and gas fields, Azerbaijan managed to resolve the disputed legal status of the Caspian Sea.

At the same time, a new network of oil and gas export pipelines was created in the region. These pipelines have strengthened the role of Azerbaijan in the energy security of the region and Europe.

Thus, the oil strategy of Azerbaijan has strengthened the geopolitical position of the country along with its economic potential. Successfully implemented with its active participation energy projects have turned the country into a place of large investments and close cooperation between neighboring and leading countries of the world. This was one of the essential factors in enhancing the political prestige and geopolitical role of Azerbaijan, as well as restoring its territorial integrity by defeating Armenia in the Patriotic War.

**Keywords:** oil strategy, "Contract of the Century", geopolitical position of Azerbaijan, Caspian oil fields.

## PETROL STRATEJISİNİN AZERBAJCAN'IN JEOPOLİTİK DURUMUNA ETKİSİ

### ÖZET

Bağımsızlık dönemine derin bir sosyo-ekonomik krizle giren Azerbaycan'ın kalkınması zengin yakıt ve enerji kaynaklarının esnek ve verimli kullanımından daha çok bağımlıydı. Bu nedenle de o zamanlarda Batı ülkelerinin önde gelen petrol şirketleriyle Hazar Denizi'nin hidrokarbon alanlarının kullanımına dair müzakereler yoğun bir şekil almıştır.

20 Eylül 1994'de SOCAR ile ABD, İngiltere, Norveç, Türkiye, Rusya ve Suudi Arabistan'ı temsil eden petrol şirketleri arasında "Yüzyılın Sözleşmesi" imzalandıktan sonra uluslararası arenada bu anlaşmaya dikkat daha da arttı. Sonraki dönemlerde Japon, Hint ve Macar şirketleri de anlaşmadan pay aldı. Anlaşma konsorsiyumda temsil edilen ülkelerle ilişkilerin geliştirilmesinin yolunu açtı.

Azerbaycan hükümetinin petrol stratejisini gözden geçirirken onun sadece ekonomik hedefleri değil, hem de jeopolitik yönleri gözlemlenebilir.

İlk olarak, ard arda imzalanan sözleşmeler yavaş yavaş geniş bir coğrafi alanı – ABD ve Kanada'dan Çin, Malezya ve Japonya'ya kadar, Birleşik Krallık, Fransa ve Norveç'ten Türkiye, İran ve Suudi Arabistan'a kadar farklı devletleri ve jeopolitik bölgeleri kapsıyordu. Uzmanlara göre, Azerbaycan'ın bu ülkelerle işbirliği yapma girişimi, "Enerji güvenliği alanında güçlü bir ortaklık ilişkileri ve aynı zamanda bölgenin jeopolitik ve jeoekonomik durumunu da kökten değiştirdi"

Azerbaycan dünyanın önde gelen devletlerini ve bölge ülkelerini Hazar'ın petrol ve doğalgaz sahalarının kullanımına ait sözleşmelere çekerek, büyük tartışmalara neden olan Hazar Denizi'nin yasal statüsü sorununu çözmeyi başardı.

Aynı zamanda bölgede yeni bir petrol ve gaz ihraç boru hatları bağlantısı kuruldu. Bu boru hatları Azerbaycan'ın bölge ve Avrupa'nın enerji güvenliğindeki rolünü artırdı.

Böylece, petrol stratejisi Azerbaycan'ın ekonomisi ile birlikte, jeopolitik pozisyonunu da güçlendirdi. Onun aktif katılımıyla başarıyla gerçekleştirilen enerji projeleri ülkeyi komşu ve dünyanın önde gelen devletlerinin ağır yatırım ve sık işbirliği yaptığı mekana dönüştürdü. Bu da Azerbaycan'ın siyasi prestijinin, jeopolitik rolünün artmasında ve ayrıca Vatan Savaşında Ermenistan'ı yenerek toprak bütünlüğünü sağlamasında önemli faktörlerden biri oldu.

**Anahtar kelimeler:** petrol stratejisi, "Yüzyılın Sözleşmesi", Azerbaycan'ın jeopolitik pozisyonu, Hazar'ın petrol sahaları.

**Introduction.** Azerbaijan, which entered the period of independence with a deep socio-economic crisis and political problems, had to mobilize all its opportunities in response to the challenges of the time, make use of its economic potential and resolve complex issues related to the construction of a new state. In this situation, the country's development prospects were more dependent on the flexible and efficient use of rich fuel and energy resources. That is the reason why negotiations on the development of hydrocarbon deposits of the Caspian Sea with

leading oil companies of Western countries were intensive in those years.

The fact that the giant oil companies (“Amoco”, “Unocal”, “Pennzoil”, “BP”) were primarily representatives of powerful countries such as the United States and Great Britain showed that Azerbaijan, trying to develop economic cooperation with these countries, also strived to secure its political interests.

**Geopolitical aspect of the contracts.** The decision of Heydar Aliyev, who started to exercise the powers of the president of Azerbaijan on June 24, 1993, to stop negotiations with foreign oil companies, caused to concern both companies and Western states. They drew their interests to the fore and strived to speed up the process of signing contracts. The US Deputy Secretary of Energy, W. White said at the meeting with Heydar Aliyev in Baku that he “brought a special protocol to sign the contract as soon as possible” and his country “had a strategic interest” in Azerbaijan. Heydar Aliyev noted that he is not against the signing of the contract, he expressed his opinion openly and firmly: "Azerbaijan also has a strategic interest in America. We are more concerned about the extent to which strategic interests are aligned" <sup>1</sup>.

Along with the economic interests of Azerbaijan, geopolitical interests also influenced the adoption of this decision on the negotiations. At that time, the resumption of intensive attacks by the Armenian armed forces in Karabakh further aggravated the military situation. In the aggravated circumstances, Heydar Aliyev sought to turn the attention of the Western states interested in Azerbaijani oil to the front line and get political support to stop the aggression.

At the same time, policy of the West to realize geo-economic interests in Azerbaijan and the Caspian Basin stimulated the countries of the region - Russia, Turkey and Iran to become more active in this strategically important region. They also competed to get a share in order to utilize hydrocarbon resources in the Caspian Sea. In the late 1990s Z. Brzezinski described Azerbaijan “as the vitally important "cork" controlling access to the "bottle" that contains the riches of the Caspian Sea basin and Central Asia”. <sup>2</sup>

It is not surprised that all interested parties began to struggle for securing their dominant position here. However, the deep contradictions in Iran's relations with the United States blocked the way for Iranian companies to join the American-represented consortium and excluded their economic cooperation. Therefore, Azerbaijan, that was not interested in the aggravation of relations with the neighboring state, said that the issue of allocating a share for Iran will be taken into consideration in the next contracts.

Russia also made great efforts to take part in the oil contract. Taking advantage of the legal status of the Caspian Sea, the Kremlin, trying to exert pressure on Azerbaijan, aimed to maximize its interests in the field of oil production and transportation in the region. As a result of the negotiations, finally, on March 22, 1994, SOCAR officially announced to its Western partners that “LUKOIL” joined the consortium with a 10% share <sup>3</sup>.

There were more countries interested in cooperation with Azerbaijan in the field of oil production and wanting to benefit from this agreement. If by September 14, 1994, there was approved the participation of nine oil companies representing five foreign countries, in just a few days, before September 20 - the signing ceremony of the document, one more country - a

leading state in the Muslim East, Saudi Arabia's "Delta Nimir" company joined the agreement. It took 15% of the shares of "Unocal" and acceded the consortium with a share of 1.68% <sup>4</sup>.

Thus, on September 20, 1994, in Baku, there was signed an agreement on the sharing of oil production and the joint development of the Azeri, Chirag and deep parts of Gunashli fields between SOCAR and ten oil companies representing the United States, Great Britain, Norway, Turkey, Russia and Saudi Arabia – "Amoco", "BP", "Pennzoil", "Unocal", "Statoil", "McDermott", "Remco", "Turkish Petroleum Corporation" (TPAO), "LUKOIL" and "Delta Nimir" <sup>5</sup>.

After the signing of the agreement, the international community paid more attention to it. A number of influential oil companies of the world made great efforts in order to get a share in the project. This can be assessed as a manifestation of the global economic and geopolitical interests surrounding Azerbaijani oil.

At the beginning of 1995, when there were difficulties in financing 20% investment of Azerbaijan in the project, well-known foreign oil companies made various proposals to join the consortium. In early April, the Azerbaijani government announced that it gave 5% of its 20% stake to TPAO and 5% to US company "Exxon". Not only economic factors but also political factors played a role in making this decision. Thus, during a meeting with the heads of TPAO and "Exxon", President Heydar Aliyev stressed that high-ranking officials of Turkey and the United States, appealing to the leadership of Azerbaijan, guaranteed the successful operation of these companies <sup>6</sup>.

In the following years, the project was again in the interest of foreign oil companies. In 1996, the Japanese company "Itochu" joined the consortium and expanded the geography of the participating states by buying a share from "McDermott" <sup>7</sup>. In 2000, "Remco" sold its 2.08% stake in the project to three US companies for \$150 million <sup>8</sup>.

In accordance with the commercial interests of the consortium members, the purchase and sale of shares and the joining of new companies to the project led to new changes in the allocation of shares. Even more controversial one of them was withdrawal of the "LUKOIL" company of Russia from the consortium in 2002 by selling a 10% stake to the "Inpex" corporation of Japan <sup>9</sup>. However, the Russian company continued to participate in other projects in Azerbaijan, including the contract for the development of the giant "Shahdeniz" gas field. A few years later, Indian and Hungarian companies also bought shares in the "Contract of the Century".

The contract, which laid the foundation of Azerbaijan's oil strategy, was important in terms of leading to significant changes in the economic, social and political life of the country and strengthening its international position. It should be noted that in his congratulatory message regarding to the signing of the document, US President B. Clinton said that "the United States appreciates this contract, which is the largest of its kind in the history" <sup>10</sup>. It is no coincidence that due to the participation of influential oil companies from a number of leading countries, the large amount of capital investment and the critical geopolitical importance, the project soon became known in international political and economic circles as the "Contract of the Century". At the same time, some authors called the contract an

"independence contract", considering that it was the first international economic act which reflected the full sovereignty of Azerbaijan <sup>11</sup>. This was due to the geopolitical and geoeconomic significance of the document.

By signing agreements with foreign companies, the Republic of Azerbaijan demonstrated its political independence and full ownership of its resources. At the same time, it proved that it chose the path of mutually beneficial cooperation with countries around the world, confirming that the economy is open to foreign investment. This step should be considered essential in terms of forming the international image and strengthening the position of Azerbaijan, which has just become independent.

Formalizing the fair position of the world community on the restoration of Azerbaijan's territorial integrity was the main task of the country due to the military aggression and loss of a part of its territory. In this regard, the contract paved the way for the development of relations with the countries represented in the consortium - the United States, Great Britain, Norway, Russia, Turkey, Saudi Arabia and, finally, Japan.

Azerbaijan did not unilaterally hope for reconciliation of interests with those countries. The same views were expressed in congratulatory letters received from the leaders and members of the government of the consortium on the occasion of the signing of the contract. Thus, US President B. Clinton noted that "Azerbaijani oil can play an important role in resolving the long-running conflict within and around the Nagorno-Karabakh region, as well as bringing stability, economic development and prosperity to the people of Azerbaijan" <sup>12</sup>.

In his congratulatory letter, the Prime Minister of the United Kingdom J. Major described the contract as the beginning of a new stage in the development of relations between two countries. The prime minister showed that the United Kingdom is ready to play an active role in the settlement of the Nagorno-Karabakh conflict, "establishing a fair and strong peace on the condition that all peoples of the region get the fruits of security and progress" <sup>13</sup>.

Thus, the "Contract of the Century" is an important factor in the socio-economic and political development of Azerbaijan, as well as in the establishment and expansion of relations with foreign countries, and the strengthening of its position among the world countries. The long-term start-up of influential Western oil companies in Baku led to dispelling of perception that Azerbaijan is a high-risk destination for the foreign investment.

At that time, other oil companies also showed great interest in the development of hydrocarbon fields in the Caspian sector of Azerbaijan. The Azerbaijani government made consistent efforts to reconcile these growing tendencies with the interests of the country. Thus, in the international arena, "oil was becoming not only a fuel and energy source, but also a political and strategic component"<sup>14</sup>, playing an important role in the regulation of the economic and geopolitical interests of states.

After the "Azeri", "Chirag" and "Gunashli" ("ACG") contracts, negotiations on the "Karabakh" and "Shahdeniz" perspective blocks became more intensive.

On November 10, 1995, SOCAR signed an agreement with "LUKOIL" (Russia), "Agip"

(Italy), “LUK-Agip”, “Pennzoil” (USA) and SOCAR Joint Commercial Company on the establishment of the “Karabakh” perspective structure and the exploration, development and production sharing of the area surrounding it <sup>15</sup>.

Unlike “LUKOIL” and “Pennzoil”, represented in the Contract of the Century, “Agip” started to operate in Azerbaijan by participating in this oil contract. A large stake bought by “Agip”, one of the well-known Italian oil companies, in the contract on the “Karabakh” structure should be considered as a factor that can have a significant impact on the development of economic and political relations between Azerbaijan and Italy. With the involvement of “Agip” in the contract, the range of the major European states with which Azerbaijan has established relations was expanded.

On June 4, 1996, SOCAR and “BP”, “Elf Aquitaine” (France), “Statoil” (Norway), “LUKOIL”, TPAO and “Oil Industries Engineering and Construction” (OIEC) of Iran signed an agreement on exploration, development and production sharing of the “Shahdeniz” perspective field <sup>16</sup>.

It should be noted that initially, according to the results of the negotiations, “BP”, “Statoil” and TPAO had a 60% stake in the agreement, while SOCAR had a 40% stake. However, at the next stage of negotiations, taking into account the appeals of the governments of Russia, Iran and France, the Azerbaijani leadership, based on the political and economic interests of the country, decided to involve companies from those countries in the agreement. Thus, 40% stake of SOCAR was shared equally with these companies <sup>17</sup>.

The inclusion of these companies in the agreement can be explained by the fact that Azerbaijan was trying to neutralize the intersecting geostrategic interests of different countries in the region and reconcile them with its own interests. First of all, it was impossible to deny traditional geo-economic and geopolitical stakes of Russia in the region. It was in interests of Azerbaijan to pursue a constructive, consistent line of cooperation with Russia in the settlement of issues such as the legal status of the Caspian Sea, the Armenian aggression and the Nagorno-Karabakh conflict, as well as other regional development processes.

Providing the interests of France, represented by Elf Aquitaine, as one of the leading countries of the world, as well as co-chair of the OSCE Minsk Group, in Azerbaijan and the comprehensive development of mutual relations was a necessary requirement for that time.

Finally, Iran, seeking to pursue its interests in the Caspian region and the South Caucasus, intended to get a stake in the first agreement - the "Contract of the Century". However, the representation of the US companies in the previous two agreements did not allow the Iranian company to join the consortium. Striving to establish mutually beneficial relations with all neighboring countries, Azerbaijan paved the way for cooperation with Iran in the oil industry in the third contract - the “Shahdeniz” agreement, which does not include the US companies.

Apparently, the Azerbaijani government considered the Caspian fuel and energy resources, which were part of the interests of the world leading countries, as an important tool in addressing the upcoming geopolitical tasks. In the first agreements the Republic of Azerbaijan sought to strengthen its international position, provide its political interests by

creating conditions for the broad representation of states, having a decisive role in the international arena and greater influence in the region.

From this point of view, the signing of the fourth contract on the maritime blocs of Azerbaijan at the end of 1996 was aimed at realizing not only the economic but also the geopolitical interests of the country. In the contract signed on December 14 of the same year, SOCAR agreed with companies such as “Amoco” and “Unocal” of USA, “Itochu” of Japan and “Delta” of Saudi Arabia to explore and develop the “Dan ulduzu” and “Ashrafi” perspective structures in the Azerbaijani sector of the Caspian Sea <sup>18</sup>.

All the companies in the consortium, operating under the name of North Absheron Operating Company, also participated in the first oil agreement - the “Contract of the Century”. However, one of the distinguishing features of the fourth contract was that, for the first time, the US companies had an absolute majority of the stake. In the “Contract of the Century”, signed in 1994, the share of four US companies was about 40%, while in the “Dan ulduzu”-“Ashrafi” contract, two American companies – the share of “Amoco” and “Unocal” was 55.5%. The US government appreciated the fact that American companies had a large share in this consortium. It is no coincidence that President B. Clinton's special envoy I. Kalitsky, who led the US delegation at the signing ceremony, emphasized this point in his speech <sup>19</sup>.

Another important point was that the Japanese company joined the contract for the first time as a founder. “Itochu”, which joined the “Contract of the Century” two years later with a small stake, had a larger - 20% stake in the fourth oil contract from the first day. Following the path of building and developing cooperation with the world's political and economic power centers, the Azerbaijani government expanded this range and created an economic basis for strengthening relations with Japan. This factor was one of the features of the oil strategy of Azerbaijan.

The fact that the partners of SOCAR in the contracts on the “Yanan Tava”, “Mugandeniz” and “Ateshgah” blocs (December 25, 1998) were only Japanese companies can be assessed as a result of this factor. Four Japanese companies – “Japex”, “Inpex”, “Teikoku” and “Itochu” shared the remaining 50% stake in the agreement between each other, in which SOCAR has a 50% stake <sup>20</sup>. Thus, the growing interest of Japanese companies in Caspian oil was reflected in the expansion of cooperation with Azerbaijan.

France, which had special interests in the South Caucasus, also became more active. Two companies of this country – “Elf Aquitaine” and “Total” took part in the negotiations on the exploration and development of “Lankaran-deniz” and “Talysh-deniz” perspective structures. The signing of the fifth maritime oil agreement on January 13, 1997 during the official visit of President Heydar Aliyev to France at the Élysée Palace in Paris with the participation of President Jacques Chirac also highlighted its political significance <sup>21</sup>.

Jacques Chirac, speaking at the ceremony, noted that he considered this step of the President of Azerbaijan as a sign of friendly relations with France, appreciating the signing of the contract in Paris. According to him, “this is a step taken to strengthen political, economic and cultural ties between two countries” <sup>22</sup>.



Although the fifth contract was signed with the absolute advantage of French companies, later with the joining of “Deminex” (Germany), “Petrofina” (Belgium) and OIEC (Iran) companies to the project, two more influential European countries - Germany and Belgium were added to the list of partners in the oil contracts of Azerbaijan. This increased the economic and political significance of the contract. It was the second contract that the Iranian company "OIEC" took a share after "Shahdeniz".

President Heydar Aliyev, who started his official visit to France in 1997, also made official visits to Russia and the United States in the second half of that year. During these visits, the signing ceremony of the next contracts on cooperation in the field of oil production was held again. When paying attention to the geography of trips, it becomes clear that the route was not chosen by chance. France, Russia and the United States were influential states seeking to provide their strategic interests in the South Caucasus and the Caspian region. At the same time, the Republic of Azerbaijan, aiming to strengthen political and economic ties with all three co-chairs of the OSCE Minsk Group, did not hide its intention to use the oil factor.

On July 3, 1997, in the Kremlin in Moscow, with the participation of President Heydar Aliyev and President Boris Yeltsin, SOCAR and “LUKOIL” signed an agreement on exploration, development and production sharing of the “D-222” (“Yalama”) perspective structure in the Caspian Sea <sup>23</sup>.

A month later, on the first day of President Heydar Aliyev's official visit to the United States on August 1, 1997, three agreements on exploration, joint development and production sharing of three perspective fields in the Azerbaijani sector of the Caspian Sea were signed in White House between SOCAR and the US companies “Chevron” on the “Absheron” structure, “Exxon” on the “Nakhchivan” structure, and “Mobil” on the “Oghuz” block <sup>24</sup>.

Additionally, the fourth contract signed on the same day between SOCAR and “Amoco” gave the US company exclusive rights to negotiate on “Inam” perspective structure in the Azerbaijani sector of the Caspian Sea.

The main feature of the contracts was that the participants, along with SOCAR, were only American companies. The Azerbaijani government pursued its own political goals through the activities of these companies in the country. Thus, these companies, which participated in oil contracts at that time, due to their influence in the United States, could play an important role in relieving pressure on Azerbaijan and regulating political processes in the region.

It is no coincidence that, as the American press reported, on the eve of Azerbaijani President Heydar Aliyev's visit to the United States, there was a fierce struggle between oil companies and the Armenian lobby in White House in Washington <sup>25</sup>. Attempts by the Armenian National Committee of America to disrupt Heydar Aliyev's visit and reception at the White House were thwarted.

The “Financial Times” reported that Heydar Aliyev's meeting with President B. Clinton and the signing of a number of oil contracts worth \$10 billion by Azerbaijan was the culmination of the visit that confirmed special status of Azerbaijan as one of the closest and

most respected partners of the United States <sup>26</sup>.

The Russian press also covered the signing of oil contracts during President Heydar Aliyev's visit to the United States. In assessing the visit and cooperation with oil companies, special attention was paid to geopolitical aspects rather than economic factors. The "Известия" (Izvestia) newspaper reported that Heydar Aliyev "achieved to connect American corporations to oil projects of Azerbaijan. This played an important role in the beneficial settlement of the Karabakh conflict" <sup>27</sup>.

Monitoring of the agreements signed so far shows that in 1998, a record number of seven new contracts were concluded. Continuing cooperation with a number of companies, Azerbaijan was expanding the geography of partner countries and establishing relations with new companies. Canadian and Spanish and a few years later Chinese companies joined the oil contracts <sup>28</sup>.

**Conclusion.** Thus, when considering the oil and gas contracts signed between SOCAR and foreign companies, it is possible to observe not only the economic goals, but also the geopolitical aspects of the oil strategy of the Azerbaijani government.

First of all, the signed contracts gradually covered a wide geographical area and various states and geopolitical regions from the United States and Canada to China, Malaysia and Japan, from the United Kingdom, France and Norway to Iran and Saudi Arabia. Therefore, according to experts, initiative of Azerbaijan to cooperate with these countries, "the strong partnership in the field of energy security radically changed the geopolitical and geoeconomic situation in the region" <sup>29</sup>.

At the same time, Azerbaijan, which chose the tactic of participation in the first contracts with a smaller share, set itself the task of achieving major strategic goals. Increasingly, the Azerbaijani government started to realize its geopolitical and geoeconomic intentions by involving the world's largest companies and leading countries in oil and gas projects, and after a few years gradually increased its share in contracts to 50%. US companies and "BP" had a dominant position in the contracts. Later, French and Japanese companies gained a large stake in some projects, starting to become more active.

As one of the important results, it should be noted that Azerbaijan, firstly, found a de facto, then de jure solution for the issue of the controversial legal status of the Caspian Sea, by involving the world's leading countries, including the countries of the region (Russia and Iran), as well as multinational companies in the contracts for the development of Caspian oil and gas fields. The consistent oil strategy led to break the deadlock in the issue of "legal status", which was raised as a major obstacle to the development of hydrocarbon resources in the Caspian Sea, and then to the gradual adoption of the principle of sectoral division of the seabed by neighboring countries (firstly, a contract confirming the agreement with Russia and Kazakhstan, and 15 years later, the Convention on the Legal Status of the Caspian Sea (2018) were signed between the littoral Caspian states <sup>30</sup>. Negotiations with Turkmenistan and Iran on the coordinates of the sector division are still ongoing).

Along with the signing of oil contracts, Azerbaijan has been actively working to establish a system of export pipelines in the region. The work done in this area radically

changed the map of energy transportation in the region. The Baku-Novorossiysk, Baku-Supsa, Baku-Tbilisi-Ceyhan oil pipelines, the Baku-Tbilisi-Erzurum gas pipeline, as well as the Southern Gas Corridor (South Caucasus Pipeline, Trans-Anatolian Pipeline, Trans-Adriatic Pipeline) extending directly from the Caspian Sea to Italy, by promoting Azerbaijan as an important source of energy export, enhances its role in the energy security of the region and Europe. These pipelines had a significant impact on the growth of the country's geopolitical weight in the region and the strengthening of its international position, connecting it with Russia, Georgia, Turkey, Greece, Albania, Bulgaria and Italy.

Thus, along with the economic potential of Azerbaijan, its effective oil strategy also significantly strengthened the geopolitical position. The energy projects successfully implemented with Azerbaijan's initiative and active participation turned the country into a place where not only neighboring but also the world's leading countries invest heavily and cooperate closely. This was one of the important factors in increasing the political prestige, geopolitical role of Azerbaijan and restoring its territorial integrity by defeating Armenia in the Patriotic War.

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## **MECHANISMS FOR MONITORING, EVALUATION AND CERTIFICATION IN THE HIGHER EDUCATION SYSTEM**

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### **XÜLASƏ**

Elmi məqalədə ali təhsil sistemində keyfiyyətin dəyərləndirilməsində əsas mexanizmlər olan qiymətləndirmə, monitoring və atestasiyanın mahiyyəti, yerinə yetirdikləri funksiyalar aşkara çıxarılmış və öyrənilmişdir. Qiymətləndirmənin iki səviyyəli xarakter daşması, pedaqoji problemlərin öyrənilməsində ən çox istifadə edilən kəmiyyət metodlarından qeydəalma, rəqəbləşdirmə və reyting metodunun olması aşkarlanmışdır. Qiymətləndirmənin nəticələrinin müvafiq sxemlərdən, diaqramlardan, cədvəllərdən və digər metodlardan, o cümlədən modernləşdirmə metodlarından istifadə olunmaqla təhlil olunması, qiymətləndirmə sisteminin elementləri – modulları və onların məzmunu araşdırılmışdır. Burada eyni zamanda Akkreditasiyanın əsas vəzifəsi, funksiyaları, lisenziya məsələləri, standartlar, bu strukturun təkmilləşdirilməsi istiqamətləri aşkara çıxarılmışdır. Ali təhsilin həyata keçirilməsində və keyfiyyətin təmin edilməsində bir-biri ilə sıx əlaqədə olan dörd amil və ya dörd ünsür insanlar, qaynaqlar və ideyalar olduğu, öyrənənlər-müəyyən ali təhsil dərəcəsi (bakalavr, magistr, doktor...) almaq istəyənlər, yəni tələbələr, öyrədənlər-yəni alimlər, müəllimlər, yüksək ixtisaslı mütəxəssislər, öyrənənlərlə öyrədənlərin fəaliyyət göstərdiyi şərait və mühit, yəni ali məktəbdəki mənəvi mühit, idarəetmə və maddi-texniki qaynaqlar/şərait, müəllimlərin tələbələrə dərs deyərək əsaslandığı ideyalar və proqramlar, yəni müasir və dinamik təhsil modeli, proqramlar və tədris planları olduğu müəyyən olunmuşdur. Eləcə də elmi məqalədə belə bir nəticəyə gəlinmişdir ki, öyrənənlər və öyrədənlərlə, şərait, idarəetmə və mühitlə yanaşı, nəyin öyrədildiyi (hansı tədris planları, fənn proqramları və hansı dərs kitabları?) həlledici əhəmiyyətə malikdir. Şərait və mühit elə olmalıdır ki, tələbə öyrənmək istəsin və ya öyrənməkdə çətinlik çəkən tələbə öz gücsüzlüyünü, bacarıqsızlığını dərk edib düşünsün, tədbir görsün və ya kənara çəkilməli olsun. Eyni zamanda bəlli şərait və mühit müəllimin öyrətmə gücünə və həvəsinə təsir edə bilsin. Təhsil sistemini inkişaf etdirmək və təkmilləşdirmək məqsədilə təhsil müəssisəsinin fəaliyyət göstərdiyi sosial-mədəni şəraitin, təhsilin məzmununun, təhsilin keyfiyyətinin, təhsil alanların psixoloji xüsusiyyətlərinin, təhsilalanların peşəyönümünün, ixtisas hazırlığının, təhsil sisteminin səmərəliliyinin, müəllimin pedaqoji fəaliyyəti və peşəkarlıq səviyyəsinin, təhsil müəssisəsinin innovasiya fəaliyyətinin, təhsil müəssisəsi fəaliyyətinin valeoloji (intellektual, psixoloji, fiziki sağlamlıq) aspektlərinin və digər sahələrin monitoringi və qiymətləndirilməsinin vacibliyi önə çıxarılmışdır.

**Açar sözlər:** keyfiyyət, ali, monitoring, qiymətləndirmə, attestasiya, şöbə

## **ABSTRACT**

The scientific article reveals and studies the essence of assessment, monitoring and certification, which are the main mechanisms for quality assessment in the higher education system, and the functions they perform. It was revealed that the assessment has a two-level nature, and the most commonly used quantitative methods in the study of pedagogical problems are registration, ranking and rating methods. Analysis of the results of the assessment using appropriate schemes, diagrams, tables and other methods, including modernization methods, elements of the evaluation system - modules and their content were investigated. At the same time, the main tasks, functions, licensing issues, standards, and directions for improving this structure of the Accreditation were revealed here. There are four factors or four elements that are closely related to each other in the implementation of higher education and quality assurance, people, sources and ideas, learners - those who want to get a certain higher education degree (bachelor, master, doctor ...), ie students, teachers - ie scientists, teachers, highly qualified specialists, conditions and environment in which learners and teachers operate, ie moral environment in higher education, management and logistics / ideas, ideas and programs based on teachers teaching students, ie modern and dynamic model of education, programs and curricula. The paper also concludes that what is taught (what curricula, subject programs, and textbooks?) Is crucial, along with learners and teachers, conditions, management, and environment. Conditions and environments should be such that the student wants to learn, or the student who is having difficulty learning realizes his or her weakness, incompetence, takes action, or withdraws. At the same time, certain conditions and environments can affect a teacher's teaching ability and enthusiasm. In order to develop and improve the education system, the socio-cultural conditions of the educational institution, the content of education, the quality of education, the psychological characteristics of students, the professional orientation of students, training, the effectiveness of the education system, pedagogical activity and professionalism, innovative activities of education The importance of monitoring and evaluation of valeological (intellectual, psychological, physical health) aspects and other areas of the enterprise's activity was emphasized.

**Keywords:** quality, higher, monitoring, evaluation, certification, department

## **GİRİŞ**

Qiymətləndirmə ardıcıl hərəkətdə olan metoddur və bu işə praktiki işçilərin peşəkar ekspertlərin cəlbi və müvafiq tədqiqat üsullarından düzgün istifadə mövcud problemlərin həllinə nail olmaq üçün real zəmin yaradır. Bu nəticə etibarı ilə təqdim olunacaq tövsiyələrin hazırlanması üçün əsas şərtədir. Qiymətləndirmə metodikasının tətbiqi xüsusi qaydalara, prinsiplər və ardıcılıqlara riayət etməyi tələb edir. Əsas məqsəd kadr potensialının real imkanlarının üzə çıxarılması və onlardan səmərəli istifadə, işçilərin peşəkarlıq səviyyəsinin düzgün qiymətləndirilməsinə zəmanətin verilməsi və gələcək fəaliyyət üçün inkişaf proqramının təklif olunmasından ibarətdir. Ədalətli, hərtərəfli qiymətləndirməyə olan tələbat bütün işçilər üçün eynidir. Rəhbər işçilərinin ədalətli qiymətləndirilməsinə ehtiyac isə tabeçilikdə işləyən əməkdaşlarından qat - qat üstündür. Rəhbər sanki iki mövqedən-kollektivə rəhbər və şəxsiyyət kimi qiymətləndirilir.

## **ARAŞDIRMALAR**

Qiymətləndirmə iki səviyyəli xarakter: aşağı və yuxarı (asan və mürəkkəb) variantlarda aparılır. Qiymətləndirmənin asan variantı dedikdə, ( yəni hamı üçün sadə qəbul olunan) rəhbər tərəfindən əməkdaşların qiymətləndirilməsi üzrə adi vəzifə nəzərdə tutulur. Buraya

hamıya məlum olan ənənəvi attestasiyaların keçirilməsi, xasiyyətnmə və təqdimatların verilməsi və s. daxildir.

İşçilərin peşəkar və şəxsi keyfiyyətlərə görə qiymətləndirilməsi sistemi, onun təşkil olunması və mexanizmi ənənəvi üsullara malikdir. İşçini qiymətləndirmək üçün informasiya almağın aşağıdakı əsas üsulları qeyd olunur:

- rəhbərin şəxsi müşahidəsi;
- xaricdən olan zəmanət;
- xarakterizə edən sənədlərin öyrənilməsi;
- testləşdirmə;
- müsahibə;
- attestasiya.

Lakin insanı zarakterizə edən bəzi sənədlər (attestasiya, xasiyyətnmə və s.) öz amorfluğu, nəticəsində kadr təyinatı məsələlərinin həlli zamanı ən əsas faktor kimi götürülmür. Əksər hallarda attestasiyalar formal keçirilən kompaniyalara çevrilirlər ki, sırf bunun nəticəsində də qiymətləndirmə tam məqbul hesab edilmir. Ona görə də məsələyə yuxarıda göstərilən üsullarla yanaşdıqda bir çox neqativ halların aradan götürülməsinə, qiymətləndirmə prosesinin asanlaşdırılmasına, sadələşdirilməsinə, müasirləşdirilməsinə, analitik fəaliyyətdə kadr strukturlarının potensial imkanlarının genişləndirilməsinə, qiymətləndirilənlərin inamının artmasına real şərait yaradılır. Bu məsələnin müvəffəqiyyətli həllinin iki variantı təqdim edilə bilər. Əsas variant rəhbər və attestasiya komissiyalarının üzvləri üçün kadrların qiymətləndirilməsinin sadə mexanizmini yaratmaqla, digəri- daha çətin olan variantı isə yalnız buna hazırlıqlı olan ekspertlər, mütəxəssislər və ən başlıcası isə modelləşdirmənin riyazi üsullarından geniş istifadə edən ixtisaslaşdırılmış Monitoring Qiymətləndirmə Mərkəzləri- strukturları həyata keçirə bilər.

Tutduğu vəzifəyə peşəkar və fərdi yararlılıq səviyyəsini müəyyənləşdirmə alqoritmi metodlarının əsasını kadrlar üçün xüsusi vasitə olan müvafiq professoqramların müəyyənləşdirilməsi və onlara uyğunluq təşkil edir. Dövlət orqanları və hökumət strukturlarının kadrlarla bağlı işlərində onların tətbiqi daha effektivdir. Bu mexanizm rəhbər işçilər üçün hər şeydən əvvəl onların təcəlliyində olanları düzgün qiymətləndirməyi asanlaşdıran vasitə kimi nəzərdən keçirilir. Qiymətləndirməni həyata keçirənin başlıca vəzifəsi professoqramda qeyd olunmuş hər bir tələb üzrə təcəllikdə olanı düzgün və ədalətli qiymətləndirməkdən ibarətdir. Professoqramlarla sonrakı işi (məlumatların işlənilməsi, təhlil, modelləşdirmə, məlumat bankı və s.) də kadr orqanlarının və MQM-in xüsusi hazırlıqlı mütəxəssisləri aparır. Qiymətlər, rəhbərin məlumatları üzrə işçinin sonrakı təyinatının məqsəduyğunluğu haqqında nəticə və təkliflər hazırlanır. Qiymətləndirmə-öz məqsədindən, prosesdə iştirak edən tərəflərin (təhsilənlərin, öyrədənlərin, valideynlərin, yuxarı təhsil qurumlarının və b.) işinin xüsusiyyətlərindən, qiymətləndirilən sahələrdən və onların işinin xarakterindən asılı olaraq mürəkkəb, müxtəlif cəhətli, çoxparametrlili prosesdir.

Əldə edilmiş pedaqoji faktları obyektiv surətdə təhlil və şərh etmək, ümumiləşdirmək, materialları kəmiyyət baxımından işləmək, müəyyən olunmuş əlamətin (xüsusiyyətin, xassənin) tipik olduğunu sübut etmək məqsədilə statistik (riyazi) metodlardan istifadə olunur.

Pedaqoji tədqiqatda istifadəsi faydalı olan riyazi metodlar çoxdur. Lakin pedaqoji problemlərin öyrənilməsində ən çox istifadə edilən kəmiyyət metodları aşağıdakılardır:

Qeydəalma metodu.

Ranqlaşdırma metodu.

Reyting metodu.(6, s.346)

Qeydəalma metodunun mahiyyəti ondan ibarətdir ki, pedaqoji prosesin qiymətləndirilməsi üçün tələb olunan komponentlər əvvəlcədən müəyyən olunur və kəmiyyət göstəricilərinə görə hesaba alınır. Alınmış məlumatlar təhlil olunur və konkret təkliflər verilir. Ranqlaşdırma (nizamlama) metodunun mahiyyəti tədqiqatlardan alınmış nəticələri sıraya düzmək, ardıcılıqla göstərməkdən ibarətdir. Ranqlaşdırma-toplanmış faktların müəyyən kriteriyalar, parametrlər əsasında ardıcıl göstərilməsi prosesidir. Bu, öyrənilən və qiymətləndirilən prosesdə əsas komponentlərin vacibliyinə görə artması, yaxud azalmasını aşkarlamağa və əyani şəkildə göstərməyə imkan verir.

Reyting (qiymətləndirmə) metodunun mahiyyəti pedaqoji prosesin ayrı-ayrı əlamətlərinin rəqəm göstəriciləri ilə əvəz edilməsindən ibarətdir. Öyrənilən əlamətlər rəqəm göstəriciləri ilə ifadə olunduqda müəyyən qanunauyğunluqlar aydın surətdə nəzərə çarpır. Reyting metodundan daha çox hər hansı bir pedaqoji prosesi, yaxud onun tərkib elementlərini (məsələn, təlimin keyfiyyəti, təhsil müəssisəsinin innovasiya fəaliyyəti və s.) öyrənərkən istifadə olunur. Bu halda hər bir element (komponent, göstərici) qiymətləndirilir və onlardan hər biri üçün orta qiymət çıxarılır. Sonra komponentlər üzrə alınmış orta qiymətlərdən istifadə olunmaqla öyrənilən proses qiymətləndirilir.

Qeydəalma, ranqlaşdırma, reyting metodlarının pedaqoji proses və hadisələrin, habelə təhsil müəssisəsinin fəaliyyətinin qiymətləndirilməsində istifadəsi zamanı bəzi hallarda problemin həlli onun riyazi qoyuluşundan kənara çıxır. Bu səbəbdən də ekspertlərin xidmətlərindən istifadə olunur və bu metodlar bütövlükdə ekspert qiymətləndirmə metodları adlanır. Həmin metodların nöqsanlı cəhəti məhz qiymətləndirmə prosesində bilavasitə iştirakı ilə əlaqədardır. Nəzarətin progressiv və perspektiv metodlarından biri bilik, bacarıq və vərdişlərin reyting sistemi ilə qiymətləndirilməsidir. Reyting-təlim prosesini təşkil edən və onun effektivliyini təmin edən sistemdir. Reyting metodu bilik, bacarıq və vərdişlərin testləşdirilməsi metodundan ayrılmazdır. Nəzarətin ənənəvi metodlarından fərqli olaraq testləşdirmə bir sıra üstünlüklərə malikdir. Nəzarətin ənənəvi metodları ilə müqayisədə testləşdirmə daha effektivdir. Testləşdirməni eyni vaxtda böyük tələbə qrupları ilə keçirmək mümkündür. Yekun qiymətlərin müəyyənləşdirilməsi məqsədilə nəticələrin işlənməsi daha tez başa gəlir, vaxta qənaət olunur.

Qiymətləndirmə zamanı subyektivlik hallarını aradan qaldırmaq üçün müxtəlif mənbələrdən olan məlumatları təhlil edərək nəticələri nəzərə almaq məqsəduyğundur. Həmin məlumatlara özünüqiymətləndirmə, horizontal qiymətləndirmənin nəticələri, aşağıdan qiymətləndirmə, həmçinin attestasiya komissiyası üzvlərinin və ya müstəqil ekspertlərin rəyləri daxildir. Kadrların fəaliyyətinin hərtərəfli və əsaslandırılmış şəkildə qiymətləndirilməsi üçün bu cür yanaşma son dərəcə vacibdir. Qiymətləndirmə sistemi strukturuna görə modul quruluşa malik ola bilər. Bütöv sistemin formalaşdırılmasında modulların məzmun və ardıcılığını genişləndirmək vacibdir. Hər şeydən əvvəl ilkin modul işlənilib hazırlanır ki, bu da gələcəkdə bütün sistem üçün növbəti modulların əlaqələndiricisi olur. Onun əsas rolu digər yarım sistemlərin həm müstəqil, həm də ayrı-ayrı funksiyaları



özündə birləşdirən vahid sistem kimi fəaliyyətini təmin etməkdən ibarətdir. ”Qiymətləndirmənin texnologiyası və metodikası” əsas modul rolunda çıxış edə bilər.

Kadr fəaliyyətinin qiymətləndirilməsi obyektini kimi tədris müəssisəsi və təhsil orqanlarının rəhbərləri, mütəxəssisləri, iş icraçıları, habelə ayrı-ayrı strukturlar, bütövlükdə isə sistemin kadr institutları çıxış edirlər. Qiymətləndirmənin sahəsi tədqiqat obyektinin əsas keyfiyyət dərəcələri və real vəziyyət, yaxud da onun fəaliyyətinin səmərəliliyidir. Obyektin qiymətləndirilməsi üçün tələblər toplusunun hazırlanması ilə yanaşı hazırlıqlı ekspertlər, ya da xüsusi treninq metodları üzrə digər mütəxəssislər məşul olur. Tələblərin seçilməsi və onların üstün sahələr üzrə müəyyənləşdirilməsi müxtəlif metodlarla həyata keçirilir. Bu metodlara qoşa müqayisə, ELJA və digər treninqlər aiddir. Qiymətləndirmə ”Miqyas (doqquz ölçülü) xətkəsi ilə aparılır. Qiymətləndirmə proqramlarının formalaşması ekspert xarakterlidir. Qiymətləndirmənin nəticələri müvafiq sxemlərdən, diaqramlardan, cədvəllərdən və digər metodlardan, o cümlədən modernləşdirmə metodlarından istifadə olunmaqla təhlil edilir. Qiymətləndirmə sisteminin elementləri – modulları aşağıdakılar ola bilər:

- ekspertlərin sərəştəlliliyinin qiymətləndirilməsi;
- kadrların (bu proses attestasiya prosesi də adlandırılır) qiymətləndirilməsi;
- kollektivin qiymətləndirilməsi;
- idarəetmə komandasının (rəhbərlər)keyfiyyət qiymətləndirilməsi;
- dövlət idarəetmə institutunun sisteminin potensial imkanlarının qiymətləndirilməsi;
- sistemin, prosesin, fəaliyyətin gücü və zəif tərəflərinin müqayisəli qiymətləndirilməsi ;
- xarici və daxili faktorlarının təsirinin qiymətləndirilməsi;
- obyektin keyfiyyət səviyyəsinin qoyulan tələblərə müvafiqliyinin qiymətləndirilməsi;
- səmərəliliyin qiymətləndirilməsi;
- kadrların sosial müdafiəsi səviyyəsinin qiymətləndirilməsi .

Həmin siyahını davam etdirmək də mümkündür. Bu qiymətləndirilən sistem obyekt, struktur və s. kimi xüsusiyyətlərdən asılıdır.

Bu gün bütövlükdə ali təhsil sistemi səviyyəsində keyfiyyətin təmin edilməsinin özünü tənzimləyən mexanizmi üçün təşkilatı əsas ali təhsilin keyfiyyətinə nəzarət edən orqan rolunu 2010-cu ildə yaradılmış və kiçik işçi heyəti olan (10 nəfərdən az) Təhsil Nazirliyi yanında Akkreditasiya Şöbəsi oynayır. Akkreditasiyanın əsas vəzifəsi hər hansı universitetin, proqramların dövlət standartlarına və Təhsil Nazirliyi tərəfindən hazırlanmış bir sıra tələblərə uyğunluğunu yoxlamaqdan ibarətdir. Şöbə özəl universitetlərin fəaliyyəti üçün də lisenziyalar verir. Dövlət Universitetləri üçün lisenziya tələbi yoxdur. Beləliklə, özəl universitetlər üçün lisenziya alınması birinci dərəcəli, akkreditasiya isə ikinci dərəcəlidir. Yalnız akkreditasiya prosesində təhsil proqramları, tələblər, müəllimlər və sairə üçün müxtəlif uyğunluq standartları yoxlanılır. Azərbaycanda akkreditasiya hələlik pulsuzdur. Bu şöbə öz fəaliyyətində ölkədə ali təhsil üzrə dövlət standartlarının siyahısını özündə əks etdirən Azərbaycan Respublikası Nazirlər Kabinetinin 23 aprel 2010-cu il tarixli 75 sayılı qərarına

əsaslanır. Akkreditasiya mexanizminin təkmilləşdirilməsinin növbəti mərhələsi Azərbaycan Respublikası Təhsil Nazirliyinin 26 aprel 2011-ci il tarixli 656 sayılı əmrində əks olunmuşdur ki, orada ali məktəbin akkreditasiyası prosesində aşağıdakı 11 araşdırma istiqaməti müəyyənləşdirilmişdir:

- Müəssisənin fəaliyyətini normativ-hüquqi təminatı.
- Müəssisənin idarə olunması.
- Müəssisədə təhsil proqramları üzrə hazırlığın məzmunu və strukturu.
- Müəssisədə tədris prosesinin təşkili.
- Müəssisədə təhsil proqramları üzrə hazırlığın keyfiyyəti.
- Müəssisədə kadr təminatı.
- Müəssisənin elmi-tədqiqat fəaliyyəti (ali təhsil müəssisələri üzrə).
- Müəssisənin beynəlxalq əməkdaşlığı (ali təhsil müəssisələri üzrə).
- Müəssisənin maddi-texniki bazası
- Müəssisənin sosial-məişət şəraiti.
- Müəssisənin maliyyə təminatı. (3)

Budan başqa, sözügedən əmrdə 25 müvafiq ölçülən meyarlar da öz əksini tapıb və onların köməyi ilə ali təhsil müəssisəsinin akkreditasiya tələblərinə uyğunluğunun yekun nəticəsi hesablanır. Belə ki, bütövlükdə ali məktəbin və onun ayrı-ayrı təhsil proqramlarının istiqamətlər üzrə göstəriciləri standartın tələblərinin 61-80%-nə uyğun gəldikdə, təhsil müəssisəsinin (və ayrı-ayrı təhsil proqramlarının) fəaliyyəti “dövlət təhsil standartlarının tələblərinə əsas etibarilə uyğundur”, 81-100%-nə uyğun gəldikdə “dövlət təhsil standartlarının tələblərinə uyğundur”, 60%-dən (60% də daxil olmaqla) az olduqda “dövlət təhsil standartlarının tələblərinə uyğun deyil”. Ali təhsil müəssisələrinin dövlət standartlarının tələblərinə uyğunluğunun qiymətləndirilməsi üzrə praktiki işlərin həyata keçirilməsi üçün şöbə ali məktəbin fəaliyyətinin müxtəlif sahələrini əhatə edən xüsusi qiymətləndirmə formalarından istifadə edir. Onlardan bəzilərinə baxaq:

1 sayılı forma: təhsil müəssisəsinin mövcud olan əsas sənədləri haqqında məlumat.

2 sayılı forma: maddi-texniki baza haqqında məlumat

3 sayılı forma: kadrlarla təminat haqqında məlumat:

4 sayılı forma: təhsil alan kontingent haqqında məlumat.

5 sayılı forma: kontingent haqqında son beş il ərzində mövcud olan məlumat.

6 sayılı forma: kontingent və onun maliyyə təminatı haqqında məlumat. Müvafiq kontingentdə bir tələbəyə çəkilən xərclər.

7 sayılı forma: son 5 il ərzində ixtisaslar (proqramlar) üzrə edilmiş köçürmələr haqqında məlumat.

8 sayılı forma: son 5 il ərzində ixtisaslar üzrə bərpa olunmuş, kursda təkrar saxlanılmış, xaric edilmiş tələbələr haqqında məlumat və s.

Ümumiyyətlə, mövcud olan akkreditasiya sistemi ali təhsil müəssisəsində ali təhsilin keyfiyyətinin təminatı üçün minimum zəruri olan tələblərin mövcudluğunun Təhsil Nazirliyi tərəfindən təsdiqini təmin edir. Eyni zamanda şöbə öz fəaliyyətində Boloniya prosesinin, ali təhsilin keyfiyyətinə aid olan tələblərini də nəzərə alır. Akkreditasiya qaydalarına, təhsil prosesinin fasiləsiz təkmilləşdirilməsinə yönəlmiş məxsusi tələblər daxil deyil. Ali təhsilin həyata keçirilməsində və keyfiyyətin təmin edilməsində bir-biri ilə sıx əlaqədə olan dörd amil və ya dörd ünsür ( insanlar, qaynaqlar və ideyalar) iştirak edir:

Öyrənənlər, müəyyən ali təhsil dərəcəsi (bakalavr, magistr, doktor...) almaq istəyənlər, yəni tələbələr.

Öyrədənlər, yəni alimlər, müəllimlər, yüksək ixtisaslı mütəxəssislər.

Öyrənənlərlə öyrədənlərin fəaliyyət göstərdiyi şərait və mühit, yəni ali məktəbdəki mənəvi mühit, idarəetmə və maddi-texniki qaynaqlar/şərait.

Müəllimlərin tələbələrə dərs deyərək əsaslandığı ideyalar və proqramlar, yəni müasir və dinamik təhsil modeli, proqramlar və tədris planları.

Öyrənənlər və öyrədənlərlə, şərait, idarəetmə və mühitlə yanaşı, nəyin öyrədildiyi (hansı tədris planları, fənn proqramları və hansı dərs kitabları?) həlledici əhəmiyyətə malikdir. Şərait və mühit elə olmalıdır ki, tələbə öyrənmək istəsin və ya öyrənməkdə çətinlik çəkən tələbə öz gücsüzlüyünü, bacarıqsızlığını dərk edib düşünsün, tədbir görsün və ya kənara çəkilməli olsun. Eyni zamanda bəlli şərait və mühit müəllimin öyrətmə gücünə və həvəsinə təsir edə bilər.

Azərbaycan Respublikasının “Təhsil haqqında Qanun”da da göstərilir ki, “Azərbaycan Respublikasında təhsil dünyəvi və fasiləsiz xarakter daşımaqla, vətəndaşın, cəmiyyətin və dövlətin maraqlarını əks etdirən strateji əhəmiyyətli prioritet fəaliyyət sahəsidir.”(1,s.1) Azərbaycan Respublikasında təhsil insan hüquqları haqqında beynəlxalq konvensiyalara və Azərbaycan Respublikasının tərəfdar çıxdığı digər beynəlxalq müqavilələrə əsaslanır, təhsil sahəsində milli-mənəvi və ümümbəşəri dəyərlərin prioritetliyi əsasında dünya təhsil sisteminə inteqrasiya olunaraq inkişaf edir. Maddə 9-da göstərilir:”Təhsilin keyfiyyət səviyyəsi ölkədə qəbul olunan dövlət təhsil standartları əsasında beynəlxalq və ümumavropa təhsil sisteminin prinsiplərinə uyğunlaşdırılaraq təhsil pillələri üzrə müvafiq keyfiyyət göstəriciləri sistemində (təhsil proqramları, abituriyentlərin hazırlıq səviyyəsi, maddi-texniki baza, infrastruktur, informasiya resursları, təhsilverənlərin peşəkarlığı və elmi-pedaqoji səviyyəsi, mütərəqqi tədris texnologiyalar və s.) uyğun olaraq edilir.”(1, s.15) Hər bir ali məktəb öz fəaliyyətinin spesifik xüsusiyyətlərini peşə-ixtisas hazırlığı istiqamətlərini nəzərə alaraq öz nizamnaməsini hazırlayır. Hər bir ali məktəb öz nizamnaməsini hazırlayır. Hər bir ali məktəb öz nizamnaməsini hazırlayarkən belə keyfiyyət məsələlərini nəzərə alır. Ali məktəbin Nizamnaməsi, Təhsil haqqında Qanun və ali təhsil müəssisəsi haqqında əsasnamə bazasında mütəxəssis hazırlığının spesifik xüsusiyyətləri nəzərə alınmaqla hazırlanır. Ali məktəbin özünə nəzarət mexanizmindən başqa xaricdən nəzarət mexanizmləri də mövcuddur. Bunlar aşağıdakılardır:

-ali məktəbdə tədris-metodiki istiqamətli işlərin və təhsil-tərbiyə prosesinin keyfiyyətinə nəzarət Təhsil Nazirliyi tərəfindən həyata keçirilir;

-ali təhsil müəssisəsinin maliyyə-təsərrüfat fəaliyyətinə nəzarəti mövcud qanunvericiliyə uyğun olaraq Maliyyə Nazirliyi həyata keçirir;

-ali təhsil müəssisəsi öz fəaliyyətinin mühasibat uçotunu reallaşdırır;

-təsdiq edilmiş formalar üzrə statistik və mühasibat hesabatı aparır;

-müəyyən olunmuş müddətdə bu hesabatı müvafiq dövlət orqanlarına təqdim edir;

-tələbələrin təhsilinin keyfiyyətinə, doktorantların (dissertantların) hazırlığına, mütəxəssislərin --- ixtisasının artırılmasına və yenidən hazırlanmasına müəyyən olunmuş qaydada attestasiya yolu ilə həyata keçirilir;

Nizamnamənin və Azərbaycan Respublikasının digər qanunvericilik aktlarının yerinə yetirilməsinə nəzarət müvafiq icra hakimiyyəti orqanları tərəfindən həyata keçirilir. Təhsil müəssisəsində kadr hazırlığının keyfiyyət səviyyəsi məzunların milli və beynəlxalq əmək bazarında rəqabət qabiliyyəti, ölkənin sosial və iqtisadi inkişafında rolu ilə müəyyən edilir. Təhsilin keyfiyyət səviyyəsi hər bir tarixi mərhələdə ictimai-siyasi, sosial-iqtisadi, elmi və mədəni inkişafı ilə bağlı tələblərdən irəli gəlir və akkreditasiya xidməti tərəfindən müvafiq qaydada qiymətləndirilir.

Attestasiyanın keçirilməsi əsasən aşağıdakı məsələlərin həllini nəzərdə tutur:

-attestasiya olunan hər bir əməkdaşın peşə və fərdi keyfiyyətlərini obyektiv qiymətləndirmək;

-onların peşəsinə yaralığını, tutduqları vəzifəyə uyğunluğunu və gələcək xidməti perspektivini müəyyən etmək;

-kadr potensialının keyfiyyət təhlili əsasında kadrların gələcək işlərində peşə bacarıqları və öz vəzifəsinə məsuliyyət hissələrinin artırılması, xidməti və şəxsi nizam-intizam qaydalarına riayət etməsi istiqamətində məqsədyönlü tədbirlər həyata keçirmək;

-rəhbər vəzifələri tutmaq üçün ehtiyatı yaratmaq və dəqiqləşdirmək;

-stimul və diplomdansonrakı təhsili bu proseslə əlaqələndirmək;

-keyfiyyətin və iş intizamının, eləcə də məsuliyyətin artırılmasına nail olmaq.

Attestasiya proseduru təkcə attestasiya olunan şəxsin qiymətləndirilməsi məqsədini daşımamalıdır. O, həm də bütün sahələr üzrə rəhbərlərdə hüquqi əsaslara arxalanan məsuliyyət hissini artırmaq və aşılamaq məqsədini daşmalıdır. Qiymətləndirmə proseduru öz məzmunu etibarlı ilə bir sıra tələblərə, hər şeydən əvvəl, dəqiq ilkin məlumatlara əsaslanan obyektivlik tələblərinə cavab verməlidir.

Monitoring latınca monitor xatırladan, izləyən, müşahidə aparan deməkdir. Təhsildə monitoring –didaktik proseslərin arzuolunan nəticələrə, yaxud ilkin mülahizələrə uyğun olub-olmamasının aşkarlanması məqsədilə aparılan müntəzəm nəzarətdir) və qiymətləndirmə

(dəyərləndirmə)-pedaqoji prosesin və onun bütün komponentlərinin işi barədə məlumatları əldə etmək və səmərəliliyini müəyyənləşdirmək deməkdir (təlim prosesinin durumu, nəticələrinin göstəriciləri və proqnoz). Monitoring təkcə qiymətləndirmə ilə bağlı deyil. O, üç əsas sütun-diaqnostika, proqnozlaşdırma və korreksiya üzərində dayanır.

Pedaqoji prosesin müxtəlif mərhələlərində monitoringin pedaqoji, sosioloji, psixoloji, iqtisadi və demoqrafik formalarından istifadə olunur. Müəssisələrdə bu cür ilkin qiymətləndirməni (kadrların attestasiyasının) –rəhbərlər, Monitoring Qiymətləndirmə Mərkəzlərində isə mütəxəssislər, ekspertlər həyata keçirirlər. Bu halda əsas məsələ işin təşkil olunmasından, elmi yanaşmanın dərəcəsiindən, müasir metodlardan istifadədən və nəticələrin əsaslandırılması səviyyəsiindən asılıdır.

Bu cür mərkəzlərin yaradılması son dərəcə zəruridir. Monitoring Qiymətləndirmə Mərkəzləri qiymətləndirmə prosesində neytral mövqedən çıxış edərək kadr strukturlarının nəzəndə də fəaliyyət göstərə bilirlər. Buraya ödənişli əsaslarla neytral mütəxəssislər, ekspertlər cəlb olunurlar. MQM-in əsas vəzifəsi daim monitoringlər aparmaq, müşahidələrin nəticələrini əsaslandırmaq, son məqsədlərə çatmaq üçün perspektiv planlar tərtib etməkdən ibarət olmalıdır. Lazım olduqda, MQM –in mütəxəssisləri üçün differensiallaşdırılmış proqramlarla xüsusi kurslar təşkil edilir. Mərkəzlər yalnız qiymətləndirilən müəllimlərə deyil, hətta metodik və praktiki tövsiyələri işləyib hazırlaya bilən, "peşəkar – öyrədənrlə" də komplektləşdirilməlidirlər. Mərkəzin strukturu əhatə kontingentinin sayından, mərkəzi yaradan təşkilatın real imkanlarından asılıdır. MQM -in ştatına öyrədən metodistlərin psixodiaqnostiki, sosioloqun kompüter təminatçıların və ən nəhayət mütəxəssis- ekspertlərin daxil edilməsi zəruridir. Mərkəzin minimal tərkibi rəhbər, metodist, psixodiaqnostik tədqiqatçı və operatorlardan ibarətdir. Qiymətləndirmə mərkəzində ştat tərkibinin olması daha məqsədəuyğundur. MQM-in statusu vəzifələri və hüquqları, müvafiq qaydada təsdiq olunmuş şəxslərin hüquq və vəzifələri Əsasnamədə öz əksini tapmalıdır.

Mərkəzlər daha hansı məsələləri həll edə bilirlər? MQM - də kadrlar barəsində ətraflı məlumatları özündə əks etdirən "İnformasiya bankı" yaradılmalıdır. Standartlaşdırılmış sənədlərin formaları və onlarla aparılan iş üzrə tövsiyələr mərkəzdə cəmləşdirilir və daim təkmilləşdirilir. Professiogramlar işlənir və bunun əsasında rəhbərliyə nəticə və təkliflər verilir. Mərkəzlər qiymətləndirmənin planlı və aralıq "ölçülər" ini əks etdirən göstəriciləri və nəticələri toplayırlar. Mərkəzlər kadr strukturlarında karguzarlıq işlərinin sadələşdirilməsinə, burada avtomatlaşdırılmış sistemlərin tətbiqinə imkan yaradırlar. Bu sistem sayəsində hər cür proteksiya halları aradan götürülür, müstəqil ekspertiza və kadrların keyfiyyət qiymətləndirilməsi prosesində sistemlilik yaranır.

## NƏTİCƏ

Nəticədə onu deyə bilərik ki, MQM- lər daha mühüm məsələlər də məşğul ola bilirlər. Məsələn müxtəlif metodikaların hazırlanması bəzi problemlər üzrə digər alimlərlə birgə tədqiqatların aparılması, kadr heyətinin attestasiyasının keçirilməsində, müəssisə rəhbərlərinə metodoloji köməkliyin göstərilməsi və s. Bu məqsədlə MQM-lərin tərkibində müvəqqəti strukturların yaradılması nəzərdə tutulur. MQM-də elmi-analitik təhlillər aparılır, nəticədə əsaslandırılmış təqdimatlar verilir. Qiymətləndirmənin daha böyük effektivliyinə yeni, müstəqil işlə məşğul olmaya başlayan adamların qiymətləndirilməsinə ehtiyac yaranan hallarda daha çox nail olunur. Adi ənənəvi yolla namizəd seçiləndə səhvlər mümkündür, ancaq MQM-in təqdim etdiyi variantda namizədə yeni vəzifə və funksiyaya müvafiq problem həll etmək təklif olunur. Məhz elə buna görə də rəhbərlər qarşısında prinsipə yeni tələblər qoyulan zaman qiymətləndirmə proqramı kifayət qədər effektiv olur. Peşəkarlıq səviyyəsinin

öyrənərək xüsusi proffessioqramların tətbiqi yolu ilə həm fərdi, həm də kadr potensialını müəyyənləşdirmək işi şərti mərhələlər formasında müəyyən ardıcılığı nəzərdə tutur.

Pedaqoji monitoring və qiymətləndirmənin əsas məqsədi təhsil sistemi fəaliyyətinin mövcud vəziyyətini və onun keyfiyyətə yüksəlməsinə yönələn əməliyyatlar sistemini müəyyənləşdirməkdir. Təhsil sistemini inkişaf etdirmək və təkmilləşdirmək məqsədilə aşağıdakı əsas sahələrin monitoringi və qiymətləndirilməsi vacibdir:

- təhsil müəssisəsinin fəaliyyət göstərdiyi sosial-mədəni şərait;
- təhsilin məzmunu;
- təhsilin keyfiyyəti;
- təhsil alanların psixoloji xüsusiyyətləri;
- təhsil alanların peşayönümünün, ixtisas hazırlığının müəyyənləşdirilməsi;
- təhsil sisteminin səmərəliliyi;
- müəllimin pedaqoji fəaliyyəti və peşəkarlıq səviyyəsi;
- təhsil müəssisəsinin innovasiya fəaliyyəti;
- təhsil müəssisəsi fəaliyyətinin valeoloji (intellektual, psixoloji, fiziki sağlamlıq) aspektləri;
- təhsil müəssisəsi fəaliyyətinin kompleks təhlili.

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## **ARE CRYPTOCURRENCIES THE BEST MILKYWAY TO REACH MONEY?**

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### **Abstract**

In recent years, especially the cryptocurrency market has been one of the most popular topics among investors. The transaction volume in the Covid-19 process has reached incredibly high rates compared to the stock markets. As the first examples of cryptocurrency in the early 1990s; Coins such as Flooz, Beenz, and DigiCash had created. However, the biggest problem with these coins is; they failed in the market due to internal disputes, frauds, and problems in the financial market. After these studies, Bitcoin was introduced to the world by Satoshi Nakamoto in 2008. In addition to these uncertainties, it carries out blockchain technology, and everyone can see every transaction. This study will explain why investors are turning to cryptocurrencies over the market's rate of return. The data series will interpret in the research, and the literature review supports the data.

As the data obtained from the research; The contraction of the global economy and the direct impact of the global business life of the Covid-19 process pushed investors to alternative investment methods during this period. Bitcoin, which was \$ 3,441 in February 2019, rose to \$ 60,285 by mid-March 2021. The fact that 2019 stock return expectations are 9% on average shows a difference that cannot compare with the rate of return of the crypto markets. The increase in the value of Bitcoin in November 2020 is one of the other coins; Ethereum (ETH) started from \$ 133.76 at the beginning of March 2020 and increased to \$ 2,114.14 in April 2021, and DogeCoin (DOGE) reached \$ 5.92 in March 2021 from \$ 0.46 in December 2020 to the bull market of the entire market. This earning rate can trigger people's instincts to earn money, especially in crises, and enable them to turn to digital money markets.

**Keywords:** Cryptocurrency, Bitcoin, International Finance, Digital Currency

### **INTRODUCTION**

The globalization of the economy causes investors all over the world to come together and form new structures. In terms of the financial sector, the increase in the transaction volumes of the stock exchanges, the presence of governments and financial institutions as guarantors for investments contribute to the investors' preference of the stock markets. However, the difficulties of financial institutions as required by the contracts and the lack of high circulation margins in the stock market cause some investors to stay away from the stock markets.

New investors direct them to different investment instruments to keep their profit margins high in the fastest way possible. Especially in recent years, crypto markets, which everyone speaks of, are in great demand. Increasing interest in cryptocurrency products day by day, the inclusion of new coins in the blockchain system, the high-profit margin compared to the classical exchanges, and the ease of entering and leaving the crypto market are remarkable. In

this study, the cryptocurrency market that has followed the bull market trend in recent years, why cryptocurrencies are attractive for investors, and why they are attracted so much attention will be given. During the Covid-19 period, the rise of crypto markets and why coins are attractive for investors will be discussing.

### **1. Crypto markets and Coins**

When it examines digitalization examples of money, it first draws attention to the digital cards used in oil offices in Holland. Later, steps such as encouraging the use of individual cards, increasing promotions by banks, increasing digital security levels, people's transition to online banking, and access to exchanges through online systems are following. Today, digital money, or cryptocurrencies known by everyone, has emerged as a new one to digital financial markets (Dannen, 2017).

The coins, which first appeared in the United States in the early 90s, caused a wrong perception in the society due to the problems in the security network of the blockchain system and the cryptocurrencies used by malicious people for fraud. However, in the 2010s, cryptocurrencies came to the fore again through Bitcoin (Tikhomirov, 2018). Even though it is seen as an unsafe and uncanny investment tool by investors during the first outflows of bitcoins, some have attracted attention. Significantly, following the digital markets, the introduction of new coins and the increase in their variety have attracted investors' attention (Farell, 2015)

The cryptocurrency market had built on the blockchain system. In this system, investors can trade in a "peer to peer" manner, and their progress by obtaining the approval of user information in each transaction process makes it vital in terms of security. In particular, this blockchain system has handicaps such as not being regulated by the state or any financial institution and system servers worldwide (Caporale et al., 2018).

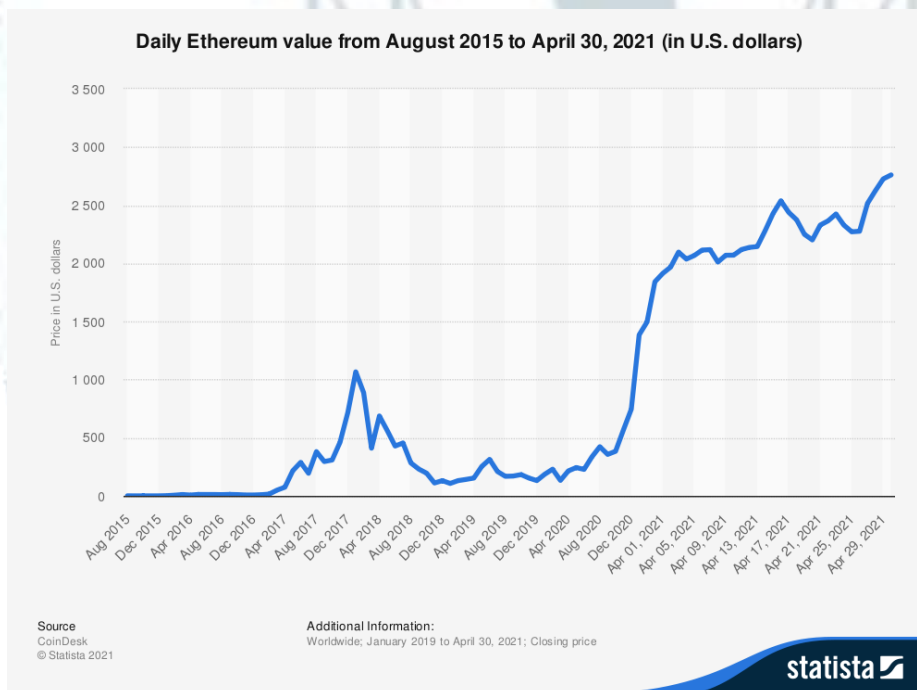
Why have cryptocurrencies become the milky way for investors, even though they are not accepted in the classical financial system? Investors started to turn to new investment instruments in order to gain profits in a short time. Since the first entries of every new instrument into the market is not generally offered at high prices, it may be attractive for investors in the first place. Because in classical stock exchanges, a new stock, bond, or bill starts to be traded at the initial price that their financial institutions deem appropriate in the initial pricing (Liu et al., 2019). In the regulatory principles of intermediary financial institutions, the company's past financial statements for stocks did not promise a future, especially in terms of bonds. Government-guaranteed bonds are risk-free securities purchased to be a haven for investors and bonds to be diverse in investors' portfolios (Gencer et al., 2018).

When cryptocurrencies are compared to securities used in classical exchanges; The features such as not being intervened by any financial institution, the earnings trend range being very high, and many coins being tax-exempt from the blockchain system stand out. Factors such as these facilitating factors attract the attention of today's investors, and the shortest way for people to access money, namely the milky way, has become (Lee et al., 2018). In this study, the uptrend charts and interpretations of various cryptocurrencies in recent years will be explaining.



### 1.1.1. Ethereum

When the information about Ethereum is examined, it can be said that there is a response in society. Ethereum is a system that contributes to the development of the blockchain system and aims to provide opportunities for use in more areas (Tikhomirov, 2018). Ether (ETH) is the cryptocurrency used in this system. The purpose of this system is; It is to enable the creation of new software over the blockchain system where Bitcoin is located. Ethereum's freedom to its users in this sense allows many sub-coins to be launched into the market (Tikhomirov et al., 2018). Aimed in the system; Preventing investors' personal information from being accessed by third parties is the ability to keep all of the purchase/sale transactions on scattered and independent devices (Mózo, 2017). When traders want to buy Ether, they pay a low price for this transaction. This transaction fee is the earning point for miners in the Entereum (Valenta & Sandner, 2017). The duties of these miners are; It prevents investors' personal information from falling into the hands of others, updates entry/exit codes so that earnings can be securely stored in digital wallets, prevents the investment made from being followed by others (Ethereum (ETH) - Bitlo.Com, n.d.). The popularity of other sub-coins and Bitcoin has caused the prices to rise significantly in recent years. These rises are showing in Figure 1.



**Figure 1.** Daily Ethereum Value Between 2015-2021

**Source:** (Ethereum (ETH) - Statista, n.d.)

As seen in Figure 1; \$ 1.25 in August 2015, \$ 11.22 in August 2016, \$ 380.71 in August 2017, again \$ 283.75 in 2018 of the same month, \$ 168.69 in 2019, \$ 423.08 in 2020, \$ 30 April 2021. Ether coin, which has gained popularity since 2015, has been in the bull market, especially since 2020. It continues this trend by continuing in the 2021 market. Ethereum market investors, which continue to rise in the first quarter of 2021, can be said to be on a more advantageous line compared to the classical stock market (Ethereum Prices 2015-2021 | Statista, n.d.).

### 1.1.2. Cardano (ADA)

It is a platform called "Cardano" developed for trading cryptocurrencies. This system includes features such as representing investors' income, contributing to the high level of security with cryptography, and making direct transfers. Cardano is not just a cryptocurrency. Cardano is a blockchain system created to scale first-generation blockchains like Bitcoin and second-generation blockchains like Ethereum (Redshaw, 2021). Within this classification, they are experiencing congestion in the networks of first and second-generation blockchains. Therefore, their management is limited to the total amount of transactions (Rosu, 2018). The realization of this limitation can be perceived as inefficiency by large mass investors around the world.

Fluctuation times between BTC and ETH indicate the fluctuations in the transaction amount. Cardano references VISA as its computing power. In payments within the system, the average of "transactions per second (TPS)" is 1,736, and its total capacity is 24,000 TPS. Cardano aims to improve the process efficiency in the system in different ways. The first of these goals is the Proof of Stake (PoS) mechanism called Ouroboros. According to Proof of Work (PoW), Ouroboros ensures the reduction of energy costs and the creation of a demonstrable security system (Zurich & Date, 2019). ADA is Cardano's token and named after Ada Lovelace (Mathematician). ADA is both a digital currency and allows making transactions within the Cardano system. ADA holders also own a stake in the Cardano network, and this share can be used in the staking pool to earn staking rewards. Cardano staking takes place through Binance Earn (Binance Academy, n.d.).

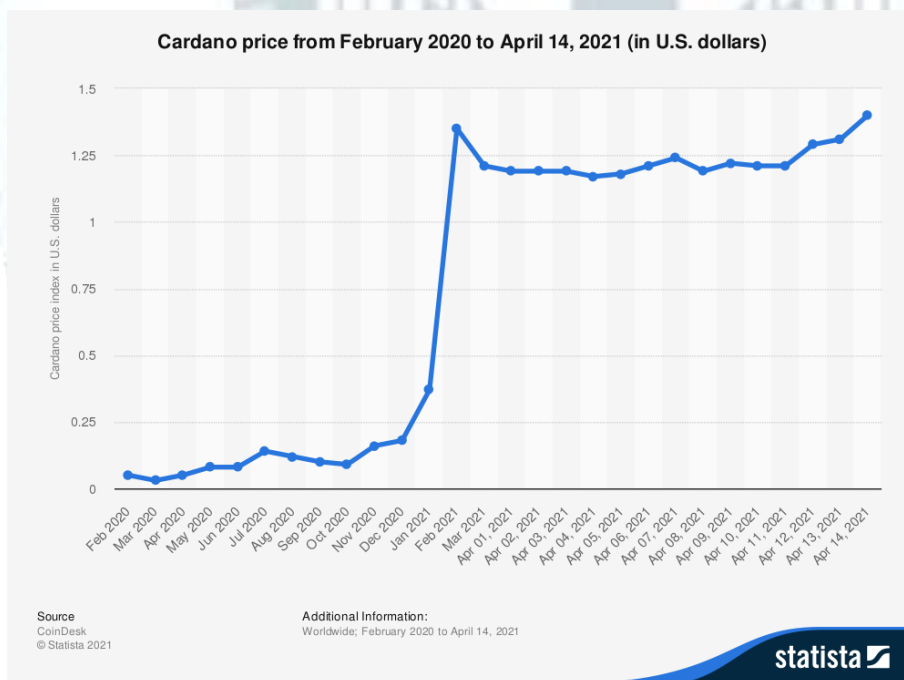


Figure 2. Cardona Prices Between 2020-2021

Source: (Cardano Price History 2021 | Statista, n.d.)

Cardano; The bull market started its trend in 2021, starting from \$ 0.18 in December of the same year, while it was \$ 0.05 in February 2020. It continued with 1.35 in February

2021 and saw \$ 1.4 on April 14. Cardano's lack of bounce trips such as Bitcoin or Ethereum can be attributed to its being a third-generation blockchain application. The increasing number of sub-coins is affecting the competition and preference rates among tokens. However, since the beginning of 2020 and not falling below \$ 1 as of March 2021, sub-coins are preferred in the crypto money market (Cardano Price History 2021 | Statista, n.d.).

### **DISCUSSION/SUGGESTION**

In this study; Information was given about two coins and systems in demand in the crypto money market. It is noteworthy that both have similar features and can make transactions on their blockchain systems, and have only coins in the market. Although they have a lot in common, the values of the two cryptocurrencies are not close to each other. There may be many different reasons for the very high volume differences between them. Ethereum, especially after Bitcoin, maybe the striking feature of an investor who does not know the market very much. However, an investor who is dominant in the crypto money market can make investments in this direction, taking into account the characteristics of Cardano, such as its strong infrastructure and systematic determination of its security level. Coins that have similarities between different cryptocurrencies and their properties and areas of use can be examined, and the reasons for coins that are inversely proportional to their prices can be questioned.

### **CONCLUSION**

Undoubtedly, Crypto Money is one of the most talked-about financial events in recent years. The increasing popularity of these financial digital investment products and the continuous appreciation of coins attract the attention of investors. Especially in terms of recent years, the fact that the growing volume of the crypto money market is higher than the classical stock exchanges calls for an answer to whether financial regulations should be introduced both by international financial institutions and countries. Although any state / private financial institution does not accept them, this market maintains its popularity with the investors' instinct to earn money. Especially in the Covid-19 process, following the bull market trend has been a Milkyway for investors to reach money from short.

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## **THE EFFECTS OF HDFC BANK MERGER ON THEIR EMPLOYEE PERFORMANCE**

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### **Abstract**

With the increasing competition in the globalized economy, mergers are expected to occur at a much larger scale than any time in the past and have played a major role in achieving a competitive edge in the dynamic market environment. Mergers can prove to be a huge risk to the human resources of both companies. If not done with care, a proper understanding of each other by either the entities or the lack of willingness among anyone to co-operate, the whole effort may go waste and the whole result will be disastrous. This situation mostly occurs when most mergers fail to consider or address the concern of the employees within the firm, especially of the firm which is being acquired. Mergers and Acquisitions can be especially challenging to employees, ultimately impacting their performance.

Many studies have been carried out to examine the profitability and efficiency ratios of the firms involved in the M&A especially abroad. Literature proves that deep studies have not been carried out in the Indian scenario and that too with the little or negligible focus on the human factor. Hence, the objective of the study is to find out the perceived effects of the merger in the HDFC Bank on their employee performance. Here, exploratory factor analysis is used to explore the clusters of perceived effects of the merger in the HDFC Bank that influence the employee performance through the principal component method with varimax rotation.

The study reveals that out of the 29 parameters of perceived effects of the merger that influence the employee performance, 7 factors have been extracted and these seven factors explain the total variance of perceived effects of the merger to the extent of 79.26 %.

The study also reveals that the remuneration variable has the highest influence on employee performance with a variance of 26.05%.

It is identified that the loading patterns of the factors suggest a strong association among the parameters and all the variables are found to be contributing to the perceived effects of the merger that influence the employee performance in the HDFC Bank.

**Keywords:** Bank, Merger, HDFC Bank, Employee Performance, Perceived Effects.

## **INTRODUCTION**

The Indian banking sector has witnessed tremendous changes ever since the origination of banking in India in the modern sense in the eighteenth century. Transformation in its operations has been brought about through various changes over time, including the Nationalisation in the 1900s, the New Economic Reforms in 1991- consisting of privatization, liberalization, and globalization, all of which have changed the very face of banking. From the traditional brick-and-mortar system, now to the branchless form, technology has changed banking a lot. Though it has a lot of ways yet to go, it is one banking system in the world that had not been much affected by the global financial crisis of 2008.

Mergers are viewed as a means of synergy and growth. All the sectors in the world are influenced by mergers, and hence, the banking sector too. In India, many a time, mergers are considered as a means of protecting weak firms by forcing the better-performing ones to take over these weak ones. Moreover, mergers are considered an instrument for enduring global competition.

Mergers mean the evolution of an entirely new entity when two businesses/firms dissolve and combine their assets and liabilities into the newly formed one. Mergers are meant to take place between equals but most of the time this does not happen. Mergers may also be termed amalgamations or absorption or consolidation. A bank merger is an occurrence in which two entities that were entirely independent earlier and used to perform their tasks individually are combined into one entity.

Many types of research in this direction have been carried out at the global level mainly to assess the financial performance of acquiring firms before and after the mergers. But in most of the studies, the human factor side is often ignored, which forms the most vital facet for the success and future of any industry. Mergers can pose threats as well as opportunities to the employees in both the acquiring and target firm.

The competition in the global market has pushed India also to adapt to these strategic changes, to sustain in the market. The merger of State Bank of India with its subsidiaries has made the Bank one of the top 50 banks in the world. Mergers in India are undertaken mainly due to Government initiatives and also for synergy motives.

Hence, the objective of the study is to find out the perceived effects of the merger in the HDFC Bank on their employee performance.

## **OBJECTIVE OF THE STUDY**

- ❖ To find out the perceived effects of the merger in the HDFC Bank on their employee performance.

## **MATERIALS AND METHODS**

The area of study is Kerala and is based on both primary and secondary data. Primary data was collected using structured questionnaires from 162 employees of the HDFC Bank all over Kerala. The secondary sources of data obtained from the annual audit report of the HDFC Bank, websites, journals, newspapers, articles are used for the theoretical development.

In this study, exploratory factor analysis is used to explore the clusters of perceived effects of the merger in the HDFC Bank that influence the employee performance through the principal component method with varimax rotation. Descriptive Statistics and Garret Ranking is used as tools for explanation.

## RESULTS & DISCUSSION

The HDFC Bank Limited was incorporated in August 1994, by the Housing Development Finance Corporation, a reputed Mortgage finance company in India. It is one of the largest and leading private sector banks in India with its headquarters in Mumbai. At present, they have 4715 branches and 12260 ATM's spread across 2669 cities and towns. It had conducted two mergers which made the HDFC Bank one of the largest banks in India in terms of assets and market capitalisation (₹ 4,97,284.17crores). The first merger initiated by HDFC Bank was in 2000 with the Times Bank of India and the second one took place in 2008 with the Centurion Bank of Punjab. The merger by HDFC Bank is the first one among the New Generation Private banks in India.

Exploratory Factor analysis is a data reduction technique that reduces the larger number of variables to a smaller set of underlying factors that summarizes the essential information contained in the variables. Factor loadings are numerical values that indicate the strength and direction of a factor influencing a measured variable. Here, exploratory factor analysis is used to explore the clusters of perceived effects of the merger in the HDFC Bank that influence the employee performance through the principal component method with varimax rotation.

**Table 1: Reliability Analysis**

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.838
Bartlett's Test of Sphericity	Approx. Chi-Square	20334.898
	Df	406
	Sig.	.000

The above table reveals the results of two tests namely, Kaiser-Meyer- Olkin measure of sampling adequacy and Bartlett's Test of Sphericity to test whether the relationship among the variables is significant or not. Kaiser-Meyer-Olkin measure of sampling adequacy shows the value of test statistic as 0.838, which means the factor analysis for selected variables is found to be appropriate. Bartlett's Test of Sphericity shows the significant value as 0.000, which means the selected variables are statistically significant and exhibits a high relationship among the factors of perceived effects of the merger that influence the employee performance.

**Table 2: Clustering of Factors**

<b>Factor</b>	<b>Parameters</b>	<b>Rotated Factor Loadings</b>
Factor 1: Perceived effects of merger in	Wages and benefits	.893
	Allowances and bonus	.884

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remuneration 26.05 % of Variance	Performance based pay	.881
	Terms of employment	.866
Factor 2: Perceived effects of merger in sense of belongingness 17.03 % of Variance	Communication and contributions	.747
	Employee composition	.792
	Work place relationship	.780
Factor 3: Perceived effects of merger in job security 12.57 % of Variance	Organizational commitment	.709
	Job skills and traits	.718
	Employee retention	.708
	Job satisfaction	.675
Factor 4: Perceived effects of merger in chain of command 6.60 % of Variance	Coordination	.661
	Work loads	.655
	Personal and task conflicts	.627
	Cultural compatibility	.623
	Resource allocation	.600
Factor 5: Perceived effects of merger in company policy 6.09 % of Variance	Management support	.584
	Staff development	.564
	Strategic rationale	.562
Factor 6: Employee Motivation 5.68 % of Variance	Training and development	.796
	Non-monetary benefits	.754
	Employee commitment	.741
	Employee attitude	.716
	Working conditions	.701
Factor 7: Employee Productivity 5.24 % of Variance	Efficiency	.699
	Consistency	.696
	Service quality	.686



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	Creativity	.657
	Target achievement	.591
<b>Total Variance Explained : 79.26 % Variance</b>		

The study reveals that out of the 29 parameters of perceived effects of the merger that influence the employee performance, 7 factors have been extracted and these seven factors explain the total variance of perceived effects of the merger to the extent of 79.26 %.

The 4 parameters of perceived effects of the merger such as ‘Wages and benefits’, ‘Allowances and bonus’, ‘Performance-based pay’, ‘Terms of employment’ were clustered together as factor 1 (**perceived effects of the merger in remuneration**) with 26.05% variance.

The 3 parameters of perceived effects of the merger such as ‘Communication and contributions’, ‘Employee composition’, ‘Workplace relationship’ were clustered together as factor 2 (**perceived effects of the merger in sense of belongingness**) with 17.03% variance.

The 4 parameters of perceived effects of the merger such as ‘Organizational commitment’, ‘Job skills and traits’, ‘Employee retention’, ‘Job satisfaction’ were clustered together as factor 3 (**perceived effects of the merger in job security**) with 12.57% variance.

The 5 parameters of perceived effects of the merger such as ‘Coordination’, ‘Workloads’, ‘Personal and task conflicts’, ‘Cultural compatibility’, ‘Resource allocation’ were clustered together as factor 4 (**perceived effects of the merger in the chain of command**) with 6.60% variance.

The 3 parameters of perceived effects of the merger such as ‘Management support’, ‘Staff development’, ‘Strategic rationale’ were clustered together as factor 5 (**perceived effects of the merger in company policy**) with a 6.09% variance.

The 5 parameters of perceived effects of the merger such as ‘Training and development’, ‘Non-monetary benefits’, ‘Employee commitment’, ‘Employee attitude’, ‘Working conditions’ were clustered together as factor 6 (**Employee Motivation**) with 5.68% variance.

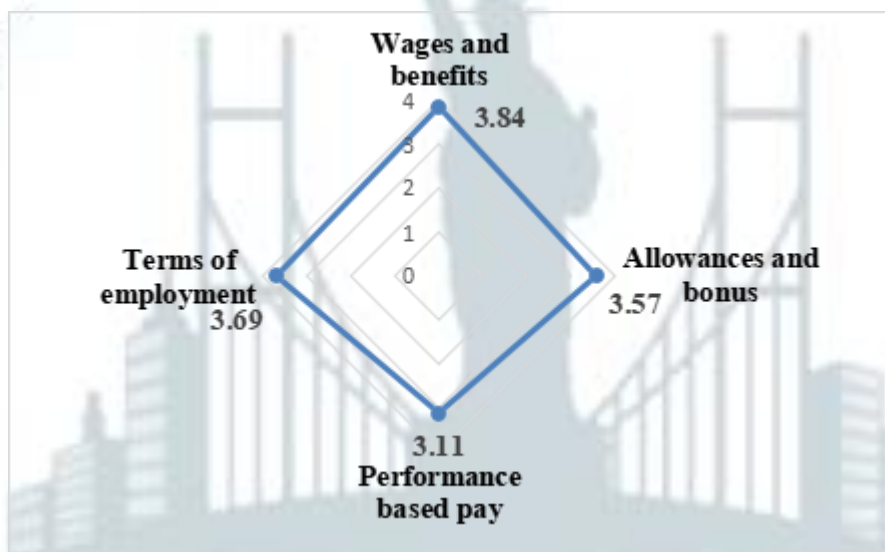
The 5 parameters of perceived effects of the merger such as ‘Efficiency’, ‘Consistency’, ‘Service quality’, ‘Creativity’, ‘Target achievement’ were clustered together as factor 7 (**Employee Productivity**) with 5.24% variance.

It is identified that the loading patterns of the factors suggest a strong association among the parameters and all these variables are found to be contributing to the perceived effects of the merger that influence the employee performance in the HDFC Bank.

The study also reveals that the remuneration variable has the highest influence on employee performance with a variance of 26.05%.

**Table 3: Descriptive Statistics on the Perceived Effects of Merger in Remuneration**

<b>Perceived effects of merger in remuneration</b>	<b>Mean</b>	<b>Rank</b>
Wages and benefits	3.84	1
Allowances and bonus	3.57	3
Performance based pay	3.11	4
Terms of employment	3.69	2

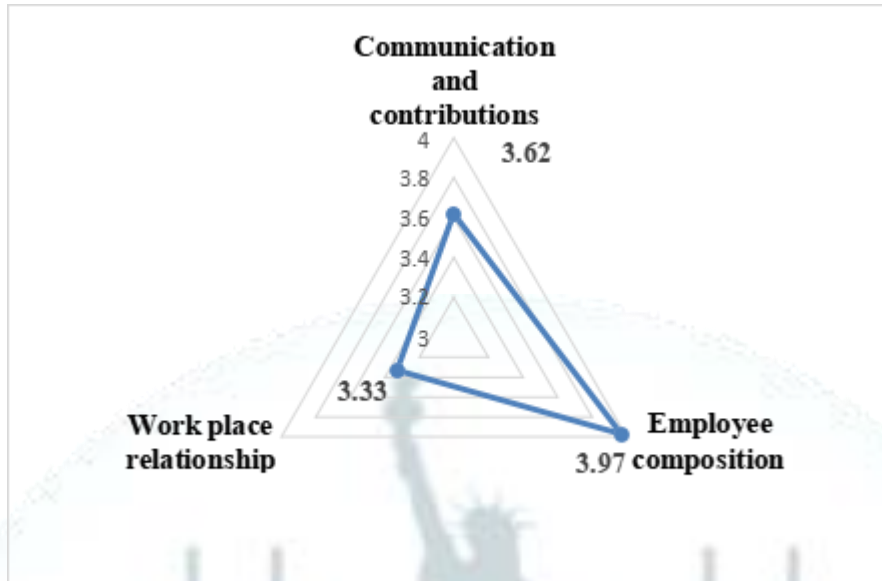


**Figure 1: Garret Ranking on the Perceived Effects of Merger in Remuneration**

It is found that the ‘wages and benefits’ (3.84) have got the highest perceived effect on the merger in remuneration. The second factor that has got the perceived effect on the merger in remuneration is ‘terms of employment’ (3.69). The other factor which has a perceived effect on the merger in remuneration is ‘allowances and bonus’ (3.57) and ‘performance-based pay’ (3.11).

**Table 4: Descriptive Statistics on the Perceived Effects of Merger in Sense of Belongingness**

<b>Perceived effects of the merger in sense of belongingness</b>	<b>Mean</b>	<b>Rank</b>
Communication and contributions	3.62	2
Employee composition	3.97	1
Workplace relationship	3.33	3

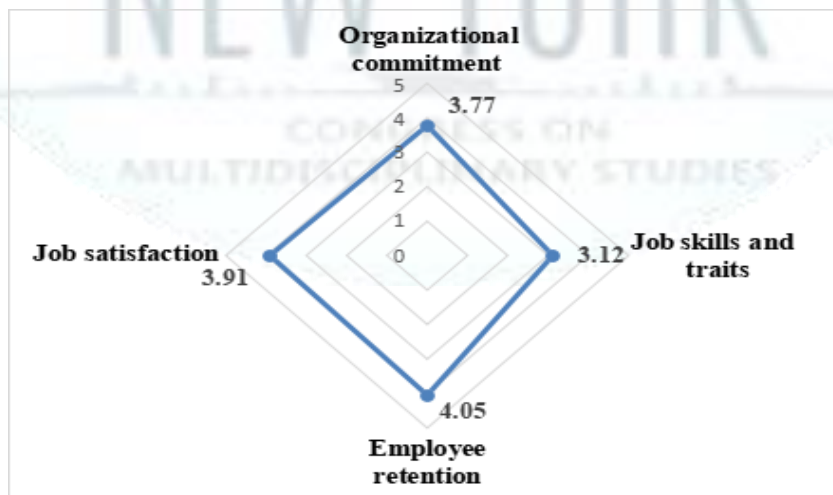


**Figure 2: Radar Graph on the Perceived Effects of Merger in Sense of Belongingness**

The above table and figure show that the ‘employee composition’ (3.97) has got the highest perceived effect of the merger in sense of belongingness. The other factors having the perceived effect of the merger in sense of belongingness are ‘communication and contributions’ (3.62) and ‘workplace relationship’ (3.33).

**Table 5: Descriptive Statistics on the Perceived Effects of Merger in Job Security**

Perceived effects of the merger in Job security	Mean	Rank
Organizational commitment	3.77	3
Job skills and traits	3.12	4
Employee retention	4.05	1
Job satisfaction	3.91	2

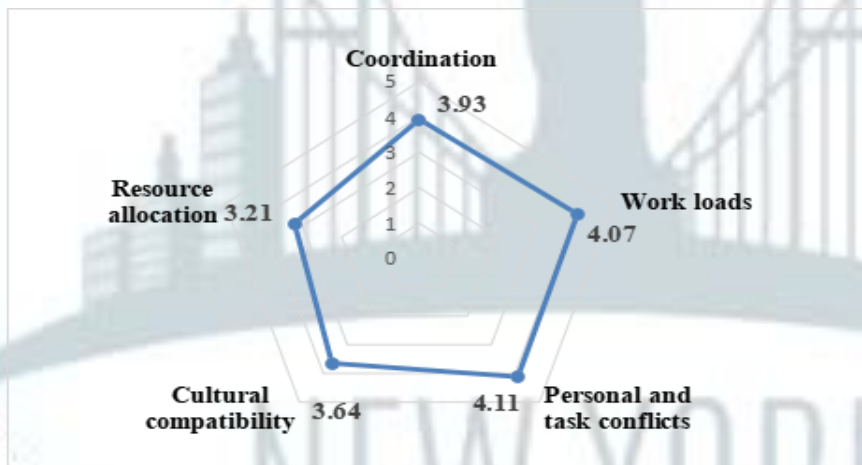


**Figure 3: Radar Graph on the Perceived Effects of Merger in Job Security**

It is found that the ‘employee retention’ (4.05) has got the highest perceived effect of the merger in job security. The second factor having the perceived effect of the merger in job security is ‘job satisfaction’ (3.91). The other factors having the perceived effect of the merger in job security are ‘organizational commitment’ (3.77) and ‘job skills and traits’ (3.12).

**Table 6: Descriptive Statistics on the Perceived Effects of Merger in Chain of Command**

<b>Perceived effects of the merger in the chain of command</b>	<b>Mean</b>	<b>Rank</b>
Coordination	3.93	3
Workloads	4.07	2
Personal and task conflicts	4.11	1
Cultural compatibility	3.64	4
Resource allocation	3.21	5



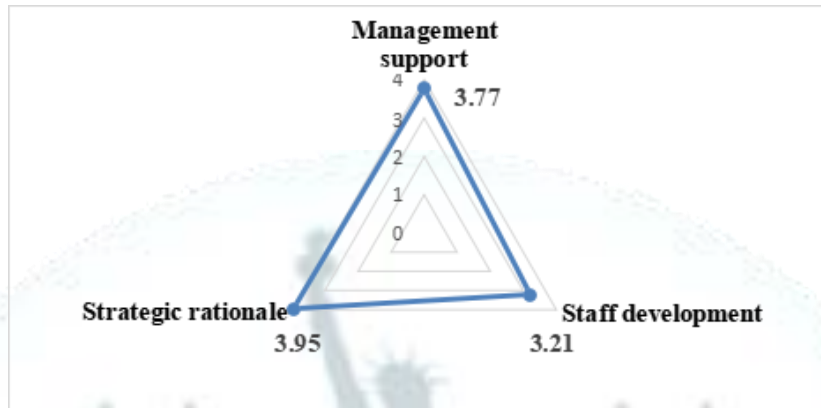
**Figure 4: Radar Graph on the Perceived Effects of Merger in Chain of Command**

It is found from the above table and figure that the ‘personal and task conflicts’ (4.11) have got the highest perceived effect of the merger in the chain of command. The second factor having the perceived effect of the merger in the chain of command is ‘workloads’ (4.07). The other factors having the perceived effect of the merger in the chain of command are ‘coordination’ (3.93), ‘cultural compatibility’ (3.64), and ‘resource allocation’ (3.21).

**Table 7: Descriptive Statistics on the Perceived Effects of Merger in Company Policy**

<b>Perceived effects of the merger in company policy</b>	<b>Mean</b>	<b>Rank</b>
Management support	3.77	2
Staff development	3.21	3

Strategic rationale	3.95	1
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**Figure 5: Radar Graph on the Perceived Effects of Merger in Company Policy**

It is found that the strategic rationale (3.95) has got the highest perceived effect of the merger in company policy. The other factors having the perceived effect of the merger in company policy are management support (3.77) and staff development (3.21).

### **SUGGESTIONS & CONCLUSION**

Mergers will bring around a drastic cutting down in the number of staff and personnel, as the company shuts down or lay off employees. Those who are retained may experience a change in their positions or location. This can create a feeling of insecurity and difficulty adjusting to the changing situations. There can also be an increase in the workload as the nature and quality of the job change. Most of the evidence shows that the M&As have a negative impact on the employees, as it is followed by redeployment of employees, their forced movement from one place to another, maybe even from one state to another, affecting their morale and leading to frustration. All this will affect their potential and contribution to the institution. Further, M&As would result in the requirement of highly talented and skilled employees owing to the change in technology and the change in the products and services offered to the customers. This would require providing training to the existing employees, which would mean additional costs to the firm.

But a positive effect is that the new company can obtain a highly skilled and effective workforce. Some even argue that there has been a growth in the job due to mergers.

Perception of an individual refers to his viewpoint on a particular situation, and need not be based on reality. It is what one perceives, based on what he sees and experiences. In the context of an organization, what the employee considers about the organization or his co-workers or manager may be different from the reality. But it is crucial from the viewpoint of the organization, since this perception of the employee determines its growth. Therefore, the organization must provide its employees with a proper understanding of itself.

For a firm, especially one such as a banking institution, where customer satisfaction is important, it is also essential to maintain employee satisfaction as well. It is them who are constantly in contact with the customers. If they are unhappy in their work that will be

reflected in their attitude towards the customers, which can adversely affect the entire business. Hence, the management needs to find means to keep their employees motivated.

One method is to empower the employees by delegating them the responsibility for the work they do. By doing so, they become in charge of the particular category and will be answerable for any shortcoming. This will make them do the task with more devotion and diligence.

Another means of motivation is through encouraging creativity and innovation in an employee. If they are given enough space for working out their ideas and imagination, they will not easily be drained out in their sphere of work. Learning is another factor that motivates employees. Training and skill enhancement programs equip them to acquire new knowledge in their fields of activity thus increasing their self-confidence and improving their attitude to the customers as well as towards their colleagues. Another aspect to be considered by the employers is that they do not take the quality of life away from their employees.

A considerable number of studies reveal that the failure of M&A is higher than expected. Many a time, this failure is attributed to the mishandling of the employees by the management. In this fast-changing, highly competitive globalized economy, some changes can be destabilizing, especially for the human factor. Hence, their apprehensions must be addressed effectively by the people concerned. Most important is to create a milieu of trust among the employees. Ensuring their participation from the initial stages of M&A to its final execution can confirm whole-hearted co-operation from the employees. The employees expect transparency on the part of their employers. Involving them in the M&A process would solve these issues to a great extent and thus create a sense of belongingness among the human resource.

A speech delivered by Dr. K.C. Chakrabarty, Deputy Governor of RBI, stresses the importance of Human Resource Management in Banks. According to him, two crucial challenges faced by any banking industry are management of people and management of risk. To manage the second effectively, the first need to be efficient. Hence, acquiring and retaining the right personnel is very important since this is a service industry (Chakrabarty, 2012).

### **FURTHER SCOPE**

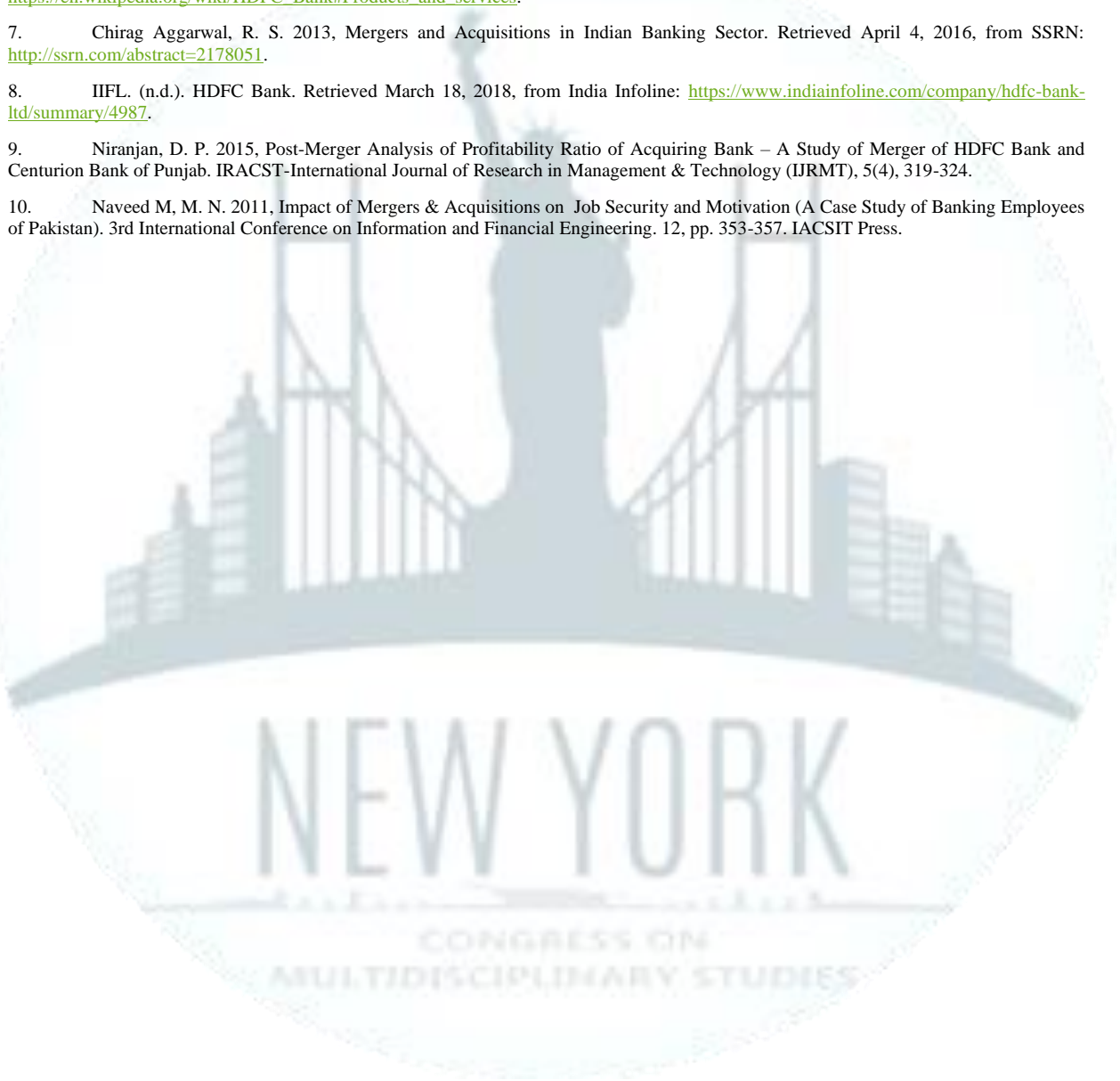
With regard to the insignificant changes in the profitability ratios during the pre-merger period and post-merger period, studies may be carried out to find the real cause as to why mergers are not able to create the desired wealth and measures to overcome such situations, as it is also possible for the net gain expected from the M&A process to be offset by the costs of conducting the same.

The study can be extended to other banks- both private sector and public sector banks. A comparative study may also be undertaken.

Further research on the topic can relate to how the work-stress can impact the family life of the employees.

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## THE ROLE OF EXAMPLES OF ORAL FOLK LITERATURE IN THE HISTORY OF SCHOOL AND EDUCATION DEVELOPMENT IN AZERBAIJAN

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*As our generation learns its national and moral values, it becomes proud of its past, and their attachment to their lineage, roots and nation becomes even stronger.*

### HEYDAR ALIYEV

One of the important tasks of today's pedagogical science should be to re-examine the history of pedagogical thought of our people, to reveal its forgotten pages in terms of preserving our national values and transmitting them to the younger generation. Although pedagogy as a science is relatively new compared to other sciences, pedagogical ideas have a very ancient history. The first pedagogical ideas are related to folk art. Examples of oral folk literature - proverbs, parables, riddles and lullabies, valuable pedagogical ideas are reflected in fairy tales and epics. Examples of oral folk art with their content give our youth courage, bravery, friendship, humanity, patriotism and so on. Positive feelings are instilled and instilled. In this sense, folk pedagogy is a very ancient source and invaluable source of scientific pedagogy.

National values are emphasized in Azerbaijani proverbs, proverbs, bayats, epics, fairy tales, as well as in the works of scientists, writers and poets. Each proverb has an educative and teaching character. In the parables, the person in front is warned and admonished. In this case, it is recommended that he be intelligent, moral, sympathetic to science and scientists. While some of the bayats are dedicated to people's love for their homeland, land, children, parents and family, some are dedicated to being scientific and gaining knowledge, and some are dedicated to purifying the moral and spiritual image of people, especially the younger generation.

Examples of oral folk literature play a key role in the development of our education in schools in Azerbaijan. In our ethnopedagogical values, wise ideas, which are considered to be the ideas of our people related to training, upbringing and education, are considered to be the main effective basis and the first source of our pedagogy.

Our main goal is to acquaint our students with our glorious past by teaching them examples of oral folk literature, as well as what was said and written by our geniuses in ancient times, to deeply teach them our past history, language and national spiritual values.

**Keywords:** national values, education, development, examples of oral folk literature.

### INTRODUCTION

The history of pedagogical thought of our people is as rich and diverse as it is ancient. In other words, the history of enlightenment and pedagogical thought of our people, which has an ancient history, is based on very ancient roots. In all sources of our ethnopedagogical values, the wise ideas of our people related to teaching, upbringing and education are considered to be the main effective basis, the first source of our national pedagogy.

Teaching examples of oral folk literature for the development of students' education in Azerbaijani schools, assimilation of our national traditions to students means the formation of positive moral qualities, civic maturity, active life position by influencing their consciousness, feelings and emotions, behavior, systematic, purposeful, organized .



Oral folk art is a culture that not only tells about antiquity and history, but also filters the spirit of the people. Culture, on the other hand, is a way of life that embodies a moral norm. Therefore, the process of personality formation must be in harmony with the culture-lifestyle and moral norms. That is why all this is taken into account in the curriculum and plays an important role in the creativity of the teacher. The teacher must take into account the environment and worldview of the students he teaches and align the subject with their environment. These opportunities are more common in the teaching of oral folk literature, and it is the teacher's responsibility to provide information about local myths, tales, legends, bayats, proverbs, and issues.

As it is known, the subject of literature taught in secondary schools has great educational, pedagogical and developmental functions. The great Russian critic VB Belinsky, combining literature and education, wrote: "Literature and education - these two concepts can not be imagined separately as the concepts of sun and light, life and activity."

In the 5th grade of secondary school, the ancient genres of oral folk literature, including the words of the enumerator, labor songs, ceremonial songs, applause and curses, lamentations, lamentations and caresses, proverbs and parables, myths, guards, tales and riddles were widely covered. It is important for students to include examples of folk literature in primary school.

There are many instructive ideas, advices and wise sayings in Azerbaijani oral folk literature that help to purify the morals of schoolchildren. Such ideas can be found in any genre of folk literature. Proverbs and parables that embody the reminders of the people are among such genres. The proverbs, which consist of one or two sentences, express deep wisdom and meaning, call for patriotism, courage and bravery, truthfulness and honesty, as well as hatred of evil forces. It is very important to include these valuable examples in the development of education.

#### **RESEARCH AND DISCOVERIES**

Our history is ancient, and the role of folk examples in the deep study of this ancient history and its teaching to future generations, our children and youth is irreplaceable. We also achieve the development of cognition in the teaching of these beautiful, valuable examples, wise words and expressions. The teaching of folklore, starting from pre-school to primary school and then to higher education, plays a crucial role in the development of the younger generation in their future lives. Examples of folk literature are mostly covered in textbooks for grades V-XI. There are examples of folklore in the primary grades, but the importance of assigning these nuances to students from the primary grades will develop their consciousness and understanding, and in the upper grades they will understand these examples of folk literature more deeply.

When many of us were children, we heard many similarities, bayats, tales, riddles, and deceptions from our grandmothers and mothers. At that time, we did not know that these examples, which live in the memory of our mothers and grandmothers and we hear every day, are examples of the people's inexhaustible wealth - folklore. We often saw that uncles from Baku, Ganja and Tbilisi (Tbilisi) used to tell their grandparents, write down what they said and transcribe it on paper.

We later learned that they were folklorists and ethnographers who did not allow the people's vocabulary to disappear. In fact, the collection of folklore samples and their transfer from memory to writing was a great event. Unfortunately, many of those samples have not been recorded, or have disappeared, or are waiting for the day when they will be remembered by the elderly. The vast majority of contemporary folklorists use examples collected and published by their predecessors, folklore martyrs. However, it is possible to visit the regions and collect samples.

Meanwhile, we must not forget to appreciate the work done by some folklorists, as well as the Folklore Institute of the Azerbaijan National Academy of Sciences in recent years. The Folklore Institute has done great systematic work in this area.

Researchers say that Azerbaijani folklore is a creative field that reflects the high moral values of the Azerbaijani Turks, the leading tendencies of ethical and aesthetic thinking and is an integral part of all-Turkic oral literature.

Scientists note that the Azerbaijani Turks. Traditions, rituals and beliefs, historical chivalric morality, patriotism and love of land, parental love, sad lyrical feelings are glorified in this work in a whole and unique way.

As we know, the folklore of the Azerbaijani Turks originated at the crossroads of different genres (lyrical, epic and dramatic) and was divided into types according to the same styles.

As we know, samples of folklore have been recorded mainly since the end of the XIX century. The role of a number of intellectuals and folklorists should be noted here.

Researchers note that the first stage of recording Azerbaijani folklore dates back to 1830-1900. During this period, the first examples of oral folk literature of the Caucasian peoples, Azerbaijani Turks were widely reflected in the newspapers "Vedomosti", "Tiflisskiye vedomosti", "Novoe obozreniye", "Kafkazskiy Vestnik", "Kafkaz", SMOMPK, which began to be published after the seventies of the XIX century. Press researchers note that Akinchi, the first national newspaper to be published in 1875, and Kashkul, which later began publishing, also continued this work with dignity. The main stage of mass collection of samples of Azerbaijani oral folk literature was between 1900-1920. During this period, the activities of Eynali Sultanov and Mahmudbey Mahmudbeyov in the field of collection, publication and research of examples of oral folk literature are considered to be the first steps of our folklore. Prominent literary critic Firudin bey Kocharli entered the history of our folklore not only as a collector, but also as the creator of Azerbaijani folklore. Scholars write that Hanafi Zeynalli (author of the books "Azerbaijani Proverbs and Proverbs" (1926), "Azerbaijani Riddles" (1928), who had a special role in the collection, publication and research of folklore in those years, is considered one of the first researchers to classify oral literature. H.Arasli, M.H.Tahmasib, M.Seyidov, H.Koroglu, A.Akhundov, V.Valiyev, M.Hakimov, P.Afendiyev, A.Nabiyev, M.Gasimli and others are among the researchers who have made great contributions to the development of our folklore. names need to be specifically mentioned. Before the emergence of pedagogy, which was still a science of teaching and education, folk pedagogy was used in the education of the younger generation.

Folk pedagogy is the content, purpose, means, methods, organization of education, etc. It is a set of pedagogical knowledge, experience, views and rules and traditions that have been acquired by the working masses as a result of daily observations throughout history and under the influence of living conditions. This pedagogy is based on folk philosophy.

The scope of folk pedagogy is very wide. There are many valuable ideas in folk pedagogy about the role of health, mind, enlightenment, beauty and hard work, physical, mental and aesthetic education, moral and labor education in the development of a person as a perfect person.

Folk pedagogy is to give aesthetic pleasure to the people by serving their spiritual purity and beauty for many years.

People say, "You have to be beautiful, you have to be beautiful, you have to be beautiful on the outside." Therefore, for true beauty, the unity of natural and physical beauty, intellectual and spiritual perfection is necessary. However, as it is said in the "Koroglu" epos: "It is very rare for a person to be both beautiful in appearance and intelligent and perfect." Many of them, though not so handsome in appearance, are polite in behavior and manners, rich in intellect, courageous and noble in character.

There have always been opinions about the importance of using the wisdom and experience of the people in the upbringing and education of children. Among the prominent representatives of the history of our public opinion are G.Tabrizi, N.Ganjavi, M.Ganjavi, F.Shirvani, A.Khagani, I.Nasimi, A.Bahmanyar, Farabi, Yusif Khas Hajib, M.Kashgari, M.Fuzuli, Sh. I.Khatayi, MPVagif, A.Bakikhanov, MFAkhundov, G.Zakirin, SA Shirvani, H.Zardabi, F.Kocharli, YV There are many examples of the use of folk wisdom in the works of Chamanzaminli and others. Great thinkers, using the boundless pearls of the people, the rich experience of the people, skillfully created valuable works of art for the education of human attitude to himself, others, nature, society and thought, and the development of noble moral qualities. The great Russian pedagogue KD Ushinsky was one of the theoretical and practical substantiators of the idea of the nationality of education. He wrote: "There is only one innate tendency which is common to all, on which education can always be relied: we call it nationalism." He believed that "education created by the people and based on the people has such an educational power that this power does not exist even in the best systems based on abstract ideas or borrowed from other nations." According to Ushinsky, the best expression of nationalism is the mother tongue: "Language is the most vital, the most productive and the strongest connection that unites the dead, the living and future generations in a great historical and living whole. Language not only expresses the vitality of the people, it is also life itself. As the mother tongue disappears, so does the people. Language not only expresses the vitality of the people, it is also life itself. As the mother tongue disappears, so do the people."

During this period, the concepts of national education based on national beliefs, patriotism and traditions were widely discussed in the press.

A characteristic feature of the pedagogical thought of Azerbaijan in the first stage of the history of ethnopedagogical research is that in the beginning of the twentieth century the struggle for the mother tongue and the national school began to gain momentum.

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For the sake of clarity, let's recall some facts from our historical past in a very concise way. As early as 1852, Mirza Shafi Vazeh and the teacher of the Tbilisi gymnasium I. The first chapter of the textbook "Kitabi-turki" compiled by Grigoriev together gave many ethnopedagogical examples. Examples presented under the headings "Wisdoms and Admonitions" include "Seek a neighbor from home, a companion from the road", "A wise enemy is better than an ignorant friend", "A dumb tongue is better than a false tongue", "A scientist's day is better than an ignorant man's life", "There is remorse in haste, patience and peace", "Whoever sows a thorn, does not pluck grapes from it", "Whoever seeks an innocent friend, will be left without a friend", "Do not leave today's work for tomorrow", etc. hand words can be shown. Or, in 1866, in the "Comparative monograph of the Turkish language" compiled by the orientalist LM Lazarev, 283 proverbs were given along with other ethnopedagogical examples.

In 1882, A. O. Chernyayevsky's book "Vatan Dili" (Part I) was published. This textbook, which was used as an alphabet, contained a lot of ethnopedagogical material. The book included 46 parables, 24 proverbs, 20 riddles, and 1 misconception. Let's look at some of them:

#### ISSUES

Can de, can hear.

You can't make a sound alone.

There is blood in the eyes of the one who looks at his master.

Everyone reaps what he sows.

The tree keeps its head down when it bears fruit.

The fault is from me, the fault is from you.

Goodness is the work of every man,

Good to evil is a man's business.

**PROVERB**

No one calls buttermilk sour.

They told the tailor to move, and he put the needle in his collar.

It will not spring with a flower.

Don't leave today's work for tomorrow.

He sleeps without a candle, hoping for a neighbor.

Samples of folklore are also widely covered in the book "Vatan Dili" (Part II) published by AO Chernyayevsky and Safarali bey Valibeyov in Tbilissi (Tbilisi) in 1888. In the textbook "Vatan dili" published by Mirza Hasan Rushdie in Tabriz in 1894, in the book "Istilahi-Azerbaijan" compiled by Soltan Majid Ganizadeh in 1902, in 1912 in Firudin bey Kocharli's children Ethnopedagogical materials, as well as proverbs with tried and tested codes of folk pedagogy, are given a lot of space in the two-part book "Gifts for Children" and other similar materials. The first part of this last book contains 42 texts on folklore materials, and the second part contains 33 verses.

Fidurin bey Kocharli, the son of the great enlightener of the Azerbaijani people, wrote in his introduction to his book "Gifts to children" entitled "Muhazzir's expression-purpose": beautiful verses and verses, wise parables, proverbs, subtle mysteries and riddles, truths and misconceptions that open children's hearts, and counting words belonging to the animal part are forgotten and forgotten in this case. A nation that loves its history, livelihood, homeland and language, has collected these works with great enthusiasm and attention, keeps them as a valuable investment, and the first education and upbringing of its children begins with teaching them.

A.O. Chernyayevsky and SA Shirvani from L. Tolstoy, I. Krylov, K.D. The following are excerpts from Ushinsky: "The Lion and the Mouse", "Father and Grandson", "Two Friends", "The Gardener and His Sons", "The Wolf and the Crane", "The Horse and the Donkey", "The Fish, the Duck and the Crab" fables, as well as "Dog and Cat", "Rooster and King", "Old Man and Cat", "I Cold Yes I Cold", "Shepherd", "Orange Sheep", "Camel and Thorn", "Calling the Sun", "Shangulum, Shungulum, Men-gulum", "Shoot the drum, go to the edge", "Fox and partridge", "Fox" ("Fox, fox trumpet"), "Turtle lady and left-handed man" ("Mrs. Tik-tik" ), "The Tale of Beautiful Fatma", etc. has been included in textbooks for a long time (some still).

## **CONCLUSION**

Ethnopedagogical problems in modern times are one of the main directions of scientific and pedagogical research. Scientific conferences at various levels are held on these issues. Almost all peoples of the world are deeply interested in the ethnic values of their national education systems, in building a more successful educational work for the younger generation through the application of these values to the modern pedagogical process.

The living experience of upbringing prevails in folk pedagogy. Folk pedagogy plays a key role in the emergence and development of pedagogical science, reflecting a certain level of pedagogical knowledge, a specific historical stage in the spiritual evolution of man. That is, folk pedagogy is the most reliable source of scientific pedagogy. However, it should be noted that the emergence of the history of literature did not destroy the oral folklore, and the emergence of the science of pedagogy did not displace the pedagogical views of the people in their daily lives. The science of pedagogy and folk pedagogy interacted with each other and created conditions for their development. It is this sphere of interaction that determines the pedagogical culture of the people. The development of education and science in schools in

Azerbaijan also consists in teaching these valuable examples of oral folk literature and passing them on to the younger generation.

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## CULTURE SELECTION IN YOGHURT PRODUCTION IN ACCORDANCE WITH THE EXPECTATIONS OF THE PRODUCERS AND CONSUMERS

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### Abstract

In this study, yoghurt production was carried out with 6 (C1-C6) different commercial starter cultures offered for sale in the yoghurt production. As a result of the evaluation, the highest acidity development in terms of pH during the incubation in the activated cultures was found in the samples C2, C3, C4 and C5, while the best acidity development, yoghurt texture and aroma were detected in the C2, C3 and C4 yoghurt samples after 21 days of cold storage (4°C). As a result of the fermentation of the cultures, rough texture index was found to be high in the samples C2, C3, C4 and C5. When samples with a low number of lactic acid bacteria were examined microscopically, deformation was observed in the morphological structure of the starter bacteria in the culture content, while yoghurts containing this culture showed a weaker curd and a lower acidity development, and the lowest scores in terms of taste and aroma in sensory evaluation. When the specific total lactic acid bacteria counts in the final product were examined, the number of lactic acid bacteria in yoghurts was determined as  $10^5$ - $10^8$  cfu/g, while the minimum number of bacteria ( $>10^7$  cfu/g) that should be in the standard was reached except for two samples and also it was determined that the samples with high bacteria count received high scores in terms of general acceptability and sensory. In addition, textural properties such as firmness, consistency, *cohesiveness* and viscosity index were determined in yoghurt samples during storage, and higher textural parameters and a compact yoghurt structure were found in samples with high acidity development (C2, C3, C4 and C5). As a result of the study, it was determined that the number of lactic acid bacteria in the yoghurt matrix and the morphological structure of the culture affect the acidity development, texture and sensory properties of the final product, and yoghurt producers should pay attention to these points when choosing yoghurt cultures to be used in practice.

**Keywords:** Yoghurt, Starter Culture, Lactic Acid Bacteria, Texture

### INTRODUCTION

Consumer interest in functional foods has been increasing in recent years. This changing trend is related not only to the high nutritional value of the food, but also to its health-promoting biotherapeutic effects by reducing the risk of various chronic diseases. Nutraceutical foods aim to improve physical and mental well-being as well as directly affecting health. Milk and dairy products have an important place in nutrition as a functional

food with various basic components. Among these products, yoghurt is one of the most consumed fermented milk products due to its proven health properties (Perdigon, 2001; Nöthlings et al. 2007, Takachi et al. 2008).

Yoghurt is a lactic acid gel that contains one or more lactic acid bacteria in which it is sometimes included in probiotic bacteria along with specific yoghurt bacteria (*Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus*). Yoghurt draws attention with its cream/white colour, soft and smooth texture, gel structure that does not show syneresis and its unique taste and aroma compounds (Shah, 2003). Yoghurts differ according to their chemical composition, production methods, flavours and the nature of the post-acidification process (Ozcan, 2013). Lactic acid is a characteristic substance in all fermented dairy products such as yoghurt and is produced by all starter microorganisms. Acid gelation of milk is very important in the production of set yoghurt. To develop the optimum processing procedure for yoghurt, it is necessary to have an understanding of how the physical changes that occur in milk during fermentation. Upon increasing the acidity by the activity of starter cultures, colloidal calcium phosphate is solubilized from casein micelles, micellar disintegration takes place and the caseins associate to form a network in the form of a coagulum or gel (Lucey, 2002; Horne, 2009). However, the type and amount of starter culture affects the rate of acidity formed and this determines the rheological properties of the casein matrix. Slow acidity formation leads to the formation of a gel network with good hydration capacity. Rapid acidification causes casein to aggregate and precipitate and syneresis occurs in yoghurt (Sodini et al. 2004; Ozdemir and Ozcan, 2020). The rheological properties of the curd network in yoghurt vary depending on the milk composition, dry matter content and heat treatment of the milk. Apart from that, these properties are affected by the strains of the starting cultures used and the incubation temperature (Sodini et al. 2004; Mahdian and Tehrani, 2007; Wu et al. 2009). Companies producing culture in yoghurt production offer starter cultures containing bacteria with different characteristics to the producers, and as a result, yoghurts produced differ in terms of consumer taste depending on the variety in cultures. In this study, the bacterial activity, acidity development, yoghurt fermentation and the effect of different commercial yoghurt cultures on the technological properties of the product were investigated.

## **MATERIALS AND METHODS**

### **Materials**

The raw milk samples used in yoghurt production were obtained from dairy companies in Bursa. In the research, 6 different commercial starter yoghurt cultures (C1, C2, C3, C4, C5, C6) *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus* bacteria were used. The cultures were pre-activated for 45-60 minutes at 41-42 °C.

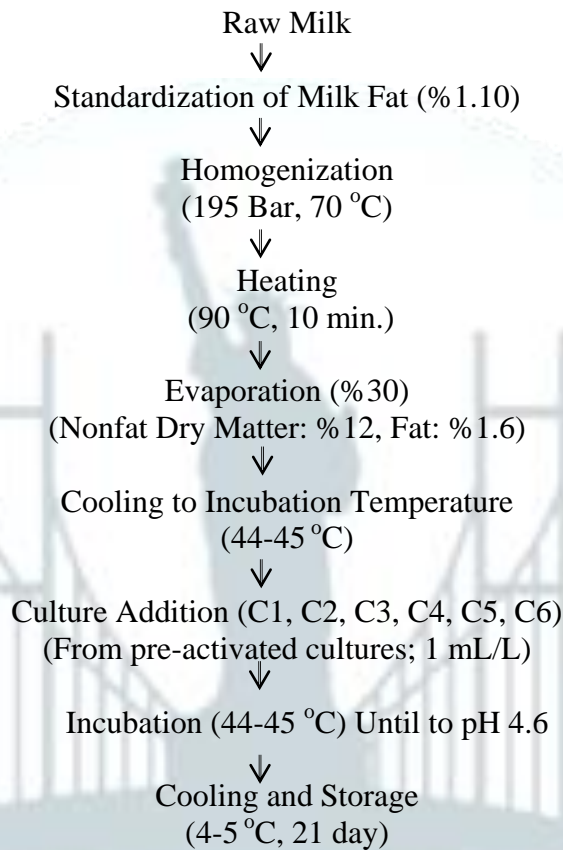
### **Yoghurt Production**

Semi-fat yoghurt production process flow chart is given in Figure 1.

### **Methods**

The yoghurt cultures were pre-activated for at 41-42 °C. Before the pre-activation started, the pH values of the yoghurt milks were 6.45 and the acidity was activated until the

pH decreased to 5.20 pH. The acidity developments of the cultures during the pre-activation period are shown in Table 1. While samples numbered C2, C3, C4 reach pH 5.20 in an average of 45 minutes, samples numbered C5, C6 are 60 minutes. At the latest, it was the C1 culture that reached pH 5.20, and it occurred in 85 minutes.



**Figure 1.** Yoghurt production flow chart

**Table 1.** Acidity development of cultures during pre-activation

Culture Code	pH	10 min.	20 min.	30 min	45 min.	60 min.
<b>C1</b>	6.24	6.00	5.88	5.75	5.57	5.40
<b>C2</b>	6.27	5.96	5.68	5.45	5.27	5.16
<b>C3</b>	6.09	5.85	5.60	5.38	5.18	5.03
<b>C4</b>	6.14	5.86	5.55	5.35	5.19	5.00
<b>C5</b>	6.12	5.95	5.82	5.67	5.51	5.28
<b>C6</b>	6.09	5.93	5.74	5.54	5.30	5.20

Yoghurt samples were analyzed at the end of the 21<sup>st</sup> day. During the activation of yoghurt milk, the acidity created by the pre-activation starting cultures is adjusted with 7.00 and 4.00 buffer solutions as a pH change at 30-minute intervals (WTW-110 (USD) pH meter). Titration acidity was determined in terms of SH. Nonfat dry matter amount was calculated by extracting milk fat from the total amount of dry matter. Fat content was determined by the



Gerber method. Viscosity in pre-activated cultures were measured by using a free flow viscometer (Gerber, Free Flow Viscometer) after reaching a pH of 5.00- 5.05 (AOAC 2016). Viable cell counts of specific microorganism MRS (Man, Rogosa and Sharpe Agar) agar were used by the method reported by Tharmaraj and Shah (2003). At the end of the shelf life of the produced yoghurt samples, cocci and bacillus microorganisms were examined by simple staining with methylene blue. In the samples, cocci and bacillus microorganisms were examined on the image determined under the microscope, and an idea about their morphological structures was obtained and then the cocci/bacillus ratios were determined. Texture profile analysis (TPA) were performed using Texture Analyzer TA-XT Plus (Stable Micro Systems, UK) with back extrusion prob. Firmness, cohesiveness, consistency and viscosity index parameters were evaluated (Patrignani et al. 2007). Sensory evaluation of yoghurts was done by seven panellists using a 5-point hedonic scale (1= not liked at all; 2= moderately unpleasant; 3= indifferent; 4= moderately liked; and 5= highly appreciated)(Izadi et al. 2015). In order to determine the significant differences between samples, statistical analysis was performed using one-way ANOVA procedure with a confidence interval of 99%.

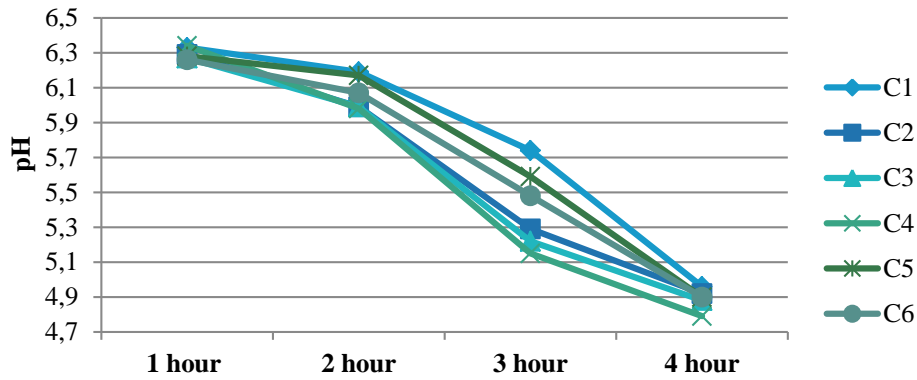
## RESULTS AND DISCUSSION

During incubation in pre-activated cultures, when the cultures reach pH 5.20, viscosity, SH<sup>o</sup> and pH values were checked and the results are given in Table 2. While C6 reached the highest viscosity value in the pre-activated cultures, it was followed by the C4 sample, and the lowest viscosity value was determined in the C1 sample, and the difference was found to be significant (Table 2, p>0.01). In terms of acidity development, the highest acidity (SH) was found in the sample numbered C4 (p>0.01). However, when the cultures were pre-activated, acidity formation levels varied between 4.94-5.08 in terms of pH, except for the culture sample numbered C1.

**Table 2.** Viscosity of cultures during pre-activation

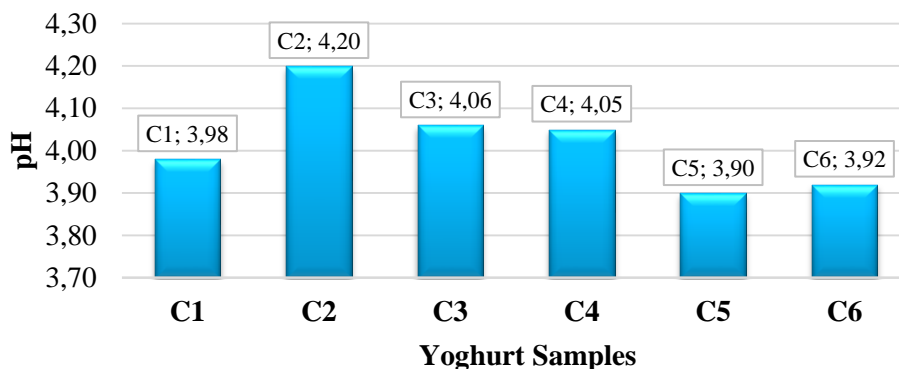
Culture Code	Viscosity	SH <sup>o</sup>	pH
C1	1.70 <sup>f</sup>	67.0 <sup>e</sup>	5.25 <sup>a</sup>
C2	3.60 <sup>d</sup>	73.2 <sup>b</sup>	4.96 <sup>d</sup>
C3	2.50 <sup>e</sup>	70.0 <sup>c</sup>	5.03 <sup>c</sup>
C4	4.53 <sup>b</sup>	77.5 <sup>a</sup>	4.94 <sup>d</sup>
C5	4.10 <sup>c</sup>	70.0 <sup>c</sup>	5.08 <sup>b</sup>
C6	4.70 <sup>a</sup>	68.7 <sup>d</sup>	5.00 <sup>c</sup>

Cultures activated after pre-activation were added to yoghurt milk and acidity developments were examined during the yoghurt process and it was determined that the fastest pH decrease was in the C4 samples. Then, at the 3<sup>rd</sup> and 4<sup>th</sup> hours of the incubation, acidity development occurred in the samples C2, C3 and C4 respectively. In this sense, in terms of acidity development, both in pre-activation and in the production process, yoghurts made with C4 culture were the samples that decreased acidity the most. The yoghurt sample with the slowest acidity decrease was determined as C6 (Figure 2).



**Figure 2.** Changes of yoghurt pH during fermentation

When the acidity values of the final product were examined after 21 days of storage, it was determined that the yoghurt samples with the lowest pH value was the with C5 culture. Samples C1 and C6 fell down to pH 4.00 values and were determined as yoghurts with the highest acidity during storage. The yoghurt culture with the lowest storage acidity was the sample with the C2 (Figure 3). In this study, the C2 culture has been seen as a suitable culture for yoghurt producers who prefer low acidity growth.



**Figure 3.** pH values of yoghurts produced at the end of storage

Although texture is also related to the sensory perception of a food product, the most important parameters determining yoghurt quality and consumer acceptance are viscosity and textural properties (Lucey, 2002; Sodini et al. 2004; Lee and Lucey, 2010). When the texture analysis results of yoghurt samples on the 21<sup>st</sup> day of cold storage were examined, it was seen that the highest values in terms of firmness, consistency, cohesiveness and viscosity index are in yoghurt samples produced with C4 culture ( $p > 0.01$ ). While the yoghurt sample with the lowest firmness and consistency values were found with the culture C6. The lowest value in the cohesiveness was determined as the C1 samples and the lowest value as the viscosity index was the C5 yoghurt samples ( $p > 0.01$ ). In this sense, the C1 yoghurt sample has been seen as a culture that can be recommended for yoghurt producers who do not want a strict structure. The C4 yoghurt culture has been determined as a recommended culture for the consumers who want to have a fuller and denser structure in yoghurt.

In the sensory evaluation, all the yoghurt appearance, odour and colour were included in the same group and received 5 full points, being liked by all panellists. The C5 sample received the lowest score with 4 points in terms of flavour and taste. The lowest scores in

terms of general acceptability were evaluated in the same group by taking C4 and C5 samples (Table 4,  $p>0.01$ ). When the curd acidity of the pre-activated liquid yoghurt cultures reached 4.45-4.50 pH, the structures were visually examined and it was observed that there were no curd particles in the culture samples C1 and C6. In sensory evaluation, it was determined that these samples also got good scores in terms of texture (C1 and C6).

**Table 3.** Textural properties of yoghurts at the end of storage

<b>Culture Code</b>	<b>Firmness (g)</b>	<b>Consistency (gs)</b>	<b>Cohesiveness (g)</b>	<b>Viscosity Index (gs)</b>
<b>C1</b>	190.90 <sup>c</sup>	4431.01 <sup>d</sup>	-130.54 <sup>c</sup>	-350.06 <sup>b</sup>
<b>C2</b>	180.64 <sup>e</sup>	4591.05 <sup>b</sup>	-137.84 <sup>c</sup>	-306.41 <sup>d</sup>
<b>C3</b>	186.35 <sup>d</sup>	4534.74 <sup>c</sup>	-141.94 <sup>b</sup>	-345.58 <sup>c</sup>
<b>C4</b>	218.03 <sup>a</sup>	5032.11 <sup>a</sup>	-166.35 <sup>a</sup>	-377.67 <sup>a</sup>
<b>C5</b>	192.28 <sup>b</sup>	4547.34 <sup>c</sup>	-132.83 <sup>d</sup>	-294.55 <sup>e</sup>
<b>C6</b>	173.67 <sup>f</sup>	4247.47 <sup>e</sup>	-132.33 <sup>d</sup>	-310.48 <sup>d</sup>

It was determined that the gel structure and rheological properties in yoghurt were affected by the composition of the milk, dry matter content, heat treatment, type and properties of starter cultures and incubation temperature (Sodini et al. 2004). In this study, the changes that occur with the effect of culture confirm the explanations of the researchers.

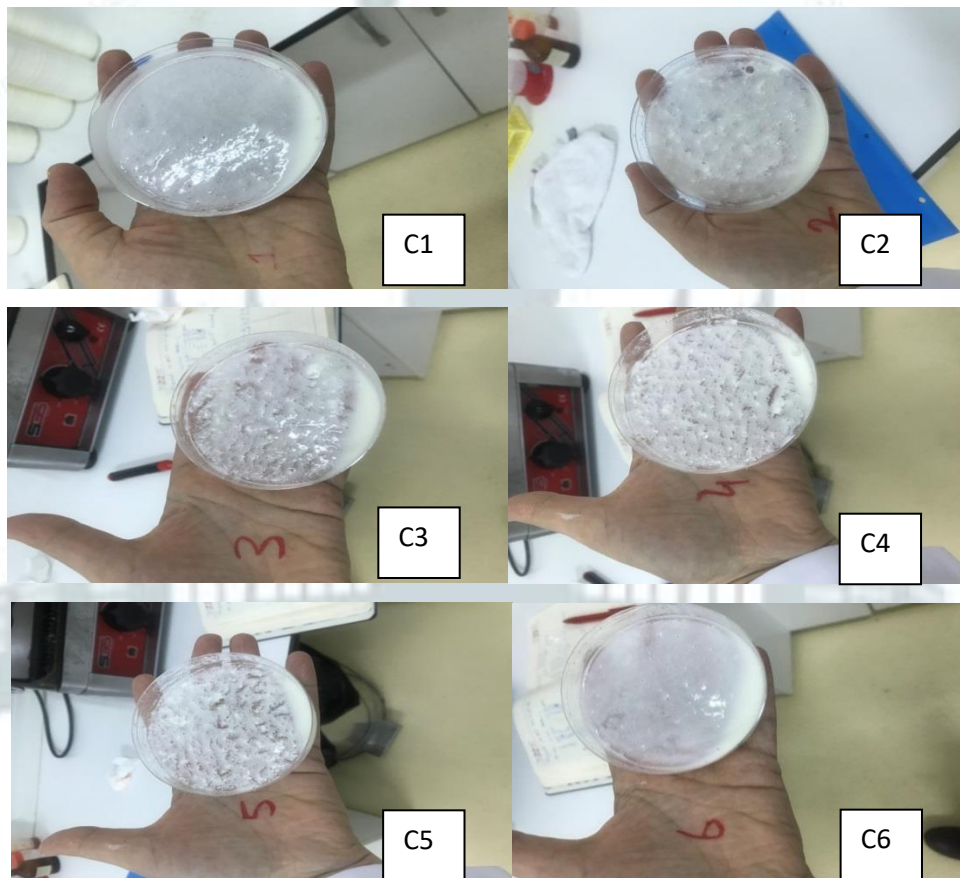
**Table 4.** Sensory evaluation of yoghurt samples

<b>Culture Code</b>	<b>Appearance</b>	<b>Texture</b>	<b>Odour</b>	<b>Taste</b>	<b>Colour</b>	<b>Flavour</b>	<b>Acetaldehyde</b>	<b>General Acceptability</b>
<b>C1</b>	5.00 <sup>a</sup>	4.80 <sup>b</sup>	5.00 <sup>a</sup>	4.6 <sup>d</sup>	5.00 <sup>a</sup>	4.90 <sup>c</sup>	4.80 <sup>b</sup>	4.80 <sup>b</sup>
<b>C2</b>	5.00 <sup>a</sup>	4.50 <sup>d</sup>	5.00 <sup>a</sup>	4.4 <sup>e</sup>	5.00 <sup>a</sup>	4.90 <sup>c</sup>	5.00 <sup>a</sup>	4.70 <sup>b</sup>
<b>C3</b>	5.00 <sup>a</sup>	4.50 <sup>d</sup>	5.00 <sup>a</sup>	5.0 <sup>a</sup>	5.00 <sup>a</sup>	5.00 <sup>b</sup>	4.50 <sup>c</sup>	5.00 <sup>a</sup>
<b>C4</b>	5.00 <sup>a</sup>	4.70 <sup>c</sup>	5.00 <sup>a</sup>	4.8 <sup>c</sup>	5.00 <sup>a</sup>	4.50 <sup>d</sup>	4.00 <sup>d</sup>	4.00 <sup>c</sup>
<b>C5</b>	5.00 <sup>a</sup>	4.50 <sup>d</sup>	5.00 <sup>a</sup>	3.85 <sup>f</sup>	5.00 <sup>a</sup>	3.80 <sup>e</sup>	4.00 <sup>d</sup>	4.00 <sup>c</sup>
<b>C6</b>	5.00 <sup>a</sup>	5.00 <sup>a</sup>	5.00 <sup>a</sup>	4.9 <sup>b</sup>	5.00 <sup>a</sup>	5.00 <sup>a</sup>	5.00 <sup>a</sup>	5.00 <sup>a</sup>

When the curd acidity of the pre-activated yoghurt cultures reached 4.45-4.50 pH, the structures were visually examined and it was observed that there were no curd particles in the culture samples C1 and C6. The yoghurt samples showing a high value with the number of lactic acid bacteria at  $10^8$  cfu/g were samples C1 and C6. According to the Turkish Food Codex Fermented Milks Communiqué, the total number of specific microorganisms required in yoghurt should be at least  $10^7$  cfu/g and this value was reached in C1, C3, C6 samples of yoghurt (Figure 5,  $p>0.01$ ).

When the results were examined, a similarity was observed between sensory evaluations and lactic acid bacteria counts. The most sensuously liked yoghurt was C6 numbered yoghurt, and the number of lactic acid bacteria was found to be high as  $1.1 \times 10^8$

cfu/g (Figure 5). Basil /cocci numbers were determined as 1/2, 1/40, 1/10, 1/5, 1/20 and 1/10 in C1, C2, C3, C4, C5, C6 yoghurt samples, respectively. At the end of the storage period, yoghurt samples with the highest cocci number of 1/40 and the lowest acidity yoghurt sample with a pH of 4.20 was C2. Yoghurt has a beneficial feature for human health by containing a large number of living microorganisms. For yoghurt bacteria, the minimum requirement in the standards varies between  $10^6$ - $10^7$  cfu/g live cells, but it is generally recommended that yoghurt or fermented milk contain at least one million live cells per gram during consumption, and the number of live bacteria must be preserved during cold storage (Damin et al. 2006; Damin et al. 2008).

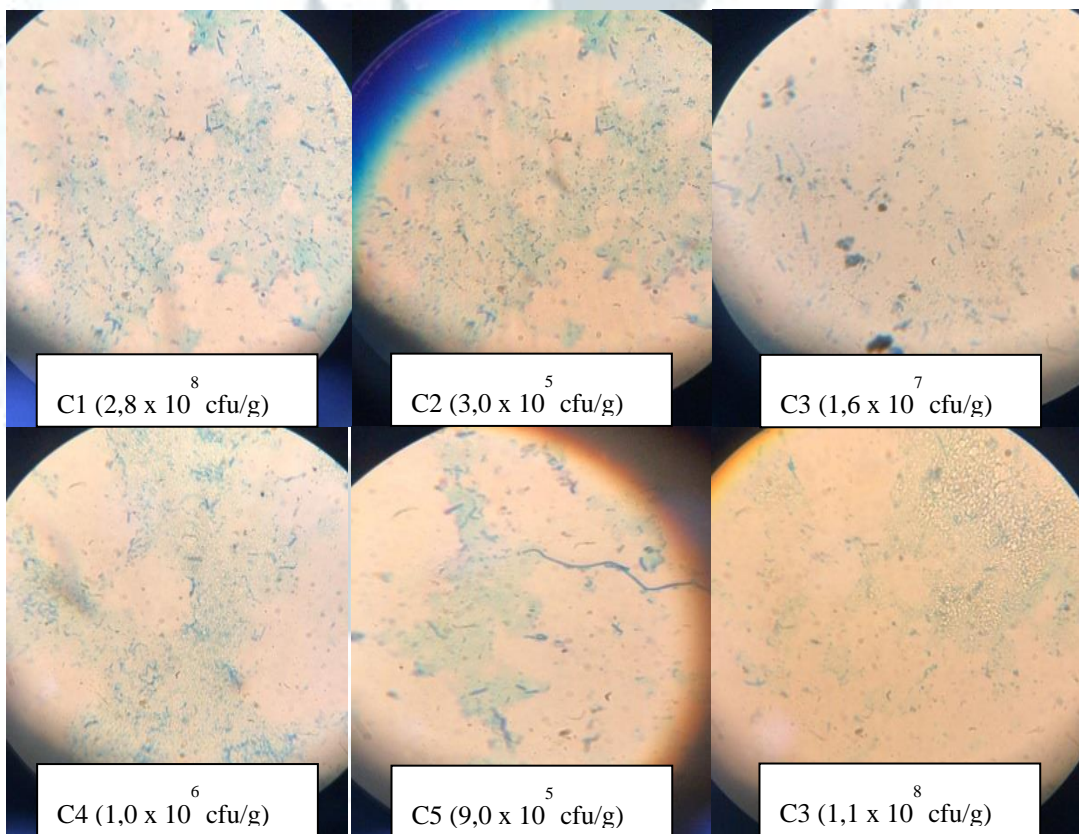


**Figure 4.** Appearance of the structure of pre-activated cultures at pH 4.40-4.45

## CONCLUSION

Process parameters should be managed correctly, taking into account the properties of the milk to be used in yoghurt production. It should be known that factors such as heat treatment applied in the process, homogenization and cooling speed of yoghurt are also important factors that shape the operation of the culture in yoghurt milk and affect the quality of yoghurt. It is very important to include the number of lactic acid bacteria as the total number of specific microorganisms in microbiological analyses, especially in dairy producing enterprises. This control point is a quality control analysis method and provides information about the therapeutic value of fermented dairy products such as yoghurt, cheese, fermented milk and kefir. It is not only an analysis that needs to be done in this respect, but also it should

be seen as a CCP point as required by HACCP in terms of preserving product quality, since cultures have a protective effect against foreign flora. The culture used should preserve the therapeutic value of the product until the end of its shelf life and at the same time have a positive effect on the textural and sensory values of the product. In the research, it was determined that there is a similarity between the total number of lactic acid bacteria and the textural and sensory qualities of yoghurt. Microbiology laboratories should work to detect not only pathogenic microorganisms and microorganisms that deteriorate the quality of the product, but also lactic acid bacteria. Considering the positive effects of starter cultures on the quality of yoghurt as well as on human health, the importance of starter culture selection should be known. Studies on starter cultures should ensure consumer demand and technologically appropriate yoghurt quality. A feature that is important to yoghurt for a yoghurt producer may not be that important to another yoghurt maker. Because in yoghurt consumption, there are different preferences that vary from region to region in terms of the desired properties of yoghurt. In this sense, the choice of culture will also differ according to the enterprises. Although there is a wide variety of yoghurt cultures, the important thing is to determine the yoghurt culture that meets all quality criteria. This is important not only for yoghurt but for all dairy products, and detailed studies with R&D and product improvement studies will enable the producer to determine the cultures to be used in production.



**Figure 5.** Morphological images of starter cultures under microscope and specific microorganism counts (cfu/g)

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## RELIGIOUS OLD TURKIC TERMS IN TRANSLATION OF THE QURAN INTO KHWAREZM TURKIC

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### Summary

Turks, who accepted Islam individually or in small groups in the early periods, from the 9th century, they started to become Muslims en masse. In order to explain the Islamic rules, the surahs and verses of the Quran to the Turks, who had adopted different religions before Islam, translation of the Quran, its interpretation, and works written in religion were needed. Although the translation of the Quran into Persian took place during the time of the Prophet, it is not clear when and by whom the first translation into Turkic was made. The first Turkic translations of the Quran that we have reached belong to the Karakhanid period. Subsequent translations are considered to be works in Khwarezm Turkic. One of them is the copy of Istanbul Suleymaniye Library, located in Hakimoglu Ali Pasha Mosque № 2, which was copied in 1363. Other translations belonging to the Khwarezm Period have been found in Mashhad. In the article, the Turkic translation of the Quran found in No.293 in Mashhad was examined and it was found that some words common in Old Turkic beliefs were used to meet the rules and concepts of the Islamic religion. In order to explain the foundations of the religion of Islam to Turks who do not speak Arabic, it was necessary to explain it in words that the public could understand. In fact, many words of the old Turks regarding the concepts of death, spirit, soul going to heaven or hell, angels, holiness, and crime were in accordance with the religion of Islam. Some of these words appear with their meanings in Old Turkic, that is, unchanged. For example, Tanrı, Idi, tap-, uçmak, yek etc. It is possible to see that another group of lexical units coming from Old Turkic show an enlargement of meaning. For example, the lexical unit of edgölük, which is used to mean "goodness" in Old Turkic, expresses the meaning of "good deed, sevap" in the translation we researched, yet the verb kirtin-, which is used in the Uyghur meaning "to believe", also has the meaning of "to bring faith" in the work, which is the subject of our article.

In addition, the etymology of some words was emphasized in the article, and the views that Turkish words were quoted from other languages were evaluated.

A very important point in terms of learning our language history in the works written in the first translation of the Quran, generally in the first period of Middle Turkish - is the Turkish equivalent of Arabic Islamic terms. Namely, many of these words were completely forgotten over time and Arabic and Persian words replaced Turkish religious words.

**Keywords:** religious terms, Translation of the Quran, Khwarezm Turkic, Old Turkic

## ESKİ TÜRKÇEDEKİ DİNİ TERİMLER HAREZM TÜRKÇESİ KUR'ÂN TERCÜMESİNDE

### Özet

İlk dönemlerde İslamiyeti tek tek veya küçük gruplar halinde kabul eden Türkler IX. yüzyıldan kitleler halinde Müslüman olmaya başladılar. Müslümanlıktan önce farklı dinlere intisap eden Türklere İslamî kuralları, Kur'ân'ın sure ve ayetlerini anlatmak için Kur'ân tercümesine, tefsirine, dini konularda yazılan eserlere ihtiyaç vardı. Kur'ân-ı Kerîm'in

Farsçaya yapılan tercümesi Peygamber zamanında gerçekleştiği halde, Türkçeye ilk çevrinin ne zaman ve kim tarafından yapıldığı belli değil. Elimize ulaşan ilk Türkçe Kur'ân tercüme Karahanlı dönemine aittir. Sonraki tercüme Harezmi Türkçesi eserleri sayılmaktadır. Onlardan biri İstanbul Süleymaniye Kütüphanesi'nin Hakimoğlu Ali Paşa Camii № 2'de bulunan 1363 yılında istinsah edilmiş nüshadır. Harezmi dönemine ait başka tercüme Meşhed'de bulunmuştur. Yazıda Kur'ân'ın Meşhed'de No.293'te bulunan Türkçe tercüme nüshası incelenmiş ve burada Eski Türk inançlarında (Tengricilikte) yaygın olan bazı kelimelerin İslam dininin kural ve kavramlarını karşılamak için kullanıldığı tespit edilmiştir. İslam dininin temellerini Arapçayı bilmeyen Türklere anlatmak için halkın anlayabileceği kelimelerle izah etmek gerekmektedir. Bu yüzden Eski Türkçede kullanılan dini kelimelere ihtiyaç duyulmaktaydı. Aslında eski Türklerin ölüm, ruh, ruhun cennet veya cehenneme gitmesi, melekler, kutsallık, suç kavramları ile ilgili birçok kelimesi İslam dinine uygundu. Bu kelimelerin bazıları Eski Türkçedeki anlamlarıyla karşımıza çıkmaktadır, yani hiç değişmeden. Örneğin, Tanrı, İdi, tap-, uçmak, yek vs. Eski Türkçeden gelen diğer bir bölüm leksik birimlerin anlam genişlemesi gösterdiğini görmek mümkündür. Mesela, Eski Türkçede “iyilik” anlamında kullanılan edgölük leksik biriminin araştırdığımız tercümede “sevap” anlamı, yine Uygurcada “inanmak” manasında kullanılan kirtin- fiilinin yazımızın konusu olan eserde “iman getir-” anlamı da vardır.

Ayrıca yazıda bazı kelimelerin etimolojisi üzerinde durulmuş, Türkçe kelimelerin başka dillerden alıntı olduğu konusundaki görüşler değerlendirilmiştir. Kur'ân'ın ilk tercüme nüshalarında, umumen Orta Türkçenin ilk döneminde yazılan eserlerde dil tarihimizin öğrenilmesi bakımından çok önemli bir nokta - Arapça İslami terimlerin Türkçe karşılığının bulunmasıdır. Şöyle ki bu kelimelerin bir çoğu zamanla tamamen unutulmuş ve Türkçe dini sözcüklerin yerini Arapça, Farsça kelimeler almıştır.

**Açar sözler:** dini terimler, Kur'ân tercümesi, Harezmi Türkçesi, Eski Türkçe

Arapça bilmeyen Müslümanlar arasında İslâm dininin yayılması ve anlatılması için Kur'ân-ı Kerîm'in tercümesine ihtiyaç vardı. 7.yüzyıl gibi erken bir tarihte Farsçaya çevrildiği düşünülen Kur'ân'ın bütün olarak Farsçaya ilk tercümesi 10. yüzyıla aittir (Ata, 2013; IX). Kur'ân'ın Türkçeye de bu dönemde çevrildiği ihtimal edilmektedir. Fakat elimizde bulunan ilk Türkçe Kur'ân tercüme Karahanlı dönemine aittir ve bu tercüme Manchester Ryland Kütüphanesi ile İstanbul Türk ve İslâm Eserleri Müzesi'nde muhafaza edilmektedir (Şimşek, 2019;5). Sonraki tercüme Harezmi Türkçesi eserleri sayılmaktadır. Onlardan biri İstanbul Süleymaniye Kütüphanesi'nin Hakimoğlu Ali Paşa Camii № 2'de bulunan 1363 yılında istinsah edilmiş nüshadır. Harezmi Dönemine ait başka tercüme Meşhed'de bulunmuştur. Bunlardan biri (No. 2229) tam değil, yani bir bölümü eksiktir. Diğer bir kısmı Farsça, bir kısmı da Harezmi Türkçesinde yazılan 692 sayfalık nüshadır (No.1007). Meşhed'de bulunan 361 sayfalık üçüncü nüsha (No.293) 2019 yılında Yaşar Şimşek tarafından iki cilt halinde yayınlanmıştır (Şimşek, 2019). Sad Suresi'nden başlayarak Kuran'ın tefsiri ve satır satır tercümesi olan eserin Seyyid el-Hattat lakaplı Muhammed Yusuf el-Abari oğlu Muhammed tarafından 1337 yılında (H.737) tamamlandığı belirtilmektedir. Çalışmada Kur'ân-ı Kerîm'in bu Meşhed nüshası incelenmiştir. Bu nüshanın diğerlerinden farkı ve önemli noktası kelimelerin satırasını yapılan tercümelelerinde bir değil, bir kaç Türkçe karşılığın verilmesidir. Örneğin, “çok” anlamında köp kelimesinin altından aynı anlamı bildiren öküş onun da yanında telim kelimeleri yazılmıştır.

Satırasını Kur'ân tercümelelerinde Arapça, Farsça kelimelerin üzerinde veya altında o kelimelerin Türkçe karşılığının verilmesi, onların anlamsal analizini bir luğat gibi gözönünde



bulundurmaktadır. Arapça İslâm dinine ait kelimelerin ve kavramların Türkler tarafından anlaşılması için Türkçe yeni kelimelere ihtiyaç vardı. Yeni gelen din ile Türkçede birçok kelime türemiş, bazı kelimeler ise yeni anlam kazanmıştır. Yazıda, yukarıda da belirtildiği gibi, Meşhed'de bulunan ve Yaşar Şimşek tarafından iki cilt halinde yayınlanan Kur'ân tercümesi incelenmiş ve buradaki Eski Türk inançlarında (Tengricilikte) yaygın olan kelimeler tespit edilmiştir. İslâm dininin temellerini Arapçayı bilmeyen Türklere anlatmak için halkın anlayabileceği kelimelerle izah etmek gerekmekteydi. Bu yüzden Türkçe yeni kelimelere ihtiyaç duyulmaktaydı. Kur'ân'da geçen İslâmî sözcüklerin Türkçe karşılıkları için tercümede birkaç yöntem uygulandığı dikkat çekmektedir: 1. Eski Türk inançlarında (Tengricilikte) yaygın olan bazı kelimeler İslâm dininin kural ve kavramlarını karşılamak için kullanılmıştır (uçmak, tamu v.s.) 2. Bazı Türkçe kelimeler yeni anlamda, yani anlam genişlemesi ile karşımıza çıkmaktadır. 3. Kök veya gövdelere getirilen eklerle yeni kelimeler türetilmiştir. Bu yazıda Eski Türklerin İslâm dininden önceki inançlarda kullandıkları kelimelerin İslâmî terimler için istifade ettikleri kelimeler üzerinde durulmuştur. Tercümede bu tür kelimelerin bazıları aynı Eski Türkçedeki anlamlarıyla, yani hiç değişmeden, diğer bir kısım leksik birimler ise anlam genişlemesi ile karşımıza çıkmaktadır.

1. Eski Türkçede (Göktarıda / Tengricilikte) karşımıza çıkan ve söz konusu Kur'ân tercümesinde aynı anlamda kalsa da artık yeni gelen dininin (İslâm dininin) kavramlarını ifade eden kelimeler.

İslâmiyet'ten önce Türklerin ezeli ve ebedi bir Tanrı inancına erdikleri ve bir çok konularda İslâmiyet'e yaklaştıkları anlaşılmaktadır (Tanyu, 1980;73). Bu yüzden Eski Türklerin ölüm, ruh, ruhun cennet veya cehenneme gitmesi, melekler, kutsallık, suç kavramları ile ilgili birçok kelimesi İslâmın yayılması ve halka dinin kurallarını anlatmak için yazılan eserlerde aktif olarak kullanılmıştır. Bunun en yaygın örneği Tanrı kelimesidir. "Türkler'in İslâmiyet'i benimsemesiyle Tanrı Allah kelimesinin yerini almıştır. Nitekim XIII. yüzyılın sonlarından itibaren Yûnus Emre'de ve ondan bir asır sonra Süleyman Çelebi'de Tanrı Allah kelimesiyle birlikte kullanılmıştır." (Güngör, 2010;570). İncelediğimiz Harezmi Türkçesi Kur'ân tercümesinde de Eski Türkçeden gelen bu tür kelimeler seçilmiştir.

Barmak "ölmek"

Orhon anıtlarında, Uygur metinlerinde "varmak, gitmek" anlamlarını ifade eden barmak fiili (Ergin, 2011;87, EUTS 1968;33), Yenisey metinlerinde ve Göktürk dönemi yazıtlarından olan İhe Ashete yazıtında "ölmek" manası ile de karşımıza çıkmaktadır (DTS 1969;83). Aynı leksik birim incelediğimiz tercümede "(öteki dünyaya) varmak, ölmek" anlamında şu cümlede geçmektedir:

Abbas aydı ay oğlum bilgil uqğıl kim yakın kelmiş turur yalavaçnıng barmakı.. (186)\*

Bük "Kur'ân'da geçen Eyke halkı kastedilmiştir"

Semud kavmi takı Lut kavmi takı bük eyeleri.. (s.50) "Semud kavmi de Lut kavmi de Eyke halkı.."

Şuara suresinde (176) Eyke halkının adı geçmiştir: Kezzebe ashabul eyketil murselin "Eyke halkı da peygamberleri yalanladı". Tercümede Eyke halkının karşılığı bük eyeleri şeklinde verilmiştir. Bükli/bökli kelimesine Orhon yazıtlarında rastlanmaktadır. Şöyle ki Kül Tigin abidesinin Doğu yüzünde bökli / bükli çöl(l)üg kelimesi vardır: Yoğçı sıgıtçı öngre kün toğsıkda bökli çöl(l)üg... "Yasçı, ağlayıcı, doğuda gün doğusundan Bökli Çöllü halk.." (Ergin, 2011;8). Vilhelm Thomsen bu kelimeyi bökli çöl'g'l şeklinde okuyarak "güçlü çöl kavimleri

Örnekler Yaşar Şimşek Harezmi Türkçesi Kur'ân Tercümesi (Meşhed Nüshası {293 No.}, Giriş-Metin-Dizin).

Ankara, 2019 yılında yayınlanmış kitabından alınmıştır.

(yani yabancılar?)” (Thomsen 2002;128-129), Melioranskiy “doğuda dağ silsilesi” (Malov 1951;373), Muharrem Ergin “Bökli/ Bükli Çöllü halk” (Ergin, 2011;9) anlamında olduğunu göstermiş, Talat Tekin ise Bükli “yer adı, ülke adı” olduğunu göstererek, sonra soru işaretiyle “Mançurya ovası” olabileme ihtimalini vermiştir (Tekin 2010;242).

Kın “ceza, azap, işkence, eziyet”

yüz ewürseler aygıl kōrkuttum sizni katıg kın birle (s.104) “yüz çevirseler söyle: “korkuttum sizi katı azap ile”

Kın kelimesinin Eski Türkçedeki “ceza, işkence, azap” anlamları (EUTS, 1968;175; Gabain, 1988;280, DTS, 1969;444) İslâm dinine ait eserlerde aynen Allah'ın ceza ve azabını bildirmek için de kullanılmıştır (Ata, 2013;454, Ata, 1997;346, Yüce, 1993;143).

Tamu / tamuğ “cehennem”

tanğuçılarka mengü tamu bolğay (s.346) “kafirlerle ebedi cehennem olacak”

Eckmann 1972 yılında On Üçüncü Yüzyıl Öncesi Türkçenin Etimolojik Sözlüğü kitabında kelimenin Soğdca (tmw) veya diğer İran tayfalarından alındığını (Clauson, 1972;503) yazdıktan sonra birçok makale veya sözlüklerde kelimenin Soğdca olduğu (gerçi bazılarında soru işaretiyle) gösterilmiştir. Kelimenin her ne kadar Soğdcadan geldiği söylenirse de fikrimizce bu kelimenin kökeni Türkçedir. Şöyle ki tamu / tamuğ kelimesinin “cehennem”le beraber “uçurum, mağara, karanlık çukur, zindan, hapishane” gibi manaları da vardır (Radlov, 1905;1001, Rasanen, 1969;459). Ve Eski Türkler de birçok halklar gibi ölümden sonraki hayatın var olduğuna inanarak (Qumilyov, 2003;56) insanların kötü emellerine göre “tamu”ya (yer altına, karanlık çukura v.s.) gideceklerini düşünüyorlardı. Eski Türkler için kötü kuvvetler yer altında, cehennemde, karanlık dünyada yaşıyorlar. Kaynaklar şamanizmin ahlaki temelleri hakkında ayrıntılı bilgi içermese de onların en esas temel özellikleri bilinmektedir. Şöyle ki her insanın iki yolu vardır: iyilik yaparak gökyüzüne (cennete) ulaşmak ve orada yaşamak için çabalamak ya da kötülük yaparak yerin dibine atılmak ve orada sonsuza dek karanlık ve işkenceye mahkum olarak yaşamak (Arsal, 2002;61). Bu yüzden cehennemin yerin altında olduğunu düşünen Türklerde tamu / tamuğ sözcüğü kapalı bir yer (yani yer altını) manasını da taşımaktadır. Kelimenin kökenindeki tam / dam kelimesi ise Eski Türkçeden çağdaş Türkçelere kadar “tavan, duvar, taş ev,” anlamlarında kullanılmaktadır (Ergin, 2011;112, Gabain, 1988;253; Recebov, 1993;376, EUTS, 1968;222; Vambery 1878;166, Radlov 1905;991). Aysu Ata ise tamu kelimesinin etimolojisi hakkında bir fikir ireli sürerek Kırgızcada “tutuşmak, yanmak” için tam- fiilinin Türk dilinde çok kullanılan isimden fiil yapma eki -(u)ğ ile “tutuşan, yanan şey, ateş” ve oradan da “cehennem anlamını kazandığını” ihtimal etmektedir (Ata, 2013;193).

Tangrı “Allah”

Tangrı manga arıg iman birsün “Allah bana temiz iman versin” (s.185)

Eski Türkçede “Tanrı, gök, mukaddes” anlamlarında (Recebov, 1993;376), T(e)ngri “Tanrı” (EUTS, 1968;233), Tengri “gök, Tanrı” (IB, 2013;113), Tenrı “gök, Tanrı” (Malov, 1951;429) karşımıza çıkan Tengri kelimesi İslamiyetten sonra “Allah” kelimesiyle paralel kullanılmış ve bugün bile çağdaş Türkçelerde çeşitli fonetik yapıda korunmaktadır. Her ne kadar da kelimenin Sümerce dıngır/dingir'den geldiğini veya Çince t'ien/ tiyan kelimesi ile paralellik gösterdiğini (Güngör, 2010;570) söyleyenler olsa da, ünlü Macar türkolog Nemeth Tengri kelimesinin Türkçe olduğunu yazmıştır: “Esasen tengri sözünün Sümerceden alınmış olması da imkansızdır. Çünkü aslı Türkçe bir kelimedir”. (Nemeth, 1940;381). Tercümede Tangrı kelimesi ile paralel İdi, Uğan, Bayat kelimeleri de kullanılmıştır. Mesela, Tangrı 'azze ve celle Davudka nerselerni birmiş irdi (s.57) cümlesinde Tangrı kelimesinin üzerinde İdi, Uğan ve Bayat sözcükleri yazılmıştır.

Tap- “ibadet etmek”

Yenisey yazıtlarında “sitayış etmek (ibadet etmek), tapmak, tapınmak, hizmet etmek” (Recebov, 1993;376), Uyğur metinlerinde “tapmak, perestiş etmek” (EUTS 1968;225) anlamlarında karşımıza çıkan tap- fiili İslam dininde Allah'a ibadet etmek anlamında kullanılmıştır.

secde kılıglar Tangrıka yime tapınglar (s.229) “secde kılıp Allah'a yine ibadet ederler”

İncelediğimiz tercümede tap- fiilden türeyen bir kaç dini kelimeler de vardır: tapğan “ibadet eden”, tapu “ilah”, tapug “ibadet” (Uyğur metinlerinde tapıg “tapma, perestiş etme, hürmet” (EUTS, 1968;224), tapugsız “ibadetsiz”, tapungu “ilah”.

Yalavaç “peygamber, elçi”

yalavaç Tangrı birle sözledi (s.229) “Peygamber Tanrı ile sözledi”

Yenisey yazıtlarında yalabaç fonetik yapısında olan bu kelime “elçi (posol)” anlamında kullanılmıştır (tüpüt qanqa yalabaç bardım “ben Tibet hanına elçi gittim” (DTS, 1969;227). Türkçe İslamî konularda yazılan eserlerde (Ata, 2013;740, Ata,1997;697 vb) ve araştırdığımız Kuran tercümesinde söz konusu kelime Eski Türkçedeki “elçi” anlamını koruyarak “Peygamber” kelimesini de karşılamıştır.

Uğan “muktedir, kadir”

Uğan kelimesi eski Uygur metinlerinde “Tanrı” (DTS, 1969;607, EUTS, 1968;263), DLT'de ise “şeyler üzerinde, onları etkileyebilecek gücü olma durumu” anlamında verildikten sonra, ugan tengri birleşmesi şeklinde “her şeye kadir Tanrı” (DLT, 2007;616) olarak gösterilmiştir. Yukarıda Tangrı örneğinde sözcüğün üzerinde uğan kelimesinin yazıldığı hakkında bilgi verilmiştir. Başka bir cümlede ise “kadir” anlamını bildiren yarağlıg kelimesinin üzerinde de uğan yazılması bu kelimenin “Allah, kadir, muktedir” anlamlarında kullanıldığını göstermektedir.

Yek “şeytan, iblis, cin”

..bir bulğak erdi ol kişilerke kim anlarnıg köngülleri içinde yek turur (s.230) “bir kargaşa olur o kişilere ki onların gönülleri içinde şeytan durur (var)”

Turfan'da bulunan Türkçe yazılmış Mani yazısında (Gabain, 1930;203) ve Uygurca metinlerde (EUTS, 1968;292) yek kelimesi “şeytan” anlamındadır. Harezmi Türkçesindeki Kur'an tercümesinin bu nüshasında önemli nokta bir kelimenin bir kaç eş anlamlı sözcükle takdim edilmesi, tercüme olunan kelimelerin bile çoğu zaman yeniden izahının verilmesidir. Şöyle ki, Türkçe tercümede şeytan ve iblis kelimeleri yazıldıktan sonra, bu kelimelerin de izahı olarak yek yazılmıştır. Eserde yek kelimesi 26, iblis 19, şeytan 8, cin 1 defa kullanılmıştır. 26 defa yazılan yek kelimesi tek yazılmış ve hiç bir izahı verilmemiştir. 19 defa adı geçen iblis sözcüğünden ise 11'nin üzerinde izah için yek kelimesi yazılmıştır. Bu istatistik göstergelerden hareketle Apapça kökenli şeytan ve iblis kelimelerinin Türkçeye henüz tam yerleşmediği ve söz konusu kelimelerin izahı için yek sözcüğünün kullanıldığı söylenebilir.

Uçmak “cennet”

ol kişiler tapa kim Tangrıga taparlar, anlarğa sewünç uçmak birürler (s.131) “o kişiler ki Allah'a ibadet ederler, onlara müjde olarak cennet verirler”

Türkler öbür dünyada ikinci bir hayatın varlığına (ahiret) ve ruhların ebediliğine inanıyorlardı. Eski Türkçede (Gök-Türk, Uygur) ruh, can manasında “tin” kelimesi kullanılıyordu. Bu, aynı zamanda “nefes” demektir. Ölümü nefesin kesilmesi, ruhun bedenden çıkıp uçuşması şeklinde tasavvur ediyorlar, böylece bazen “öldü” yerine “uçtu” diyorlardı (Kafesoğlu, 1980;47)

Örneğin, Kül Tigin yazıtında şöyle cümle geçmektedir: “Kanım kağan uçdukta inim Kül tigin..” (Babam kağan öldüğünde küçük kardeşim Kül tigin..) (Ergin 2011;18). Böylece Türkler “kağan ve beğler ölünce ruhlarının bir kuş gibi göğe, Tanrı'nın yanına uçtuğunu (uçabardı) kabul ediyorlardı. Eski Türkçede uçmak kelimesinin aynı zamanda “cennet” manasına gelmesi ve İslâm devrinde bu mefhumu ifade için kullanılması sebebi de budur (Turan, 2003;72). Araştırma konusu olan tercümede de cennet anlamında uçmak kelimesi kullanılmıştır ve günümüzde çağdaş Türkçelerdeki cennet veya behişt kelimelerine ise eserde rastlamadık.

2.Yazıda Eski Türkçede kullanılan, Harezmi Türkçesi Kur'ân tercümesinin bu nüshasında yeni anlam kazanarak, yani anlam genişlemesi ile karşımıza çıkan kelimeler toplanmıştır. Eski Türkçede kullanılan bazı kelimelerin İslâm dininin yayılması ile yeni anlam kazanmalarını görmek mümkündür. Aşağıda eserden derlenen söz konusu kelimelerden örnek verilmiştir:

Bitig “Kur'ân-ı Kerîm” anlamında

..bizke yalavaç kelmedi. kökdin bitig inmedi.. (s.300) “bize Peygamber gelmedi, gökten Kur'ân inmedi”

Eski Türkçe ve sonraki kaynaklarda “yazı, kitap, mektup” anlamlarını ifade eden bitig kelimesinin (DTS, 1969;103, Ergin, 2011;90, Malov, 1951;372) bu eserde yukarıdaki manaları ile beraber bir de “Kur'ân-ı Kerîm” anlamında kullandığını görmek mümkündür:

Edgülık “iyilik, güzellik, iyi amel, nimet ve **sevap**”

...tigme 'arefe küni sanınça kim bolur ajun içinde on edgülık (s.371) “her arefe günü sayınca dünya içinde on sevap olur”

Eski metinlerde “iyilik” anlamında karşımıza çıkan (DTS, 1969;163, EUTS, 1968;69) edgülık kelimesi tercümede anlam genişlemesi göstererek “sevap” anlamını da karşılamıştır.

İdi “rab, ilah, Tanrı”

başladım ol idi atı birle.. (s.49) “Tanrı adı ile başladım”

Vilhelm Thomsen Orhon yazıtlarını araştırırken idi kelimesi hakkında şunları yazmıştır: “İdi kelimesi ister bir hükümdar, bir kağan, ister herhangi bir bey için kullanılmış olsun, “sahip, bey” anlamına gelmektedir” (Thomsen, 2002;336). XI. yüzyıldan sonraki eserlerde ise idi kelimesiyle “sahip anlamında Allah” kastedilmiştir.

Kulluk “kulluk , kölelik ve **ibadet** ”

ķulluk haķķın ödedi (s.383) “ibadet haqqımı ödedi”

Orhon yazıtlarında “kullu, kul sahibi” (Ergin, 2011;104), Uygur metinlerinde “hizmetçi, esir sahibi” (EUTS, 1968;185) anlamında yer alan kulluk kelimesi Kur'ân'ın bu tercümesinde bir de “ibadet” anlamında kullanılmıştır.

Sakın- “günah işlemekten sakınmak”

ol kün kim saķınur ademi (s.358) “o gün ki günah işlemekten sakınır ademi..”

Tercümede sakın- fiilinin Eski Türkçede (DTS, 1969;486) de görünen “düşünmek, idrak etmek; sakınmak” anlamları kullanılmış, fakat bu anlamlarıyla beraber kelimenin semantik genişlemesi ile bir de “günah işlemekten sakınmak” manasının olduğunu görmekteyiz. Bundan başka, “günah işlemekten sakınan, takva sahibi” anlamında saķınğan kelimesi de kullanılmıştır.

Tan- “inanmamak, inkar etmek ve **kafir olmak**”

aydılar anlar kim küfr ketürdiler (s.107) “söylediler: onlar kafir oldular”

Tercümeden örnek verilen cümlede küfr ketürdiler kelimesinin üzerinde ona eşanlamlı olan kafir boldılar, bunun da üzerinde tandılar kelimesi yazılmıştır.

Çağdaş Türkçelerde “inkar etmek” anlamını koruyan dan- / tan- fiili eski Uygur metinlerinde de “danmak, inkar etmek” (sEUTS, 1968;24) manalarında karşımıza çıkmaktadır. Araştırdığımız Kur’ân tercümesinde tan- fiili “inanmamak, inkar etmek” anlamlarının yanısıra bir de “kafir olmak” semantik genişlemesi ile görülmektedir. Bundan başka, eserde tan-filinden türeyen “kafir” anlamında tanğan ve tanğlı kelimeleri de dikkatimizi çekmiştir

Yan- “1 dönmek, geri dönmek, 2.(kötü işlerden) dönmek, 3. **tövbe etmek, müslüman olmak; (Tanrıya ve hayırlı işlere) yönelmek**”

sakındılar şeytandın kim tapunsalar angar tağı yandılar Tanrığa (s.64) “..saklandılar şeytandan ki kulluk etseler ona Tanrıya tövbe ettiler”

Yan- fiili Tonyukuk yazıtı (Ergin, 2011;120) ve eski Uygur metinlerinde (EUTS, 1968;284) “dönmek” anlamındadır. Görüldüğü gibi, kelime anlam genişlemesi göstererek “tövbe etmek” anlamını da karşılamıştır.

Sonuç olarak ister Kur’ân’ın ilk tercüme nüshalarında, isterse de Orta Türkçenin ilk dönemlerinde yazılan eserlerde Arapça İslâmi terimlerin bazılarının Türkçe karşılığının kullanıldığını görmekteyiz. Bu kelimelerin bir çoğu zamanla tamamen unutulmuş ve Türkçe dini sözcüklerin yerini Arapça, Farsça kelimeler almıştır. Bu yüzden Orta dönem Türkçe yazılan eserlerin dilinin araştırılması dil tarihimizin öğrenilmesi bakımından çok önemlidir.

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## MOUNTAIN IMAGE IN TURKISH EPICS

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### Summary

Turkish epic art has a very ancient history. It took thousands of years of epic experience and tradition to create a perfect, exhausting and unique epic like *Kitabi Dādā Gorgud*. Therefore, it is safe to say that the Turkish epic has developed on a very rich experience and tradition, has risen to today's level. The Turks created dozens of epics before "*Kitabi Dādā Gorgud*". But those sagas are not the beginning. The beginning should be sought in some depths, in antiquity. Familiarity with Sumerian folklore and literature sheds light on many dark pages today. It is now clear that Turkish epic creativity is rooted in Sumerian folklore. There are enough facts in the epics "*Kitabi Dādā Gorgud*" and "*Koroghlu*" to give this opinion.

The similarities between the Sumerian heroic epics and "*Oghuz kaghan*", "*Manas*", "*Kitabi Dādā Gorgud*", "*Koroghlu*" and other Turkish epics, as well as the form, content, idea and plot are obvious. In addition, there are many distinctive elements that are connected to a source between the means of artistic expression and description, the shades of poetic style. First of all, all the Sumerian heroic epics were written in verse. This tradition was later successfully continued in the creation of Turkish epics. Most oral traditions consist only of poetry. There is no prose in a great Turkish epic of 400,000 verses like *Manas*. In the epics "*Kitabi Dādā Gorgud*" and "*Koroghlu*", this tradition has reached a new stage, and the prose pieces of poetry have been synthesized and alternated at a high level.

In E.Alibeyzadeh's book "*Primary sources of Turkish-Azerbaijani artistic thought*" published in 2007, E.Alibeyzadeh drew successful parallels between the epos "*Bilgamis*" and the epic "*Kitabi Dādā Gorgud*", gave comparative analyzes and drew interesting conclusions. This is the subject of a very extensive study. There are still many untouched issues and unmatched similarities in the mentioned book. There is a need for a broader and more comprehensive study of a number of issues raised by E.Alibeyzadeh in the form of concise, or rather, theses.

**Keywords:** Turkish, saga, culture, mountain, Oghuz

## TÜRK DESTANLARINDA DAĞ İMAJI

### Özet

Türk destan sanatının çok eski bir tarihi vardır. *Kitabi-Dada Gorgud* gibi mükemmel, eşsiz bir destan yaratmak binlerce yıllık deneyim ve gelenek aldı. Dolayısıyla Türk destanının çok zengin bir tecrübe ve gelenek üzerine gelişerek bugünkü seviyeye geldiğini söylemek yanlış olmaz. Türkler "*Kitabi-Dada Gorgud*"dan önce onlarca destan yarattılar. Ancak bu sagalar başlangıç değil. Başlangıç, antik çağda bazı derinliklerde aranmalıdır. Sümer folkloru ve edebiyatına aşinalık, bugün birçok karanlık sayfaya ışık tutmaktadır. Türk destan yaratıcılığının Sümer folklorundan kaynaklandığı artık açıktır. "*Kitabi-Dada Gorgud*" ve "*Köroğlu*" destanlarında bu görüşü aktarmaya yetecek kadar gerçek var.

Sümer kahramanlık destanları ile "Oğuz Kağan", "Manas", "Kitabi-Dada Görgü", "Koroğlu" və digər Türk destanları arasındakı benzerliklər, biçim, içerik, fikir ve olay örgüsü ortadadır. Ayrıca şiirsel üslubun tonları olan sanatsal anlatım ve betimleme araçları arasında tek bir kaynağa bağlı çok özel unsurlar vardır. Her şeyden önce, tüm Sümer kahramanlık destanları nazmla yazılmıştır. Bu gelenek daha sonra Türk destanlarının yaratılmasında başarıyla sürdürüldü. Çoğu sözlü gelenek sadece şiirden oluşur. Manas gibi 400.000 dizelik büyük bir Türk destanında nesir yoktur. "Kitabi-Dada Görgü" ve "Koroğlu" destanlarında bu gelenek yeni bir aşamaya gelmiş, destanlarda şiir ve nasır parçaları sentezleşmiş ve üst düzeyde dönüşümlü hale getirilmiştir.

E.Alibeyzadeh, 2007 yılında yayımlanan "Türk-Azerbaycan sanat düşüncesinin başlıca kaynakları" adlı kitabında "Bilqamis" destanı ile "Kitabi-Dada Gorgud" destanı arasında başarılı paralellikler kurdu, karşılaştırmalı analizler yaptı ve ilginç sonuçlar çıkardı. Bu, çok kapsamlı bir çalışmanın konusudur. Bahsedilen kitapta hala pek çok dokunulmamış konu ve eşsiz benzerlikler var. E. Alibeyzade'nin özlü veya daha doğrusu, tezler şeklinde ortaya attığı bir dizi konunun daha geniş ve daha kapsamlı bir incelemesine ihtiyaç vardır.

**Anahtar Kelimeler:** Türkçe, destan, kültür, dağ, oğuz

## **TÜRK DASTANLARINDA DAĞ OBRAZI**

### **Xülasə**

Türk epos yaradıcılığının çox qədim tarixi var. Təkcə "Kitabi-Dədə Qorqud" kimi kamil, bitkin və bənzərsiz bir eposu ərsəyə gətirmək üçün neçə minillik dastan yaradıcılığı təcrübə və ənənəsi tələb olunurdu. Ona görə cəsarətlə demək olar ki, türk epos yaradıcılığı çox zəngin təcrübə və ənənə üzərində inkişaf edərək bugünkü səviyyəyə yüksəlib. Türklər "Kitabi-Dədə Qorqud"a qədər onlarla dastan yaradıblar. Ancaq həmin dastanlar da hələ başlanğıc deyil. Başlanğıcı bir qədər də dərinliklərdə, qədimlərdə axtarmaq lazımdır. Şumer folkloru və ədəbiyyatı ilə tanışlıq bu gün bir çox qaranlıq səhifələrin üstünə işıq salır. İndi bəlli olur ki, türk epos yaradıcılığı Şumer folklorundan qaynaqlanır. "Kitabi-Dədə Qorqud" və "Koroğlu" eposlarında bu fikri söyləməyə əsas verən yetərinə faktlar var.

Şumer qəhrəmanlıq dastanları ilə "Oğuz Kağan", "Manas", "Kitabi-Dədə Qorqud", "Koroğlu" və digər türk eposları arasında həm forma, həm də məzmun, ideya, süjet oxşarlıqları aydın nəzərə çarpır. Bundan başqa bədii ifadə və təsvir vasitələri, poetik üslub çalarları arasında da bir qaynağa bağlanan çox səciyyəvi elementlər var. Hər şeydən öncə, Şumer qəhrəmanlıq dastanlarının hamısı nəzmlə yazılıb. Bu ənənə sonralar türk epos yaradıcılığında uğurla davam etdirilib. Oğuznamələrin çoxu yalnız nəzmdən ibarətdir. "Manas" kimi 400 min misradan ibarət möhtəşəm bir türk eposunda nəsr yoxdur. "Kitabi-Dədə Qorqud" və "Koroğlu" eposlarında bu ənənə yeni bir mərhələyə keçərək nəzmlə nəsr parçaları yüksək səviyyədə sintezləşdirilib, növbələşdirilib.

E.Əlibəyzadə 2007-ci ildə işıq üzü görmüş "Türk-Azərbaycan bədii düşüncəsinin ilkin qaynaqları" kitabında "Bilqamis" dastanı və "Kitabi-Dədə Qorqud" eposu arasında uğurlu paralellər aparıb, müqayisəli təhlillər verib, maraqlı nəticələr çıxarıb. Bu, çox geniş bir tədqiqatın mövzusudur. Adı çəkilən kitabda toxunulmamış məsələlər, tutuşdurulmamış oxşarlıqlar hələ çoxdur. E.Əlibəyzadənin yığcam, daha doğrusu, tezislər şəklində toxunduğu bir sıra məsələlərin də daha geniş, hərtərəfli araşdırılmasına ehtiyac duyulur.



**Açar sözlər:** türk, dastan, kültür, dağ, oğuz

### **INTRODUCTION:**

There is no other nation in history that has created as many and rich heroic epics as the Turks. Turkish epic art has a very ancient history. It took thousands of years of epic experience and tradition to create a perfect, exhausting and unique epic like Kitabi Dādä Gorgud. Therefore, it is safe to say that the Turkish epic has developed to a current level, developing on a very rich experience and tradition. The Turks created dozens of epics before Kitabi Dādä Gorgud. But those sagas are not the beginning. The beginning should be sought in some depths, in antiquity. Familiarity with Sumerian folklore and literature sheds light on many dark pages today. It is now clear that Turkish epic creativity is rooted in Sumerian folklore. There are enough facts in the epics "Kitabi Dādä Gorgud" and "Koroghlu" to give this opinion.

The similarities between the Sumerian heroic epics and " Oghuz Kaghan ", "Manas", " Kitabi Dādä Gorgud ", " Koroghlu " and other Turkish epics, as well as the form, content, idea and plot are obvious. In addition, there are many distinctive elements that are connected to a source between the means of artistic expression and description, the shades of poetic style. First of all, all the Sumerian heroic epics were written in verse. This tradition was later successfully continued in the creation of Turkish epics. Most oral traditions consist only of poetry. There is no prose in a great Turkish epic of 400,000 verses like Manas. In the epics " Kitabi Dādä Gorgud " and "Koroghlu", this tradition has reached a new stage, and the prose pieces of poetry have been synthesized and alternated at a high level.

In his book "Primary sources of Turkish-Azerbaijani artistic thought" published in 2007, E.Alibeyzadeh drew successful parallels between the epos "Bilgamis" and the epic " Kitabi Dādä Gorgud ", gave comparative analyzes and drew interesting conclusions. This is the subject of a very extensive study. There are still many untouched issues and unmatched similarities in the mentioned book. There is a need for a broader and more comprehensive study of a number of issues raised by E. Alibeyzadeh in the form of concise, or rather, theses.

All the mythological layers of the "Oguz Kagan" epos, which is still little studied in Azerbaijan, resonate closely with the pantheon of Sumerian gods and mythological texts. The idea of divinity, devotion to God, belief in the beginning of God, the greatness and greatness of God are very clearly expressed in the epos "Oghuz Kaghan". It is clear from the epos "Oghuz Kaghan", the only manuscript of which dates back to long before our era and is available in Turkish in Uyghur letters, that is kept in the National Library of Paris, " He was an understanding and real man. He was the minister of Oghuz Kaghan.

His name was Ulugh Türük. "Attention: Ulugh Türük! As Maharram Ergin, who prepared the book for publication, rightly said," Ulugh Türük is the Great (Ulu) Turk ". The word " Ulu "was synonymous with the word" God "in Sumer," year ", " The word "God" is often used in conjunction with the epithet "great" in our language.

It is obvious that the name of the Great Turkic person in the epos "Oghuz Kaghan" is the same as the name of the Turkic / Turkish God in the Sumerian pantheon, and this connection requires a search for the history of the Turkic ethnonym in antiquity. The divine origin of Oghuz Kaghan also shows that these searches were not meaningless. For example, the naming of Oghuz Kaghan's sons Ay khan, Gun khan, Ulduz khan, Deniz khan, Dag khan and Goy khan directly connects the saga with the pantheon of Sumerian gods. We know that in the Sumerian pantheon, both the Moon and the Sun are God. We know that the first khagans / khans were also gods. The epithet "khan" in the names of Oguz Kagan's sons comes

from there. Heaven is the name of the first God - Ab. The word "ab" was later replaced by heaven, and the divinity of heaven originated here. The first God, Ab, later became the God of Heaven. The sea means water. The first name of the Caspian Sea was the Absu-Blue Sea, the Sea of Heaven. Therefore, the name of the sea means the beginning of water, the name of the mountain means the beginning of the earth. There are other motives that connect the epos "Oghuz Kaghan" with the pantheon of Sumerian gods. At the end of the saga, Oghuz Kaghan tells the boys, "I have paid my debt to God." The names of Ulugh Türük and Ulugh Ordu are mentioned in the saga. The name of the God of heaven clearly shows the truth of the above idea. Other facts speak for themselves.

Plaques about mountains are more common in "Kitabi Dädä Gorgud" and "Koroghlu". In those sagas, mountains were humanized. People worship mountains and consider them their closest friends and confidantes. Because in the most difficult moments, the mountains embraced people, hid them and protected them. Ashugs reciting the saga recited "Mountains". There are such passages in the "Koroghlu" epos. At the same time, I would like to bring to your attention that the Great Ashug Alasgar had two pairs of "mountains".

The relationship between the mountains and the people has a very ancient history. Ancient Sumerian epics are an example of this. In Sumerian epics, mountains are addressed as human beings. They talk to them and get advice. For example, in the ancient epos "Bilqamis" Bilqamis's conversation with the mountain is an example of this.

Bilqamis climbed the mountain and looked around.

"Mountain, bring me a good night's sleep!" he said.

The mountain hears the words of Bilqamis, Bilqamis lies down and dreams. This event is repeated three times. And every time Bilqamis's dreams are good. Because the mountain is a positive image, it has become a friend of the people and worked for their benefit. When writing about mountain images, they sometimes forget that it is great. In the Sumerian epics, the mountains were sanctified in the memory of the Turkic ethnoses by the fact that Noah's ark was able to stand on the top of the mountain (Mountain Nisir) and save people.

In our epics and literary examples, the mountain has always been a symbol of the homeland, the dogma of the country. Just as the mountains always protected the Turks, the Turks also considered the protection of the mountains and the homeland sacred. Murov Mountains, Deli Mountain, Kechel Mountain, Tumas Mountains, Shusha Mountains, Topaghaj Mountain in Gubadli, Pirdagh, Kirs Mountain in Shusha, Ziyarat Mountain in the south-east of Karabakh mountain range, Aghoghlan Mountain and others were bravely fought in the 44-day Patriotic War. was liberated from occupation. The liberation of the mountains means the liberation of the homeland.

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## METHODS OF WORD CREATION AND FORMATION

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### SUMMARY:

One of the urgent issues of modern linguistics is to clarify the semantics of words, the ways of their formation. Let's pay attention to a few words. For example; Let's take the word bardak// pardak- bardak// pardak. The dictionary explains the word as follows: a vessel with a handle or without a handle made of porcelain or porcelain, used to pour water or other liquid (liquid) into it, with a narrow neck. However, it should be noted that the cup is not a container for any liquid. It has its own characteristics. That is, not every liquid is stored in a glass. While explaining this word in the dictionary, it also contains information about cooking piti in it. But if it is a narrow vessel, how can a meat dish be cooked in it?

The word bar-daq || bar-dag is a two-component word.

Each of these components has a meaning: bar-liquid and dag -bottle. This indicates why the dish is made and for what purpose it is served. Ancient Turkic sources used the word "bor|| bor " in the literary language of the 15th century Jigatay, in the medieval Mongolian language, in the sense of "mey, şərab// mey, shārab" (wine)". However, over time, the semantics of the word also changed, ie not only wine, but other liquids were placed in the same container, there was a slight difference in the phonetic structure of the word, ie it was replaced by "o-a": bordaq//bardaq(bordag//bardag).

What is the second component of the word "dak// dak "? In the Ural-Altai languages, the meaning of "**yer, mükän**" is historically "takh, dagh, tang, tog, tıg, däk, dāy, day, dav, dan etc." words have been developed and are still part of some words. For example, in Turkish it is used in the form of bardag//chay bardaghı (cup // tea cup). The word "daqa// daga" in the Ilisu dialect of our language means a tub; The fact that the pottery for drinking water in Mingachevir (Gulovsha village) is called "duqu// duggu " gives us reason to say that the word "daq//dag" has been a common name for pottery since ancient times. (In the Western dialect, the tallest person is called "daqqaqarın// daggagarın"). Later, the shape of these dishes and the material from which they were made gradually changed, but the name was preserved in the form of "bardaq//bardag": bor + daq = bordaq // bardaq (bor + dag = bordag // bardag) .

It should also be noted that the cup is petrified as a simple word in our modern language. It is also possible to explain the word **cürdək// jürdək**. According to the previous word, we can say that the second component of the word "cürdək// jürdək " is a modified form of the component in the word " bardag (cup)": -daq, -dək//-dag, -däk. So, the second part of the word "**cürdək// jürdək**" still means pottery. So how do we explain the first "cür//jür" component? To do this, we need to know what **cürdək// jürdək** is used. These containers mainly store water. The water stored in these containers stays cool for a long time. It is used in Sheki dialect as "cirdak". In other regions it is called "sahang// sähäng ". (The water industry is tested in water - with the phonetic change of the word and the displacement of the sound in the aphorism, the -el variant has been developed). The first part of the word "cür//jür" is not historically explained in terms of Turkic languages, it is assumed to be a derivative word and means "su//water". That is, a kind of su qabı// water bottle.

Explaining the meanings and clarifying the etymologies of many ancient words developed in our language is one of the important issues facing modern linguistics.

**Keywords:** word, meaning, etymology, cup, water ...

## SÖZLƏRİN YARANMASI VƏ FORMALAŞMASI YOLLARI

### TEZİS:

Müasir dilçiliyin aktual məsələlərindən biri də sözlərin semantikasının, formalaşma yollarının aydınlaşdırılmasıdır. Bir neçə sözün yaranmasına diqqət edək. Məsələn; bardaq/pardak sözünü götürək. İzahlı lüğətdə həmin söz belə izah olunmuşdur: içərisinə su, ya da başqa maye(sıvı) tökmək üçün istifadə olunan saxçı və ya çinidən hazırlanmış, qulplu və ya qulpsuz, boğazı dar olan qab. Lakin qeyd etmək lazımdır ki, bardaq hər cür maye saxlanan qab deyildir. Onun özəl cəhətləri var. Yəni hər bir maye saxlanan qaba bardaq deyilmir. Lüğətdə bu söz izah edilərkən onun içində piti bişirilməsi haqqında məlumat da verilmişdir. Lakin əgər bu, darboğazlı qabdırsa, onun içində ətli bir xörək necə bişirilə bilər?

**Bar-daq** sözü sözü ikikomponentli sözdür.

Həmin komponentlərin hərəsinin mənası vardır: bar-maye və daq-qab mənasındadır. Bu qabın nə üçün hazırlandığı, hansı məqsəddə xidmət etməsini ifadə edir. Qədim türkdilli mənbələrdən-XV əsr Cığatay yazılı ədəbi dilində, orta əsrlər moqol dilində, “mey, şərab” mənasında “bor” sözündən istifadə edilmişdir. Lakin zaman keçdikcə sözün semantikasında da dəyişiklik getmiş, yəni yalnız şərab deyil, digər mayələr həmin qaba qoyulmuş, sözün fonetik tərkibində azacıq fərq yaranmış, yəni “o-a” ilə əvəzlənmişdir: bordaq/bardaq şəklinə düşmüşdür.

Sözün ikinci komponenti “daq” nədir? Ural-Altay dillərində “**yer, məkan**” anlamında tarixən “tax, dağ, tanq, toq, tıq, dək, dəy, day, dav, dan və s.” sözlər işlənmiş, hazırda bəzi sözlərin tərkibində də qalmaqdadır. Məsələn, türk dillərində bardaq/çay bardağı şəklində işlənməkdədir. Cürdək, dilimizin İlisu şivəsində çəllək mənasında “daq” sözü; Mingəçevir (Gülövsə kəndi) şivəsində su içmək üçün saxsı qabın “duqqu” adlandırılması onu deməyə əsas verir ki, “daq” sözü qədim dövrlərdən saxsı su qabının ümumi adı olmuşdur. (Qərb ləhcəsində el arasında yekəqarın adama “daqqarın deyilir). Sonralar tədricən bu qabların formaları, hazırlandığı material dəyişmiş, lakin adı “bardaq” şəklində qorunmuşdur: bor + daq = bordaq/bardaq.

Onu da demək lazımdır ki, bardaq müasir dilimizdə sadə söz kimi daşlaşmışdır. Eyni şəkildə **cürdək** sözünü də izah etmək mümkündür. Əvvəlki sözə əsasən, deyə bilərik ki, cür- dək sözünün də ikinci komponenti *bardaq* sözündəki komponentin ahəngə görə dəyişmiş şəklidir: -daq, -dək. Deməli, cürdək sözünün ikinci hissəsi yenə də saxsı qab mənasını saxlayır. Elə isə birinci “*cür*” komponentini necə izah edə bilərik? Bunun üçün bilməliyik ki, *cürdək* nə üçün istifadə edilir. Bu qablarda, əsasən, su saxlanılır. Bu qablarda saxlanan su uzun müddət sərin qalır. Şəki şivəsində “*cirdək*” kimi işlənir. Digər rayonlarda “*səhəng*” adlanır. (Su sənəyi suda sınar- ata sözündə sözün fonetik dəyişməsi, səs yerdəyişməsi ilə -el variantı işlənmişdir. Səhəng həcminə görə də cürdəkdən bir az böyük olur). Sözün birinci hissəsi “*cür*” tarixən türk dilləri baxımından izah edilməmiş, alınma söz olması və “su” mənası bildirməsi ehtimal edilir. Yəni, cürdək//su qabı.

Dilimizdə işlənmiş bir çox qədim sözlərin mənalарının açığlanması, etimologiyalarının dəqiqləşdirilməsi müasir dilçiliyin qarşısında duran mühüm məsələlərdən biridir.

**Açar sözlər:** söz, məna, etimologiya, bardaq, su ...

## KELİME OLUŞUMU VE ONLARIN USULLARI

### ÖZET

Modern dilbilimin mühim konularından biri, kelimelerin anlambiliminin, oluşum yollarının açıklığa kavuşturulmasıdır. Birkaç kelimeye dikkat edelim. Örneğin; “bardak” kelimesine bakmamız yeter. Açıklayıcı sözlükler, “bardak” kelimesini şu şekilde açıklar: Kulplu veya sapsız, porselen yapılmış, içine su veya başka bir sıvı (sıvı) dökmek için kullanılan, dar boyunlu bir kap. Bununla birlikte, bardağın herhangi bir sıvı için bir kap olmadığı unutulmamalıdır. Kendine has özellikleri vardır, yani her sıvı bir bardakta depolanamaz. Sözlükte kelime anlatıldığında içerisinde piti pişirme hakkında bilgi verilir. Ama şu dar bir kapsa, içinde et yemeği nasıl pişirilebilir?

“Bar-dağ” kelimesi iki komponentli bir kelimedir.

Bu kelimelerin her birinin anlamı vardır: bar-sıvı ve dak-kap. Bu, kapın neden yapıldığını ve hangi amaçla düzeltiliyini gösterir. Eski Türk kaynakları - 15. yüzyıl Jigatay edebiyat dilinde, ortaçağ Moğol dilinde, "mey, şarap" anlamında "bor" kelimesi kullanılmıştır. Ancak zamanla kelimenin anlamı da değişti, yani sadece şarap değil, diğer sıvılar da aynı kaba konuldu, kelimenin fonetik yapısında küçük bir fark oldu, yani "o-a": bordaq // bardaq ile değiştirildi.

Kelimesinin ikinci tarafı “dağ” nedir? Ural-Altay dillerinde "yer, mekan" kelimesinin anlamı tarihsel olarak "yergi, dağ, tang, toq, tig, dak, gün, dav, dan vb." kelimeler geliştirilmiştir ve hala bazı kelimelerde işlenmektedir. Örneğin Türkçede “bardak//çay bardağı” şeklinde kullanılır. Dilimizin İlisu lehçesindeki "daqa" kelimesi “kab” anlamına gelir; Mingaçevir’de (Gulovsha köyü) içme suyun saklandığı kab "dakka" adlandırılmıştır. Bizde "dak" kelimesi antik çağlardan beri saksı su kablalarının ortak bir adı olmuştur. (Batı lehçesinde kocaman karnı olan adama "dakkakarın" denir). Daha sonralar bu kablarn şekli ve yapıldığı malzeme değişmiş, ancak adı "bardak" şeklinde korunmuştur: bor + dak = bordak // bardak.

Modern dilimizde “bardak” kelimesi struktur bakımdan basit bir kelime gibi formallaşmıştır. Aynı mantıkla “cürdək” kelimesini de açıklamak da mümkündür. Bir önceki kelimeye göre, "cürdək" kelimesinin ikinci tarafı "bardak" kelimesindeki gibi “dak” kelimesinin fonetik deyişmiş (“dek”) halidir: -daq, -dek. Yani, "cürdek" kelimesinin ikinci tarafı da hala gil kab anlamındadır. Öyleyse ilk "cür" kelimesini nasıl açıklarız? Bunun için bilmemiz gerekiyor ki, heminkab hangi amaçla kullanılıyor. Bu kablarda çoğunlukla su saklarlar. Bu kablarda depolanan su uzun süre serin kalır. Şeki lehçesinde bu kelime "cürdek" olarak kullanılır. Diğer bölgelerde buna "sahang" de denir. (Su senegi suda sınar – ata sözünde sesin yer değiştirmesi ile -el varyantı geliştirilmiştir. Sahangın boyutu cürdekden bir az büyük oluyor). Kelimenin ilk tarafı “cür” tarihsel olarak Türk dilleri açısından açıklanmamış, ecnebi kelime olarak "su" anlamına geldiği düşünülmüştür. Yani; cürdək//su qabı.

Dilimizde gelişmiş birçok eski kelimelerin anlamlarını ve etimolojilerini açıklamak, modern dilbilimin karşıya koyduğu önemli konulardan biridir.

**Anahtar Kelimeler:** kelime, anlam, etimoloji, bardak, su ...

### INTRODUCTION:

First of all, it should be noted that the formation of words, semantics, etymology of words in the language has always been one of the most pressing issues of world linguistics and still remains a topical issue. To this end, we would like to talk about the etymology of several special names and several appellate units, the ways of their formation.

First of all, we consider it expedient to start with the word Caucasus, as our beautiful homeland is an important country in the Caucasus and our history is connected with the

Caucasus. Everyone knows that the Caucasus is the name of a mountain. However, the meaning of this name is not known to everyone. Those who have information about the ethnoses that took part in the ethnogenesis of our people, about the Turkic ethnoses, can find out that this name contains the element "qas" and say that the mountain is connected with that ethnos. However, it is known that the etymological explanations may be different. It is our duty to find, study and even propagate the most scientific and correct of them.

Main part: Now we will look at a few options: 1) The word Caucasian was written in the original Latin sources as "kavkasos". The Greek historian Eratosthenes used this word in the form "Gaspios", where the name "ethnos" is clearly visible.

There is an opinion in Russian linguistics that the first part of the word Caucasus//Caucasus - "kav" is from the Russian word "kovat - to beat". And if the muscle component means the name of the tribe, the word means "mountain country where the gass beat metal". This explanation is quite wrong. There is a positive side to this explanation that it has been acknowledged that it is the name of the so-called Qas tribe. However, the connection of the first component with the Russian word "kovat" is incorrect. That is, it is not correct to explain the meaning of a word in the form of a sentence. Because the word Caucasus consists of two components, two words. The meaning of one is clear: the name of the tribe.

Some linguists, based on the Yafas theory, say that the name Caucasus means "white snow". This idea does not justify itself. A. Bakikhanov wrote that this word contained the name of the ethnos and the name of the legendary mountain "qaf", as a result of which he explained the meaning of the word in the form of a mountain belonging to the Qafkas//Gafgaz.

The word qaf // kaf // kuh // kaf mountain was also historically used in ancient Persian. In ancient times, this word was even used in the form of "gaufa", and in the word Gafgaz it was kept in the form of qaf.

At that time, the Iranians, who did not see and recognize the ethnos called Qas, preserved the word qaf in the word meaning mountain, and created the meaning of "mountain + mountain". In fact, the word "qaf + qas" means a mountain of qas. In our ancient monument "Kitabi-Dada Gorgud// Kitabi-Dada Ğorgud the name of Gazilig mountain // Gazlig mountain is used. This word also means "Caucasus Mountain", which means Caucasus Mountain, and means Mountain of Geese.

Let's pay attention to another special island. This is the word Mugan. This word is often interpreted as the place where the Mughals lived. The -an component in the name is presented as a plural suffix of Persian origin. The meaning of the word is explained as "maghs". However, I would like to express my opinion on the suffix -an. First of all, why should we rely on foreign languages and foreign sources that are not related to any Turkish language when explaining something. If one of the oldest ethnic groups in the history of society is the Turks, one of the creators of the first alphabet, and perhaps the first, the Turks, the Turks who stimulated the European renaissance with their culture, if we come across elements and words of the Turkic language in many languages. not to explain?

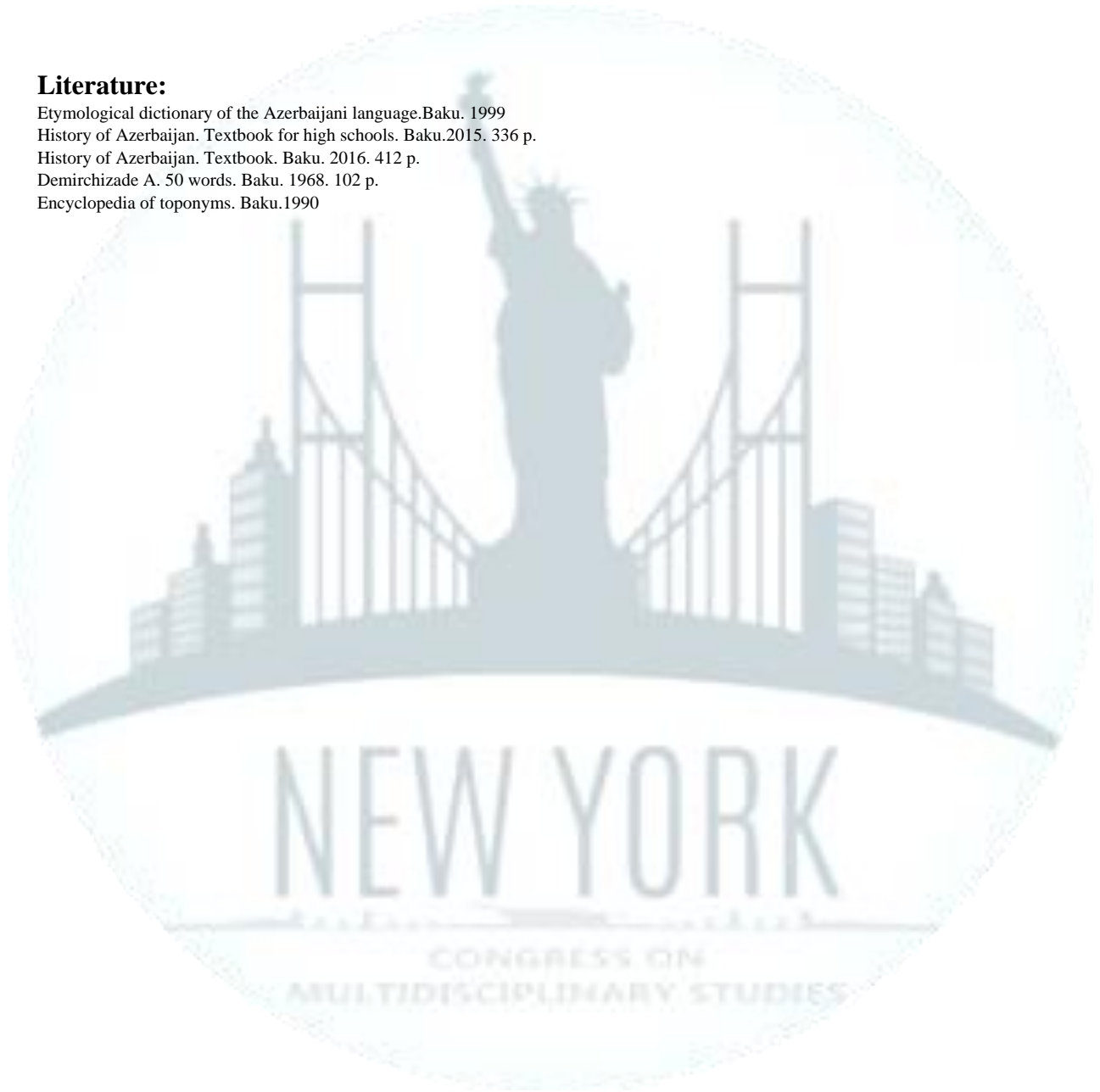
Let's go back to the suffix -an. We all know that in our language in many toponyms -an; -kan suffix developed. For example; Azerbaijan//Azerbaizhan, Mardakan//Mardakan, Shuvalan// Shuvalan, Nakhchivan// Nakhjhivan, Absheron// Absheron and others. If we explain it in terms of the Persian language, then we have to explain all these words in the same way. However, the suffix that is derived cannot participate in the formation of so many

words. What is my opinion? In all words ending in -an, -kan, -van elements, that element means kan//ken//village, which means the content of space.

Both the Armenians and the Persians and those who poured water on their mills made such statements, either as a result of misinformation or as a result of political pressure during the Soviet era. During the years of independence, these issues must be reconsidered and the truth must be established.

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## **INVESTIGATION OF THE MICROBIOLOGICAL QUALITY OF READY-TO-EAT FOODS AND THEIR POTENTIAL FOR FOOD POISONING**

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### **Abstract**

Nowadays, the increase in working people due to rapid urbanization and increasing industrialization has increased the number of meals outside the home, leading to the opening of ready-to-eat (RTE) companies that offer cheap and easily accessible meals. Microbiological suitability of food in Turkey for human health is evaluated in accordance with the communicate on Microbiological Criteria of the Turkish food codex (TFC). The aim of this study is to examine the microbiological quality of RTE foods offered for consumption in Istanbul and to determine their compliance with TFC and to evaluate the risks of food poisoning of ready meals. In our study, 750 samples were obtained from 14 RTE companies; Coliform bacteria, *E. coli*, *B. cereus*, *S. aureus*, *Salmonella* spp. and *Listeria monocytogenes* has been studied in terms of presence. *S. aureus* was detected in 6.4% of the 718 samples and *B. cereus* was detected 2.25% of the 577 samples. Coliform bacteria was detected in 4.8% of the 709 samples and *E. coli* was detected 2.4% of the 750 samples. In the pastry samples, both Coliform bacteria and *E. coli* and *S. aureus* were detected highest rate as 33%. In our study, when the products of 14 food companies were evaluated in terms of microbiological analysis, it was determined that 7 companies had RTE food products that did not comply with the TFC Microbiological Criteria communicate. Failure of personnel to comply with personal cleaning and hygiene rules in the preparation of meals, failure to pay attention to the cleaning of the tools and equipment used a risk to consumer health. As a result, in order to ensure healthy food production in RTE companies, it is necessary to support the working staff with hygiene training, and the nutrients provided for food preparation must be high quality and healthy.

**Keywords:** Ready-to-eat, Microbiological Quality, Food Poisoning, TFC

### **INTRODUCTION**

One of the most basic needs of people is nutrition. A healthy, adequate and balanced diet is a must for individuals to grow and continue their lives (Pichhardt, 1997). Currently, the increase in working people due to rapid urbanization and increasing industrialization has increased the number of meals outside the home, leading to the opening of ready-to-eat (RTE) companies that offer cheap and easily accessible meals (Çolak et al., 2007, Christison et al., 2008). Thus, in many parts of the world, companies have been opened that serve many private or official institutions, offer cheap and easily accessible food, provide ready-to-consume food products (Şireli et al., 2008). Food-related diseases are an important health problem both in our country and in many parts of the world today, as in the past (Pichhardt, 1997, Fidan and Ağaoğlu, 2004).

According to the statistical data obtained from the USA, England and the Netherlands, more than 70% of foodborne diseases are associated with food service sectors (Griffith, 2006).



The majority of studies on this topic in Turkey, poisoning indicating that occur in RTE foods consumed in institutions such as schools and hotels (Baş et al., 2006). Although most people receive services from ready-to-eat companies, it is difficult to say that complete attention is paid to food safety and food hygiene in these companies (Çolak et al., 2007). Food hygiene is a very important element for healthy food production, as it includes rules that must be applied in production and consumption stages so that foods do not make people sick and do not lose their nutritional properties (Çolak et al., 2007). When catering companies produce microbiologically poor quality food, they can cause food poisoning that causes serious health problems that concern both forensic science and public health (Fidan and Ağaoğlu, 2004). Microorganisms that contaminate RTE foods at different stages from various sources (air, water, soil, personnel, waste, insects and rodents, etc.) can cause highly dangerous diseases (Griffith, 2006, Baş et al., 2006). In addition, during food preparation, personnel not obeying the cleaning and hygiene rules and not paying attention to the cleaning and disinfection of the tools and equipment used by the personnel, especially the don't use of clean water in the production of food, constitute a potential risk for consumer health (Fidan and Ağaoğlu, 2004, Sousa et al., 2002, Leifert et al., 2008, Ünver et al., 1981).

Food poisoning is a condition that occurs with digestive system diseases or nervous system disorders that occur in the stomach and intestines that cause fever, vomiting after eating food, and is one of the important subjects of forensic science (Ayçiçek and Aktan, 2003). One of the main causes of food poisoning is eating raw or defective forms of foodstuffs that are contaminated by pathogenic microorganisms or where pathogens have the opportunity to reproduce and make toxins (Christison et al., 2008). In the case of a food poisoning that causes similar symptoms at the same time and place in two or more people following the consumption of the same food, the poisoning occurs as an epidemic (Wagner, 1989). It is very important to reveal the cause of a foodborne epidemic in order to achieve justice. It is possible to determine the true cause of the epidemic by carefully interpreting the initial investigation information, microbiological analysis of suspect foods and the analysis results of the clinical samples (feces, vomit, blood, etc.) of affected persons. (Wagner, 1989). For this reason, it is very important to do food poisoning analysis correctly. Foods, especially ready-to-eat foods, are a good breeding environment for microorganisms (Yafet, 1998). Among the most important pathogens that cause food poisoning; *Listeria monocytogenes*, *Salmonella* spp., *Staphylococcus aureus*, *E. coli*, *Bacillus cereus* can be counted (Yafet, 1998).

Considering that millions of people are fed with RTE foods in a big city like Istanbul, it is important to reveal the potential of RTEs and the companies that produce them to cause food poisoning in terms of reducing forensic cases. The aim of this study is to examine the microbiological quality of RTE foods offered for consumption in Istanbul and to determine their compliance with TFC and to evaluate the risks of food poisoning of ready meals. In addition, according to the results obtained in terms of microorganisms examined, it is aimed to make suggestions regarding the issues that catering companies and personel working should pay attention to.

## **MATERIALS AND METHODS**

### **Sampling and microbiological analysis**

In this study, 750 samples from 14 different RTE food companies in Istanbul in 5 different categories were collected by cold chain (Table 1). In the study, many different types

of ready meals such as pastries, soup, puddings, salads, patties, rice, vegetable meals, meat dishes, food legumes, meatballs, pasta, meat dishes, turkish kebabs and chicken meals were examined. RTE samples were examined in terms of selected parameters depending on the type of food on the basis of TFC Microbiological Criteria Communique (No: 2009/68) and evaluated according to their compliance with this regulation (Turkish Food Codex 2010).

**Table 1:** RTE categories.

<b>Foods</b>	<b>Number</b>
All kinds of ready-to-eat (cooked) meat and vegetable meals.....	531
All kinds of ready-to-eat salads, (delicatessen products and cold appetizers, etc). ....	120
Ready to consume (cooked) all kinds of bakery products (pasta, all kinds of pastry, lahmacun, pita, pizza).....	46
All kinds of ready-to-eat (cooked) desserts (pudding, pudding, cream, ashura, water pudding).....	41
Tarts and wet cakes (cream, chocolate, filled, fruit etc.).....	12

The samples were studied for detection of the existence of microorganisms (*Listeria monocytogenes*, *Salmonella* spp., *Staphylococcus aureus*, Coliform bacteria, *Escherichia coli*, *Bacillus cereus*). International Standard Organization (ISO) methods, which are international standard methods, were used in RTE microbiological analysis. In the analysis of Coliform bacteria, *Escherichia coli*, *Bacillus cereus* and *Staphylococcus aureus*, 10 g or 10 mL and *Listeria monocytogenes* and in *Salmonella* spp analysis, 25 g or 25 mL sample was weighed and nine-fold amount of TPS was added. Samples were homogenized in the stomacher so parent suspensions were prepared. ISO 4832 was used in the microbiological analysis of Coliform bacterial mL of the prepared suspension was transferred to Violet Red Bile agar (VRBL) plates and mixed circularly (ISO 4832, 2006). After the medium solidified, the surface was covered with 5 mL of VRBL Agar to prevent colony dispersion on the surface and to provide a mild anaerobic environment. Petri dishes were incubated for 18-24 hours at 35 °C, purple-red colonies with a diameter of 0.5 mm and larger with a zone of precipitated bile acids were counted as coliform bacteria. To verify the colonies, at least 10 selected colonies were transferred to Brilliant Green Lactose Bile (BGLB) and incubated at 35°C for 24-48 hours to observe gas formation. Gas-forming

colonies were evaluated as positive. ISO 16649-2: 2001 was used in *E. coli* analysis (ISO 16649-2, 2001). 0.1 mL of the prepared suspension was transferred to two Tryptone Bile X-glucuronide (TBX) media and left to incubate for 4 hours at 37 °C and 18-20 hours at 44 °C. *E. coli* positive colonies were observed as typical blue-green color on TBX agar. In the *S. aureus* analysis, ISO 6888-1 was used. 0.1 mL of the prepared suspension was transferred to two BP media and kept in the oven at (37 ± 1) °C (24 ± 2) hours. Suspected typical and atypical colonies were confirmed with a latex agglutination commercial kit (ISO 6888-1, 1999).

In the *B. cereus* analysis, ISO 7932 was used and 0.1 mL of the prepared suspension was inoculated into Mannitol egg Yolk Polymixin agar (MYP) medium and incubated at 30 °C for 18-24 hours (ISO 7932, 2004). At least 5 typical colonies (pink colonies surrounded by sediment) were selected from each plate and gram staining and hemolysis test were performed. ISO 6579 was used in the *Salmonella* spp. analysis. After the prepared main suspension was kept in a 37 °C incubator for 16-20 hours, 0.1 mL of it was transferred to

Rappaport Vassiliadis medium and kept in a 37 °C oven for 24 hours (iso 6579, 1993). Subsequently, the sample was streaked into Xylose Lysine Deoxycholate (XLD) agar. 5 of Salmonella spp. suspected colonies were inoculated on 5 Triple Sugar Iron (TSI) Agar and Urea medium for confirmation. In Listeria monocytogenes analysis, ISO 11290-2 was used (ISO 11290-2, 1998). The prepared suspension was left at 20 °C for 60 minutes, 0.1 mL of suspension was plated to Palcam agar, and the plates were incubated at 37 °C for 24 hours. The Christie Atkins Munch-Peterson (CAMP) test and hemolysis test were performed to confirm small grayish olive green, sometimes black centered colonies that are characteristic colonies of Listeria spp.

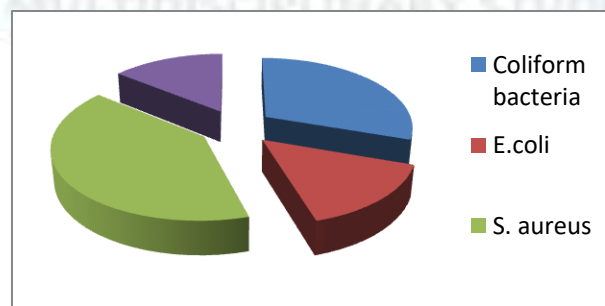
## RESULTS

In our study, 750 samples from 13 different food groups (in 218 variations) obtained from 14 RTE companies were studied (Table 2). In the study, it was determined that each RTE food varies in itself. For example, 100 meatless vegetable dishes were composed of 23 different ingredients (Table 2). RTE food whose sample numbers were highest were 120 salads and soups (Table 2).

**Table 2.** RTE types examined in the study.

<b>RTE group</b>	<b>Number</b>	<b>Variations</b>
Salad	120	34
Soup	120	23
Vegetable meals	100	23
Meat dishes	98	32
Rice	70	8
Meatball	52	2
Chicken meals	48	27
Pudding	41	10
Pasta	32	12
Turkish Kebab	23	10
Food legumes	20	4
Patty	14	7
Pastry	12	5
<b>Total</b>	<b>750</b>	<b>218</b>

Four different microorganisms were isolated from the RTE samples. These were Coliform bacteria, E. coli, S. aureus and B. cereus (Table 3). Salmonella spp. and L. monocytogenes were not isolated from any of the RTE samples analysed. S. aureus was found in 6.4% of the 718 samples and B. cereus was detected 2.25% of the 577 samples (Figure 1). Coliform bacteria was found in 4.8% of the 709 samples and E. coli was detected 2.4% of the 750 samples (Figure 1).



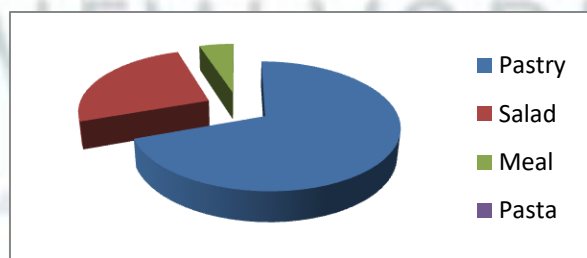
**Figure 1.** Microorganism positivity rate in RTE foods.

In the pastry samples, both *S. aureus* and Coliform bacteria and *E. coli* were detected highest rate as 33%. The sample groups in which *S. aureus*, Coliform bacteria and *E. coli* were isolated together were soups (0.83%), vegetable dishes (1%), pilaw (1.45%) and salads (5%). Coliform bacteria were detected 13% in kebabs and 11.7% in salads in the 709 samples analyzed (Table 3). *E. coli* was found 5% in salads and 4.4% in kebabs in the 750 samples analyzed (Table 3). *S. aureus* was found 6.3% in chicken meal in the 718 samples (Table 3). *B. cereus* was determined 13% in kebabs, 4.2% in chicken meals and 3% in vegetable dishes in the 577 samples analyzed (Table 3).

**Table 3.** Microorganism values and rates in various RTE food samples.

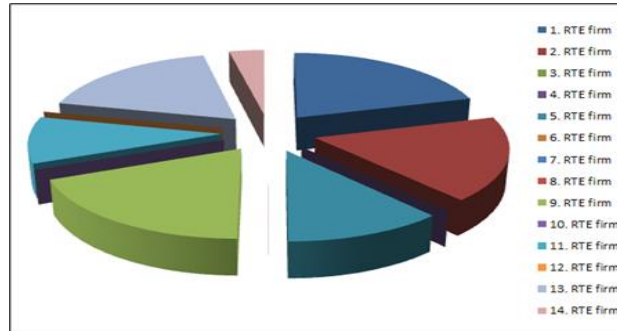
Sample type	<i>S. aureus</i> (%)	CFU/g	Coliform (%)	CFU/g	<i>E.coli</i> (%)	CFU/g	<i>B.cereus</i> (%)	CFU/g
Salad	4.2	10 <sup>2</sup> -10 <sup>5</sup>	11.7	10 <sup>1</sup> -10 <sup>4</sup>	5	10 <sup>1</sup> -10 <sup>4</sup>	NT	
Soup	1.7	10 <sup>2</sup> -10 <sup>3</sup>	0.8	10 <sup>1</sup> -10 <sup>2</sup>	0.8	10 <sup>1</sup> -10 <sup>2</sup>	0.8	10 <sup>4</sup> -10 <sup>5</sup>
Vegetable meals	5	10 <sup>2</sup> -10 <sup>4</sup>	4.2	10 <sup>1</sup> -10 <sup>3</sup>	2	10 <sup>1</sup> -10 <sup>3</sup>	3	10 <sup>2</sup> -10 <sup>3</sup>
Meat dishes	4.1	10 <sup>2</sup> -10 <sup>3</sup>	ND		ND		2	10 <sup>1</sup> -10 <sup>3</sup>
Rice	5.8	10 <sup>1</sup> -10 <sup>6</sup>	5.7	10 <sup>5</sup> -10 <sup>6</sup>	1.5	10 <sup>5</sup> -10 <sup>6</sup>	1.4	10 <sup>4</sup> -10 <sup>5</sup>
Meatball	5.8	10 <sup>2</sup> -10 <sup>4</sup>	ND		ND		1.9	10 <sup>2</sup> -10 <sup>3</sup>
Chicken meals	6.3	10 <sup>1</sup> -10 <sup>3</sup>	4.2	10 <sup>3</sup> -10 <sup>4</sup>	4.2	10 <sup>3</sup> -10 <sup>4</sup>	4.2	10 <sup>2</sup> -10 <sup>4</sup>
Pudding	4.9	10 <sup>2</sup> -10 <sup>3</sup>	NT	NT	2.4	10 <sup>1</sup> -10 <sup>3</sup>	NT	
Turkish Kebab	4.4	10 <sup>1</sup> -10 <sup>3</sup>	13	10 <sup>1</sup> -10 <sup>2</sup>	4.4	10 <sup>1</sup> -10 <sup>2</sup>	13	10 <sup>2</sup> -10 <sup>4</sup>
Food legumes	1	10 <sup>2</sup> -10 <sup>3</sup>	ND		ND		ND	
Pastry	33.3	10 <sup>2</sup> -10 <sup>5</sup>	33.3	10 <sup>2</sup> -10 <sup>4</sup>	33.3	10 <sup>1</sup> -10 <sup>3</sup>	NT	

Although the microorganism value (from 10<sup>1</sup> to 10<sup>6</sup>) in the samples varied, it was determined that the *S. aureus*, Coliform bacteria and *E. coli* amounts increased up to 10<sup>6</sup> CFU/g, especially in pilaw (Table 3). In addition, microorganism values in pastry samples, which have the highest rate among RTE foods, vary in different foods (Table 3).



**Figure 2.** Distribution of samples not conforming to TFC Microbiological Criteria.

In our study, it was determined that 50% of pastry samples and 18.3% of salad samples among the meals produced by RTE companies are "unsatisfactory" to the TFC Microbiological Criteria (Figure 2). When the RTE companies in our study were evaluated according to TFC Microbiological Criteria, it was determined that the highest rate of "unsatisfactory" ready foods was the meals produced by the company number 1 (14.55%) (Figure 3). As a result, it has been determined that the foods produced in 7 (50%) of RTE companies contain microorganisms that are not suitable for health (Figure 3).



**Figure 3.** "Unsatisfactory" rates of RTE companies to TFC Microbiological Criteria.

## DISCUSSION

With the urbanization and industrialization, the food produced in many different varieties in the companies in the catering sector, which is growing day by day, is offered to the consumer directly or indirectly after a heating process. The lack of high quality and healthy conditions of RTE foods, whose usage is increasing day by day, increases the potential of causing food poisoning and becomes an important issue that closely concerns forensic research. In this presented study, it is aimed to determine the risk of food poisoning by examining the microbiological quality of the meals produced in 14 RTE companies in Istanbul with standardized techniques. In addition, according to the results obtained in terms of microorganisms examined, it is aimed to make suggestions regarding the issues that catering companies and personnel working should pay attention to. All microbiological analyzes were performed using ISO's standard methods.

Staphylococcal food poisoning occurs with the intake of enterotoxin, an exotoxin that is synthesized when staphylococci with enterotoxigenic characteristics reach  $10^6$  CFU/g or higher in food. *S. aureus* is the most important species among enterotoxigenic staphylococci. *S. aureus* is one of the most important reasons for foodborne illnesses worldwide (Atanassova et al., 2001). Oh et al. reported that in Korea, food poisoning outbreaks caused by *S. aureus* have increased over the years (Oh et al.,

2007). K1sa et al. found that the ratio of coagulase-positive staphylococci in 26% of the total pastry samples, 36.4% of plain cream samples, 22.6% of the samples with cocoa cream, and 28.1% of the samples with fruit cream (K1sa et al., 1996). K1sa et al. similarly, in our sample group, the group with the highest *S. aureus* ratio was pastry products with 33.33%. In our study, a positive value ( $10^1$ - $10^6$  CFU/g) was observed in 46 (6.4%) of the 718 food samples investigated for *S. aureus*. Pastries containing cream carry out a favorable environment for the development of microorganisms due to their pH values and water activities. In addition, the low temperature heat treatment of cream pastry, the use of raw cream in the preparation of cream pastries and the many steps in the preparation of the pastry increase the number of microorganisms (Ayçiçek et al., 2005). In our sample group, the second group with the highest *S. aureus* rate was determined as salads, and it was determined at a rate of 14.16% and  $10^2$ - $10^5$  CFU/g in 120 salad samples. Another reason for the presence of *S. aureus* in RTE foods is cross contamination during storage and processing (Pérez-Rodríguez et al., 2007). As a result, in the occurrence of *S. aureus* food poisoning; it has been concluded that pastry and pudding desserts and salads pose a potential health risk to the consumer, that an effective and

continuous control system is required, and especially attention must be paid to personnel and business hygiene.

*B. cereus* can cause various diseases due to the food consumed and is frequently found both in nature and in foods (Marrollo et al., 2016). In studies conducted in different parts of the world, *B. cereus* has been determined from various RTE foods, especially samples such as mixed salads and cooked rice (Yu et al., 2019, Park et al., 2009, Batchoun et al., 2011). Yu et al., 302 of the 860 collected samples (35%) were positive for *B. cereus*; including 224 of the 656 cooked meat samples (34%) (Yu et al., 2019). In our study, *B. cereus* was found at a considerable rate of 13% in Turkish kebabs and 4.2% in chicken meals, and the value of *B. cereus* in these foods was determined to be above  $10^3$  CFU/g. In Australia and New Zealand, if the *B. cereus* level is 103-104 CFU/g, this value is considered an “unsatisfactory” level (Yu et al., 2019). In Turkey, if the amounts of *B. cereus* in RTE samples are more than  $10^3$  CFU/g, their quality is considered to be “unsatisfactory”. In our study, a positive value was found in terms of *B. cereus* analysis in 2.25% of 577 food samples. Our study shows the potential danger of consuming kebab and chicken meals prepared without proper processing for *B. cereus*.

Since Coliform bacteria are considered as indicator organisms in foods, their analysis in foods is very important. In our study, 34 (4.8%) of 709 RTE foods showed a positive value in terms of coliform bacteria. In a study (Temelli et al., 2005) was found the average value of coliform bacteria in different salad samples to be  $10^4$  CFU/g. In another a study was (Çolak et al., 2007) found coliform bacteria in 28% of meat dishes, 20% of meatless vegetable dishes, and 30% of rice. In our study, the highest rate in terms of coliform bacteria was seen in pastries with 33.33%. Afterwards, a high rate of Coliform bacteria was detected with 13.04% in kebabs and 11.66% in salads. Coliform bacteria can cause life-threatening consequences in diabetics, especially in the elderly, as they cause septicemia and endotoxemia.

When a total of 13 different RTE foods were examined in terms of the presence of *E. coli*, the group with the highest rate of *E. coli* was pastry with 33.33% and salads ranked second with 5%. *E. coli* value in salads has reached up to  $10^4$  CFU/g. In a study was found the *E. coli* level of 3.7% of 1213 salad samples in England above  $10^2$  CFU/g (Meldrum et al., 2009). Especially, RTE salads have been caused in foodborne poisoning because of their often not cleaning well (Colombari et al., 2007). The identification of *E. coli* and Coliform bacteria in foods may be related to the risk of faecal contamination.

One of the main subject in the RTE food system is food safety, as large amounts of food are served to large numbers of people every day (Rosset et al., 2004). According to the results of the our study, it was concluded that pastry type desserts, salads, chicken dishes and kebab type dishes offered for consumption in Istanbul carry the risk of food poisoning. We think that the risk of food poisoning of these studied foods can be avoided if the products are treated with sufficient heat treatment, taking into account the hygienic conditions, kept in the cold sufficiently and protected from recontamination.

The role of RTE companies in foodborne outbreaks around the world is substantial. The number of reported food-borne diseases in Turkey, although relatively small, this situation does not mean that food-borne diseases have not been observed in our country. Because the rate of reported foodborne illnesses is thought to be only as little as the tip of an iceberg, but the actual numbers are much higher (Wagner 1989).

## CONCLUSION

As a result, in order to ensure healthy food production in RTE companies, in companies where RTE foods are prepared, microbiological checks should be done frequently, the employees should be supported with hygiene trainings, and the food provided should be of good quality and healthy. In future studies, very valuable data can be obtained by comparing the biological materials of people who are poisoned by consuming RTE foods with the microorganisms that are detected in the food they eat.

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## **AN INVESTIGATION THE RELATION BETWEEN PRESERVICE TEACHERS' EMOTIONAL LITERACY LEVELS AND THEIR COMMUNICATION SKILL LEVELS**

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### **Abstract**

The teaching profession is one of the professions in which the individual's communication skills are at the forefront. In addition, individuals who choose the teaching profession must have the ability to both express their own emotions and understand the feelings of others, that is, they must be emotionally literate individuals. Therefore, it is expected that teacher candidates who are get ready for the teaching profession have strong communication skills and have high levels of emotional literacy. In this context, the main purpose of this research is to determine the communication skill levels and emotional literacy levels of teacher candidates and to reveal the relation between these two. In line with this main purpose, the relational survey model was used in the research. Study group of the research consists of 318 teacher candidates who are studying two different state universities in Turkey. While determining the candidates, the maximum diversity sampling method, which is one of the purposeful sampling methods, was used. Two data collection tools were used in the study: "Emotional literacy skills scale" and "Communication skills scale". The emotional literacy skill scale consists of five sub-dimensions, which are: "Motivation", "Empathy", "Self-regulation", "Emotional awareness" and "Social skills". The communication skills scale consists of four sub-dimensions, which are: "Communication principles and basic skills", "Self-expression", "Active listening and non-verbal communication" and "Willingness to communicate". When the results of the study were investigated, it was seen that the emotional literacy and communication skills of the teacher candidates were above the middle scores of the scale. Teachers candidates' emotional literacy levels and communication skills differed significantly in favor of female students. No difference was found between emotional literacy levels and communication skills in terms of grade level, department which they attend to and academic achievement. Finally, it has been revealed that there is a high-level positive relationship between teachers candidates' emotional literacy levels and their communication skills.

**Keywords:** Preservice teacher; Emotional literacy; Communication skill.

### **INTRODUCTION**

Emotions, which are defined as the impression, feeling (Turkish Language Society [TLS], 2021) which are created by certain objects, events or individuals in the inner world of a person, play a very critical role in individuals' learning. Figueroa-Sánchez (2008) states that students' expressing their emotions contributes to the development of their learning potential and also emphasizes that an important part of childrens' social and emotional development is their emotional literacy. Emotional literacy described as, "the ability to perceive, evaluate and express emotion correctly; the ability to access and/or produce feelings that facilitate thought; the ability to understand emotion and emotional information; ability to regulate emotions in order to encourage emotional and intellectual growth" (Mayer and Salovey 1997, cited in

Matthews, 2006). Matthews (2006) states that emotional literacy not only contributes to the emotional development of students, but also helps them manage their own behaviors and learning. In this context, it would not be wrong to say that emotional literacy is very important in education and it is among the skills that should be acquired by students. Park (1999) emphasizes that the way to achieve this is to provide students with a classroom atmosphere in which they would feel emotionally safe, can talk freely about their experiences, and allow others in the classroom to talk comfortably about their experiences, and by giving students the opportunity to discover themselves and test their responses. Without doubt, providing this atmosphere in the classroom is the teachers' responsibility. This situation requires teachers to be individuals with high emotional literacy and thus to be able to support their students in this regard. Sherwood, (2008) states that the teacher is the heart of the classroom and all students should protect their hearts and create a large 'umbrella' heart area that will allow them to gather in a safe environment. In this way, it will contribute to the development of emotional literacy of students, and with their hearts maturing, their minds will also develop, and this situation will improve their cognitive literacy (Sherwood, 2008). In order for teachers to be such an 'umbrella' heart, it is very important that they have emotional literacy skills when they start their profession. In this context, acquiring this skill in undergraduate education can be seen as a great advantage in terms of contributing to the emotional literacy of students when they start their profession. As a matter of fact, Yeigh, Woolcott, Donnelly, Whannell, Snow, and Scott (2016) found that the concept of emotional literacy not only includes the use of empathy and social skills to connect with their students, but also is enables teachers candidates to controle and regulate their emotions in relation to the classroom environment. "Communication skills" is also included among the social skills that teachers are expected to have.

Communication is defined as "transmitting and receiving information" in its broadest sense (Barker, 2011). In general, communication can be defined as the process of verbal and non-verbal information exchange from the person who gives the information to the person who receives the information. The most common method of communication is verbal, using a specific language where it is a two-way process with feedback on the message received. Communication also includes the exchange of ideas, views and information for a specific purpose. In addition to verbal communication, information can also be shared using symbols or signs (Iksan, Zakaria, Meerah, Osman, Lian, Mahmud & Krish, 2012). Although communication skills seem simple in theory, it requires a lot of repetition, practice, and reflection to reach a level of mastery (Kotzman & Kotzman, 2008). In this context, communication skills are seen as very important in terms of interpersonal relationships. Communication skill is also a critical skill for teaching, which is one of the professions where interpersonal communication is frequently used. Yeşil (2010) states that teaching is a profession that sets an example to the society especially for children with its knowledge, skills, attitudes and habits, and undertakes the responsibility of raising children in a sample that is served as a human being. In this context, teachers should have communication skills. Developing effective communication skills is an important part of teachers' advancement potential. Teachers need to have highly developed communication skills in order to be successful. Developing these skills not only increases teachers 'potential but also improves their quality. Advanced communication skills are required in all areas of the teaching process. Teachers must have highly developed verbal and writing skills to communicate effectively with management, students, and colleagues (Ihmeideh, Al-Omari & Al-Dababneh, 2010). In the light of all this information, the aim of this study is to determine the level of emotional

literacy and communication skills of primary school teacher candidates, which are considered to be very critical for teachers, and to reveal the relationship between these skills. When the literature is examined, although separate studies have been conducted on the emotional literacy and communication skills of teachers and teacher candidates, there are only few number of studies exists which examine the relationship between these skills. For this reason, it was thought that it is necessary to work on this subject.

## **METHOD**

### **Research Model**

In the research correlational survey model was used. According to Balcı (2015), relational studies are studies which conducted to determine the relationships between two or more variables. In this research, as it was aimed to determine the relationship between the emotional literacy levels of teacher candidates and their communication skills, the correlational survey model was preferred.

### **Study Group**

Study group of this study consists of teacher candidates who attends two different universities in Turkey. The maximum variation sampling method, one of the targeted sampling methods, was used while determining the teacher candidates. In this context while creating the study group, participants' attendance to different departments was put in to consideration. In other words, teacher candidates from different departments were included in the study to ensure diversity in the study group. The demographic information about the variables of gender, department, grade level, academic achievement of the teacher candidates who constitute the study group of the study are given in Table 1 below:

**Table 1.** Demographic information of teacher candidates

<b>Variable</b>	<b>Group</b>	<b>f</b>
<b>Gender</b>	Male	251
	Female	67
<b>Department</b>	Department of science teaching	33
	Department of social sciences teaching	56
	Department of primary school teaching	133
	Department of pre-school teaching	26
	Department of guidance and psychological counseling	70
<b>Grade level</b>	1st grade	35
	2nd grade	110
	3rd grade	119
	4th grade	54
<b>Grade point average</b>	0.00-2.99	78
	3.00-3.49	168
	3.50 and above	72

### **Data Collection Tools**

In the research two data collection tools were used, which are: “Emotional Literacy Skills Scale” and “Communication Skills Scale”. “Emotional Literacy Skills Scale” was developed by Alemdar and Anılan (2020). The scale consists of 31 items and five sub-dimensions which are: “Motivation”, “Empathy”, “Self-regulation”, “Emotional awareness” and “Social skills”. The scale is a five-point Likert type with answers as “Not suitable for me”, “Rarely suitable for me”, “Sometimes it suits me”, “Most of the time it suits me” and “It

always suits me”. The Cronbach Alpha reliability coefficient of the scale was .70 for the “Motivation” sub-dimension; .60 for the “Empathy” sub-dimension; .70 for the “Self-regulation” sub-dimension; .71 for the “Emotional awareness” sub-dimension and .77 for the “Social skills” sub-dimension. The reliability coefficient determined for the overall scale is .85 (Alemdar & Anılan, 2020). For this research the reliability coefficient of the scale was determined as .87.

Another data collection tool used in the research, “Communication Skills Scale” was developed by Korkut Owen and Bugay (2014). The scale consists of 25 items and four sub-dimensions which are: "Communication principles and basic skills", “Self-expression”, “Active listening and non-verbal communication” and “Willingness to communicate”. The scale is a five-point Likert type with answers as “Never”, “Rarely”, “Sometimes”, “Often” and “Always”. The Cronbach Alpha reliability coefficient of the scale was .79 for the “Communication principles and basic skills” sub-dimension; .72 for the “Self-expression” sub-dimension; It was determined as .64 for the “Active listening and non-verbal communication” sub-dimension and .71 for the “Willingness to communicate” sub-dimension. The reliability coefficient determined for the overall scale is .88 (Korkut Owen & Bugay, 2014). For this research the reliability coefficient of the scale was determined as .89.

### **Data Analysis**

Within the scope of the research, mean score and standard deviation values were calculated to determine the emotional literacy levels and communication skill levels of teacher candidates. In the study, whether the emotional literacy levels and communication skills of the teacher candidates differ significantly according to the gender variable was determined by the independent groups t-test, and whether they differ significantly according to the variables of department, grade level and academic achievement determined by ANOVA. The relationship between teacher candidates’ emotional literacy levels and their communication skill levels was determined with the Pearson Product Moment Correlation Coefficient.

## **FINDINGS**

### **Findings Regarding the Emotional Literacy Levels of Teacher Candidates**

In the research, firstly, the emotional literacy levels of teacher candidates were calculated. The lowest score that can be obtained from the emotional literacy scale is 31 (31x1), the middle score is 93 (31x3) and the highest score is 155 (31x5). When the teacher candidates’ scores from the emotional literacy scale examined, it was determined that the lowest score the students got from the emotional literacy scale was 79 and the highest score was 153. Also, the arithmetic mean of the emotional literacy of the students was calculated above the middle score of the scale (119.84).

Findings regarding the change in the emotional literacy of teacher candidates according to gender are given in Table 2.

**Table 2.** Independent groups t-test result regarding emotional literacy levels according to gender

Gender	n	$\bar{x}$	sd	t	p
Male	251	120.73	23.50	3.36	.001
Female	67	116.52	14.65		

p<.05

When Table 2 is examined, it can be seen that the emotional literacy of teacher candidates differ significantly according to gender. It has been determined that this difference is in favor of female students.

When the descriptive statistics on the change of the emotional literacy levels of teacher candidates according to the departments which they attend to were examined, it was determined that the department with the highest emotional literacy scores was the preschool education department (122.58). This is followed by department of primary school teaching (121.69), Department of social sciences (118.89) and Department of science teaching (117.85). The lowest average belongs to the department of guidance and psychological counseling (117.00). Information on the difference of emotional literacy levels regarding to departments is presented in Table 3.

**Table 3.** ANOVA test results regarding emotional literacy levels according to departments

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	1396.51	4	349.13	2.07	.08
In-group	52764.31	313	168.58		
Total	54160.82	317			

p>.05

When Table 3 is examined, it can be seen that the emotional literacy levels of teacher candidates do not differ according to the departments which they attend to.

When the descriptive statistics regarding the change in the emotional literacy of the teacher candidates according to the grade level were examined, it was determined that the third graders had the highest emotional literacy scores (121.70). This is followed by the first (120.46) and second (117.85) grades. The lowest average belongs to fourth grade students (117.67). Information on the change of emotional literacy according to grade levels is given in Table 4.

**Table 4.** ANOVA test results on emotional literacy levels according to grade level

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	821.93	3	273.98	1.61	.18
In-group	53338.90	314	169.87		
Total	54160.82	317			

p>.05

According to Table 4, it has been revealed that the emotional literacy of the teacher candidates does not differ according to their grade levels.

When the descriptive statistics on the change of the emotional literacy levels of teacher candidates according to their academic achievement were examined, it was determined that the emotional literacy scores were the highest among the students with a grade point average of “3.50 and above” (122.31). This was followed by students with GPAs in the range of “3.00-3.49” (119.91). The lowest average belongs to students with GPAs in the range of “0-2.99” (117.41). Information on the change of emotional literacy levels according to academic achievement is presented in Table 5.

**Table 5.** ANOVA test results on emotional literacy levels according to academic achievement

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	899.01	2	449.51		
In-group	53261.81	315	169.09	2.66	.07
Total	54160.82	317			

p>.05

When Table 5 is examined, it can be seen that the emotional literacy levels of teacher candidates do not differ according to academic achievement.

#### **Findings Regarding the Communication Skills of Teacher Candidates**

The lowest score that teacher candidates can get from the communication skills scale is 25 (25x1), the middle score is 75 (25x3), and the highest score is 125 (25x5). When the scores of teacher candidates from the communication skills scale was examined, it was determined that the lowest score they got was 74 and the highest score was 125. Also, the arithmetic mean of the students' communication skill scores was calculated above the middle score of the scale (102.07).

Findings regarding the change of teacher candidates' communication skills according to gender are given in Table 6.

**Table 6.** Independent groups t-test result for communication skills according to gender

Gender	n	$\bar{x}$	ss	t	p
Female	251	103.08	9.93		
Male	67	98.28	11.93	3.36	.001

p<.05

When the Table 6 is examined, it can be seen that the communication skills of teacher candidates differ significantly according to gender. It has been determined that this difference is in favor of female students.

When the descriptive statistics on the change in communication skills of teacher candidates were examined, it was determined that the department with the highest communication skills scores was the department of primary school teaching (103.24). This is followed by department of pre-school teaching (102.54), department of social sciences

teaching (102.36) and department of guidance and psychological counseling (100.90). The lowest average belongs to department of science teaching (98.97).

Information on the change of teacher candidates' communication skills according to the department which they attend to is presented in Table 7.

**Table 7.** ANOVA test results regarding communication skills according to departments

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	605.59	4	151.40		
In-group	34656.89	313	110.73	1.37	.25
Total	35262.48	317			

p>.05

When the Table 7 is examined, it can be seen that the communication skills of the teacher candidates do not differ according to the departments which they attend to.

When the descriptive statistics on the change of teacher candidates' communication skills according to their grade level were examined, it was determined that the grade level with the highest communication skills scores was the first graders (103.69). This is followed by the third (103.23) and second (101.35) grades. The lowest average belongs to fourth grade students (99.93). Information on the change of emotional literacy according to grade levels is included in Table 8.

**Table 8.** ANOVA test results on communication skills according to grade level

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	555.185	3	185.06		
In-group	34707.30	314	110.53	1.67	.17
Total	35262.48	317			

p>.05

According to Table 8, it has been revealed that the communication skills of the teacher candidates do not differ according to their grade levels.

When the descriptive statistics on the change of teacher candidates' communication skills according to their academic achievement were examined, it was determined that the communication skills were the highest among the students with a grade point average of "3.50 and above" (103.43). This was followed by students with GPAs in the range of "3.00-3.49" (102.20). The lowest average belongs to teacher candidates in the range of "0-2.99" (100.53). Information on the change of communication skills according to academic achievement level is presented in Table 9.

**Table 9.** ANOVA test results on communication skills according to academic achievement

Source of Variance	Sum of Squares	sd	Average of Squares	F	p
Between groups	322.26	2	161.13		
In-group	34940.22	315	110.92	1.45	.24
Total	35262.48	317			

p>.05

When the Table 9 is examined, it can be seen that the communication skills of teacher candidates do not differ according to academic achievement.

### **Findings Regarding the Relationship Between Teacher Candidates' Emotional Literacy Levels and Communication Skills**

In order to determine whether there is a relationship between teacher candidates' emotional literacy and communication skills, the correlation between them was examined. Result of the analysis is given in Table 10.

**Table 10.** Correlation Analysis Results between Emotional Literacy and Communication Skills

		Emotional Literacy	Communication Skills
Emotional Literacy	Pearson	1	.72*
	p		.00
	n	318	318
Communication Skills	Pearson	.72*	1
	p	.00	
	n	318	318

When the Table 10 is examined, it can be seen that there is a positive, significant and high-level relationship between emotional literacy and communication skills (.72).

### **DISCUSSION, CONCLUSION and RECOMMENDATIONS**

As a result of the research, it was determined that the emotional literacy levels of the teacher candidates were above the middle score of the scale. Accordingly, it can be said that teacher candidates perceive themselves as good emotionally literate individuals. It can be stated that the high level of emotional literacy of the teacher candidates will have a positive effect on their professional life in the future. Because the sub-dimensions of emotional literacy, which are: motivation, empathy, self-regulation, emotional awareness, and social skills, are the skills that teachers must have in order to perform their profession effectively. Similar results were obtained in studies conducted with teacher candidates in the literature. In the study conducted by Akçin (2019), it was determined that the emotional literacy levels of



pre-school teacher candidates were above average; where as in the study conducted by Özden, Kana, and Uzan (2018), it was determined that the first grade teacher candidates' emotional literacy skills were at high level. In addition, the high level of emotional literacy of the teacher candidates provides clues that their emotional intelligence is also at a high level. Also, studies in the literature also support this statement. In the studies conducted by Ekinçi Vural (2010) and Yılmaz and Zembat (2019) with pre-school teacher candidates, it was determined that the emotional intelligence of the teacher candidates was at a good level; In the study conducted by Yavaşoğlu and Yenice (2020) with science teacher candidates, it was determined that the pre-service teachers had a high level of emotional intelligence.

In the research, it was determined that the emotional literacy levels of teacher candidates differ according to gender. It has been determined that the emotional literacy levels of female teacher candidates are significantly higher than male teacher candidates. In line with this finding, it can be said that female teacher candidates can express their feelings more easily and understand the feelings of the other person than male teacher candidates. In addition, it can be inferred that the emotional intelligence levels of female teacher candidates are higher than male teacher candidates. The study by Ural and Ercan (2018) also confirms this view. In the study conducted by Ural and Ercan (2018), it was determined that female teacher candidates' emotional intelligence scores were higher than male teacher candidates. When the emotional literacy level of teacher candidates was examined in terms of academic achievement, departments which they attend to and grade level, it was found that there was no significant difference according to these parameters. In the study conducted by Özden et al. (2018), it was determined that the emotional literacy levels of teacher candidates did not differ according to the department variable. Similar results were obtained in the studies conducted to determine the emotional intelligence of teacher candidates in the literature. In the studies, it was found that the emotional intelligence of the teacher candidates do not show significant difference according to academic achievement level (Aykutlu, Bezen, Bayrak & Seçken, 2019; Diken & Aydoğdu, 2018), departments which the students attend to (Aykutlu ve diğ., 2019; Ural & Ercan, 2018) and grade level (Balaban Dağal, Hamamcı & Yayla, 2020; Işıksalan, 2020; Ural & Ercan, 2018; Yavaşoğlu & Yenice, 2020).

Another important finding obtained as a result of the research is that the communication skill levels of the teacher candidates are above the middle score of the scale. In other words, teacher candidates think that their communication skills are good. It can be interpreted as an expected result that the communication skill levels of the teacher candidates who choose the teaching profession, which is a profession based on communication, are high. As a matter of fact, in many studies conducted with teacher candidates in the literature, it was determined that the communication skill levels of teacher candidates were high (Çuhadar, Özgür, Akgün & Gündüz, 2014; Dilber & Akhan, 2019; Gülbahar & Sıvacı, 2018; Ocak ve Erşen, 2015; Sarıkaya & Şakiroğlu, 2019; Tunçeli, 2013; Uygun & Arıkan, 2019; Yıldız & Gültekin, 2016; Yılmaz & Çimen, 2008).

In the research, it has been determined that just like in the emotional literacy level, there is a significant difference in terms of gender in the communication skill levels of the teacher candidates. This difference is in favor of female teacher candidates as in emotional literacy. Therefore, in line with the findings obtained from the research, it can be said that the communication skills of female teacher candidates are higher than male teacher candidates. Similar findings were obtained in many studies in the literature, and it was determined that the communication skills of female teacher candidates were higher than male teacher candidates

(Çetinkaya, 2011; Çuhadar ve diğ., 2014; Milli & Yağcı, 2017; Ocak & Erşen, 2015; Özerbaş, Bulut & Usta, 2007; Sarıkaya & Şakiroğlu, 2019; Uygun & Arıkan, 2019; Yılmaz & Altunbaş, 2012). The communication skill levels of teacher candidates do not differ significantly according to the variables of academic achievement, department and grade level. Again, similar results were obtained in studies conducted with teacher candidates in the literature. In the studies it was shown that the the communication skills of teacher candidates do not show significant difference according to academic achievement level (Gün, 2018), departments which students attend to (Acar, 2009; Apteğin, 2019; Dilber & Akhan, 2019; Gülbahar & Sıvacı, 2018; Özerbaş et al., 2007), and grade level (Apteğin, 2019) parameters.

As a result of the research, it was determined that there is a highly positive and significant relationship between the emotional literacy levels of the teacher candidates and their communication skills. This finding shows that both concepts are closely related with each other. In other words, it can be said that emotional literacy level and communication skill are two skills that are affected by each other. In addition, based on this finding, it can be interpreted that there is a relationship between the emotional intelligence of the teacher candidates and their communication skills. Also the study conducted by Gürşimşek, Ekinci Vural, and Selçioğlu Demirsöz (2008) with teacher candidates also supports this interpretation. In the study conducted by Gürşimşek et al. (2008), it was determined that there is a high level of positive and significant relationship between teacher candidates' emotional intelligence and communication skills.

The high level of emotional literacy and communication skills of teacher candidates is very valuable considering the competencies required by the teaching profession. Teachers who cannot understand the feelings of their students and cannot establish dialogues with them cannot be expected to create effective learning environments in their classrooms. For this reason, all teacher candidates must receive a training before starting the profession that will enable them to be competent in these two skills. In addition, in this study, the emotional literacy levels and communication skills of teacher candidates were examined. In future studies, the emotional literacy levels and communication skills of the teachers who are actively working can be examined in terms of various variables.

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## **POLYETHYLENE/SODIUM CASEINATE/SORBITOL BLEND FILMS PRODUCED BY EXTRUSION**

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### **Abstract**

The accumulation of synthetic plastics, mainly from food packaging is causing a critical environmental issue. In recent years, researchers have focused on bio-based packaging materials as a solution. But the application of biopolymers as food packaging is limited due to their low mechanical properties as compared to synthetic plastics and their high sensibility to humidity. Therefore, the blending of biopolymer and synthetic polymers represents a simple and economical way to combine their best properties to obtain materials with good mechanical and barrier properties. Polyethylene (PE) is one of the most important thermoplastic polymers which is mainly used in the food packaging area. Sodium caseinate (NaCAS) is obtained by acid precipitation of casein, the major protein of the milk. Caseinate-based films are attractive materials in packaging applications due to being flavourless, flexible, and transparent films and having a nutritional value coming from milk protein. For this reason, NaCAS and PE blend films were produced by a hot press after a twin-screw extruder by using sorbitol (SOR) as a plasticizer, in this study. NaCAS was incorporated into PE as 15 wt% and SOR/NaCAS ratios were adjusted as 1 and 2 in the films. Tensile strength and elongation at break values decreased with the incorporation of NaCAS into PE film. Tensile strength slightly decreased due to the addition of SOR but, a slight increase observed in elongation at break value. The thermal stability of the films slightly decreased with the presence of NaCAS and SOR as compared with the pure PE film. Melting temperature reduced with the addition of NaCAS and SOR into PE but, no change observed in crystallization temperature. Contact angles were affected with the incorporation of NaCAS and SOR but contact angle of all films revealed greater than 90°. Although Fourier transform infrared spectroscopy revealed no interactions between NaCAS and PE, a certain amount of interaction observed with the addition of SOR. Consequently, by tailoring the PE/NaCAS films with the addition of SOR, many applications of these films in the packaging industry can be developed.

**Keywords:** Polyethylene, casein, sorbitol, extrusion, packaging

## **INTRODUCTION**

The waste from synthetic plastics causes a critical environmental issue mainly from food packaging. Therefore, in recent years, researchers have focused on bio-based packaging materials as a solution (Arrieta et al., 2013; Belyamani et al.2014). The use of biodegradable polymers reduces environmental pollution and the need for waste storage (Onwulata et al.2009). Research on biopolymers recommends the use of biodegradable polymers as an alternative to petroleum-based polymers. The proposed biopolymers consist of various polysaccharides, proteins, oils, and their combinations (Pirsa et al. 2018). But the application of biopolymers as food packaging is limited due to their low mechanical properties as compared to synthetic plastics and their high sensibility to humidity. Therefore, blending biopolymer and synthetic polymers provides a simple and economical way to obtain materials with good mechanical and barrier properties (Audic and Chaufer, 2012).

Polyethylene (PE) is one of the most important thermoplastic polymer which is mainly used in the food packaging (Lüftl and Visakh, 2016). Sodium caseinate (NaCAS) is obtained by acid precipitation of casein, the major protein of the milk. The objective of this study is to produce and characterize the PE/NaCAS blend films, containing different levels of sorbitol as plasticizer. The production of the films was used to get the pellets by twin screw extrusion and then by a heat press.

## **MATERIALS AND METHODS**

### **Materials**

LDPE (PG7008) was supplied from Dow Chemical Company. Melt flow index value of PE is 7.7 g/10 min at 190°C with 2.16 kg. Sodium caseinate (Protein  $\geq$ 92 %) was purchased as a powder form from Acros. SOR ( $C_6H_{14}O_6$ ,  $M_w$ : 182.17 g/mol) was purchased from Sigma to be used as plasticizers.

### **Preparation of the films**

The PE granules and NaCAS powder were dried in an oven at 80°C for 24 hours under vacuum before extrusion. The films were prepared through a two-step process: The blend was extruded to form into pellets by twin-screw extruder at 135°C with 100 rpm. The pellets from the extruder were placed into a hydraulic hot press at 135°C, 60 bar and 3 min. The films were formed.

### **Characterization**

spectra of the films were obtained using FTIR Perkin-Elmer 100 spectrophotometer. The spectrum was scanned from 4000  $cm^{-1}$  to 650  $cm^{-1}$  wavelengths.

Tensile properties of the films were carried out at room temperature on an Instron universal testing machine according to the standard testing method D882-12 (ASTM) at a crosshead speed of 10 mm/min. The five specimens were tested and the averages and standard deviations of tensile strength and elongation at break were calculated and reported.

The thermal stabilities of the specimens were investigated by thermogravimetric analysis (TGA). TGA was performed from 25 °C to 750 °C, with a heating rate of 10 °C/min under nitrogen atmosphere in Mettler Toledo TGA 1 Instrument.

DSC analysis was realized by Mettler Toledo DSC 1 Star. The DSC analysis performed with temperature ranging from 25°C to 200°C at a rate of 10°C/min, a 5 min hold,

followed by cooling to  $-70^{\circ}\text{C}$  a 5 min hold, and finally a second part from  $-70$  to  $200^{\circ}\text{C}$  at a rate of  $10^{\circ}\text{C}/\text{min}$ . The crystallization behavior was determined from DSC endotherms.

CA between the water droplet and film surface was determined with the Attention Theta Lite contact angle instrument.  $5\mu\text{l}$  of distilled water was placed on the surface of the film by a micro syringe for the measurement. At least five measurements were taken on each film surface to obtain the average contact angle value.

## RESULTS AND DISCUSSION

### Fourier Transform Infrared Spectroscopy (FTIR)

Fourier transform infrared spectroscopy (FTIR) was used to examine the structural properties of the blended films. FTIR spectra of the unplasticized and plasticized PE/NaCAS films were given in Figure 1. PE chemical structure consists of methylene ( $\text{CH}_2$ ) groups of four peaks as shown in Figure 1; methylene stretching  $2919\text{ cm}^{-1}$  and the methylene deformations at  $1469$  and  $721\text{ cm}^{-1}$  in accordance with the literature as  $2920$  and  $2850\text{ cm}^{-1}$  and the methylene deformations at  $1464$  and  $719\text{ cm}^{-1}$  (Theapsak et al. 2012). FTIR revealed no interactions between NaCAS and PE but, a certain grade of interaction observed in addition of SOR from the intensities of the peaks.

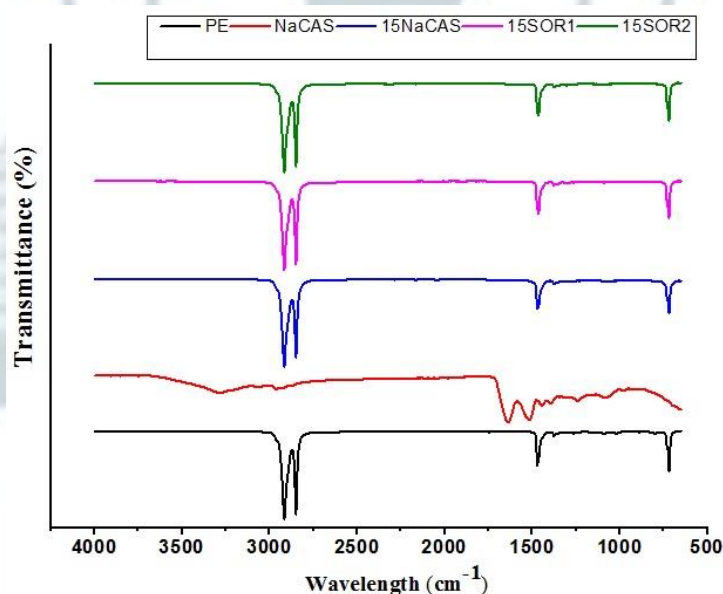


Figure 1. FTIR spectra of unplasticized and plasticized films

### Tensile test

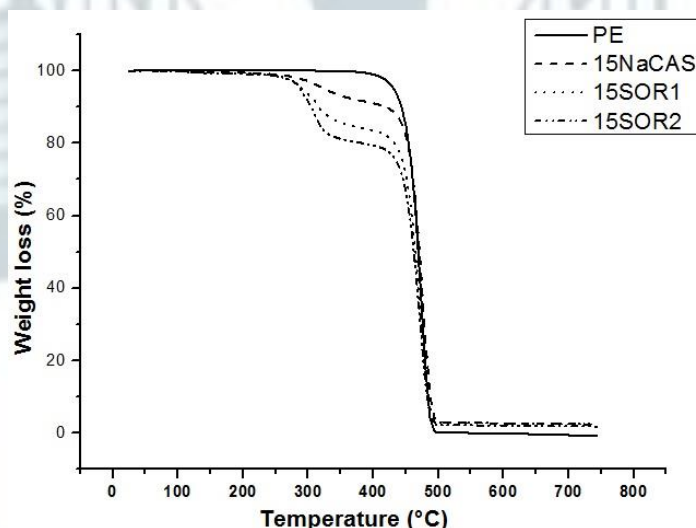
Tensile strength and elongation at break values obtained from the tensile test are given in Table 1. According to the tensile test results, tensile strength and elongation at break values sharply decreased by the incorporation of NaCAS to PE film. NaCAS disrupts the LDPE crystal structure and therefore reduces the tensile strength. The similar result was observed by Onwulata et al (Onwulata et al.2009). Elongation at break value increased with the incorporation of SOR as compared to 15NaCAS film. The result is expected due to the increasing mobility of the polymer chains and free volume.

Table1. Tensile test results of the films

Sample	Tensile Strength (MPa)	Elongation at break (%)
PE	17,8	43,3
15NaCAS	3,7	11,2
15SOR1	3,5	12,0
15SOR2	3,4	12,0

### Thermo Gravimetric Analysis (TGA)

The thermal stability and degradation mechanism were investigated by TGA and the TGA curves of the films were presented in Figure 2. The pure PE film has a single-stage degradation and is characterized by -C-C- breaking (Prasanna et al., 2011). The degradation of PE film started at 432.3 °C. Two-stage degradation obtained with the addition of NaCAS into PE and thermal stability decreased. The thermal stability decreased more with the addition of SOR, and onset degradation temperature of the films have observed at 287°C for 15SOR2 sample. The reason was explained as the addition of the plasticizer caused to the reduction of inter and intra-molecular bonds in the protein structure. (Arrieta et al., 2013)



**Figure 2.** TGA curves of the films

### Differential Scanning Calorimetry (DSC)

Thermal properties of blend films were examined by DSC. DSC thermogram of the prepared film samples were given in Figure 3. It was observed that there is no change in  $T_c$  with the addition of NaCAS and SOR but, decreased in  $\Delta H_c$ .  $T_m$  and  $\Delta H_m$  decreased with NaCAS and SOR addition. Onwulata et. al found a similar result and explained the reason as the alteration of PE properties.



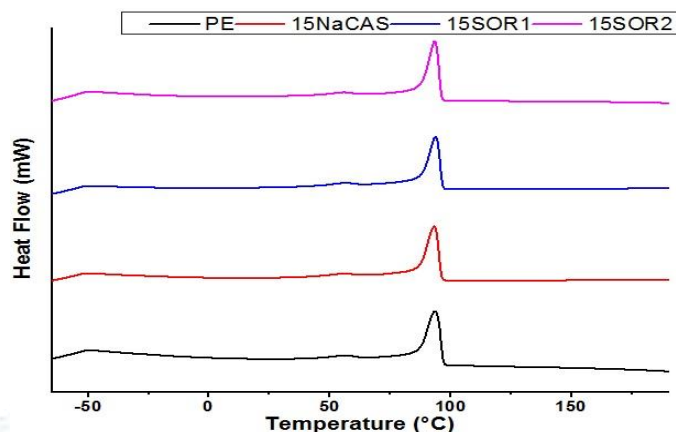


Figure 3. DSC curves of the films

### Contact Angle (CA)

CA of the pure PE film was measured as  $99,1^\circ$  and decreased to  $91,6^\circ$  with the addition of 15wt% NaCAS. Bio-based films have many  $-OH$  groups able to combine with water molecules are tending hydrophilic nature (Lüftl et al., 2016). CA decreased with the increasing SOR concentration until  $90,8^\circ$ . Brzoska et. al explained that plasticizers generally are highly polar substances which exhibit relatively high hygroscopicity and they have many  $-OH$  groups (Brzoska et. al, 2018). They found that SOR had the most hydrophobic nature among other plasticizers used due to its ring structure. All films were hydrophobic ( $>90^\circ$ ) (Erbil, 2006).

### CONCLUSION

In this study, plasticized PE / NaCAS blend films were prepared by melt-mixing method and hot press. The films were characterized with structural mechanical, thermal, and surface properties analyzes. Tensile strength decreased with the addition of NaCAS to PE and slightly decreased with the increase of SOR content. EAB slightly increased with the addition of SOR as 12%. Thermal stability decreased with the addition of NaCAS and SOR.  $\Delta H_m$  and  $\Delta H_c$  decreased with the addition of NaCAS and SOR. It was observed no change in  $T_c$  with the addition of NaCAS and SOR but, a slight decrease in  $T_m$ . Contact angle decreased with the incorporation NaCAS and a slight decrease observed with the addition of SOR. CA of all films showed as  $> 90^\circ$ . No interactions between NaCAS and PE revealed but, a certain grade of interaction shown in addition of SOR.

### Acknowledgment

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# **TUNING THE STRUCTURAL EIGENFREQUENCIES OF AN OUD GUITAR BY USING DIFFERENT BRACE PATTERNS ON THE SOUNDBOARD**

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## **Abstract**

Most of the manufacturing steps of musical instruments are determined by craftsmen, where the knowledge and experience that come from the past is employed. Modeling the musical instruments with engineering methods is of great importance in two ways: (i) for standardization and to conserve the ideal acoustic characteristics of musical instruments, all manufacturing steps should be determined based on engineering calculations; (ii) to respond to the specific demands of musicians, computational models should be available. Oud guitars are well-known and popular stringed musical instruments, which is played in many different countries. In particular, the oud guitar is an indispensable musical instrument for traditional Turkish music. In this study, the full body of an oud guitar is modeled using finite element method to reveal the effect of braces located on the internal face of the soundboard. The orthotropic wooden material properties are assigned to the relevant components of the oud guitar i.e., Sitka spruce for the soundboard, braces and the neck, walnut for the pegbox and maple for the back. During the preprocessing phase of modeling, 3D mesh elements are employed, and to assemble the components, two-part epoxy paste is used as an adhesive. The mesh size of elements is determined to be 4 mm after the convergence of solution of the eigenvalue problem is examined. The unbraced oud guitar model is taken as a base model, and its eigenfrequencies and eigenvectors are computed. Then, to reveal the changes in the dynamic characteristics of the oud guitar, a braced model is used. The results for the unbraced and braced oud guitars are compared and reported. Further, different bracing cases are studied to evaluate the effect of braces on tuning the structural eigenfrequencies of the oud guitar.

**Keywords:** Musical instruments, oud guitar, brace pattern, modal analysis.

## **INTRODUCTION**

The stringed musical instruments are well-known and frequently played all around the world. They are mostly manufactured using wooden materials by craftsmen. The oud guitar, shown in Figure 1, is one of the members of the stringed musical instruments. The oud guitar is a globally recognized musical instrument. Besides, it is a very important musical instrument for the traditional Turkish music.

During the manufacturing steps of an oud guitar, different types of wooden materials are employed. The selection of materials to be used vary due to the preferences of craftsmen and region. In general, Sitka spruce is employed for the construction of soundboard, braces, and

neck. Walnut and maple are employed for the construction of pegbox and the back parts, respectively. (Oter, 2014). For several musical instruments, like classical guitar, apart from the manufacturing materials to be used, some other techniques about the construction and the assembly procedures are also critical to obtain different acoustical characteristics. In a paper from the literature of acoustic guitar, Curtu et al. (2008) are focused on the soundboard of the musical instrument, where different bracing systems are compared. They conclude that both material selection and the design of the structure is crucial for the ideal acoustic characteristics. In another study about the classical guitars, different bracing patterns implemented at the back of the soundboard are discussed. The authors indicate that the bracing patterns affect the sound quality of the musical instrument significantly (Gorrostieta-Hurtado et al., 2012). For different bracing systems, symmetry is also considered as a design criterion (Stanciu et al., 2019). To reveal how the used materials and the construction procedures affect the vibroacoustic properties of the musical instrument, Ribeiro and Inácio (2016) study on different guitars made by different craftsmen. In a paper about the violins, the importance of the mechanical properties of the materials employed are shown (Corradi et al., 2016). It is concluded that the mechanical properties of materials directly affect the vibrational behavior of the musical instrument. In a study about 'Setar', it is claimed that some components of the musical instrument e.g., the soundboard have more effect on the tones. The authors conclude that to tune the tonal specification, it is crucial to exactly know the mechanical and physical properties of the soundboard (Pedrammehr et al., 2018). The geometrical properties of a Qanun are examined in a paper, where the thickness of the soundboard is considered in the 4 different scenarios. The authors explain the effects of the soundboard thickness at the acoustic spectra (Yılmaz and Belenli, 2011). The Greek musical instrument, Cretan Lyra, is analyzed in a study, where the main focus of the is to reveal the effects of the soundboard in terms of acoustic characterization (Bakarezos et al., 2006). Idrobo-Ávila et al. (2015) model Spanish guitars to examine the effects of the wooden materials on the sound quality. According to the authors, there is a strong correlation in between the mechanical properties of the construction material and the sound quality. In the experiments, they use two different materials for the construction of the soundboard, namely German spruce, and Canadian cedar. They report that the soundboard is the most important part of the whole body in terms of sound formation, and the orthotropic properties of the wooden materials are crucial for the musical instruments. Another relevant study (Brémaud, 2012) is about the wooden materials, which are employed for the manufacturing of musical instruments. The study classifies 452 different types of wooden materials and categorize them in two groups: hardwoods and softwoods. According to the study, softwoods are generally preferred for the soundboards.



**Figure 1.** An oud guitar

As the above discussion shows the soundboards are the critical components of the stringed musical instruments in terms of acoustical characterization. For the very reason, the bracing systems that are located on the back surfaces of the soundboards have significant effects on the acoustic properties. The bracing system techniques used especially in the manufacturing of classical guitars can be adapted to oud guitars, as well. In the current study, the effects of

different brace patterns are examined, and it is shown that the bracing systems can be effectively used to tune the structural eigenfrequencies of an oud guitar. By doing so, it is also possible to alter the vibroacoustic characteristics of the musical instrument to get a desired acoustic spectrum.

### COMPUTATIONAL MODEL OF THE OUD GUITAR

In what follows, the whole body of an oud guitar is modeled using finite element method (FEM). Four different models are constructed including one unbraced and 3 different braced models. The oud guitar body, shown in Figure 2, consists of 4 main components, soundboard, neck, pegbox, and the back. The back part is made of separated slices, and these slices are assembled by using adhesives as done in the original manufacturing process. The other components are assembled using adhesives to construct the full body model, as well. Different soundboards are constructed according to 4 different scenarios, where the braced and the unbraced models are considered.

Different soundboard models used for the analysis are shown in Figure 3. Note that, the models are identical except the bracing systems employed. In Figure 4, different bracing systems used on the soundboards of the classical guitars are shown (Bucur, 2016). For Model 4 used in the current study, the 'Cordoba' bracing pattern shown in Figure 4 is adapted to the oud guitar. In Figure 5, the cross section of the brace geometry implemented is shown. After the construction of 4 different models, modal analysis technique is employed to extract the structural eigenfrequencies and the associated mode shapes.

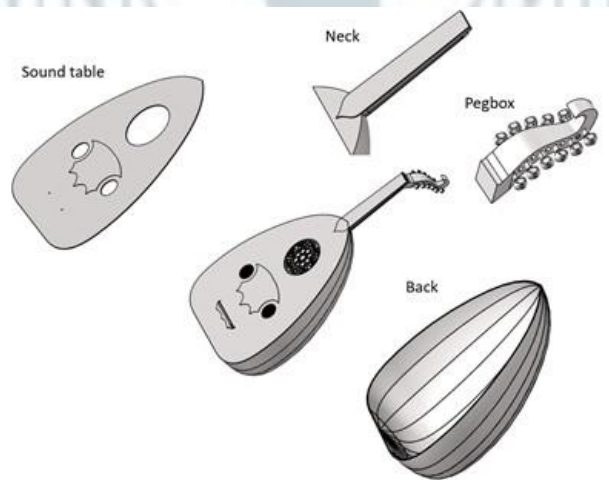


Figure 2. The components of the oud guitar

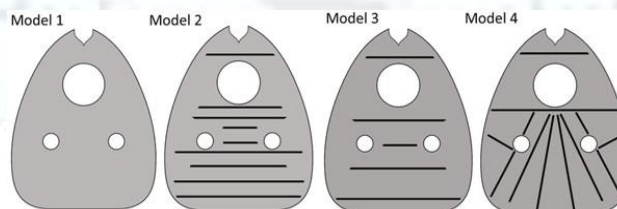


Figure 3. Different bracing systems located on the back side of the soundboard

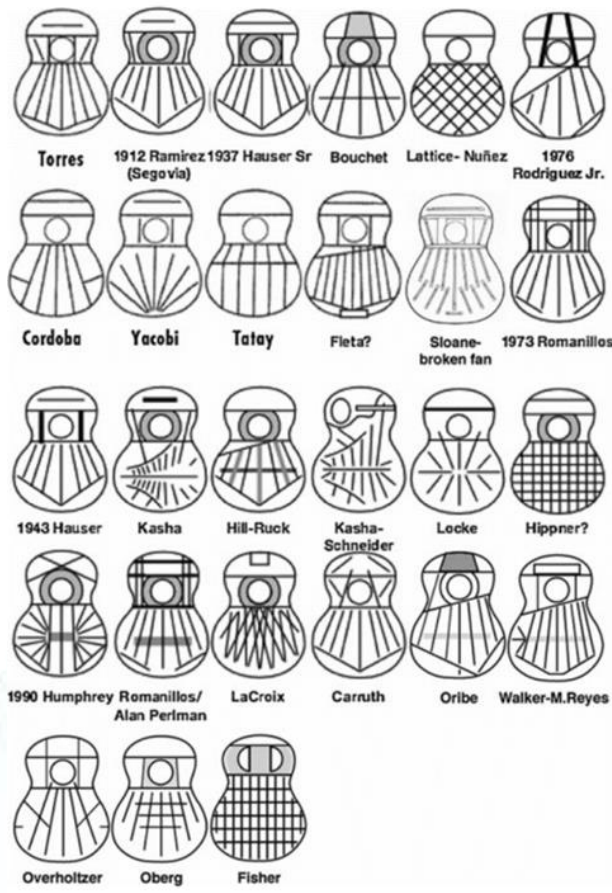


Figure 4. Bracing systems for the classical guitar (Bucur, 2016)

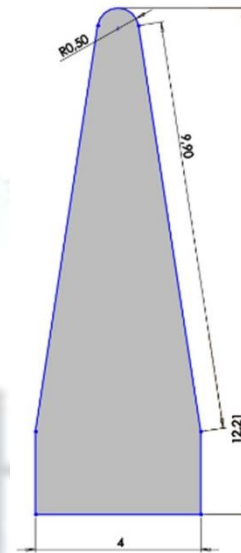


Figure 5. The cross section of the braces

### MODAL ANALYSIS OF THE OUD GUITAR

Since the materials used in the oud manufacturing are wooden materials, orthotropic material properties should be assigned in the preprocessing phase of the FE analysis (see Figure 6). For the whole body, 3D mesh elements are used to recognize the mechanical properties of the orthotropic materials assigned. A convergence study is performed to determine an ideal mesh size, which is computed as 4 mm for the current study. The element types of the whole assembled body mesh are CHEXA, CTETRA, CPENTA, and CPYRA. The total numbers of elements for all models are tabulated in Table 1.



Figure 6. The orthotropic wooden materials assigned to the FE model of oud guitar

**Table 1.** Total number of elements of four different models

Models	Unbraced	Braced		
	Model 1	Model 2	Model 3	Model 4
# of elements	655,437	714,119	709,921	705,586

Different wooden materials are used to model the components of the oud guitar. Sitka spruce is employed for the construction of soundboard, braces, and neck. Walnut and maple are employed for the construction of pegbox and the back parts, respectively. Mechanical properties of the wooden materials used in the construction of the oud guitar model are tabulated in Table 2.

**Table 2.** Mechanical properties of the wooden materials used for oud guitar (Bucur, 2016)

Mechanical property	Young's Modulus (MPa)			Shear Modulus (MPa)			Poison's Ratio			Density (kg/m <sup>3</sup> )
	E <sub>R</sub>	E <sub>L</sub>	E <sub>T</sub>	G <sub>LR</sub>	G <sub>LT</sub>	G <sub>RT</sub>	V <sub>RL</sub>	V <sub>LT</sub>	V <sub>TR</sub>	d
Sitka-spruce	900	11,600	500	750	720	39	0.029	0.47	0.25	390
Maple	1,520	10,000	870	1,220	1,100	290	0.093	0.50	0.40	590
Walnut	1,230	11,600	650	986	719	243	0.052	0.632	0.367	550

The assembling process for the slices, soundboard/back, neck/soundboard, pegbox/neck, and back/neck are achieved using an adhesive. The adhesive is a two-part epoxy paste, where its mechanical properties are tabulated in Table 3.

**Table 3.** Mechanical properties of the two-part epoxy used for assembling (Hussey, 1997)

Property	Young's Modulus (E)	Shear Modulus (G)	Poison's Ratio (ν)	Density (d)
Two-part epoxy	2,070 MPa	900 MPa	0.38	1,100 kg/m <sup>3</sup>

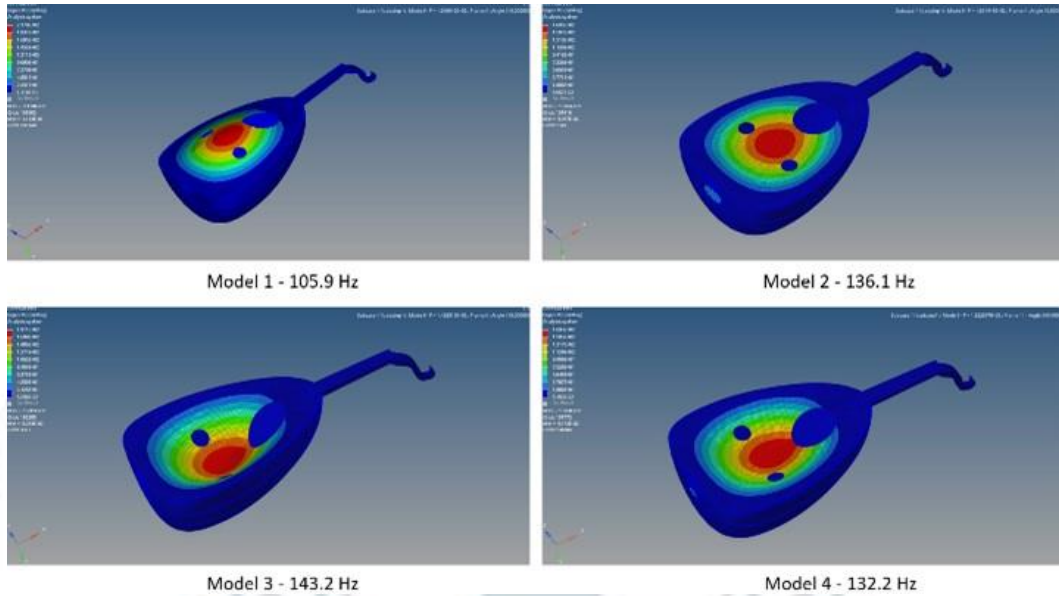
Modal analysis of 4 models is performed; then, third, fifth, and eleventh flexible modes, which are associated with the soundboard are obtained for each model. Mode shapes of these 3 flexible modes are shown in Figures 7 to 9. The eigenfrequency value of 4 models with different brace patterns vary for the same associated flexible modes. The third, fifth, and eleventh eigenfrequency values are tabulated in Table 4.

**Table 4.** The comparison of the models in terms of the computed eigenfrequencies (in Hz)

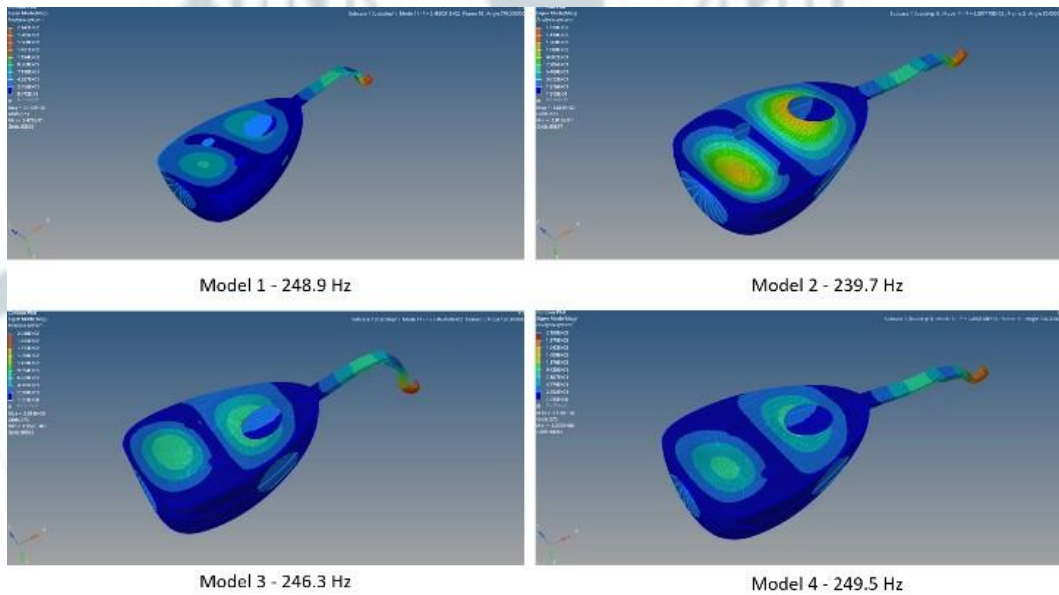
	Flexible Modes	3rd	5th	11th
Unbraced	Model 1	105.9	248.9	458.5
Braced	Model 2	136.1	239.7	445.5
	Model 3	143.2	246.3	454.9
	Model 4	132.2	249.5	467.9*(12th)

## RESULTS

After performing the modal analysis for the four different models, the obtained results are compared in Table 5. It is observed that different brace patterns alter the flexible modes of the model.

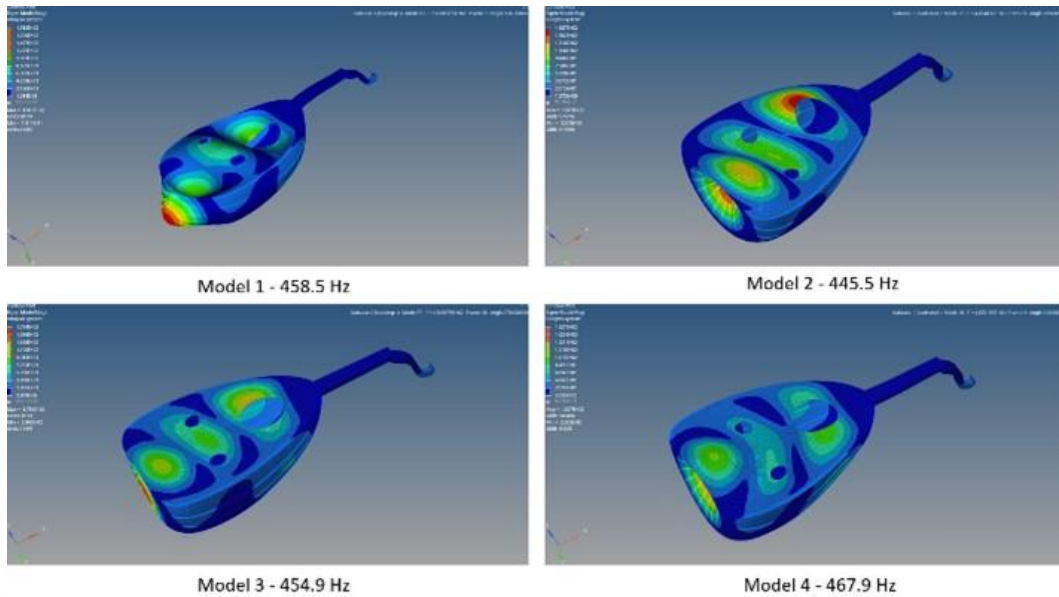


**Figure 7.** Third flexible mode shape of four different models



**Figure 8.** Fifth flexible mode shape of four different models





**Figure 9.** Eleventh flexible mode shape of four different models (\*twelfth mode for model 4)

**Table 5.** The comparison of the models for 14 flexible modes (in Hz)

Flexible Modes	Unbraced		Braced	
	Model 1	Model 2	Model 3	Model 4
1	78.9	78.8	78.9	78.9
2	89.6	89.9	89.8	90.1
3	150.9	136.1	143.2	132.2
4	211.5	212.7	212.1	213.4
5	248.9	239.7	246.3	449.5
6	253.2	258.8	256.0	265.8
7	308.6	273.7	289.9	290.2
8	322.4	318.7	321.9	291.1
9	388.8	387.6	388.4	388.2
10	419.7	416.9	419.4	437.6
11	458.5	445.5	454.9	450.4
12	479.4	449.8	465.2	468.0
13	546.2	519.9	546.3	510.2
14	561.7	550.9	553.0	553.8

## CONCLUSION

Four oud guitar models having different bracing systems are constructed through FEM. The bracing systems are located on the back surface of the soundboard as they have a direct

effect on the acoustic characterization of the musical instrument. During the modeling, the actual manufacturing procedures are considered i.e., all components of the full body are assembled using an adhesive material. Then, a structural modal analysis is conducted for the designed models. It is shown that the structural eigenfrequencies of the oud guitar can be tuned using different bracing systems without making any changes in the actual geometry or the construction materials of the musical instrument.

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## STABILITY VALUATION OF SOME ANTIBROADLEAVED HERBICIDES FOR GRAIN YIELDS OF DURUM WHEAT (TRITICUM DURUM DESF)

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### Abstract

The research was conducted during 2018 - 2020 on pellic vertisol soil type. Under investigation was Bulgarian durum wheat cultivar Predel (*Triticum durum* Desf.). Factor A included the years of investigation. Factor B included 19 variants: hand weeded control and 18 antibroadleaved herbicides – Secator OD (amidosulfuron + iodosulfuron) – 150 ml/ha, Pelican delta (diflufenican + metsulfuron-methyl) – 100 g/ha, Omnera OD (fluroxypyr + metsulfuron-methyl + thifensulfuron-methyl) – 1 l/ha, Ergon WG (metsulfuron-methyl + thifensulfuron-methyl) – 90 g/ha, Pointer ultra (metsulfuron-methyl + tribenuron-methyl) – 35 g/ha, Harmony extra SG (thiphensulfuron-methyl + tribenuron-methyl) – 60 g/ha, Sarasen max (florasulam + tribenuron-methyl) – 25 g/ha, Tripali WG (tribenuron-methyl + metsulfuron-methyl + florasulam) – 50 g/ha, Lancelot (florasulam + aminopyralide) – 33 g/ha, Starane gold (fluroxypyr + florasulam) – 1.8 l/ha, Biathlon 4 D (tritosulfuron + florasulam) – 55 g/ha, Arat (dicamba + tritosulfuron) – 200 g/ha, Mustang 306.25 SC (florasulam + 2.4 D-ester) – 800 ml/ha, Magneto top 464 SL (2.4 D amine salt + dicamba) – 1 l/ha, Bucril universal (bromoxynil octanoate + 2.4 D ethylhexylester) – 1 l/ha, Beflex (beflubutamide) – 500 ml/ha, Cliofar 600 SL (clopyralid) – 170 ml/ha, Logran 20 WG (triasulfuron) – 37.5 g/ha. All of antibroadleaved herbicides were treated during tillering stage of the durum wheat. The herbicides Pelican delta, Beflex and Cliofar have phytotoxicity on durum wheat by foliar treatment during tillering stage. Foliar-applied herbicides Secator, Omnera, Ergon, Pointer ultra, Harmony extra, Sarasen max, Tripali, Lancelot, Starane gold, Biathlon, Arat, Mustang, Magneto top, Bucril universal and Logran have high selectivity on durum wheat. The herbicides Pelican delta, Beflex and Cliofar are the most unstable for grain yield. The herbicides Lancelot, Secator, Omnera, Tripali, Biathlon, Ergon, Arat, Pointer ultra, Sarasen max, Starane gold and Harmony extra are technological the most valuable. They combine high grain yield with high stability with relation to different years.

**Keywords:** durum wheat, antibroadleaved herbicides, grain yield, selectivity, stability.

### INTRODUCTION

Weeds have acquired mechanisms to adapt to adverse conditions in its evolutionary. Therefore they are particularly harmful in drought due to their high ecological plasticity and adaptability compared to cultivated plants, and this makes them more competitive (Wanikorn, 1991). The weed associations are not inactive; they are changed by influence the climatic conditions, used agrotechnical and crop rotations (Hartmann et al., 2000; Labrada, 2000; Mennan and Zandstra, 2005). It is need to be analyzed new herbicides for fight against the weeds. The specific sensitivity of the durum wheat (*Triticum durum* Desf.) to some of the herbicides used at the common wheat (*Triticum aestivum* L.) determines the necessity since investigations on the efficacy and the selectivity of new herbicides for fight against the weeds in durum wheat crops.

The herbicides have specific effect on the physiological and biochemical characteristics on the plants (O'Sullivan, 1980; Liu et al, 1994; Kerin et al., 1995; Mazacheri and Gherokhloo, 2005). They affected on the growth and the development to the weeds from the different biological groups, but also on the cultural plants (Orr, 1996; Delchev, 2018, 2018a, 2020). For this reason, it is needed in the application of new herbicides to be investigate as well their efficacy on the weeds, so they selectivity of relation to the crop.

The purpose of the investigation was to establish the selectivity and stability of some antibroadleaved herbicides on the durum wheat by influence of different meteorological conditions.

## **MATERIALS AND METHODS**

The research was conducted during 2018 - 2020 on pellic vertisol soil type. Under investigation was Bulgarian durum wheat cultivar Predel (*Triticum durum* Desf.). A two factors field experiment was conducted under the block method, in 4 repetitions; the size of the crop plot was 15 m<sup>2</sup>. Factor A included the years of investigation. Factor B included 19 variants: hand weeded control and 18 antibroadleaved herbicides – Secator OD, Pelican delta, Omnera OD, Ergon WG, Pointer ultra, Harmony extra SG, Sarasen max, Tripali WG, Lancelot, Starane gold, Biathlon 4 D, Arat, Mustang 306.25 SC, Magneto top 464 SL, Buctril universal, Beflex, Cliofar 600 SL, Logran 20 WG. The active substances and doses of the investigated herbicides are given in Table 1. All of herbicides were treated with working solution 200 l/ha. Mixing was done in the tank on the sprayer. Due to of low adhesion of the herbicide Biathlon it was used in addition with adjuvant Dash HC - 1 l/ha.

To study the effects of herbicides only and to eliminate the negative effects of weeds, they were removed by manual weeding throughout the growing season.

The selectivity of herbicides has been established through their influence on grain yield. The math processing of the data was done according to the method of analyses of variance (Shanin 1977; Barov, 1982; Lidanski 1988). The stability of herbicides and herbicide combinations for grain yield with relation to years was estimated using the stability variances  $\sigma_i^2$  and  $S_i^2$  of Shukla (1972), the ecovalence  $W_i$  of Wricke (1962) and the stability criterion  $YS_i$  of Kang (1993).

## **RESULTS AND DISCUSSION**

The results for the obtained durum wheat grain yields (Table 2) show that the highest grain yields except hand weeded control are also obtained by herbicides Lancelot and Secator. The greatest decrease of the durum wheat grain yield is obtained by use of herbicides Beflex and Kliofar during tillering stage. Foliar treatment with herbicide Pelican delta also has a negative effect on grain yield.

High selectivity to durum wheat of the other antibroadleaved herbicides included in the investigation was found: Omnera, Ergon, Pointer ultra, Harmony extra, Sarasen max, Tripali, Starane gold, Biathlon, Arat, Mustang, Magneto top, Buctril universal and Logran. By their use grain yields are similar to those at hand weeded control.

A two-factor analysis of variance for grain yield (Table 3) shows that the investigated antibroadleaved herbicides have a proven influence on this index – 95.9 %. The years also have high influence on grain yield – 92.2 % on the variants. The strength of influence of herbicides is lower – 2.3 %. The influence of variants as a whole and of the meteorological conditions of years was proven at  $p \leq 0.1\%$ , and that of herbicides was proven at  $p \leq 1\%$ .

There is an interaction between years x herbicides (A x B) – 1.4 %, proven at  $p \leq 5$  %. This means that the meteorological conditions during the vegetation period of the three years of the experiment influenced on the degree of herbicides selectivity in regard to the investigated durum wheat cultivar. This is observed in regard to the herbicides Beflex, Cliofar and Pelican delta. Their selectivity varies with the meteorological conditions over the years. In these three antibroadleaved herbicides the phytotoxicity are poorly expressed, resulting in a smaller decrease in grain yield.

**Table 1.** Investigated variants

No	Herbicide	Active substance	Dose	Treatment period
1	Control – hand weeded	-	-	-
Antibroadleaved herbicides				
2	Secator OD	amidosulfuron + iodosulfuron + mefenpyr-diethyl (antidote)	150 ml/ha	tillering
3	Pelican delta	diflufenican + metsulfuron-methyl	100 g/ha	tillering
4	Omnera OD	fluroxypyr + metsulfuron-methyl + thifensulfuron-methyl	1 l/ha	tillering
5	Ergon WG	metsulfuron-methyl + thifensulfuron-methyl	90 g/ha	tillering
6	Pointer ultra	metsulfuron-methyl + tribenuron-methyl	35 g/ha	tillering
7	Harmony extra SG	thiphensulfuron-methyl + tribenuron-methyl	60 g/ha	tillering
8	Sarasen max	florasulam + tribenuron-methyl	25 g/ha	tillering
9	Tripali WG	tribenuron-methyl + metsulfuron-methyl + florasulam	50 g/ha	tillering
10	Lancelot	florasulam + aminopyralide	33 g/ha	tillering
11	Starane gold	fluroxypyr + florasulam	1.8 l/ha	tillering
12	Biathlon 4 D	florasulam + tritosulfuron	55 g/ha	tillering
13	Arat	dicamba + tritosulfuron	200 g/ha	tillering
14	Mustang 306.25 SC	florasulam + 2.4D-ester	800 ml/ha	tillering
15	Magneto top 464 SL	2.4 D amine salt + dicamba	1 l/ha	tillering
16	Buctril universal	bromoxynil octanoate + 2.4 D ethylhexylester	1 l/ha	tillering

17	Beflex	beflubutamide	500 ml/ha	tillering
18	Cliofar 600 SL	clopyralid	170 ml/ha	tillering
19	Logran 20 WG	triasulfuron	37.5 g/ha	tillering
Herbicide Biathlon was used in addition with adjuvant Dash HC – 1 l/ha.				

Based on proven year x herbicide interaction, it was evaluated stability parameters for each antibroadleaved herbicide for grain yield of durum wheat with relation to years (Table 4). It was calculated the stability variances  $\sigma_i^2$  and  $S_i^2$  of Shukla, the ecovalence  $W_i$  of Wricke and the stability criterion  $YS_i$  of Kang.

**Table 2.** Influence of some antibroadleaved herbicides on grain yield of durum wheat (mean 2018 - 2020)

Herbicides	2018		2019		2020		Mean (Factor B)	
	kg/ha	%	kg/ha	%	kg/ha	%	kg/ha	%
Control – hand weeded	5354	100	5286	100	5100	100	5247	100
Secator	5376	100.4	5265	99.6	5105	100.1	5250	100.1
Pelican delta	5140	96.0	5127	97.0	4922	96.5	5063	96.5
Omnera	5300	99.0	5270	99.7	5105	100.1	5225	99.6
Ergon	5274	98.5	5233	99.0	5085	99.7	5197	99.1
Pointer ultra	5247	98.0	5186	98.1	5075	99.5	5169	98.5
Harmony extra	5229	97.7	5236	99.0	5100	100.0	5184	98.8
Sarasen max	5258	98.2	5207	98.5	5105	100.1	5190	98.9
Tripali	5290	98.8	5233	99.0	5133	100.7	5219	99.4
Lancelot	5467	102.1	5236	99.0	5133	100.7	5278	100.6
Starane gold	5467	102.1	5186	98.1	5080	99.6	5242	99.9
Biathlon	5308	99.2	5261	99.5	5100	100.0	5221	99.5
Arat	5258	98.2	5180	98.0	5049	99.0	5162	98.4
Mustang	5444	101.6	5186	98.1	5033	98.5	5221	99.5
Magneto top	5422	101.2	5211	98.6	5000	97.8	5210	99.3
Buctril universal	5397	100.8	5186	98.1	4983	97.7	5189	98.9
Beflex	5076	94.8	5075	96.0	4896	96.0	5016	95.6
Cliofar	5086	95.0	5085	96.2	4896	96.0	5022	95.7

Logran	5104	95.4	5186	98.1	5033	98.5	5105	97.3
Mean (Factor A)	5289	-	5202	-	5049	-	-	-

LSD, kg/ha:

F. A	p≤5%=59	p≤1%=77	p≤0.1%=99
F. B	p≤5%=178	p≤1%=234	p≤0.1%=303
A x B	p≤5%=209	p≤1%=307	p≤0.1%=426

Stability variances ( $\sigma_i^2$  and  $S_i^2$ ) of Shukla, which recorded respectively linear and nonlinear interactions, unidirectional evaluate the stability of the variants. These variants which showed lower values are considered to be more stable because they interact less with the environmental conditions. Negative values of the indicators  $\sigma_i^2$  and  $S_i^2$  are considered 0. At high values of either of the two parameters -  $\sigma_i^2$  and  $S_i^2$ , the variant are regarded as unstable. At the ecovalence  $W_i$  of Wricke, the higher are the values of the index, the more unstable is the variant.

On this basis, using the first three parameters of stability, it is found that the most unstable are herbicides Pelican delta, Beflex and Cliofar. In these variants values of stability variance  $\sigma_i^2$  and  $S_i^2$  of Shukla and ecovalence  $W_i$  of Wricke are the highest. At these three herbicides there is instability from linear type - proven values of  $\sigma_i^2$ . The values of  $S_i^2$  are not proven. The reason for this high instability is greater variation in grain yields during years of experience as weather conditions affect those most. Foliar antibroadleaved herbicides Secator, Omnera, Ergon, Pointer ultra, Harmony extra, Sarasen max, Tripali, Lancelot, Starane gold, Biathlon, Arat, Mustang, Magneto top, Bucril universal and Logran exhibit high stability for durum wheat grain yield because they interact poorly with the conditions of years.

**Table 3.** Analysis of variance for durum wheat grain yield

Source of variation	Degrees of freedom	Sum of squares	Influence of factor, %	Mean squares	Fisher's criterion	Level of significance
Total	170	2692489	100	-	-	-
Tract of land	2	25545	2.2	19271.1	7.1	**
Variants	56	2596729	95.9	45208.2	22.3	***
Factor A – Years	2	2534461	92.2	107229.1	25.7	***
Factor B – Herbicides	18	33381	2.3	1605.9	0.4	**
A x B	36	15889	1.4	245.1	0.2	*
Pooled error	112	48217	1.9	271.2	-	-

\*p≤5%    \*\*p≤1%    \*\*\*p≤0.1%

**Table 4.** Stability parameters of some antibroadleaved herbicides for grain yield with relation to years

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Herbicides	$\bar{x}$	$\sigma_i^2$	$S_i^2$	$W_i$	$YS_i$
Control – hand weeded	5247	223.9	25.7	422.4	23+
Secator	5250	52.2	82.0	104.5	22+
Pelican delta	5063	337.4*	398.1	545.4	5
Omnera	5225	275.2	55.0	432.1	21+
Ergon	5197	345.6	98.9	478.8	18+
Pointer ultra	5169	377.4	99.2	484.8	17+
Harmony extra	5184	95.5	189.0	184.7	13+
Saracen max	5190	93.4	156.8	174.1	14+
Tripali	5219	90.9	141.4	163.9	21+
Lancelot	5278	266.5	44.4	481.3	22+
Starane gold	5242	111.9	56.5	215.5	14+
Biathlon	5221	276.7	55.5	433.4	21+
Arat	5162	333.3	78.9	488.8	18+
Mustang	5221	183.0	-19.6	274.1	10+
Magneto top	5210	138.7	-20.7	264.3	9+
Buctril universal	5189	167.2	-17.4	280.0	9+
Beflex	5016	327.9*	650.4	615.3	4
Cliofar	5022	366.5*	406.1	551.1	6
Logran	5105	166.6	329.5	316.0	8+
Mean	5179				14.5
LSD (p=0.05)	209				

To evaluate the complete efficacy of each antibroadleaved herbicide should be considered as its effect on grain yield of durum wheat and its stability - the reaction of wheat to this variant during the years. Valuable information about the value of technologic value of the variant give the stability criterion  $YS_i$  of Kang for simultaneous assessment of yield and stability, based on the reliability of the differences in yield and variance of interaction with the environment. The value of this criterion is experienced that using nonparametric methods and warranted statistical differences we get a summary assessment aligning variants in descending order according to their economic value.

Generalized stability criterion  $YS_i$  of Kang, taking into accounts both the stability and value of yields gives a negative assessment of herbicides Beflex, Pelican delta and Cliofar, characterizing them as the most unstable and low yields. They combine lower levels of grain yield and higher instability of this index during some years. According to this criterion, technologically the most valuable appears herbicides Lancelot, Secator, Omnera, Tripali, Biathlon, Ergon, Arat, Pointer ultra, Saracen max, Starane gold, Harmony extra, Mustang, Magneto top, Buctril universal and Logran. These herbicides combine high levels of grain yield - equal or close to hand weeded control - and high stability of this index during the years.



## **CONCLUSION**

The herbicides Pelican delta, Beflex and Cliofar have phytotoxicity on durum wheat by foliar treatment during tillering stage.

Foliar-applied herbicides Secator, Omnera, Ergon, Pointer ultra, Harmony extra, Sarasen max, Tripali, Lancelot, Starane gold, Biathlon, Arat, Mustang, Magneto top, Buctril universal and Logran have high selectivity on durum wheat.

The herbicides Pelican delta, Beflex and Cliofar are the most unstable for grain yield.

The herbicides Lancelot, Secator, Omnera, Tripali, Biathlon, Ergon, Arat, Pointer ultra, Sarasen max, Starane gold and Harmony extra are technological the most valuable. They combine high grain yield with high stability with relation to different years.

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## **IMPACT OF RABINDRASANGEET ON PROBLEM BEHAVIOURS OF SPECIAL NEEDS INDIVIDUALS**

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### **Abstract**

Music has, undeniably, a positive and conducive impact on the perturbed human mind. Using this very trait of this art form, the therapists all over the world treat their patients with music through music therapy. Rabindrasangeet, the songs written by Rabindranath Tagore (the poet laureate) mainly in Bengali and later translated in different languages of India and the world, is a very popular form of music among the Bengalis in the eastern part of India. It is often used to treat patients with mental disorders like Obsessive Compulsive Disorder (OCD) through the already established therapy called Rabindrik Psychotherapy. However, till date, there exists no such treatment to reduce the anxiety level and modify the problem behaviours of special needs individuals. The researchers conducted 3 case studies of three special needs individuals based in Kolkata and Mumbai, India. Owing to the prevailing COVID-19 pandemic, they carried out semi-structured telephonic interviews of the mothers (primary caregivers) of these individuals, a private music teacher, a special educator and two music teachers attached to a special school in Kolkata to investigate the impact of Rabindrasangeet on the problem behaviours of these challenged individuals. It was found out that the soothing tune of this genre does play a positive role in bringing down the anxiety level and problem behaviours like self-hitting, self-biting, aggression etc. These individuals experience a calming effect on their mind and a subtle joy while listening to Rabindrasangeet and exhibit socially acceptable behaviours.

**Keywords:** Rabindrasangeet, Special needs individuals, Problem behaviours, Music therapy, Rabindrik Psychotherapy

### **Introduction**

According to Shakespeare, music is “such art” that dispels the “grief of heart” (Henry VIII) or “music oft hath such a charm/ To make bad good...” (Measure for Measure). It is universally acknowledged that music has a beneficial impact on the human mind and behaviour. Naturally, this art form, consisting of sound and rhythm, has been employed all over the world to soothe the perturbed human mind and modify human behaviour through music therapy.

Several studies have been conducted across the world pertaining to music and its positive influence on individuals with challenges (both physical and mental) and individuals with typical development. In the paper “Use of Music in Special Education and Application Examples from Turkey”, Eren (2013) cited an example where 4 pre-school kids with autism

learned various concepts pertaining to colours and emotions after being exposed to music activities twice a week for a year. Batabura & Maniam (2019) in their work “Enhancing Creativity through Musical Drama for Children with Special Needs Down Syndrome in Education of Disabled Children” found out that musical drama could improve language skills, communication skills, memory and storage of information in children with Down Syndrome. Again, Stratford & Ching (1989) in their study “Responses to music and movement in the development of children with Down’s Syndrome”, pointed out that music and dance movements had a congenial impact on the development of the special needs children. Bharathi, Venugopal & Vellingiri (2019) in their work “Music therapy as a therapeutic tool in improving the social skills of autistic children” revealed that music therapy for three months could improve the social skills of the 54 children with mild to severe autism (taken as sample) such that they could communicate, understand, respond and interact with their peers in a better way. Jellison & Gainer (1995) conducted a case study of a child with special needs for one year in both music education and music therapy settings to examine the special child’s behaviour. They concluded that music therapy produced better result than music education. Rates of individual correct responses were higher in music therapy than in music education. However, in both cases, the child exhibited less aggressive behaviour as compared to non-musical environment. Mitchell, E. (2016) revealed that English music therapists accepted that musical experiences in the form of therapeutic music education produced personal growth along with musical growth in their clients. In the book titled Music Therapy in Schools: Working with Children of All Ages in Mainstream and Special Education (2012), Bruce, A. & High, S. in Chapter 4 (Multiple Views of Music Therapy), have talked about a 5-year-old girl with cerebral palsy and severe learning disabilities. She does not use any language and whose exposure to music in her school in therapeutic setting improves her vocalisation, interaction and communication skills. Again, Daveson & Edwards (1998) revealed the wide use of music in medical and educational institutions, both special and regular, in Australia. Berger, D.S. (2002) has shown very aptly that music therapy is, indeed, very effective for children with autism spectrum disorder because communication with these children via music works better than communication through words. Berger also mentions that music stimulates the brain to produce remarkable results. Lloyd, P. in his book Let’s All Listen: Songs for Group Work in Settings That Include Students with Learning Difficulties and Autism (2007), has compiled 46 songs for especially children with special needs who have problems in communication, based on the principle that music improves and enhances the communication skills and social interaction in students with learning difficulties.

### **The use of Rabindrasangeet in music therapy**

Rabindrasangeet is a very popular form of music in Eastern India. It is a body of songs written by the poet laureate, Rabindranath Tagore (the first Asian to win a Nobel Prize in literature in 1913). The songs are written mainly in Bengali that depict the entire gamut of human emotions. Almost every Bengali is fond of this unique genre. Whether in deep agony, sorrow, joy or ecstasy, the Bengali heart clings on to Rabindrasangeet. Naturally, this Bengali art form has also been adopted for promotion of mental health and well-being among individuals in Rabindrik Psychotherapy, an already established therapy for treating patients with mental disorders. In “Effectiveness of Rabindra Sangeet and Rabindra Nritya on level of stress among mothers of children with ASD” (2020, February), Mandal, Mondal & Bishnuroy have shown that by exposing the mothers of children with autism spectrum disorder to Rabindrasangeet, the stress level could be reduced. They have opined that Rabindrasangeet

are the eternal songs created by Tagore that act as a mediator “to feel deeply the inner and inner core of consciousness”. Acharya & Tarafdar (2019) conducted a research (tools used: a close-ended questionnaire and Beak Depression Inventory) and found that the songs of Tagore drove away tension and depression and lowered the anxiety level among the 200 adolescents of both the genders, aged between 16 and 18 years. In another work titled “Study of the effect of music on HRV signal using 3D Poincare plot in spherical coordinates-A signal processing approach” (2015), Das et al. have revealed that Rabindrasangeet may be used as a tool to deal with different medical problems such as stress management or hypertension. **But can Rabindrasangeet be equally effective in reducing the problem behaviours of special needs individuals?**

**Objective:** To investigate the impact of Rabindrasangeet on problem behaviours of special needs individuals.

### **Rabindrasangeet and its impact on special needs individuals**

Special needs individuals constitute one of the most marginalised sections of the society in India. According to William Radice, the British poet, writer and translator who has studied the mood and melody of Tagore’s songs, **it is difficult for anyone to ignore Tagore’s songs** [as mentioned by Sugandha, T. (2020, June) in “Tagore and Music Therapy”]. The researchers, thus, have attempted to find out the impact of Rabindrasangeet on the problem behaviours of the special needs individuals, which hamper their learning process, through **case studies of 3 individuals with special needs (cerebral palsy, ASD and PDD-NOS)**, based in Kolkata and Mumbai, India.

Owing to the prevailing COVID-19 pandemic situation, the researchers conducted semi-structured telephonic interviews of mothers (primary caregivers) of 3 individuals with special needs, a music teacher imparting private music lessons to one of these special needs individuals at the learner’s home and a special educator and 2 music teachers attached to a special school in Kolkata.

### **Case study#1: The teenager from Kolkata who loves to sing and dance to the tunes of Rabindrasangeet**

This 14-year-old-girl with cerebral palsy from Kolkata is wheelchair bound and attends both a special school (run by a Non-Governmental Organisation) and a government mainstream (normal) school in the city. The mother sends her to the government school twice a week after attending the special school mainly to avail the benefits, especially monetary, that her daughter is eligible for. Presently, she is at the B-level (equivalent to standard 5) under NIOS (National Institute of Open Schooling) in the special school. The mother reveals that her daughter has a good memory and loves counting numbers backward both in English and Bengali (mother-tongue). She has speech problem of moderate degree and problem in fine-motor too. Thus, she takes the help of her mother while writing. She had a convulsion attack after birth. At the age of six, she suffered from convulsion several times. After that she has not experienced any. The mother believes that homeopathy treatment has stopped these convulsion attacks. However, she is presently not under any medication. Observing her inclination for music, especially Rabindrasangeet that her mother used to sing and play on the harmonium at home, the mother hired a private music teacher two years ago. The teacher comes home and conducts a class every week for one hour. The teacher reports that her special needs student enjoys her music classes and even starts dancing in her own way by

clapping the hands when certain songs of Tagore are sung to her accompanied by a harmonium. According to the teacher, she does not adopt any special technique for giving music lessons to her challenged student. All she does is playing the songs of her student's liking several times so that she makes an effort to sing them. And she does make every effort to utter the lyrics. She loves singing "Alo amaar alo ogo alo bhupon bhora..." (Light O my light! This world is full of light...) and "Amra shobai raja amader ei rajar rajottay..." (We are all kings in our king's kingdom...). The mother sent the researchers a video clipping in which she is seen trying her very best to sing the latter. During the lockdown in 2020, she attended online music classes happily every week for nearly an hour. Unlike the school online classes, she would sit all alone and sing with the teacher during the virtual music classes. Both the teacher and the mother are of the view that she waits eagerly for her music classes. Though she does not understand the inner meanings of these songs, yet she likes their tunes, rhythms and beats. She prefers the rhythmic songs of Tagore to the slow-paced ones. She memorises the lyrics quite well. The mother opines that music, especially Rabindrasangeet, has a constructive impact on her daughter. It definitely reduces her anxiety level and problem behaviours. The mother takes recourse to playing Rabindrasangeet on cell phone whenever she has to leave the daughter unattended for her household chores. The daughter sits quietly and listens to the songs. Otherwise, she messes up the whole place trying to do things on her own. Also, according to the mother, while learning the lyrics and attempting to utter them, her speech has improved to a considerable degree.

#### **Case study#2: The young man from Mumbai with a keyboard**

This 21-year-old young man with autism spectrum disorder (ASD) from Mumbai understands both Bengali, his mother-tongue, and Hindi, the language of instruction in school. He studied in a mainstream school in Mumbai till class 12 and completed higher secondary examination under NIOS (National Institute of Open Schooling). Presently he goes to a vocational centre. Due to the COVID-19 pandemic scenario, he is staying indoors and learning computers online. The mother says that he has been learning keyboard since he was 8 years old. The music teacher, a non-Bengali, comes home to give him lessons on keyboard playing. The mother reveals that her son, though verbal, does not converse spontaneously. His communication through spoken words is only need based. However, he has a strong liking for music. He listens to different genres of music including Rabindrasangeet and plays them on his keyboard at a specific time (between 4.30pm and 5pm) during the evening. This gives him satisfaction and also calms him down when in anxiety. However, according to the mother, he is not hyperactive. The mother points out that whenever her son experiences high anxiety level he starts playing the keyboard to soothe his disturbed mind. Though he does not prefer the melancholic tunes of certain Rabindrasangeet, he likes the 'happy' songs by Tagore which have beats and are rhythmic. In fact, he switches off the sad numbers by Tagore. The mother recalls that her son, at the age of 3 years, used to cry the whole day and then it was music particularly the Rabindrasangeet: "Akash bhora /Shurjo tara..." (The sky full of sun and stars...) that played a great role in calming him down. It played a significant role in reducing and modifying his problem behaviour of crying and throwing tantrums. At present, the father plays Rabindrasangeet besides Western classical like Mozart during night. Such a musical environment, as pointed out by the mother, has a positive effect on her son's overall mental health and keeps his anxiety and stress level low. The mother says that her son is under homeopathic medication which she opines has no side effects as such and it gives her peace of mind because there is no cure for ASD as of now. On contacting the mother two months after

the interview, the researchers learnt that both the mother and her son were down with COVID. So, no further communication could be made.

### **Case study#3: The young man from Kolkata who loves singing and listening to Rabindrasangeet**

This 21-year-old Bengali young man from Kolkata exhibits certain traits of autism and has been diagnosed with PDD-NOS (Pervasive Developmental Disorder, Not Otherwise Specified). He has delayed developmental milestones and balance problem while walking. He wears a pair of leather-made special shoes to school, given by the school authority. He has flat feet and these shoes aid him in stepping and climbing up the staircase. The mother reveals that right from the age of 1 year 3 months, her son experienced several convulsion attacks that worsened her condition. That last convulsion was when he was 11 years old. Presently he takes 3 types of neurological medicine at different times of the day. Though verbally, he is quite strong, yet he has severe fine motor problem and cannot write. He does not show any interest in functional academics and is at pre-vocational level in the special school that he attends in the southern fringes of the city. However, he has a strong liking for music. The mother, a trained singer, is of the view that he has inherited his love for music from the family, in which every member sings and takes keen interest in music and Tagore's songs. The family runs a music school too. This young man loves to sing the very popular Rabindrasangeet: "Puranoshei diner katha bhulbi ki re hai..." (How can you forget the memories of yesterday?/...). The mother says that most of the time she has observed him singing this song when sitting alone. He also likes to sing "Boroasha kore eshechhi go kachhe deke lou..." (I have come to you with great hope, so take me close to you, mother...). He possesses a very sharp memory, remembers the lyrics very well and even identifies the songs by their tunes. When unable to sing tunefully some of Tagore's difficult songs, he simply utters the lyrics as in poetry. The mother points out that he does this for the song "Chorono dhorite diyo go amare, nio na nio na shoraye..." (Let me hold your feet, don't move them away...). The mother sent a video clipping to the researchers in which he is seen singing the Rabindrasangeet: "Aguner poroshmoni chhowao prane ..." (Touch my life with the fiery magical stone and purify my life...). She thinks that her son understands the meaning of these songs to a certain extent. At the age of ten, when he caught his mother crying and singing a sad song by Tagore, after his grandmother's demise, he asked her whether she was singing it out of pain and remorse due to his grandmother's absence.

During the lockdown of 2020, he became hyperactive and aggressive and it was singing of Rabindrasangeet that significantly reduced his heightened anxiety level (caused due to the abrupt changes in his daily routine). Consequently, his problem behaviours like pinching others, hurling verbal abuses at others and repeatedly saying the same thing also have got reduced. Now he has adapted himself to the 'new normal' and attends online classes for two hours thrice a week. A talkative person that he is, he enjoys talking to his friends and teachers during the virtual classes. The problem behaviours, the mother points out, arise out of anger, frustration and inability to express himself fully in spite of being verbal. During the hot summer days, when he usually becomes hyperactive, the mother takes recourse to singing of Rabindrasangeet that has considerably a soothing and positive impact on her son's mind.

**The special educator and the two music teachers attached to a special school in Kolkata**

This special educator, dealing with individuals with special needs for more than 13 years, is of the view that exposing special needs individuals of varied age groups to soothing music actually calms down their anxiety level. It works well in reducing their problem behaviours, especially in the case of autistic individuals, and also improves their communication skills. So, in her school, the very first thing that the music teachers, in collaboration with the special educators, try to play are some Rabindrasangeet in the music classes. Tagore's songs, by and large, are gentle and soothing. Besides, most of the students come from Bengali households who have been exposed to Tagore's songs at home environment in one or the other way. Most of them are quite familiar with this genre. She opines that exposure and familiarity matter. However, even if a student is not familiar with this genre or does not understand Bengali, by playing these songs repeatedly in every music class, the student develops a liking for it eventually. The soothing, gentle and lilting tunes of many of Tagore's songs appeal to them as they appeal to many individuals without special needs. Such tunes produce a calming effect on them when they get agitated and their anxiety level decreases eventually. The problem behaviours (resulting out of frustration and anger) like self-hitting, self-biting, hitting others, head banging, throwing tantrums etc. also get reduced. In the process, these individuals also start paying heed to the instruction given by the teacher. She opines that the student-teacher interaction level gets enhanced too. She, however, does not mention any special technique adopted by the music teachers in her school. The two music teachers in her school also talked to the researchers over the phone. They, too, have not made any mention of any specialised method while singing in the music classes of the special needs individuals. Repeated singing of the songs of the students' liking has proved beneficial and effective for the students. They are of the view that their students learn through repeated practice and habit formation.

**Discussion**

The present study is unique in its own way because till date no study has been conducted, in Indian or foreign context, to investigate the impact of Rabindrasangeet on the special needs individuals and their socially inappropriate problem behaviours. The studies by Mandal, Mondal & Bishnuroy (2020), Acharya & Tarafdar (2019) and Das et al. (2015) explored the effect of Rabindrasangeet on the stress level among the mothers of the autistic children, depressed adolescents and typically developing individuals respectively. These three studies found the songs of Tagore to be an effective tool in reducing stress level, anxiety level and hypertension among individuals with typical development. The studies did not include the special needs individuals. Again, unlike the present study, consisting of 3 case studies of 3 special needs individuals (cerebral palsy, ASD and PDD-NOS) of various age groups, Jellison & Garner (1995) carried out a single case study of a single challenged child to compare the child's behaviour in both musical and non-musical environments with the conclusion that less aggressive behaviours were exhibited in musical environment. The similarity lies at one point that both the studies deal with the impact of music (or songs) on the problem behaviours of individuals with special needs, one in the English context and the other in the Indian context. The only other study reviewed that deals with case study of a challenged individual is by Bruce & High [Chapter 4 (titled "Multiple Views of Music Therapy") of the book called Music Therapy in Schools] in which the authors revealed the improvement of vocalisation, interaction and communication skills of a 5-year-old girl with cerebral palsy and severe

learning disabilities in the musical and therapeutical setting. The study by Batubara & Maniam also adopted a qualitative approach in which data were collected through observation of the teachers, principals and parents to investigate whether musical drama could improve communication skill and expression in Down Syndrome children. The other research works by Bharathi, Venugopal & Vellingiri (2019), Eren (2013) [both quasi experimental researches], Berger (2002), and Daveson & Edwards (1998)- all are related to finding out whether music therapy could enhance the communication skills, social interactions, cognitive functioning etc. in the challenged individuals through music therapy. None of these is concerned with **case studies** or impact of Rabindrasangeet, on the **problem behaviours of special needs individuals**, either in Indian or foreign context. Thus, the present study, undeniably, explores a novel area, precisely in the Indian context.

### **Conclusion**

From the above case studies of the three special needs individuals of both genders (2male and 1female individuals), of various age groups, it can be inferred that Rabindrasangeet plays a positive role in reducing the socially inappropriate problem behaviours of the special needs individuals. The opinions and views expressed by the mothers of the 3 special needs individuals, a private music teacher and the special educator and the two other music teachers, attached to a special school in Kolkata, further strengthen this inference. That language is not a barrier as far, as music is concerned, is well-known. Thus, Rabindrasangeet or songs of Tagore can be used for modifying the socially unacceptable problem behaviours of the challenged individuals from both Bengali and non-Bengali background. Also, Debdulal Dutta Roy, the proponent of Rabindrik Psychotherapy, has aptly viewed: “Rabindrasangeet tunes (without the words) can help those who don’t understand Bengali”( <https://timesofindia.indiatimes.com/city/kolkata/rabindrasangeet-as-psychotherapy/articleshow/26489400.cms>). It may be pointed out that one need not actually understand the inner meanings and connotations lying within these songs as far as special needs individuals are concerned. The rhythm and the tunes matter a lot. Till date there exists no “well-structured, holistic curative procedure” (in the words of Dutta Roy) like Rabindrik Psychotherapy, as far as treating the challenged individuals with Rabindrasangeet is concerned. Still several special schools and special educators in Kolkata take recourse to this very genre of music so as to produce a positive and conducive effect on special needs individuals of various age groups and of both genders (male and female) to lessen their anxiety level, to reduce their problem behaviours and to help them manage their emotional disturbances. In fact, positive results are being obtained due to this practice and the music teachers and the special educators as well as the caregivers of the challenged individuals concede that soothing tunes of Tagore’s songs, indeed, are helpful for modifying the socially undesirable problematic behaviours of their pupils and wards, thereby enhancing their attention level and learning process. These problem behaviours come in the way of their learning and education.

It may be suggested that further wider researches may be conducted in this field. Seminars, workshops and conferences may be organized on this topic to widen the scope of Rabindrasangeet as a tool for behaviour modification of the special needs individuals across India and other countries of the world. The many facets of Tagore’s songs have already been explored. With the present study another new facet of Rabindrasangeet has been explored. The researchers are optimistic that in the near future an established treatment through this



popular genre and trained therapists will take shape that will be beneficial for the special needs individuals, who have largely remained neglected in the Indian society.

### **Acknowledgement**

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## **4th INTERNATIONAL NEW YORK CONFERENCE ON EVOLVING TRENDS IN INTERDISCIPLINARY RESEARCH & PRACTICES**

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## **HOW CAN NOTHING BE SOMETHING? A MULTIMODAL ANALYSIS OF THE SHORT FILM ZERO**

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### **Abstract**

Multimodality is a way of composing and combining different semiotic modes in meaning making. The fundamental idea here is that we are interacting with multimodal mediums which include verbal, visual and audiovisual elements during communication. As a consequence of this, every text is seen as a multimodal structure, in which language, image, sound and music can be used. Therefore, the term multimodality has become one of the essential categories in several disciplines that deal with text analysis such as linguistics, semiotics, media studies and film studies. Films are one of the most examined multimodal text types in these research fields because of their potential for multiplying the highest level of semiotic modes. Christine and Christopher Kezelos' stop motion animated short film Zero (2010) is about a fictional world where people are born into a numerical class system. It is a world in which the social standing and destiny of individuals are predetermined based on their number, that define their value in society. The protagonist of the film is born with a zero. As a member of the lowest class, he is constantly discriminated and persecuted by larger numbers to make him feel like nothing. In the form of a numerical caste system, the film contains a sharp criticism of how certain groups of people are treated and discriminated by society in every level of the daily life. Considering films as multimodal texts, this study focuses on the animated short film Zero (2010) and aims to analyze the film's distinctive multimodal elements on the basis of Hartmut Stöckl's (2004; 2012) and Janina Wildfeuer's (2014) theories of multimodal film text analysis. Moving towards a multimodal oriented method, the results of this study demonstrate how filmic semiotic modes are used as film's narrative to reflect the challenge between social classes and discrimination in society.

**Keywords:** Multimodality, Multimodal Text, Film Text Analysis, Zero, Short Film

### **INTRODUCTION**

Today there are many scientific theories and methods that deal with films. The linguistic and semiotic oriented multimodal film text analysis is one of them. The term multimodality is related to the semiotic modes which were suggested by Kress (2010) and Van Leeuwen (2005). Kress defines the term mode as "socially shared and culturally given resource for meaning making. Image, writing, layout, music, gesture, speech, moving image, soundtrack are examples of modes used in representation and communication" (Kress, 2010). He also adds that "What a community decides to regard and use as mode is mode" (Kress, 2010). In this regard multimodality is a way of composing and combining different semiotic modes in meaning making. The fundamental idea here is that we are always interacting with different multimodal mediums which include verbal, visual and audiovisual elements during communication. Under this view multimodality is an aspect of our daily lives.

Linguistic and semiotic oriented multimodal studies consider films as multimodal texts, that combine different semiotic codes such as language (written and/or spoken), image (still

and/or moving), music (jingle and/or song and/or instrumental) and sound (diegetic and/or non-diegetic). It is obviously the fact that films are capable of using a rich variety of audiovisual modes at the same time. The opportunities that films offer for the combination and integration of various modes and multiplication of meaning are immensely challenging when seen from the aspect of multimodality. For this reason, the multimodality studies have expanded their object domain to films, and films are one of the most examined multimodal text types in this research field because of their potential for multiplying the highest level of semiotic modes (Bateman and Schmidt, 2012; Wildfeuer, 2014).

Considering films as multimodal structured texts, this study focuses on the animated stop motion short film *Zero* (2010) and aims to analyze the film's distinctive multimodal elements on the basis of Hartmut Stöckl's (2004; 2012) and Janina Wildfeuer's (2014) theories of multimodal film text analysis. Moving towards a multimodal oriented method, the results of this study demonstrate how filmic semiotic modes are used as film's narrative to reflect the challenge between social gender and discrimination in society.



## **CORPUS**

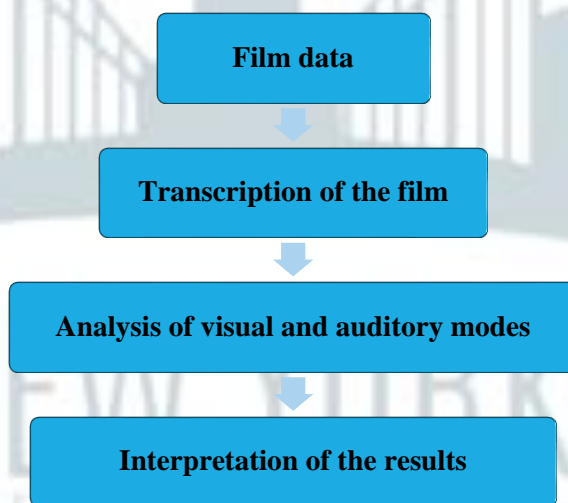
**Figure 1.** Zero film poster

*Zero* (2010) is a 12'32 stop motion animated short film written and directed by Christopher Kezelos and produced by Christine Kezelos. The film is about a fictional world where people are born into a strict numerical social class system. It is a world in which the social standing and destiny of individuals are predetermined based on their number, that define their value and place in society. Each individual has a number on their chest. The ones who are born with a larger number such as 9 or 8 are regarded as the chosen elites of this world, while lower numbers represent the middle and lower class of the society.

The protagonist of the film is born with a zero. As a member of the lowest class, he is constantly discriminated and persecuted by larger numbers to make him feel like nothing. Although Zero faces constant mistreat and persecution, he never gives up his hope for finding the sense of belonging and acceptance as a valued member of the society. He holds to the belief that even he with a zero number who is destined for nothing can be something. His life starts to change when he meets a female zero one day. They fall in love; however, zeros are not allowed to procreate in this social order. Their illegal affection and connection are discovered soon by the police and other numbers.

Zero is arrested and taken to jail while his partner the female zero is released to the streets. One day she comes to visit him. She stands in front of the jail's window and shows him her pregnant belly, which is also noticed by the other numbers. She is suddenly surrounded by the other numbers when the labor starts on the street. Zero tries to see what is happening but she is obscured from his view by the crowd. Then a baby's cry is heard, and the other numbers bow out of respect for the newborn conjoined twins, who bear the mark of infinity, the largest and most respected number of the society. By creating something truly magnificent both zeros prove that through determination, courage, and love, even nothing can be truly something.

## **METHOD**



**Figure 2.** The steps of multimodal film text analysis

This study considers films as texts. The notion of film as text makes it necessary to apply text analysis methods on films. My point is oriented to understanding films as multimodal structures. The methodology of this paper is based on the multimodal film text theories of Hartmut Stöckl (2004; 2012) and Janina Wildfeuer (2014).

The model of analysis which is taken for the examination of the short film Zero includes four steps. The first step is choosing the filmic data. At second step the film data is transcribed on scene-by-scene basis for the use of the analysis part. The transcription of the data is made to demonstrate a detailed overview of the auditory and visual semiotic resources

and to describe them on several levels to reveal their form and meaning as well as the interactions between them. In this regard transcribing the data is an essential part of multimodal film text analysis, “since it elaborates which individual semiotic resources contribute to the meaning-making process and how they unfold in time and space in the filmic text” (Wildfeuer, 2014).

The transcription is based on the categorization of modes on macrolevel by Stöckl (2004). He classifies modes on visual and auditory level. Visual modes are image (static and/or dynamic) and language in written form. Auditory modes are music, sound (diegetic and/or non-diegetic) and language as speech. The third step is devoted to the detailed analysis of the visual and auditory modes as well as their sub-modes. The meaning in film is constructed by the combination of visual and auditory modes. Every mode has a specific task and function in the process of meaning construction. However, they cannot be assumed as independent components, they need to be analyzed with respect to one another in terms of their interrelation with each other. Since a detailed analysis of each filmic mode and their sub-modes is very comprehensive, this study focused only on the intermodal connections between the modes to show an itemized examination. The results of the analysis are interpreted at the final step.

## **RESULTS**

On the basis of the analytical model presented in previous section, this chapter will display the results of the analysis and give examples for significant intermodal relations between the examined modes and sub-modes that are used in the film for meaning making. The main focus lies on describing in detail how meaning construction takes place in combination of visual and auditory modes in examined data.

The film is narrated by voice over Nicholas McKay. There is no actual dialogue based on verbal level between the characters. The shots are connected by continuous use of numbers on the chests of the yarn puppets which represent their social status. The quality and color of the yarn are another significant visual modes that symbolize their status and value in the society. For example, zeros are mixed with brown yarn unlike other numbers, who are made of light-colored wool. In this case zeros may represent a different race in the film.

The difference between the social status of the numbers is also underlined on auditory level from the narrator’s voice. While the narrator is telling that “Some people are born to be leaders, effecting great change amongst their people” (Shot 4), a yarn baby puppet born with a 9 is depicted from extreme close-up shot to emphasize the value of the larger numbers. The privileged position of the larger numbers is determined by the use of pronoun “some” to make clear that they are distinguished from the rest.

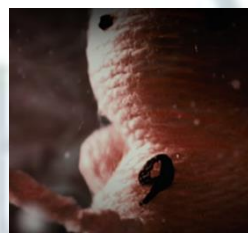
Lower numbers are openly marginalized by the narrator’s expression “Others are born into mediocrity, living unremarkable lives” (Shot 5) on language level. The othering is made visible by the close up shot of another yarn baby having a 5 on its chest and supported by the use of “other” as a pronoun on auditory level. The narrator adds “But for some... Life will be a constant battle offering zero opportunities” (Shot 6) to point out the lowest class of the society while the blurred image of a third yarn puppet with a zero on a darker background represents the hard circumstances of zeros in society on visual level. The reuse of “some” as a pronoun creates a contrast between the position of the larger numbers and zeros in the society. From this point of view, it is clear that larger numbers and zeros are the opposite minorities in

the social order. It is remarkable that the number zero is repeatedly used on auditory and visual level many times during the film. Thereby an intermodal meaning construction is evident: The identification of the social classes is based on the narrator’s voice, the spoken language, images of the numbers and also their semantic content, the meaning.

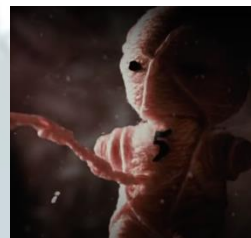
In addition, diegetic sounds such as crying and screaming in the foreground are the most dominant auditory filmic modes on sound level in all film. They maintain a direct connection with the sorrows of the zeros that they have been through in their lives. Their suffering and unhappiness are also supported on visual level by showing their facial expressions from different camera angles in close up shots.

**Table 1.** Transcription of the shots 4-6 of Zero

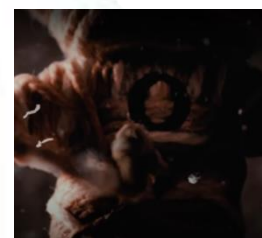
Shot



4



5



6

Spoken Language

“Some people are born to be leaders, effecting great change amongst their people”

“Others are born into mediocrity, living unremarkable lives”

“But for some... Life will be a constant battle offering zero opportunities”

The relationship between zeros and other numbers are depicted in medium shot and long shot to indicate the characters’ gestures, facial expressions and behaviors. For example, at school Zero is bullied by his classmates and his teacher. This action is expressed as “School was the only place where Zero received attention. He learned important life lessons like his value in society” by the narrator’s voice. The mistreatment of other numbers to Zero is also maintained on auditory level by the use of significant laughing and hitting sounds. The persecution of Zero is interpreted as “It wasn’t the first time Zero awoke with a battered and bruised body” by the narrator’s voice on language level whereas Zero was shown with a bandage on his head in eye level medium shot. Another example, all doors shut at once in Zero’s face as a result of his number. The scene is accompanied by the images and sounds of closing doors and a “closed” sign hanged on a shop’s entrance. This makes it evident that no one wants to communicate with him except a disabled zero begging on the street. The prejudicial treatment of others to Zero is synchronously illustrated on visual and auditory level by the use of the specific filmic modes.

On visual level the contrast between the use of light and dark colors as background and the lightning techniques play an important role by the meaning construction in film. Low key lightning and dark colors are dominant in the scenes where Zero was demonstrated alone or beaten by larger numbers. In contrast to that bright colors and high key lightning are

preferred in the shots where Zero is with the female zero to make a distinction between being alone and the sense of belonging.

The shots in which the narrator is not speaking are connected by an instrumental music in the background, that is supporting the emotional atmosphere of the film. From a multimodal perspective the music has an accompanying function here whereas other semiotic modes and their sub-modes are playing a major role in meaning making process of the analyzed film.

## **CONCLUSION**

The detailed analysis of the filmic modes in the animated stop motion short film Zero not only gives us a multimodal film text examination of the intersemiotic relationship of the modes, but it also reveals that in most cases the combination of visual and auditory modes have an influence on meaning construction. This is maintained by noticeable intermodal connections between the language, image, sound and music, that are used in the film. The order of parallel relations between the auditory and visual modes illustrates the dark themes of racism, discrimination, prejudice and intolerance that underlies the story of the protagonist Zero. Consequently, the results of the analysis have shown that in the form of a numerical caste system the short film Zero contains a sharp criticism of how certain groups of individuals are mistreated and discriminated by society in every level of the daily life.

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## **THE HEBREW BIBLE AND TURKIC LITERATURES: SOME PARALLELS**

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### **Abstract**

Every nation has its unique world of folk tales, legends, proverbs, songs, poems, stories and other oral and written texts. In these texts, people express their “truths” in ways most natural and meaningful to them. Generations treasure these texts as an important part of their cultural heritage. The Hebrew Bible is a collection of ancient texts most meaningful to the ancient Hebrew people. Unlike other nations of the ancient world, Hebrews were monotheists, hence the Hebrew Bible is a national literature based on the Hebrew people’s monotheistic beliefs. During the centuries, many other nations translated the Hebrew Bible and accepted it as sacred writings. As a result, a multitude of Hebrew sayings and idioms made their way into other languages. There have been numerous studies on biblical elements in different languages and literatures. In this study, we focus on “meanings” or “truths” of the Hebrew Bible rather than the idioms and other Hebraic elements. As we know, translating national texts into another language by necessity results in deformation of the phonetic, musical, rhythmic, associational and aesthetic aspects of the texts. While expressing the “meanings” relatively correctly, translation often fails to come across as natural and loses significant linguistic and literary qualities of the original. On the other hand, similar “meanings” or “truths” may naturally exist in other national literatures, and identifying these parallel texts helps discover similar ideas and values in different linguistic and literary forms and appreciate cultural diversity. In this paper, some passages from several books of the Hebrew Bible are compared with some parallel Turkic texts that express the same “truths”, but in forms peculiar to Turkic languages and literatures. Examples are given from some poems by the Turkish poet Yunus Emre (1238-1320), the Azerbaijani poet Molla Panah Vaqif (1717-1797), and other sources.

**Keywords:** comparative literature, Hebrew Bible, Turkic literature, Yunus Emre, Molla Panah Vaqif.

### **INTRODUCTION**

The German literary scholar Wolfgang Iser asked the question “why human beings, in spite of their awareness that literature is make-believe, seem to stand in need of fictions.” (Iser, 1997) Indeed, why do we have the need to write and read stories, poems, and other literary works? Iser quotes Marshall McLuhan’s description of the “art of fiction” as an “extension of man” and suggests that literature arises from our need to “extend ourselves beyond ourselves”. As beings endowed with capacity of language and speech, we are not only able to imagine limitless possible and impossible situations, but also have a need to share our imaginations with others. Our imagination is our inner world which often is closely associated with “meanings” or “truths” that we value and regard as important. In process of sharing their stories or other texts, speakers of a language partake of each other’s inner world and form a common “pool” of ethnic texts closely associated with their language and life realities. Some

of the individual “truths”—especially those expressed in linguistically harmonious and orderly texts—find general acceptance and form the core of the ethnic group’s cultural heritage. The earliest texts of an ethnic group or its verbal folklore is the “bottom layer” of the national literature, and the subsequent authors make their original works on top of this layer and in its context. At the same time, each ethnic group interacts with other groups and is to a certain degree influenced by their languages and texts. Especially in case of “turning points” such as military occupation or converting to a different religion, the language and literature of the ethnic group undergoes a serious change, and often the people in that ethnic group begin identifying themselves with the “meanings” or “truths” of the occupying or converting nation, perceiving them as their own, as an integral part of their culture. Thus “meanings” are shared, but due to commonality of human nature and experience, many “meanings” appear in different ethnic groups independently and are expressed in their folklore in most natural ways.

The ancient Hebrew people’s literary heritage has a lot in common with other ethnic groups, but is also strikingly different from them in several ways. Historically, Hebrews are known to be the first monotheists, and their most ancient written literature is canonized as Holy Scripture. Eventually, this collection of canonized texts was translated into Greek (The Septuagint) and with the raise of Christianity into hundreds of other languages. In Christian tradition, the texts are called “The Old Testament,” and in Islamic tradition they are called “Tawrat and Zabur.” Jews divide these texts into three sections: The Law (Torah), Prophets (Nabi’im), and Writings (Ketubim) and call them collectively TaNaKh (based on the first letters of each of the three sections). For academic purposes, the Hebrew Bible seems to be the best name, for it has the least undesirable associations.

As a result of the translations of the Hebrew Bible into many languages and of historical relationships between Jews, Christians and Muslims, a multitude of Hebrew sayings and idioms made their way into other languages. Some of these “loaned” expressions integrate into the language so well that they are perceived as original. Others are perceived as “foreign but holy.” There have been numerous studies of such biblical expressions in different languages and literatures. In this study, however, we are focusing on a different aspect of the Hebrew Bible –its universal meanings or “truths” that also find their expression in the national literatures of other ethnic groups– and we are undertaking to compare the Hebrew Bible to Turkic peoples’ national literatures in this respect. The Hebrew Bible has been translated into different Turkic languages, and the “meanings” expressed in the Hebrew text are reproduced in these translations relatively well. Nevertheless, translating by necessity results in deformation of the phonetic, musical, rhythmic, associational and aesthetic aspects of the original text, so the translations often fail to come across as natural and lose significant linguistic and literary qualities of the Hebrew original. The Hebrew idioms and Hebraic elements translated into Turkic languages coexist side by side with national Turkic texts that may express similar “meanings” or “truths” independently from the Hebrew Bible. In this paper, we aim to describe a certain procedure for identifying and classifying such parallel texts and present some examples of parallels.

## **MATERIALS AND METHODS**

We have already mentioned that the Hebrew Bible has a lot in common with other national literatures, but it is also strikingly different from them in some aspects. Firstly, Hebrews have a unique history as the first ethnic group which accepted monotheism as a part of their national identity; secondly, the Hebrew Bible was one of the first major literary works to be translated and is now one of the most translated and published books in the world; and

thirdly, millions of people accept the Bible as a divinely inspired book, and the main Biblical characters such as Adam and Eve, Abraham, Moses, David, Solomon etc. are considered as important in all the three Abrahamic religions. The above-mentioned unique characteristics of the Hebrew Bible should be taken into account when undertaking any comparative analysis of a biblical text and any other literary text. On the other hand, the Hebrew Bible shares a lot of similarities with other works of literature: it has similar genres, literary features, and major themes such as love, wisdom, justice, mercy and others.

For the purpose of our research, it is helpful to identify the hierarchy of “meanings” of the Hebrew Bible. Despite the enormous diversity of these ancient texts, they are united by a common world view based on the faith in the personal and moral God. This is the main “message” of the Hebrew Bible, the common thread running through all its books. In the context of this highest “message,” each section (Torah, Prophets, Writings) has its main “message” too. Then in the context of these higher messages, each book has its more specific message, and further on each literary unit in the books has a certain meaning. (See **Figure 1**) We start searching for parallels from the highest to the lowest level with the assumption that some parallels do exist at least on some levels of the hierarchy of meanings.



**Figure 1.** The Hierarchy of Meanings in the Hebrew Bible

For the Turkic texts we have chosen the Turkish and Azerbaijani folklore and some of the “canonized,” that is nationally recognized, Turkish and Azerbaijani poets. After identifying some parallel texts, we arrange them according to the hierarchy of meanings, the genres or Biblical books, and the themes.

### RESULTS

In our search for parallels between the Hebrew Bible and Turkic literatures, we have identified some texts in all the three Turkic sources (folklore, Turkish poetry, Azerbaijani poetry) that correspond to the main “message” of the whole Hebrew Bible that is the belief in the personal and moral God. On the levels of each section and each book of the Hebrew Bible, we haven’t identified any parallels. Most parallels have been discovered on the lowest level of the hierarchy, which is the level of literary units, and the vast majority of these literary units in the Hebrew Bible are found in the ‘Writings’ category. In addition to parallels between some passages in the book of Proverbs and Turkish/Azerbaijani proverbs, we have also

identified several passages from Ecclesiastes and Psalms with similar meanings in the poems by the founder of Turkish poetry Yunus Emre (1238-1320), and one passage from the book of Jeremiah with similar message in a Mukhammas (pentastich) by the Azerbaijani poet Molla Panah Vaqif (1717-1797).

## **DISCUSSION**

In our search for parallels between the Hebrew Bible and Turkic literatures, we start with an effort to identify various “meanings,” “truths,” or “messages” of the Hebrew Bible both ‘vertically’ and ‘horizontally’. On the highest level of the hierarchy, we have the overarching “truth” of the Hebrew Bible, its main message. In Encyclopedia Britannica, the main message of the Hebrew Bible is formulated as “the account of God’s dealing with the Jews as his chosen people, who collectively called themselves Israel.” (Britannica, 2020) In our opinion, this formulation does not correspond to the universal scope of the Hebrew Bible. The main message of the whole collection appears to be relevant not only to the Jews (or Hebrews), but to other nations as well. A broader formulation seems more appropriate here. Apparently, the Hebrew Bible is all about the personal and moral God, and all the sections, separate books, chapters and verses are meant to be understood and interpreted in view of this larger context of the canonized “Holy Scripture” or “God’s Word.” Any other interpretation makes it impossible to accept the Hebrew Bible as one unit.

A similar belief in the personal and moral God is also foundational for other Abrahamic religions: Christianity and Islam. We can assume that due to this similarity the same message must have been reflected in many literary texts written by Muslim authors. Since the vast majority of texts of Turkic literatures were written in the context of Muslim religion, we expect to find certain parallels on this level.

One of the parallels related to this fundamental belief is found in the emphasis on fearing God. As the only person without beginning or end, the Creator and Sustainer of everything, God is to be revered above all else. This reverence is called “fearing God” and is emphasized throughout the Hebrew Bible.

“The fear of the LORD is the beginning of knowledge ...” (NASB, Proverbs 1:7a)

“Praise the LORD! How blessed is the man that fears the LORD ...” (NASB, Psalms 112:1a)

These passages are similar to the following saying from the Turkic epic *Oğuznamə*:

“Vay ol kişiyə kim, Tanrıdan qorqmaya.” (Atalar sözü, 2004, 255)

(Woe to the man who does not fear God)<sup>4</sup>

God’s moral character is revealed in the Bible as good: holy and just, and at the same time loving and merciful. This truth is also reflected throughout the Hebrew Bible. Psalm 145 has some lines that beautifully portray the divine characteristics:

“The LORD is gracious and merciful;  
Slow to anger and great in lovingkindness.  
The LORD is good to all,  
And His mercies are over all His works ...

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<sup>4</sup> All the translations from Turkic languages to English are by I.Pavlii

The LORD is righteous in all His ways

And kind in all His deeds.” (NASB, Psalm 145:8-9,17)

Characterizing God as “טוֹב” (tov – good, verse 9) and “חַסִּיד” (chasid – kind, verse 17) corresponds to the Arabic terms such as “لطف” (lutf – gentleness, kindness) and “عناية” (‘inaya – care, providence). The Hebrew terms “רַחֻם” (rachum – merciful, verse 8) and “רַחֲמָיו” (rachamav – His mercies, verse 9) which are used in these verses are etymologically related to the famous Arabic phrase “بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ” (bismillahirrahmanirrahim – In the name of God, the Most Gracious, the Most Merciful).

The similarity between the Hebrew Bible and the Muslim belief in the moral God provided the ground for the emerging of some beautiful lines expressing this belief in Turkic poetry. In the examples below the above-mentioned key terms are highlighted.

From Yunus Emre

“Sensin kerîm sensin **rahîm** Allah sana sundum elim

Senden artık yoktur emüm Allah sana sundum elim” (Anadol, 1993, 77)

(You are generous, You are **merciful**. O God, to You I raise my hand

I have no remedy apart from You. O God, to You I raise my hand)

From Molla Panah Vagif

“Vaqifə, ya Rəbbəna, öz lütfünü eylə pənah,

Səndən özgə kimsədə **lütfü inayət** görmədim.” (Azərbaycan klassik ədəbiyyatından seçmələr, 2005, 405)

(Oh Lord, may Your grace be Vagif’s refuge!

I have not seen any **grace and goodness** in anyone except for You)

As we move down the hierarchy, we see the overall message of each section (Torah, Prophets, Writings) narrow down to more specific ideas and purposes that rarely have exact parallels or similarities in other literatures. This is where God’s dealing with the Hebrew people comes into view more clearly.

The same situation is observed on the level of separate books: the message of each book is more specific than the overarching message of the whole collection, and yet it is not specific enough for finding parallels in Turkic or any other literatures. Only on the lowest level of the hierarchy, smaller literary units express more specific meanings which often have parallels in literary texts of other ethnic groups.

A word of caution is necessary in connection with this discussion. It is important to consider the larger context for ensuring the correct contextual comprehension of the parallel texts. Some passages may look similar when taken separately from the context, but in their context express different or even opposite ideas. Therefore, we should also compare the broader contexts of the Biblical and Turkic texts that look similar. This task requires an overall knowledge of the Hebrew Bible, a sufficient knowledge of the ancient Hebrew language and ancient Near Eastern setting, as well as a good knowledge of Turkic languages and literatures in their historical and cultural context.

### **Proverbs**

According to our research, the book that contains the most parallel texts with national literatures in the Hebrew Bible is the Book of Proverbs. Below are some of the parallels that seem to have similar meanings and fit well in their broader contexts.

Proverbs 12:19

“Truthful lips will be established forever,  
But a lying tongue is only for a moment.” (NASB)

Parallel texts

“Yalan tez ayaq tutar, amma yeriməz.” (Atalar sözü, 2004, 235)  
(A lie quickly stands on its feet, but isn't able to walk)

Proverbs 14:1

“The wise woman builds her house,  
But the foolish tears it down with her own hands.” (NASB)

A parallel text

“Arvad var ev tikər, arvad var ev yıxar.” (Azərbaycan folkloru, 2005, 156)  
(There is a woman who builds the house, and there is a woman who destroys the house)

Proverbs 21:31

“The horse is prepared for the day of battle,  
But victory belongs to the LORD.” (NASB)

A parallel text

“Bağla atını, sonra ısmarla Hakk'a.” (Atasözleri Deyimler Sözlüğü, 2016, 60)  
(Tie your horse, then commit it to God)

### **Ecclesiastes**

The Book of Ecclesiastes is famous for its philosophical meditations on the meaning and purpose of life. In the broader context, the author's thoughts about death are echoed in Yunus Emre's poems, and some of the observations related to the injustice in the world are found in the Mukhammas “Görmədim” by Molla Panah Vagif.

Ecclesiastes 7:2

“It is better to go to a house of mourning  
Than to go to a house of feasting,  
Because that is the end of every man,  
And the living takes it to heart.” (NASB)

Parallel texts from Yunus Emre

“Sabahın sinleye vardum gördüm cümle ölmüş yatur  
Her biri biçäre olmuş ömrin yavı kılmış yatur” (Anadol, 1993, 276)

(In the morning I came to the graveyard and I saw all the dead lying there

Each one has become helpless, has lost his life and is lying there)

“Sana ibret gerekirse gel göresin bu sinleri” (Anadol, 1993, 299)

(If you need a wise lesson, come and see these tombs)

Ecclesiastes 8:8a

“No man has authority to restrain the wind with the wind, or authority over the day of death ...” (NASB)

A parallel text from Yunus Emre

“Ey dünyayı seven kişi!

Bir gün kopup gitmek gerek ...” (Anadol, 1993, 121)

(O man who loves the world,

One day you’ll have to leave it and go ...)

Ecclesiastes 8:14

“There is futility which is done on the earth, that is, there are righteous men to whom it happens according to the deeds of the wicked. On the other hand, there are evil men to whom it happens according to the deeds of the righteous. I say that this too is futility.” (NASB)

A parallel text from Molla Panah Vagif

“Müxtəsər kim, belə dünyadən gərək etmək həzər,

Ondan ötrü kim, deyildir öz yerində xeyrü şər,

Alilər xaki-məzəllətdə, dənilər mötəbər,

Sahibi-zərdə kərəm yoxdur, kərəm əhlində zər,

İşlənən işlərdə ehkamü ləyaqət görmədim.” (Azərbaycan klassik ədəbiyyatından seçmələr, 2005, 405)

(To put it short, you’ve got to flee from such a world.

For good and evil are not in their right places.

Noble people are humiliated, while villains are honored.

Rich people lack generosity, and the generous ones lack riches.

I have not seen any worthy judgments in the works which are done.)

### **Psalms**

Another book of the Hebrew Bible that contains passages with parallels in Turkic poetry is the book of Psalms. It consists of 150 songs on a wide variety of themes including praise, worship, celebration, meditation, complaint, lament, cry for help, cry for revenge etc. Some of the passages from Psalms expressing a yearning for God or describing a believer’s closeness to God can be paralleled with some lines from Yunus Emre’s poetry.

Psalms 73:25

“Whom have I in heaven but You?  
And besides You, I desire nothing on earth.” (NASB)

Parallel texts from Yunus Emre

“Cennet Cennet dedikleri birkaç köşkle birkaç huri  
İsteyene ver sen anı, bana seni gerek seni” (Toprak, 2006, 114)  
(What they call ‘Paradise’ – a few mansions and a few hours –  
You can give it to those who desire it, but I need You)  
“Sensin benim canım canı, Sensiz kararım yokdürür  
Uçmak’ta Sen olmaz isen, vallah nazarım yokdürür” (Toprak, 2006, 145)  
(You are my very soul, without You I cannot stand  
If You are not in Heaven, by God, I won’t look forward to it)

Psalms 92:12-13

“The righteous man will flourish like the palm tree,  
He will grow like a cedar in Lebanon.  
Planted in the house of the LORD,  
They will flourish in the courts of our God.” (NASB)

A parallel from Yunus Emre

“Ko ben yanayım tüteyim, bülbül olayım öteyim  
Dost bahçesinde biteyim, açılıben solmayayım.” (Toprak, 2006, 63)  
(May I burn, be a nightingale and sing  
May I grow in the Friend’s garden, bloom and never wither)

### **Jeremiah**

The books of Proverbs, Ecclesiastes, and Psalms belong to the ‘Writings’ section. But parallels can also be found in the other two sections. As an example, the following passage from the Book of Jeremiah in the ‘Prophets’ section can be compared to a stanza from Molla Panah Vagif’s poem:

“An appalling and horrible thing  
Has happened in the land:  
The prophets prophesy falsely,  
And the priests rule on their own authority;  
And My people love it so!  
But what will you do at the end of it?” (NASB, Jeremiah 5:30-31)

The parallel text from Molla Panah Vagif

“Alimü cahil, müridü mürşidü şagirdü pir,



Nəfsi-əmmarə əlində sərbəsər olmuş əsir,  
Həqqi batil eyləmişlər, işlənilir cürmi-kəbir,  
Şeyxlər şəyyad, abidlər abusən qəmtərir,

Hiç kəsdə həqqə layiq bir ibadət görmədim.” (Azərbaycan klassik ədəbiyyatından seçmələr, 2005, 404)

(The learned men and the ignorant ones, sheikhs and their followers, elders and their disciples –

All have become captives in the hands of the ego which commands evil.  
They turned the truth into vanity, they commit a great sin,  
The sheikhs are crafty and the worshippers are spiteful;  
I have not seen in anyone the worship worthy of the truth)

## **CONCLUSION**

This paper is just a modest beginning of a possible comparative study of the ancient Hebrew and Turkic literatures. We have endeavoured to outline some general principles of such a comparison and present some examples of parallel texts that have been identified in the course of our study. The results of this study have confirmed our assumption that there are many parallels between the Hebrew Bible and Turkic literatures, and further research can provide a larger picture of the existing similarities. In our opinion, comparative studies of this kind are highly beneficial for people who feel attachment to either of the two literatures. Discovering similar ideas and values in different linguistic and literary forms is important for appreciating cultural diversity and enhancing friendship between people who belong to different ethnic and religious groups.

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## **MULTIPURPOSE LACTOBACILLUS DIVERGENS AS A POTENTIAL BIOFACTORY FOR ADVANCED APPLICATIONS**

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### **Abstract**

New identification techniques supported by novel and strong instruments have resulted in increased knowledge on the diversity of microorganism. *Lactobacillus divergens* is a bacteria listed as potential silage microbial inoculant microorganism in a few patents and patented applications. It can be observed that it is a hidden multipurpose microbe (latent and waiting to be discovered between hundreds of thousands microbe species) when an academic search on electronically published papers specifically focused on that creature.

It has many potential applications in fields of agriculture, pharmacology, medicine, industrial polymer assembly, biosensor production with enzymes and excretes they release. This bacteria also transforms materials exist in its environment to produce many other advanced and specific materials which may find a place in novel advanced processes subfields.

This article is focused on this organism which exists in Turkey, in Isparta conditions and informs the potential ready application procedures which are discovered currently in international research articles and methods databases.

**Keywords:** Multipurpose, microbe, *Lactobacillus divergens*, *Carnobacterium*, enzyme, advanced materials, pharmacology, medicine, polymer, self-assembly, industry

### **1. Introduction**

Developments in microorganism identification techniques have resulted in increased knowledge on the diversity of prokaryotes and eukaryotes in silage (pathogenic or toxic metabolic compound producers), enhanced the understanding of how fermentation occurs in forage crops and how the process can be improved to enhance silage quality. But still, the major challenge of ensilage is to produce high-quality feed that is nutritional, sanitary and stable. High dry matter recovery rate during fermentation is other important required characteristics of the substrates. We may improve fermentation if we fully understand microbial diversity (Avila & Carvalho, 2020).

The main challenge of ensiling is conserving the feed through a fermentative process with high nutritional and microbiological quality with minimum fermentative losses. As additives to improve the fermentation process and preserve the ensiled material, most studies are focused on microbial additives like lactic acid bacteria (Carvalho et al., 2020).

*Lactobacillus divergens* have been reclassified as *Carnobacterium* species (Bernardeau et al., 2006). *Carnobacterium divergens* is found responsible for the tyramin production in vacuumed meat products (Straub et al., 1994).

Lactic acid bacteria and yeasts were identified by analysis of sourdough sponges in Isparta in Turkey. Total 14 sourdough samples were collected from different bakeries from Isparta. *Carnobacterium divergens* (*Lactobacillus divergens*) (6.1%) and other eight lactic acid bacteria were isolated from sourdoughs. Four yeasts were also isolated from sourdough sponges, too (Gül et al., 2005).

Carnobacterium species originated from meat and meat products could be separated by a few biochemical characteristics like presence of meso-diaminopimelic acid in the cell wall, the isomers of lactic acid produced, production of citrulline from arginine and fermentation of some carbohydrates (Montel et al., 1991).

Biochemical and chemical studies were performed on some atypical lactobacilli from chicken meat to classify their taxonomy which showed that most of the poultry strains could be *Lactobacillus divergens*, *Brochothrix thermosphacta*, and *Lactobacillus piscicola*. Biochemical, physiological and chemical criteria's showed that *L. divergens*, *L. piscicola*, and the two unidentified poultry taxa be classified in a new genus (Collins et al., 1987).

*Lactobacillus divergens* is a homofermentative organism by the use of D-[1-14C]-and D-[3,4-14C]-glucose, that *L. divergens* does in fact metabolize glucose principally via the glycolytic pathway. These results suggest that *L. divergens* be reclassified as a homofermentative organism (De Bruyn et al., 1987).

From 12 samples of gariss, a Sudanese traditionally fermented camel's milk, 24 lactic acid bacteria were isolated and phenotypically characterized by biochemical tests and by their fermentation capacity of different carbohydrates. The isolates were classified into 11 groups. A minor groups were classified as *Lactobacillus divergens* (Ashmaig et al., 2009).

Twenty strains of atypical lactobacilli isolated from vacuum-packaged meats in the UK, South Africa and Australia have been compared. Heterofermentative metabolism, production of most of the lactate as the L (+) isomer, a meso-diaminopimelic acid (m-Dpm) type of peptidoglycan and low mol % G+C in the DNA (33-36%) characteristics were common for all strains. Two groups were, however, distinguishable on the basis of sugar fermentation patterns and the presence/absence of lactobacillic acid in the cellular fatty acids. Deoxyribonucleic acid hybridization revealed that these groups represented two closely related species one of which was identified with *Lactobacillus divergens*. *L. divergens* appear as an important components of the micro flora of vacuum-packaged meats (Shaw & Harding, 1985).

## **2. Potential Toxicity**

Tyramine poisoning is caused by the ingestion of food containing high levels of tyramine. If foods/feeds are containing "free tyrosine", they subject to tyramine formation parallel with poor sanitation and low quality foods/feeds usage with temperature abuse or extended storage time. Tyramine is generated by decarboxylation of the tyrosine through tyrosine decarboxylase enzymes derived from the bacteria especially lactic acid bacteria (Marcobal et al., 2012).

## **3. Pharmacologic Properties and Potential Applications**

*Lactobacillus divergens*, are being isolated from meats and other processed meat products as a biogenic amine producing bacteria species (Temiz, 2001). A biogenic amine is a biogenic substance with one or more amine groups. They are basic nitrogenous compounds formed mainly by decarboxylation of amino acids or by amination and transamination of aldehydes and ketones. Biogenic amines are organic bases with low molecular weight and are synthesized by microbial, vegetable and animal metabolisms. In food and beverages they are formed by the enzymes of raw material or are generated by microbial decarboxylation of amino acids. Some toxicological characteristics and outbreaks of food poisoning are associated with histamine and tyramine (Santos, 1996).

Tyramine and octopamine and are vertebrate adrenergic transmitters. They are decarboxylation products of the amino acid tyrosine. Tyramine is the biological precursor of octopamine. Both compounds are independent neurotransmitters act through G protein-coupled receptors. Octopamine modulates behaviors and sense organs of insects to respond correctly to external stimuli. These two phenolamines are the only biogenic amines restricted to invertebrates. Pharmacologists have focused to use them as promising targets for new

insecticides (Roeder, 2005). Tyramine is the most frequent biogenic amine found in cheese and is also commonly found in other fermented foods and beverages (Fernández et al., 2007).

An electrochemiluminescence sensor using a poly (luminol-benzidine sulfate) electrode was fabricated for dopamine detection by Wang et al. (2017). With a constant ratio of 2 : 3 concentrations of luminol and benzidine sulfate used as precursors to synthesize poly (luminol-benzidine sulfate) by cyclic voltammetry. Tyramine oxidase was immobilized onto the surface of the resultant poly (luminol-benzidine sulfate) film to use to oxidize dopamine and produce H<sub>2</sub>O<sub>2</sub> for electrochemiluminescence detection. The electrochemiluminescence signal increases linearly with the concentration of dopamine with the optimized electrode. This provides a promising sensor with high sensitivity and selectivity for dopamine detection.

Darr & Calabro (2009), characterized a two-step enzymatic cross-linking chemistry for production of tyramine-based hyaluronan hydrogels. Hyaluronic acid, an immunoneutral polysaccharide that is ubiquitous in the human body, is crucial for many cellular and tissue functions and is in clinical use for decades. Chemically modified Hyaluronic acid can be transformed into many viscoelastic solutions, soft or stiff hydrogels, electrospun fibers, non-woven meshes, macroporous and fibrillar sponges, flexible sheets and nanoparticulate fluids derived from the chemical crosslinking of reactive groups by chemistry or by radical polymerization. Cell therapy, regenerative medicines, encapsulation of cells, injection into tissues are a few of applications (Burdick & Prestwich, 2011).

Injectable hyaluronic acid-tyramine hydrogels (HA-Tyr hydrogels) were developed for the treatment of rheumatoid arthritis by Kim et al. (2011). Xu et al. (2013) report an injectable hydrogel system that incorporates interferon- $\alpha$ 2a in “hyaluronic acid-tyramine (HA-Tyr) hydrogels” for liver cancer therapy. IFN- $\alpha$ 2a-incorporated HA-Tyr hydrogels effectively inhibited tumor growth.

Fast in-situ formation of dextran-tyramine hydrogels for in vitro chondrocyte culturing was proposed by Jin et al. (2008). Dextran hydrogels were formed in situ by enzymatic crosslinking of dextran-tyramine conjugates (dex-TAs). Teixeira et al. (2012) explored the potential of covalent bond formation by Dex-TA based hydrogels promote self-attachment (and cell-attracting) during the enzymatic crosslinking reaction.

Donnelly et al. (2017) showed the tunable mechanical properties of photocrosslinked tyramine-substituted hyaluronate hydrogels in their study. Loebel (2016) generated a HA-Tyr hydrogel platform that is an attractive matrix for stem cell engineering.

Derivatives of xylans were synthesized from corncob xylan by carboxymethylation, oxidation with different molar ratios of periodate and by reductive amination with tyramine. Peroxidase-Sensitive Tyramine Carboxymethyl Xylan Hydrogels (Tyr-CMX) were used for Enzyme Encapsulation (Spasojevic et al., 2019).

Enzymatically cross-linked Tetronic-Tyramine Hydrogels were characterized for the usage as injectable intraocular lens for cataract patients by Lee et al. (2011). Sakai & Kawakami (2008) proposed an ionically and enzymatically crosslinkable alginate-tyramine conjugate as materials for cell encapsulation to use the capsules in the treatment of diseases. The conjugate gel showed no obvious cytotoxicity for cells. This alginate-tyramine conjugate was found as a promising material for use in cell-enclosing capsules for cell therapy. The development of a nanocrystalline apatite reinforced crosslinked hyaluronic acid-tyramine composite as an injectable bone cement was informed by Pek et al. (2009).

#### **4. Industrial Properties and Self-Assembling Polymer Applications**

Tyramine was polymerized by an enzymatic reaction with horseradish peroxidase to use the polymer for recovery of platinum and palladium metals from acidic media. The obtained poly (tyramine) was macroporous aggregate particles were selectively adsorbed platinum and palladium. This polymer could be applied to the treatment of wastewater containing precious metals (Yoshimura et al., 2012).

Ehsani (2015) present that the electrodeposited poly tyramine (PTy) film by using potentiostatic method on the surface of the graphite electrode is fractal object with semiconductor properties. The relation between fractal dimension and anomalous diffusion were investigated and the nature of the counter anions and anomalous diffusion parameter  $\gamma$  were found interconnected.

An amperometric tyramine biosensor was constructed by Batra et al. (2012), based on covalent immobilization of black gram tyramine oxidase onto citric acid-capped silver nanoparticles bound to surface of Au electrode through cysteine self-assembled monolayer.

Ehsani et al. (2014) described in detail a novel method of electrochemical preparation of poly tyramine (PT), transforming anionic surfactants to micelles in aqueous media. Electropolymerisation process with sodium dodecyl sulfate at an oxidation potential lower than in an aqueous media yielded organized poly tyramine films. With respect to Ni-PT/G, this Ni-SDS-PT/G electrode shows a higher catalytic performance for the electrocatalytic oxidation of methanol.

## **5. Conclusions**

Microbial fermentation of silage and foods; sourdough bread production; beneficial lactobacilli addition in foods; lactic acid production; biofabrication of tyramine biosensors; hyaluronic acid hydrogel self-assembly for biomedical and advanced polymer productions; poultry health improvement applications via microbial biodiversity applications; materials and drug delivery inside tissue by injection; stem cell behavior modifier; injectable nanocrystalline composite bone cement production; conjugate materials for cell encapsulation; enzyme encapsulation hydrogel production; self-attaching and cell-attracting biomaterial production; electrochemiluminescent biosensors for hormone detections; precious metal recovery from wastes; electroactive nano film production; tunable mechanical polymer production; controlled release biomaterial production are a few of potential applications that currently proved by many international research teams worldwide.

This bacteria exists in Turkey in Isparta conditions. A multidisciplinary project including researchers and companies from related sub-sectors to produce these proved materials might be a good to discover micro and nano worlds more for the benefit of humanity and country.

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## **REPRESENTING SCOTLAND AS THE OTHER IN 18<sup>TH</sup>-CENTURY BRITISH TRAVEL WRITING**

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Particularly after the political union of Scotland and England and abolition of Scottish Parliament in early 1707, the literary interest in the landscapes and people of Scotland proportionally grew and the process by which Scotland was discovered in literature began in the early eighteenth century. Daniel Defoe's *A Tour Through the Whole Island of Great Britain* (1724-6) and Tobias Smollett's *The Expedition of Humphrey Clinker* (1771) along with *A Journey to the Western Islands of Scotland* by Samuel Johnson (1775) are regarded as prominent early attempts to describe and portray Scotland in travel writing aimed at both English and Scots readers. The aim of this study is to illustrate how these travel and imaginative texts figured the people and/or the landscapes of Scotland as "the other".

Otherness is simply defined as "being or feeling different in appearance or character from what is familiar, expected, or generally accepted" (The Cambridge Dictionary). The term itself has recently become a crucial concept in identifying differences, alterity, diversity and even selfhood and nationality in modern and post-modern political and social studies. Particularly, Edward Said's *Orientalism* (1978) is influential in arguing that the orientalist discourse of the West represents the Orient (East) in terms of its cultural otherness. Said argues that Orientals are often depicted as unsavoury and barbarian, and thus denigrated as an antithesis to a supposedly more enlightened Western culture (183). However, otherness now in a broader sense refers to representations of differences in race, language, ethnicity, religion, gender and national identity. In travel writing, otherness is used in two slightly different senses according to Carl Thompson. While in the general sense it "simply denotes the process by which the members of one culture identify and highlight the differences between themselves and the members of another culture", in a more powerful sense "it has come to refer more specifically to the processes and strategies by which one culture depicts another culture as not only different but also inferior to itself" (132).

Considering these common historical definitions and contemporary connotations of the term "otherness", this study sets out to demonstrate how English travel writers in eighteenth century and non-Scots characters in Smollett's *The Expedition of Humphrey Clinker* represent differences between the two neighbouring nations. To do so, the depictions of natural landscapes – those of the Highlands in particular – will be examined to establish connections between place and national identity.

### **The Image of the Scots in the Eighteenth Century**

Preston claims that "the traditional English view[ed] the Scots as dour, incorrigible and pragmatic" in the eighteenth century (xxxii). This prejudiced view is mainly caused by representations of the Scots in British travel writings as the primitive, barbarous and savage due to the differences in language, religion, way of living and economy. Daniel Defoe sets a good example in illustrating this general divergence. While celebrating the Union and making propaganda on the benefits of it for the Scots, he cannot avoid representing the Scots as the other in cultural context. In his *Tour*, Defoe claims that "... nor is there the least appearance of anything English, either in customs, habits, usages of the people, or in their way of living, eating, dress, or behaviour; any more than if they had never heard of an English nation ..." (563).

Language plays a dominant role in defining a nation. Therefore it is not surprising that the Scots are represented as different from their south-side neighbours due in large part to their “rustic dialect” (Smollett 210). Johnson names this dialect as “Earse language – the rude speech of a barbarous people” (22, 104) and finds it so different from his native English language that he needs support from local interpreters while wandering among the Highlanders (28). Similarly, claiming the superiority of the English in humour and wit to the Scots, Smollett’s imaginative Welsh character Jerry Melford observes that “a North-Briton is seen to a disadvantage in an English company, because he speaks in a dialect they can’t relish, and in a phraseology which they don’t understand” (Smollett 193). However, Defoe claims that, particularly after Cromwell’s military initiative, the Highlanders “speak perfect English, even much better than in the most southerly provinces of Scotland” (661). Likewise, Johnson argues that “their language seems to have been learned in the army or the navy, or by some communication with those who could give them good examples of accent and pronunciation” (31). In addition, it is also known that after the law about disarmament of Highlanders was enforced and they were militarily civilized by Cromwell and his forces, the English built schools at which the only subject taught was English (Johnson 23). Therefore, this enables the western Highlanders to acquire the English accent and dialect in a smoother way.

As seen above, portrayals of the Scots’ dialect in eighteenth-century travel writings suggest that early British travellers find the Scottish language especially spoken in the Lowlands Scotland relatively different from the way they speak in terms of phraseology, lexis varieties and intonation. Thus, by constructing schools and military units where “true” English is taught, it is aimed to set a more common and understandable language between the two nations since the language is regarded as a significant factor in shaping cultural identity.

Another factor to be considered in cultural otherness is religion. In travel writing from eighteenth century onwards, Christianity along with civilization and commerce are assumed to be ‘three C’s’ that raise other peoples to a higher level of material, moral and intellectual development (Thompson 145). Although Johnson claims that “the religion of the Islands is that of the Kirk of Scotland” (95), it is not possible to suggest a religious uniformity in eighteenth century Scotland. Defoe observes that the Lowland Scots all go to the kirk as a result of their custom (584). He is even startled to see a crowd of seven thousand people in an outdoor congregation preached by an old Cameronian and wishes an equal vehemence to such sacred institutions for his own country (594). It is clear from his visions that Defoe overviews the Scots as more religious than the English. On the other hand, when he heads north, he finds Highlanders knowing “so little of religion, or of the custom of Christian, or the worship of God in a Christian island” (671). Johnson also reports that the majority of the prayer houses that they visit in the Highlands are of poor condition or in complete ruins and he blames the total ignorance, vanity and laziness of Highlanders for the cause of this religious decay (58). Thus, Defoe reports that “his Majesty’s gift of 1.000l annually to the Assembly of Scotland, for sending ministers and missionaries for the propagating Christian knowledge in the Highlands, is certainly one of the most needful charities...” (671).

The profaneness found in the Highlands Scots astounds the British travellers and so they represent these primitive people in their travelogues as the other to not only the English but also their Lowlands neighbours in religion context. Particularly, the accounts of the religious difference observed between the Highlanders and the Protestant British result in viewing the Scots as the other in many British travelogues in the eighteenth century.

Food, dress and households are significant signs to represent the daily life of common people within a certain country. Johnson asserts that rather than the gentry and nobility “the true state of every nation is the state of common life” (20). Therefore, it is crucial to look at the portrayals of the Scots in everyday life to compare their national identity with the English. Thompson argues that “food often serves as a powerful signifier both of cultural self-



definition and of cultural difference” (131). Although the Bramble family in Smollett’s *Humphrey Clinker* fears that they will not find anything to eat in Scotland due to their general presumption of the Scots as poor people, they are amazed at finding abundance of relatively better food in the lodgings that they stay at in the Lowlands (207, 259). Johnson also believes that the breakfast, whether of the Lowlands or mountains, excels the English and finds the lunch and dinner in the Western Islands very little different from that of England (50). However, Johnson doesn’t like the national oatmeal bread of the Scots and prefers the English wheat flavour bakery. Nor does he find the meat, which the Scots are even now proud of, equally preferable to what he eats in England. Even though Defoe in his *Tour and Mrs Tabitha Bramble* in *Humphrey Clinker* complain about the poverty of the ordinary people, it is not safe to claim that these representations imply that eating habits of the Scots are inferior to those of the English.

Jerry Melford, nephew of the protagonist Matthew Bramble in Smollett’s novel, claims that clothes they wear make the general appearance of labourers in Scotland “lank, lean, hard-featured, sallow, soiled, and shabby”. He further argues that “their little pinched blue caps have a beggarly effect” (207). His uncle Matthew Bramble also thinks the Scottish peasants and hinds are not comparable to those of the rich countries of South Britain (208). Similarly, in their letters, many characters in the novel portray Highlanders as wild and savage without shoes or stockings (232). For instance, Jerry thinks so ill of North-Britons that he presupposes that the Scots ladies are not “remarkable for personal attractions” (280). On the other hand, Johnson observes a proportional improvement in the dressing of Highlanders after the law intended to abolish the dissimilitude of appearance between the Scots and other inhabitants of Britain (46).

From these accounts, it can be claimed that although there seems to be some improvements in the way of life that the Scots have after the Union, they are mostly represented as the inferior other due to their primitive and savage appearance in these travelogues.

### **Poverty vs. Prosperity**

The main sources of income in eighteenth-century Scotland were agriculture and stockbreeding. Before the Union of the Parliament in 1707, the Scots had limited commerce with France and Scandinavia. The lack of trade and ill methods employed in husbandry are regarded as the main reasons for poverty in Scotland by British travellers (Defoe 660, Johnson 11). For instance, Johnson observes that the Lowlands of Scotland – between Edinburgh and England in particular – are completely barren and naked without even any oak or thorn (9). He claims that this barrenness is so hopeless that “the owner, when he was required to pay the usual tax, desired rather to resign the ground” (16). Moreover, Johnson’s travelogue clearly demonstrates that although the abundance of sheep, goats, cattle and some other wild animals in the Highlands is not deniable, the occupation of stockbreeding is still far behind that of England (55). Therefore, Johnson argues that before the Union, which enabled the Scots to get acquainted with the English manners, “the culture of their lands was unskilful, and their domestic life unformed” (24).

Similarly, Daniel Defoe assumes that the earth and its natural sources are there to be harvested by man. This philosophical outlook is also seen in colonial travel writings of most nineteenth century emissaries. However, according to Defoe, “the wonder of all the towns of North-Britain; especially, being so near England, that it has all the invitations to trade that Nature can give them, but they take no notice of it” (596). He sees Scotland as a new source of British improvement and celebrates the prosperity that the Union promises to bring to this country. Therefore, Defoe believes that with the right application and judgement and with English methods in husbandry and cultivation of the earth, Scotland “might be equal to even the richest, most fruitful, most pleasant, and best improved part of England” (566). Defoe’s

narratives resemble the colonial discourse that is quite widespread in the nineteenth century travel writing. Thompson exemplifies this genre with Henry Morton Stanley's bestselling book *Through the Dark Continent* (1878). He suggests that "Stanley's account of Africa is like an investigation into the natural resources and lucrative opportunities for trade" (138). It can also be said that, in his *Tour*, Defoe's portrayals of Scotland involve the search for commercial potential and agricultural development. While Stanley explores Africa to provide profit and self-advancement for traders and investors in Europe (Thompson 138), Defoe describes an already explored land and champions its potential improvement for the sake of the Scots and Union which he helped to bring into existence.

### **Othring the Other: Lowlands and Highlands Scots**

It is difficult for any travel writer to conclusively define national identity in eighteenth-century Scotland. Thus, the narratives of these travelogues seem to represent not only a national difference between Scotland and England but also a broader cultural boundary between Lowlands and Highlands Scots. Particularly, nature appears to be a barrier between two different nations. In Smollett's novel, a Lowlands-born Scot, the Welsh protagonist Matthew Bramble elaborates on this difference:

They [Highlanders] are undoubtedly a very distinct species from their fellow-subjects of the Lowlands, against whom they indulge an ancient spirit of animosity; and this difference is very discernible even among persons of family and education. The Lowlanders are generally cool and circumspect, the Highlanders fiery and ferocious (245).

Likewise, although the Highlands of Scotland, which Defoe calls "the real Caledonia" (627), are romanticised with descriptions of wild natural scenery, people dwelling in this wilderness are portrayed as idle and ignorant savages living in very poor conditions. Johnson claims that the state of the mountaineers and the islanders in the north of the country is not properly known to even the southern inhabitants of Scotland (79). They are believed to be strangers to the language and the manners of their southern neighbours and therefore represented as the other of the other by eighteenth-century British travel writers.

The primitivism and savageness of Highlanders are also explained by the harsh climate (Defoe 560) and severe mountainous landscape of the region (Johnson 38). Johnson claims that "mountainous countries [like deserts and forests] commonly contain the original, at least the oldest race of inhabitants, for they are not easily conquered, because they must be entered by narrow ways" (38). He also adds that "mountaineers are warlike, because by their feuds and competitions they consider themselves as surrounded with enemies, and always prepared to repel incursions, or to make them" (40). However, Thompson claims that this primitivism is sometimes celebrated by some travel writers who 'other' the peoples that they visit in a more favourable way under the influence of Romanticism (150). The hard primitivism of the Highlanders of Scotland, who are believed to embody valour and bravery, is also favourably represented by Defoe and Johnson, particularly in their narratives of the Scots' military success. In one of his accounts, Johnson champions this military power and associates it with patriotism:

... England has for several years been filled with the achievements of seventy thousand Highlanders employed in America. I have heard from an English officer, not much inclined to favour them, that their behaviour deserved a very high degree of military praise; but their numbers has been much exaggerated ... Those that went to the American war, went to destruction. Of the old Highland regiment, consisting of twelve hundred, only seventy-six survived to see their country again (89).

### **Conclusion**

Thompson argues that all travel writing engages in an act of othering since the accounts they premise claim to bring news of people and places which are to some extent

unfamiliar or ‘other’ to the readers (133). However, in Thompson’s stronger sense of the term, it is disputable to claim all travelogues other the cultures they visit. By examining portrayals of the Scots and their country in the light of cultural otherness in Defoe’s, Johnson’s and the Welsh characters’ in Smollett’s novel, it can be said that Scotland is represented as the other in the eighteenth century travel writing both in weak and strong senses of the term. The way the Scots speak, the things they eat and drink, the clothes they wear and the faith they believe in, along with their general state of impoverished life, are not only compared to the standard English customs and manners but also represented as the inferior other to the glorified English culture.

However, in Scotland’s case, it is not easy to claim a kind of colonial othering as exemplified by Thompson in Stanley’s narratives of Africa. Defoe’s obsessive and detailed accounts of economical potentials in Scotland and the sarcastic language he uses for the Scots in his *Tour* might be likened to those of Stanley. Moreover, Johnson’s and Smollett’s usage of pejorative language about the Highlanders, which widen the political and social chasm between England and Scotland, may resemble the portrayals of the Africans in colonial context. Nevertheless, it is known that these travel accounts are written to propagate the Union of parliaments and celebrate the mutual gains it promised to bring about for both England and Scotland. In addition, the hard primitivism of the Highlanders and the masculinity, machismo and military success they produce are represented with praise and magnitude in these narratives. Therefore, colonial othering is not explicitly noticed in either Defoe’s or Johnson’s travelogues.

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## LEXICAL RHETORICAL DEVICES IN THE AZERBAIJANI AND ENGLISH LANGUAGES

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### Abstract

One of the broadest fields of linguistics is stylistics. In linguistics, style is important in terms of how the author dominates the language, how he knows the language, how creative he is. In this process, the main tools that we can use are the rhetorical devices of the language. In the literary language, stylistic means are mainly divided into three parts - lexical, syntactic, and phonetic stylistic means.

In this study, mainly lexical stylistic devices of Azerbaijani and English are taken as the object of research, information was provided on the definition of devices available in both languages, the history of their creation and statistics of their development were also investigated. It is very important to understand the essence of each figure of speech, and here we share the idea of Thomas A. Knott that "The most important element in a human being is his thought. The next is the manner in which he communicates his thought." We have tried to clarify the problem with examples used in our research with the speeches by different writers and statesmen in both languages.

Tropes and schemes are a way to improve the effectiveness, clarity, and enjoyment of writing. Authors of nonfiction, poetry, and drama use variety of tools to create emotional mood, attitude, and characterization in their works. Just as a woodworker uses many tools and techniques to craft a piece of furniture, a skilled author uses different devices and techniques of language and storytelling to create a piece of writing. Stylistic devices are one of the most effective implements that an author possesses to draw a mood more artfully or to persuade more eloquently. While reading we try to identify the literary devices used in the piece. Then make a connection between those devices and the themes of the text.

In particular, the stylistic devices, which are little studied in the language, but very common, have been selected.

**Key words:** stylistic devices, language, tools and techniques, linguistics, lexical

### Introduction

**Metaphor** ['metəfə(r)] (from Greek *μεταφορα* - *metaphorá* "transference") is transference of the characteristics of one phenomenon to another, showing likeness or similarity in things that are basically different (without using "as" or "like" as in simile). A metaphor states that  $a=b$ . It is an expressive characterization of an object.

Metaphor is a figure of speech which makes an implicit, implied or hidden comparison between two things that are unrelated but share some common characteristics. In other words, a resemblance of two contradictory or different objects is mainly based on a single or some common characteristics. **E.g.:**

Ah, Bakı, doğma Bakı, deyə düşündüm, mən səndə tapdığım ulduzumu itirdim, nakam ilk məhəbbətə vida etdim (Oh, Baku, native Baku, I thought, I lost the star I found in you, I said goodbye to my first love) [1, 97]

Memory is a crazy woman that hoards colored rags and throws away food; The skies of his future began to darken.

**Personification** [pəˌsɒnɪfɪˈkeɪʃ(ə)n] (from Greek προσωποποιεῖα - “making face”) – is the qualities of a living thing (either animal or human) given to an inanimate lifeless object to visualize it. Personification is a figure of speech in which a thing, an idea or an animal is given human attributes. The non-human objects are portrayed in such a way that we feel they have the ability to act like human beings. **E.g.:**

Şəhərin nəbzi burada döyünürdü, sanki şəhərin şah damarı idi. Nəhayət, bir axşam uğultu kəsildi (The pulse of the city was beating here, as if it were the lifeblood of the city. Finally, one evening the roar ceased);

The ship began to creak and protest as it struggled against the rising sea; My dog pranced around like a beauty queen.

**Anthropomorphism** [ˌænθrəpəˈmɔːfɪz(ə)m] (Greek ἀνθρώπος “human being” + morphism “suffix”) also is a type of personification that gives human characteristics to non-humans or objects especially animals. However, there is a slight difference between these two devices. Personification is an act of giving human characteristics to animals or objects to create imagery, while anthropomorphism aims to make an animal or object behave and appear like they are human beings.

Pinocchio, the famous wooden doll was anthropomorphized when he was given the ability to talk, walk, think, and feel like real boy. Fables and fairy tales usually have characters that can serve as anthropomorphism examples. **E.g.:** Siçan bəy Tık-tık xanımı görcək: “Tık-tık xanım hara gedirsən belə?” (As Mr. Mouse saw Tik-tik khanum: "Tik-tik khanum (lady) (the bug beetle is meant), where are you going?" (from Azerbaijan child literature).

A lion fell in love with beautiful maiden and proposed marriage to her parents;

**Metonymy** [miˈtɒnɪmi:] (from Greek μετωνυμία - metōnymía “renaming” or “change of name”) – is the substitution of one object by another on the basis of their common existence in reality. It is a figure of speech that replaces the name of a thing with the name of something else with which it is closely associated. We can come across examples of metonymy both from literature and in everyday life. **E.g.:**

Gözəl bacısının dediklərini bu qulağından alıb, o qulağına verirdi. (Gozal gave what his sister said from one of her ear and gave it to another) (Bu qulağından alıb, o qulağına vermək – azeri idiom which means not to obey, to listen to what is said) .

The orders came directly from the White House; I am fond of Dickens.

**Synecdoche** [siˈnɛkdəki] (from Greek συνεκδοχή – synekdochē “perceiving together”) – is the use of a part to denote the whole or vice versa. Using a part of a physical object to represent the whole object. Synecdoche may also use larger groups to refer to smaller groups or vice versa. It may also call a thing by the name of the material it is made of or it may refer to a thing in a container or packing by the name of that container or packing. **E.g.:**

Tacirlərimiz sonyalara bənd olacaqmış,

Bədbəxt tükəzbanları neylərdin, ilahi?!

(Our merchants will fall in love with sonyas (foreign ladies) ,

What would you do, unfortunate tukazbans (native ladies), divine ?!) (M.A.Sabir)

If I had some wheel (caris meant), I'd put on my best threads and ask for Jane's hand in marriage; White-collar criminals.

**Irony** [ˈaɪrəni] (**ridicule**) (from Greek εἰρωνεία - eirōneía “mockery concealed”) is a direct contrast of two notions, **which means to express an idea not in a direct way, but in a covered way - in signs, where one of the main conditions is irony.** In other words, the writer says one thing, but really means the opposite to produce a humorous effect, or to express a feeling of irritation, displeasure, pity, or regret. **E.g.:**

Olsun də. Guya ki, məktəbi qurtaranda mənə ağzi ilə quş tutacaq (Let it be. It's as if he going to catch a bird with his mouth when he finishes the school;) (İ.Shikli).

Xi... xi... xi... Bəli, ölümlər elə bilirlər ki, dirilər halva yeyir (Ha... Ha ... Ha... Yes, the dead think that the living eat halva (traditional sweet) (S.Rahimov).

The food was so delicious I took it home for my dog;

The owner of a butcher shop is a vegetarian! [2]

**Humor** ['hju:mər] is from Latin humour, “body fluid” is a literary tool that makes audience laugh, or that intends to induce amusement or laughter. Its purpose is to break the monotony, boredom and tedium, and make the audience’s nerves relaxed. It is something that is funny, comical, or amusing. There are many types of humor, and what appears humorous to one person may not be humorous to another. **E.g.:**

Əvvəlcə məni döymək üçün atamın beynini dolduran, döymək istəyəndə də əlindən alan anamı başa düşə bilmirəm (I can't understand my mother, who at first fills my father's brain to beat me, and then takes him away when he tries to beat me) [3, 18];

“Doctor, when my hand gets better, will I be able to play the piano?” “Of course” said the doctor. “That’s great. I could never play the piano before!”.

Note: Hyperbole or exaggeration, sarcasm, irony and pun are considered to be the types of humor.

The word **sarcasm** ['sɑ:kaz(ə)m] comes from the Greek word σαρκασμός - sarkasmos, which means “to tear flesh, bite the lip in rage, sneer”. Sarcasm is a remark made mockingly, ironically, or in bitter contempt so as show some foolishness on the part of the interlocutor. Sarcasm can be quite harsh and biting, or it can be said in teasing jest. Sarcasm examples often employ irony, though this is not a requirement. If a writer wants to correct the shortcomings of the person in front of him by making fun of the shortcomings of the event, he exposes the target of criticism in a very hard way [4, 246].

Note that situations can be ironic, but only people can be sarcastic. **E.g.:**

Dilbər – Gülüş can, diliniz çox iti deyilmi?

Gülüş – Bağışlayınız, təzəcə itilətdirmişəm, çarxdan indi gəlmişdir.

Dilbər – Deyirəm axı... Ancaq gözləyiniz, daşa toxundurmayasınız.

Gülüş – Qorxusu yoxdur... Sınamışam, daşdan keçir, ancaq bircə dana gönünə işləmir, batmır ki, batmır.

(Dilbar - Gulush, dear, isn't your tongue very sharp?

Gulush - I'm sorry, I have just sharpened it (tongue), it's off the knife sharpener now.

Dilbar - Yes, I see ... But be careful, don't touch it the stone.

Gulush - There is no fear ... I have tried, it passes through the stone, but it does not work on a single calf skin (here the very ‘dull’ person in meant), it does not sink, it does not sink) (J.Jabbarli).

Do you really think this country is going to elect a black guy from the south side of Chicago with a funny name to be president of the US? (B.Obama).

“Honesty is the best policy - when there is money in it” (Mark Twain).

The word **satire** ['sɑ:tʌɪə] comes from the Latin word satur “full”. Satire is a technique employed by writers to expose and criticize foolishness and corruption of an individual or a society by using humor, irony, exaggeration or ridicule. It intends to improve humanity by criticizing its follies and foibles. A writer in a satire uses fictional characters, which stand for real people, to expose and condemn their corruption. Satire and irony are interlinked. Irony is the difference between what is said or done and what is actually meant. Therefore, writers frequently employ satire to point at the dishonesty and silliness of individuals and society and criticize them by ridiculing them. There is a very interesting epigram for satire in English: “Satire is a lesson; Parody is a game”.

Satire is also a violent, revealing and bitter laugh in literature. Satire arises when a writer writes about an event with anger and hatred, laughs bitterly, and expresses his hatred of any social group or negative habit through bitter laughter. **E.g.:**

Kərəmov. Mənə toxunublar, Mirzə Hüseyn. (Bir qədər sükutdan sonra). Aslanı yaralayıblar. Aslan yaralananda neyləyir, bilirsənmi, Mirzə Hüseyn?

Mirzə Hüseyn. Bilmirəm, yoldaş Kərəmov. Mən məktəbdə oxuyanda həmişə heyvanat dərindən zəif qiymət alardım.

(Karamov. I was touched, Mirza Hussein. (After a pause). They wounded the lion. Do you know what a lion does when it is injured, Mirza Hussein?)

Mirza Hussein. I do not know, comrade Karamov. When I was in school, I always got a bad grade in animal studies (zoology in meant) (S. Rahimov).

“Satire is a kind of mirror in where a man sees everyone’s face but nit his own”. (Jonathan Swift).

**A pun** [pʌn] (of uncertain origin, perhaps from Latin punctum “ fine point” or “quibble”) [5] is a play on words in which a humorous effect is produced by using a word that suggests two or more meanings or by exploiting similar sounding words having different meanings. Puns are figures of speech based on the inherent ambiguities of language. Although puns are commonly regarded as a childish form of humor, they are often found in advertisements and newspaper headlines.

Puns (jinas in Azerbaijani language) are words that have the same form but different meanings. But *tajnis* (the name of the rhetorical device in Azerbaijani language) are poems whose rhymes are puns [4, 261]. **E.g.:**

Qışda dağlar ağ geyinər, yaz qara,  
Sağ əlində ağ kağıza yaz qara.

(In winter the mountains are dressed in white (ağ) , in spring black (yaz – spring; qara – black),

Write with black (yaz – imperative form of the verb to write; qara - black) color on white (ağ) paper in the right hand) (Ashik Alasgar)

A vulture boards a plane, carrying two dead possums. The attendant looks at him and says, “I’m sorry, sir, only one carrion allowed per passenger.”

A small boy swallowed some coins and was taken to a hospital. When his grandmother telephoned to ask how he was, a nurse said, ‘No change yet’.

**An epithet** [ˈɛpɪθɛt] (from Greek: epitheton, (attributed, addition”) is a descriptive literary device that describes a place, a thing or a person in such a way that it helps in making the characteristics of a person, thing or palace more prominent than they actually are. An epithet is as a nickname or descriptive term that is added to someone’s name that becomes part of common usage. For example, in the name Alexander the Great, “the Great”; in Suleyman the Magnificent, “Magnificent” is an epithet. The epithet plays an important role in the emergence and evaluation of one or another character traits of the described event [6, 131].

**E.g.:**

İnci qumlar üstündə yenə verib baş-başa, yayı vuraydıq başa (If only we could sit together on pearl sands, and be happy till the end of summer) (M. Mushfig. I wish it was that garden again)

Ten-thirty is a dark hour in a town where respectable doors are locked at nine. (T. Capote);  
He sat with Disy in his amis for a long silent time (F. Scott Fitzgerald).

**An oxymoron** [ˌɒksɪˈmɔːrən] is a figure speech that puts together opposite elements. The combination of these contradicting elements to reveal a paradox, confuse or give the reader a laugh. The word oxymoron is derived from the Greek phrases oxus and móros, meaning a mix of “sharp and keen” and “dull and dumb”. The common oxymoron phrase is a combination of an adjective proceeded by a noun with contrasting meanings. As with many other literary and rhetorical devices, oxymorons are used for a variety of purposes. Sometimes they are used to create some sort of drama for the reader or listener, and sometimes they are used to make the person stop and think, whether it is to laugh or to ponder.

Oxymoron arises as a result of a combination of words that contradict each other to make the expression artistic and effective, and has an individual character [7, 134]. **E.g.:**

“Səyahətnamə”nin insanı güldürə-güldürə ağladan məzmununu dərhal xəyalımdan keçirdim və ixtiyarsız olaraq gözlərim yaşardı (I immediately imagined the content of the “Travelogue”, which made people cry in laugh, and my eyes were involuntarily filled with tears) (M.S. Ordubadi “Foggy Tabriz”).

Ən parlaq gündüzlər gecədən doğar (The brightest days are born from night (or darkness)). (H.Javid)

“Modern dancing is so old fashioned” - Samuel Gildwyn

“I like a smuggler. He is the only honest thief” - Charles Lamb.

**A paradox** ['parədɒks] is a statement that contradicts itself, or that must be both true and untrue at the same time [8]. It is from Greek paradoxon “contrary to expectation, incredible”, “from para – “contrary to” + doxa “opinion”, from dokein “to appear, seem, think”. Paradoxes are quirks in logic that demonstrate how our thinking sometimes goes haywire, even when we use perfectly logical reasoning to get there. At that most basic level, a paradox is a statement that is self contradictory because it often contains two statements that are both true, but in general, cannot both be true at the same time.

The term paradox arose for the first time from the Greek Epimenides, who put forward the well-known idea that “all Cretans are ever liars.” [9]. It means “strange, unexpected” in Greek. This is when two or more ideas come together to create a conflict. This is a judgment that proves that a particular judgment is both true and false. **E.g.:**

“Bir onu bilirəm ki, heç nə bilmirəm” (“I know that I know nothing”) - Socrates

“Oxuma-yazma istəyənlərə müjdə, dərhal bu nömrələrə zənd edin” (“Good news for those who want to read and write, call these numbers immediately”) – Advertisement

Dənizlidə dəniz yoxdur (There is no deniz (sea) in Denizli (a city in Turkey).

Nobody goes to Murphy’s Bar anymore – it’s too crowded

A time traveler goes back in time and murders his own great-grandfather.

As I said before, I never repeat myself.

We have bigger houses, but smaller families; More conveniences, but less time. (Dalai Lama)

**Antonomasia** [ˌæntɒnəˈmeɪziə] is a literary device in which a descriptive phrase replaces a person’s name. Antonomasia is a figure of speech in which some defining word or phrase is substituted for a person’s proper name (for example, “the Bard of Avon” for William Shakespeare).

These figures of speech are formed on the basis of personal names, and antonomasia is considered to be a kind of metonymy in the Azerbaijani language [1, 107]. In fiction, the practice of giving to a character a proper name that defines or suggests a leading quality of that character is also called antonomasia. The word is from the Greek antonomasia, a derivative of antonomázēin “to call by a new name.” **E.g.:**

Sanma könül sınısıdır

Kərəm olub yanasıdır...

(Do not think that the heart will be broken

And will burn like a Kərəm (a person who is in love)) (G.Gasimzade. A violet leaf).

Hər oxuyan Molla Pənah olmaz (Not every reader is a Mullah Panah (a very educated man is meant)

Excuse me Tarzan, could you please come down from that tree.

He is such a good guy. I enjoy his company so much! I just hope he is Mr. Right [11].

**A simile** ['sɪmli] from Latin similis (similar) is a figure of speech that makes a comparison, showing similarities between two different things.

Unlike a metaphor, a simile draws resemblance with the help of the words “like” or “as”. Therefore, it is a direct comparison. While similes are mainly used in forms of poetry that



compare the inanimate and the living, there are also terms in which similes and personifications are used for humorous purposes and conversation; in language, literature, and music. The use of similes can be confusing to people who are not fluent in a given language because they will interpret the words literally. Also, similes can change from region to region, and even among groups of people, like musicians or teenagers. **E.g.:**

Böyük bir ailə tamamilə məhv olub getdi, evdə bayquş kimi bir mən, bir də xidmətçilər qalmışdılar (A large family was completely destroyed, only I and the servants remained in the house like an owl). (M.S.Ordubadi).

I am so thirsty, that my throat is as dry as a bone.

This contract is as solid as the ground we stand on.

**A hyperbole** [hʌɪ'pə:bəli] or overstatement from Greek *hyberbolē* “excess”, is an extreme exaggeration used to make a point. It is like the opposite of “understatement”. Hyperboles can be found in literature and oral communication. Hyperbolic statements are often extravagant and not meant to be taken literally. These statements are used to create a strong impression and add emphasis. They would not be used in nonfiction works, like medical journals or research papers, but, they are perfect for fictional works, especially to add to a character or humor to the story. Hyperboles are comparisons, like similes and metaphors, but they are ridiculous. **E.g.:**

Bayramın gözü kəlləsinə çıxdı. Kirpiklərini qırpmadan xeyli baxıb birdən qışqırdı... (Bayram was very much surprised. Without closing his eyes for a while, he looked at her for a long time and suddenly shouted ....) (A. Valiyev).

- Arvad, lap dəv yuxusuna getmişən, dur ayağa! ("Wife, you've dev yuxusuna getmişən (fallen asleep very-very deeply), get up!" (S. Rahimov).

That joke is so old, the last time I heard it I was riding on a dinosaur.

This car goes faster than the speed of light.

**Periphrasis** [pə'rɪfrəsis] originates from a Greek word *periphrasein* which means “talking around”. It is a stylistic device that can be defined as the use of excessive and longer words to convey a meaning which could have been conveyed with a shorter expression or in a few words. For example, using “I am going to” instead of “I will”, is periphrasis. This is also called circumlocution but there is a slight difference between circumlocution and periphrasis.

Periphrasis might be used for many different reasons. The writer or speaker wants the reader to be confused, or the person stating the thought is attempting to appear more intelligent by talking around the point and using “big word”. **E.g.:**

- Gəl özün buna cavab ver, qızım, yoxsa bu məni təkləyib abırımı ətəyimə bükəcək. (- Answer it yourself, my daughter, or he will annoy me seeing me alone). (H. Mehdi).

Anamın saçına ilk dən düşüb mən sevdəyə düşəndə (When I first fell in love with my mother's hair began to gray). (Yashar Nuri)

“After only a short time of marriage, he wasn't prepared to offer advice to other youngsters intending to tie the knot.... But, he said he's looking forward to having a family”.

The big man (Allah) upstairs hears your prayers.

**A euphemism** ['ju:fəmɪz(ə)m] from the Greek phrase *euphēmismos*, meaning “to sound good” is a polite expression used in place of words or phrases that otherwise might be considered harsh or unpleasant to hear. Euphemisms are used regularly, and there are many examples in every day language. Euphemisms may be used to amuse, downplay the severity of a situation, or conceal the speaker's embarrassment about something. The term euphemism refers to softened and "safe" expressions used instead of unpleasant, rude, indecent, terrible, horrible words and phrases [1, 188]. Euphemisms can develop over time to avoid having to say a particular word, though sometimes euphemisms themselves become taboo once they are closely associated enough with the offensive concept. Euphemisms protect talkers from undesired emotional provocation. Anxiety, humiliation, and hatred are three principal factors inspiring the use of euphemisms. **E.g.:**

Şər deməsən, xeyir gəlməz, bəlkə suvaqçı yatıb qalxmadı (If you don't think about bad thing, the good won't come, maybe the plasterer will not stand from the bed tomorrow (in the menaing he will die). (A. Valiyev).

Mən heç, mən bu gündə, sabah da qara torpağın altına qonaq gedəcəyəm. (No, I will go to under the black soil (to die and be buried) today or tomorrow as a guest. (H. Mehdi).

She's a curvy (overweight) woman.

You are becoming a little thin on top (bald).

Our teacher is in the family way (pregnant).

**Cliché** ['kli:ʃeɪ] from French cliché came to mean “a ready-made”, “often repeated” phrase refers to an expression that has been overused to the extent that it loses its original meaning or novelty. The French word cliché has several meanings in the Azerbaijani language. One of the most commonly used forms is an example designed to reproduce anything, such as a template, a stencil, or a standard to check the accuracy of something. In the figurative sense, the template is used as a simple, printed form [11, 69]. **E.g.:**

Qüvvət elmdədir (The strength of a man is in science) ; Riyaziyyat elmlərin şahıdır (Mathematics is the king of sciences).

Laughter is the best medicine.

**A Quotation** [kwə(ɔ)'teɪʃ(ə)n] is from Medieval Latin quotation is a report of the exact words of an author or speaker. It is the repetition of one expression as part of another one, particularly when the quoted expression is well-known or explicitly attributed by citation to its original source, and it is indicated by quotation marks [12]. “A quotation whose author is forgotten becomes a saying; a saying used too often becomes a cliché”. **E.g.:**

“Təhsilin kökləri acı, meyvələri şirindir” (“The roots of education are bitter, the fruits are sweet”) (Aristotle)

“Nə qəribədir. Sevdiyimiz insanın hər yalanında bir doğru, sevmədiyimiz insanın hər döğrusunda bir yalan axtarıq” (“It is really very strange that, we are looking for one truth in every lie of the person we love, and one lie in every truth of the person we do not love”) (F.Dostaevsky)

Mark Twain said: “Never put off till tomorrow what may be done after tomorrow just as well”.

Albert Einstein “Life is like riding a bicycle. To keep your balance, you must keep moving”.

Both of the samples stand for quotation, but the first is humor and the second is a simile.

**Parenthesis** [pə'renθəsi:z] or round brackets is a stylistic device that comes from Greek parenthesis, meaning “to place” or “alongside”. It is a punctuation mark that is used to set aside information that is not deemed to be essential to a sentence, paragraph, or longer text, that remarks put inside or the parentheses are considered to be superfluous, or explanations that are not needed. These statements are also sometimes called parenthesis, or parenthetical statements. Writers mark them off by round and square brackets or by commas, dashes, little lines and brackets. **E.g.:**

Pulun günü-gündən çoxalıb şişməsi onun qarşısında gözəl bir gələcək açırdı (heç kəsə inanmadığından pulu evdə qoymaz, həmişə cibində gəzdirərdi) –(The money swelled day by day, opening up a bright future for him (he didn't leave money at home because he didn't trust anyone, he always carried it in his pocket)) (S.Rahman).

- Gözəl qızıdır, - deyə Səlimə təkrar edərək, Şahmara baxdı (o, oğlanın bir qulağının onlarda

olduğunu hiss etmişdi) (- She's a beautiful girl, - repeated Salima, looking at Shahmar (she felt that he was listening to them) (I. Afandiyev).

My family is getting a new dog from the shelter (we are going to name him Barney).

Did you leave your bag (red, black handles) in the classroom?

My umbrella (which is somewhat broken) san still shield the two of us from the rain.

**An allusion** [ə'lu:ʒ(ə)n] from Latin allūsiō “the act of playing with” or “to jest”, is a literary device used to reference another object outside of the work of literature. The object can be a real or fictional person, event, quote, or other work of artistic expression. Allusions often make reference to previous works of literature, especially references to Guran, Bible, Greek or Roman mythology. The allusion does not give much detail about the reference – it does not describe things in detail. When using these expressions, the source is not mentioned, but the reader remembers the event according to its sign. It is this feature that separates the allusion from the quotation [13]. Rather, because these events are momentous – significant historically, culturally, or politically. The speaker or author expects that people in general would understand the allusion without explanation. E.g.:

“Lete çayından keçmişdim sanki” (“Lete” yunan mifologiyasında unutmamağın, yaddaşı itirməyin rəmzlərindən biridir) (“It's as if I crossed the Lete River” (“Lete” in Greek mythology is one of the symbols of forgetfulness) (A. Mammadkhanli).

“Bayquşun atası çörəkçi idi” (Əfsanəyə görə İsa peyğəmbər çörəkxanaya gəlib çörək istəyir. Çörəkçi xəmiri yoğurub, çörək bişirməyə hazırlaşır. Bunu görə qızın qızı xəsislik edib xəmirin yarısını kəsb götürür. Allahın qıza acığı tutur və onu bayquşa çevirir). (“The owl's father was a baker” (According to the legend Jesus came to the bakery and asked for bread. Seeing this, the man's daughter greedily cuts the dough in half. God gets angry with the girl and turns her into an owl) (W.Shakespeare “Hamlet”) [14]

You are carrying the weight of the world on your shoulders. (reference to Atlas in myth)

“This place is like a Garden of Eden”. –This is a biblical allusion to the “garden of God” in the Book of Genesis).

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## **STYLISTIC DIFFERENTIATION AND USE OF ANTONYMS**

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### **Abstract**

Antonyms are the words having specific colouring in the vocabulary of a language. Contradictory and opposite shades of meaning expressed in these units of vocabulary make them able to serve rather different purposes in the process of communication. The role that antonyms play in the speech act, the purposes they are used for in various modes of communication, their manifestation in different styles of language have always been among core issues for linguists and researchers. Although some studies related to the aspects of antonyms mentioned above are possible to be found in the sections of lexicology and semasiology of linguistics, there is a lack of research works dedicated to this issue and we consider that it is basically up to the stylistics to undertake the investigation of the problem of stylistic differentiation and use of antonyms.

The current study could be considered as a small scale attempt made to meet this need as it examines the purposes of the use of antonyms in the Azerbaijani and English languages. Here, the attention is given to the analysis of lexical peculiarities of antonyms and their contribution to the creation of various stylistic techniques in belles - lettres style. The main task of the paper is to analyze the artistic and aesthetic features of antonyms in a literary text based on their types and to describe their emotional and expressive effects.

To achieve this goal, the author intends to highlight the most common instances of the use of antonyms, provide their analysis by suggesting appropriate samples from various works of art (fiction, drama, poetry) by authors of both languages.

**Keywords:** antonyms, stylistic techniques, aesthetic, belles-lettres

**INTRODUCTION.** The word stock of a language forms a definite system where words can be picked out and studied according to different aspects of the language. That is, they can be grouped and studied according to their lexical specificities, grammatical peculiarities, phonetic features, stylistic uses etc. To keep the goals and purposes of the current article we are going to concentrate on and specify definite groups of words, i.e. antonyms, of the vocabulary of the Azerbaijani and English languages from the point of view of stylistic differentiation and use.

Accepting the fact that all existing languages have literary and colloquial forms, and vocabulary units of a language can be divided into several parts with respect to the styles functioning in that language it is possible to study antonyms from these two different and at the same time related aspects. In the current paper we are going to touch the problem of a functional style, to mention main functional styles in these different languages and to investigate the relation of words with contradictory and contrary meanings to their stylistic differentiation and use in the language.

**Materials and methods:** Methods of comparative analysis and contrast that allows to have a broader view of the problem in different languages and consider it from different aspects, and observation were used in the study. Here, comparison and contrast helped to see the similarities and differences in terms of stylistic use of antonyms between the Azerbaijani and English languages and through the observation method we analyzed different literature, both scientific and fiction to have more profound insight to the problem under study in the

languages under consideration. Also, method of generalization and systematization was applied in coming up with results of the obtained analysis. Scientific works of such scientists as A. Demirchizade, G. Mustafayeva, M. Huseynov, B. Khalilov, Головенченко М.Ф etc. were taken as the theoretical basis of the research.

**Results:** Antonyms are distinguished from other semantic - lexical groupings of words (homonymous and synonymous) by their stylistic quality, which can create a more effective, sharp effect. Antonyms can be used to reinforce, evaluate, deny, determine the relative quality of an idea or image by distinguishing different features and qualities of concepts in a language through contrast, comparison and contradiction.

Like other lexical-semantic groups of words, the most extensive embodiment of stylistic features and possibilities of antonyms is realized in the literary language. Opposite words, which have a wide range of stylistic uses in works of art, are a powerful means of artistic expression that create contrast, antithesis and oxymoron. This feature of antonyms in both languages is widely embodied in the language of works of art.

### **Discussion:**

The stylistic functions of antonyms are studied by linguists in different ways. Thus, some scholars studied the stylistic possibilities and qualities of antonyms based on different types of these words, while others studied them based on their aims in the text. We find the first approach in the works of A. Demirchizade and G. Mustafayeva. In both sources, linguists evaluated and analyzed the stylistic use of antonyms in terms of their types, origin, structure and parts of speech belonging. Speaking about the role of types of antonyms in assessing their stylistic capabilities, A. Demirchizade writes: "To determine accurate stylistic use, it is important to know whether words are absolute or relative antonyms" [2,136]. In addition, these sources emphasize that absolute antonyms stand out among other types of antonyms, arguing that they are more suitable in an artistic style, especially for creating contrasts and contradictions, e.g. *Bəlkə, doğurdan da, belədir. Bəlkə, varlığın izahsız vaxt düzümündə İndi yoxdur, yalnız Keçmiş və Gələcək var*" (Maybe it really so. Perhaps, in the inexplicable order of existence, there is no Present, there exists only the Past and the Future "(Anar) [9, 160].

Antonyms can be used in all functional styles of the language and the choice of the type of antonym to be used depends basically on the type of written text and its communicative function. The ability to express contradictions allows to use these words in scientific, journalistic and official styles indispensably, but with some restrictions and more precision following certain rules and accepted norms for specific purposes. Although it is possible to refer to all types of antonyms in journalistic and formal styles, the scientific style uses relative antonyms that are more absolute or fixed, with exact opposite meanings; e.g: *İzometrlər tərkibləri eyni, lakin molekullarının sayı müxtəlif olan maddələrdir* (Isometers are substances with the same composition but different number of molecules) [2, 142; 9, 168].

Research proved that the wide-spread and common use of antonyms is possible in an artistic / belles - lettres style. It is namely this style that makes it possible to use all types of antonyms - relative, absolute, simple, derivative, compound, native, borrowed, as well as fixed word combinations and idiomatic phraseological structures based on contrast, and gives the writer ample opportunities to achieve different stylistic goals. [3, 68-69]. Thus, based on the analysis of the views on use in belles-lettres, antonyms can serve:

1. To evaluate a feature or quality of any person, object, or event in a piece of art, to form a certain opinion (positive or negative) in the reader. For example, *Fon Valterin balaca və yumru boyuna nisbətən başı çox yekə görünürdü. Alnı elə bil qabağa çıxmışdı. Sarı qaşları tərpnəndə gözlərinin üstünü örtürdü, onları dərinlərdə gizlədir. Bilmək olmurdu ki, gözləri çox batıqdır, yoxsa qaşları çox çıxıq* (Von Walter's head looked very big compared to his small, round height. His forehead seemed to be protruded. His eyes were covered and hidden

in the depths with his yellow eyebrows. It was difficult to know whether his eyes were very sunken or his eyebrows were very protruded (M.Ibrahimov "Future Day").

There was warmth, but little color, in her cheeks; her large, dark eyes were soft. But it was at her lips - asking a question, giving an answer, with that shadowy smile - that men looked; (J. Golsworthy "The Forsyte Saga")

2. To reveal the personality traits and spiritual world of the characters in the work of art, to convey the contradictions that exist within the described image in an emotional way. This use of antonyms not only gives the reader an idea about the character of an image, but also points out the similarities and contrasts between the personality traits of the characters and their appearance, forms a picture of their way of life - O, fitrətən xarici mühitə və insanlara qarşı həssas idi, yaxşını da yamanı da tez duyub seçə bilirdi. Yaxşı sinəsini sevinclə doldurduğu halda, yaman ürəyini yaralayır, kədər oyadırdı, ağrıdırdı (By nature, she was very sensitive towards people and surroundings – she could easily see the good and the bad. While the goodness filled her heart with joy and happiness, the evil hurt her, aroused sorrow and pain [5, 38].

All that was possible of them was possible of her. She could love, and hate, may be have hysterics; and she could certainly be jealous, as she was jealous now, uttering her last sobs in his arms (J.London "Martin Eden")

External heat and cold had little influence on Scrooge. No warmth could warm, no wintry weather chill him (Dickens Charles. A Christmas Carol)

3. To describe different strata and currents in the society, to form the reader's opinion about the status, worldview, ideology, education of the heroes in the work – Elxan: - Dünya iki cəbhəyə ayrılmışdır. Bir tərəfdə silahlı güclülər, digər tərəfdə isə əliboş məzlumlar... (Elkhan: - The world was divided into two fronts. Armed forces on one side, and the oppressed on the other; C.Cabbarli "Od gəlini – Bride of Fire"); "Həyatda mənim varım, dövlətim sevgidir. Mən yoxsulam, lüt və çılpağam, hər şeydən mərhumam, hətta həyatın ən böyük neməti olan günəş işığını belə mənim əlimdən almışlar. Lakin bu yoxsulluğumla mən hakimlərimizdən, ağalar və kübarlardan varlıyam" (M.İbrahimov "Çandranın üsyanı" - "All I have in life - is love. I am poor, broken, deprived of everything, and even the sun, which is the greatest blessing of life, has been taken away from me. But with this poverty, I am richer than judges, lords and nobles" (M. Ibrahimov, "Chandra's Rebellion").

"I do" said Scrooge. "Merry Christmas! What right have you to be merry? What reason have you to be merry? You are poor enough."

"Come, then," returned the nephew gaily. "What right have you to be dismal? What reason have you to be morose? You are rich enough. (C.Dickens "A Christmas Carol")

4. To depict natural phenomena, contrasting time, space, concepts of quantity and quality in a more natural and at the same time figurative way. Example: Qışın dördüncü günü idi. Soyuq qılınc kimi kəsirdi. Göylər matəmlilər kimi qara çarşaba bürünmüş, dağlar, çöllər ağ kəfənlə örtülmüşdü - It was the fourth day of winter. Cold cut like a sword. The skies were covered with a black sheet like mourners, and the mountains and fields were covered with white shrouds. (Şaiq A. Seçilmiş əsərləri)

It was an early May evening – the April of the poets; for heavy showers had fallen all the morning, and the round, soft white clouds which were blown by a west wind over the dark blue sky, were sometimes varied by one blacker and more threatening (Gaskell Elizabeth. Mary Barton)

5. To arouse positive mood, enthusiasm, optimism in the reader on a certain topic, to provide artistic and aesthetic value in the work. This function of antonyms is more specific for short poems

Niyə hücum çəkir, gecə-gündüzə,  
niyə qənim olub işığa zülmət?

Həqiqət böhtanla gəlir üz-üzə,  
qışqıran BÖHTANDI, susan HƏQIQƏT. (Nəriman Həsənzadə 'Durnalar vurulur  
qaqqıldaşanda')

If you can keep your head when all about you

Are losing theirs and blaming it on you;

If you can trust yourself when all men doubt you,

But make allowance for their doubting too (Rudyard Kipling "If")

6. To create an antithesis in literary language - Antithesis is based on contrast. The fact that antithesis is a powerful means of artistic expression has been appreciated by Greek scholars since ancient times. It is no coincidence that Aristotle described the antithesis as "the most effective expression of evidence arising from the comparison of contradictions." When words with opposite meanings are used as a means of antithesis, "the aim is not to distinguish between different contradictory concepts, but to create a special stylistic effect" [8, 80]. In literary language, antithesis is created not only by antonyms, but also by comparing "figures formed from images and situations" [14, 193]:

"Allah dindirə bilmədiyini pul dindirir!" Cahan xanımın atasından dönə-dönə eşitdiyi və inandığı həqiqətlərdən biri bu idi. ...Cahan xanımın tərsinə olaraq Hürü bilirdi ki, ... "Pul ki var, əl çirkidir". Onun atasından eşitdiyi və inandığı həqiqət bu olmuşdu. (M.İbrahimov "Pərvanə" - "Those who God fails to make speak money manages!" This was one of the truths that Jahan khanum heard and believed from her father over and over again. ... Unlike Jahan khanum, Huru believed... "Money to be the dirt." That was the truth he had heard and believed from her father.

As can be seen, the antithesis "emerges as a result of the joint activity of two language structures - lexicology and syntax. Therefore, it should not be considered only as a category of lexicology or a stylistic tool of syntax. Antithesis is a powerful artistic description that emerges as a result of the close connection and influence of lexicology and syntax"[4, 107]

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredibility, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way (C.Dickens "A tale of Two Cities")

"I would rather be ashes than dust! I would rather that my spark should burn out in a brilliant blaze than it should be stifled by dryrot. I would rather be a superb meteor, every atom of me in magnificent glow, than a sleepy and permanent planet. The proper function of man is to live, not to exist. I shall not waste my days in trying to prolong them. I shall use my time." (JACK LONDON, Jack London's Tales of Adventure, ed. Irving Shepard, Introduction, p. vii (1956).

7. To create an oxymoron in a literary language - B. Khalilov considers oxymorons to be one of the types of antonyms: "They, as one of the types of antonyms, are formed from logically contradictory words, phrases and expressions" [7, 198]. The linguist notes that this type of antonyms is understood as a "figurative expression" when used together. M.Adilov considers oxymoron to be " a style of expression consisting of a combination of two words that contradict each other in meaning and logically deny each other" [1, 205], ağıllı dəli, diri ölü, dilənçi milyoner, danışan sükut, soyuq od, gəliş-gediş, alqı-satqı (clever mad, alive dead, beggar millionaire, talking silence, cold fire, coming and going, buying-selling) and so on.

U.Hajiyeva presents oxymorons as a stylistic tool arising from the interaction of logical and emotional meanings of words, defines them as "a combination of two words with meaning contrary to logic". Giving such examples of oxymorons in English as "cold fire, the best enemy, ill health, ill together, living together, living death", the author writes: "In these

compounds, the adjective contradicts to the meaning of the noun and thus describes the object with humor or irony." [10, 49; 57].

As can be seen from the examples shown above, oxymorons in the Azerbaijani language mainly have nouns + nouns, adjectives + nouns structure, while in English this structure is formed by adjectives + nouns, nouns + nouns.

The fact of possible use of words logically opposing each other in a literary text, of course, arises from definite reasons and serves certain purposes. M. Huseynov connects this with the fact that oxymorons have "strong expressiveness, expressive-emotive strength" [5, 44]. T. Afendiyeva connects the formation of such expressions with stylistic needs and considers that "the writer brings closer incompatible concepts in order to create a more vivid and striking means of description, to strengthen the satirical tone at some points, and sometimes to express ideas sharply" [3, 125]. The linguist emphasizes that the image created in this way is much more meaningful and effective.

The other characteristic feature of oxymorons is their individuality. The fact that many oxymorons which are now used as templates in language, were once created in the works of certain writers to fulfill this or that stylistic need, and then became popular is good evidence of this e.g. lascivious grace (Shakespeare, William. "Sonnet 40."), "sweet sorrow" (*Romeo and Juliet*), scalding coolness (Hemingway, Ernest. *For Whom the Bell Tolls*), melancholy merriment (Byron, Lord. "Don Juan.") transparent night (Whitman Walt, *When Lilacs Last in the Door-yard Bloom'd.*) etc.

**Conclusion:** Oxymorons are exclusively important elements of the language. Due to their nature, they can be employed in all styles of the language system for the purposes of comparing, contrasting, opposing, highlighting, evaluating, criticizing, evoking laughter etc. The most widespread use of oxymorons encounters to the belles – lettres style as specificities of this style make it possible to realize majority of the functions mentioned above.

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## KNOWLEDGE AND APPLICATION OF HEALTHCARE EMPLOYEES DURING COVID-19 PANDEMIC PROCESS AND REVIEW OF CITRES LEVELS

### COVID-19 PANDEMİ SÜRECİNDE SAĞLIK ÇALIŞANLARININ BİLGİ, UYGULAMA VE STRES DÜZEYLERİNİN İNCELENMESİ

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#### **Abstract**

**Purpose:** To evaluate the knowledge, practices and stress level of healthcare professionals during the COVID-19 pandemic.

**Study Design:** It is a cross-sectional study.

**Working Place and Time:** Between January 2021- February 2021, has been applied in various hospitals in Turkey.

**Methodology:** The study of health care workers in Turkey for a month uygulanmıştır.18 a well structured questionnaire consisting of questions was prepared. The questionnaire consists of two parts. In the first part; There are questions regarding demographic characteristics. In the second part; There are questions that evaluate the knowledge, practice and stress level of healthcare professionals. The perceived stress score was calculated using the SPSS-25 program to evaluate the stress levels. The questionnaire was uploaded to www.surveys.com. The questionnaire was distributed via google.com and e-mail and shared on social media. SPSS Version-25 was used for statistical analysis.

**Results:** Questionnaires were applied to 1397 healthcare workers. The majority of healthcare professionals (75%) have sufficient knowledge of COVID-19 presentation, progress and basic precautionary measures. 64.65% follow basic preventive protocols to combat COVID-19. Perceived stress scale scores were found as 29.93, indicating high levels of stress among healthcare workers. In addition, when the perceived stress scale score was correlated with gender and different age groups, a significant difference was found ( $p = 0.04$ ), ( $p < 0.001$ ).

**Conclusion:** Although healthcare professionals have sufficient knowledge and practice levels to combat COVID-19, the stress level was found to be high. Therefore, team leaders or managers in healthcare institutions are expected to develop appropriate strategies to overcome this stress and bad mental health. In addition, managing mental health and psychosocial well-being in this challenging period in individual capacity is as important as managing one's physical health.

**Keywords:** COVID-19, Healthcare Professionals, Information, Practices, Stress Levels.

## Özet

**Amaç:** Sağlık çalışanlarının COVID-19 salgını sırasında bilgilerini, uygulamalarını ve stres düzeyini değerlendirmektir.

**Çalışma Tasarımı:** Kesitsel bir çalışmadır.

**Çalışma Yeri ve Süresi:** Ocak 2021- Şubat 2021 tarihleri arasında Türkiye'deki çeşitli hastanelerde uygulanmıştır.

**Metodoloji:** Çalışma, Türkiye'deki sağlık çalışanlarına bir ay süreyle uygulanmıştır. 18 sorudan oluşan iyi yapılandırılmış bir anket hazırlanmıştır. Anket, iki bölümden oluşmaktadır. Birinci bölümde; demografik özelliklere yönelik sorular yer almaktadır. İkinci bölümde ise; sağlık çalışanlarının bilgi, uygulama ve stres seviyesini değerlendiren sorular bulunmaktadır. Stres seviyelerini değerlendirmek için algılanan stres puanı SPSS-25 programı kullanılarak hesaplanmıştır. Anket [www.surveys.com](http://www.surveys.com) adresine yüklenmiştir. Anket, [google.com](http://google.com) ve e-posta yoluyla dağıtılmıştır ve sosyal medyada paylaşımı gerçekleştirilmiştir. İstatistiksel analiz için SPSS Versiyon-25 kullanılmıştır.

**Bulgular:** Sağlık çalışanlarının çoğunluğu (% 75) COVID-19 sunumu, ilerlemesi ve temel ihtiyati tedbirler hakkında yeterli bilgiye sahiptir. % 64.65, COVID-19 ile mücadele için temel önleyici protokolleri takip etmektedir. Algılanan stres ölçeği puanları, sağlık çalışanları arasında yüksek stres düzeyini gösteren 29,93 olarak bulunmuştur. Ayrıca, algılanan stres ölçeği puanı cinsiyet ve farklı yaş grupları ile korele edildiğinde anlamlı bir fark bulunmuştur ( $p = 0,04$ ), ( $p < 0,001$ ).

**Sonuç:** Sağlık çalışanlarının COVID-19 ile mücadele için yeterli bilgi ve uygulama düzeyine sahip olmalarına rağmen, stres düzeyi yüksek bulunmuştur. Bu nedenle, sağlık kurumlarındaki ekip liderlerinden veya yöneticilerden bu stresi ve kötü ruh sağlığını aşmak için uygun stratejiler geliştirmeleri beklenmektedir. Ek olarak, bireysel kapasitede bu zorlu dönemde zihinsel sağlığı ve psiko-sosyal iyiliği yönetmek, kişinin fiziksel sağlığını yönetmek kadar önemlidir.

**Anahtar Kelimeler:** COVID-19, Sağlık Çalışanları, Bilgi, Uygulamalar, Stres Düzeyleri

## GİRİŞ

Korona virüs hastalığı (COVID-19), dünya çapında 5 milyondan fazla insanı etkileyen ve ölüm oranı yaklaşık %3.7 olan SARS-COV-2'nin neden olduğu yeni ve oldukça bulaşıcı bir viral enfeksiyondur[9]. Birinci virüs, solunum damlacıklarından veya SARS-COV-2 ile kontamine olmuş yüzeylere ve nesnelere yakın kişisel temas yoluyla bulaşmaktadır[1]. COVID-19 olan hastalar, yüksek dereceli ateş, baş ağrısı, öksürük, nefes darlığı, miyalji, tat veya koku kaybı gibi çok çeşitli semptomlar yaşamaktadır. Çoğu hasta hafif ila orta şiddette semptomlar bildirmekte ve sadece destekleyici tedavi ile iyileşmektedir. Şiddetli formu geliştirenler, akut solunum sıkıntısı sendromundan (ARDS) ve solunum yetmezliğinden muzdarip oldukları için suni ventilasyona ihtiyaç duymaktadırlar. Semptomlar virüse maruz kaldıktan 2-14 gün sonra ortaya çıkabilir[2,9].

COVID-19 pandemisi, öngörülemeyen ve oldukça bulaşıcı doğası olan bir rahatsızlıktır. Çeşitli klinik sunumları, epidemiyolojik özellikleri, halk sağlığı etkisinin

ciddiyeti, yenilik ve hazırlıksız sağlık tesisleri nedeniyle dünyayı bir zihinsel felaket haline getirmektedir. Özellikle, sosyal izolasyonun bir sonucu olarak insanlar arasında artan korku, stres ve anksiyete seviyelerini deneyimlemek zor olmamaktadır. Dünya çapında milyonlarca insan virüs bulaşmasını en aza indirmek için evde kalmakta ve sağlık çalışanları da hastaları için her gün çalışmaktadırlar. Hastaneler, personeline ihtiyaç duydukları şeyi almakta zorlanırken, COVID-19 testlerinin ve koruyucu ekipmanların eksikliği sadece sağlık hizmeti sağlayıcılarını riske atmamaktadır; tüm toplulukları tehlikeye sokmaktadır[14,21]. Son zamanlarda yapılan bir araştırma, pandeminin Çin'deki tıp çalışanları arasında morbidite ve mortaliteye neden olmasının yanı sıra, zihinsel ve psikolojik durumlar üzerinde de ciddi bir etkisi olduğu sonucuna varmıştır. Sağlık çalışanları hayal kırıklığı, korku, anksiyete, depresyon ve uykusuzluk yaşamışlardır[20]. Ayrıca, COVID-19'dan ölebileceklerinden endişe duymuşlardır. Bu mantıksız bir korku gibi görünebilir, ancak; Çin, İtalya ve Amerika Birleşik Devletleri'nde ön saflardaki sağlık çalışanları vefat etmiştir [15].

Bu ruh sağlığı sorunları, sağlık çalışanlarının dikkatini, anlayışını ve karar verme gücünü etkilediği gibi, aynı zamanda refahını da tehdit etmektedir. Dahası, bulaşıcı hastalıkları daha iyi kontrol etmek için sağlık çalışanlarının ruh sağlığını korumak çok önemlidir. Bu kadar çok şeyin yaşandığı bu noktada, ön saf sağlık çalışanlarının stres düzeyini, bilgi ve uygulamalarını güncelleyerek değerlendirmek gerekmektedir. Böylece, gelecekte bu faktörler COVID-19 ile mücadeleyi engelleyebileceğinden gerekli önlemlerin alınması şarttır. Bu nedenle, bu çalışmada amaç; Türkiye'deki sağlık çalışanlarının bilgi birikimlerini, uygulamalarını, endişelerini ve stres düzeylerini değerlendirmektir.

## **MATERYAL VE METHOD**

Bu kesitsel araştırma, Ocak 2021 - Şubat 2021 tarihleri arasında Türkiye'de çeşitli hastanelerde gerçekleştirilmiştir. Çalışma, hızlandırılmış bir süreçle Etik ve İnceleme Komitesi tarafından onaylanmıştır. Algılanan stres ölçeği için % 95 güven aralığı tutulduktan sonra, ortalama puan  $13.8123 \pm 6.34$  olarak bulunmuştur. Bu çalışmanın örneklem büyüklüğünü hesaplamak için Açık Epi örneklem büyüklüğü hesaplayıcısı kullanılmıştır. Hesaplanan toplam örneklem büyüklüğü 1397'dir. 18 sorudan oluşan iyi yapılandırılmış bir anket oluşturulmuş ve Cronbach alfa ile doğrulanmıştır. Test edilen maddelerin iç tutarlılığı ( $\alpha = 0.72$ ) şeklinde güçlü bir korelasyon değerine sahiptir. Anket iki bölümden oluşmaktadır. İlk bölümde, demografik sorular ve ikinci bölümde, sağlık çalışanlarının bilgi, endişe, uygulama ve stres seviyesi değerlendirmesini içeren sorular bulunmaktadır. Anket [www.surveys.google.com](http://www.surveys.google.com) adresine yüklenmiştir. Bağlantı e-posta (yahoo, outlook, gmail, hotmail) aracılığıyla dağıtılmıştır ve sağlık çalışanlarıyla sosyal medyada (facebook, instagram, whatsapp, linkedin, twitter) paylaşılmıştır.

Anket, doktorlar, diş Hekimleri, fizyoterapistler, hemşireler, teknisyenler ve asistanlar da dahil olmak üzere 1397 katılımcı tarafından doldurulmuştur. Hastane yönetim personeli ile birlikte uygulamada olmayan sağlık çalışanları hariç tutulmuştur. Çalışmaya tekrarlama ve ilgisizlik temelinde 1346 form dahil edilmiştir ve 51'i çıkarılmıştır. Toplanan veriler istatistiksel paket yazılım sürümü 25'e girilmiştir. Değişkenlerin ortalama, frekans ve yüzde hesaplamaları için tanımlayıcı istatistikler yapılmıştır. Sağlık çalışanları arasında algılanan stres skorları olan COVID-19 hastası ile yaş, cinsiyet ve temas öyküsünün etkisini değerlendirmek için ki kare, bağımsız t-testi ve Sperman korelasyonu kullanılmıştır. p-değeri 0.05'den küçük olarak kabul edilmiştir.

**Tablo-1: Katılımcıların Demografik Özellikleri N=1346**

Yaş (Yıl)	n (%)
26-30	531 (39.5)
22-25	290 (21.5)
31-35	293 (21.8)
36-40	98 (7.3)
41-45	39 (2.9)
45'ten fazla olanlar	36 (6)
<b>Eğitim</b>	
Mbbs	405 (30.1)
Bds	805 (59.8)
Hemşirelik / Fizyoterapi	116 (8.6)
Sertifika Sahipleri	20 (1.5)
<b>Cinsiyet</b>	
Erkek	473 (35.1)
Kadın	873 (64.9)

Algılanan Stres Ölçeği (PST-10) bu çalışmada kullanılmıştır. Her sorunun notu 0 ile 4 arasındadır. Burada 0-hiçbir zaman, 1-neredeyse- hiçbir zaman, 2-bazen, 3 oldukça sık ve 4-çok sık olarak kategorize edilmiştir. PSS Puanı, 3,4,7 ve 8 numaralı soruların yanıtlarının tersine çevrilmesi ile elde edilmiştir. Son olarak, katılımcıların nihai puanını elde etmek için 10 sorunun puanı eklenerek sonuca ulaşılmıştır. PSS skoru 0 ile 40 arasındadır. Skor ne kadar yüksekse, algılanan stres o kadar fazladır. Bu çalışmada, izlenen PSS puanlamasının özellikleri aşağıda verilmiştir:

- 0-13 arası puanlar, düşük stres olarak kabul edilmiştir.
- 14-26 arası puanlar, orta derecede stres olarak kabul edilmiştir.
- 27-40 arası puanlar, yüksek algılanan stres olarak kabul edilmiştir.

**Tablo-2: Sağlık Çalışanlarının Bilgi ve Uygulama Düzeylerinin Özellikleri (N=1346)**

	n (%)		n(%)
Şiddetli akut solunum sendromu Corona virüs-2 ile temas öyküsü?		<b>Hasta teması sırasında kişisel koruyucu ekipman kullanıyor musunuz?</b>	
<b>Evet</b>	537 (39.9)	Her zaman	697 (51.8)
<b>Hayır</b>	809 (60.1)	Çok sık	267 (19.8)
Şiddetli akut solunum sendromu Corona virüs-2 iletimi için yollar nelerdir?		Ara sıra	271 (20.1)
<b>Solunum damlacıkları</b>	75 (5.6)	Nadiren	58 (4.3)
<b>Havadaki damlacıklar</b>	18 (1.3)	Asla	53 (3.9)
<b>Yukarıdakilerin hepsi</b>	1253 (93.1)	<b>Covid-19'un belirti ve semptomları nelerdir?</b>	
Şiddetli akut solunum sendromu Corona virüs-2'nin kuluçka süresi nedir?		Bulantı, kusma, ishal	1.8 (1.3)
<b>2-14</b>	1306 (97)	Ateş, öksürük, miyalji, nefes almada zorluk	1074 (79.8)
<b>3 hafta</b>	20 (1.5)	Yukarıdakilerin hepsi	234 (17.4)
<b>Bilmiyorum</b>	20 (1.5)	Bilmiyorum	20 (1.5)

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Covid-19'un ölüm oranı nedir?		Şiddetli akut solunum yolu sendromu Corona virüs-2'nin vücut dışında hayatta kalma süresi nedir?	
1-2%	483 (35.9)	9 saat	374 (27.8)
2-4%	444 (33)	> 48 saat	310 (23)
5-10%	174 (12.9)	İki gün	173 (12.9)
<10%	56 (4.2)	< 24 saat	151 (11.2)
<b>Bilmiyorum</b>		<b>Covid-19'un tedavi seçenekleri nelerdir?</b>	
Hastalardan kendine virüs bulaşma endişesi		Karantina ve sosyal uzaklaşma	1152 (85.6)
<b>Evet</b>	1209 (89.8)	Aşılar	35 (2.6)
<b>Hayır</b>	117 (10.2)	Önleyici Tedbirler	159 (11.8)
Ellerinizi sık sık temizler ve yıkar mısınız?		<b>Virüsün aileye yayılması endişesi</b>	
<b>Her zaman</b>	925 (68.7)	Evet	1229 (91.3)
<b>Çok sık</b>	288 (21.4)	Hayır	8.7 (117)
<b>Bazen</b>	114 (8.5)	<b>Cerrahi işlemlerde N-95 maskesi takıyor musunuz?</b>	
<b>Nadiren</b>	1 (0.1)	Her zaman	<b>985 (73.2)</b>
<b>Asla</b>	18 (1.3)	Çok sık	139 (10.3)
		Bazen	114 (8.5)
		Nadiren	35 (2.6)
		Asla	73 (5.4)

Yanıt veren toplam 1397 sağlık çalışanı arasından, 873'ü (% 64.9) kadın ve 473'ü (% 35.1) erkektir. 346 (% 96.34) yanıt oranıyla çalışmaya katılım sağlanmıştır. Çoğunluk, 531 kişi (% 39,5) 26-30 yaşları arasındadır. 1210 (% 89,9) tıp / diş hekimliği uzmanı ve 136 (% 11,1) fizyoterapist, hemşire ve yardımcı personel Tablo-1'de sunulmuştur.

Sağlık çalışanlarının COVID-19 hastaları ile temas öyküsü 537 (% 39,9)dir. COVID-19'a yönelik sağlık sektörü çalışanlarının değerlerine bakıldığında; %75'inde yol üzerindeki komuta bulaşma oranı %93.1; belirti ve semptomlar %79.8; SARS-COV-2 insan vücudu dışında hayatta kalma oranı %27.8; kuluçka süresi %97; ölüm oranı %35.9 ve tedavi seçenekleri %85.6 olarak bulunmuştur.

Katılımcıların 1209'u (% 89,8) virüse yakalanabileceklerinden endişelidir ve 1229'u (% 91,3) ailelerine yayabileceklerinden korkmaktadır. Ayrıca, doğru uygulama seviyesi % 64.65 dir; sık sık el yıkama oranı % 73.2; hastane ve diğer yakın temas prosedürlerinde N-95 maske kullanma oranı % 51.8; sağlık çalışanları arasında temel yüzeyleri ve nesnelere dezenfekte etme oranı % 64.9 olarak Tablo-2'de verilmiştir.

**Tablo-3: Algılanan Stres Ölçeğinin Özellikleri (N=1346)**

	Algılanan Stres Ölçeği-Geçen Ay 10 Puan,	Ortalama ± SD
PSS-1	Beklenmedik bir şekilde meydana gelen bir şey yüzünden ne sıklıkla üzülüyorsunuz?	3.27 ± 1.15
PSS-2	Hayatınızdaki önemli şeyleri kontrol edemediğinizi ne sıklıkla hissettiniz?	3.17 ± 1.28
PSS-3	Ne sıklıkla gergin ve stresli hissettiniz?	3.13 ± 1.26

PSS-4*	Kişisel sorunlarınızı çözme beceriniz konusunda ne sıklıkla kendinize güveniyorsunuz?	2.60 ± 1.18
PSS-5*	Her şeyin yoluna girdiğini ne sıklıkla hissettin?	2.89 ± 1.15
PSS-6	Yapmanız gereken her şeyle baş edemeyeceğinizi ne sıklıkla anladınız?	2.89 ± 1.15
PSS-7*	Hayatınızdaki rahatsızlıkları ne sıklıkla kontrol edebildiniz?	2.81 ± 1.01
PSS-8*	Her şeyin zirvesinde olduğunuzu ne sıklıkla hissettiniz?	3.02 ± 0.94
PSS-9	Kontrolünüz dışında olan şeyler yüzünden ne sıklıkla öfkelenirsiniz?	3.11 ± 1.15
PSS-10	Zorlukların üstesinden gelemeyecek kadar yükseldiğinizi ne sıklıkla hissettiniz?	2.98 ± 1.15
Toplam Puan		29.93 ± 11.43**

**\* Puanlar Ters Sırayla Düzenlenmiştir. \*\* Yüksek Algılanan Stres Seviyeleri**

Tablo-3 değerlendirildiğinde; sağlık çalışanlarının algılanan stres düzeyi puanı 29,93 ± 1,518'dir. PSS puanı, cinsiyet ve yaş ile karşılaştırıldığında, Tablo-4'te gösterildiği gibi anlamlı bir fark ( $p = 0,04$ )-( $p < 0,001$ ) bulunmuştur. Ayrıca, COVID-19 hasta teması öyküsü olan ve olmayan sağlık çalışanları ile algılanan stres düzeyi arasında anlamlı bir ilişki yoktur ( $p = 0,09$ ).

**Tablo-4: Cinsiyetin Algılanan Stres Ölçeği Skoruna Etkisi (N=1346).**

Cinsiyet	Algılanan Stres Ölçeği - 10 Puan	p değeri
Erkek	Ortalama ± SD	0.04
	n	
Kadın	Ortalama ± SD	0.04
	N	

## TARTIŞMA

Tıp, normal koşullar altında zaten stresli bir meslek olarak görülse de, COVID-19 salgını sağlık çalışanlarını benzeri görülmemiş bir duruma sokmuştur. Sağlık çalışanları, sadece aşırı baskı altındaki COVID-19 hastalarını tedavi etmekle kalmamış, aynı zamanda kendi sağlıklarını da riske atmışlardır. Mevcut pandemik durumu etkin bir şekilde yönetmek için, sağlık çalışanlarının ruhsal durumu ve stres düzeyinin yanı sıra hastalık hakkındaki bilgilerinin değerlendirilmesi de çok önemlidir.

Çalışmaya göre, sağlık çalışanlarının COVID-19'a yönelik bilgi düzeyi % 75 olarak değerlendirilmiştir; bu durum sağlık çalışanlarının % 88,4'ünün iyi bir bilgiye sahip olduğunu göstermektedir[11]. Zhou ve arkadaşlarının Mart 2020'de Çin'de yürüttüğü bir çalışmada,

sağlık sektörü çalışanları arasında yetersiz bilgi seviyelerinin devam ettiği görülmektedir[24].Katılımcıların % 93,1'i SARS-COV-2'nin solunum damlacıkları- yakın kişisel temas ya da SARS-COV-2 ile kontamine olmuş yüzeylere nesnelere yakın teması ile bulaşabileceğine inanmaktadır. Kişi aracılığıyla bulaşma ise, esas olarak doğrudan temas yoluyla- enfekte bir kişiden öksürme veya hapşırma yoluyla yayılan damlacıkların üst solunum organlarına yerleşmesi ile gerçekleşmektedir [18,22].

Katılımcıların çoğunluğu (% 79,8) ateş, öksürük, nefes darlığı ve miyaljinin COVID-19'un en sık görülen belirti ve semptomları olduğu fikrine sahiptir. Guan ve arkadaşlarının yapmış olduğu çalışmada, COVID-19'un klinik belirtileri; ateş (% 88,7), öksürük (67,8), yorgunluk (% 38,1), nefes darlığı (% 18,6) ve baş ağrısıdır (% 13,6) [10]. Başka bir çalışmada, COVID-19'un asemptomatik olarak ortaya çıktığına dair kanıtlar bulunmaktadır[13]. Dahası, bu çalışmada çoğunluk (% 27,8) virüsün vücut dışında yalnızca 9 saat hayatta kalabileceğine inanmaktadır, bu da SARS-COV-2'nin aerosollerde saatlerce ve yüzeylerde canlı-bulaşıcı kalabildiğini kanıtlamaktadır[23]. Katılımcıların çoğunluğu (% 97) kuluçka süresinin 2-14 gün olduğunun farkındadır [9]. Guo ve arkadaşlarına göre, COVID-19 ile savaşmanın en iyi yolunun semptomatik tedavi (% 85.6) olduğu ileri sürülmektedir. Aşılar ve antiviral ilaçlar henüz sonuç alınmadığı için mümkün olan en iyi tedavi semptomatik rahatlama ve solunum desteğidir[9].

Katılımcıların çarpıcı bir şekilde % 89,8'i virüse yakalanabileceklerinden endişe duymaktadır ve % 91,3'ü ailelerine virüs bulaşabileceğinden korkmaktadır. Sağlık çalışanlarının kişisel güvenlik ve aileleri için endişeleri olduğu sonucuna varan diğer araştırmalara göre, kişiler virüsü kapabilirler, ayrıca hasta ölümleri gerçekleşebilir. Bu faktörler, sağlık personeline önemli stres tetikleyici faktörlerdir[7,17].

Araştırmada bulunulan uygulama seviyesi % 64.65 dir. Mevcut koşullarda virüs son derece bulaşıcı olduğundan bazı durumlarda asemptomatik oluşum meydana gelebilir, bu nedenle katı çapraz enfeksiyon protokolleri önerilir. Bu çalışmada, sağlık sektörü çalışanlarının % 68,7'si sık sık el hijyeni uygulamaktadır,% 73,2'si yüksek riskli bölgelerde N-95 maskesi ve % 51,8'i hastane ve diğer yakın temas prosedürlerinde KKD kullanmaktadır, ancak bir araştırmaya göre önerilen önlemlerin yaygın kullanımı (örneğin; maskeler, eldivenler, önlükler ve yüz siperleri) en yüksek önceliğe sahip olmalıdır. Virüs bazı yüzeylerde çok kararlı bir şekilde saatlerce veya günlerce yaşayabilmektedir. Ancak, uygun şekilde kullanıldığında mevcut dezenfektanlar tarafından etkili bir şekilde öldürebildiğinden, gelişmiş el hijyeni ve yüzey temizliği güvenliğin anahtarıdır. İhtiyati tedbirler, daha sonra kontamine yüzeylerle karşılaşan ve ellerini yıkayamayan sağlık çalışanlarını korumada başarısız olmaktadır. Çalışmamızda, sağlık çalışanlarının yalnızca % 64,9'u temel yüzeyleri ve nesnelere dezenfekte etmektedir. Bu nedenle, sağlık sektörü çalışanları titiz el hijyeni, yüzey dekontaminasyonu ve evrensel önlemlere odaklanmalıdır[5,19].

Türkiye'de sağlık sektörü çalışanlarının algılanan stres seviyesi puanı 29,8 dir ve bu, Limcaoco RS (PSS 10 puanı 17,4) [16], Du J (PSS puanı 13,81) [8] tarafından yapılan diğer çalışmalara kıyasla oldukça yüksektir. COVID-19'un sağlık çalışanlarında stres için bağımsız bir risk faktörü olabileceğine dair artan kanıtlar vardır. Bu, aşırı iş yükü / çalışma saatleri, yetersiz KKD'ler, aşırı hevesli medya haberleri, yetersiz hükümet desteği ve COVID-19 nedeniyle sağlık sektörü çalışanlarının morbidite ve mortalitesinin artması gibi belirli faktörlerin sonucu olabilir[7]. Çalışmamız, diğer araştırmalarla karşılaştırıldığında katılımcıların yarısından fazlasının orta ila aşırı derecede stres yaşadığı ortaya çıkmaktadır[6,12].

Ayrıca, PSS skoru cinsiyet ve farklı yaş grupları ile ilişkilendirildiğinde, kadınlarda ve genç sağlık çalışanlarında (22-35 yaş arası,% 82.76) yüksek stres seviyeleri ile anlamlı farklılık (p = 0.04) ve (p≤0.001) bulunmuştur. COVID-19 hasta teması öyküsü olan ve

olmayan sađlık alıřanı ile algılanan stres dzeyi arasında anlamlı bir iliřki bulunamamıřtır (p = 0,09). Limcaoco [16] ve arkadařlarının yapmıř olduđu bir arařtırmada, COVID-19 salgını sırasında kadınlar, ge bireyler ve đrenciler arasında algılanan stres puanları anlamlı olarak daha yksek bulunmuřtur.

## **SONU VE NERİLER**

Bu alıřma, farklı istasyonlarda ve kapasitelerde alıřan sađlık bakımı alıřanlarının COVID-19 ile mcadele etmek iin yeterli bilgi ve uygulama dzeylerini deđerlendirmeyi amalamıřtır. Arařtırmada, sađlık alıřanlarının zihinsel stres seviyesi yksek bulunmuřtur. Bu nedenle, sađlık tesislerindeki ekip liderlerinden veya yneticilerden akut stres ve kt ruh sađlıđının stesinden gelmek iin gerekli stratejiler geliřtirmeleri beklenmektedir. Ek olarak, bireysel kapasitede bu zorlu dnemde ruh sađlıđı ve psikososyal iyiliđi ynetmek, kiřinin fiziksel sađlıđını korumak kadar nemlidir.

zetlemek gerekirse, bu akut stresler ve ařırı baskı zihinsel sađlık sorunlarına yol aarak sađlık alıřanlarının performansını ve refahını etkilemektedir. Bu nedenle, onları desteklemek iin uzmanların sadece fiziksel sađlıklarını deđil, zihinsel sađlıklarını da korumaya yardımcı olmaları gerekmektedir. Geliřmiř lkeler hali hazırda ruh sađlıđını zinde tutan alıřmalar yapmaktadır. Toplum olarak onların liderliđini takip etmeyi felsefe haline getirmeliyiz.

## **ALIřMANIN SINIRLILIKLARI**

Bu arařtırmadaki bulgular, katılımcıların tek bir noktadaki hatırlama yeteneklerine dayanmaktadır. Bu durum hatırlama yanlılıđına neden olabilir. Ayrıca, bulgular belirli demografik blgelere zeldir ve yerel topluluđa dayanmaktadır. Bu nedenle, aıklama iin geliřmiř ve geliřmekte olan lkelerden geiř bir kitleye dayanan daha fazla arařtırmaya ihtiya vardır. Bu sınırlamalara rađmen alıřma, sađlık alıřanlarının mevcut bilgi ve uygulamaları hakkında deđerli bilgiler ortaya koymaktadır. Arařtırmada, zorlu zamanla mcadele etmek iin ruh sađlıđı sorunlarını belirlemeye ve ruh sađlıđı dzeylerini iyileřtirmeye ynelik abalar nerilmektedir.

## **IKAR ATIřMASI**

Bu alıřmanın herhangi bir yazar tarafından beyan edilecek bir ıkar atıřması bulunmamaktadır.

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## COMMONLY USED VERBS IN "ET-TOHFET UZ-ZEKIYYE Fİ'L-LUGAT-IT TURKEY" AND THE AZERBAIJANI LANGUAGE

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### Absrtact

Language is one of the main factors that show unity among peoples. This fact applies to every language in the Turkish language family. M. Mirzaliyeva rightly states in one of his works that "the dictionary of languages is a mirror of the history of its creation and development". That is why studies on the lexical system of the language have always attracted the attention of Azerbaijani linguists. The history of the Turkish language is very old. This fact has also been registered with written monuments. The work "Et-tuhfetü'z zekiyye fi'l-lugâti't Turkey" is also a very valuable work for the history of Turkish languages. "Et-tuhfetü'z zekiyye fi'l-lugâti't Turkey ", one of the works of XIV century Mamluk Kipchak Turkish, was written to teach Turkish to the Arabs. Although there is no comprehensive information about where and by whom the dictionary was written, it can be said that it contains 3500 (3600) words that play an important role in the lives of Turkish peoples and reflect their lifestyles. There is nothing in nature older than action. In linguistics, the word that describes action is called Verb. Since the object examined by the verb is old, the verb is also one of the oldest main parts of speech. In this article, we compared "Et-tuhfetü'z zekiyye fi'l-lugâti't Turkey" and the Azerbaijani literary language, considering common verbs (hereinafter "Et-Tuhfe"). It is interesting to note that all these lexical units were introduced in the same sense and in the same phonophore both in "Et-tohfe" and in the Azerbaijani literary language. This is due to the fact that they belong to the family of Turkic languages, that they belong to the same indigenous language, and that the lexical units contained in them are Turkish words. This clearly shows that the Kipchaks played an important role in the formation of the Azerbaijani language. Our goal is to introduce "Et-tohfetü'z zekiyye fi'l-lugat-it Turkiyye", which may be important from the point of view of unknown Turkology and the history of the Azerbaijani language. In our opinion, this dictionary should also be used in research in Azerbaijan and should be used in studying the history of the Azerbaijani language.

**Keywords:** Turkic languages, Azerbaijan, "Et-tohfe", dictionary, verbs.

## "ET-TUHFETÜ'Z-ZEKIYYE Fİ'L-LUGÂTİ'T TÜRKİYYE" VE AZERBAYCAN TÜRKÇESİNDE ORTAK KULLANILAN FİLLER

### Özet

Halklar arasında birliği gösteren ana faktörlerden biri de dildir. Bu gerçek Türk dil ailesindeki her bir dil için geçerlidir. M.Mirzaliyeva çalışmalarından birinde haklı olarak "dil sözlüğünün onun oluşum ve gelişim tarihinin bir aynası olduğunu" belirtiyor. Bu yüzden dilin sözcüksel sistemi üzerinde yapılan çalışmalar her zaman Azerbaycanlı dilbilimcilerin dikkatini çekmiştir. Türk dilinin tarihi çok eskidir. Bu gerçek yazılı abidelerle de tescillenmiştir. "Et-Tuhfetü'z zekiyye fi'l-lugâti't Turkiyye" eseri de Türk dillerinin tarihi için oldukça değerli bir çalışmadır. XIV yüzyıl Memluk Kıpçak Türkçesi eserlerinden olan "Et-

Tuhfetü'z zekiyye fi'l-lugâti't Türkiyye" araplara türkçeyi öğretmek maksadıyla yazılmıştır. Sözlüğün nerede ve kim tarafından yazdığına dair kapsamlı bir bilgi olmamasına rağmen, onun Türk halklarının yaşamında önemli rol oynayan ve yaşam tarzlarını yansıtan 3500 (3600) kelime içerdiği söylenebilir. Doğada eylemden daha eski hiçbir şey yoktur. Dilbiliminde eylemi öyrenen sözbirimine fiil adı veriliyor. Fiil tarafından incelenen nesne eski olduğu için fiil de konuşmanın en eski ana bölümlerinden biridir. Bu makalede, "Et-Tuhfetü'z zekiyye fi'l-lugâti't Türkiyye" ile Azerbaycan edebi dilinide ortak kullanılan fiilleri karşılaştırdık (Bundan sonra "Et-Tuhfe"). Tüm bu sözcük birimlerinin hem "Et-Tuhfe" hem de Azerbaycan yazı dilinde aynı anlamda ve aynı fonetik yapıda kullanılmış olması oldukça ilgi çekicidir. Bunun nedeni karşılaştırılan her iki lehçenin Türk dilleri ailesine ait olmaları, aynı bir kökenden türemeleri ve içerdikleri sözcük birimlerinin Türkçe kelimeler olmasıdır. Bu, Azerbaycan dilinin oluşumunda Kıpçaklar'ın önemli bir rol oynadığını açıkça göstermektedir. Amacımız, Azerbaycan'da bilinmeyen Türkoloji ve Azerbaycan dili tarihi açısından önemli olabilecek "Et-tuhfetü'z zekiyye fi'l-lugâti't Türkiyye" sözlüğünü tanıtmaktır. Bize göre bu sözlük Azerbaycan'da araştırılmalı, Azerbaycan dili tarihinin incelenmesine de dahil edilmeli ve kullanılmalıdır.

**Anahtar kelimeler:** Türk dilleri (lehçeleri), Azerbaycan, "Et-Tuhfe", sözlük, fiil.

## Giriş

Halklar arasında birliği gösteren ana faktörlerden biri de dildir. Bu gerçek tüm halklar, hem de Türk dil ailesindeki her bir dil için geçerlidir. Türk dilinin tarihi çok eskidir. Bu gerçek yazılı abidelerle de tescillenmiştir. Bu sahada Orhun Yazıtlarından günümüze kadar gelen çeşitli yazılı abideleri örnek verebiliriz. Bu yazılı eserleri (anıtları) söz varlığı açısından ele alırsak çoğu söze günümüz Türk dillerinde hemen hemen aynı, ya da küçük harf veya anlam değişiklikleri ile rastamamız mümkündür. Bu konuyu ele alan Prof.Dr. M.Mirzaliyeva makalelerinin birinde "dil'in sözlüğünün, yani söz varlığının, onun oluşum ve gelişim tarihinin bir aynası olduğunu" belirtiyor. Bu yüzden dilin söz varlığı üzerinde yapılan çalışmalar her zaman Azerbaycanlı dilbilimcilerin dikkatini çekmiştir. "Et-Tuhfetü'z zekiyye fi'l-lugâti't Türkiyye" eseri de Türk dillerinin tarihi için oldukça değerli bir çalışmadır. XIV yüzyıl Memlük Kıpçak Türkçesi eserlerinden olan "Et-Tuhfetü'z zekiyye fi'l-lugâti't Türkiyye" araplara türkçeyi öğretmek maksadıyla yazılmıştır. "Et-tuhfe" eseri Arapça-Türkçe sözlük ve gramerden oluşuyor. Sözlükte önce Arapça kelimeler, sonra onların bir, bazen de daha çok Türkçe karşılıkları verilmiştir. İki sayfasının eksik olduğu belirtilen eserin sözlük kısmı ilk 39 varakta (78 sayfa) Arap dilbilim okulunun kurallara göre alfabe sırasıyla önce adlar (isimler), sonra fiiller olarak sıralanmış; Arapça kelimeler siyah, Türkçe kelimeler kırmızı mürekkeple yazılmıştır. Eserde yer alan bazı notlara dayanarak onun 14. yüzyılda - Memlûklerin son dönemlerinde yazıldığını tahmin etmek mümkündür. Böyle bir tarihi eserin Azerbaycan Türkçesi ile karşılaştırılmalı incelemesi dilimizin tarihinin araştırılması bakımından da da önem arz etmektedir. Türk dilinin tarihi boyunca Türk halkları geniş bir coğrafyaya yayılmıştır. Bu durum bir yandan Türk dilinin söz varlığını zenginleştirirken diğer yandan onun incelenmesini güçleştirmiştir. "İki dilin karşılaştırmalı incelemesi demek, üstü kapalı bir biçimde, bu dillerin sözcük, anlam, söz dizim, ses ya da yapı bakımından bazı ortak özelliklerinin olduğunu varsayıp, bu benzerliklerden hareketle farklılıkların araştırılıp belirlenmesi demektir" (Topçu, 2001: 24). Bu karşılaştırma farklı dil ailelerine ait diller arasında yapılabileceği gibi aynı dilin farklı kolları arasında da yapılabilir diye düşünerek Azerbaycan Türkçesi ile "Et-tuhfe" eserinin dilini, yani Memlûk Kıpçakcası'nı karşılaştırmaya çalıştık. Sözlüğün nerede ve kim tarafından yazdığına dair kapsamlı bir bilgi olmamasına rağmen, onun 3500 (3600) kelime içerdiği söylenebilir. Bu kelimelerden 1729'u isim (ad), 1185'i fiil (eylem), 313'ü sıfat (önad), 53'ü evezlik (zamir), 34'ü zarf (belirteç),

22'si bağlayıcı (bağlaç), 32'si koşma, 7'si edat (ilgeç), 6'sı ise nidalardan (ünlemlerden) oluşuyor. Türk halklarının yaşamında önemli rol oynayan ve yaşam tarzlarını yansıtan bu kelimeleri biz 3 kısma ayırabiliriz: ad bildirenler, elamet ve kalite ifade edenler, hareket veya eylem bildirenler.

### 1. “Et Tuhfe” ve Azerbaycan Türkçesinde ortak kullanılan filler.

Doğada eylemden daha eski hiçbir şey yoktur. Dilbiliminde eylemi öğrenen sözbirimine fiil adı veriliyor. Fiil tarafından incelenen nesne eski olduğu için fiil de konuşmanın en eski ana bölümlerinden biridir. Türk dillerindeki fiiller, belirli morfolojik özellikler, rengarenk kategorileri açısından dikkat çeken zengin bir konuşma parçasıdır. Bununla birlikte, pratürk döneme özgü çok az eski, tamamı Türkçe fiil vardır. Türk dillerinin fiilleri alan oluşturma açısından farklılık göstermektedir. Prof. Dr. Ferhat Zeynalov çalışmalarının birinde, türk dillerindeki fiillerin anlam bakımından çok az çalışıldığını dile getirmişti. O çalışmasının devamında “Çoğu Türkoloji literatüründe fiiller eylem, durum ve eylemi ifade eden bir kategori olarak nitelendirilse de, bu anlam tonları neredeyse yorumlanmamaktadır. Bazen fiillerin zengin anlamsal tonları abartılır (figüratif, ses taklidi, iş - durum, durum, hareket, doğal fenomenler, zihinsel durumu ifade eden fiiller, çalışma fiilleri, konuşma fiilleri, düşünme fiilleri vb.)” yazmış ve Türk dillerinin fiillerini anlamsal olarak şu şekilde bölmeğin daha uygun olduğunu savunmuştur: “1) hareket fiilleri, 2) iş fiilleri, 3) durumsal fiiller, 4) konuşma fiilleri, 5) düşünme, görme ve duyma (işitme) süreciyle ilgili fiiller” (Zeynalov, 2008, s. 63).

#### 1.1. “Et Tuhfe” ve Azerbaycan Türkçesinde aynı şekilde ortak kullanılan filler

Biz de bu bölüme sadık kalarak “Et-Tuhfe” ve Azerbaycan Türkçesindeki ortak kullanılan filleri tasnif ettik. Zamana kanaat etmek amaçlı o fillerden bazılarından bahsedeceğiz. “Et Tuhfe” ve Azerbaycan Türkçesinde ortak kullanılan en-en “inmek”, aş-aş “aşmak”, az-az “azmak”, aç-aç “açmak”, apar-apar “aparmak”, ek-ek “ekmek”, al-al “almak”, öl-öl “ölmek”, yar-yar “yarmak”, at-at “atmak”, et-et “etmek”, yat-yat “yatmak”, sat-sat “satmak”,öp-öp “öpmek”, ov-ov “ovmak”, biş-biş “bişmek”, iç-iç “içmek”, başla-başla “başlamak” ve b. gibi fillere rastladık. Bunun yanısıra, bazı fiillerin de küçük ses değişimleri ile kullanıldığına da rastladık: es-əs “esmek”, beyen/begen-bəyən “beğenmek”, boz-poz “bozmak”, teş-deş “deşmek”, di-de “demek” kal-qal “kalmak”, ket-get “gitmek” ve b.

**En (Et-Tuhfe) – en (Azerbaycan) “inmek”.** (25 a-4). Bu fiil “Et-tuhfe” ve Azerbaycan Türkçesinde “inmek” anlamında kullanılır. Bu fiili B.Atalay, G.Al-Türk, E.Fazılov aynı Azerbaycan Türkçesindeki seslenme biçimiyle okumuşlar. Azerbaycan Türkçesi'nin sözlüğünde bu kelimenin sekiz anlamı verilmektedir ki, onların her biri direkt ilk iki anlamla bağlıdır: “Enmək – f. 1. Yuxarıdan və ya bir şeyin üstündən aşağı düşmək. Dağdan enmək. Zirzəmiyə enmə (Y.V,Çəmənözminli)... 2. Azalmaq, alçalmaq, düşmək. Havanın temperaturu endi. Qiymətlər xeyli enmişdir... (ADİL, II, 2006, s. 28).

**Aç (Et-Tuhfe) –aç (Azerbaycan) “açmak”.** (34 a 10). “Et-Tuhfe” eserinde aç şeklinde geçen bu kelime Azerbaycan Türkçesi'nde de aynı şekilde kullanılmaktadır. Bu fiili B.Atalay, G.Al-Türk, E.Fazılov aynı Azerbaycan Türkçesindeki seslenme biçimiyle okumuşlar. “Azerbaycan dilinin izahlı lüğeti”nde aç kelimesinin yirmi anlamı yer alır: “f.1. Qapalı bir şeyin qapağını və s. Qaldırma, götürmək, çıxartmaq. Qazanın qapağını açmaq... 2. Açıq hala gətirmək, qapının, pəncərənin taylarını aralamaq. Qapını açmaq. Pəncərəni açmaq...” ve b. (ADİL, I, 2006, s. 41-42). Bu kelime “Dîvânu lugâti't türk” eserinde açmak şeklinde geçmektedir

## 1.2.“Et Tuhfe” ve Azerbaycan Türkçesinde küçük ses değişmesi ile ortak kullanılan filler

**Ket (Et-Tuhfe) – get (Azerbaycan) “gitmek”.**(49 b 5). Bu fiil Azerbaycan Türkçesinde k>g ses değişimi ile kullanılmaktadır. “Azerbaycan Türkçesi Sözlüğü”nde bu kelime getmək şeklinde yer almış ve on yedi anlamı gösterilmektedir: “Getmək – f. 1. Addım ataraq hərəkət etmək; yerimək; addımlamaq. Asta-asta getmək. İti getmək... 2. Başqa bir yerə köçmək, yaşayış yerini dəyişmək. Yaylağa getmək... 3. Keçmək, ötmək, ötüb keçmək. Xiyabanla getmək... ve b. (ADİL, II, 2006, s. 234-35). Prof.Dr. Ferhat Zeynalov gitmek fiili ile alakalı yazıyor: Gitmek fiili hemen hemen tüm Türk dillerinde kullanılır (Al Thai, Tuva, Yakut, Ş veya Khakas'ta barmak fiili bu anlamı yansıtır. Çuvaşça кай-). Birkaç fonetik varyantı (get, ket, ket, kit) olan bu kelime, anlam bakımından fiil “barmak”dan (daha çok Oğuz grubu dillerinde) biraz farklıdır. Türkiye ve Azerbaycan Türkçelerinde kullanılan varmak fiili de barmak fiilinden farklıdır. Çoğu Türk dilinde kullanılan fiil parmağı aynı zamanda yön anlamına da gelmektedir. Ayrıca değişken, par, varyantları da vardır (aslında, par daha eskidir: par - bar - var). Barmak fiili, sonsuza dek gitmek ve ölmek anlamına da gelebilir.” Onu da söylemem gerekiyor ki, varmak ve barmak filleri de “Et-Tuhfe”de aynı anlamda yer alıyor. Barmak ve varmak filleri Azerbaycan Türkçesinde yazı dilinde yer almasa da, bazı yazılı abidelerde ve dialektlerinde (ağızlarında) yer almaktadır.

### Sonuç

Bu makalede, “Et-Tuhfetü’z zekiyye fî’l-lugâti’t Türkiye” ile Azerbaycan edebi dilinde ortak kullanılan fiilleri ele alarak karşılaştırdık. “Et-Tuhfe” sözlüğünde rastlanan 1185’i fiillerin 2%-sine dilimizde tamamen rastlanmamaktadır. Sözlükte yer alan fiillerin 75%-i günümüz Azerbaycan Türkçesinde ister edebi dilde, isterse de ağızlarında olduğu gibi, 23%-ü ise küçük fonetik değişmelerle kullanılmaktadır. Tüm bu sözcük birimlerinin hem “Et-Tuhfe” hem de Azerbaycan yazı dilinde aynı anlamda ve aynı fonetik yapıda kullanılmış olması oldukça ilgi çekicidir. Bunun nedeni karşılaştırılan her iki lehçenin Türk dilleri ailesine ait olmaları, aynı bir kökenden türemeleri ve içerdikleri sözcük birimlerinin Türkçe kelimeler olmasıdır. Bu, Azerbaycan dilinin oluşumunda Kıpçaklar’ın önemli bir rol oynadığını açıkça göstermektedir. Amacımız, Azerbaycan’da bilinmeyen Türkoloji ve Azerbaycan dili tarihi açısından önemli olabilecek “Et-tuhfetü’z zekiyye fî’l-lugâti’t Türkiye” sözlüğünü tanıtmaktır. Bize göre bu sözlük Azerbaycan’da araştırılmalı, Azerbaycan dili tarihinin incelenmesine de dahil edil meli ve kullanılmalıdır.

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## **SOCIAL WORK AND SUSTAINABLE DEVELOPMENT GOALS: ROLE OF SOCIAL WORKERS IN IMPROVING WELL-BEING FOR RESIDENTS OF NURSING HOMES IN MALAYSIA**

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### **Abstract**

The traditional role of social work includes but not limited to addressing issues of inequality, violence, substance abuse, isolation, discrimination and social well-being. The values and principles of the SDG are geared towards the creation of a cohesive and equitable society in a more transformative manner. In addressing social well-being, nursing homes are set up for people who do not need to be hospitalized but cannot be cared for at home. These people are supposed to be managed by professional and skilled nurses, doctors and social workers. As such, this study focuses on the services and advocacy of social workers to help nursing homes achieve an improved sense of well-being. To get relevant data, Google Scholar was used as a tool to access the major databases provided by Taylor and Francis, Emerald, Elsevier, Springer, Sage and others. The study found that the service and advocacy of social workers produce a significant impact on the individuals at nursing homes. The study contributes to knowledge by critically exploring and synthesizing the role of social work in response to welfare services to reduce inequality, enhance good health and wellbeing of the people in nursing homes as indicated in SDGs 3 and 10.

**Keywords:** SDG, well-being, nursing homes, social workers, equality, health care

### **INTRODUCTION**

Social workers need to work at the pace at which society is transforming to provide the needed support in empowerment and sustainable socio-economic development among the population. Social workers can ensure sustainable development and transformation by designing programmes beyond their usual interventions like crisis support, needs assessment and disaster relief program to include advocacy to highlight the pressing issues in society. The role of social worker in this case will go beyond anticipation, assessment, and addressing the psychosocial needs of the residents as well as liaising between their families and the nursing home. These programmes could be through strong social protection systems (Ife, 2016; Jayasooria, 2016; Staub-Bernasconi, 2016) to mitigate the effects of reduced capacity and allow the elderly to participate in the activities they value with minimal limitations thereby enhancing their well-being. The attainment of the Sustainable Development Goals (SDGs) requires a strategic process involving several actors including social work to represent a step further toward achieving sustainable health care delivery and building harmonious society (Chams, & García-Blandón, 2019). In ensuring the wellbeing of this group of people, social workers could advocate for governments to roll out social assistance in the form of cash benefits for the vulnerable groups like women, children and older persons in society. Such intervention may alleviate poverty and the chronic undernutrition that put the elderly, who are mostly the inmate of nursing homes, at greater risk of dying from common infections or leads

to poor health conditions. These roles are crucial especially for social workers in order for them to give the best care to this group of population to better their lives. The practical roles are in relation to the health statuses such as general health, physical and functional status of inmates of these homes in the country. Generally, social work focuses on the needs and empowerment of the vulnerable, the oppressed and those living in poverty. As such, the researchers think that the training of social work professionals equips them with the requisite skills and knowledge to design programmes that help meet the basic human needs to enhance the well-being of all. Hák, Janoušková, and Moldan, (2016) opine, that some of the proposed SDGs and their targets are only laid policy framework without thorough expert follow up, thus the role of social workers may include operationalization of those indicators. Invariably, social workers value their roles in offering services to the vulnerable groups like mentally challenged, older people, economically disadvantaged, children and people who are medically frail in society. It is observed that the prolonged life expectancy in Malaysia and anticipated problems that may arise as a result of old age and the resultant chronic diseases due to ill-health and economic burden, makes it imperative for social work to model on the SDGs.

The SDGs are the new universal set of goals, targets and indicators expanded on the Millennium Development Goals (MDGs) (Sachs, 2012). The MDGs as first global development partnership framework between developed and developing nations were agreed by Heads of State during the Millennium Summit in 2000 (McArthur, 2014; Le Blanc, 2015; Bebbington, & Unerman, 2018). In pursuance of sustainability, the United Nations (UN) conducted the largest consultation programme to get opinion on the composition of the SDGs to establish post-2015 goals which was an outcome of the Rio+20 summit in 2012 dubbed the “Future We Want” (UN, 2012; Sachs, 2012; Hák et al., 2016). The final draft from the working group drawn from 70 countries presented 17 suggestions (which later became the targets and goals) was submitted to the UN general assembly in 2015 (Bebbington, & Unerman, 2018). The SDGs were officially adopted at a UN summit in New York in September and supposed to be applicable from January 2016 until 2030 as the deadline for its implementation and/or realization. As such, the member countries of the UNs are expected to frame their agendas and policies based on these new set of goals. The SDGs focus on transforming the world through poverty eradication, peace, prosperity and opportunities among others for all. It deals with issues and concerns pertaining to human rights, the economy and the environment in an inclusive development agenda (Hashim, & Azman Firdaus, 2019; Wynton Pillai Thomas et al., 2020). In the broader sense, the SDGs are to ensure that the financial, economic and political systems of nations across the globe guarantee the human rights of all without discrimination. In lieu of the SDGs, social workers are required to act beyond their usual roles to practically ensure social justice to foster long term shift in values and principles that equitably integrate vulnerable people into the main stream society. According to Rodriguez (2011), social workers feel accomplished when their clients, for that matter, residents successfully transitioned from life at home to life in residential care. The values and functions of SDGs are already within the confines of social work which may shape and transform the well-being of the vulnerable in society. There are several ways by which the role of social work is prompted by the SDGs in connection with human rights and well-being of the marginalized in society. The response of social work to the well-being of these homes and the implementation of the SDGs may include targeting, reporting, evaluating and advancing how to operate within these contexts. As indicated, addressing the needs of the marginalize based on the possibilities that are opened up by the SDGs will likely engage social workers to focus on a variety of issues at different levels. As part of the goals, ending extreme suffering by 2030 is of much interest to social work as it involves improved care of the old and elderly in nursing homes.

The UN reports in 2019 indicated that elderly population is increasing worldwide and that the percentage will increase from 9% to 16% by year 2050 (United Nations, 2020). In Malaysia, the aging population is becoming eminent as the number of elderly increased from 2.12 million in 2018 to 2.21 million in 2019 (Safian et al., 2021). The situation is crucial and needs special facility like nursing home to care for the well-being of those who cannot be cared for at home. Grabowski (2020) nursing homes care for two main groups like the beneficiaries of Medicare or who stay for short periods to rehabilitate after surgeries or illnesses, and Medicaid beneficiaries, or long-term residents who are unable to live independently. Studies show that nursing homes are designed to house people who are elderly and unable to take care of themselves properly. Therefore, there are institutions that provide activities of daily living, psychological and personal care, physiotherapy, occupational therapy as well as residence care (Ree, & Wiig, 2019; Abd Aziz, Hasbollah, Yaziz, & Ibrahim, 2017). The fact that the population of elderly Malaysians is expected to increase from 7.5% in 2020 to 15% by 2040 (Shuhairi et al., 2017; Safian et al., 2021) makes the role of social workers in nursing home in the country more crucial. Since nursing home entails long term care system, (Kenrick et al., 2010) qualified staff with skills in decision making with regards to planning, organizing, staffing, directing, coordinating, reporting and budgeting are required for effective management. As indicated, the well-being of the residents of these homes include staying healthy, getting around, seeing, hearing, and communicating which are associated with quality of life, and level of dependency (Talarska et al., 2018; Safian et al., 2021). Safian et al. (2021) indicated that essential socio-economic, emotional and health services, and lifesaving interventions are essential and should be provided by qualified professionals like doctor, nurses and social workers for the improvement in caring for the inmates. However, Tabatabaei et al. (2017) found that there is inadequate evidence of study on the quality of life of elderly Malay residents in Malaysian' residential homes.

In a broader sense, the paper aimed at advancing the role of social worker in the pursuit of the UNSDGs in achieving quality of life and an improved care for nursing homes up to the year 2030. The researchers think that the two proposed goals, thus SDG 3 on good health and well-being, and SDG 10 on inequality, provide critical connections, and linked with the role of social workers. In order to achieve these objectives, the SDGs are discussed from social work perspective to explain the quality of life of residents of nursing homes and how they could be enhanced by social workers. This paper is categorized as SDGs in Malaysia, the relationship between SDGs and social work in Malaysia. It specifically explains the source of the SDGs, outlines some of the goals.

### **RESEARCH METHOD**

This narrative study focused on articles available in English and Malaysian Language Bahasa Malaysia. Researchers adopted secondary data analysis approach. Data were taken from journal articles published in areas of nursing homes and social work. The search was done using Google scholar. This narrative literature review examines the key role of social work in caring for residents of nursing homes as prescribed in the SDGs. As such, the roles and outcomes of social work identified and highlighted in relation to the implementation and attainment of SDG 3 (good health and well-being) and SDG 10 (reduced inequalities).

The qualitative data analysis technique is adopted to assess issues on the role of social workers in ensuring the well-being of residents of nursing homes. Extensive and relevant literature was gathered from articles on the latest development in relation to social workers and nursing homes. Therefore, the source of data for the current study is extracts from the secondary data that shed lights on how residents of nursing homes could be served by social



workers through services and advocacy to improve their lives. The search involved reading to identify reports that related to the roles and advocacy of social workers for the benefit of nursing homes. A sample of articles were collected to refine the information and to generate representative themes on issues about the roles and advocacy of social workers.

Both authors consulted with each other throughout the analysis of the articles. The authors also discussed and reviewed each other's portion of the paper and what they found to support validity and reliability of the analysis. The researchers settled on descriptive themes as most appropriate to respond to the research question to describe recent contribution of social workers in supporting the lives of residents of nursing homes in Malaysia. The data collected through multiple sources and varied interpretation was analyzed in line with the research objectives. This involved reading and re-reading articles to pick consistent information to support the objectives of the review. The main themes were generated from the data after several readings and analysis. These themes were based on the appearance in the secondary data and information obtained from the literature.

The limitation of the study is the fact that it is based on online articles and not that of social workers' voices or personal narratives or face-to-face presentation of testimonies for that matter it is not based on intense empirical techniques. Besides, it is important to note that since the analysis was based on thematic analysis, it is possible the work did not fully capture all the essential nuances within the available literature on complex concept like SDGs and the role of social worker. Therefore, the basic features of the study are to offer a glimpse of the role of social workers in the service to humanity in relation to SDG 3 and SDG10 rather than seek generalization.

## **LITERATURE REVIEW**

### **Sustainable Development Goals in Malaysia**

SDGs has taken over MDGs since 2015. For a clearer picture on SDG1 to 17, listed below all 17 SDGs that was initiated by UNs for 15 years of agenda starting year 2016 until 2030.

SDG 1 No Poverty	SDG 10 Reduced Inequalities
SDG 2 Zero Hunger	SDG 11 Sustainable Cities and Communities
SDG 3 Good Health and Well-Being	SDG 12 Responsible Consumption and Production
SDG 4 Quality Education	SDG 13 Climate Action
SDG 5 Gender Equality	SDG 14 Life Below Water
SDG 6 Clean Water and Sanitation	SDG 15 Life on Land
SDG 7 Affordable and Clean Energy	SDG 16 Peace, Justice and Strong Institution
SDG 8 Decent Work and Economic Growth	SDG 17 Partnerships for the Goals
SDG 9 Industry, Innovation and Infrastructure	

The 2030 agenda for sustainable development is to end poverty and other deprivations. The strategies are improving health and education, reduce inequality and economic growth, while for climate change are to preserve the oceans and forests. Some countries in Asia, Malaysia included, have taken initiatives to implement and monitor the SDGs at sub-national

(state, district, local) levels (Rahman et al., 2020). In ensuring UNSDGs slogan Leave No One Behind (LNOB), makes it important to identify local needs, engaging local stakeholders, and address the needs of marginalized groups (Rahman et al., 2020). SDG agenda has been there since 2016, there has not been much awareness on the agenda. Research by Ghazi et al., (2020) among the medical students at a private university in Malaysia stated that 77.8% have heard about SDG and 74.4% are positive that SDG will be achieved by 2030. Unfortunately, COVID-19 has hit the world in late 2019 which would probably slow down the process in achieving SDGs by the year 2030. Lim et al., (2021) doubt about Malaysia's progress in SDG as he questioned whether political leaders are willing to go against their stream, gradually allowing participatory practices to prevail and finally abandoning capitalist politics and adopting ecological democracy. The COVID-19 pandemic has made Malaysia to focus more on SDG 3 Good Health and Well-being.

From the literature review research, most of the articles on SDGs in Malaysia are focusing most on SDG 3 Good Health and Well-Being followed by SDG 1 No Poverty, SDG 2 Zero Hunger, SDG 6 Clean Water and Sanitation, SDG 13 Climate Action, and SDG 15 Life on Land. Indeed, good health and well-being in Malaysia are in need to be focused at this current time as COVID-19 has affected our mental health tremendously through locked up at home for the longest time, retrenchment, financial crisis, abuse and many more. Most of the SDGs research articles found are related to science. SDG 12, SDG 16 and SDG 17 are not adequately covered in Malaysia. However, researchers could not find any article on SDG 10, Reduced Inequalities. Is it because Malaysia is a diverse country or inequality is not pervasive enough to demand action? Refer Table 1 below for Articles of Sustainable Development Goals in Malaysia.

Table 1: Articles on Sustainable Development Goals in Malaysia

Articles on SDGs in Malaysia	Sustainable Development Goals																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(Rashid et al, 2020)		/	/			/	/		/				/	/			
(Wynton Pillai Thomas et al., 2020)		/				/				/		/					/
(Sukeri & Sayuti, 2020)			/														
(Daud, Wan Hanafi, & Othman, 2020)		/						/									
(Hashim & Azman Firdaus, 2019)				/													
(Mahmud, 2019)			/														
(Vaziri et al., 2019)		/															

In Malaysia, it is important to look at SDG 4 for issues such as lack of quality higher education services, unskilled human resources, poor supply of instructional materials, lack of research expertise, and inadequate access to education for some disadvantaged communities (Hashim & Azman Firdaus, 2019). Wynton Pillai Thomas et al., (2020) stated that SDG 2, SDG 6, SDG 11, SDG 13 and SDG 15 are integrated in international school's curriculum as an initiative to nurture the sustainable society and to promote Malaysia as a country with a proper platform of sustainability conscious citizens. United Nations Educational Scientific and Cultural Organization (2009; p. 6) stated that despite the resources that is available in wealthier country, "many young people leave school with no useful qualifications and some choose to drop out since what is taught is irrelevant to their lives". "Education is key in achieving all SDGs where aspects of education is in relationship with gender equality (SDG 5), climate change (SDG 13) focusing on linkages monitoring and professional capacity development, including through partnerships (SDG 17)" (UNESCO, 2020; p.312). This indeed shows that by focusing more in quality of education more goals in SDG can be achieved. Though Malaysia is a developing country, education should still be emphasized.

COVID-19 would make Malaysian government spend a lot for the citizens. However, according to Yun and Yusoff (2015), education and health expenditure do not have significant effects on the country's economic growth. In relation to that, Malaysian government do subsidize government hospitals. Hospitals in Malaysia become crowded and health resources are scarce because Malaysians, rich or poor, take advantage of the inexpensive healthcare services in public hospitals (Sukeri & Sayuti, 2020). Vulnerable groups affected the most to access the care (Sukeri & Sayuti, 2020). More hospitals, facilities and hospital staff are needed to address these issues. Malaysian government should look at SDGs action that is related to address on good health and well-being issues in Malaysia.

Vaziri et al., (2019) research related to SDG 1 in Peninsular Malaysia on poverty stated that more roads are in need throughout Peninsular so that it is accessible to remote places and efficient ways to commute back and forth who live far away from their jobs. Besides, fertile lands too are not accessible to everyone (Vaziri et al., 2019). Other than that, Daud, Wan Hanafi, and Othman, (2020) helped the poor in Malaysia through business model in microcredit and social business ventures which can be mapped to SDG 1 and SDG 8.

Jayasooria (2016) in his article related to SDG stated that in Malaysia there is a total neglect in the environmental and sustainability concerns although human rights activities, development workers and environmentalist especially those working with indigenous people have been in the forefront of community development and social justice approaches.

### **Sustainable Development Goals and Social Work**

Social work is indeed very much related to human rights. It is through involvement with various human rights campaigns and supporting human rights initiatives, through national, regional and global social work bodies, and through social workers' role as activities (Ife, 2016). As stated by Ife (2016) in Australia, social worker is also looking at indigenous for social justice and human rights besides areas such as domestic violence, child protection, disability rights, age discrimination, women's rights, mental health rights, and, LGBTIQ rights.

International Federation of Social Workers (2017) stated that as a human rights profession, social work is well-equipped in contributing substantially in SDGs. SDG goals

and target are on people, planet, prosperity, peace and partnership (United Nations, 2016). SDGs also emphasized at the issues such as ageing, civil society, cooperatives, disability, employment, family, indigenous peoples, poverty, social inclusion and youth (United Nations, 2016). IFSW (2017) also stated that the emergence of eco social work, green social work, or ecological social work has shown a new paradigm rather than just focusing on the human. Though IFSW emphasizes on SDGs, social work association in South East Asia under IFSW such as Singapore Association of Social Workers, Indonesian Social Worker Association, Thailand Association of Social Workers, Philippine Association of Social Workers, and Vietnam Association for Vocational – Educational Training and Social Work Profession, were not really into SDGs. Jayasooria (2016) in his article stated that IFSW social work and social development practitioners are not normally involved in global, macroeconomic decision.

Social work in Malaysia is looking forward in achieving SDGs. Denison Jayasooria a Malaysian Association of Social Workers (MASW) member had participated in World Social Work Day programme in 2017, presented a video messages titled SDGs, Social Work and Addressing Inequities (MASW, 2017). Jayasooria (2016) also added that social workers in Malaysia were not very active in SDGs and therefore the role are played by national, regional and international organizations.

## **RESULTS**

Certain steps are considered in efforts by social workers to discharge their roles in addressing specified needs in order to improve residents' lives. As a profession guided by principles and ethics, social workers employ ethical considerations in discharging their responsibilities to realize the well-being and quality of life of the population. They carry out certain primary duties to ensure the smooth running of a home to ensure the well-being of the resident of nursing home in Malaysia as shown in the themes generated below. The broader themes include social workers contributing to regulate and enforce rules and policies, promote and protect residential rights and well-being, establish community and facility-based programme, collaborate with state agencies and organizations as well as prevent and address resident abuse to provide welfare services. Invariably, it is a trite knowledge that provision of proper care for residents will translate into quality life.

### **Regulation and enforcement of policies**

Social workers can employ and enforce rules and regulations as a primary approach to improve the quality of care and life in nursing homes. Regulation and policies on quality of care, resident assessment, residents' rights and quality of life (Grabowski, 2020) are possible if social workers ensure performance standards at nursing homes are maintained. For instance, this is possible if social workers could add their voice to suggestions of restructuring of the health care system in Malaysia to continue to empower the elderly people to enhance knowledge, attitudes and skills to improve quality of life (Slatyer et al., 2015; Tabatabaei et al., 2017). Besides, what makes it doable is that recent study shows that health social workers provide services in varied environments and in various roles like in design, delivery, and evaluation of care. They as well serve as linkages across both governmental and non-organizational levels to improve health care for individuals (Browne 2019). Social workers may also need to advocate, when necessary, a piece of legislation on affordability of care as well as transparency and accountability, act against abuse of residents at nursing homes. These are all in line with the SDGs addressing the needs of people as social workers' emphasis that no one is left behind. The failure to comply with rules and regulations at

nursing homes could be detrimental to the smooth management and ensuring proper care for the residents. Sofian et al., (2021) suggest that policies designed should include preventive measures to ensure sustainable care delivery to the elderly to promote healthy ageing and a good quality of life. As such, social workers ought to be able to maintain strong oversight and enforcement processes of policies that govern rules and regulations at these facilities to empower the residents. Studies indicate that empowerment allows the individuals to gain better control over their lives as they are able to do things for themselves (Tabatabaei et al., 2017; Abdoli et al., 2011). With regard to policy and planning role, Chams, and García-Blandón (2019) entreat social workers to be committed in enforcing regulations to ensure consistent reporting of health issues and disclosure, distributing responsibilities equally among care givers and setting specific timeline to be applied in the nursing home. According to Ruth, Wachman, and Marshall, (2019), social workers promote health and well-being in child welfare, housing, school social work, veterans and military services and forensic social work.

### **Advocate for the rights and well-being of residents**

The researchers analyze themes that examine the relationships between SDGs and social work and its role in facilitating welfare activity in line with sustainable development. The social workers could design an enhanced website or create a vibrant website, if there is none, (de Saxe Zerden, et al., 2018; Yi et al., 2015) to enable families and the general public to explore information about health and safety, quality of care, evidence of qualify staff, and other topics like rules and regulation at the facility. Steps could be designed for additional information about resident satisfaction testimonies, staff present on site and availability of accommodation to admit new residents or members of the general public. Studies found empowerment of residents in making decisions, in group activities, abilities to meet their own needs, and meaningful engagement improve quality of life in nursing homes (Mandič, & Hrast, 2014; Bayulken, & Huisingh, 2015; Tabatabaei et al., 2017). In pursuit of enforcing rules and regulations, the need to mobilized the necessary resources (both material and human) becomes very crucial for service providers, especially social workers. Relatively, human resources are very important since skillful and knowledgeable staffs are needed to identify issues concerning quality health care gaps in the nursing homes. Recent studies indicate that social workers are trained in designing evidence-based interventions on how to build rapport and enhancing engagement, care coordination and management, and brief treatment (Ross, Zerden, Ruth, Zelnick, & Cederbaum, 2020; Ross & Zerden, 2020; de Saxe Zerden et al., 2018). The designed interventions and engagement will prevent disconnection between residents and families' expectation of care at the nursing homes that is geared towards quality healthcare improvement efforts and evidence-based care for older people. The familiarity with evidence-based and team-based approaches to healthcare support and some welfare systems that contextualizes people, especially the elderly, in their environments (Ross et al., 2020; Schuetz, Mann, & Everett, 2010). Previous studies revealed that one activity of daily life and one instrumental activity of daily living like shopping and housekeeping which involve 1 million and 2.5 million elderlies requires professional assistance (Safian et al., 2021).

### **Establish community-based program**

This theme explores the overlaps between social work values/principles, SDGs and how these might allow the profession to contribute to the achievement of enhance wellbeing for all, particularly the vulnerable in society. Social work's involvement in health care delivery and intensive collaboration is not new thus social workers work in a broad range of health and health care roles (Ruth & Marshall, 2017). As professional social workers, they

consider concepts like community solidarity, social cohesion, social interaction and social networks, to enhance bonding within communities and particularly nursing home to ensure the wellbeing of the residents (Neves et al., 2019) They create community solidarity and bonding through deliberate designed programmes that encourage visitations, communal meals and group activities. According to Kruk et al. (2018), high-quality health systems is needed to optimise health care in each given context by consistently delivering care that improves or maintains the health of residents which is valued and trusted by the public and by responding to changing needs of the people. The role of social empowerment through direct involvement and participation of residents through these special designed programmes could improve and contribute to their emotional and health status thus translate to their well-being. In suggesting policy direction for programmes, it is important for social workers to identify the factors associated with the need for assistance or support of the various communities of a multiracial society like Malaysia. For instance, the supportive environment and improvement in healthcare systems (Grabowski, 2020; Ross, & de Saxe Zerden, 2020; Safian et al. 2021) led to longevity of the current population hence increasing the elderly population with its profound implications on lives of the people. McDonough and Davitt (2011) think that social work can make unique professional contributions to older persons and the late-life family through initiatives, guidelines and intervention programmes. Besides, they should be prepared to handle the long-term care needs of an aging population. In support of this assertion, Ruth et al., (2019) indicated that social work always expands its roles in public health remit by engaging in case finding, early intervention and harm reduction programmes thereby enhancing wellbeing of the residents.

### **Collaboration among state agencies and organizations**

Social workers could focus in assessing government comprehensive list of federal standards in clinical and personal care policies in determining the quality of nursing home care. Grabowski, (2020) regulatory reform might encompass increased enforcement and standards consistent with what residents and their family members want from nursing homes. With this role, they would be informing the state policy makers of potential levers to improve health care and well-being and thereby reducing inequality. The need to urge state and non-state agencies, public and private organizations adopt the UNSDGs as a benchmark by which they evaluate their activities, strategies and organisational outcomes (Hashim, & Azman Firdaus, 2019; Wynton Pillai Thomas et al., 2020). It is observed that the SDGs offer a pathway for countries to mobilize efforts to end poverty, enhance living standards and well-being in order to secure equitable livelihoods for all people. Even though, the goals and targets are important indicators of success but activities that directly or indirectly support the delivery of the SDGs remain unclear (Sullivan, Thomas, Rosano 2017; Jayasooria, 2016). In this vein, social work serve as a double edge sword thus by operationalising these indicators and seeing to it they are put into use by designing welfare programmes in collaboration with state departments and non-state actors for the wellbeing of all, particularly nursing homes. The social workers could also carry out intermittent on-site survey or recommend the state department and agencies to conduct on-site survey to interview the residents and staff, examine the facilities as well as review the medical care records to determine if they meet best standards and practice (de Saxe Zerden, et al., 2018; Yi et al., 2015). Such surveys would have been unearthing the deficiencies health care-related issues, life-safety and harm or abuse to residents after the evaluation of existing quality standards in the facility or nursing home and thereby designing measures that may contribute to the wellbeing of residents. Previous studies indicated that nursing home care in certain areas might have improved possibly due to stronger government enforcement, market-based quality improvement efforts such as public reporting among other factors (Mor, 2011; Li, 2015). The principles of social work can

facilitate the integration of sustainability into nursing homes health care and welfare. They have the potential to design some breakthrough programmes in consultation with other stakeholders in order to support and deliver sustainable good healthcare and well-being. The social work ethics and principles could be shared, reviewed or set care-based and quality of life based on residential policies in consultations with key stakeholders. With this, they should be able to fulfill government requirements for social service documentation and policy delivery.

### **Prevent and address resident abuse**

The abuse perpetrated against residents of nursing home cut across all manner of societies thus poor or rich, developing or developed. For instance, studies revealed that one in three or more of deaths in most high-income nations occur in nursing homes (Broad et al., 2013; Pivodic et al., 2016). In certain situation service providers need to use restraint in order to maintain sanity in the home, even though (de Saxe Zerden, et al., 2018; Maker, & McSherry, 2019) physical restraints in nursing homes among elderly people may result in negative physical, psychological and social consequences on residents and family. In corroboration, recent studies indicate that restraint may be rationalized on the basis of preventing harm to self or others, nonetheless, there are adverse consequences that necessitate the minimization, if not elimination, of their use (Pivodic et al., 2020; Maker, & McSherry, 2019). In this regard, social workers could design guidelines that discourages use of physical restraint and suggest alternative practices or interventions that may lessen situations that demand use of restraint like severity of anger, depression, social isolation on residents. Where physical restraint is inevitable, the situation can be alternatively dealt with when social workers remind colleagues the need for quick referral on a special admission to a psychiatric hospital as situations are getting out of control. Empirical evidence suggests that social workers' commitment in demonstrating ethical and professional behavior, advancing human rights and socioeconomic and environmental justice, using both practice-informed research and research-informed practice, engaging diversity and difference, and engaging in policy practice are crucial (Ross et al., 2020; Bern-Klug, & Beaulieu, 2020; Browne, 2019; de Saxe Zerden et al., 2018).

### **DISCUSSION**

The findings indicate that nursing home are often unable to complete needed nursing care due to inadequate time or human resources like professionals like doctors, nurses and of course trained social workers. The paper aimed at look at the role of social work in pursuit of the health and well-being of residents of nursing homes in relation to the SDGs 3 and 10. The problems with most nursing homes relates to difficulty in walking or mobility that are associated with old age and people under those facilities. Most recent study by Safian et al. (2021) found difficult financial statuses, hearing difficulties, and severe limitations in daily activity were associated with a higher likelihood of people needing assistance. And that, daily activities such as an inability to feed, stand without support, or walk for 15 minutes without stopping were significantly associated with the need for assistance. It is trite knowledge that people without any of these problems or difficulty tend to be physically active and have least risk of disability. Social workers are trained to offer their skills and knowledge to support people's coping process in emotional and distress situations. As indicated by Ross et al. (2020) social work professional competencies training utilises a competency-based approach that is structured around engagement, assessment, intervention, and evaluation across individual, group and community systems, in this case nursing home. Practically, social workers by training are equip to help people, especially in facilities like nursing homes to identify and

build on their natural resilience through access to information and emotional support through special designed programmes or activities.

In an effort to address global problems, sustainable development has become a strategic objective for governments and global community since the launch of the UN SDGs in 2015. Muñoz-Torres et al. (2018) main sustainability principles are associated to the concepts of sustainability and sustainable development are consistent with the works done by Wass et al. (2011), who highlighted sustainability principles as sustainable development influenced values and reflects the needs of society, the equity principle among people, and sustainable development process submitted to change. Apart from the core function of social work in anticipating, assessing and addressing the psychological and social needs of residence, they have always liaised with the family members of inmates and the nursing home to facilitate proper and effective care delivery. The link between the role of social worker and SDGs is considered since the key roles have direct impact on achieving of the UN's SDGs in nursing home (Chams, & García-Blandón, 2019). The two proposed goals (3 - health and well-being and 10 - reducing inequality) provide critical connections among the other goals and make the SDGs more linked to social work functions. These two presented links every target of the SDGs to all the goals. Such engagement by the skillful social workers especially in unpleasant situations, engaging distraught residents and in identifying the resilience of the family and residents are refreshing. (Chams, & García-Blandón, 2019; Daud et al., 2020; Jayasooria, 2016; Rahman, et al., 2020). Recent studies suggest practical role of social workers as compassionate engagement of their clients and families (Bern-Klug, & Beaulieu, 2020; Browne, 2019); Ross et al., 2020) through active listening, crisis management, anger de-escalation, situation stabilization, emotion processing, problem solving, decision making support, boundary setting assistance, advance care planning, transitions of care discussion, validation of family connectedness, role playing, role affirmation, clarifying, reflecting, interpreting, reassuring and meaning making as acquired during social work training (Bern-Klug & Beaulieu 2020)

The researchers opine that social workers play a substantive role in advocating for policies and actions at all levels to contributes towards the achievements of the SDGs since the two share similar values. It is observed that the MDGs somehow failed to recognize the root causes of poverty, overlooked gender inequality, the holistic nature of development and also silent over human rights which necessitated the crafting of SDGs that share same core value with social work. Social workers played advocacy role in recognizing strengths and capacities of their clients, provide needed direct services to clients and the family to serve as an example for emulation. The activities and needed services at nursing homes involve mental health and well-being like staying healthy, getting around, seeing, hearing, and communicating which are associated with quality of life, level of dependency, risk of falls and the need for assistance (Talarska et al., 2018; Safian et al., 2021). The researchers think that practical role of social service providers is the maintenance of balanced life and provision of intervention to stabilize the physical and emotional needs of the elderly in the nursing homes. The successful integration of residents, social workers' knowledge and skill in managing human services like shelter, food, medical care, intensive support services are carefully designed to meet the daily needs of nursing homes (Palmer 2010). Social workers craft activities and programmes to empower the residents with the public support and assistance as a result of their advocacy for the public and family members to encourage residents to move on with their daily lives, take charge of their lives and build a sense of value and self-worth. Thompson (2011) indicated that empowered individuals are able to make their own decisions, solve their problems with less support and in meeting their daily needs. They are able to move



on with their lives with or without the support from professional social workers, as sign of improved well-being.

## CONCLUSION

The study specifically focuses on the role of social worker in ensuring the well-being of residents of nursing homes. Thus, by looking at social workers' response at a practical level through advocacy in supporting residents of nursing homes. There is a pressing need for social workers to ensure that several of their duties are run cohesively before certain goals could be achieved within the nursing home. They ought to get involved in both designing and implementation of programmes that provide an improved quality of life for the inmates of these homes. Suggestively, the role and advocacy informed by principle of social work in responding to the needs of residents of nursing homes is significant in the advancement of their well-being.

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# SINIF ÖĞRETMENLERİNİN MATEMATİKSEL MODELLEME İLE İLGİLİ FARKINDALIKLARI VE MATEMATİK DERS KİTAPLARININ İNCELENMESİ

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## ÖZET

Bu çalışmanın amacı matematiksel modelleme ve modelleme geliştirilmesi konusunda sınıf öğretmenlerinin farklı bakış açılarını ortaya koymaktadır. Matematiksel düşünmenin geliştirilmesi güncel hayatta karşılaşılan sorunlarla başa çıkmak için önemli bir rolü vardır. Matematiksel modelleme, güncel yaşamdaki fikirleri matematiksel bilgiler ışığında bağlantı kurarak açıklama fırsatı sunar. Veri toplama aracı olarak çalışmada Modeller ve Modelleme Anketi, Matematik Tutum Ölçeği ve öğretmenlerin yorumlarına yer vererek etkinlik uygulanmıştır. Anket 2020-2021 eğitim-öğretim yılında Çanakkale 18 Mart Üniversitesi mezunu ve seçilen 60 sınıf öğretmenine uygulanmıştır. Verilerin analizi SPSS programı ile yapılmıştır. Elde edilen bulgular sonucunda ; ilköğretim öğrencisi için soyut kavramların anlamlandırma ve kavrama süreci zor olduğundan sınıf öğretmenleri konuları daha somut bir model haline getirerek kalıcılığı sağlanmaktadır. Uygulama ile ilgili kazanımın güçlü yönleri öğrenci açısından yaparak – yaşayarak öğrenme, matematiği oyunlaştırarak sevdirmeye ve akran grubu ile birlikte olduğundan sınıfın tümüne hitap etmesi öğrenme açısından etkili olduğu görülmektedir. Matematiksel modelleme yönteminin sınıf öğretmenleri tarafından en fazla kullanıldığı alanlar geometrik şekillerin gösterimi, kesir problemleri ve diğer problem çözümü teknikleridir. Sınıf öğretmenleri matematiksel modellemeyi güncel hayatın içinde etkin bir şekilde kullanımın farkına vardıkları ancak modellemeyi derslerde kullanılan somut materyaller olarak tanımlamıştır. Sınıf öğretmenlerine hizmet içi eğitim olarak literatür ve soyut matematiksel düşünmeyi günümüz dünyasına entegre etmek için geniş çaplı bir eğitim ve uygulama olanağı tanındığı takdirde daha verimli çalışmalar olacaktır. Matematik dersi nicel verilere sahip bir ders olduğu halde farklı değerler de problemler ve etkinlikler yoluyla öğrencilere kazandırılabilir. Matematik öğretiminde, çocukların kazanması gereken değerler ve modelleme bazında somut içerikli örneklerle yer verilmelidir.

**Anahtar Kelimeler:** matematiksel modelleme, modelleme farkındalığı, sınıf öğretmenleri

## AWARENESS OF PRIMARY SCHOOL TEACHERS RELATED TO MATHEMATICAL MODELING AND EXAMINATION OF MATHEMATICS TEXTBOOKS

### Abstract

The aim of this study is to reveal the different perspectives of classroom teachers on mathematical modeling and development of modeling. The development of mathematical thinking has an important role in dealing with problems in current life. Mathematical modeling provides the opportunity to explain the ideas in daily life by establishing connections in the light of mathematical knowledge. The researches on the purpose of using

mathematical modeling of classroom teachers, teachers include mathematical modeling in their lessons within the framework of applications for better understanding and concretization of the subjects. Models and Modeling Questionnaire, Mathematics Attitude Scale and the activities were applied by interviewing with teachers in the study as a data collection. The survey was applied to 60 classroom teachers who were graduated of Çanakkale 18 Mart University and who are selected from the close environment in 2020-2021 academic year. The data used in the research were analyzed with the SPSS program. Since the process of understanding and understanding abstract concepts is difficult for elementary school students, classroom teachers make the subjects more concrete model permanent. The strengths of the learning outcome related to the application are seen to be more effective in terms of learning by doing - learning by experiencing, making mathematics like fun. The areas where mathematical modeling method is mostly used by classroom teachers are representation of geometric shapes, fraction problems and other problem solving techniques. Effective use of mathematical modeling requires effective communication with the student. In the research, terms of modeling and values were examined which are in 2020-2021 primary school third grade mathematics textbooks and workbooks. Although mathematics lesson is a lesson with quantitative data, different worths can also be gained to students through activities. There are concrete examples on the basis of modeling and values that children should acquire in mathematics teaching.

**Keywords:** mathematical modeling, awareness of modelling, Classroom teachers

## **GİRİŞ – INTRODUCTION**

Matematiksel düşünmenin geliştirilmesi güncel hayatta karşılaşılan sorunlarla başa çıkmak için önemli bir rolü vardır. Matematiksel modelleme, güncel yaşamdaki fikirleri matematiksel bilgiler ışığında bağlantı kurarak açıklama fırsatı sunar. Sınıf öğretmenlerinin matematiksel modellemeyi kullanım amaçlarına yönelik araştırmalar incelendiğinde, öğretmenler konuların daha iyi kavranması ve somutlaştırmaya yönelik uygulamalar çerçevesinde matematiksel modellemeye derslerinde yer vermektedir. Uygulama ile ilgili kazanımın güçlü yönleri öğrenci açısından yaparak – yaşayarak öğrenme, matematiği oyunlaştırarak sevdirmeye ve akran grubu ile birlikte olduğundan sınıfın tümüne hitap etmesi öğrenme açısından etkili olduğu görülmektedir. Matematiksel modelleme yönteminin sınıf öğretmenleri tarafından en fazla kullanıldığı alanlar geometrik şekillerin gösterimi, kesir problemleri ve diğer problem çözümü teknikleridir. Araştırmada ilkökul üçüncü sınıf matematik ders ve çalışma kitaplarının içerdiği modelleme ve değerler bakımından incelenmiştir. 2020- 2021 yılında ilkökul üçüncü sınıf düzeyinde Matematik dersinde okutulan ders kitabı araştırma kapsamına alınmıştır. Matematik dersinde matematiğin kendine özgü değerleri dışında matematiksel modelleme eğitimine de yer verilmesi son derece önemlidir.

The development of mathematical thinking has an important role in dealing with problems encountered in current life. Mathematical modeling provides the opportunity to explain the ideas in daily life by establishing connections in the light of mathematical information. When the researches aimed at primary school teachers' use of mathematical modeling are examined, teachers include mathematical modeling in their lessons within the framework of applications for better understanding and concretization of the subjects. The

strengths of the learning outcome related to the application are seen to be effective in terms of learning by doing - learning by experiencing, making mathematics like it and appealing to the whole class because it is with the peer group. The areas where mathematical modeling method is mostly used by primary school teachers are representation of geometric shapes, fraction problems and other problem solving techniques. In the study, primary school third grade mathematics textbooks and workbooks were examined in terms of modeling and values. In 2020-2021, the textbook taught in the third grade mathematics course at primary school was included in the study. It is really very important to include mathematical modeling education in addition to the specific values of mathematics in mathematics lesson.

## **MATERIALS AND METHODS**

### **ARAŞTIRMANIN AMACI - PURPOSE OF THE RESEARCH**

Bu araştırmanın amacı sınıf öğretmenlerinin matematik dersi modelleme yöntemi kullanılarak öğretimi açısından öz yeterliklerini inceleyerek onların bir nebze olsun eksikliklerini sorgulamasını sağlamak ve en fazla hangi alanlarda zorluk çektiklerini tespit etmektir. Sınıf öğretmenlerinin matematiksel modelleme konusundaki farkındalıklarını arttırmak , sadece somut materyal örneklerinden çok soyut düşünebilmeyi ve güncel hayata uygun hale getirip matematiksel uygulamalara katılabilmeyi amaçlamaktadır. Bunun yanı sıra Milli Eğitim Bakanlığınca onaylanmış olan ders kitaplarını değerler ve modeller açısından değerlendirilmiştir. Böylece günümüz koşullarında neler değiştirip geliştirilebilir ve değişen dünya koşullarına matematik modelleme nasıl uyarlanabilir konusu araştırma ile ele alınmıştır.

The aim of this study is to examine the primary school teachers' self-efficacy in terms of teaching by using the mathematics lesson modeling method, to make them question their shortcomings a little and to determine which areas they have the most difficulties. Another aim of this study is to increase the awareness of Primary school teachers about mathematical modeling, to be able to think abstractly rather than just concrete material examples and to participate in mathematical applications by making them suitable for daily life. In addition, the textbooks approved by the Ministry of Education were evaluated in terms of values and models. Thus, what can be changed and improved in today's conditions and how mathematical modeling can be adapted to changing world conditions has been discussed with research.

### **ARAŞTIRMANIN MODELİ - THE MODEL OF THE RESEARCH**

Bu çalışmada nicel ve tarama modeli kullanılmıştır. Tarama yöntemi günümüzde ve geçmişte var olan problem veya sorunları belirlemek ve betimlemek amacıyla var olmuştur.. Araştırmaya katılan katılımcılar kendi öz yeterlilik , sosyal ve kültürel durumları ile birlikte örneklem olur ve ölçüğe katılım sağlamaktadırlar.

Quantitative and scanning models were used in this study. Scanning method is to identify and describe the current and past problems or problems. Participants participating in the research, together with their own self-efficacy, social and cultural conditions, become samples and participate in the scale

### **ARAŞTIRMANIN ÖRNEKLEMİ - SAMPLE OF THE RESEARCH**

Bu araştırma Çanakkale 18 Mart Üniversitesi mezunları ve seçilen 60 sınıf öğretmenine uygulanmıştır. Sosyal ve kültürel ,ekonomik anlamda değişken nitelikte deneklerle sınırlandırılmış bir araştırmadır. Örneklemede farklı değer ve öz yeterlilik seviyelerine sahip öğretmenler bulunmaktadır.

This research was applied to the graduates of Çanakkale 18 Mart University and 60 Primary School Teachers. It is a research that is limited to subjects that are socially and culturally and economically variable. There are teachers with different values and levels of self-efficacy in the sample.

### **Veri Toplama Yöntemi ve Analizi - Data Collection Method and Analysis**

Araştırmada veri toplama araçları olarak kullanılan Modeller ve Modelleme Anketi, Matematik Tutum Ölçeği, nicel ve tarama yöntemi kullanılmış ve öğretmenlerle görüşmeler yapılmıştır.Öğretmenlerin modeller ve modelleme ile ilgili görüşleri, uygulama öncesinde verilen ankette bulunan 30 maddeden oluşan 5'li likert tipi bir ölçekle ölçülmüştür. Öğretmen adaylarının çoklu temsiller olarak modeller, tam bir kopya olarak modeller, açıklayıcı araçlar olarak modeller, bilimsel modellerin kullanımı, modellemenin yapısının değişimi ve model örnekleri ile ilgili görüşleri incelenmiştir. Matematik dersine karşı tutum ölçeği anketi yapılmış ve 38 maddeden oluşmaktadır. Sınıf öğretmenlerinin uygulama modelleme konusunda uygulama öncesinde ve sonrasında matematik dersine karşı düşüncelerinde değişim olup olmadığını belirlemek amacıyla Matematik Tutum Ölçeği uygulanmıştır. Ölçekteki maddelerin hiçbirinin kesin cevabı yoktur. Her cümleyle ilgili görüş, doğal olarak kişiden kişiye değişebilir. Bu ölçek, sevgi, meslek, korku, zevk, önemlilik, ilgi ve güven boyutlarını içeren 38 maddeden oluşmaktadır. Son olarak maddelerin tek tek frekans analizi yapılarak yüzdeler ve anlamlılık düzeyleri incelenmiştir. Ölçekte yer alan maddelerin frekansı, toplam puanların ortalaması ve anlamlılık düzeyi Tablo 1'de verilen değerlerine göre yorumlanmıştır.

Models and Modeling Questionnaire, Mathematics Attitude Scale, quantitative and scanning methods were used as data collection tools in the study. And interviews were made with teachers. Teachers' views about models and modeling were measured with a 5-point Likert-type scale consisting of 30 items in the questionnaire given before the implementation. Pre-service teachers' views on models as multiple representations, models as complete copies, models as explanatory tools, the use of scientific models, the change in the structure of modeling and model examples were analyzed. An attitude scale questionnaire was conducted towards the mathematics course. This questionnaire consists of 38 items. The Mathematics Attitude Scale was applied to determine whether there was a change in primary school teachers' views on application modeling before and after the application towards the mathematics lesson. None of the items in the scale have an exact answer. The opinion of each sentence can naturally vary from person to person. This scale consists of 38 items including the dimensions of love, profession, fear, pleasure, importance, interest and trust. Finally, the percentiles and significance levels were examined by making frequency analysis of the items one by one. The frequency of the items in the scale, the average of the total scores and the level of significance were interpreted according to the values given in Table 1.

Tablo 1. 5'li Likert Tipi Ölçeğin Değerleri

İfadeler	Değer
Tamamen Katılıyorum	5
Katılıyorum	4
Kararsızım	3
Katılmıyorum	2
Tamamen Katılmıyorum	1

## BULGULAR – RESULTS

Tablo 2 incelendiğinde, katılımcıların %75'i kadın ve %25 erkek olmak üzere %86,7 oranında sınıf öğretmeni katılım yapmış diğer katılımcılar ise farklı branş öğretmenleridir.

Tablo 2. Katılımcıların Sosyo - Demografik Dağılımları

	f	%
<b>Kadın</b>	40	75
<b>Erkek</b>	20	25
<b>20-30 Yaş Aralığında Olan Öğretmenler</b>	23	40
<b>30 Yaş ve Üzerinde Olan Öğretmenler</b>	37	60
<b>Lisans Mezunu Öğretmenler</b>	35	41,7
<b>Lisansüstü Mezunu Öğretmenler</b>	25	58,3
<b>Toplam</b>	60	100

Tablo 2 incelendiğinde, anket sonucunda katılımcıların ortalama 30 – 40 yaş aralığında olduğu sonucuna ulaşılmıştır. Sınıf öğretmenlerinin %90'ı ise modelleme yöntemini güncel hayat ile bağdaştırarak kullandığını belirtmektedir. Anketin açık uçlu soru kısmında ise daha çok kesir problemlerinde somut görsel olarak bir kek görselinden faydalandıklarını yorum olarak belirtilmiştir. Öğretmenlerin %90'ı görsel ve işitsel hafızaya olan etkisinden dolayı matematiksel modelleme konusunu gerekli görüp uygulamaktadır. Katılımcı öğretmenlerin kişisel özelliklerine ait frekans ve yüzde değerleri Tablo 2'de verilmiştir.

When evaluated in line with the answers of the people participating in the survey in line with the values given in Table 2 It was concluded that 90% of the participants had a better understanding by using the modeling method of the mathematics lesson. A primary school teacher attended 86.7% of the participants, 75% of whom were women and 25% were men. Other participants are teachers of different branches. As a result of the survey, it was concluded that the participants were between 30 and 40 years old on average. 90% of primary school teachers state that they use the modeling method in line with the current life. In the open-ended question part of the questionnaire, it was stated as a comment that they mostly benefited from a concrete visual cake visual in fraction problems. 90% of the teachers consider mathematical modeling necessary and apply it due to its effect on visual and auditory memory. The frequency and percentage values of the participant teachers' personal characteristics are given in Table 2.

Tablo 3. Öz Yeterlik Düzeyi Yüksek Olan Maddeler

MADDE	n	$\bar{x}$	SS
Maket ve oyuncak birer modeldir.	60	4,083	0,808
Matematiksel Modelleme yöntemi ile öğrencilerim konuyu daha iyi kavradı	60	4,75	0,836
Modelleme yöntemini güncel hayat ile bağdaştırarak dersi anlatıyorum	60	4,70	0,907
Modeller bir şeyin küçültülmüş halidir	60	4,033	0,780

Matematiksel Modelleme anketindeki tüm maddeler tek tek incelemiş ve özetle sınıf öğretmenlerinin matematiksel modelleme konusunda öz yeterliğinin en yüksek ve en düşük çıktığı maddeler anlamlılık düzeylerine göre Tablo 3 ve Tablo 4’de gösterilmiştir. Tablo 3 incelendiğinde sınıf öğretmenlerinin matematiksel modellemeyle ilgili somut verilere ihtiyaç duyduğu ve kullandığı ortaya çıkmaktadır. Sınıf öğretmenleri matematiksel modelleme yöntemini güncel hayat ile bağdaştırarak uyguladığı saptanmıştır. Maket, oyuncak gibi modellerin matematiksel modelleme anlamında bir şeyin küçültülmüş hali olduğunu belirtmişlerdir. Bilimsel bir olayla ilgili bir fikir ve teorilerin formüle edilmek istendiğinde de kesinlikle yararlanılması gerektiği sonucuna varılmaktadır.

All items in the Mathematical Modeling questionnaire were examined one by one. And in summary, the items with the highest and lowest self-efficacy of primary school teachers in mathematical modeling are shown in Table 3 and Table 4 according to their significance levels. When Table 3 is examined, it is revealed that primary school teachers need and use concrete data about mathematical modeling. It has been determined that primary school teachers apply the mathematical modeling method in line with the current life. They stated that models such as models and toys are a scaled-down version of something in terms of mathematical modeling. It is concluded that when an idea and theories about a scientific event are wanted to be formulated, they should definitely be utilized.



Tablo 4. Öz Yeterlik Düzeyi Düşük Olan Maddeler

MADDE	n	$\bar{x}$	ss
Bir model, boyutu hariç, gerçek cisme tam olarak benzemelidir.	60	3,55	1,032
Bir model, hiç kimsenin reddedemeyeceği kadar, gerçek cisme tam olarak benzemelidir.	60	3,50	1,157
Bir model tam bir kopya olmalıdır.	60	3,28	1,276

Tablo 4 incelendiğinde sınıf öğretmenleri matematik dersinde kullanılan bir modelin gerçek cisme birebir benzemesi veya tam bir kopya olması gerektiği konusunda öz yeterlik seviyesi düşük çıktığı saptanmıştır. Sınıf öğretmenleri matematiksel bir modelleme kullanmak istediklerinde kullandıkları modeller somut veya benzer olduğundan dolayı bir modelin birebir benzemesi veya tam bir kopya olması gerektiği konusuna katılmamaktadır. Bu nedenle her şeyden önce alanda görev yapan ve yapmak üzere yetişen sınıf öğretmenlerine çok daha etkili bir matematiksel modelleme eğitimi verilmeli ve öğretmenler bu dersin önemini bilincinde olarak daha fazla çaba sarf etmelidirler. Matematiksel modelleme uygulaması sadece somut kavramlardan değil, soyuttan soyuta düşünüp modelleyebilmeyi kapsamaktadır. Gündelik hayat ile bağdaştırarak daha etkili bir eğitim vermekten geçer.

When Table 4 is examined, it is found that a model used in primary school teachers' mathematics lesson has a low level of self-efficacy that it must be exactly like the real object or be an exact copy. When primary school teachers want to use a mathematical model, they disagree that a model should be identical or an exact copy, since the models they use are concrete or similar. For this reason, first of all, a much more effective mathematical modeling training should be given to primary school teachers who work in the field and are trained to do so. And teachers should put more effort, being aware of the importance of this lesson. The application of mathematical modeling includes not only concrete concepts but also thinking and modeling from abstract to abstract. This modeling practice is about giving a more effective education by associating it with daily life.

Sınıf Öğretmenlerinin Cinsiyete Bağlı Ön Anket / Son Anket  
Görüşlerinin Değerlendirilmesi

	Cinsiyet	Kişi Sayısı	Ortalama	Standart Sapma	Test Değeri	P değeri
Ön Anket	Kadın	40	4,20	0,607	1,243	0,219
	Erkek	20	3,95	0,944		
Son Anket	Kadın	40	4,37	0,667	0,318	0,752
	Erkek	20	4,30	1,031		

Sınıf öğretmenlerinin matematik dersinde modelleme kullanımı öncesi ve sonrası arasındaki farkın saptanmasını amaçlayan alt problemi daha geniş tutularak “Sınıf öğretmenlerinin matematiksel modelleme uygulama öncesi ve sonrası cinsiyete bağlı farklar nelerdir?” şeklinde belirlenmiştir. Belirtilen tabloda bulunan veriler incelendiğinde, sınıf

öğretmenlerinin cinsiyete bağlı olarak uygulama öncesi ve sonrası yapılan ön anket ve son anket sonrası görüşlerine göre değerlendirilmiştir. Bağımsız örneklem t-testi verilerine göre istatistiksel olarak anlamlı ( $p > 0,05$ ) bir fark bulunamamıştır.

The sub-problem aimed at determining the difference between before and after the use of modeling in the mathematics lesson of classroom teachers was broadened and determined as "What are the gender-related differences before and after the mathematical modeling application of classroom teachers?". When the data in the specified table was examined, it was evaluated according to the opinions of the classroom teachers after the pre-survey and the last questionnaire, which were made before and after the application depending on gender. There was no statistically significant difference ( $p > 0.05$ ) according to the independent samples t-test data.

Sınıf öğretmenlerine uygulanan matematik tutum ölçeği sonrasında matematik dersine karşı tutumu konusunda öz yeterliğinin en yüksek ve en düşük çıktığı maddeler anlamlılık düzeylerine göre Tablo 6 ve Tablo 7’de gösterilmiştir.

**Tablo 6. Öz Yeterlik Düzeyi Yüksek Olan Maddeler**

MADDE	$\bar{x}$
Matematik çalışırken sıra dışı bir soruyla karşılaşınca yanıt bulana kadar uğraşırım.	3,81
Yeni bir matematik problemiyle uğraşırken kendimi rahat hissedirim.	3,80
Matematik sevdiğim dersler arasındadır.	3,75
Matematik beni korkutmuyor.	3,48

Tablo 6 incelendiğinde sınıf öğretmenleri matematik dersinden korkmamaktadır ve matematik sevdiği dersler arasında olduğu belirlenmiştir. Sınıf öğretmenleri yeni bir matematik problemiyle uğraşmak istemekte ve sıra dışı bir soru kalıbıyla karşılaştıklarında ise soruyu çözene kadar mutlaka uğraşmaktadır.

Tablo 7. Öz Yeterlik Düzeyi Düşük Olan Maddeler

MADDE	$\bar{x}$
Matematik bir bilim değil yalnızca bir araçtır.	3,10
Matematik problemlerini çözmeye çalışmak bana çekici gelmiyor.	2,98
Zorunlu olmasam matematik derslerine girmezdim.	2,56

Tablo 7 incelendiğinde sınıf öğretmenlerinin %40 oranında matematiğin bir bilim değil yalnızca araç olduğunu belirtmiştir. %36,6 oranında katılımcıya matematik problemlerini çözmeye çalışmak istememektedirler. Sınıf öğretmenlerinin %36,6 oranında katılımcı matematik problemlerini çözmeye çalışmak istememektedirler.

When Table 7 is examined, 40% of primary school teachers stated that mathematics is not a science but only a tool. 36.6% of the participants do not want to try to solve math problems. 36.6% of primary school teachers do not want to try to solve math problems.

Milli Eğitim Bakanlığı matematik ders kitabında yer alan "Paylaşma" değeri ile ilgili örneğin ;"Kağan, annesinin yaptığı kurabiyeleri 10 arkadaşına eşit bir şekilde paylaşmak ister. Tepside 20 kurabiye vardır. Kağan her arkadaşına kaç tane kurabiye vereceğini kısa yoldan nasıl bulabilir? Düşünelim."

### Şekil 1. Modelleme Matematik Problemi



Şekil 1 incelendiğinde, üçüncü sınıf matematik kitabında 3.Ünite 2.Bölümde 116.sayfada yer alan bu örnek paylaşma değerini içinde barındırmaktadır. Bu değerde ölçeklendirme modeli kullanılmış olup somut görünen bir temsil ifade edilmiştir. Böylelikle bu kurabiye örneği öğrencinin kafasında "Paylaşma" değerini daha net canlandırarak olup matematiksel modelleme yöntemlerinden yapının paylaşılabilirliği ve yeniden kullanılabilirliği prensibiyle açıklanabilir.

According to the following statement regarding the "Sharing" value in the mathematics textbook of the Ministry of National Education for example;"Kağan wants to share the cookies made by his mother equally to 10 of his friends. There are 20 cookies in the tray. How can Kağan find out how many cookies he will give to each friend in a short way? Let's think. " As seen above, this example in the third grade mathematics book on page 116 in the 3rd Unit 2nd Chapter contains the value of sharing. In this value, the scaling model is used

and a concrete visible representation is expressed. Thus, this cookie sample will more clearly visualize the "Sharing" value in the student's mind, and it can be explained by the principle of share-ability and reusability of the structure, which is one of the mathematical modeling methods.

### **SONUÇ – CONCLUSIONS**

Sınıf öğretmenleri model, resim, diyagram, ile somut bir modelle öğretim yapmaktadırlar. Modeli bir şeyin küçültülmüş hali olarak görmektedirler. Örneğin maket ya da oyuncak gibi. Bir modelin doğru bilgi verecek ve cismin nasıl görüldüğünü gösterecek şekilde gerçek cisme benzemesi gerektiği katılımcılar tarafından belirlenmiştir. Modelin boyutu hariç, gerçek cisme tam olarak benzemesi gerektiğini düşünmemektedir. Öğretmenler modelin gerçek cismin ne olduğu hakkında fikir vermesi hususunu yeterli bulmaktadırlar. Öğretmenler modelleme yönteminin kalıcı bir öğretimle olabileceğini savunmaktadır. Matematiksel modelleme yöntemiyle öğrencilerinin konuyu daha iyi kavradığı konusunda hem fikirdir.

Öğretmenlerin matematik dersini sevdiği ve bu konuda severek eğitim verdikleri görülmektedir. Kullanılan modellerin tam olarak benzememesi ve soyut kavramların güncel hayat ile bağdaştırmada güçlük olsa bile öğretmenlerin somut kavramlarda matematiksel modelleme kullanıldığı görülmektedir. Milli Eğitim Bakanlığı ders kitapları incelendiğinde değerler veya matematiksel modelleme kullanımıyla ilgili birçok soyut ve somut matematik problemi bulunduğu saptanmıştır. Matematiksel modelleme veya matematiksel prensiplerin uygulandığı görülmektedir.

Primary school teachers teach with a concrete model with models, pictures, diagrams. They see the model as a scaled-down version of something. For example, like a model or toy. It was determined by the participants that a model should resemble a real object in a way that gives accurate information and shows what the object looks like. Teachers do not think that the Model should look exactly like the real object, except for its size. The teachers find it sufficient for the model to give an idea about what the real object is. Teachers argue that the modeling method can be achieved with a permanent teaching. There is a consensus among the teachers that their students better grasp the subject with the mathematical modeling method. It is seen that teachers love mathematics lesson and teach fondly about it. Even if the models used are not exactly similar and it is difficult to reconcile abstract concepts with daily life. It is seen that teachers use mathematical modeling in concrete concepts. When the textbooks of the Ministry of Education were examined, it was determined that there were many abstract and concrete mathematical problems related to the use of values or mathematical modeling. Mathematical modeling or mathematical principles appear to be applied.

### **ÖNERİLER - DISCUSSIONS**

- Sınıf öğretmenlerine hizmet içi eğitim olarak literatür ve soyut matematiksel düşünmeyi günümüz dünyasına entegre etmek için geniş çaplı bir eğitim ve uygulama olanağı tanınmalıdır.
- Alışlagelmiş eğitim sisteminin yanında matematik problemlerini çözmeden önce problemi bir model haline getirip dersin işlenmesi yönünde öğrencilere yönelik kazanım sağlanmalıdır. Böylece öğrenci, sorunun çözümünden önce sorunun oluşma sürecini takip etmiş olacaktır.

- Öğrencilerin matematik problemlerinin çözümüne ilişkin katılımına destek verilmesi gerekmektedir. Öğrenciye gerekli zaman tanınmalıdır. Farklı çözüm yolları ve bakış açısı ile daha iyi kazanımlar ve beceriler geliştirilebilir.
- Matematiksel bilginin kullanımı ile ilgili sözel bilginin yanı sıra matematiksel grafikler, tablolar ile ifade edilmesi istenilmelidir. Öğrenci böylelikle matematiksel bilginin kullanımına etkin katılım sağlamış olur.
- In order to integrate literature and abstract mathematical thinking into today's world as primary school teachers and in-service training, a wide-ranging education and application opportunity should be provided. In addition to the usual education system, before solving mathematics problems, students should be provided with an outcome for making the problem a model and teaching the course. Thus, the student will follow the process of the problem before solving the problem. Students' participation in solving mathematical problems should be supported. The student should be given the necessary time. Better acquisitions and skills can be developed with different solutions and perspectives. In addition to verbal information about the use of mathematical knowledge, it should be asked to be expressed in mathematical graphs and tables. Thus, the student participates actively in the use of mathematical knowledge.

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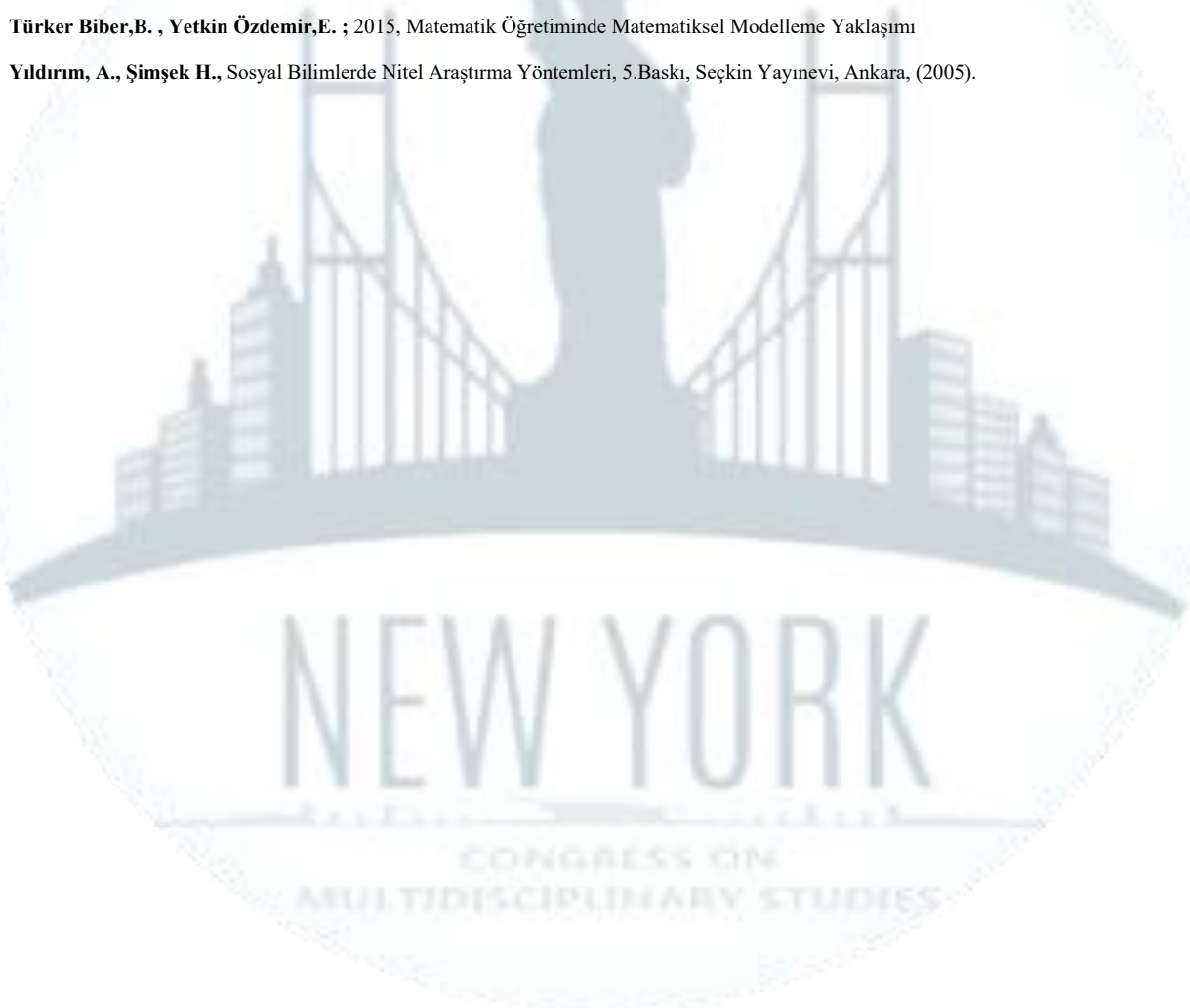
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## **EMPIRICAL COMPARISON OF THE RESULTS OF THE KAZAKH - AND RUSSIAN-LANGUAGE VERSION OF THE METHODOLOGY**

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### **Abstract**

The article is devoted to the problem of cross-cultural equivalence of test methods. The article presents the results of empirical comparison of the results of the Kazakh -and Russian-language version of the methodology for the study of the value-semantic sphere of personality, namely the test of viability. The respondents were undergraduates of Kazakh nationality, who performed the test of viability in two versions: initially in the Kazakh language, and a week later – in Russian. It is revealed that the results of both versions - Kazakh and Russian-closely correlate with each other and are close in average values. Consequently, they give equivalent results, which allow using any of the variants of this technique when conducting research on respondents of Kazakh nationality.

**Keywords:** cross-cultural comparison, bilingualism, personality technique, value-semantic sphere, ethno-cultural studies, vitality, vitality test.

The study of various psychological problems is impossible without the appropriate diagnostic tools. And now psychologists-scientists are doing a lot of work on the adaptation and translation of foreign techniques into Russian. Cultural adaptation of psychological techniques to different languages allows identifying cultural differences that undoubtedly characterize each ethnic group.

Recently in psychology are considered adapted and translated foreign techniques of motivation to search for meaning in life (S.P.C.Elshanskiy, F.Anufriev, F.D.Kamaletdinov and V.Semenov), psychosomatic medicine (T.A.Zhelonkin, P.S.Enikolopov, A.Ermushev), personal development (V.E.Oryol, I.G.Senin Astana), emotional States (E.M.P.Osin), individual differences in optimism (i.e. T.Gordeeva, O.Sychev, E.M.P.Osin), dimensions, orientations and time perspective).

The author in his works convey the experience of adaptation and translation of foreign language techniques, discuss the organizational aspects of the Russian version of the tests, the procedure for creating a primary form of questionnaires and analysis of psychometric testing. All methods have been modified by the authors, as the original version of the tests is designed for a different cultural and linguistic environment.

In the late 1970-s in foreign psychology S.Cobas and S.Maddy suggested theoretical designer of resilience for the study of the endurance of a person in coping with life's difficulties. Resilience as a valid predictor of successful coping with stress, first of all, attention is drawn to the confrontation of personality stressful situations in professional activity. And since then, until today, the test of viability developed by the American psychologist S.Maddy has not lost its relevance in various psychological studies. The test of viability in Russian was translated and adapted by D.A.Leontiev [1].

The modified version of the test consists of 45 statements instead of 18 in the original. As in the English version, it consists of three scales and contains direct and inverse questions. The Russified version of the test showed reliability and validity in studies on a large sample in Russia, and today with the help of this technique, various aspects of the life of the individual

are actively studied. Adapted Russian-language test of viability is usually used in cross-cultural studies. This technique, together with the methods and morphological test of life values is translated using the technique of double translation into Chinese and Polish.

After our research is focused on the Kazakh sample, we also need to translate the methodology into the Kazakh language.

In Kazakhstan, the test of viability was used in the study of professional orientation of first-year students, semantic aspects of identification.

According to V.Pozhitkin in the structure of resilience in freshmen more pronounced risk taking, as most students are able and willing not only to be actively involved in the process, but also to find useful and necessary for themselves in the implementation of educational and professional activities [2].

The study does not mention the ethnicity of the respondents, but as it was conducted in the North Kazakhstan state University (Ust-Kamenogorsk), it could be Russian-speaking respondents.

This cross-cultural study of Russians and Kazakhs was also conducted in the Northern region of the country in Pavlodar. Translation of the methodology into the language of the studied culture did not become the task of the authors of both studies, since the respondents were representatives of the Russian-speaking environment, and the need to translate the methodology into the ethnic language of the respondents did not arise. In Kazakhstan, it is true that bilingualism (Russian and Kazakh) is widespread in all spheres of activity, so a large number of people understand both Russian and Kazakh languages equally. But in our case, all participants of the experiment are representatives of the southern region of the country, where the Kazakh language of the role dominates both in the household and in the professional sphere.

In ethno-cultural studies, adaptation and translation of methods into the language of the culture being studied is considered a mandatory requirement. As shown by our experience in the translation and adaptation of the methodology DLC in the Kazakh sample, the Kazakh-language version of the test DLC was absolutely equivalent to the English-language version [3].

However, the results of this test cannot be directly transferred to the method of measuring resilience. And therefore there is a problem of translation of the test of viability into the Kazakh language and a problem of check of equivalence of the Kazakh-language version of the test to its Russian-language primary source.

The aim of this study was to identify the equivalence for the choice of Kazakh respondents to the Russian version of the test of viability of its Kazakh-language version, obtained in the course of language translation and adaptation.

Organization and methods of research. The technique was used in career guidance work:

Test of resilience in the development of D.Leontiev, characterized by a system of beliefs about you, about the world, about the relationship with the world and resilience includes three components: involvement, control and risk taking [4].

At the beginning, the method was translated by philologists from the Russian version into the Kazakh language with the method of asymmetric translation. Asymmetric translation is focused on fidelity, accuracy of meaning and verbatim language of the original method. This type of translation according to L.F.Burlachuk is aimed at understanding the meaning of statements rather than at the diagnosis of personal characteristics [5].

Further, in the next stage, the reverse translation method was used, to which bilingual experts were involved. At the same stage, a pilot study was conducted with the participation of 20 respondents-undergraduates of different specialties (average age – 32 years, median – 28 years, standard deviation – 8-9 years). During the conversation with the respondents after



the pilot experiment, incomprehensible questions were identified and their formulations were corrected.

In the pilot and subsequent main series of studies, all respondents filled in the methodology individually and on a voluntary basis.

To exclude positional effects, we divided the sample into 2 parts that distinguish the sequence of the filling process:

1) the first group filled in the methodology with a period of time of 1 week. They were undergraduates of 1 and 2 courses of KSU by Korkyt Ata in Kyzylorda ( $p=61$ ), aged from 21 to 48 years (men 31,7 %, women – 68,2 %, average age - 25,3 years);

2) the second group ( $N=100$ ) filled the method with a time interval of 2-3 days, aged 21 to 29 years (men 27 %, women - 73 %, the average age – 22,3 years);

3) the third group ( $p=178$ ), aged 21 to 26 years (men 49.4 %, women – 50,6 %, average age – 22,3 years) filled out the method first in the Kazakh language, then in Russian one day a few hours later.

All respondents of the second and third groups are undergraduates of the 1st year of KazNU named after al-Farabi and KazNTU named after K.I.Satpayev.

In the results there are no differences in the overall score and in the individual scales of the methodology, and the results of both versions are correlated with each other at a significant level. Analysis of individual test items revealed that the bulk of the test items are also equivalent in both languages and respondents equally answer most questions independent of the language.

These were such statements, for example:

<b>№</b>	<b>Russian version of the issue</b>	<b>Kazakh-language version of the question</b>
23	When somebody complains that life is boring, it means he just can't see the interesting. If someone says that his life is not interesting, he does not know that he is just interesting.	Кімде-кім өз өмірінің қызықсыз екендігін айтып шағынса, онда оның жай ғана қызықты нәрселерді көре білмейтіндігін байқатады.
32	I think life is passing me by.	Менің ойымша, өмір менің қатысуымсыз өтіп бара жатқан сияқты.
37	I don't have the perseverance to finish what I started.	Маған бастаған ісімді аяқтауға табандылық жетіспейді.
41	As a rule, I work with pleasure.	Әдетте мен құлшыныспен жұмыс жасаймын.

Comparative analysis of the test of ZHS on the total indicators and their relationships in the first group (table.1.1) revealed the least number of differences between variants of language of techniques. In the Russian version of the test, the total indicators of the control scale are slightly higher than in the Kazakh version of the technique, although this difference is unreliable. And on the other scales of the test there are no special differences. Direct relationships were found in all test scales at a high level of reliability (at  $p<0.01$ ).

Table 1.1

Comparison of indicators of the test of ZHS on options of language of a technique in the first group (N=61)

Test scales JS	Options JS $\bar{a}$ ( $\sigma$ )		r Pearson	r Spearman
	Russian	Kazakh		
Engagement	36,3 (8,7)	36,6 (6,8)	<b>0,67**</b>	<b>0,61**</b>
Control	31,0 (7,3)	30,5 (6,5)	<b>0,61**</b>	<b>0,64**</b>
Risk taking	16,5 (4,3)	16,6 (4,2)	<b>0,49**</b>	<b>0,45**</b>
Resilience	83,4 (17,4)	83,7 (14,7)	<b>0,72**</b>	<b>0,67**</b>

The level of correlation reliability is highlighted in bold: \*\* -  $p < 0,01$ .

The values of the total indicators and correlation coefficients between the Russian and Kazakh variants in the second group are presented in table 1.2.

Table 1.2

Comparison of indicators of the test of ZHS on options of language of a technique in the second group (N=100)

Test scales JS	Test Options JS $\bar{a}$ ( $\sigma$ )		r Pearson	r Spearman
	Russian	Kazakh		
Engagement	37,5 (7,5)	35,8 (8,3)	<b>0,26**</b>	<b>0,24**</b>
Control	31,2 (6,5)	31,2 (7,0)	<b>0,32**</b>	<b>0,34**</b>
Risk taking	18,0 (4,2)	18,2 (5,0)	<b>0,30**</b>	<b>0,29**</b>
Resilience	85,5 (16,1)	85,5 (17,0)	<b>0,36**</b>	<b>0,37**</b>

Bold a confidence level of correlation: \*  $p < 0,05$ , \*\*  $p < 0,01$ .

As you can see, the total indicators of the scale of involvement and overall viability in the Russian version is higher than in the Kazakh version of the test, but these differences are statistically unreliable. The correlation relationship is positive over-sufficient level of reliability ( $p < 0,05$  and  $p < 0,01$ ).

In the third group of undergraduates found significant differences in the total performance of all test scales and overall viability ( $PR < 0,001$ ). But the correlation coefficients are denser (at the level of  $p < 0,01$ ) than in the previous groups (table.1.3).

Table 1.3

Comparison of indicators of the test of ZHS on options of language of a technique in the third group (N=178)

Test scales JS	Test Options JS $\bar{a}$ ( $\sigma$ )		r Pearson	r Spearman
	Russian	Kazakh		
Engagement	36,0 (6,9)	35,1 (8,1)	<b>0,79**</b>	<b>0,77**</b>
Control	32,6 (6,1)	31,3 (6,9)	<b>0,76**</b>	<b>0,73**</b>

Risk taking	18,1 (4,5)	17,3 (4,7)	<b>0,78**</b>	<b>0,78**</b>
Resilience	86,7 (13,7)	83,5 (16,6)	<b>0,79**</b>	<b>0,79**</b>

Significant differences, the level of reliability of correlations are highlighted in bold:  
\*\*- p<0.01.

Comparison of summary indicators and their interrelation between variants of the methodology language in the sample (table. 1.1, 1.2 and 1.3) revealed that only in the third group all the test scales and parameters of viability significantly differ in the values of the student's t-test (at p<0.001), but their relationship between the multilingual versions of the test ZHS, however, is very dense. Other groups are also characterized by close correlation connections (at p<0.01 and p<0.001).

These statistics prove that in the perception of the Kazakhs multilingual options to test the viability does not exist significant and dependent on the applied language difference.

The empirical correlation of the parameters of the scales of the test of ZHS options showed the following: the reliability of the differences in the scales of ZHS revealed only in the third group, this group filled the methodology in two languages on the same day after a few hours, and this indicates the need for further study of the stability of individual issues in this technique. In General, the overall picture of the results shows the equivalence of the test of viability in the Kazakh language to the original. The difference for understanding the statements in any variant of the technique does not occur at any time interval of filling of these variants.

Thus, we can generally conclude that the Kazakh - and Russian-language versions of the test ZHS perceived with Kazakh respondents is equivalent and these multilingual versions of the methodology are equivalent to each other.

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## ÇİMENTO ESASLI HARÇLARDA NANOKAPSÜLLÜ FAZ DEĞİŞTİREN MALZEMELERİN SICAKLIĞA BAĞLI VİSKOZİTEYE ETKİSİ

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### Özet

Gelecek nesillerin enerji ihtiyacını karşılamak ve çevreye verilen zararı azaltabilmek için sürdürülebilir enerji kaynaklarının kullanılmasına imkan sağlayan yeşil binaların yapımı inşaat endüstrisinin öncelikli hedefleri arasında yerini almıştır. Çevreci binaların yapılabilmesi için yeni enerji tasarruflu malzemelerle üretim esas alınmaktadır. Yeni enerji tasarruflu malzemelerden biri olan faz değiştiren malzemeler (FDM), termal enerjiyi belirli bir sıcaklıkta absorbe etme ve serbest bırakma yeteneğine sahip olmaları nedeniyle son yıllarda enerji tasarruflu ve çevreci üretimler de öne çıkmaktadırlar. Faz değiştiren malzemeler büyük gizli ısıya sahiptirler ve faz değiştirme işlemi sırasında enerjiyi sabit bir sıcaklıkta depolayarak serbest bırakırlar. Faz değiştiren malzemelerin dış ortamla reaksiyona girmesini azaltmak, geniş ısı transferi sağlamak ve faz değişimi gerçekleştikçe depolama malzemelerinin hacmindeki değişiklikleri kontrol edebilmek amacıyla kapsülleme yapılmaktadır. Nanokapsülleme de FDM'ler nanometre boyutunda bir kapsül kabuğunda kapsülendir ve daha sonra bu parçacıklar bir çalışma sıvısı içinde dağıtılarak kullanılmaktadır. Yaptığımız bu çalışmada çimento esaslı harç içine %0, %2,5 ve %5 oranında nanokapsülendirilmiş FDM'ler ilave edilerek 20 °C ile 50 °C sıcaklık aralığı ve 10 rpm ile 100 rpm hız aralığında on farklı devirde görünen viskozite değerleri ölçülerek kaydedilmiştir. Çimento esaslı harçlarda nanokapsüllü FDM kullanımı sonucunda belirli sıcaklıklarda harcın viskozitesinin değiştirilebildiği gözlemlenmiştir.

**Anahtar kelimeler:** Faz değiştiren malzeme, nanokapsül, harç özellikleri, sıcaklık, viskozite.

## THE EFFECT OF NANOCAPSULATED PHASE CHANGING MATERIALS ON TEMPERATURE DEPENDENT VISCOSITY IN CEMENT BASED MORTARS

### Abstract

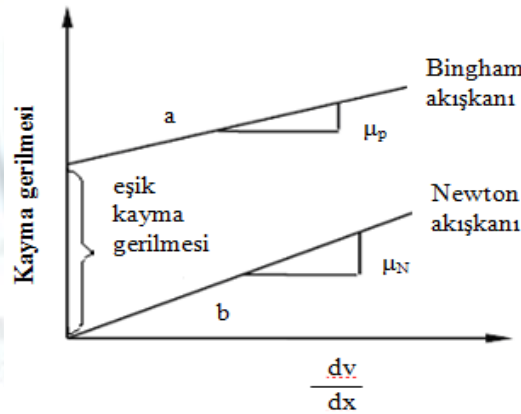
The construction of green buildings that enable the use of sustainable energy sources in order to meet the energy needs of future generations and to reduce the damage to the environment has become one of the primary goals of the construction industry. In order to construct environmentally friendly buildings, production is based on new energy-saving materials. As one of the new energy-saving materials, phase-change materials (FDM) have the ability to absorb and release thermal energy at a certain temperature, and energy-saving and environmentally friendly productions have also come to the fore in recent years. Phase-

changing materials have great latent heat and release energy by storing it at a constant temperature during the phase-changing process. Encapsulation is used in order to reduce the reaction of phase-changing materials with the external environment, to provide wide heat transfer and to control changes in the volume of storage materials as phase change occurs. In nano-encapsulation, FDMs are encapsulated in a nanometer-sized capsule shell and then these particles are dispersed in a working fluid and used. In this study we conducted, 0%, 2.5% and 5% nanocapsulated FDMs were added to cement-based mortar and viscosity values were measured and recorded at ten different cycles between 20 °C and 50 °C temperature range and 10 rpm and 100 rpm speed range. It has been observed that the viscosity of the mortar can be changed at certain temperatures as a result of the use of nanocapsulated FDM in cement based mortars.

**Keywords:** Phase changing material, nanocapsule, mortar properties, temperature, viscosity.

## GİRİŞ

Hızla gelişen teknoloji ile birlikte ortaya çıkan yeni yapım teknikleri ve yapı malzemelerine rağmen inşaat sektörünün en önemli yapı taşı olan betonlar, çimento hamuru ve agregadan oluşan kompozit bir yapı malzemesidir. Betonun sertleşmiş haldeki dayanım ve dayanıklılık özelliklerini kazanması taze halde iken gerekli kriterleri sağlamasına bağlıdır. Taze haldeki çimento esaslı harçlarda işlenebilirlik, pompalama, yerleştirme ve sıkıştırma işlemi gereken özen gösterilerek yapıldığı takdirde dayanım ve dayanıklılığı yüksek performanslı beton elde edilmesine imkan sağlamaktadır. Taze haldeki betonun hazırlanıp yerine yerleştirilmesi sürecinde deformasyona uğramadan özelliklerini koruması reolojik açıdan kararlı olmasıyla mümkün olmaktadır (Banfill, 1991; Erdoğan, 2003). Newton kuralına uymayan akışkanların kayma gerilmesine karşı davranışları reoloji ile tayin edilmektedir. Çimento esaslı harçların reolojik davranışı ise Bingham modeline uygundur (Coussot vd., 1996; Topçu ve Uygunoğlu, 2010). Bingham modelindeki kayma gerilmesi-deformasyon doğrusunu gösteren 'a' doğrusunun eğiminden plastik viskozite hesaplanmaktadır (Şekil.1).



Şekil 1. Sıvıların reolojik davranışları (Topçu ve Uygunoğlu, 2010)

Literatürde yapılan çalışmalar incelendiğinde çimento esaslı harçların özelliklerini sürdürülebilir çözümler üretmek için istenilen yönde değiştirmek için enerji verimli malzemeler üzerine yoğunlaşıldığı görülmektedir. Betonun dünya genelinde en fazla kullanılan yapı malzemelerinden biri olması ve en önemli bileşenlerinden biri olan portland çimentosu üretimi esnasında sera gazı açığa çıkması nedeniyle sürdürülebilir beton üretimi kaçınılmaz olmuştur. Sürdürülebilir beton elde etmek için daha az enerji ve kaynak kullanan malzemeye

ihtiyaç duyulması sonucunda son yıllarda faz değiştiren malzeme kullanımı öne çıkmıştır (Tarun ve ase, 2008). Ayrıca nano parçacıkların kullanımı yeni işlevlere sahip malzemeleri üretimi için birçok uygulama alanında kullanımı yaygınlaşmıştır. Çimento esaslı harçlara nano parçacıklar eklendiğinde, geleneksel malzemelerden farklı özelliklere sahip malzemeler elde edilebilmektedir (Liv d., 2004).

Senff v.d, (2009) yaptıkları çalışmada nano silikanın çimento macunu ve harçların reolojisi ve taze özellikleri üzerindeki etkisi incelemişler ve akma gerilimi önemli ölçüde artarken plastik viskozitedeki değişikliklerin daha az olduğu sonucuna varmışlardır.

Schossig v.d. (2008) mikro kapsüllenmiş faz değiştiren malzemeleri yapı malzemelerine entegre ederek yazın aşırı ısınmayı önlemek ve soğutma yükünü azaltmak, kışın ise ısıtma enerjisinden tasarruf etmek için kullanmışlardır. Mikro kapsüllenmiş faz değiştiren malzemeli ürünlerin soğutma talebini azalttığı ve hafif binalarda konforu artırma potansiyelini gösterdiği sonucuna ulaşmışlardır.

Bu çalışmada, nanokapsüllenmiş faz değiştiren malzemelerin taze haldeki harcın sıcaklığına bağlı olarak harcın akışkanlığına ve viskozitesine yaptığı etkiler araştırılmıştır.

## **DENEYSEL ÇALIŞMALAR**

### **Kullanılan Malzemeler**

Deneysel çalışmalar çimento esaslı harçlar üzerinde gerçekleştirilmiş olup, bağlayıcı olarak TS EN 197-1 standardına uygun olan çimento CEM I 42.5 Portland çimentosu kullanılmıştır. Çimentonun özgül yüzey alanı 3320 cm<sup>2</sup>/g olup, özgül ağırlığı 3.1'dir. Çimentonun kimyasal özellikleri Tablo 1'de sunulmuştur. Harç üretimlerinde agrega olarak da 0.5-400 mikron aralığında silis kumu kullanılmıştır. Kumun özgül ağırlığı da 2.64'tür. Çimento esaslı harcın oluşturulabilmesi için şehir şebeke suyu kullanılmıştır. FDM'ler 10 µm boyutunda nanokapsüllenmiş olarak kullanılmıştır. Kapsüllenmiş olarak kullanılan FDM'ler poliüretanla nanokapsüllenmiş haldedirler. Nanokapsüller, arayüzey polimerizasyonu ile sentezlenmiştir.

**Tablo 1.** Portland çimentosu özellikleri

Kimyasal Analiz (%)	Portland Çimentosu
CaO	63.56
SiO <sub>2</sub>	19.3
Al <sub>2</sub> O <sub>3</sub>	5.57
Fe <sub>2</sub> O <sub>3</sub>	3.46
MgO	0.86
SO <sub>3</sub>	2.96
K <sub>2</sub> O	0.8
Na <sub>2</sub> O	0.13
Kızdırma kaybı	1.15
Özgül ağırlık	3.07

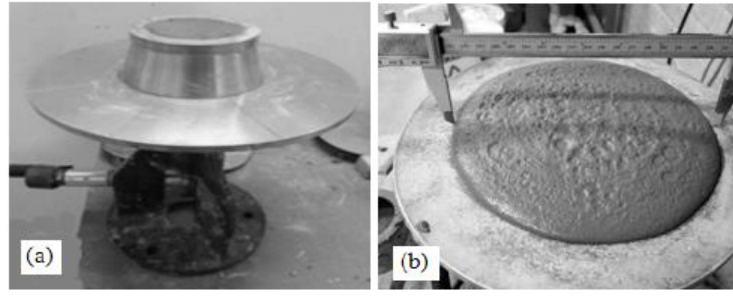
İncelik(Blaine) (cm <sup>2</sup> /g)	3212
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### Karışımların Hazırlanması ve Deneyler

Tüm karışımlar 0.5 su/çimento oranı ile hazırlanmış olup, FDM içermeyen (KTSZ) çimento hamurlarının görünen viskoziteleri kontrol olarak dikkate alınmıştır. Nanokapsüllü FDM'ler harca %0, %2.5 ve %5 oranında ilave edilmiştir. Viskozite ölçümleri, Afyon Kocatepe Üniversitesi, İnşaat Mühendisliği Bölümü'nde bulunan Brookfield RV-II Pro marka viskozite cihazı ile viskozite cihazına ait yine aynı marka sıcaklık ayarlı su banyosu kullanılarak gerçekleştirilmiştir (Şekil 2). Nanokapsüllü FDM'li çimento hamurunun görünen viskozite değerleri sıcaklığa bağlı olarak 10 rpm (dev/dk), 50 rpm ve 100 rpm spindle dönüş hızları için grafik ortamında sunulmuştur. Grafiklerde nanokapsüllü FDM'li karışımlar KPSL ile gösterilmiştir.

### Yayılma

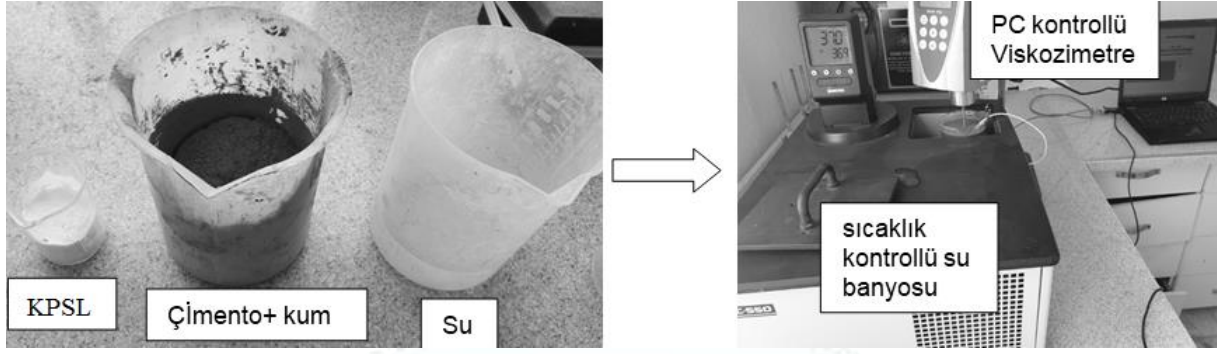
Çimento hamuruna farklı oranlarda nanokapsüllü FDM ilave edilerek elde edilen harçların yayılma özellikleri her bir değişen katkı oranı için yayılma tablası üzerinde tablanın bir bölümü olan mini koni içerisine yerleştirilerek yapılmıştır. Koni yukarı doğru çekildikten sonra, tablanın altındaki kol vasıtası ile 15 vuruş yaptırılarak harca darbe uygulanmış ve bu sarsıntıyla tabla üzerinde yayılması sağlanmıştır (Şekil 2.a ve b).



Şekil 2. (a) Mini Abrams konisi (b) Yayılma değerlerinin ölçülmesi

### Görünen viskozite

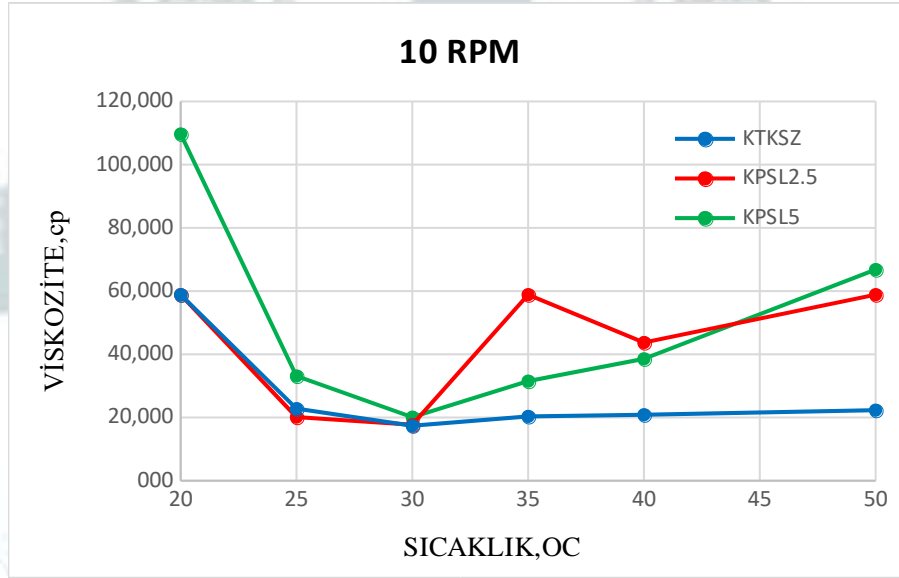
Hazırlanan her bir katkı oranındaki harçların viskozite ölçümleri, Afyon Kocatepe Üniversitesi, İnşaat Mühendisliği Bölümü'nde bulunan Brookfield RV-II Pro marka viskozite cihazı ile V-72 nolu kanat şeklindeki uç kullanılarak yapılmıştır (Şekil 3). Nanokapsüllü FDM içermeyen (KTKSZ) çimento hamurunun görünen viskozite değeri kontrol karışım olarak referans alınmıştır.



Şekil 3. Nanokapsül FDM katkıli çimento hamurunun viskozitelerinin belirlenme aşamaları

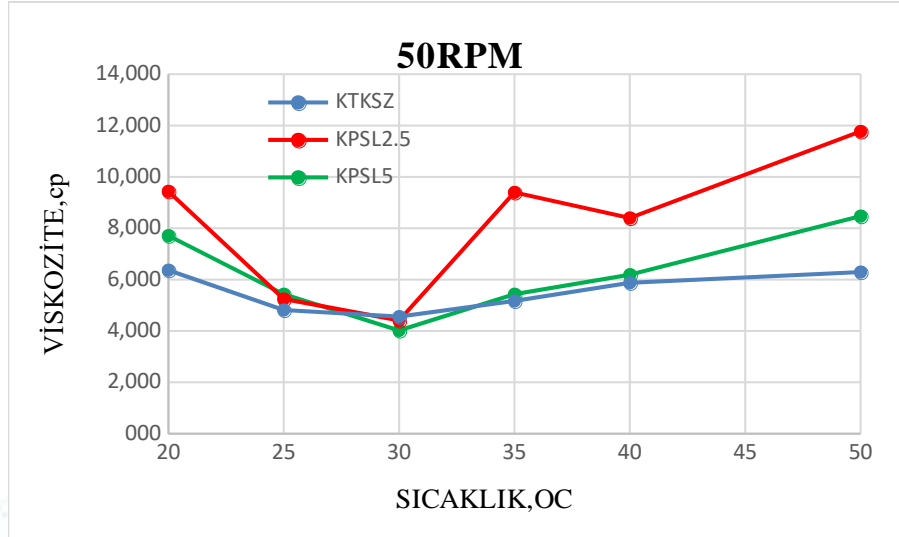
### DENEYSEL BULGULAR

Çimento esaslı harçların deney tablası üzerindeki yayılmaları sonrası birbirine dik doğrultuda yayılma çapları ölçülmüş, aritmetik ortalamaları alındıktan sonra yayılma değerleri 170, 165 ve 160 mm olarak ölçülmüştür. Çimento hamuru içerisindeki nanokapsüllü FDM oranı arttıkça yayılma çapında azalma görülmüştür. Çimento hamurlarının içerisine nanokapsüllü FDM ilave edilmesiyle viskozitelerindeki değişimler farklı karıştırma hızları için ölçülmüştür ve 10 rpm, 50 rpm v 100 rpm dönüş hızları için sırasıyla Şekil 4, Şekil 5 ve Şekil 6'da sunulmuştur.

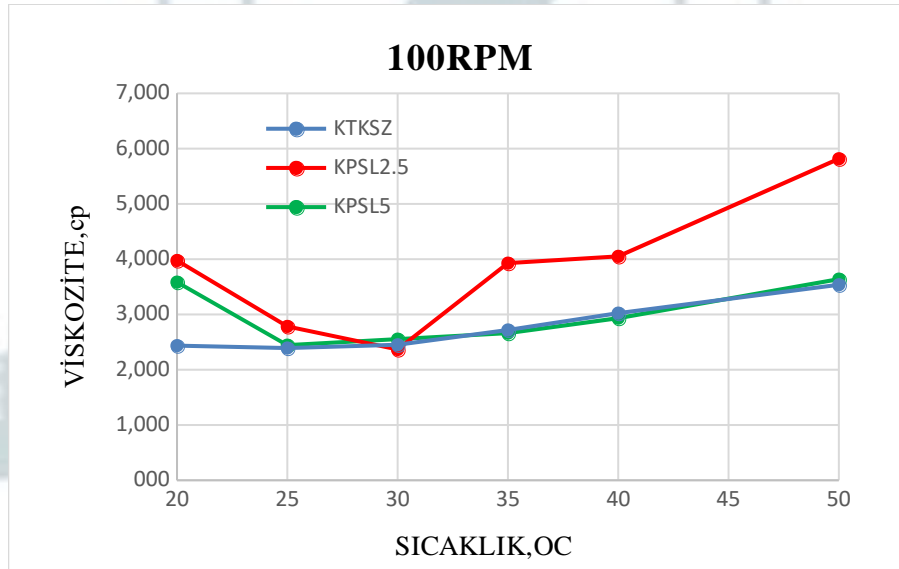


Şekil 4. Nanokapsüllü faz değıştiren malzemeli çimento hamurlarının karıştırma hızına ve sıcaklığa bağılı viskoziteleri





Şekil 5. Nanokapsüllü faz değıştiren malzemeli çimento hamurlarının karıştırma hızına ve sıcaklığa bağı viskoziteleri



Şekil 6. Nanokapsüllü faz değıştiren malzemeli çimento hamurlarının karıştırma hızına ve sıcaklığa bağı viskoziteleri

Şekillerden de açıkça görüleceği üzere çimento hamuru içerisinde nanokapsüllü FDM kullanımı özellikle düşük hızlarda (10 rpm) oldukça etkili olmuştur. Çimento hamuru içerisinde nanokapsüllü FDM'li karışımların viskoziteleri tüm dönüş hızları için 30 °C sıcaklıktan itibaren doğrusala yakın bir ivme ile artışa geçmiştir. Bunun nedeni FDM'nin bu sıcaklık değerinde faz değışimi göstermesindedir. Düşük karışım hızında çimento hamuru içerisinde %2,5 oranında nanokapsüllü FDM ilave edilmesi durumunda %5 nanokapsüllü FDM'li karışımına göre daha düşük viskozite değerleri elde edilirken, hız arttıkça durum tersine dönmüştür.

## SONUÇLAR

Yaptığımız çalışmada, nanokapsüllü faz değıştiren malzemelerin çimento hamuru içerisinde kullanılmaları durumunda taze haldeki harcın sıcaklığına bağılı olarak harcın akışkanlığına, viskozitesine etkisi araştırılmış ve aşığıdaki sonuçlar elde edilmiştir.

- Çimento hamuru düşük hızlarda karıştırılırsa %5 nanokapsüllü faz değıştiren malzemeli harçların 20 °C sıcaklıkta viskozite değerleri kontrol karışımına göre düşük iken, sıcaklık 45-50 °C değerine arttırıldığında viskozite değeri kontrol harcına göre 8 kat artışa neden olacaktır.
- Çimento hamuru içerisinde faz değıştirici malzeme kullanımı özellikle düşük hızlarda (10 rpm) oldukça etkili olmuştur. Bununla birlikte, karıştırma hızı arttığında faz değıştiren malzemeli karışımların viskoziteleri de fark edilir derecede azalmıştır.
- Çimento hamurunun içerisinde faz değıştirici malzeme katılırken, hamurun sıcaklığının oldukça etkili olduğu görülmüştür.

Sonuçlar değerlendirildiğinde, nanokapsüllü FDM'lerin kullanıldığı çimentolu esaslı harçların sıcaklığının taze haldeki reolojik özelliklerini etkilediği açıkça görülmektedir. Hedeflenen viskozite değerlerini elde edebilmek için çimento esaslı harcın sıcaklığının dikkate alınması önem taşımaktadır.

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## **METHODS USED TO IMPROVE THE RHEOLOGICAL PROPERTIES OF SOFT CHEESES**

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### **Abstract**

According to the Turkish Food Codex Cheese Communiqué, cheeses are classified as extra hard, hard, semi-hard, semi-soft and soft cheeses according to their hardness levels. Soft cheeses containing high amounts of moisture may have some quality defects. Excessive amount of moisture can lead to the formation of undesirable microorganisms, loss of nutritional value and sensory defects. One of the most important defects observed in soft cheeses during storage is the softening / melting problem. It is known that as the moisture content of cheese increases, the amount of softening that occurs in its structure also increases. This is due to the fact that the ratio of rennet / casein in cheeses with high humidity is higher than in cheeses with low moisture. Rennet hydrolyzes  $\alpha_{s1}$  casein to form  $\alpha_{s-1-1}$  casein, and this cleavage in the peptide bond causes premature softening problem in the cheese matrix. For this reason, cheeses are generally preserved in brine to increase the strength of soft cheeses. Soft cheeses have a shorter ripening time compared to hard cheeses. The softening observed in cheeses is a very considerable problem for the dairy industry. For many years, a solution to this problem has been sought in scientific research and R&D departments of industrial organizations. In this context, many methods have been developed and tested on cheeses. In order to eliminate the softening / melting problems observed in soft white cheeses, methods such as adding stabilizer directly to cheese milk, using different stabilizers in the production of coating material / edible film, enzymatic modification, use of fat substitutes, protein addition, different starter culture applications are applied. In this study, the methods used to eliminate the textural problems observed in soft cheeses and to improve the rheological properties were compiled.

**Keywords:** Soft cheese, rheological properties, methods

### **Introduction**

According to the Turkish food codex cheese communiqué, cheeses are classified as extra hard, hard, semi-hard, semi-soft and soft cheeses (Anonymous, 2015). Full fat soft cheeses have moisture content of about 50–65% and above 67% moisture on a fat-free basis. These have a soft texture, which becomes viscous and creamy with ripening (IDF, 2021). Soft cheeses have generally high moisture content and short shelf life. Their texture ranges from creamy and spreadable to soft and crumbly. They are generally mild flavored and more pronounced flavors with age. Some of them have deliberate mold rinds that add to the taste of cheese. They are often used for snacks, appetizers and desserts and are very fruit friendly. It is possible to classified soft cheeses as unripened and ripened. Unripened soft cheeses are also called fresh cheese. They are not aged or aged for a very short time. They may also be sold packaged in brine. Some popular varieties of unripened soft cheeses are cream cheese, Chèvre, Queso Fresco, Queso Blanco, Mascarpone and Feta cheese. Ripened soft cheeses are

surface-ripened by mold spores applied to surface. White and edible mold rind develops at the surface of the cheeses. These cheeses ripen from the outside, in developing creamy, spreadable texture. They have mild taste and firm texture when young while they have stronger taste when aged. The popular types of ripened soft cheeses are Brie, Camembert and creamy blue (IDDBA, 2013).

Some quality defects may be observed in cheeses contains high moisture content. Excessive moisture may cause unwanted microorganisms, loss of nutritional value and sensory disturbances (Budreckiene and Struzeckiene, 2014). One of the most important defects seen in soft cheeses during storage is the softening / melting problem. As the moisture content of cheese increases, the level of softening seen in its structure increases. This is due to the higher rate of rennet / casein in cheeses with high humidity than cheeses with low moisture content. Rennet hydrolyzes  $\alpha_{s1}$  casein to form  $\alpha_{s1-1}$  casein, and this cleavage in the peptide bond causes premature softening in the cheese matrix (Zalazar et al., 2002). The hardness of cheese is determined by four main mechanisms: moisture on a non-fat basis, fat content, the degree of calcium phosphate mineral solubility, and the degree of casein protein hydrolysis (proteolysis, ripening) all cause higher levels of cheese softening. All of them cause the cheese to soften at higher levels (IDF, 2021).

In this study, the methods used to eliminate the textural problems observed in soft cheeses and to improve the rheological properties were compiled.

### **The Methods for Solving Softening Problem**

In order to eliminate the softening / melting problems observed in soft cheeses, methods such as;

- Adding stabilizer directly to cheese milk,
- Using different stabilizers in the production of coating material / edible film,
- Enzymatic modification,
- Use of fat substitutes,
- Protein addition,
- Different starter culture applications are applied.

### **Adding Stabilizer Directly to Cheese Milk**

It is possible to use some stabilizers and thickeners to improve the textural properties of cheeses. Stabilizing agents increase the water holding capacity of foods, reduce moisture evaporation rates, change the freezing degree, provide ice crystal formation modification, regulate rheological properties or viscosity. The basic principle of using thickeners is to increase the viscosity thanks to hydrogen bonds between the water molecules and the hydroxyl groups of the thickener used (Bayram, 2012). As in many countries, the use of such additives has been restricted in Turkey. According to the Turkish Food Codex Communiqué on Food Additives other than Colorants and Flavors, in cheese such as Mozzarella and Lor, powdered cellulose (E 460), unripened cheeses, processed cheese and processed cheese analogs; diphosphates (E 450), triphosphates (E 451) and polyphosphates (E 452) can be used (Anonymous, 2008). Modified starch (Benaouadj et al., 2017), dietary fibers (Suvera et al., 2017), hydrocolloids (gum) (Murtaza et al., 2017) and some polysaccharides (Yousefi and Jafari, 2019) are used as thickeners or stabilizers in cheese making. Some varieties of stabilizers that were used in milks of different cheese types were given at Table 1.

### **Using Different Stabilizers in the Production of Coating Material / Edible Film**

Edible films and coatings applied to the surface or interior of foods as a thin, edible coating material by various methods are obtained from vegetable and animal sources. The

main features of edible films include reducing moisture losses, containing ions that stop browning reactions, being biodegradable, being edible and looking good, showing a barrier against oxygen and physical stress, and being economically and toxicologically safe (Oğuzhan Yıldız and Yangılar, 2016). Edible films are classified into three categories, taking into account the nature of their components. They are classified as hydrocolloids (containing proteins, polysaccharides or alginates), lipids (formed by fatty acids or waxes) and composites (containing compounds belonging to both categories together) (Çelikel and Akın, 2017). Edible film and coating in cheeses control food quality, water loss and maturation rate by providing semi-permeable properties for oxygen, carbon dioxide and water vapor. In addition, edible films and coatings are used as carriers of antimicrobial agents to prevent unwanted microbial growth on the cheese surface (Candan and Bağdatlı, 2018). Stabilizer types used in the edible coating film production for different cheeses were given at Table 2.

Hydrocolloids have often been used as edible film in hard cheeses. Therefore, there are not many studies on its use as coating material in soft cheeses.

**Table 1. Stabilizers Used in Milks of Different Soft Cheese Types**

Stabilizer	Cheese Type	Researcher
Xanthan gum	Cottage cheese, Camembert, Whey cheese, Ricotta, Feta cheese	Puspitasari et al. (1991); Hee et al. (2008); Joyner and Damino (2015); Chatziantoniou et al. (2019); Rubel et al. (2019); Zomorodi et al. (2020)
Carrageenan	Cottage cheese, Whey cheese, Ricotta	Puspitasari et al. (1991); Kampf and Nussinovitch, (2000); Chatziantoniou et al. (2019); Rubel et al. (2019)
Pectin	Feta cheese, Karish cheese	Lobato-Calleros et al. (2006); Korish and Elhamid (2012); Kayaalp Özdemir (2016)
Alginates	Feta cheese	Kampf and Nussinovitch, (2000)
Guar gum	Cottage cheese; Camembert; Feta cheese, Whey cheese, Ricotta	Puspitasari et al. (1991); Hee et al. (2008); Lashkari et al. (2014); Joyner and Damino (2015); Shendi (2017); Chatziantoniou et al. (2019); Rubel et al. (2019)
Gum Arabic	Cottage cheese, Feta cheese	Puspitasari et al. (1991); Lobato-Calleros et al. (2006); Lashkari et al. (2014)
Gum tragakant	Feta cheese	Zomorodi et al. (2020)
Gum karaya	Camembert	Hee et al. (2008)
Maltodextrin	Camembert, UF Soft cheese	Hee et al. (2008); Iakovchenko and Arseneva (2016)
Starch	Camembert, Tvarog cheese	Hee et al. (2008); Treszczyńska et al. (2018)

Locust bean gum	Cottage cheese, Whey cheese	Joyner and Damino (2015); Chatziantoniou et al. (2019)
Basil seed gum	Feta cheese	Baghdadi et al. (2018), Zomorodi et al. (2020)
$\beta$ -glukan	Feta cheese	Volikakis et al. (2004)
CMC	Feta cheese, Karish cheese, Domiati cheese	Lobato-Calleros et al. (2006); Korish and Elhamid (2012); Elhamid (2013)
Gelatin	Camembert, Tvarog cheese, Ricotta	Hee et al. (2008); Treszczynska et al. (2018); Rubel et al. (2019)
Caseinates	Feta Cheese	Lobato-Calleros et al. (2000); Güven et al. (2006); Güzeler et al. (2018)

**Table 2.** Stabilizers Used in the Production of Coating Film for Different Cheese Types

Stabilizer	Cheese Type	Researcher
Chitosan	Ricotta	Di Pierro et al., 2011
	Egyptian soft White cheese	Youssef et al., 2016
	UF Soft cheese	El-Sayed et al., 2021
Galactomannans	Ricotta	Martins et al., 2010
Whey protein	Ricotta	Di Pierro et al., 2011
Egg white protein	Lor	Kavas and Kavas, 2016
Whey protein isolate	Lor	Kavas and Kavas, 2016
Alginate	UF Soft cheese	El-Sayed et al., 2021
CMC	UF Soft cheese	El-Sayed et al., 2021

### Use of Fat Substitutes

Various fat substitutes are used to partially or completely eliminate vegetable and animal oils used in processed food products. These substances are additives that reduce the energy value of food and are used instead of fat. Among the general functions of fat substitutes in foods are their use as bulking, gelling, water retention, mouthfeel improvement, stabilizer, texture improvement, thickener and cooking medium. In addition, those with particle structure serve as light reflecting centers. Each fat substitute has its own unique properties. The use of these substances depends on the fat content of the food to be used and the expected functions (Türküzü et al., 2012). It is possible to benefit from many different fat substitutes such as lecithin, inulin or dietary fibers especially in low-fat cheese production.

Lecithin, which can be of both animal and vegetable origin, is found in higher concentrations in animal products. Lecithin is a compound called phosphatidylcholine, commonly derived from egg yolks, soybeans, and more recently sunflower. Lecithin, which is obtained as a by-product during soy and sunflower oil production, contains glaucolipids,

triglycerides and phospholipids in its composition. Apart from its emulsifying function, it also has functions such as increasing the flavor of the food, increasing its volume, reducing its stickiness and ensuring foam stability (Ceyhun Sezgin and Elmacı, 2019). There are many researches that proving use of lecithin improves cheese texture (Rashidi et al., 2015; Ibrahim, 2018; Li et al., 2019).

Inulin is a fructose oligomer found in many vegetables such as onions, garlic, leeks, chicory, and artichokes. In recent years, inulin has been used in the food industry due to its gel, thickening and sweetening properties. Inulin contains less energy than other carbohydrates. The most important function known is that they stimulate the growth of bifidobacteria in the intestines. Additionally, inulin reduces the risk of diabetes, heart disease, cancer, and osteoporosis (Yabancı, 2010). There are many researches that studied improving cheese texture by using inulin (Santos et al., 2015; Aydinol and Özcan, 2018; Borges et al., 2019).

Dietary fiber is defined as a group of food components resistant to digestive enzymes, with its main sources being grains, fruits and vegetables. Dietary fiber has positive effects in the prevention of many diseases such as cardiovascular diseases, diabetes, constipation, especially colon cancer. Dietary fiber is important in food technology due to its technological and functional properties. It is also a very important component of the formulation in low energy food production. Today, the increasing number of consumers with healthy diets increases the interest in the consumption of foods with high dietary fiber content (Ergene and Bingöl, 2019). Some dietary fiber types which were used as a stabilizer in the production of Soft cheeses were given below.

- Wheat fiber (Kunz et al., 2001; Kayaalp Özdemir 2016)
  - Oat bran (Basiony et al., 2018; Xue et al., 2019)
  - Acacia (Szafranska et al., 2021)
  - Bamboo (Szafranska et al., 2021)
  - Citrus (Szafranska et al., 2021)
  - Potato (Szafranska et al., 2021)
  - Fructooligosaccharides (Minervini et al., 2017)
  - Date seed (Basiony et al., 2018)
- And many other plant-derived fibers are still researching.

Some other fat substitutes were given below.

- Bacterial cellulose (Karahan et al., 2011)
- Dextrins (Iakovchenko and Arseneva, 2016)
- Vegetable oils (Hjalmarsson, 2015)
- Commercial fat replacers (Ognean et al., 2006)

### **Enzymatic Modification**

Enzymatic modification applications in cheeses also improve the textural structure. They modified milk proteins, i.e., caseins and whey proteins, and their ability to form structures such as networks and gels when manipulated appropriately. Oxidoreductases (laccase, trichoderma reesei tyrosinase, peroxidases, lactoperoxidant, horseradish peroxidase and glucose oxidase) and transferases (microbial transglutaminase) are the most important types of enzymes used to modify milk protein (Gharibzahedi and Chronakis, 2018).

Transglutaminase (TG) is a type of enzyme in the transferase enzyme group that catalyzes acyl transfer reactions between  $\alpha$ -carboxamide groups (acyl donors) and primary amines or water molecules (acyl acceptors). TG enzyme can form inter or intra molecule crosslink with  $\epsilon$ - (c-Glu) -Lys bond in proteins (Gharibzahedi and Chronakis, 2018). This reaction is very useful for modifying the physical and functional properties of foods. TG enzyme improves the textural properties such as hardness, firmness, viscosity, elasticity and water binding capacity of food products. Commercial interest in TG enzyme in the food industry is increasing day by day due to the advantages TG provides in food processing and development. Although the TG enzyme is found naturally in animals, plants and microorganisms, the commercial TG enzyme is obtained from limited sources, especially pig liver and some microorganisms such as *Streptovorticillium* sp. and *Streptomyces* sp. (Al Hassan and Norziah, 2017; Zhang et al., 2017; Ceresino et al., 2018). However, the use of microbial transglutaminase (MTG) enzyme is preferred because it is a very profitable method and can bring new features to food systems (Ahmadi et al., 2017).

MTG is used in the modification of all milk proteins, casein and whey proteins in dairy products. It is reported that MTG, which is effective on all milk proteins in emulsions, processed milk and gels, improves the stability and rennet treatment properties, increases the hardness and fracturability properties, improves the water holding capacity and microstructure. It is known that MTG improves physical properties and rennet treatment properties, increases gel strength, decreases permeability, decreases fat and protein content and improves texture in cheeses. It increases surface viscosity, improves stability, and improves mechanical properties in whey proteins in films and dried dairy products (Jaros et al., 2006; Romeih and Walker, 2017). While casein acts as a very good substrate in the use of MTG in milk and dairy products, they exhibit poor substrate properties of whey proteins (Góes-Favoni and Bueno, 2014).

Some cheese types which were modified by TG enzyme were given at Table 3.

<b>Table 3. Cheeses Modified by Transglutaminase Enzyme</b>	
Cheese Type	References
Soft cheese	Mahmood and Sebo (2009); Ibrahim and Khalifa (2013); Abou-Soliman et al. (2020)
Tvarog cheese	Dmytrow et al. (2010)
White cheese	Şener (2012); Özer et al. (2013); Eren Karahan (2016); Danesh et al. (2018); Jooyandeh et al. (2018); Garcia-Gomez et al. (2019); Garcia-Gomez et al. (2020); Razeghi and Yazdanpanah et al. (2020); Torabi et al. (2020)
Whey cheese	Karzan et al. (2016)
Karish cheese	Darwish and Taher (2017); Darwish et al. (2019)
Panela cheese	Salinas-Valdés et al. (2015)

### **Protein Addition**

By increasing the total dry matter content in cheese production with protein additives, defects in the products can be prevented. It is known that proteins with high nutritional value have functional properties such as increasing the consistency, strengthening the gel formation,



providing clot tightness, increasing the shelf life, providing firmness and preventing serum separation in the development of the textural properties of cheeses (Saygılı and Karagözlü, 2019). Mostly milk proteins and soy protein are used in cheese production.

Casein and whey proteins constitute a significant portion of milk proteins that can be classified according to their chemical, physical properties and biological functions. Casein, the main protein of milk, constitutes approximately 80% of the proteins in milk, and whey proteins approximately 20% of the proteins in milk. Whey proteins consist of major and minor proteins, each of different molecular weights and different biological activities. Major whey proteins are  $\beta$ -lactoglobulin,  $\alpha$ -lactalbumin, serum albumin, immunoglobulins and glycomacropetides. Minor whey proteins consist of lactoperoxidase, lactoferrin, microglobulin, lysozyme, insulin-like growth factor,  $\gamma$ -globulins and several other small proteins (Özcan and Delikanlı, 2011).

Soy protein is a heterogeneous mixture of storage proteins, which are generally classified through their separation by using centrifugal sedimentation in sucrose gradients. Soy protein concentrates demonstrate a very high degree of functionality (Yıldız, 2018).

### **Different Starter Culture Applications**

Tidona et al. (2016) aimed to optimize the combination of two strains of *Streptococcus thermophilus* used as a starter culture to develop a reduced-fat soft cheese with improved texture. Similar research was performed by Bekele et al. (2019). Abd El-Salam et al. (2019) used crude extract and purified protease enzyme produced from an isolated bacterial strain identified as *Lactobacillus plantarum* in Soft White cheese (Domiaty type). This method has been investigated more in recent years and there are a limited number of studies.

### **Conclusion**

Soft cheeses face softening problem during storage due to their high moisture content, and this is a huge problem for the dairy industry. In order to eliminate the softening / melting problems observed in soft cheeses, methods such as; adding stabilizer directly to cheese milk, using different stabilizers in the production of coating material / edible film, enzymatic modification, use of fat substitutes, protein addition, different starter culture applications are applied. The common point of all these methods is to bind excess water or increase the amount of dry matter in the cheese mass. Among all methods, it has been determined that the use of stabilizers and fat substitutes in cheese milk is the most researched and applied methods. It has been found that the use of stabilizers as coating material is not a very suitable method for soft cheeses, so it is not widely used. It has been observed that enzyme applications, which have increased in recent years, are one of the most suitable methods to overcome the softening problem in soft cheeses. However, it has been found that the studies on this subject are mostly related to the microbial transglutaminase enzyme. At this point, it is thought that different enzymes can be tried to improve texture in soft cheeses. In the literature research, it has been determined that whey proteins, caseinates and soy proteins are mostly used as protein sources in the applications of increasing the dry matter with the addition of protein in soft cheeses. Different protein sources are also thought to be open to research. The use of different starter cultures in order to improve the texture has started to be studied in recent years, and studies on this subject are very limited. Therefore more research needs to be done on this topic.

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**SAĞLAMLIQ İMKANLARI MƏHDUD UŞAQLARIN İNKLÜZİV  
TƏHSİLİNİN TƏŞKİLİ İSTİQAMƏTLƏRİ  
DIRECTIONS FOR THE ORGANIZATION OF INCLUSIVE  
EDUCATION FOR CHILDREN WITH DISABILITIES**

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Elmi məqalədə aktual problemlərdən biri olan sağlamlıq imkanları məhdud uşaqların xüsusi təhsil formaları: inklüziv təhsil, inteqrativ təhsil, evdə təhsil və onların mahiyyəti, bu təhsil formalarında onların təhsilinin təşkili istiqamətləridir. Burada inklüziv təhsil, onun həyata keçirilməsi prinsipləri, ümumi elementləri- inklüziv təhsilin məktəblərin daha münbit və bütün uşaqlar üçün faydalı olmasına yönələn fasiləsiz proses olması, onun təhsil mədəniyyətinin, hüquqi sənədlərin və təcrübələrin şagirdlərə uyğun olması üçün yenidən qurulmasını ehtiva etməsi, bütün şagirdlərə uyğun olması üçün məktəbin dəyişməsi ilə şərtlənməsi, uşaqların məktəbdə və icmada təhsilə çıxışına mane olan konkret səbəbləri müəyyənləşdirib aradan qaldırılması üçün davamlı fəaliyyət olması, bütün maraqlı tərəflərin iştirakı ilə icra edilməli olan bir proses olması, müəllimin nüfuzu, inklüziv təhsilin məzmunu və digər məsələlər araşdırılaraq tədqiqata cəlb olunmuşdur. BMT-nin “Əlilliyi olan şəxslərin hüquqları haqqında” Konvensiyasının maddələri, əlilliyi olan şəxslərin təhsil hüquqları burada öz əksini tapmışdır. Ayrı-ayrı dövlətlərin inklüziv təhsili tətbiq etmək öhdəlikləri, təhsil hüquqlarının təmin edilməsi məsələləri öyrənilmişdir. Akkomodasiya, öyrənməni fərdiləşdirən, materialı dəyişdirmədən öyrətməyə təşviq edən taktika və strategiyalar, akkomodasiya nümunələri: eşitmə məhdudluğu olan uşaqlar üçün işarət dili tərcüməçiləri, görmə məhdudluğu olan uşaqlar üçün elektron mətn danışma sistemləri, kiçik motorika məhdudluğu olan uşaqlar üçün elektron mətn danışma sistemləri, kiçik motorika məhdudluğu olan uşaqlar üçün elektron mətn danışma sistemləri, görmə məhdudluğu olan uşaqlar üçün böyük hərfləli kitablar və s. öyrənilmişdir. Modifikasiya, modifikasiyanın mənfi tərəfləri, dəyişikliklərin şagirdlər arasında daha böyük boşluqlara səbəb ola bilməsi, bir şagirdin daha az material öyrənməsi, tapşırıq və testlərin azaldılması və s. üzə çıxarılmışdır. Burada mənsubiyyətindən asılı olmayaraq bütün uşaqların təhsil almaq hüquqları, təhsil almağa çalışarkən üzləşdikləri maneələr göstərilməklə yanaşı onların aradan qaldırılması istiqamətləri də göstərilmişdir. Sınıf otağında fəaliyyəti refleksiya etmək üçün üsullar: fərdi refleksiya, həmkar müşahidəsi, dərslərin qeydə alınması, şagirdlərin rəyi və onlardan istifadə diqqət mərkəzində saxlanılmışdır. Bu uşaqların təhsil almaq və öyrənmək imkanını çətinləşdirən maneələri müəyyən edilərək üzə çıxarılmışdır.

**Açar sözlər:** inklüziv, şagird, xüsusi, yardımçı, məktəb

## **ABSTRACT**

One of the current problems in the scientific article is the special forms of education for children with disabilities: inclusive education, integrative education, home education and their essence, the direction of the organization of their education in these forms of education. Inclusive education, the principles of its implementation, general elements - inclusive education is a continuous process aimed at making schools more productive and useful for all children, to include its reconstruction of educational culture, legal documents and practices to suit students, to suit all students. The change in the school, the ongoing efforts to identify and address specific causes that prevent children from attending school and the community, the presence of a process to be implemented with the participation of all stakeholders, the teacher's reputation, the content of inclusive education and other issues. The articles of the UN Convention on the Rights of Persons with Disabilities and the educational rights of persons with disabilities are reflected here. Obligations of individual states to implement inclusive education, issues of ensuring education rights were studied. Accommodation, tactics and strategies that individualize learning and encourage learning without changing the material, examples of accommodation: sign language interpreters for hearing impaired children, electronic text speech systems for visually impaired children, minor motor skills, long-term learning for visually impaired or learning disabilities learning to read, capitalize books for visually impaired children, etc. Modification, the disadvantages of modification, the fact that changes can lead to larger gaps between students, the fact that one student learns less material, the reduction of assignments and tests, and so on. It shows the rights of all children, regardless of their affiliation, to the obstacles they face in trying to get an education, as well as the ways to overcome them. Methods for reflecting on classroom activities: individual reflection, peer observation, lesson recording, student feedback, and their use were the focus. Obstacles that impede children's access to education and learning have been identified.

**Keywords:** inclusive, student, special, auxiliary, school

## **GİRİŞ**

Xüsusi təhsil- sağlamlıq imkanları məhdud şəxslərə göstərilən təhsil formasıdır. Azərbaycanda əhaliyə defektologiya xidmətinin göstərilməsi 3 nazirlik tərəfindən keçirilir. Azərbaycan Respublikası Təhsil Nazirliyi, Azərbaycan Respublikası Səhiyyə Nazirliyi və Əmək və Əhalinin Sosial Müdafiəsi Fondu. Əhaliyə göstərilən xüsusi pedaqoli xidmət isə Təhsil Nazirliyi tərəfindən idarə olunur. Şagirdlərin uyğun təhsil formasına seçilməsi üçün xüsusi tibbi - psixololi- pedaqoli komissiya yaradılıb. Bəs xüsusi təhsilin hansı formaları var?

- inkluziv təhsil
- integrativ təhsil
- evdə təhsil.

Budan başqa Yardımçı məktəblər də fəaliyyət göstərir. Yardımçı məktəb ümumtəhsilə daxildir, yalnız öz vəzifələrinə görə kütləvi ümumtəhsil məktəblərindən fərqlənir. Aşağıda xüsusi təhsilin növləri ilə daha yaxından tanış olaq.

## **ARAŞDIRMALAR**

İnklüziv təhsil-ümumiyyətlə dünya təhsil sistemində sağlamlıq imkanları məhdud uşaqların ayrıca, xüsusi təhsil almaları vacib hesab olunmur. Çünki bu cür yanaşma uşaqların cəmiyyətə adaptasiyasına, sosiallaşmasına mənfi təsir edir. Halbuki Xüsusi təhsilin əsas məqsədi sağlamlıq imkanları məhdud şəxslərin yenidən cəmiyyətə bağlılaşması, özü və cəmiyyət üçün lazımlı şəxs olmasıdır. Məhz bu cür problemlərə görə bir çox yeni təhsil proqramları işlənib hazırlanmışdır. İnklüziv təhsil haqqında qanun Azərbaycanda 2004-cü ildən etibarən qüvvəyə minib. 2005-ci ildən etibarən isə tətbiqi davam edir. İnklüziv sinif üçün uşaqların sayı sinifdəki uşaqların ümumi sayına əsasən qiymətləndirilir. Yəni bir sinifdə maksimum 4-5 sağlamlıq imkanları məhdud uşaq təhsil ala bilər. Bu zaman həmin uşaqlara “köməkçi müəllim” təyin olunur. Bu dərslərin daha səmərəli keçməsi üçündür. İnklüziv təhsil uşaqların müstəqil bir fərd olduğunu və təhsil zamanı onların hər birinin öz ehtiyacları olduğunu qəbul edən metodologiyaları inkişaf etdirməyə yönəlib. İnklüziv təhsil tədris zamanı müxtəlif ehtiyacların ödənilməsinə yönəlmiş yanaşmaların formalaşdırılmasına çalışır. İnklüziv təhsil istər sağlam, istərsə də əlillərin bərabər təhsil alma hüquqlarını təmin edir və bu cəmiyyətdə sosial bərabərliyin qorunmasına, əlil uşaqların təhsil və başqa xüsusi ehtiyaclarının ödənilməsinə şərait yaratmış olur. İnklüziv təhsilin bir çox tərifləri və mənalrı mövcuddur. Onların ümumi elementləri aşağıdakılardır:

- İnklüziv təhsil məktəblərin daha münbit və bütün uşaqlar üçün faydalı olmasına yönələn fasiləsiz prosesdir;
- İnklüziv təhsil təhsil mədəniyyətinin, hüquqi sənədlərin və təcrübələrin şagirdlərə uyğun olması üçün yenidən qurulmasını ehtiva edir;
- İnklüziv təhsil bütün şagirdlərə uyğun olması üçün məktəbin dəyişməsinə şərtləndirir;
- İnklüziv təhsil uşaqların məktəbdə və icmada təhsilə çıxışına mane olan konkret səbəbləri müəyyənləşdirib aradan qaldırılması üçün davamlı fəaliyyətdir;
- İnklüziv təhsil bütün maraqlı tərəflərin iştirakı ilə icra edilməli olan bir prosesdir.

İntegrativ təhsil dedikdə əlilliyi olan uşaqların ümumtəhsil məktəbə getmələrinə icazə verilməsi, lakin özlərinin tipik həmyaşıdları ilə eyni sinifdə dərs keçməmələri nəzərdə tutulur. Onlar ayrıca sinif otaqları və müəllimlər ilə təmin olunurlar. Hənsisa bir növ əlilliyi olan uşaqlar ümumi məktəb kurikulumu əsasında təhsil alırlar. Sadəcə olaraq onların dərs proqramı bir qədər yüngülləşdirilmiş şəkildə olur. İntegrativ təhsil əsasən Bakı şəhərindəki məktəblərdə tətbiq olunur.

Evdə təhsil-təhsil qanunu və ümumtəhsil məktəblərinin nümunəvi əsasnaməsinin müddəalarına uyğun olaraq uzunmüddətli xəstə olan, səhhətinə görə məşğələlərdə iştirak edə bilməyən uzunmüddətli xəstə olan uşaqların evdə fərdi təhsili təşkil olunur. Evdə fərdi qaydada təhsil alan şagirdlər həmin təhsil müəssisəsinə xəstəxanaların, dispanserlərin, poliklinikaların göndərişi ilə rayon (şəhər) tibbi-pedaqoji-psixoloji komissiyaların qərarına əsasən qəbul olunur. Evdə fərdi məşğul olan şagirdlərin dərslərinə sinif rəhbəri, proqram materiallarının yerinə yetirilməsinə və həmin prosesdə tətbiq edilən metodik işə təlim-tərbiyə işi üzrə direktor müavini məsuliyyət daşıyır. Şagirdlərin biliyi sinif jurnalında qeyd olunur. Sinfdən-sinifə keçirilməsi, məktəbi bitirməsi də müvafiq qaydada jurnallarda öz əksini tapır.

Hazırda ölkəmizdə 60 mindən çox əlilliyi olan uşaq vardır. Onlardan 1105-i xüsusi təhsil məktəblərində, 2664-ü xüsusi internat məktəblərində təhsil alır (onlardan 1353 nəfəri müəssisədə gecələyir), 7750-si evdə təhsilə, 268-i isə inklüziv təhsilə cəlb edilmişdir. “Təhsil haqqında” Qanunda sağlamlıq imkanları məhdud şəxslərin təhsil hüquqlarının təmin edilməsi təsbit edilmişdir. Belə ki, Qanunda göstərilir ki:

– dövlət hər bir vətəndaşın təhsil alması üçün müvafiq şəraitin yaradılmasına təminat verir və təhsilin hər hansı pilləsindən, səviyyəsindən və formasından məhrum edilməsinə yol vermir;

– dövlət cinsindən, irqindən, dilindən, dinindən, siyasi əqidəsindən, milliyyətindən, iqtisadi və sosial vəziyyətindən, mənşəyindən, sağlamlıq imkanlarından asılı olmayaraq hər bir vətəndaşa təhsil almaq imkanı yaradılmasına və ayrı-seçkiliyə yol verilməməsinə təminat verir;

– vətəndaşlar təhsilin növünü, təhsil müəssisəsini və tədrisin dilini sərbəst şəkildə seçmək hüququna malikdir;

– Azərbaycan dövlətinin təhsil siyasətinin əsasını, vətəndaşlar üçün keyfiyyətli təhsilin təmin edilməsi ilə yanaşı, təhsil islahatlarının aparılması prosesində milli azlıqları, qaçqınları, məcburi köçkünləri təmsil edən uşaqların, həmçinin sağlamlıq imkanları məhdud uşaqların keyfiyyətli təhsil alması üçün bərabər imkanların yaradılması təşkil edir. (7, s.12)

“İnklüziv təhsil” termini çox zaman səhv başa düşülür. BMT-nin “Əlilliyi olan şəxslərin hüquqları haqqında” Konvensiyasının 24-cü maddəsi əlilliyə daha münasib tərif verir. Konvensiya əlilliyi olan şəxslərin təhsil hüquqlarını tanıyır və dövlətlərin üzərinə inklüziv təhsili təbiiq etmək öhdəliyini qoyur. Bu öhdəliyə aşağıdakılar daxildir:

- Əlilliyi olan uşaqların ümumtəhsil məktəblərindən kənarlaşdırılmamasını təmin etmək;

- Yaşadıqları icmada digərləri ilə bərabər əsaslarla inklüziv, keyfiyyətli və pulsuz ibtidai və orta təhsil almaq imkanlarını təmin etmək;

- İnklüzivliyin tam şəkildə təmin olunması üçün akademik və sosial inkişafa şərait yaranan mühitdə fərdi ehtiyaclara uyğunlaşdırılmış zəruri dəstək tədbirlərini təmin etmək. (1)

İnklüziv təhsil inklüziv dəyərlərə əsaslanır. Bəzi ölkələrdə əlilliyi olan uşaqların 90%-i məktəbə getmir. Əlil olmaq uşağın məktəbə getməmək ehtimalını iki dəfə artırır. Əlilliyi olan uşaqların məktəbi yarımçıq tərk etmək və ya ayrı-seçkiliklə üzləşmək ehtimalları ikiqat yüksəkdir. Son onilliklər ərzində dünyada inklüziv təhsilə yönələn nümunəvi təcrübələr yaranmışdır. BMT-nin “Əlilliyi olan şəxslərin hüquqları” haqqında Konvensiyası tam inklüziv təhsilin dəstəklənməsi üçün müfəssəl istiqamət vermişdir, bir çox ölkələr öz siyasətlərini inklüziv təhsilin təməl prinsiplərinə uyğunlaşdırmışdır və fasiləsiz olaraq uyğunlaşdırmağa davam edir. Lakin bu müsbət proseslərə baxmayaraq hələ də çoxsaylı çətinliklər qalır. Əlilliyi olan uşaqlar üçün bir nömrəli maneə insanların əlilliyə qarşı mənfi münasibətidir. Bu isə əlilliyi olan uşaqların davamlı olaraq kənarlaşdırılması, ayrı-seçkiliyə məruz qalması və təcrid olunması ilə nəticələnir.

Məktəbdə müəllimlər fərqli bilik, bacarıq, maraq və öyrənmə ehtiyacları olan uşaqlar ilə işləyirlər. Əlilliyi olan uşaqlar üçün xüsusi təlim üsulu olmadığından inklüziv mühitdə müəllimlər bütün uşaqların ehtiyaclarını qarşılamaq üçün uşaqyönümlü pedaqogikadan



istifadə edirlər. Daha ənənəvi mühitdə və ya müəllimiyönümlü pedaqogikada müəllim stolları sıra və cərgə ilə düzür, bütün sinfin qarşısında durur, şagirdlərə bütün bilikləri hazır verir və şagirdlərə onların cavablarının doğru və ya yanlış olduğunu deyir. Qeyd olunanlar “yaxşı” müəllimin xüsusiyyətləridir. Uşaqyönümlü yanaşmada isə səmərəlilik üçün vacib şərt müəllimin 21 davranışdır. Müəllim dərs zamanı vəziyyətdən asılı olaraq sinfin müvafiq yerlərində durur, sinifdəki resurslardan istifadə edir, uşaqlar ilə ünsiyyət qurur və uşaqların öyrəndikləri bilikləri qiymətləndirir.

Biliyə çox zaman nəzəriyyə və konsepsiyaların sabit toplusu kimi yanaşılır və fərz edilir ki, müəllimlərə, məsələn, inklüziv təhsilin tətbiqi ilə bağlı biliklər aşılанда, onlar avtomatik olaraq bunu öz məktəblərində tətbiq edəcəklər. Lakin inklüziv təhsil çox mürəkkəb bir məfhumdur. Inklüziv təhsilin tətbiqinin elə bir modeli yoxdur ki, bütün məktəblərdə uğurlu şəkildə həyata keçirilsin. Çünki hər bir məktəb icması fərqlidir və inklüziv təhsilin tətbiqi üçün müxtəlif kontekstual amilləri, təlimə mane olan müxtəlif əngəlləri aradan qaldırmalıdır. Buna görə də müəllimlərə təqdim olunan nəzəriyyə və biliklərin sabit toplusu yoxdur. Müəllimlər birlikdə tənqidi refleksiya fəaliyyətində iştirak etməyə, həmçinin öz məktəb icmalarında öz vəziyyətlərini təhlil etməyə və yerli çətinlikləri aradan qaldırmaq üçün yerli strategiyalar tapmağa həvəsləndirilməlidirlər. Öyrənmə aktiv fəaliyyətdir. Müəllimlər əldə etdikləri biliyi tətbiq etdikdə yaxşı nəticələr əldə olunur. Ənənəvi müəllim inkişafı prosesində öyrənmə çox zaman passiv xarakter daşıyır. Təlimçi ənənəvi olaraq, müəyyən məzmun təqdim edir. Bəzən təlimçi yeni məzmun təqdim etməzdən əvvəl iştirakçılar bu məzmunu müzakirə etməyə və öz fikirlərini bölüşməyə dəvət olunurlar. Bu yanaşma öyrənmə fəaliyyətinin çox passiv olmasına səbəb olur. Müəllimlər əsasən bilikləri qəbul edir, lakin bu bilikləri təcrübədə tətbiq etməyi öyrənmirlər və bununla bağlı dəstək almırlar. Aktiv təlim isə qrup müzakirələri və ya seminarlarda keçirilən oyunlarla məhdudlaşmır. O, yeni konsepsiya və təcrübələrlə geniş şəkildə işləməyi və əsas anlayışların və prinsiplərin real vəziyyətlərdə tətbiqini ehtiva edir.

Inklüziv təhsildə müəllim tədris materialının uyğunluğunu təhlil etdikdən sonra seçdiyi təlim metodunun uyğun olub-olmadığını müəyyənləşdirməyə çalışmalıdır. İstənilən metodların tətbiqi ilkin şərt kimi şagirdlərdə müəyyən bilik və bacarıqların olmasını nəzərdə tutur. Müəllimlər dərsdə istifadə etmək üçün seçdikləri metodların tətbiqi zamanı şagirdlərin hansı potensial çətinliklərlə üzləşə biləcəklərini müəyyən etməlidirlər. İstifadə ediləcək təlim metodlarının təhlili zamanı müəllimlərin bu və ya digər metodunun uğur qazanmasının şərti kimi aşağıdakı bacarıqları nəzərdən keçirmələri zəruridir: əqli, sosial, müstəqil öyrənmə, fiziki. Təlim metodlarının təhlili müxtəlif ehtiyacları olan uşaqlar üçün təlimin planlaşdırılmasında birinci mərhələdir. Növbəti mərhələ uşaqların müxtəlif ehtiyaclarına uyğun olan metodların istifadə olunmasından ibarətdir. Bu isə təlimdə uyğunlaşdırma (akkomodasiya) və dəyişikliklərin (modifikasiyaların) həyata keçirilməsini tələb edir. Akkomodasiya tədris materialının məzmununu və anlama baxımından mürəkkəbliyini dəyişmədən təlimin xarakterini dəyişir. Akkomodasiya termini əlilliyi olan uşağın cəmiyyətə adaptasiyasına şərait yaradan mühit və ya təchizatın dəyişdirilməsini tərif etmək üçün istifadə olunur. Əlilliyi olan uşaqların nizamlı şəkildə təlim kursuna davam etmələrini təmin edir. Akkomodasiya öyrənməni fərdiləşdirən, materialı dəyişdirmədən öyrətməyə təşviq edən taktika və strategiyadır. Akkomodasiya nümunələri bunlardır:

1. Eşitmə məhdudiyyəti olan uşaqlar üçün işarət dili tərcüməçiləri;
2. Görmə məhdudiyyətli uşaqlar üçün elektron mətn danışma sistemləri;
3. Kiçik motorika məhdudiyyətləri, görmə məhdudiyyətli və ya öyrənmə çətinliyi olan şagirdlər üçün uzun zamanın verilməsi;
4. Görmə məhdudiyyətli uşaqlar üçün böyük hərflə kitablar və s.

Müəllimlər təlim prosesinə tam cəlb olunmaları üçün uşaqlara bərabər imkanlar yaratmaq məqsədilə akkomodasiyaları həyata keçirirlər. Başqa sözlə, akkomodasiyalar uşaqlara təlim prosesində iştirak etmək imkanı verir, onlara hansısa bir üstünlük vermir. Təlim prosesində akkomodasiyaları həyata keçirmək üçün bir çox üsullar var. Sınıfdə aşağıdakı sahələr üzrə akkomodasiyaları həyata keçirmək olar:

- Fiziki mühit: bu sahə üzrə akkomodasiya sinif mühitində, qruplara bölünmədə, uşaqların yerləşdirilməsində uyğunlaşdırmanı nəzərdə tutur ;

-Təlim metodu: bu sahə üzrə akkomodasiya müəllimin materialı necə təqdim etməsi, eləcə də uşaqların tapşırıqları yerinə yetirməsinə necə cəlb edilməsi nöqtəyi- nəzərindən təlim metodunun uyğunlaşdırılmasını nəzərdə tutur və şagirdlərin təliminə yardım etmək məqsədi daşıyır;

-Təlimatlar – bu sahə üzrə akkomodasiya müəllimin qayda, metod və gündəlik məşğələləri təqdim etməsi üzrə uyğunlaşdırmanı nəzərdə tutur.

-Materiallar – bu sahə üzrə akkomodasiya tədris alətləri və materialların şagirdlərin fərdi ehtiyaclarına uyğunlaşdırılmasından ibarətdir. Materiallara kitablar, iş vərəqləri, manipulyativ əşyalar və s. daxil ola bilər. Təlimin modifikasiyası – modifikasiya tədris materialının məzmunu və anlama baxımından mürəkkəbliyini dəyişməklə təlimin xarakterini dəyişir. Modifikasiya termini dəyişikliyi ifadə etmək üçün istifadə olunur. Müəllimin öyrətdiyi materialı başa düşməyən əlilliyi olan uşaqlar üçün dəyişiklik edilir. Məsələn, tapşırıqların sayı azaldılır, material hissələrə bölünür və s. Beləliklə, modifikasiya şagirdin öyrənməsi üçün materialları dəyişdirən taktika və strategiyadır. Məsələn, uşaqların yaxınlıqdakı çaya ekskursiyaya getmələri nəzərdə tutulub. Onlar burada müşahidə aparmalı, sınıfa geri döndükdən sonra isə hesabat yazmalıdırlar. Ancaq təhlil apardıqdan sonra müəllim müəyyənləşdirir ki, şagirdlərin, demək olar ki, yarısı çox ləng yazır (zəruri şərt – müstəqil öyrənmə bacarıqları) və onların təxminən dördüdə biri kifayət dərəcədə müşahidə etmə bacarığı nümayiş etdirmir. Müəllim məşğələni modifikasiya etmək qərarına gəlir. Şagirdlərə seçim verilir: onlar qeydlər apara və ya şəkillər çəkə bilərlər. Müəllim özü müxtəlif elementlərin şəklini çəkə bilər. Uşaqlar sınıfa qayıtdıqdan sonra ya qeydlərinə əsaslanmaqla hesabat yazır, ya müəllimin çəkdiyi şəkillərdə nəyin təsvir olunduğu ilə bağlı öz qeydlərini yazır bilərlər. Dəyişikliklər önəmlidir, ancaq materialın zənginliyini və şagirdin öyrənməsini təhlükəyə atma bilər. Modifikasiyanın mənfi tərəfləri:

1. Dəyişikliklərin şagirdlər arasında daha böyük boşluqlara səbəb ola bilməsi
2. Bir şagirdin daha az material öyrənməsi
3. Tapşırıq və testlərin azaldılması. Bu zaman şagirdlər sadəcə asan tapşırıqların öhdəsindən gələ bilər. Modifikasiyanın istənilən növünü uşağın ailəsi ilə müzakirə etmək

zəruridir, çünki əksər hallarda modifikasiya uşağın bilməli və bacarmalı olduqlarını dəyişir. İstənilən fəaliyyət növündə olduğu kimi, göstərilən hər iki strategiya «planlaşdırma», «həyata keçirmə», «dəyərləndirmə» mərhələlərindən keçməli və bütövlükdə təlim prosesinin səmərəliliyini artıran «yardımçı vasitələrdən» istifadə edilməlidir. Təlimdə ümumi uyğunlaşdırma əlilliyi olan uşaqların fəaliyyətlərdə uğurla iştirak etmələrinə əhəmiyyətli dərəcədə yardım göstərsə də, onlar üçün fərdi akkomodasiya və modifikasiyalar tələb oluna bilər.

## **NƏTİCƏ**

Nəticədə onu qeyd edək ki, biz uşaqların təhsil almaq və öyrənmək imkanını çətinləşdirən maneələri müəyyən edə bilərik. Lakin vurğulamaq lazımdır ki, məktəbə getməməyə və ya öyrənməməyə görə məsuliyyəti heç vaxt uşağın üzərinə qoymamalıyıq. Mənsubiyyətindən asılı olmayaraq və həyat şəraiti nə qədər çətin olursa-olsun, bütün uşaqların təhsil almaq hüququ vardır. Uşaqların təhsil almağa çalışarkən üzləşdikləri maneələri aşkar etmək və aradan qaldırmaq məktəbin və cəmiyyətin vəzifəsidir. Çox zaman eşitdiyimiz fikirlərdən biri budur: “Uşaq dərsə getmək istəmir”. Bu, uşağın niyə məktəbə getmək istəməməsi məktəb və cəmiyyətin bunu dəyişmək üçün nə edə biləcəyi ilə bağlı müzakirə və refleksiyağa başlamaq üçün yaxşı başlanğıc nöqtədir.

Sınıf otağındakı fəaliyyəti refleksiya etmək üçün müxtəlif üsullar mövcuddur. Fəaliyyəti yaxşılaşdırmaq üçün refleksiya istifadə barədə sistemli şəkildə düşünmək üçün mütəmadi olaraq qısa sorğu anketinə diqqət yetirmək kifayətdir. Özünürefleksiya üsulları aşağıdakılardır:

- Fərdi refleksiya – fəaliyyətiniz barədə düşünmək. Əvvəlcədən hazırlanmış qısa anketləri doldurmaq. Daha yaxşı nailiyyət əldə etmək üçün nə etdiyinizə, nə üçün etdiyinizə, hansı nəticəni əldə etdiyinizə və üsulunuzda hansı dəyişikliyə ehtiyac olduğuna nəzər salmaq vacibdir.

-Həmkar müşahidəsi – iş yoldaşlarınızdan biri sinif otağına gələrək dərsləriniz barədə məlumat toplayır. Məqsəd qiymətləndirmək deyil, bir-birinizdən öyrənməkdir. Daha sonra müşahidənin nəticələri müzakirə olunur.

-Dərslərin qeydə alınması – Dərslər video və ya audio qeydiyyata alınır. Bu, refleksiya üçün çox faydalı informasiyanı təmin edə bilər. Bəzən müəllim sinifdə baş verənlərdən xəbərdar olmur və ya diqqətindən qaçırır. Video və ya audio yazıları ortaq refleksiya və öyrənmə üçün həmkarlarla paylaşmaq olar. Şagirdlərin rəyi – şagirdlərdən sinif otağında baş verənlər barədə düşüncələrini soruşun. Onların fikirləri və nəzər nöqtələri fərqli ola bilər. Şagirdlərin fikrini sadə anketlər və ya öyrənmə gündəlikləri vasitəsilə aşkarlamaq olar. Bu, eyni zamanda şagirdlərə müşahidə aparmaq, refleksiya etmək və müsbət rəy vermək təcrübəsi qazandıracaq.

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## **THE STATUS OF CHIROPRACTIC PROFESSION IN REPUBLIC OF TURKEY**

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### **Abstract**

The chiropractic profession has been defined by the World Health Organization, its jurisdictions and educational standards have been determined, and it is a health profession that has existed since 1895. The aim of our study is to contribute to science by providing information about the development of Chiropractic in Turkey on an international platform by shedding light on issues such as the legal dimensions of the profession, the form of education and the situation of professionals in the profession. For this purpose, a statement was prepared in the form of collecting information by scanning official newspapers and literatures. The Republic of Turkey is one of the states that is trying to adapt its chiropractic profession to the health system. The country first became acquainted with the chiropractic profession with the establishment of the chiropractic Spine Health Association in 2008, and in 2014 the first official definition of the profession was included in the practice guide. In 2015, with the opening of the first institution where formal education is given, its popularity among the public began to increase. Since 2015, 195 students have enrolled in the program in the country, 55 students have graduated as of 01.04.2021, 41 of them have published their thesis in the National thesis center of the higher education institution. No study has yet been carried out on how and under what conditions these students continue their profession by seeing patients. Studies are carried out through the Chiropractic Spine Health Association at national and international levels in order to recognize this education, which is approved and accepted by the higher education institution, not as a treatment method, but as a health profession as defined by the World Health Organization.

**Keywords:** Chiropractic, Chiropractic Profession, Health Professions, Health System

## **TÜRKİYE CUMHURİYETİ'NDE KAYROPRAKTİK MESLEĞİ**

### **Özet**

Kayropraktik mesleği Dünya Sağlık Örgütü tarafından tanımları yapılmış, yetki alanları ve eğitim standartları belirlenmiş olup 1895 yılından beri var olan bir sağlık mesleğidir. Çalışmamızın amacı; mesleğin yasal boyutları, eğitim şekli ve meslek profesyonellerinin durumu gibi konulara ışık tutarak uluslararası bir platformda Kayropraktiğin Türkiye'deki gelişimi hakkında bilgi vererek bilime katkıda bulunmaktır. Bu amaçla resmi gazete ve literatürler taranarak bilgilerin derlenmesi şeklinde bir bildiri ortaya konulmuştur. Türkiye Cumhuriyeti'ni Kayropraktik mesleğini henüz sağlık sistemine yeni

adapte etmeye çalışan devletlerden biridir. Ülke ilk olarak 2008 yılında Kayropratik Omurga Sağlığı Derneğinin kurulması ile Kayropratik mesleği ile tanışmış, 2014 yılında mesleğin ilk resmi tanımlaması uygulama rehberinde yer almıştır. 2015 yılında resmi eğitiminin verildiği ilk kurumun açılması ile birlikte popüler hale gelmiş halk arasında bilinirliği artmaya başlamıştır. 2015 tarihinden bu yana ülke içerisinde toplam 195 öğrenci programa kayıt olmuş olup, 55 öğrenci mezun olmuştur. 01.04.2021 tarihi itibari ile bunların 41 tanesinin tezi yüksek öğretim kurumunun ulusal tez merkezinde yayınlamıştır. Bu öğrencilerin nasıl ve hangi şartlar altında hasta görerek mesleklerini sürdürdükleri ile ilgili bir çalışma henüz yapılmamıştır. Yükseköğretim kurumu tarafından onaylanıp kabul gören bu eğitimin bir tedavi yöntemi olarak değil Dünya Sağlık Örgütü'nün de tanımladığı şekliyle bir sağlık mesleği olarak tanınması için ulusal ve uluslararası düzeyde Kayropratik Omurga Sağlığı Derneği aracılığı ile çalışmalar yürütülmektedir.

**Anahtar Kelimeler:** Kayropratik, Kayropratik Mesleği, Sağlık Meslekleri, Sağlık Sistemi

## 1. GİRİŞ

Manuel tedavi yöntemleri antik çağlardan günümüze geleneksel tedavi yöntemlerinin bir parçası olarak varlığını sürdürmüştür. Eski Mısır'dan Çin'e, Japonya'dan Tibet'e yazılı kaynaklarda yer edinmiştir. Spinal omurga manipülasyonunun omurga problemlerinde bir tedavi yöntemi olarak kullanılmasının kökeni M.Ö. Hipokrat'tan, M.S. Galen, Celsus ve Oribasius gibi bilim insanlarından günümüze kadar taşınmıştır.(Bergmann and Peterson, 2011)

19. yüzyıldan itibaren manipülatif terapi çeşitli meslek grupları tarafından sahiplenilerek bazen farklı bazen ortak amaç ve uygulama metodları ile çeşitli çekişmelere şahit olmuştur. Tıp, kayropratik, osteopati ve fizik tedavi mesleklerinde manipülatif müdahalelerin oynadığı roller uygulama metodları, uygulanma amaçları ve tedaviye bakış açıları yönünden farklılıklar taşımaktadırlar. 19. Yüzyılın sonlarına gelindiğinde artan bilgi birikimi ile bu meslekler yukarıda bahsedilen bakış açılarından dolayı sınırları çok keskin olmasa da birbirlerinden ayrılmış farklı ideolojik felsefeleri benimsemişlerdir.

### 1.1. Kayropratik Mesleği

Bir sağlık mesleği olarak kayropraktiğin doğuşu Daniel David Palmer'in icra ettiği zanaati mesleğe dönüştürerek bilimsel temel çerçevesinde şekillendirmesi sonucu ortaya çıkmıştır. İlk kayropratik mesleki uygulamanın kabul edildiği Eylül 1895'ten bu yana meslek varlığını sürdürmüş, tamamlayıcı ve koruyucu sağlık hizmetlerinin ayrılmaz bir parçası haline gelmiştir. (Bergmann and Peterson, 2011; Miller, 2000)

Dünya Sağlık Örgütü tarafından yapılan tanımlamada kayropratik; kas ve iskelet sistemlerinde karakterize hastalıkların teşhis ve tedavi edilmesi, koruyucu amaçla önlemlerin alınması ile ilgilenen bir sağlık mesleğidir. Aynı zamanda bu hastalıkların genel sağlık üzerindeki etkileri ile de ilgilenir.(WHO, 2005)

Kayropratik uygulamalar spinal manipülasyonlar üzerinde odaklanır. Bununla birlikte egzersiz, fiziksel aktivite, ergonomi, yaşam tarzı değişiklikleri gibi farklı parametreler ve bunların omurga sağlığı üzerine olan etkisine de müdahalelerde bulunmaktadır.(Meyer at al.2017)

Türkiye Cumhuriyeti'nde kayropratik mesleği ile ilgili resmi ilk tanım 27.10.2014 tarihli ve 20141027-3-1 sayılı resmi gazetede "Kayropratik; kas, omurga ve iskelet sisteminin biyomekanik bozuklukları ve bunun sinir sistemi üzerinde oluşturduğu sorunları önlemesiyle ilgilenen destekleyici bir uygulama alanıdır. Uygun hastalarda normal mekanik hareketliliğini yitirmiş eklemleri elle uygulanan tekniklerle düzeltme üzerine yoğunlaşır."

şeklinde tanımlanmıştır. Yine aynı belgede uygulamaya yetkili personel olarak sertifikalı tabip ve tabip gözetiminde sertifikalı sağlık meslek mensubu gösterilmiştir.(Türkiye Cumhuriyeti, 2017)

Yine aynı resmi gazetede Kayropraktik için; “Aşağıdaki uygulamalar ve ilişkili olabilecek alanlarda tedaviyi destekleyici yöntem olarak kullanılır. Hastalığı ortadan kaldıracığı veya tek başına tedavi edeceği gibi beyanlarda bulunulamaz.” İfadelerine yer verilmiştir. Bahsedilen uygulama alanları tablo 1.1`de listelenmiştir.(Türkiye Cumhuriyeti, 2017)

- Akut ve kronik boyun ve bel ağrısı,
  - Kronik servikal bölge kaynaklı baş ağrısı.
  - Ani fleksiyon- ekstansiyon zorlanmalarıyla ilişkili ağrılar.
  - Lomber spinal stenozun erken konservatif tedavisi.
  - Lomber, torakal ve servikal disk hernilerinin erken konservatif tedavisi.
  - Akut ve kronik yumuşak doku zorlanmaları.
  - Miyofasiyal ağrı sendromu.
  - Mesleki ve spor ile ilişkili rekreasyonel kas-iskelet sistemi yaralanmaları.
  - Geriatrik yaş grubunun osteoartrit vb. kas-iskelet sistemi sorunları.
  - Mekanik faset eklem kaynaklı, biyomekanik disfonksiyonlar.
  - Koksiks ağrısı.
  - Postürel Skolyoz.
  - Progresif motor defisit ve kauda equina sendromu saptanmayan sinir kökü irritasyonları
- Omuz, sakroiliak eklem, temporamandibuler eklem, kalça, diz, el, ayak eklem.  
disfonksiyonları.

**Tablo 1.1:** Kayropraktik yasal uygulama alanları

## **1.2. Dünyada Kayropraktik Mesleği Ve Yasal Tarihçesi**

Dünya genelinde ilk olarak 1988 yılında Dünya Kayropraktik Federasyonu (World Federation of Chiropractic (WFC)) kurulmuştur. Üyeleri 85'ten fazla ülkedeki ulusal kayropraktör dernekleri olan Dünya Kayropraktik Federasyonu, Ocak 1997'de bir sivil toplum kuruluşu olarak Dünya Sağlık Örgütü (WHO) ile resmi ilişkilere kabul edilmiştir. 1996 yılında, ABD hükümeti, Ulusal Sağlık Enstitüleri aracılığıyla kayropraktik araştırmalar için resmi finansman desteğine başlamıştır. 2005 yılında, Dünya Sağlık Örgütü, tüm üye ülkelerde Kayropraktik hizmetlerinin tanınması ve düzenlenmesi için eğitim standartları öneren, Kayropraktik`te Temel Eğitim ve Güvenlik Hakkında bir Kılavuzunu yayınlamıştır. 2009 yılına kadar bu kılavuz Arapça, Çince, İngilizce, Fince, Fransızca, Almanca, Endonezce, Japonca, Korece, Portekizce, İspanyolca ve Türkçe olarak 12 farklı dilde basılmıştır.(WFC, 2021)

### **1.3. Türkiye`de Kayropratik Eğitimi**

Her ne kadar kayropratik yetkili birimler tarafından bir sağlık mesleği değil sertifikalı uygulama olarak gösterilse de Türkiye Cumhuriyeti içerisinde bir kayropratik uygulama sertifika programı bulunmamaktadır. Kayropratik eğitimi sadece Yüksek Öğretim Kurumuna bağlı olarak Bahçeşehir Üniversitesinde Yüksek Lisans Programı olarak verilmektedir.

Kayropratik yüksek lisans programına kabul edilen olan adaylarda bulunması gereken kriterler;

“Lisans "Tıp" veya "Fizyoterapi ve Rehabilitasyon" öğrenimi veren ilgili bir yükseköğretim programından mezun olmak, En az 55 ALES-SAY (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı) puanına sahip olmak, Yapılacak bilimsel mülakat sonucunda başarılı olmak.” şeklindedir.<sup>[6]</sup>

Müfredat bilgisi olarak, bu yüksek lisans programı toplam 42 kredi, 14 dersten ve bunlara ek olarak seminer dersi ile 2 dönemlik tez çalışmalarından oluşur. Öğrenciler toplamda 126 akts`lik bir ders yükü ile mezun olurlar. Her zorunlu ders sadece bulunduğu dönemde, yani kendi döneminde açılmaktadır. Seçmeli dersler ise dönem itibariyle değişkenlik göstermektedir. Ders dönemi toplamda 4 yarıyıl yani 2 yıl sürmektedir.(Bahcesehir University. 2021)

Türkiye`de ilk ve halen tek olan Kayropratik eğitimi ise 2015 yılında Bahçeşehir Üniversitesi tarafından eğitime başlanılan Kayropratik Yüksek Lisans Programı ile sağlanmaktadır. Aynı zamanda bu program Ortadoğu ve Doğu Akdeniz`in ilk Kayropratik Yüksek Lisans programıdır. 2015 tarihinden bu yana programa 195 öğrenci kayıt olmuş ve 55 öğrenci mezun olmuştur. (Bahcesehir University. 2021; YÖK, 2021)

### **1.4. Türkiye`de Kayropratik Mesleği Hakkında Sivil Toplum Kuruluşları**

Türkiye`de kayropratik mesleği ile ilgili atılan ilk resmi adım 2008 yılında Kayropratik Omurga Sağlığı Derneği`nin kurulmasıdır.<sup>[11]</sup> Bu dernek aynı zamanda Dünya Kayropratik Federasyonu ve Avrupa Kayropratik Birliğinin de üyesi olarak kabul edilmiştir. Derneğe yalnızca yüksek lisans öğrencileri, yüksek lisans mezunları ve yurtdışında eğitimini tamamlamış lisans mezunları üye olarak kabul edilmekte olup, 2021 yılı Mart ayı itibari ile derneğin 30 adet üyesi bulunmaktadır.(Kayropratik Omurga Sağlığı Derneği, 2021)

### **1.5. Türkiye`de Kayropratik ile İlgili Bilimsel Çalışmalar**

Yukarıda da belirtildiği gibi Kayropratik Yüksek lisans programına şuana kadar 195 öğrenci kayıt olmuş ve bunların 55`i mezuniyete hak kazanmıştır. Ancak henüz bu 55 öğrencinin 41 tanesinin tezi ulusal tez merkezinde yayın aşamasına geçmiştir. Türkiye sınırları içerisinde bir öğrencinin yüksek lisans tezini ulusal veya uluslararası yayına çevirebilmesi için öncelikle ulusal tez merkezinde yayınlaması zorunlu olduğundan bu akademik çalışmaların kaçının bilimsel bir yayına dönüştüğünü bulmak için ulusal tez merkezi verileri kullanılarak aramalar gerçekleştirilmiştir. (Bahcesehir University. 2021; YÖK, 2021)

Ulusal ve uluslararası yayın olarak bilim camiasına katılan yayınların bazıları aşağıda listelenmiştir.

Çalışmanın ismi	Yayımlandığı Dergi	Çalışmanın Yazarları	Yayın Tarihi
Sakroiliak eklem fonksiyon	7. Ulusal Fizyoterapi Ve	SEFA HAKTAN	18.04.2019



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bozukluğunun tedavisinde kayropraktikmanipülasyonun ve kas enerji tekniğinin etkinliğinin karşılaştırılması (Sözel Bildiri)	Rehabilitasyon Kongresi	HATIK, DEMET TEKİN, KORHAN BAYRAM	- 20.04.2019
Pediatric Hastalarında Kayropraktik Manipulasyon Tedavisinin Etkinlik ve Güvenirliğinin Araştırılması (Sözel Bildiri)	Türkiye Spastik Çocuklar Vakfı Prof. Dr. Hıfzı Özcan 7. Uluslararası Cerebral Palsy ve Gelişimsel Bozukluklar Kongresi	MESUT ARSLAN, DONAT ALİ	23.02.2018 - 25.02.2018
The Retrospective Investigation of the Patients Who Apply With the Cause of Low Back Pain to the Chiropractic Clinic (Sözel Bildiri)	Uluslararası Müzik Dans ve Sağlık Kongresi	MESUT ARSLAN, İLKNUR SARAL, DONAT ALİ	10.10.2018 - 13.10.2018
Lateral Epikondilitli Hastalarda Kayropraktik Servikal Manipülasyonun Ağrı ve Fonksiyonellik Üzerindeki Etkisi (Sözel Bildiri)	GETAT-II. Uluslararası Geleneksel ve Tamamlayıcı Tıp Kongresi	ŞULE OKUR, DEMET TEKİN, MESUT ARSLAN	24.04.2019 - 27.04.2019
Chiropractic Nimmo Receptor-Tonus Technique and McKenzie Self-Therapy Program in the Management of Adjacent Segment Disease: A Case Report	Journal of Chiropractic Medicine	EMSAL SALİK, ALİ DONAT, MUSTAFA HULİSİ AĞAOĞLU	December 2020
<b>Chiropractic in Global Health and wellbeing: A white paper describing the public health agenda of the World Federation of Chiropractic(Note)</b>	Chiropractic and Manual Therapies	Maiers, M., Agaoglu, M., Brown, R., Cassirer, C., DaSilva, K., Lystad, R.P., Mohammad, S., Wong, J.J.	17 July 2018
<b>Immediate effects of chiropractic thoracic manipulations on the autonomic nervous system</b>	Journal Of Orthopaedics Trauma Surgery And Related Research	Aziz Giray Cakir1, Ali Veysel Ozden1, Alptekin Hasan Kerem1* and Julide Oncu Alptekin2	Oct 30, 2019
<b>Kayropraktik uygulama endikasyonları</b>	Yıldız S, Ağaoğlu	Yıldız S, Ağaoğlu MH.	2013
Response of Practicing Chiropractors during the	Journal of Manipulative and Physiological	Claire D.Johnson, Bart N.Green, Karen	June 2020

Early Phase of the COVID-19 Pandemic: A Descriptive Report Therapeutics

K.Konarski-Hart, Elise  
G.Hewitt, Marcelo  
B.Botelho, Kendrah L.Da  
SilvaM, GitteTønner,  
Terrence BK. Vasileios  
S.Gkolfinopoulos, MPhil,  
GabrielQuintero,  
Mustafa H.Agaoglu

## 2.SONUÇ VE ÖNERİLER

Kayropraktik mesleğinin Türkiye`de yer edinmesi sırasında ana odak noktası kayropraktiğin bir manuel terapi uygulama yöntemi olarak değil, bir sağlık mesleği olarak yer edinmesini sağlamaktır. Tüm dünyada olduğu gibi Kayropraktik mesleği birinci ve ikinci basamak sağlık hizmetleri arasında yerini almalı, Türk halkının bu bilimden mümkün olduğu kadar verimli şekilde yararlanmasını sağlamak için gerekli tüm çalışma ve girişimler yapılmalıdır.

Dünya Kayropraktik Federasyonu (WFC) ile Yüksek Öğretim Kurumu (YÖK) tarafından tanınan ve düzenlenen yüksek lisans eğitiminin sağlık bakanlığınca tanınması, bununla birlikte eğitimin diğer üniversitelerde de bu standartlarda verilmesi sağlanmalıdır. Ayrıca meslek hakkında zaman dilimlerine yayılmış hedefler de belirlenmelidir. Bu çalışmanın yazarları olarak bizim öneri olarak sunabileceğimiz yakın vade hedefleri; meslek tanınırlığı, mezun sayısının artması, eğitimsiz hizmet sağlayıcılarının engellenmesi, Türkçe kayropraktik kitabı yazılması, ülkemizde yapılan akademik çalışmaların ulusal düzeyde bilimsel dergilerde yayınlanması, meslek ile ilgili etik sorunların engellenmesidir. Orta vade hedefler; Doktora programının açılması, bu konuda uzmanlaşmış akademik personelin yetiştirilmesi, ülkemizde yapılan akademik çalışmaların uluslararası düzeyde bilimsel dergilerde yayınlanmasıdır. Uzun vade hedefler ise; Lisans Programının açılması, meslek yasa ve yönetmeliklerinin ışığında bütün Türkiye sağlık sistemine kayropraktik mesleğinin dahil edilmesidir. Türkiye`de şuan manuel tedavi adı altında geçerliliği olmayan sertifika ve kurslarla eğitim alan sağlık profesyonellerine ek olarak bu işlemlerin sağlık profesyoneli dahi olmayan kişilerle uygulanmasının halk sağlığı açısından ciddi problemler oluşturmaktadır. Bu açıdan bakıldığında lisans eğitimi açılana kadar eğitim standartlarının korunabilmesi için eğitimin üniversiteler tarafından ve minimum yüksek lisans seviyesinde verilmesi bir gereklilik olarak ortaya konabilir.

Türkiye`de Kayropraktik mesleği yeni gelişmekte olan, henüz yasal altyapısı tam olarak oluşturulamamış ancak eğitimin açılması sonrasında verdiği mezunları tarafından özveri ile sahiplenilmiş toplum yararını ve halk sağlığını birinci planda tutan bir meslektir.

Dünyadaki diğer örneklerinde de olduğu gibi kayropraktik mesleği zaman içerisinde Türkiye sağlık sistemi içerisinde de kendine yer edinecek ve gerekliliğini kendi kendine kanıtlayacaktır. Ancak bu zamana kadar halk sağlığının tehlikeye atılmaması açısından gerekli önlemler alınmalı ve Kayropraktik mesleğinin yetkisiz kişilerce adının kötüye çıkarılarak ölü doğması engellenmelidir. Bunun içinde bu çalışmanın yazarları olarak yukarıdaki önerileri sunmaktayız. Kayropraktik mesleğinin zaman içerisinde hakettiği değeri göreceğine ve Türk halkının da kayropraktik sağlık hizmetinden yarar sağlayacağına olan inancımız tamdır.

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ÜMUMTƏHSİL MƏKTƏBLƏRİNDƏ MÜASİR YANAŞMA  
BAXIMINDAN MÖVZULARIN ARDICILLIĞI VƏ DƏRSLİYİN DİLİ

CONTINUATION OF TOPICS AND LANGUAGE OF TEXTBOOKS IN  
MODERN APPROACHES IN SECONDARY SCHOOLS

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ÖZET

Hazırkı dövrdə müasir dərsə verilən pedaqoji və psixoloji tələblərə görə tədris prosesi elə qurulmalıdır ki, şagirdlərin məntiqi təfəkkürünü inkişaf etdirsin və düzgün formalaşmasını təmin etsin. Fənlərarası, fənn daxili inteqrasiyalar şagirdlərdə nəzəri biliklərlə yaradıcı tətbiq etmə bacarıq və vərdişlərini aşılamalıdır.

Bütün bunlara nail olmaq isə tədris prosesində yeni, müasir yanaşmalar tələb edir. Ona görə də orta məktəbin riyaziyyat kursunda, xüsusilə yuxarı siniflərdə, riyazi anlayışların öyrədilməsində müasir yanaşma prinsipləri və üsulları bu gün üçün çox aktualdır.

Bildiyimiz kimi klassik riyaziyyat gerçək aləmin fəza formaları və kəmiyyət münasibətlərini öyrənir. Hazırkı dövrdə elmin müxtəlif sahələrində riyazi modelləşdirmə elmin idrakın inkişafına səbəb olur.

Hər bir riyazi nəzəriyyənin özü bir modeldir. Hazırda yeni təlim üsullarına əsaslanan orta məktəbin riyaziyyatdan fənn kurikulumunun özü bir riyazi modeldir.

Ümumiyyətlə orta məktəbin riyaziyyat kursu fundamental elmi nəzəriyyələrə əsaslananraq tədris olunmalıdır. Bu isə anlayışların daxil edilməsi və öyrədilməsi prosesində müasir yanaşma üsulu və vasitələrinin tətbiq olunmasını zəruri edir.

Bəzi müasir yanaşmaları qeyd edək:

Orta məktəbin riyaziyyat kursunda fənn kurikulumuna görə yuxarı siniflərdə riyazi biliklərinin müasir yanaşmaq metodları, üsul və vasitələrdən istifadə etmək;

Orta məktəbin yuxarı sinifləri üçün riyaziyyatdan fənn kurikulumu, dərslik, metodik vəsait, didaktik materiallar və digər resurslar əsasında riyazi biliklərin proqramında yeri və tədris prosesində müasir yanaşma baxımından əsas istiqamətləri müəyyənləşdirmək.

**Açar sözlər:** Müasir yanaşma, fənlərin inteqrasiyası, riyazi fənlər, fənlərarası əlaqə

ABSTRACT

According to the pedagogical and psychological requirements of modern education, the teaching process should be designed to develop students' logical thinking and ensure their proper formation. Interdisciplinary, interdisciplinary integrations should instill in students theoretical knowledge and creative application skills and habits.

Achieving all this requires new, modern approaches to the teaching process. Therefore, the principles and methods of modern approaches to teaching mathematical concepts in high school mathematics, especially in the upper grades, are very relevant today.

As we know, classical mathematics studies the spatial forms and quantitative relations of the real world. At present, mathematical modeling in various fields of science leads to the development of scientific cognition.

Each mathematical theory is a model in itself. At present, the high school mathematics curriculum itself, based on new teaching methods, is itself a mathematical model.

In general, high school mathematics should be taught based on fundamental scientific theories. This makes it necessary to apply modern methods and tools in the process of incorporating and teaching concepts.

Here are some modern approaches:

To use modern methods, techniques and tools of mathematical knowledge in the upper grades according to the subject curriculum in the secondary school mathematics course;

To determine the main directions in terms of place in the program of mathematical knowledge and modern approach to the teaching process on the basis of the subject curriculum, textbooks, teaching aids, didactic materials and other resources in mathematics for the upper grades of secondary school.

**Keywords:** Modern approach, integration of disciplines, mathematical disciplines, interdisciplinary communication

### **TAM METİN**

Hazırkı dövrdə şagirdlərin məntiqi təfəkkürünü inkişaf etdilmərsi və düzgün formalaşması üçün müasir dərslər elə qurulmalıdır ki verilən pedaqoji və psixoloji tələblər tədris prosesini təmin etsin və fənlərarası, fənn daxili inteqrasiyalar nəzəri biliklərlə yaradıcı şagirdlərdə tətbiqetmə bacarıq və vərdişlərini aşlasın.

Qeyd edək ki, bütün bunlara nail olmaq isə tədris prosesində yeni, müasir yanaşmalar tələb edir. Ona görə də orta məktəbin riyaziyyat kursunda, xüsusilə yuxarı siniflərdə, riyazi biliklərin öyrədilməsində müasir yanaşma prinsipləri və üsulları bu gün xüsusi əhəmiyyət kəsb edir.

Bildiyimiz kimi hazırkı dövrdə elmin müxtəlif sahələrində riyazi modelləşdirmə elmi idrakın inkişafına səbəb olur.

Hər bir riyazi nəzəriyyənin özü bir modeldir. Hazırda yeni təlim üsullarına əsaslanan orta məktəbin riyaziyyatdan fənn kurikulumunun özü bir riyazi modeldir.

Ümumiyyətlə orta məktəbin riyaziyyat kursu fundamental elmi nəzəriyyələrə əsaslananraq tədris olunmalıdır. Bu isə anlayışların daxil edilməsi və öyrədilməsi prosesində müasir yanaşma üsulu və vasitələrinin tətbiq olunmasının zəruri edir.

Riyaziyyatda riyazi anlayışlar müəyyən məntiqi ardıcılıqla bir-biri ilə sıx bağlıdır. Odur ki, bu anlayışların daxil edilməsi və öyrədilməsi müasir yanaşma baxımından məntiqi davamla bir-birini tamamlamalıdır. Nümunə olaraq X sinfi götürsək görürük ki, X sinifdə bu ardıcılıq aşağıdakı kimi qurulmuşdur:

Funksiyalar → Bucağın triqonometrik funksiyaları → Triqonometrik funksiyalar → Üstlü və loqarifmik funksiyalar.

Göründüyü kimi X sinifdə riyaziyyat kursunun dörd (I,III,V,IX) əsas bölməsi “funksiya” anlayışına xidmət edir.

Ənənəvi təlim üçün olan dərsləklərlə müqayisədə burada anlayışın daxil edilməsində “asılılıq xəritəsi”, “cütleri sadalamaq” kimi əlavələr olunub. Tapşırıqların “öyrənmə”, “nümunə”, “tətbiq”, “araşdırma” kimi növlərə bölünməsi və başqa sahələrə inteqrasiya etməsi müasir yanaşmanın təzahürüdür. Ümumiləşdirici tapşırıqlar hər bölmənin sonunda verilir və məntiqi təfəkkürün induktiv formalaşmasına xidmət edir.

Şagirdlərin çətin qavradığı triqonometrik funksiyalar daxil edilərkən müxtəlif sxem və qrafiklərdən, vahid radiuslu çevrədən, fizika və coğrafiya məsələlərindən istifadə etmək işi asanlaşdırır.

Xüsusilə çevirmə düsturunun öyrədilməsində belə sxemlər qavrama prosesini sürətləndirir. Triqonometrik funksiyaların araşdırılması onların tək-cütlüyü, dövriliyi xüsusi yer tutur.

Qrafiklərin çevrilməsi, “sıxılma” və “daralma” terminləri ciddi əks olunur. Fənlərdaxili əlaqələri qeyd etsək görürük ki, tətbiq tapşırıqlarından fizika elminə istinadlar olunur. Sinusoid,

kosinusoid, fangensoid, kotangensiod kimi ayrıların qurulması bacarığı mənimsədilir. Eləcədə tərs triqonometrik funksiyalar öyrədilir. Təbiətdə baş verən dövrü proseslərdən nümunələrə baxılır.

Üstlü və loqarifmik funksiyalar genişliyi ilə və müqayisəli şəkildə öyrənilir. “Eksponenta” ( $y = a^x$  funksiyası və onun qrafiki) anlayışı daxil edilir. Eksponensial artan (azalan) funksiya termini izah olunur.

Ümumiyyətlə bütün növ funksiyalar üçün qrafiklərin çevrilməsi halları araşdırılır. Bu da müasir yanaşmanın tələblərindən biridir.

Müasir yanaşma baxımından dərsləyin dili şagird dilindən çox, elmi diləyaxındır. Mövzularda daxil edilən anlayışların miqdarı çoxdur. Düzdür dərsləyin tərtibatı, şrift fərqi, rənglərə görə fərq, sxem və qrafiklərin dəqiqliyi, tapşırıqların məqsədəuyğun ayrılması müsbət haldır.

Lakin, ilk baxışda kitab dərsləkdən çox, elmi kitaba oxşayır. Ona görə də fənni tədris edən müəllimin üzərinə böyük məsuliyyət və yük düşür. Dərsləlik sanki ali məktəb tələbələrini üçün çap olunmuşdur.

Analizə adi materiallara həndəsə materialları arasında fasilələr məntiqi ardıcılığı, rabitəni pozur.

Xüsusilə qrafiklərin çevrilməsi, mürəkkəb funksiya, tərs funksiya, xətti sürət və bucaq sürəti, beş əsas nöqtəsinə görə sinusoidin qurulması, mövzularının şərhli anlaşılıq deyil.

Loqarifmik funksiyanın davamı kimi “Loqarifmik şkala və məsələ həlli” mövzusunda daxil edilmiş ekologiya, səs dalğaları, zəlzələ,biologiya sahələrinə aid çalışmalar inteqrasiya baxımından müsbət hal kimi qarşılanarsa da, şərhli və həlli çətin mənimsənilir.

Bu da ondan irəli gəlir ki, dərsləlik ali təhsilin bakalavr pilləsi üçün yazılan səviyyədə tərtib olunub. Dərsləyin dili,üslub göstəriciləri mürəkkəbləşdirilib. Anlayışların həcmi və məntiqi davamı qənaətbəxş deyil.

X sinifdə riyaziyyatı tədris edən müəllim göründüyü kimi həm fizik, həm kimyaçı, həm biolog, həm iqtisadçı, həm ekoloq və s. olmalıdır.

Müasir yanaşma baxımından bu cəhət təqdirəlayiq olsa da, reallıqdan uzaqdır. Buna baxmayaraq ümumi prizmadan yanaşsaq, yeni yanaşma prinsipləri aşağıdakı kimi qurulmuşdur:

- Anlayışın hamısı əvvəlki riyazi bilikləri əhatə etdiyini göstərən araşdırma tapşırıqları, praktik məşğələlərlə daxil edilir.
- Riyazi anlayışın tərif və düsturlar
- Daxil edilmiş tərif və düsturun tətbiqinə aid öyrətmə tapşırıqlarının yerinə yetirilməsi
- Tərif və düsturların tətbiqi nəzərdə tutulan sadə tətbiq tapşırıqlarının icrası
  - Anlayışın tətbiqini nəzərdə tutan yaradıcı tapşırıqların, real həyati situasiya məsələlərinin riyazi modelinin müəyyənləşdirən düsturların çıxarılışı və yazılması.

#### **Nəticə olaraq qeyd edək:**

- Hər bir funksiya araşdırılarkən müasir yanaşma baxımından başqa elm sahələrindən daxil edilmiş araşdırma məsələsi, öyrətmə tapşırıqları, ümumi çalışmaları mənimsətməyə üstünlük verilmişdir,
- Dərsləyin dili “dərsləlik” dilindən “elmi kitab” dilinə daha yaxındır. Nəhayət təklif edirəm ki, dərsləyin dili sadələşdirilməli, anlayışların həcmi azaldılmalıdır,
- Bölmələr arasındakı intervallar kiçildilməli, mövzuların arasında məntiqi rabitə möhkəmləndirilməlidir,
- Çətin mövzuların bir qismi dərsləkdən və proqramdan çıxarılmalıdır.

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## **İBTİDAİ SİNİFLƏRDƏ DİDAKTİK OYUNLAR DIDACTIC GAMES IN PRIMARY SCHOOL**

**Israfilova Gunel Tabriz gizi**

Dissertation of ADPU

### **ÖZET**

Oyun – yaradıcılıqdır, əməkdir. Oyun prosesində uşaqlarda müstəqil düşünmək, diqqəti toplamaq, onu inkişaf etdirmək, öyrənməyə can atmaq kimi vərdislər yaranır. Şagirdlərin başları qarışır, dərstdə olduqları yaddan çıxır, öyrənməyə səy göstərir, yeniliyi yadda saxlayırlar, qeyri-adi vəziyyətlərdən çıxış yolu tapırlar, təsəvvürlərini, anlayışlarını tamamlayırlar, fantaziyalarını inkişaf etdirirlər. Hətta ən passiv uşaqlar belə böyük məmnuniyyətlə oyuna qoşulur, yoldaşlarını məyus etməmək üçün səy göstərirlər.

L.S.Vıqotski (9), A.N.Leontyev (11), D.N.Uznadze (13), D.B.Elkonin (14) və Y.İ.İqnatyev (10) dərstdə oyun formasını müəllim və şagirdlərin qarşılıqlı münasibətində ünsiyyətin ən məhsuldar forması hesab etmişlər.

İbrahimov F. və Hüseynzadə R. qeyd edirlər ki, “Uşaq oyunda müəyyən rollar ifa edir. Məhz oyundakı rol vasitəsilə uşaqlarda kollektivçilik, çeviklik, cəsurluq, dostluq, yoldaşlıq kimi əxlaqi keyfiyyətlər formalaşır inkişaf edir. Uşaq oyun zamanı müvəffəqiyyətə çatmaq üçün sevincə qovuşmaq arzusu ilə bütün çətinliklərə qarşı inadla mübarizə aparır. ( 4, s.111)

“Kurukulum”, “İbtidai məktəb və məktəbəqədər tərbiyə” və “Naçalnaya şkola” jurnallarında dərc olunmuş bir sıra məqalələr (1;3;5;6;7;8;12) ibtidai siniflərdə oyunların və rollu oyunların təşkilinə və keçirilməsinə həsr olunub. Bu əsərləri çox dəyərli hesab edirik.

Didaktik oyunlar aparılma formasına görə iki növə ayrılır:

1.Xüsusi didaktik materiallar vasitəsilə yerinə yetirilən oyunlar.

2. Sözlərlə ifadə olunan və yerinə yetirilən oyunlar (rebuslar, viktorinalar, tapmacalar, sayma və hesablamaya aid çalışmalar və s.)

Uşaqların təfəkkürünün və nitqinin inkişafında tapmacalar böyük rol oynayır. Tapmacanın cavabını taparkən uşaqlar əşya və ya hadisəni təsvirinə görə tanıyırlar. Bu prosesdə xalqın obrazlı dilinin təsviri ilə uşaqların nitqi inkişaf edir.

Didaktik oyunların ibtidai siniflərdə tətbiqi pedaqoji cəhətdən dəqiq, ətraflı hazırlanmış sxem tələb edir:

1. Dərslərdə didaktik oyunlardan istifadə etmək üçün müəllim uyğun mühiti təmin etməli, dərslərin gedişində uşaqların əhvalı-ruhiyyəsinə idarə etməlidir.

2. Oyundan əvvəl ilk növbədə təlimin və tərbiyənin konkret məqsədləri sistemi hazırlanmalıdır.

3. Müəllim şagirdlərin oyunun keçirilməsinə hazır olub olmadığını əvvəlcədən bilməli və buna uyğun olaraq dərstdə oyun tətbiq etməyə qərar verməlidir.

4. Müəllim didaktik oyuna başlamazdan əvvəl hər bir şagirdin bu oyunda hansı rolu oynayacağını bilməlidir.



**Açar sözlər:** İbtidai sinif, müəllim, məktəb, oyun, didaktik oyun.

## **ABSTRACT**

Game is creativity, labor. In the process of play, children develop habits such as independent thinking, concentration, development, eagerness to learn. Students are confused, forget what they are in class, try to learn, remember the novelty, find a way out of unusual situations, complete their imagination, develop their imagination. Even the most passive children join the game with great pleasure, trying not to disappoint their peers.

LS Vygotsky (9), AN Leontyev (11), DN Uznadze (13), DB Elkonin (14) and YI Ignatyev (10) considered the game form in the lesson to be the most productive form of communication between teachers and students.

Ibrahimov F. and Huseynzadeh R. note that, "Children play certain roles in the game. It is through the role in the game that moral qualities such as collectivity, agility, courage, friendship and camaraderie are formed and developed in children. During the game, the child persistently fights against all difficulties with the desire to rejoice in order to succeed. (4, p.111)

A number of articles (1; 3; 5; 6; 7; 8; 12) published in the journals "Curriculum", "Primary School and Preschool Education" and "Primary School" are devoted to the organization and conduct of games and role-playing games in primary school. We consider these works very valuable.

Didactic games are divided into two types according to the form of conducting:

1. Games performed through special didactic materials.
2. Games expressed and performed in words (rebuses, quizzes, riddles, counting and arithmetic exercises, etc.)

Riddles play an important role in the development of children's thinking and speech. When finding the answer to a riddle, children recognize an object or event by its description. In this process, children's speech develops with the description of the figurative language of the people.

The application of didactic games in primary school requires a pedagogically accurate, detailed scheme:

1. In order to use didactic games in the classroom, the teacher must provide a suitable environment and control the mood of the children during the lesson.
2. Before the game, first of all, a system of specific goals of training and education should be developed.
3. The teacher should know in advance whether the students are ready for the game and decide to apply the game in class accordingly.
4. Before starting the didactic game, the teacher should know what role each student will play in this game.

**Keywords:** Primary school, teacher, school, game, didactic game.

## **TAM METİN**

Oyun uşağın imkanları daxilində tələblərini ödəyən vasitə olub, fəaliyyət növü kimi meydana çıxır. Oyun uşağın inkişafının ilk mərhələsini təşkil etməklə həm də ilk fəaliyyət növüdür.

Uşaq oyunla böyüməlidir. Məktəbə qədəm qoyan hər bir uşağın öz aləmi, öz dünyası olur. Bu aləm, təbii ki, oyunlarla zəngin olur. Bunu nəzərə alaraq həyata keçirilən yeni təhsil islahatının tələbinə əsasən təlim prosesində oyunlara geniş yer vermiş olsaq, uşaqlar bilikləri sevə-sevə mənimsəyirlər.

İbrahimov F. və Hüseyinzadə R. qeyd edirlər ki, “Uşaq oyunda müəyyən rollar ifa edir. Məhz oyundakı rol vasitəsilə uşaqlarda kollektivçilik, çeviklik, cəsurluq, dostluq, yoldaşlıq kimi əxlaqi keyfiyyətlər formalaşır inkişaf edir. Uşaq oyun zamanı müvəffəqiyyətə çatmaq üçün sevincə qovuşmaq arzusu ilə bütün çətinliklərə qarşı inadla mübarizə aparır. ( 4, s.111)

Məktəbə daim oyun fəaliyyəti ilə məşğul olan uşaqlar gəlir və onlar əqli yüklənmələrə vərdisiz etməyiblər, onlara yeni şəraitə uyğunlaşmaq, tədris prosesinə qoşulmaq çətin olur. Belə vaxtlarda ən əsas olan müəllimin köməyidir. Müəllim didaktik oyunların köməyi ilə uşaqların diqqətini dəstəkləyir; tədris prosesinə uyğunlaşmağa, əqli fəaliyyətlərinə kömək edir; tədris prosesini maraqlı və əyləncəli edir.

Oyun – yaradıcılıqdır, əməkdir. Oyun prosesində uşaqlarda müstəqil düşünmək, diqqəti toplamaq, onu inkişaf etdirmək, öyrənməyə can atmaq kimi vərdisizlər yaranır. Şagirdlərin başları qarışır, dərstdə olduqları yaddan çıxır, öyrənməyə səy göstərir, yeniliyi yadda saxlayırlar, qeyri-adi vəziyyətlərdən çıxış yolu tapırlar, təsəvvürlərini, anlayışlarını tamamlayırlar, fantaziyalarını inkişaf etdirirlər. Hətta ən passiv uşaqlar belə böyük məmnuniyyətlə oyuna qoşulur, yoldaşlarını məyus etməmək üçün səy göstərirlər.

“Kurikulum”, “İbtidai məktəb və məktəbəqədər tərbiyə” və “Naçalnaya şkola” jurnallarında dərc olunmuş bir sıra məqalələr (1;3;5;6;7;8;12) ibtidai siniflərdə oyunların və rollu oyunların təşkilinə və keçirilməsinə həsr olunub. Bu əsərləri çox dəyərli hesab edirik.

Hacıyeva H. və Axundova S. öz metodik vəsaitlərində (2) Həyat bilgisi fənninə aid çox maraqlı oyunların keçirilməsi metodikasını şərh etmişlər.

L.S.Vıqotski (9), A.N.Leontyev (11), D.N.Uznadze (13), D.B.Elkonin (14) və Y.İ.İqnatyev (10) dərstdə oyun formasını müəllim və şagirdlərin qarşılıqlı münasibətində ünsiyyətin ən məhsuldar forması hesab etmişlər.

Oyun uşağın həyatında mühüm rol oynayır:

- 1) Şagirddə nikbin əhval ruhiyyə yaradır;
- 2) Şagirddə iş görmə, fəaliyyət əhvalını yaradır;
- 3) Biliklərin mənimsənilməsini asanlaşdırır;
- 4) Şagirdlər oyun prosesində iradi keyfiyyətlər: Çətinliyi dəf etmə, bacarıqlar qazanma, fiziki cəhətdən inkişaf etməyə nail olurlar;
- 5) Şagirdlərin tərbiyəsində, özünə tələbkar olmaq, diqqətli olmaq kimi keyfiyyətlərin formalaşmasında mühüm rol oynayır.

Didaktik oyunlar aparılma formasına görə iki növə ayrılır:

- 1.Xüsusi didaktik materiallar vasitəsilə yerinə yetirilən oyunlar.

2. Sözlərlə ifadə olunan və yerinə yetirilən oyunlar (rebuslar, viktorinalar, tapmacalar, sayma və hesablamaya aid çalıřmalar və s.)

Dərslərdə müxtəlif oyun-tapmacalardan istifadə etmək lazımdır. Bu cür dərslər řagirdləri fəallařdırır, onlarda sərbəst fikir söyləmək qabiliyyətini, yaradıcılıęı artırır.

Uřaqların təfəkkürünün və nitqinin inkiřafında tapmacalar böyük rol oynayır. Tapmacanın cavabını taparkən uřaqlar əřya və ya hadisəni təsvirinə görə tanıyırlar. Bu prosesdə xalqın obrazlı dilinin təsviri ilə uřaqların nitqi inkiřaf edir.

Tapmacalarda və onların cavablarında yazılışı çətin sözlər olur. Ona görə də tapmacalar üzrə didaktik oyunlar řagirdlərin orfoqrafik savadının artırılmasına da xidmət edir.

Tapmacalarla didaktik oyun belə təřkil edilə bilər: 3 oyunçu üçün 6 damaya ayrılmıř 3 böyük kart və 18 kiçik kartoçka komplekti götürülür. Damalarda tapmacalar, kartoçkalarda cavablar yazılır. Kartoçkalarda yazılardan başqa řəkillər də ola bilər.

Kartların hərəsi bir řagirdə verilir. řagirdlərin hər birinə həmin tapmacaların cavabları (qoyun, kələm, balqabaq, xiyar, nar, bulud) yazılmıř 6 kartoçka verilir. Uřaqların hər üçü eyni vaxtda kartlardakı tapmacanın üstünü onun cavabı yazılmıř kartoçka ilə örtməyə başlayır. Kim bütün tapmacaların üstünü cavabı ilə tez örtsə, o, oyunun qalibi hesab olunur. Tapmacanın adları yazılmıř kartoçkaları onların řəkilləri ilə də əvəz etmək mümkündür. Çoxlu oyun komplekti hazırlayaraq eyni vaxtda bütün sinfi iřə cəlb etmək mümkündür.

Bir çox halda kartları tematik tərtib etmək mümkündür. Belə ki, bütün sinif üçün yalnız tərəvzlərə aid tapmacalar verilir. Bəzən isə uřaqlardan birinin kartında tərəvz, digərininkində meyvə, üçüncüdə quş və s. mövzulara aid tapmacalar verilə bilər. I sinifdə Azərbaycan dili dərslərində belə oyunun təřkili üçün ařaęıdakı tapmacalardan istifadə etmək olar:

1. Gəlirdim kənddən,

Səs gəldi bənddən,

Aęzı sümükdən,

Saqqalı ətdən. (xoruz)

2. Bizdə bir kiři var,

Xor-xor yatıřı var. (piřik)

3. Həyətdə daędır,

Pambıqdan aędır,

Evə gələr,

Suya dönər. (qaz)

4. Odda yanmaz,

Suda batmaz. (buz)

5. Su üstündə üzərəm,

Sudan çıxsam ölərəm.

Əynimdə pullu paltar,

Məni torla tutarlar. (balıq)

Tapmacalar (Həyat bilgisi dərslərində).

Əziz uşaqlar, bilirik ki, tapmacalardan xoşunuz gəlir. Çünki, tapmacalar adamı düşündürür, qəribə suallara, gizlin mənalara düzgün cavab tapmağa çalışır. Tapmacaların cavabını tapmaqla siz biliklərinizi genişləndirir və yoxlayırsınız. Habelə, təbiət, bitki və heyvanlar aləmi barədə maraqlı məlumatlar toplayırsınız.

Şair Şamil Əsgərovun yazdığı tapmacalar da sizin üçün çox maraqlı və düşündürücü olacaqdır.

O nədir ki, üzü gülər, canı yox. (Şəkil)

O nədir ki, başını kəs, qanı yox. (kəpənək)

Bir gözəlliyin bərabəri-tayı yox,

Dörd yanında incilərin sayı yox. (Günəş, dörd yanında ulduzlar)

O nədir, nəfəsi var, leşi yox? (külək)

Yaz geyinib, qış soyunub solan nə? (meşə)

O nədir ki, alovu var, közü yox? (kibrit)

O nədir ki, bölünər dörd nəsilə? (bir il – dörd fəsilə bölünür)

O nədir ki, gecə görər səs ilə? (yarasa)

O nədir ki, harada gəzsə izi yox? (kölgə)

“Tapmacanı tap” oyunu (Musiqi dərslərində).

Bu oyun musiqi haqqında bilikləri yada salıb, təkrarlamaq üçün keçirilir.

Sınıf bir neçə qrupa bölünür. Müəllim hər qrupa musiqi alətləri, musiqi janrları, musiqi terminləri və bu kimi mövzularda tapmacalar oxuyur, qruplar isə 5 saniyə ərzində düşünüb (müzakirə edib) tapmacanın cavabını söyləməlidirlər. Məsələn:

Musiqi alətinin

Metaldan dilləri var.

Çəkiclə vursan ona

O da musiqi çalar. (Metallafon)

Oxu yoxdur, yayı var,

O yayın adı kaman.

Çalanda bu alətdə

Səs xoşa gəlir yaman. (kamança)

Simli alətdir o da

Kaman ilə çalınır.

Mənşəyi Avropadır

Səsi bizim kamanın

Tembrinə oxşayır. (skripka)

Didaktik oyunların ibtidai siniflərdə tətbiqi pedaqoji cəhətdən dəqiq, ətraflı hazırlanmış sxem tələb edir:

1. Dərslərdə didaktik oyunlardan istifadə etmək üçün müəllim uyğun mühiti təmin etməli, dərsin gedişində uşaqların əhvalı-ruhiyyəsinə idarə etməlidir.

2. Oyundan əvvəl ilk növbədə təlimin və tərbiyənin konkret məqsədləri sistemi hazırlanmalıdır.

3. Müəllim şagirdlərin oyunun keçirilməsinə hazır olub olmadığını əvvəlcədən bilməli və buna uyğun olaraq dərstdə oyun tətbiq etməyə qərar verməlidir.

4. Müəllim didaktik oyuna başlamazdan əvvəl hər bir şagirdin bu oyunda hansı rolu oynayacağını bilməlidir.

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**AUTISM IS NOT A DEFICIENCY OR A DISEASE, IT IS JUST A  
DIFFERENCE!  
OTİZM BİR EKSİKLİK, YA DA HASTALIK DEĞİL, SADECE  
FARKLILIKTIR**

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**Abstract**

Autism Syndrome is a common developmental problem that begins at an early age in a child and manifests itself in a number of problems in social relationships and communication. Symptoms of autism usually begin to appear at the age of two. However, at 6 months there are certain signals. (screaming, lack of speech and attention) Autism manifests itself as isolation from real life. The three main areas of difficulty faced by children with autism are sometimes referred to as the “disorder triad”:

- violation of social relations;
- speech and communication disorders;
- Violation of social imagination.

Behavioral symptoms of autism include:

Socialization problem: May not be interested in other children's games, may be aggressive and cruel towards his sibling, may try to prevent his parents from holding him or kissing him, does not like close contact.

Communicative problem: Avoids eye contact, avoids contact with others, likes to be alone, talks about the topic for a long time, cries or laughs for no reason, or behaves for no reason, repeats meaningless words, expresses needs freely has difficulty doing so, tries to express his needs with actions instead of talking, and exolalia (instead of answering, repeating the same thing to himself) is observed.

Strange behavior: He is very interested in waving his hands often, clapping his hands, turning around suddenly, and turning the lights on and off.

Motor problems: There are minor motor problems, he likes to turn things constantly.

Sensor problems: He does not allow his hair to be shaved, refuses water procedures, has difficulty withstanding the sound of music, does not like to change clothes, is either sensitive to sounds or is indifferent.

Do not endanger yourself: He scratches his head here and there, bites himself, scratches his own skin, tears his hair, and there are no signs of pain.

**Keywords:** children with disabilities, social problems, education and knowledge.

**ÖZET**

Otizm Sendromu, bir çocukta erken yaşta başlayan, sosyal ilişkilerde ve iletişimde bir takım problemlerde kendini gösteren yaygın bir gelişimsel problemdir. Otizmin semptomları

genellikle iki yaşında ortaya çıkmaya başlar. Bununla birlikte, 6 ayda belli sinyalleri vardır. (çığlık, konuşma ve dikkat eksikliği) Otizm kendini gerçek hayattan soyutlanmış olarak gösterir. Otizmi olan çocukların karşılaştığı üç ana zorluk alanı bazen "bozukluk üçlüsü" olarak adlandırılır:

- sosyal ilişkilerin ihlali;
- konuşma ve iletişim bozuklukları;
- Sosyal hayal gücünün ihlali.

Otizmin davranışsal semptomları şunları içerir:

**Sosyalleşme sorunu:** Diğer çocuk oyunlarına ilgi duymayabilir, kardeşine karşı saldırgan ve acımasız olabilir, anne babasının onu kucağına almasını veya öpmesini engellemeye çalışabilir, yakın temastan hoşlanmaz.

**İletişim sorunu:** Göz temasından kaçınır, başkalarıyla temastan kaçınır, yalnız kalmaktan hoşlanır, konu hakkında uzun süre konuşur, sebepsiz yere ağlar ve ya güler, sebepsiz davranır, anlamsız kelimeleri tekrar eder, ihtiyaçlarını özgürce ifade etmekte zorluk çeker, ihtiyaçlarını konuşmak yerine eylemlerle ifade etmeye çalışır ve ekzolali (cevap vermek yerine aynı şeyi kendine tekrarlayarak) gözlemlenir.

**Garip Davranış:** Sık sık el sallamak, ellerini çırpamak, aniden arkasına dönmek ve ışıkları açıp kapatmakla çok ilgileniyor.

**Motor problemleri:** Küçük motorika problemleri gözlemlenir, eşyaları sürekli olarak döndürmeyi sever.

**Duyusal problemler:** Saçların traş edilmesine izin vermez, su tedavisini reddeder, müziğe dayanmakta güçlük çeker, kıyafet değiştirmeyi sevmez, sese duyarlı ve ya ilgisizdir.

**Kendine zarar verme:** Başını sallar, kendini ısırır, derisini kaşır, saçını yolur ve bu zaman herhangi bir ağrı belirtisi hiss etmez.

**Anahtar kelimeler:** engelli çocuklar, sosyal problemler, eğitim ve bilgi.

### **TAM METİN**

"I want to play with my peers, communicate,  
help me see those around me.

I also want to play and talk to someone,

I can't, I want to understand something, I can't. "

These are the expressions read through the eyes of a child with autism ...

Autism is a neuropsychiatric disorder that manifests itself as isolation, alienation from real life, and begins at an early age, lasts a lifetime, and is associated with problems in social relationships and communication. The exact cause of congenital autism is unknown. Some experts point out that autism is a problem in evaluating information from speech and emotions because the neurons in the brain are smaller than normal.

I think that it will be necessary to make a number of proposals and make relevant changes in order to meet the needs of children and families with autism in our country, to expand their opportunities.

In all developed countries, the level of mental development at a certain age after the birth of a child is checked by special tests. When mental retardation is detected, the parent and the field physician are notified. In our country, when a parent feels mentally retarded, he goes to the doctor, but he is not given the right direction. Misdiagnosis and degrees of mental retardation in children with autism at an early age completely isolate such children from society, resolving their future. Many children with autism have special innate talents. However, this talent is not developed at an early age by misdiagnosis, and the number of "children with disabilities" is growing as a result of the medical staff's lack of familiarity with the disease and the wrong treatment options.

Symptoms of autism can be seen in children between the ages of 1 and 3. Specialists and neurologists should be actively involved in this work. It should be noted that most doctors and neurologists link a child's late speech and hyperactivity to genes and misbehavior. In August 2011, after a story about autism aired on ANS TV's Ich Khabar program, a doctor with at least 20 years of experience at the clinic came to work the next morning and asked other fellow doctors what autism was.

When a child experiences autism, the family needs to be promptly informed and guided. Because the sooner autism syndrome is diagnosed and treated, the sooner a successful outcome can be achieved. For this purpose, courses and awareness-raising events on autism should be held in field hospitals and polyclinics. "Child psychological development" cabinets should be organized under the field polyclinics and highly qualified specialists should be provided in these cabinets. In fact, other rehabilitation services for children with autism in child development centers are weak, in addition to the services of psychologists and speech therapists. Autism training should be started and the range of services in these centers should be expanded, and special trainings should be held for school staff in this area from time to time. In developed western countries, all necessary measures are taken to bring such children into society, and that is why these children will become highly qualified specialists and scientists in the future. I think that the adoption of the Law of the Republic of Azerbaijan "On state care for people with autism" would be expedient for the better formation of state care for such children in Azerbaijan and their effective integration into society.

A special psychologist should talk to parents who have their child diagnosed with autism for the first time, and they should be thoroughly informed. Such families face many financial challenges. It is not possible for such children to receive free education in development centers, and it is difficult for them to attend auxiliary kindergartens, schools and inclusive educational institutions. This prevents these children from integrating into society in terms of being forced to be sent home. This fact is especially evident in more regions. For this reason, it is very important to establish Child Development Centers in the regions. Autism syndrome is a psychological and traumatic disorder that separates a child from society and eye contact. Therefore, it is very important for a child with autism to be in society and socialize.

It is important to educate the public about this so that the public can accept children with autism as they are. Extensive awareness-raising projects should be developed and implemented in this area. All media outlets operating in Azerbaijan, especially television channels, should organize a series of programs on the "Autism Problem" with the participation of experts working in the field of autism, and extensive educational work should be done in this area. In order to increase tolerance for children with autism in society, agitation and propaganda programs in this area should be implemented at the national level.

It is very difficult to move with children with autism. Most children with autism are not able to behave adequately in transport. In this case, the family is reprimanded by outsiders.



At first glance, they look like naughty, hyperactive, aggressive, affectionate children. The center should provide a special vehicle for children with autism. At present, qualified specialists who have undergone special training and preparation courses in foreign countries at the expense of the state should be allowed to work in the center, not at home. Specialists from foreign countries with advanced experience in the field of autism should be invited and special trainings on autism should be organized on a regular basis.

It is necessary to implement an action plan to involve children with autism in inclusive education together with other children with disabilities in our country. Thus, special programs, textbooks and assessment methods for children with autism should be identified. In particular, a sufficient number of staff should be trained to work with these children, teachers working with them should be involved in additional training courses, and the issue of their financial incentives should be taken into account.

There should be a special summer camp for children with autism in Azerbaijan, conditions for special classes, physiotherapy and examinations for children with autism should be created in this camp, and various clubs, meetings, trainings should be organized and various measures should be taken to socialize these children.

In the fight against autism - hypotherapy (treatment of horses), dolphin therapy, oxygen therapy, sports - "Emotional integration", etc. The application of the most tried and tested methods has a very positive effect on their mental health development.

The publication of the newspaper "Autism", which covers the problems of autism in our country, shows a special interest in this area.

According to the Law of the Republic of Azerbaijan "On the Rights of the Child", children with disabilities, mental or physical disabilities have the right to receive emergency, free or discounted medical, defectological and psychological assistance. The state helps these children to get an education, choose a profession and get a job in accordance with their social and psychological rehabilitation opportunities. ”

The foundation of large-scale measures on social protection of the disabled in our country was laid by the great leader Heydar Aliyev. During the leadership of the prominent statesman in Azerbaijan, who pays special attention to the human factor, the social protection of people with disabilities and their integration into society has been strengthened year by year.

National leader Heydar Aliyev's opinion "We will create more conditions for people with disabilities to live, work, use their internal opportunities and talents" was identified as one of the important priorities of the state's social policy, and President Ilham Aliyev's successful social policy As in other areas, it has allowed for the continuation of these activities on an ever-increasing scale.

Of course, the attention and care of the President of the Republic of Azerbaijan, Mr. Ilham Aliyev, to members of all segments of our society, including people with disabilities, is always obvious. By the order of the President, benefits for people with disabilities from various categories are regularly increased. At the same time, as a result of the efforts of the head of the Heydar Aliyev Foundation, First Vice-President of the Republic of Azerbaijan Mehriban Aliyeva, the houses of many people with disabilities were overhauled and new rehabilitation centers were established in full compliance with modern standards. At the state level, care for citizens with disabilities is reflected in all parts of the country.

April 2 World Autism Awareness Day was established by the UN resolution of December 18, 2007 at the suggestion of the State of Qatar. April is also widely celebrated

around the world as Autism Awareness Month. However, we must see, listen to, and own them every day of the year, not just one day of the year, and at the same time, we must love, care for, care for, and support them so that they are not isolated from society. Because all people need constant support and friendship from each other. In this regard, it should be the duty not only of the state, but also of everyone to take care of the lifestyle of children with autism, to alleviate the difficulties and problems they face.

To do this, we need to start with inclusive values. As the great thinker Mahatma Gandhi noted, in order to start with values, to be able to own those values, and to be able to see the change you want in the world, you must first start with yourself! And you should never forget human values! Because the value of a person does not depend on his abilities and achievements. The development of all people depends on their knowledge and skills, and everyone has the ability to feel and think.

Children are our future. No matter how different they are, they should not be left out of development, education, communication and attention! They are just different! Difference is a feature in itself and every child is special! Every child should know that it is a miracle and that there has never been another child like him since the beginning of the world and until the end of the world ..!

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## APPLICATIONS OF VECTOR AND COORDINATE METHOD IN SCHOOL MATHEMATICS COURSE

### MƏKTƏB RİYAZİYYAT KURSUNDA VEKTORUN VƏ KOORDİNAT METODUNUN TƏTBİQLƏRİ

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#### Abstract

The concept of vector as an object of both learning and teaching has been considered in the solution of many problems and in the proof of theorems. The article presents proofs of some theorems and examples of problem solving. Vectors are used to solve many in the algebra course. The proof of Cauchy-Bunyakovsky inequality were investigated with the help of vectors in school math course. The vectors have been explained to find the largest and lowest values of expressions. Vector algebra and subjects mathematics courses at the school of internal relations. Some exemplary solutions of examples was given in the article.

The application of the vector algebraic method allows such issues to be considered geometrically. This shows that there is an interaction between different sections of mathematics. In addition, the comparison and comparison of different methods of problem solving forces the student to think more carefully about the choice of method for solving a new problem.

**Keywords:** Vector, indifference, length, angle, piece

#### ÖZET

Vektor anlayışı həm öyrənmə, həm də öyrətmə obyektini kimi bir çox məsələ həllində və teoremlərin isbatında tətbiqinə baxılmışdır. Məqalədə bəzi teoremlərin isbatı və məsələ həlli nümunələri göstərilmişdir. Vektorlar cəbr kursunda bir çox məsələlərin həllində istifadə edilir. Məktəb riyaziyyat kursunda Koşi-Bunyakovski bərabərsizliyinin isbatı vektorların köməyi ilə nəzərdən keçirilmişdir. Vektorlar vasitəsilə ifadələrin ən böyük və ən kiçik qiymətlərinin tapılması nəzərdən keçirilmişdir. Vektorlar cəbrinin məktəb riyaziyyat kursunda fənn daxili əlaqələri açıqlanmışdır. Məqalədə bəzi nümunəvi misallar həlli verilmişdir.

Vektorlar cəbri metodunun tətbiqi belə məsələlərin həndəsi baxımdan nəzərdən keçirilməsinə imkan verir. Bu iş riyaziyyatın müxtəlif bölmələri arasında qarşılıqlı əlaqənin olduğunu göstərir. Bundan başqa, məsələ həllinin müxtəlif üsullarının tutuşdurulması və müqayisə edilməsi yeni məsələnin həllində metodun seçilməsi məsələsinə şagirdi daha düşüncəli yanaşmağa məcbur edir.

**Açar sözləri:** Vektor, bərabərsizlik, uzunluq, bucaq, parça

## TAM METİN

**Vektorun tətbiqi ilə bəzi teoremlərin isbatının öyrədilməsi.** Həndəsə kursunda isbat olunan bəzi teoremlərin digər isbat üsullarının verilməsinin şagirdlərin məntiqi təfəkkürünün inkişafında mühüm rol oynadığını nəzərə alaraq biz vektorların tətbiqi ilə bir neçə teoremin isbatını veririk.

**1. Teorem.** Üçbucağın orta xətti oturacağına paraleldir və onun uzunluğu oturacağıın uzunluğunun yarısına bərabərdir.

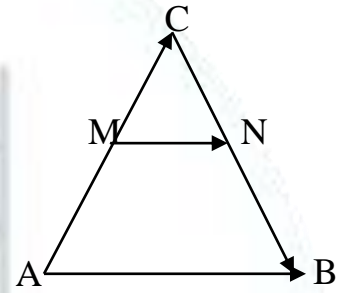
İstənilən teoremi isbat edərkən şagirdlərdə əvvəlcə onun şərtinə əsasən verilənləri və isbat ediləcək təklifləri yazmaq, sonra isə isbat prosesinin yerinə yetirilməsi vərdişlərinin yaradılmasına çalışmaq lazımdır.

**Verilir:**  $\triangle ABC$ ,  $M \in AC$ ,  $N \in CB$

$$AM = MC, CN = NB$$

**İsbat etməli:** 1)  $MN \parallel AB$ ;

$$2) MN = \frac{1}{2} AB$$



Şəkil 44

Teoremi isbat etmək üçün əvvəlcə  $ABC$  üçbucağının tərəfləri və orta xətti üzərində vektorlar təsvir edilir, sonra isə orta xətt üzərindəki vektoru tərəflər üzərindəki vektorlarla ifadə olunur.

$M$  nöqtəsi  $AC$ -nin,  $N$  nöqtəsi isə  $CB$ -nin orta nöqtəsi olduğu üçün

$$\vec{AM} = \vec{MC} = \frac{1}{2} \vec{AC} \quad \text{və} \quad \vec{CN} = \vec{NB} = \frac{1}{2} \vec{CB}$$

olması aydındır.

Vektorların toplanmasının üçbucaq qaydasına əsasən:

$$\vec{MN} = \vec{MC} + \vec{CN} = \frac{1}{2} \vec{AC} + \frac{1}{2} \vec{CB} = \frac{1}{2} (\vec{AC} + \vec{CB}) = \frac{1}{2} \vec{AB}.$$

Alınan  $\vec{MN} = \frac{1}{2} \vec{AB}$  bərabərliyi üçbucağın orta xətti və oturacağı üzərində götürülmüş

vektorların kollinear olduğunu göstərir.

Buradan,  $MN$ -nin  $AB$ -yə paralel olması alınır, 1) isbat olunur.

$$\vec{MN} = \frac{1}{2} \vec{AB} \quad \text{bərabərliyindən} \quad |\vec{MN}| = \frac{1}{2} |\vec{AB}| \quad \text{alındığını, başqa sözlə} \quad MN = \frac{1}{2} AB$$

olduğunu yazmaq olar və bu isə 2)-nin doğru olduğunu göstərir.

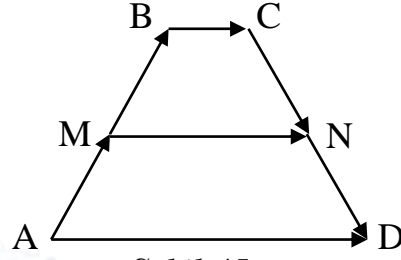
Beləliklə teorem isbat olunur.

**2. Teorem.** Trapesiyanın orta xətti oturacağına paraleldir və onların cəminin yarısına bərabərdir.

Teoremi isbat etmək üçün şagirdlərin aşağıdakı alqoritmi anlamalarına nail olmaq lazımdır:

- trapesiyanın tərəfləri və orta xətti üzərində 45-ci şəkildəki kimi vektorlar götürmək;
- $\overrightarrow{MN}$  vektorunun aşağıdakı ayrılışlarını yazmaq:

$$\begin{aligned}\overrightarrow{MN} &= \overrightarrow{MB} + \overrightarrow{BC} + \overrightarrow{CN} \\ \overrightarrow{MN} &= \overrightarrow{AD} - \overrightarrow{AM} - \overrightarrow{ND}\end{aligned}$$



- Bu bərabərlikləri tərəf-tərəfə toplamaq və alınan cəmdə  $\overrightarrow{AM} = \overrightarrow{MB}$  ;  $\overrightarrow{CN} = \overrightarrow{ND}$  olduğunu nəzərə almaq:

$$\begin{aligned}\overrightarrow{MN} + \overrightarrow{MN} &= \overrightarrow{MB} + \overrightarrow{BC} + \overrightarrow{CN} + \overrightarrow{AD} - \overrightarrow{AM} - \overrightarrow{ND} = \overrightarrow{BC} + \overrightarrow{AD} \\ 2\overrightarrow{MN} &= \overrightarrow{BC} + \overrightarrow{AD}\end{aligned}$$

buradan da

$$\overrightarrow{MN} = \frac{1}{2} (\overrightarrow{BC} + \overrightarrow{AD})$$

olduğu alınır.

Bu vektor bərabərlik trapesiyanın orta xəttinin onun oturacaqlarına həm paralel (kollinear vektorların cəmi onlarla kollinear olduğu üçün), həm də onların uzunluqları cəminin yarısına bərabər (eyni istiqamətli vektorların cəminin uzunluğu, onların uzunluqları cəminə bərabər olduğu üçün) olduğunu göstərir.

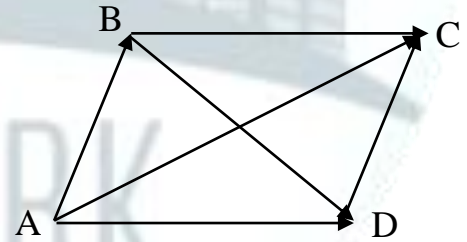
**3. Teorem.** Paraleloqramın diaqonallarının kvadratları cəmi onun tərəflərinin kvadratları cəminə bərabərdir.

**Verilir:** ABCD – paraleloqram.

**İsbat etməli:**

$$AC^2 + BD^2 = AB^2 + BC^2 + CD^2 + DA^2$$

**İsbatı:** ABCD paraleloqramının tərəfləri üzərində  $\overrightarrow{AB}$ ,  $\overrightarrow{BC}$ ,  $\overrightarrow{DC}$  və  $\overrightarrow{AD}$  vektorlarını təsvir edək.



Şəkil 46

Paraleloqramın AC və BD diaqonalları

üzərində təsvir edilən vektorları onun tərəfləri üzərində götürülmüş vektorlarla ifadə edək:

$$\overrightarrow{AC} = \overrightarrow{AB} + \overrightarrow{BC} \quad \text{və} \quad \overrightarrow{BD} = \overrightarrow{AD} - \overrightarrow{AB}$$

Bu vektorların özlərinə skalyar hasilərini – uzunluqlarının kvadratlarını tapaq:

$$AC^2 = \overrightarrow{AC}^2 = (\overrightarrow{AB} + \overrightarrow{BC})^2 = \overrightarrow{AB}^2 + 2\overrightarrow{AB} \cdot \overrightarrow{BC} + \overrightarrow{BC}^2 = AB^2 + 2 \cdot AB \cdot BC \cdot \cos A + BC^2$$

$$\begin{aligned}BD^2 = \overrightarrow{BD}^2 &= (\overrightarrow{AD} - \overrightarrow{AB})^2 = \overrightarrow{AD}^2 - 2\overrightarrow{AD} \cdot \overrightarrow{AB} + \overrightarrow{AB}^2 = AD^2 - 2 \cdot AD \cdot AB \cdot \cos A + AB^2 = \\ &= AD^2 - 2 \cdot AB \cdot BC \cdot \cos A + CD^2\end{aligned}$$

Bu bərabərlikləri tərəf-tərəfə topladıqda:

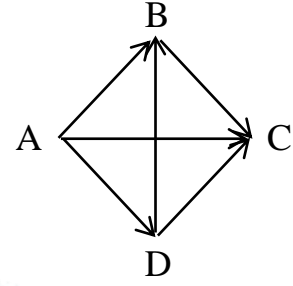
$$AC^2 + BD^2 = AB^2 + BC^2 + CD^2 + AD^2 = 2(AB^2 + BC^2) \text{ olduğu alınır.}$$

Beləliklə teorem isbat olundu.

**Nəticə:** Paraleloqramın diaqonallarının kvadratları cəmi onun iki tərəfinin kvadratları cəminin iki mislinə bərabərdir.

**4. Teorem.** Rombun diaqonalları qarşılıqlı perpendikulyardır.

- Bu teoremi isbat etmək üçün: ABCD rombu çəkilir;
- Rombun tərəfləri üzərində uyğun olaraq  $\overrightarrow{AB}$  və  $\overrightarrow{AD}$  vektorları təsvir edilir;
- Bu vektorların cəmi və fərqi tapılır;



Şəkil 47

$$\overrightarrow{AC} = \overrightarrow{AB} + \overrightarrow{AD} \quad \text{və} \quad \overrightarrow{DB} = \overrightarrow{AB} - \overrightarrow{AD}$$

- $\overrightarrow{AB}$  və  $\overrightarrow{DB}$  vektorlarının skalyar hasilini hesablanılır:

$$\overrightarrow{AC} \cdot \overrightarrow{DB} = (\overrightarrow{AB} + \overrightarrow{AD}) \cdot (\overrightarrow{AB} - \overrightarrow{AD}) = \overrightarrow{AB}^2 - \overrightarrow{AB} \cdot \overrightarrow{AD} + \overrightarrow{AB} \cdot \overrightarrow{AD} - \overrightarrow{AD}^2 = \overrightarrow{AB}^2 - \overrightarrow{AD}^2 = 0$$

olduğu alınır.

Sıfır olmayan iki vektorun skalyar hasilinin 0-a bərabər olmasından onlar arasındakı bucağın  $90^\circ$  olması alınır. Bu isə vektorların qarşılıqlı perpendikulyar olmasını, rombun diaqonallarının perpendikulyarlığını göstərir və bununla da teorem isbat olunur.

**5. Kosinuslar teoremi.** Üçbucağın bir tərəfinin kvadratı onun qalan tərəflərinin kvadratları cəmi ilə bu tərəflər və onlar arasında qalan bucağın kosinusu hasilinin iki mislinin fərqinə bərabərdir:

$$a^2 = b^2 + c^2 - 2bc \cos \varphi$$

Teoremi isbat etmək üçün:

1. ABC üçbucağının tərəfləri üzərində vektorlar təsvir etmək;
2.  $\overrightarrow{AB}$  və  $\overrightarrow{AC}$  vektorlarının arasındakı bucağı  $\varphi$  ilə işarə etmək;
3.  $\overrightarrow{AB}$  və  $\overrightarrow{AC}$  vektorlarının fərqini tapmaq:

$$\overrightarrow{BC} = \overrightarrow{AC} - \overrightarrow{AB} \quad \text{və} \quad \vec{a} = \vec{b} - \vec{c}$$

4.  $\vec{a}$  vektorunun özünə skalyar hasilini hesablamaq lazımdır:

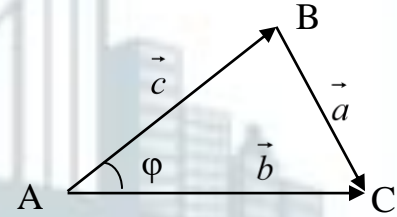
$$\vec{a} \cdot \vec{a} = (\vec{b} - \vec{c}) \cdot (\vec{b} - \vec{c}) = \vec{b}^2 - 2\vec{b} \cdot \vec{c} + \vec{c}^2 = b^2 - 2bc \cos \varphi + c^2$$

Bu bərabərlikdə vektorun özünə skalyar hasilinin özünün uzunluğunun kvadratına bərabər olmasını nəzərə alsaq,

$$a^2 = b^2 + c^2 - 2bc \cos \varphi$$

olduğunu alırıq.

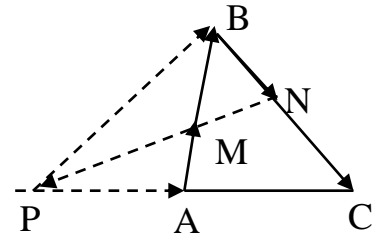
Bununla teorem isbat olunur.



Şəkil 48

**Nəticə:**  $\overrightarrow{AB}$  və  $\overrightarrow{AC}$  vektorlarının arasındakı  $\varphi$  bucağı  $90^\circ$  ( $\varphi = 90^\circ$ ) olduqda,  $a^2 = b^2 + c^2$  olması, başqa sözlə, kosinuslar teoreminin xüsusi halının Pifaqor teoremi olduğu alınır.

**6. Menelay teoremi.** ABC üçbucağının AB, BC və AC tərəfləri üzərində götürülmüş M, N və P nöqtələri uyğun olaraq onları  $1:\alpha$ ,  $1:\beta$  və  $1:\gamma$  nisbətində bölürsə və  $\alpha \cdot \beta \cdot \gamma = -1$  bərabərliyi doğrudursa, onda, M, N və P nöqtələri bir düz xətt üzərindədir.



Şəkil 49

Bu teoremin oxşarlıq və homotetiyanın tətbiqi ilə isbatları məlumdur. Biz vektorlar üzərində əməllərin tətbiqi ilə onun isbatını veririk.

Kafiliyin isbatı.

**Verilir:**  $\Delta ABC$ ,  $M \in AB$ ,  $N \in BC$ ,  $P \in AC$

$$\overrightarrow{AM} = \alpha \cdot \overrightarrow{MB}, \overrightarrow{BN} = \beta \cdot \overrightarrow{NC}, \overrightarrow{CP} = \gamma \cdot \overrightarrow{PA}, \alpha \cdot \beta \cdot \gamma = -1$$

**İsbat etməli:** M, N və P nöqtələri bir düz xətt üzərindədir.

**İsbatı:** Teoremin şərtinə əsasən M nöqtəsi AB parçasını  $AM:MB=\alpha:1$ , N nöqtəsi isə BC parçasını  $BN:NC=\beta:1$  nisbətində bölür. P nöqtəsini A, B və C nöqtələri ilə birləşdirək. Onda aşağıdakı bərabərlikləri yaza bilirik:

$$\overrightarrow{PM} = \frac{1}{\alpha+1} \overrightarrow{PA} + \frac{\alpha}{\alpha+1} \overrightarrow{PB} \quad (1)$$

$$\overrightarrow{PN} = \frac{1}{\beta+1} \overrightarrow{PB} + \frac{\beta}{\beta+1} \overrightarrow{PC} \quad (2)$$

(1) və (2) bərabərliklərindən  $\overrightarrow{PB}$ -ni rətapaq:

$$\overrightarrow{PB} = \frac{\alpha+1}{\alpha} \overrightarrow{PM} - \frac{1}{\alpha} \overrightarrow{PA} \quad (1')$$

$$\overrightarrow{PB} = (\beta+1) \overrightarrow{PN} - \beta \overrightarrow{PC} \quad (2')$$

(1') və (2')-dən

$$\frac{\alpha+1}{\alpha} \overrightarrow{PM} - \frac{1}{\alpha} \overrightarrow{PA} = (\beta+1) \overrightarrow{PN} - \beta \overrightarrow{PC},$$

$$(\alpha+1) \overrightarrow{PM} - \overrightarrow{PA} = \alpha(\beta+1) \overrightarrow{PN} - \alpha\beta \overrightarrow{PC},$$

$$(\alpha+1) \overrightarrow{PM} - \alpha(\beta+1) \overrightarrow{PN} = \overrightarrow{PA} - \alpha\beta \overrightarrow{PC}.$$

Burada  $\overrightarrow{PC} = -\gamma \overrightarrow{PA}$  olduğunun nəzərə alsaq,

$$(\alpha+1) \overrightarrow{PM} - \alpha(\beta+1) \overrightarrow{PN} = \overrightarrow{PA} - \alpha\beta(-\gamma \overrightarrow{PA}),$$

$$(\alpha+1) \overrightarrow{PM} - \alpha(\beta+1) \overrightarrow{PN} = \overrightarrow{PA}(1 + \alpha\beta\gamma),$$

və  $\alpha\beta\gamma = -1$  olduğun üçün

$$(\alpha+1) \overrightarrow{PM} - \alpha(\beta+1) \overrightarrow{PN} = 0$$



bərabərliyindən  $\overrightarrow{PN} = \frac{\alpha + 1}{\alpha(\beta + 1)} \overrightarrow{PM}$  olması alınır. Bu bərabərlik isə  $\overrightarrow{PN}$  və  $\overrightarrow{PM}$

vektorlarının kollinearlığını göstərir. Vektorların kollinearlığının tərifinə əsasən P, M və N nöqtələrinin hər bir düz xətt üzərində yerləşməsi alınır.

Bununla teorem isbat olunur.

Zəruri şərtin isbatı.

**Verilir:**  $\triangle ABC$ ,  $\overrightarrow{AM} = \alpha \cdot \overrightarrow{MB}$ ,  $\overrightarrow{BN} = \beta \cdot \overrightarrow{NC}$ ,  $\overrightarrow{CP} = \gamma \cdot \overrightarrow{PA}$  və M, N və P nöqtələri bir düz xətt üzərindədir.

**İsbat etməli:**  $\alpha \cdot \beta \cdot \gamma = -1$

**İsbatı:** M, N və P nöqtələri bir düz xətt üzərində yerləşdiyi üçün  $\overrightarrow{PN}$  və  $\overrightarrow{PM}$  vektorları kollinearlıdır.

Başqa sözlə,  $\overrightarrow{PN} = \eta \overrightarrow{PM}$ . M nöqtəsi AB parçasını  $AM:MB=\alpha:1$ , N nöqtəsi isə BC parçasını  $BN:NC=\beta:1$  nisbətində böldüyü üçün (1) və (2) bərabərliklərini yazıb birləşdiririk. Bu bərabərliklərdən  $(\alpha + 1)\overrightarrow{PM} - \alpha(\beta + 1)\overrightarrow{PN} = (1 + \alpha\beta\gamma)\overrightarrow{PA}$  olması alınır.  $\overrightarrow{PM}$  və  $\overrightarrow{PN}$  vektorları kollinear olduğu üçün  $1 + \alpha \cdot \beta \cdot \gamma = 0$  olmalıdır.

Buradan isə  $\alpha \cdot \beta \cdot \gamma = -1$  olduğu alınır və beləliklə teoremin zəruri şərti də isbat olunur.

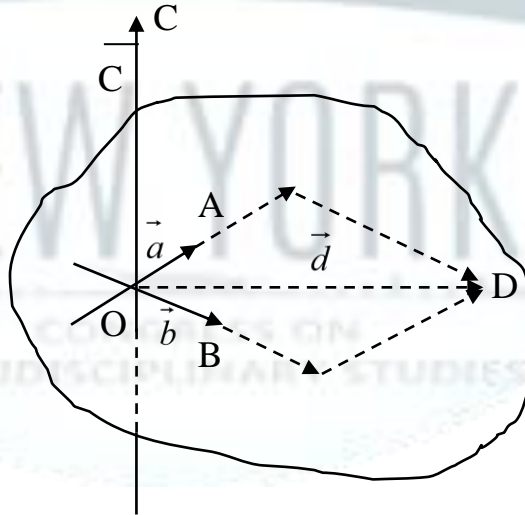
Bununla da teorem isbat olundu.

**7. Teorem:** Düz xətt müstəvi üzərindəki iki kəsişən düz xəttin hər birinə perpendikulyardırsa, onda bu düz xətt müstəviyə perpendikulyardır.

**Verilir:**  $a, b \in \alpha$ ,  $a \cap b = O$ ,  $c \perp a$ ,  $c \perp b$

**İsbat etməli:**  $c \perp \alpha$

**İsbatı:** Teoremi isbat etmək üçün şagirdlərin aşağıdakı algoritmi anlamalarına nail olmaq əhəmiyyətlidir:



Şəkil 50

1.  $\alpha$  müstəvisi üzərində yerləşən və O nöqtəsində kəsişən  $\mathbf{a}$  və  $\mathbf{b}$  düz xətlərini, bu düz xətlərə perpendikulyar olan  $\mathbf{c}$  düz xəttini çəkmək;
2.  $\mathbf{a}$ ,  $\mathbf{b}$  və  $\mathbf{c}$  düz xətləri üzərində vektorlar təsvir etmək;
3.  $\vec{a}$  və  $\vec{b}$  vektorlarının cəmini tapmaq (aydındır ki, bu vektorların cəmi  $\vec{d} = x \cdot \vec{a} + y \cdot \vec{b}$  olacaqdır);
4.  $\vec{c}$  vektoru ilə  $\vec{d}$  vektorunun skalyar hasilini tapmaq:  

$$\vec{c} \cdot \vec{d} = \vec{c} \cdot (x \cdot \vec{a} + y \cdot \vec{b}) = x \cdot \vec{c} \cdot \vec{a} + y \cdot \vec{c} \cdot \vec{b} = x \cdot 0 + y \cdot 0 = 0;$$
5. skalyar hasilin sıfıra bərabər olması  $\mathbf{c}$  və  $\mathbf{d}$  düz xətlərinin qarşılıqlı perpendikulyarlığını bildirir və buradan (düz xəttin müstəviyə perpendikulyarlığı tərifindən) düz xəttin müstəviyə perpendikulyar olması alınır.

Beləliklə teorem isbat olunur.

Bu alqoritmin dərk olunması şagirdlərdə məntiqi təfəkkürün inkişafına zəmin yaradır.

Vektorların cəbrin bəzi məsələlərinə tətbiqi onların həllini xeyli asanlaşdırır. Belə ki, vektorların skalyar hasilinin tərifindən istifadə edərək Koşi-Bunyakovski bərabərsizliyinin həllini daha sadə şəkildə verə bilərik. Əgər vektorlar kollinear olarsa

$$|\vec{a} \cdot \vec{b}| = |\vec{a}| |\vec{b}|$$

$$|\vec{a} \cdot \vec{b}| \leq |\vec{a}| |\vec{b}| \text{ bu Koşi-Bunyakovski bərabərsizliyinin vektor şəklində yazılışdır.}$$

Vektorun uzunluğu düsturunu koordinatlarla ifadəsini yazaq. Əgər  $\vec{a} = \langle a_1, a_2, a_3 \rangle$  və  $\vec{b} = \langle b_1, b_2, b_3 \rangle$

$$\text{Onda } |\vec{a} \cdot \vec{b}| \leq |\vec{a}| |\vec{b}|$$

$$(a_1 b_1 + a_2 b_2 + a_3 b_3)^2 \leq (a_1^2 + a_2^2 + a_3^2)(b_1^2 + b_2^2 + b_3^2)$$

İfadələrin ən böyük və ən kiçik qiymətlərinin tapılmasında da vektorlardan istifadə etmək olar.

$9 \sin x + 12 \cos x$  ifadəsinin ən böyük və ən kiçik qiymətlərini tapmaq.

**Həlli:**  $\vec{a} = \langle 9, 12 \rangle$   $\vec{b} = \langle \sin x, \cos x \rangle$  olsun.

Onda

$$\vec{a} \cdot \vec{b} = 9 \sin x + 12 \cos x,$$

$$|\vec{a}| = \sqrt{9^2 + 12^2} = 15$$

$$|\vec{b}| = \sqrt{\sin^2 x + \cos^2 x} = 1$$

$$|\vec{a} \cdot \vec{b}| \leq |\vec{a}| |\vec{b}| \text{ bərabərsizliyinə əsasən } |9 \sin x + 12 \cos x| \leq 15. \text{ Yəni ifadənin ən böyük}$$

qiyməti 15, ən kiçik qiyməti isə -15 olar.

Vektorlar cəbri həndəsə və cəbr arasında əlaqələndirici vasitədir.

Vektorlar cəbri metodunun tətbiqi belə məsələlərin həndəsi baxımdan nəzərdən keçirilməsinə imkan verir. Bu isə riyaziyyatın müxtəlif bölmələri arasında qarşılıqlı əlaqənin olduğunu göstərir. Bundan başqa, məsələ həllinin müxtəlif üsullarının tutuşdurulması və müqayisə edilməsi yeni məsələnin həllində metodun seçilməsi məsələsinə şagirdi daha düşüncəli yanaşmağa məcbur edir.

**KİÇİKYAŞLI MƏKTƏBLİLƏRİN TƏLİM FƏALİYYƏTİNDƏ  
KOMPÜTER TEXNOLOGİYALARINDAN İSTİFADƏYƏ VERİLƏN  
PSIXOLOJİ TƏLƏBLƏR  
PSYCHOLOGICAL REQUIREMENTS FOR THE USE OF COMPUTER  
TECHNOLOGY IN THE EDUCATIONAL ACTIVITIES OF YOUNG  
STUDENTS**

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**ÖZET**

Texniki tərəqqinin təhsilin bütün pillələrinə nüfuz etdiyi, məktəblərdə keçirilən dərslərdə kompüter texnologiyalarının tətbiqinin vüsət aldığı bir dövrdə təhsil sahəsində aparılan tədqiqatlarda da gerçəkliyə biganə qalmaq olmaz. Son illərin təcrübəsi göstərir ki, təhsilverənlərin, xüsusilə ibtidai sinif müəllimlərinin tədris prosesi kompüter texnologiyasının tətbiqi nəticəsində xeyli asanlaşır, mənimsəmənin keyfiyyəti xeyli yaxşılaşır və yüksəlir. İbtidai siniflərdə fənlərin tədrisində kompüterin köməyi ilə müxtəlif mövzuların öyrənilməsi asanlaşır, təcrübələrin aparılmasına, əyaniliyə və uyğun mövzuya keyfiyyətlə daha dərin yiyələnməyə imkan yaranır. Deməli, hazırda kiçikyaşlı məktəblilərin təhsil aldıkları siniflərdə kompüter texnologiyalarından istifadə etmək böyük əhəmiyyət kəsb edir. Dərslər kompüter resurları ilə təchiz edilir. Hər bir şagirdin onlardan əyanilik kimi istifadə etmək imkanları vardır. Odur ki, kompüter dəstəklı təlim prosesini qurmaq üçün ona müxtəlif pedaqoji və psixoloji tələblər verilir. Tədqiqatımızda məhz psixoloji tələbləri araşdırmağı qarşımıza məqsəd qoyduq.

İlk olaraq dərslin tipi kompüter texnologiyalarından istifadə imkanlarına öz təsirini göstərir. Hər bir müəllim bu sahədə hazırlıqlı olmalı, kompüter resurslarından dərslin tipinə görə ustalıqla istifadə etməyi bacarmalıdır. Bundan sonra gələn məsələ isə dərslin təşkilinə verilən psixoloji tələblərin gözlənilməsidir. Deməli, əgər biz burada təlim prosesində kompüter texnologiyalarından istifadənin psixoloji mahiyyətini öyrənmək istəyiriksə, o zaman ümumilikdə təlim prosesinin tiplərini müəyyənləşdirməliyik.

Digər tərəfdən, təlim prosesi psixoloji və pedaqoji təsirlərin qarşılıqlı əlaqəsində baş verir. Bu əlaqələrin hələ yetərinə çulğalaşmaması şagirdlərdə bir sıra çətinliklər yaradır. Bunun başlıca səbəbi onların əsasən sosial izolyasiya şəraitində işləmələri, şagirdlərin diqqətinin yalnız öz təhsilləri üçün fikirləşməyə yönəltmək üçün maraqlı və orijinal proqramların çatışmazlığıdır. Digər səbəb, mövcud proqramların müəllimlər tərəfindən ənənəvi pedaqogikaya alternativ olaraq qəbul edilməməsidir. Çünki müəllimlər texnoloji yeniliyi yalnız məktəbin təşkilati quruluşuna birbaşa daxil etmək üçün əlverişli, səmərəli və qənaətli olduğu halda qəbul edirlər.

Kiçikyaşlı məktəblilərin kompüter texnologiyalarından istifadəsində digər başlıca şərt, onların təlim fəaliyyətindəki uğurlarını şərtləndirən əsas məsələ - biliklərin keyfiyyəti mə-

nimsənilməsi və təcrübəyə tətbiqidir. Mənim səmə prosesində əsas iş isə təfəkkürün üzərinə düşür. Ona görə də kiçikyaşlı məktəblilərin kompüter texnologiyalarından istifadəsinin psixoloji mahiyyətini araşdırarkən diqqət ilk növbədə mənim səmə prosesinin əsasında duran təfəkkürə yönəlir. Məhz bu baxımdan kiçikyaşlı məktəblilərin təfəkkür xüsusiyyətlərinin nəzərdən keçirilməsi həm nəzəri, həm də mühüm praktik əhəmiyyəti kəsb edir. Təfəkkürün inkişafı bir sıra mərhələlərdən keçir. Bu mərhələlərin hər birində inkişafetdirici təlim təfəkkürün inkişafına əhəmiyyətli dərəcədə təsir göstərir. Xüsusilə, təlim-tərbiyə işi uşağın aparıcı fəaliyyətinə müvafiq qaydada qurulduqda nəticələr daha səmərəli olur.

Tədqiqatlardan da məlum olduğu kimi, müəllimin peşə ustalığı kiçikyaşlı məktəblilərə təqdim olunan kompüter informasiyalarının təsirini daha da artırır. Bu cəhəti nəzərə alaraq aparılan tədqiqatlarda müasir texnologiyaların uğurla tətbiqi üçün müəllimin bir sıra keyfiyyətlərə malik olmasının vacibliyini önə çəkmək əsas məqsədimiz olmuş və bununla bağlı olaraq pədaoqun iş ustalığı, uşaqlara bələdləşməsi kiçikyaşlı məktəblilərin psixi inkişafında özünəməxsus təsiri də müəyyən olunmuşdur.

**Açar sözlər:** kompüter texnologiyaları, təlim modelləri, təfəkkür, mümarisə, proqramlaşdırma.

#### **ABSTRACT**

At a time when technical progress is penetrating all levels of education, and the use of computer technology in school classes is expanding, research in the field of education should not be indifferent to reality. The experience of recent years shows that the teaching process of educators, especially primary school teachers, is greatly facilitated by the application of computer technology, the quality of mastering is significantly improved and increased. In the teaching of subjects in the primary grades, it is easier to learn different topics with the help of a computer, it is possible to conduct experiments, to have a deeper understanding of the relevant topic and quality. So, it is very important to use computer technology in the classrooms where young students study today. Classes are equipped with computer resources. Each student has the opportunity to use them as a visual aid. Therefore, in order to build a computer-assisted learning process, it is given different pedagogical and psychological requirements. In our study, we aimed to study the psychological requirements.

First of all, the type of lesson affects the ability to use computer technology. Every teacher must be prepared in this area and be able to use computer resources skillfully according to the type of lesson. The next task is to meet the psychological requirements for the organization of the lesson. So, if we want to study the psychological nature of the use of computer technology in the learning process, then we need to define the types of the learning process in general.

On the other hand, the learning process takes place in the interaction of psychological and pedagogical influences. The fact that these connections are not yet sufficiently intertwined creates a number of difficulties for students. The main reason for this is that they work mainly in social isolation, and there is a lack of interesting and original programs to focus students' thinking only on their own education. Another reason is that existing programs are not accepted by teachers as an alternative to traditional pedagogy. This is because teachers accept technological innovation only if it is convenient, efficient and economical to incorporate directly into the organizational structure of the school.

Another key condition for the use of computer technology by young students is the quality of knowledge acquisition and application in practice, which is the main condition for their success in educational activities. In the process of assimilation, the main work falls on thinking. Therefore, when studying the psychological nature of the use of computer technology by young schoolchildren, attention is focused primarily on the thinking that underlies the process of mastering. From this point of view, it is important to consider the thinking characteristics of young students, both theoretically and practically. The development of the mind goes through a number of stages. At each of these stages, developmental learning has a significant impact on the development of thinking. In particular, the results are more effective when the educational work is organized in accordance with the leading activities of the child.

Research shows that a teacher's professionalism enhances the impact of computer information provided to young students. Taking this into account, our main goal in the research was to emphasize the importance of the teacher having a number of qualities for the successful application of modern technologies, and in this regard, the teacher's workmanship, familiarity with children has a special impact on the mental development of young students.

**Keywords:** computer technology, training models, thinking, negotiation, programming.

#### **TAM METİN**

Məlum olduğu kimi, kompüter texnologiyalarının təlim prosesinə tətbiqi, əslində pedaqogikanın predmetinə aid olan məsələdir. Bu prosesin kiçikyaşlı məktəblilərin psixikasına təsirinin müəyyənləşdirilməsi ilə isə, əlbəttə ki, pedaqoji psixologiya məşğul olur. Xüsusilə həmin təsirin səmərəli olması üçün əlverişli texnologiyalar seçərək düzgün tətbiq etməkdən ötrü pedaqoqların psixoloji biliklərə ciddi ehtiyacı yaranır. Bu məqsədlə aparılan tədqiqatlarımızda ibtidai siniflərdə kompüter texnologiyalarından istifadənin səmərəli nəticə verməsi üçün yerinə yetirilməsi vacib olan psixoloji tələbləri araşdırdıq.

İlk olaraq dərslərin tipi kompüter texnologiyalarından istifadə imkanlarına öz təsirini göstərir. Hər bir müəllim bu sahədə hazırlıqlı olmalı, kompüter resurslarından dərslərin tipinə görə ustalıqla istifadə etməyi bacarmalıdır. Bundan sonra gələn məsələ isə dərslərin təşkilinə verilən pedaqoji tələblərin gözlənilməsidir.

Deməli, əgər biz burada təlim prosesində kompüter texnologiyalarından istifadənin psixoloji mahiyyətini öyrənmək istəyiriksə, o zaman ümumilikdə təlim prosesinin tiplərini müəyyənləşdirməliyik. Bunun üçün Bronyus Aysmontasın izahlarına müraciət edək. O, təlimin modellərini belə müəyyənləşdirmişdir [1, s. 253]:

- 1) assosiativ təlim modeli;
- 2) şərti-reflektor təlim modeli;
- 3) əməliyyat təlim modeli;
- 4) əsas təlim modeli.

Assosiativ təlim prosesi hissi təcrübədən, obyektlərin müşahidəsindən və proseslərdən başlanılır və bu zaman məlumatlar keçmiş biliklərlə əlaqə yaradılaraq şagirdlərə mənimsədir.

Şərti-reflektor təlim modelində şagirdlərin ehtiyaclarına və maraqlarına cavab verən məsələlərlə bağlı məqsədlər qoymaq, tapşırıqlar hazırlamaq, onları axtarıqlara yönəltmək, yeni informasiyalar və hərəkət bacarıqlarına yiyələnmək tələb olunur.

Əməliyyat təlim modelinin tətbiqi zamanı anlayışlar və prinsiplər tapşırıqların həlli yolu ilə öyrədilir;

Təlimə hissədən deyil, ümumidən, yaxından deyil, əsas olandan, bölünmüşdən deyil, bütövdən, elementdən deyil, quruluşdan başlamaq isə əsas təlim modelinin prinsipləridir.

Təcrübələrimiz göstərdi ki, istifadə olunan təlim modelindən asılı olmayaq kiçikyaşlı məktəblilərin kompüter texnologiyalarından istifadəsində başlıca şərt, onların təlim fəaliyyətindəki uğurlarını şərtləndirən əsas məsələ - biliklərin keyfiyyətli mənimsənilməsi və təcrübəyə tətbiqidir. Təbii ki, mənimsəmə prosesində əsas iş isə təfəkkürün üzərinə düşür. Ona görə də kiçikyaşlı məktəblilərin kompüter texnologiyalarından istifadəsinin psixoloji mahiyyətini araşdırarkən diqqət ilk növbədə mənimsəmə prosesinin əsasında duran təfəkkürə yönəlir. Məhz bu baxımdan kiçikyaşlı məktəblilərin təfəkkür xüsusiyyətlərinin nəzərdən keçirilməsi həm nəzəri, həm də mühüm praktik əhəmiyyəti kəsb edir.

Kiçikyaşlı məktəblilər özlərində hələ məktəbəqədər yaşın xüsusiyyətlərini qoruyub saxlayırlar. Onların təlim fəaliyyətində əyani-obrazlı təfəkkürün məntiqi təfəkkürlə əvəz olunması prosesi ibtidai təhsilin sonuna qədər davam edir. Digər tərəfdən, ibtidai təhsildə şagirdlərin təlim fəaliyyətinin psixoloji mahiyyəti konkret əməliyyatların yerinə yetirilməsi olduğundan bu prosesdə onlarda sadə vərdişlər, bacarıqlar mümarisələr yolu ilə yaranır. Bütün bunlar şagirdlərin təlim materialının müvəffəqyyətlə mənimsənilməsi, eləcə də bu biliklərin təcrübədə tətbiqi baxımından vacibdir. Çünki müasir təhsildə şagirddən bilik, bacarıq və vərdişlərin bütöv bir sistemə yiyələnmək tələb olunur, hansı ki, bu sistemin formalaşmasında təfəkkürün təlim şəraitinə uyğun olaraq əvəz edən formaları, növləri müstəsna əhəmiyyət kəsb edir. Hazırda bütün bunlar kiçikyaşlı məktəblilərin zehni fəaliyyətində istifadə edilən əyaniliklərin müasirliyinə, optimallığına, əlverişliliyinə diqqətlə yanaşma tələb edir.

Təfəkkürün inkişafı bir sıra mərhələlərdən keçir. Bu mərhələlərin hər birində inkişafetdirici təlim təfəkkürün inkişafına əhəmiyyətli dərəcədə təsir göstərir. Xüsusilə, təlim-tərbiyə işi uşağın aparıcı fəaliyyətinə müvafiq qaydada qurulduqda nəticələr daha səmərəli olur. Təlimin inkişafetdirici xarakteri onun ümumi səviyyəsi ilə bağlı deyildir. İnkişafetdirici təlimin mənbəyində mənimsənilmiş biliklər və elmi təsəvvürlər durur. Bu baxımdan, səmərəli təlim fəaliyyəti elə prosesdir ki, burada yeni biliklər mənimsənilir, şagirdlərdə öz fəaliyyətini tənzimləmək bacarığı formalaşdırılır. Bu, kiçik məktəbli yaş dövründə aparıcı fəaliyyətin əsas xüsusiyyətlərindəndir.

Bilikdə konstruktivliyin əsas prinsipi odur ki, bilik passiv şəkildə alınma bilməz. Bunun üçün şagirdlər öyrənmə prosesində fəal olmalıdırlar. Ona görə də ibtidai siniflərdə təhsil alan kiçikyaşlı məktəblilərə müvafiq qaydada, yaşa uyğun təlim şəraiti yaradılmalı, müasir texnologiyalardan istifadə olunmalıdır ki, onlar öyrənmə prosesində fəal iştirak etsinlər.

Tədqiqata fikri təfəkkürün inkişaf səviyyəsinin qiymətləndirilməsi də əlavə olunmuşdur. Bu halda təfəkkür təlim fəaliyyətində şagirdlərin tədris fənlərinə, yaxud mövzulara münasibətinə, dərk etmə və mənimsəmə cəhdinə görə qiymətləndiriləcək. Təlim fəaliyyətinin mahiyyəti həmçinin onunla izah edilir ki, onun köməyi ilə uşağın ümumilikdə ətraf aləmə, eləcə də özünün mənimsəmə imkanlarına seçici münasibəti, şəxsi üslubu, əlverişli qavrama və dərk etmə tərzini müəyyənləşir. Bu baxımdan, kiçikyaşlı məktəblilərlə təlimin təşkilində təfəkkürün hər bir növü, eləcə də əyani-obrazlı təfəkkürün xüsusiyyətləri nəzərə alınmalıdır.

Aydınlaşdırılmalı olduğumuz digər mühüm məsələ kompüter texnologiyalarının tətbiqi prinsiplərilə bağlıdır. Kompüter texnologiyalarının tətbiqi təlim prosesinin tərkib hissəsi olduğundan onun prinsipləri biliklərin, anlayışların mənimsənilməsi prosesinə aid olanlarla eyniləşdirilməlidir. Bu problemlə bağlı olaraq tədqiqatçıların (E.V. Bəylərov, S.R. Bədiyev, S.S. Camiyeva, V. Haqverdiyev, V.V. Artyomova, T.V. Drozdova və b.) araşdırmalarından da aydın olur ki, kompüter texnologiyaları bütövlükdə təlim prosesinin ümumi qanunauyğunluqlarına tabedir. Bəzən o özü təlim fəaliyyəti rolunda çıxış etsə də, hətta bu halda da köməkçi

funksiyasını yerinə yetirmiş olur. Ona görə də kompüter texnologiyalarının tətbiqi prinsiplərindən bəhs edərkən burada məhz ibtidai siniflərdə təlimin təşkili prinsipləri nəzərdə tutulur.

N.A.Mençinskayanın bu istiqamətdə apardığı tədqiqatlarının mahiyyətini təlim prosesində anlayışların mənimsənilməsi prinsiplərinin müəyyənləşdirilməsi təşkil edir. Son dövrlərə qədər pedaqogikada və psixologiyada geniş yayılmış bu fikrin mahiyyətini açıqlayan tədqiqatçı anlayışların mənimsənilməsi zamanı uşağın hissədən-bütövə, konkretdən-ümumiyyə, mücərrəddən-güman olunana doğru istiqamətini optimal yol kimi qiymətləndirmirdi (7, s. 250).

Mövzu ilə bağlı olaraq, tədqiqatlarda göstərilir ki, “Proqramlaşdırılmış təlimdə tapşırıq və çalışmaların yerinə yetirilməsi özünəməxsus şəkildə təşkil olunur. Tədris materialının hər payı mənimsədildikdən sonra belə tapşırıq hökmən nəzərdə tutulur. Onlar üç məqsəd güdür: təlim (məşq), əks-əlaqə və nəzarət” (2, s. 45). Hər üç məqsəddən irəli gələn vəzifələrin kompüter texnologiyalarından istifadə zamanı həlli psixoloji baxımdan da mühüm şərtidir.

Hazırda təhsil sistemində kompüter texnologiyalarının tətbiqinə meyillər artmaqda, yanaşmalar zənginləşməkdədir. Müşahidələrimizə əsasən İbtidai siniflərdə istifadə edilən bu texnologiyaların mahiyyətini belə izah etmək olar:

- a) təlim prosesi üçün müxtəlif üsul, vasitə, tədris avadanlığı, təlimin texniki vasitələrinin işlənməsi və tətbiqi;
- b) təlim prosesinin yaxşılaşdırılması, tədrislə bağlı məsələlərin səmərəli həlli məqsədi ilə fəal metodların, üsulların tətbiqi;
- c) təbiət elmlərinin qanunauyğunluqlarına əsaslanaraq, optimal öyrədici sistemlərin layihələşdirilməsi və tətbiqi;
- d) tədris prosesinin optimallaşdırılması üçün bir neçə texnologiyayı eyni zamanda tətbiq etməyə imkan verən müxtəlif aspektli yanaşmalar.

İbtidai siniflərdə şagirdlərin qavrayışı aydın, yeni təəssüratlarla zəngin, ətraf mühitə hədsiz dərəcədə açıq olur. Yenilikləri qavramaq üçün həm fərdi qaydada, həm də müəllimlə, siniflə birgə fəallıq göstərirlər. “Kiçikyaşlı məktəblilər istisna hallarda məktəbdə məşğul olmağı sevmirlər. Onlar üçün şagird mövqeyində olmaq əsasdır. Təlim prosesi ilə maraqlanırlar, çünki bu onların aparıcı fəaliyyətidir. Onlarda məmnunluq hissi yaranan yeniliklər isə kiçikyaşlı məktəblilər çətinliklərlə də üz-üzə qoyur, bundan kədərlənirlər” (6, s. 24). Bu çətinliklərin aradan qaldırılmasının üçün mühüm şərt onlarda yaranan ziddiyyətləri vaxtında aşkar etmək və aradan qaldırmaqdır.

A.R.Mustafayeva öz tədqiqatlarında kiçik məktəb yaşlı uşaqlarda məsuliyyət hissəsinin inkişaf xüsusiyyətlərini önə çəkir: “Kiçik məktəb yaşına keçidlə əlaqədar olaraq uşaq özünün inkişafının yeni sosial situasiyasına daxil olur. Uşaq yeni tipli qarşılıqlı münasibətlərlə qarşılaşır və bu əsasda onun yaşlılarla və böyüklərlə ünsiyyəti keyfiyyət dəyişikliklərinə uğrayır. Təlimin aparıcı fəaliyyət növünə çevrilməsi, tələbat- motivasiya sferasında baş verən dəyişikliklər, koqnitiv fəaliyyətin yenidən qurulması və nəhayət, müəllim-şagird və şagird-şagird münasibətlərinin xarakterinin dəyişməsi və bütün bunların uşağın psixoemosional inkişafı ilə müşayiət olunan əxlaqi davranışın formalaşması üçün əlverişli zəminin yaranmasını təmin edir” (8, s. 161).

Təcrübə göstərir ki, məhz ikinci sinfin sonları, üçüncü sinfin başlanğıcında intellektual inkişafda sıçrayış baş verir. Məhz bu dövrdə verbal təfəkkür, fikri fəaliyyət formalaşır ki, bu da təlim fəallığının yüksəlməsinə təkan verir. Təfəkkür imkanlarının genişlənməsi digər idrak proseslərinin də: qavrayış, hafizə, diqqət və s. inkişafını sürətləndirir. 6-8 yaş dövründə uşaq

əyani xüsusiyyətlərə, konkret predmet və hadisələrin keyfiyyətlərinə əsaslanaraq konkret kateqoriyalarla düşünür, buna görə də kiçik məktəb yaş dövründə əyani-əmali və əyani obrazlı təfəkkür inkişaf etməkdə davam edir ki, bu da təlimə müxtəlif tip modellərin fəal şəkildə qoşulmasına imkan yaradır: predmetli modellər, sxemlər, cədvəllər, qrafiklər və s. Şəkilli kitablar, əyani vəsait, müəllimin zarafatı, bütün bunlar uşaqda tez bir zamanda reaksiya yaradır. Bir sözlə, kiçikyaşlı məktəblilər müəllimin danışdığı hər hansı nağılın təsviri zamanı meydana gələn obrazların, parlaq faktların təsiri altında olurlar (9, s. 34).

O.B.Əlizadə kiçikyaşlı məktəblilərin sözlərin dolayı mənasını konkret obrazlarla tamamlayaraq onları hərfi şəkildə anlamağa meyilli olduqlarını bildirir. O izah edir ki, əgər bu və ya digər fikir, tapşırıq, predmet onlara müvafiq fəaliyyətin gedişində təqdim olunursa, kiçikyaşlı məktəblilər bunu daha asan qavrayır və işi asanlıqla yerinə yetirirlər. Ona görə də kiçikyaşlı məktəblilərdə təfəkkürün obrazlı növünün üstünlüyünü nəzərə alaraq müəllim daha çox əyani vəsaitlərdən istifadə etməli, abstrakt anlayışların məzmununu açmalı, konkret predmetlər, şəkillərlə izah etməli, əlaqələndirməlidir. Kiçikyaşlı məktəblilər bununla da təlim tapşırığı üçün daha əhəmiyyətli olan amili deyil, onlar üçün daha maraqlı, parlaq, emosional baxımdan bəzənmiş, yeni olanı daha tez və yaxşı mənimsəyəcəklər” (5, s. 59). Bunlar isə, aydın məsələdir ki, əyanilik, özü də müasir, çevik, məzmunlu, orijinala daha yaxın olan və ya üst-üstə düşən əyanilik tələb edir. Dərs prosesində bu tələbi yerinə yetirə bilən yeganə virtual vasitə - kompüterdir.

Hər bir yaş dövründə olduğu kimi, üçüncü siniflərdə oxuyan kiçik məktəblilərin təlim fəaliyyətində də özünəməxsusluqlar vardır. R.İ.Əliyev üçüncülərdə diqqətin inkişafında sürətin artdığını, ixtiyari diqqət əsasən formalaşdığını göstərir. Qeyd edir ki, bu amil kiçik məktəb yaş dövründən təlim müvəffəqiyyətinə də təsir göstərir. “Psixoloji tədqiqatlarla müəyyən edilmişdir ki, diqqətin xüsusiyyətlərindəki fərqli inkişafa (diqqətin mərkəzləşməsi, diqqətin davamlılığı, diqqətin həcmi, diqqətin paylanması, diqqətin keçirilməsi) uyğun olaraq ayrı-ayrı fənlərdə şagirdin təlim müvəffəqiyyəti də fərqli olur. Məsələn, riyaziyyatın mənimsənilməsində diqqətin həcmi, ana dilinin mənimsənilməsində diqqətin paylanması, oxu təlimində diqqətin davamlılığı başlıca yer tutur. (4, s. 55). Bu xüsusiyyət onu deməyə əsas verir ki, müəllim kompüter texnologiyalarından istifadə edərkəntədris etdiyi fənnə müvafiq olaraq diqqəti inkişaf etdirməyin qayğısına qalmalıdır.

Tədqiqatda dördüncü sinifləri təmsil edən 9-10 yaşlı uşaqlarda təfəkkürün inkişaf xüsusiyyətləri də geniş öyrənilmişdir. Nəticələr göstərir ki, tanış obyektlər, hadisələr, şəkillərlə üzərində iş apardıqda uşaq sadə səbəb əlaqələrini tapır, qruplaşdırır, təhlil edir, onlar haqqında səhsiz mühakimə yürüdür. Həmçinin 8-10 yaşlı uşaqlarda anlamının xüsusiyyətləri, hadisələr arasında səbəbiyyət əlaqələrinin qurulma mexanizmi, onun mürəkkəblik dərəcəsi, uşağın əvvəlki praktik fəaliyyətinin, yəni əyani-obrazlı təfəkkür imkanlarını inkişafından əhəmiyyətli dərəcədə asılı olur.

B.F.Skinner bütövlükdə kompüterə hövsələ ilə iradə edərək təlimin proqramlaşdırılması üçün vacib olan bütün mərhələləri təmin edən “əsas öyrədən maşın” kimi baxır. O, təlimin proqramlaşdırılmasındakı cəhdləri aşağıdakılarla əsaslandırır” (3, s. 3-18):

- 1) məqsədlərin dəqiq prinsiplərlə müəyyənləşdirilməsi;
- 2) addımların ardıcılığının qurulması;
- 3) əks əlaqə qismində biliklərin nəticələrinin təmin edilməsi;
- 4) düzgün və yanlış cavabların çoxsaylı seçimlərinin məhdudlaşdırılması.

Proqramlaşdırılmış təlim problemilə bağlı kiçikyaşlı məktəblilərin kompüterə münasibətini müəyyən etmək üçün monitorinq apardıq. Bu məqsədlə Şamaxı şəhərinin Avropa liseyində, M.K. Veysov adına şəhər 6 sayılı və S.M.Qənizadə adına şəhər 1 sayılı, həmçinin Bakı



şəhəri 264 və 19 sayılı tam orta məktəblərdə III-IV sinif şagirdləri arasında kompüterdən istifadə ilə bağlı aşağıdakı suallardan ibarət anket sorğusu keçirdik.

1. Evinizdə kompüter varmı?
2. Kompüterlə işləməyi bacarırsınız mı?
3. Kompüterlə işləməyə hansı yaşdan başlamısınız?
4. Kompüter qarşısında gündə orta hesabla neçə saat vaxt keçirirsiniz?
5. Kompüter oyunları oynayırsınız mı?
6. Kompüter oyunlarına nə qədər vaxt sərf edirsiniz?
7. Siz nəyi üstün tutursuz?
  - a) gəzməyi;
  - b) kitab oxumağı;
  - c) dostunuzla real ünsiyyətlə olmağı?

Anket sorğunun nəticələrindən məlum oldu ki, kiçikyaşlı məktəblilərin əksəriyyəti kompüterə çox vaxt ayırırlar. Elələri də var ki, onlar həftədə bir neçə dəfə kompüter qarşısında otururlar. Kiçikyaşlı məktəblinin 67 % - nin evində kompüter var. 85% onunla işləməyi bacarı, əlavə olaraq şagirdlərin 8% - i 4-5 və 32,5 % - i 6-9 yaşlarından kompüterlə işləməyə başlayıblar.

Əgər şagird gündə 2-3 saat kompüter qarşısında vaxt keçirirsə, bu normal hesab olunur. Anket sorğusunda iştirak edənlər arasında gündə kompüter qarşısında şagirdlərin 63,4%-i 3 saatdan çox olmayaraq, 4-6 saata qədər gündə şagirdlərin 18,6%-i vaxt keçirirlər. Şagirdlərin 18%-i isə kompüterlə işləmir.

Şagirdlərin 80 % -i kompüter oyunları ilə oynayır. 69 %-i daim oynayır. 12 % -i gündə 4-6 saata qədər və 61 % -i 6-7 saata qədər oynayır, şagirdlərin 5,5%-i məlumat verirlər ki, onlar daimi oynamaq həvəsindədirlər.

Anket sorğusunda iştirak edənlərdən 68 şagird (22%) terror və zor tətbiq edilən oyunları xoşlayır. Şagirdlərin 13 % -i dostu ilə ünsiyyətdə olmağı, 45,4 %-i kitab oxumağı seçiblər. 84 % kompüter əvəzinə gəzməyi, 55 şagird (18 %) cavab verdi ki, kompüter vasitəsi ilə bilavasitə ünsiyyətdə olmağı üstün tuturlar. Beləliklə, kiçikyaşlı məktəblilərin çoxu kompüter qarşısında işin normasını bilmirlər, lazımı səviyyədə öz sağlamlıqları ilə məşğul olurlar, kompüter qarşısında çox vaxt keçirirlər ki, bu da müxtəlif problemlərin yaranmasına səbəb olur.

Nəticələr göstərdi ki, kiçikyaşlı məktəblilərin əksəriyyətinin evində kompüter və ya onu əvəz edən smart telefonlar olduğundan müxtəlif səviyyələrdə ondan istifadə edirlər. Onunla ya müstəqil işləməyi bacarı, ya da yaşlıların köməyindən yararlanırlar. Böyük əksəriyyət kiçikyaşlı məktəbli (80%) kompüterdə oyunlar oynayır. Bir qismi (45 %) dərslər üçün məlumatlar alır və ya yaşına uyğun kitab oxuyur. Ümumilikdə isə kiçikyaşlı məktəblilərin ailədə kompüter texnologiyalarından istifadə etməyə alışdırılmasına yaşlıların nəzarəti və yardımını qənaətbəxş deyil. Söhbətlər zamanı bəzi valideynlər bunu özlərinin kompüterdən istifadə bacarıqlarına malik olmamaları, bəziləri işlədiklərinə görə vaxtın azlığı ilə əlaqələndirdilər. 25 % valideyn isə öz övladı ilə məşğul olmağa o qədər də maraqlı olmadıqlarını etiraf edərək məsuliyyəti məktəbin üzərinə atırdılar. Bu reallığı nəzərə alaraq biz tədqiqatın növbəti mərhələlərində əsas diqqəti təlim prosesində kiçikyaşlı məktəblilərin kompüter texnologiyalarından istifadə bacarıqlarının artırılmasına və həmin prosesdə psixoloji tələblərin gözlənilməsinə yönəlddik. Valideynlər üçün isə maarifləndirici və tövsiyəedici materiallar hazırlayaraq onlara payladıq.

Tədqiqat zamanı aydın olur ki, kompüter texnologiyalarından təlimi yönümlü istifadə zamanı ibtidai siniflərlə şagirdlərin əyani-obrazlı təfəkkürünün inkişafı üçün onlarda, hər şeydən əvvəl qavrama, hafizə imkanları geniş olmalı, təlimə maraqlı yaranmalı, təlim motivasiyası inkişaf etməlidir. Məhsuldar qavramanın baş verməsi üçün üzərində əməliyyat aparılması tələb olunan material haqqında şagirdlər müəyyən obrazlara malik olmalıdırlar. Daha sonra şagirdlərə müxtəlif simvolların: hərflərin, ədədlərin, işarələrin, sxemlərin, kodların köməyi ilə yeni materialı mənimsətmək olar. Bu prosesdə istifadə edilən mətnlərin,

fikirlərin, semantikasını da mühüm əhəmiyyət kəsb edir. Bu halda şagirdin təlim hərəkətlərinin intensivliyi artır. Təşkil olunmuş, məqsədyönlü fəaliyyətin istiqamətləri təlim materiallarına münasib olur. Təlim materiallarını mənimsəmə daha asan olur. Belə fəaliyyət nəticəsində şagirdlərin təfəkküründə, təlimə münasibətində müsbət dəyişmələr yaranır. Əşyavi fəaliyyət şəraitində 6-7 yaşlı şagird gerçəklikdə mövcud olan asılılıqları və müxtəlif xarakterli hadisələri təsəvvürlər planında əks etdirməyə nail olur. Bu zəmində kiçikyaşlı məktəblilərdə əyani-obrazlı təfəkkürün formalaşmasında əhəmiyyətli irəliləyişə nail olmaq mümkündür.

İbtidai məktəb yaşının aparıcı fəaliyyəti təlimdir. Aparıcı fəaliyyətin təlim oluğu ibtidai siniflərdə uşağın sosial mühitlə yeni əlaqələri inkişaf edir. Yeni biliklərin əldə edilmə üsulları meydana gəlir. Bu prosesdə yaddaş formalaşır, xarici aləmin cisimləri və hadisələri haqqında daha bitkin elmi biliklər əldə edilir.

1. Biliklərlə ümumi tanışlıq, onların mənimsənilməsi şagirdlərin hissə və bütöv biliklərlə tanışlığına imkan verir. Nəticədə onlar tərəfindən ümumidən mücərrəd tələf getməyə imkan verir. Onlar dünya ilə bütövdə tanış olurlar.

2. Konkret fənlər üzrə verilən məlumatlar, onların hissələri ilə tanışlıq şagirdlər təhlil etmə imkanları verir. Mövzuları və ya onun əsas hissələrini yaradan biliklərin ləə edilməsi zəruriliyi yaranır. Şagirdlər öz fəaliyyətlərini bu istiqamətə yönəldirlər.

3. Dərsləkdə mövzular üzrə verilmiş bu və ya digər biliklərin mənbələrini müəyyən- ləşdirərkən şagirdlər, ilk növbədə tədris materialında bu biliyin obyektini müəyyən- ləşdirən, məzmunu və quruluşuna ilkin, zəruri, universal izah verən münasibətlər tapmağa marağ göstəririlər.

4. Şagirdlər bu münasibəti xüsusi mövzularda, qrafik və ya modellərdə izləyir, bu onların xüsusiyyətlərini təmiz formada öyrənməyə imkan tapırlar.

5. Şagirdlər öyrənilən obyektin ilkin mənşəyini, eyni zamanda, ümumi biliklər sis- temindəki yerini konkretləşdirə bilirlər.

6. Şagirdlər əqli hərəkətlərdən xaricə (eksteriorizasiya) və əksinə (interiorizasiya) hərəkət etməyi bacarırlar.

Bu fikirlərə əsaslanaraq son illərdə ibtidai təhsil üçün hazırlanan kompüter texnolo- giyalarının xüsusiyyətləri yalnız quruluş və məntiqinə görə deyil, həm də düşündürmə və axtarma imkanlarına görə dəyişir. Yeni kompüter texnologiyalarının daha bir keyfiyyəti yalnız onların məzmunu ilə deyil, həm də quruluşu, xüsusilə bu texnologiyalarda tətbiqi nəzərdə tu- tulan forma və üsullar, resurslar, interaktiv metodlar, inteqrasiya sahələri, eləcə də onların reallaşdırılması yolları, müəllimin fasilitatorluq funksiyalarını necə yerinə yetirməsi qabiliyyətləri ilə əlaqələndirilir.

Əsas qənaət budur ki, təhlillərə görə, kompüter texnologiyaları hər şeydən əvvəl şagirdlərin koqnitiv sahəsinə koordinasiyaedici təsir edir. Onlar diqqəti cəmləyərək oyunlara daha yaxşı mərkəzləşir, məntiqi və abstrakt təfəkkürün imkanlarını səfərbər edir, qısa zaman kəsiyində qərar qəbuluna müvəffəq olurlar. Kiçikyaşlı məktəblilərin təlim fəaliyyətinə kompüter texnologiyalarının təsiri öz nəticəsini onların şəxsiyyətində, fəaliyyət və davranışında da göstərir. Başqalarını duymaq, halına yanmaq, empatiya göstərmək kimi keyfiyyətləri, nitqi və kommunikativ bacarıqların inkişafı sürətlənir.

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## MÜASİR İNNOVATİV TƏLİM TEXNOLOGİYASI KİMİ EVRİSTİK TƏLİM METODLARINDAN İSTİFADƏ İNKANLARI

### OPPORTUNITIES TO USE HEURYST TEACHING METHODS AS MODERN INNOVATIVE EDUCATION TECHNOLOGY

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#### ÖZET

Hazırkı dövrdə yeni təlim texnologiyası kimi evristik təlimin tətbiqi xüsusilə əhəmiyyətlidir. Bu təlim metodundan istifadə müəllim qarşısında mühüm vəzifələr qoyur.

Belə ki, müəllim öz işinin sözün həqiqi mənasında, ustası olmalı, evristik təlimin bütün imkanlarından geniş istifadə etməlidir.

Evristik təlim fəaliyyətinin psixoloji analizinin tədqiqi göstərmişdir ki, şagirdləri və məntiqi idrak xüsusiyyətlərinə görə 3 qrupa ayırmaq olur:

1. Koqnitiv
2. Kreativ
3. Metodoloji

Belə ki, koqnitiv qrupda birləşən öyrəncilər bu xüsusiyyətləri ilə fərqlənirlər: hər şeyə maraq göstərmək, yeni biliyi düzgün mənimsəmək təhlil edə bilmək, problemlərin həlli yollarını axtarmaq, eksperiment qoymağı bacarmaq.

Kreativ qrup öyrənciləri bu göstərilən keyfiyyətlərə malik olmalıdırlar: yeni biliyi təxəyyül edə bilmək, işi ruh yüksəkliyi ilə görmək, intuisiya hissənə malik olmaq, qeyri-ənənəvi üsullardan istifadə etmək, risk edə bilmək, yenilikdən qorxmamaq, mülahizə verə bilmək, müstəqil işləyə bilmək, yaradıcılıqla işləmək və s.

Metodoloji keyfiyyətlərə bunlar aiddir: iş zamanı sabitlik, məqsədə doğru inamla getmək, fəaliyyət zamanı mütəhərrik kommunikativ olmaq, təxəyyül, reflekslilik öz fəaliyyətini müstəqil təhlil etmək, özünə obyektiv qiymət vermək və s.

Evristik təlim prosesi zamanı modelləşdirmə, sürətli assosiasiyalar, səhvlər, “Sokratın ikiqat həlqəsi”, fərziyyələr və s. metodlardan geniş istifadə olunur.

**Açar sözlər:** təlim texnologiyaları, problemlə təlim, “evristik” təlim, dialektik ziddiyyətlər.

#### ABSTRACT

The application of heuristic training as a new learning technology is especially important today. Using this teaching method puts important tasks before the teacher.

Thus, the teacher must be a master of his work in the true sense of the word, make full use of all the opportunities of heuristic learning.

The study of psychological analysis of heuristic learning activities showed that students can be divided into 3 groups according to the characteristics of logical cognition:

1. Cognitive
2. Creative
3. Methodology

Thus, students united in a cognitive group are distinguished by the following features: interest in everything, the ability to properly analyze new knowledge, to find solutions to problems, to be able to experiment.

Creative group students should have the following qualities: the ability to imagine new knowledge, to work with enthusiasm, to have a sense of intuition, to use non-traditional methods, to take risks, not to be afraid of innovation, to think, to work independently, to work creatively and so on.

Methodological qualities include: stability at work, confidence in the goal, mobility and communication during the activity, imagination, reflexivity, independent analysis of their activities, self-assessment, etc.

During the process of heuristic learning, modeling, rapid associations, errors, "Socrates' double circle", hypotheses, etc. methods are widely used.

**Key words:** training technologies, problematic training, "Heuristic" training, dialectical contradictions.

#### **TAM METIN**

Təhsil prosesində müasir təlim texnologiyalarının tətbiqində əsas məqsəd şəxsiyyətə yönəlmiş müasir təhsil sisteminin qurulmasına yardım etmək, təlim-tərbiyənin demokratikləşməsinə zəmin yaratmaq, öyrədicilərin təlim nailiyyətlərini yüksəltmək, onlarda müasir dövrün tələblərinə uyğun zəruri bacarıq və keyfiyyətlər formalaşdırmaq, müəllimlərin təşəbbüskarlıq və yaradıcılığını artırmaq, müasir təlim mühiti yaratmaq, şagirdlərdə müstəqillik, təhsil və nəticə çıxarmaq vərdişlərini formalaşdırmaqdan ibarətdir.

Müasir dövrdə pedaqoji texnologiya adı altında pedaqoji prosesdə müsbət nəticələrə gətirib çıxaran pedaqoji ideyalar kompleksi başa düşülür. Pedaqoji texnologiyaların əsas elementi onun mikrotexnologiyasıdır. Pedaqoji mikrotexnologiyalara aşağıdakılar aiddir:

- a) məqsədlər
- b) diaqnostikalar (ilkin, cari, yekun)
- c) təlim prosesində subyektlərin birgə fəaliyyəti (müəllim-tələbə, tələbə-tələbə)
- ç) təlimin təşkili və forma, metod və vasitələrin seçilməsi
- e) tədris olunan fənnin məzmunu

Təlim texnologiyası çoxdur və hər biri konkret təlim-tərbiyə məqsədi həyata keçirməyə xidmət göstərir, müxtəlif təlim və metod vasitələrindən istifadə olunur və bütün bunlar müasir yanaşmalarla həyata keçirilir. Qeyd etmək vacibdir ki, bütün fəaliyyətləri həyata keçirmək üçün müəllim peşəkar hazırlığa, təcrübəyə, təşəbbüskarlığa, yaradıcılığa, demokratik və humanist keyfiyyətlərə malik olmalıdır.

Müasir ali təhsil sisteminin qarşısında duran prioritet məqsəd-yaradıcılıq metodologiyasına və texnologiyasına dərin bələd olan, yeni biliklər kəşf etməyə, yaranmış problemləri həll etməyə qabil insanlar, peşəkar mütəxəssislər yetişdirməkdir. Bu prioritet məqsədin reallaşdırılmasında "evristik" təlimin rolu çox böyükdür. "Evristik" təlim şagirdi standart olmayan təlim-idrak məsələlərini orijinal (qeyri-standard) metodlarla işləməyə hazırlayan yaradıcı prosesdir.

Bir qayda olaraq problem-tədqiqat prosesində öyrənilən obyektin dialektik ziddiyyətlərini əks etdirir. Bu baxımdan problem didaktik kateqoriyadır. Problem həm də psixoloji kateqoriyadır, çünki obyektin dərk edilməsi prosesində subyektə təzahür edən ziddiyyətlərini əks etdirir. Problemin psixoloji mahiyyəti bir də ondadır ki, eyni bir problem müxtəlif adamlar tərəfindən müxtəlif tərzdə qavranılır: müxtəlif adamların təfəkküründə müxtəlif çətinliklər yaradır, yaxud heç də hamı tərəfindən problem kimi qəbul olunmur və onu həll etmək səyi doğurmur.

Ümumtəhsil sistemində evristik təlimə geniş yer verilməsi, gələcək mütəxəssisdə yaradıcılıq potensialını inkişaf etdirən didaktik texnologiyaların yaradılması, təlimin vasitə və metodlarının elmi tədqiqatın metodik priyomlarına maksimum yaxınlaşdırılması, didaktik texnologiyaların təlimin inkişafetdirici və tərbiyəedici funksiyalarının reallaşdırılmasına daha çox istiqamətləndirilməsi, informasiyaların şagirdlər tərəfindən yaradıcı surətdə mənimsənilməsinə təmin edən innovasiya texnologiyalarının tətbiqi, ənənəvi texnologiyaların aradan qaldırılması, təlimin elmi axtarışlara istiqamətlənməsi yeni didaktik sistemin-“evristik” təlimin yaranmasına səbəb olmuşdur.

Evristik təlim təlim prosesinin xüsusi formada təşkilini nəzərdə tutur. Bu, təlim metodları və priyomlarının seçilməsində, təlim materialının strukturunda öz ifadəsini tapır. Özündə yaradıcılıq elementlərini əks etdirən evristik təlim yaradıcı mənimsəmənin müvafiq qanunauyğunluqlarına əsaslanır.

Evristik təlimin mühüm elementləri aşağıdakılardır:

- Mövcud biliklərin yeni situasiyalarda istifadəsi;
- Öyrənilən obyektin strukturunu “görmək”;
- Tanış obyektə yeni mahiyyətin aşkarlanması;
- Məsələnin həllinin alternativ yollarının müəyyənəşdirilməsi;
- Məsələnin həllinin məlum yollarından yenisinin kombinə edilməsi;
- Məsələnin həllinin orijinal həlli yollarının tapılması.

Beləliklə, evristik təlim yaradıcılıq tələb edən mürəkkəb sistem olmaqla fəaliyyətin stereotip formalarından imtina etməyi, orijinalıq göstərməyi tələb edir. Yaradıcılıq tələb edən problemlə təlim texnologiyası professional təfəkkürün formalaşmasına xidmət göstərir və aşağıdakı elementləri özündə ehtiva edir:

- Problemi bütün çalarları ilə “görmək” və müstəqil surətdə dərk etmək;
- Fərziyyə irəli sürmək və yoxlamaq;
- Faktik material toplamaq;
- Materialın təhlili metodikasını hazırlamaq;
- Nəticələri ifadə etmək və praktik tətbiq imkanlarını müəyyənəşdirmək;
- Problemin həllinin bütün aspekt və mərhələlərini aşkarlamaq;
- Problemin kollektiv həllində öz statusunu düzgün müəyyənəşdirmək;

Evristik təlim innovasiya texnologiyaları sistemində daxil edilsə də, əslində çox qədim tarixə malikdir. Həm antik, həm də intibah dövründə onun elementlərindən(Sokratın evristik müsahibələri, Qalileyin söhbət və dialoqları, J.J.Russonun problemlə dialoqları və s.) geniş istifadə olunmuşdur.

Praktikada problem-situasiyalar standart olmayan məsələlərin həlli zamanı meydana çıxır və şagirdləri idrak çətinlikləri üzləşdirir, onların düşüncə tərzində ziddiyyətli məqamları

yaradır. Təlim materialının problemlə interpretasiyasının mahiyyəti ondan ibarətdir ki, biliklər təhsilənlərə hazır şəkildə təqdim olunur. Problem qoyulur və həlli tələb olunur. Halbuki ənənəvi pedaqoji strategiya “biliklərdən-problemə” ardıcılığına əsaslandığından şagirdlərə elmi-tədqiqatçılıq bacarıq və vərdişləri aşılamır, onlarda yaradıcılıq ehtirası oyatmır, yeni biliklərin müstəqil surətdə əldə edilməsi qabiliyyəti formalaşdırmır, “hazır biliklər” tələbatı şagirdin şüurunda gələcək fəaliyyətin modelini formalaşdırma bilmir. Ona görə də biologiyanın tədrisində “biliklərdən-problemə” strategiyası müasir dövrdə özünü doğrultmur və öz yerini “problemlərdən-biliklərə” strategiyasına verir. Bu, yaradıcı təfəkkürün inkişafına təkan verir, problemin kollektiv həlli zamanı subyekt-obyekt-subyekt münasibətlərinin yaranmasına səbəb olur.

Evristik təlimin funksiyası hansılardır?

1. Öyrəncilərin yaradıcı potensialı inkişaf etdirilir;
2. Biliklərin fəaliyyət üsullarının yaradıcı mənimsənilməsi;
3. Müasir elm metodlarına yaradıcı malik olmaq.

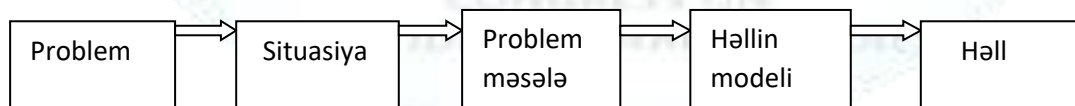
Problemlə təlimin ənənəvi təlimdən bəzi üstünlükləri vardır: 1)öyrənci elmi, məntiqi, dialektik, yaradıcı düşünməyi öyrənir; 2)tədris materialını daha çox sübutlu edir; 3)adətən müsbət nəticələrinin sevinci öyrəncilərin öz düşüncə və bacarıqlarına inamı artırır, nəticədə öyrəncilərdə elmi biliklərə ciddi maraq formalaşır; 4) müəyyən olunmuşdur ki, həqiqətlərin müstəqil “kəşfləri” çox tez unudulmur, hətta unudulduqda belə, müstəqil əldə edilən biliklər çox tez bərpa olunur.

Evristik təlimdən müvəffəqiyyətlə istifadə etmək üçün biologiya müəllimi problem situasiyaların strukturunu və tipologiyasını, həlli yollarını, pedaqoji priyomlarını, bir sözlə, evristik təlimin taktikasını yaxşı bilməlidir.

Məktəb bilikləri ilə ali məktəbin verdiyi biliklər arasındakı ziddiyətlər, problemin elmi əhəmiyyətinin dərk edilməsi ilə onun həlli üçün zəruri bilik ehtiyatının olmaması, konsepsiyaların müxtəlifliyi, praktik surətdə əldə edilmiş nəticə ilə onun əsaslandırılması üçün kifayət qədər nəzəri biliyin olmaması problemlə situasiyaların mahiyyətini təşkil edir. Bu qəbildən olan digər ziddiyətlər nəzəri və praktik informasiyaları arasında mütənəsibliyin olmamasından irəli gəlir.

Evristik təlim o halda mümkündür ki, şagird nəyi bilmədiyini və nəyi həll etmək lazım olduğunu yaxşı dərk edir. Beləliklə, təhlil prosesində problem-situasiya problem məsələyə çevrilir. Problem məsələ bir sıra suallar doğurur:”Bu ziddiyəti nə ilə izah etmək və necə həll etmək?” Problem suallar-problem məsələni, problem məsələ isə problemin həlli modelini doğurur. Problemin həlli modeli –həllin yollarını, vasitə və metodlarını nəzərdə tutur.

Problemlə təlim texnologiyası aşağıdakı ardıcılıqla reallaşdırır:



Bu ardıcılıqdan məlum olur ki, problemlə təlimin əsas pedaqoji-psixoloji məqsədi şagirdə professional problemlə təfəkkür formalaşdırmaqdır. Buna nail olmaq məqsədilə aşağıdakı tələblərə əməl etmək lazımdır:

- Problemə maraq oyadan motivlərin yaradılması;
- Məlum və məlum olmayan biliklərin rəasional nisbəti;
- Hər mərhələdə meydana çıxan problemlərin imkanlara müvafiq olması;

- Problemin həlli nəticəsində alınan informasiyanın öyrənən üçün şəxsi mənə kəsb etməsi.

Hazırda təlimdə problemin 4 mərhələsi mövcuddur:

1.Müəllim problemi özü qoyub, özü problemi fəal dinləmələri və müzakirəsi şəraitində həll edir.

2.Müəllim problemi qoyur, öyrəncilər sərbəst şəkildə və ya onun rəhbərliyi altında onun həlli yollarını tapırlar.

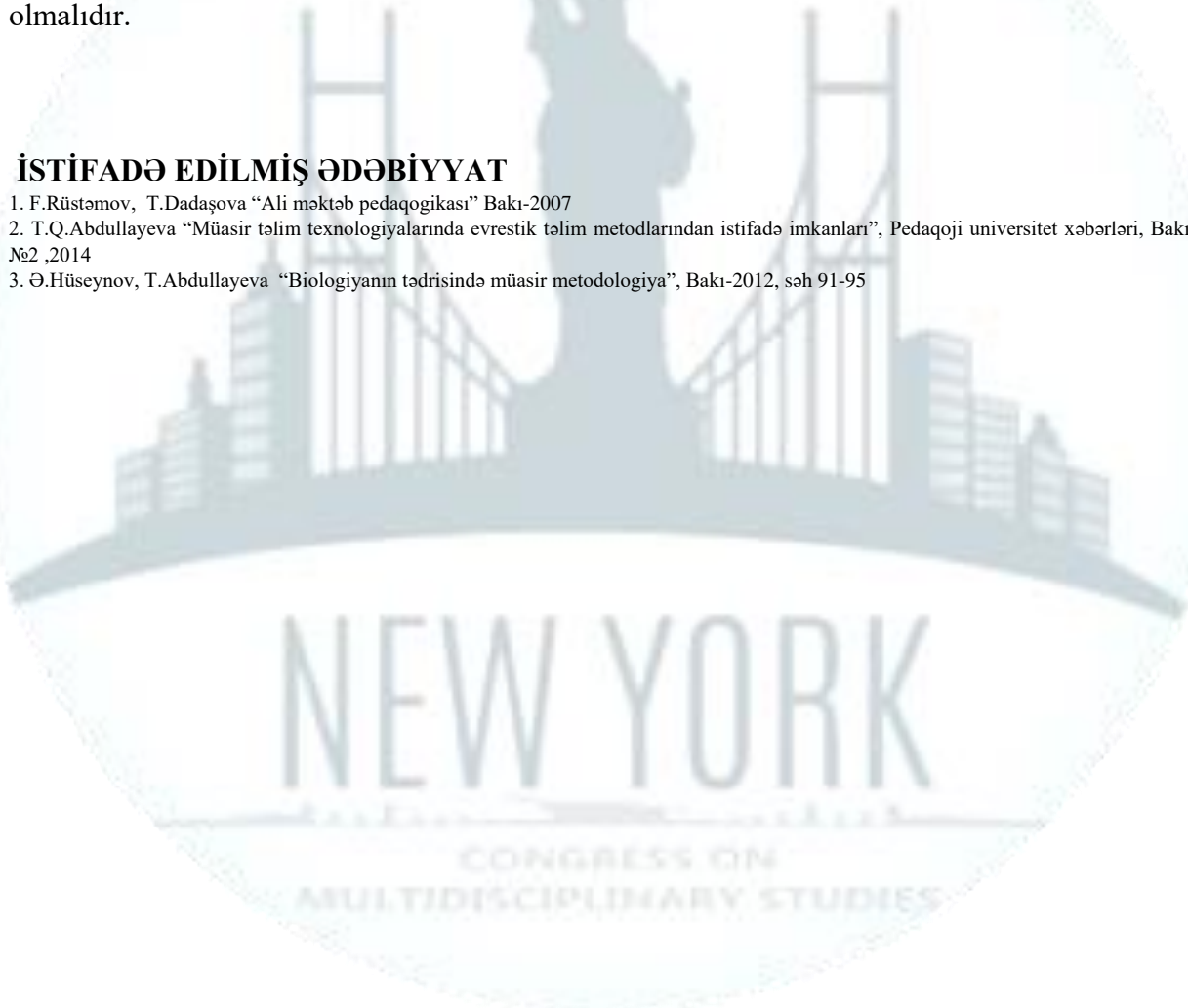
3.Öyrənci problem qoyur, müəllim onu problemi həll etməyə kömək edir.

4.Öyrənci problemi özü qoyub, özü də onu həll edir. Burada problemi özü görməli, onu formalaşdırmaq həlli imkanlarını müəyyən edib həll etməlidir.

Evristik təlimdən istifadə edən biologiya müəllimi problemi planlaşdırmağı, şagirdlərin idrak fəaliyyətini təşkil etməyi və onları problemin həllinə yönəltməyi bacarmalıdır. Buna nail olmaq üçün müəllim ənənəvi iş formalarını dəyişməli, problem metodun nəzəri-elmi əsaslarına, priyomlarına, bir sözlə, onun texnologiyasına dərinlən bələd olmalıdır.

### **İSTİFADƏ EDİLMİŞ ƏDƏBİYYAT**

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## **LEKSİK UYGUNLUQ ÜZRƏ SEMANTİK YANAŞMALAR SEMANTIC APPROACHES TO LEXICAL MATCHING**

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### **ÖZET**

Leksik birləşmə söz ehtiyatında sintaqmatik əlaqələrin bir növü kimi başa düşülür. Söz mənası anlayışına bənzər şəkildə, leksik birləşmə anlayışı alimlərin daim diqqətini çəkir, çünki sözün birləşməsi onun mənası ilə sıx bağlıdır.

Leksik semantikada paylama dedikdə, müəyyən bir sözün işlədilə biləcəyi mühitlərin məcmusu başa düşülür. Sözün bir mətnə fərqli leksik mühitdə paylanması yarana bilər. Bu, sözün leksik mühitin hər bir elementi ilə birləşməsi adlanan xüsusi semantik və sintaktik münasibətlərə aid olması anlamına gəlir.

Burada valentlilik sözün digər yollarla cümlədə realizə olunması və digər sözlərlə uyğun kombinasiyalara daxil olmaq qabiliyyəti kimi başa düşülməlidir.

Birincisi, dilin linqvistik prinsipləri onun leksik semantikasi ilə məhdudlaşır. İkincisi, "leksik semantika"nı "morfoloji semantikaya" istinad etmək lazım deyil. Üçüncüsü, sözlərin mənası onun linqvistik tətbiqinə görə öyrənilir, mətnlərin leksik müxtəlifliyi alınma sözlərin, frazeoloji birləşmələrin, köklü-mənşəli sözlərin daxil edilməsi ilə ölçülür.

XXI əsrin əvvəlindən dövrün ikinci yarısına nəzər salsaq, bu dövrün tədqiqatlarını əhatə edən dil cərəyanlarının yaranan zirvələrini aydın görmək olar: funksional dilçilik, mətn dilçiliyi, hərəkət dili, nitq aktları nəzəriyyəsi, praqmatika və s. Nəzəri olaraq, əsas leksik-semantik yanaşmalar tarix boyu əsasən aşağıdakı yanaşmalar kimi tanınmışdır.

- 1) sintaktik-leksik-semantika
- 2) koqnitiv-leksik- semantika
- 3) funksional leksik-semantika

Bu baxımdan, aparılan araşdırmalar müqayisəli dilçiliyin genealogiyası və tipologiyası tədqiqatlarında ümumiləşmişdir. Başqa sözlə, dillərin mənşəyi ilə əlaqədar aparılan təhlillərin nəticəsi olaraq genealoji dilçilik və tipoloji dilçilik sahələri kimi müstəqil tədqiqat istiqamətləri yaranmışdır.

**Açar sözlər:** leksik-uyğunluq, ekvivalentlik, semantik sahələr, mənimsəmə prinsipi

### **ABSTRACT**

Lexical combination is understood as a type of syntactic relationship in vocabulary. Similar to the concept of word meaning, the concept of lexical combination always attracts the attention of scholars, because the combination of words is closely related to its meaning.

In lexical semantics, distribution is a set of environments in which a particular word can be used. The distribution of a word in a text in a different lexical environment may occur. This does not mean that the word refers to a specific semantic and syntactic relationship called the combination of each element of the lexical environment.

Here, valence should be understood as the ability of a word to be realized in other ways, including in other words, and to enter into appropriate combinations with other words.

First, the linguistic principles of language are not limited to its lexical semantics. Second, it is not necessary to refer to "lexical semantics" as "morphological semantics." Third, the meaning of words is not studied according to its linguistic application, the lexical diversity of texts is measured by the inclusion of derived words, phraseological combinations, root words.

If we look at the beginning of the XXI century and the second half of the period, we can clearly see the emerging peaks of language trends that cover the research of this period: functional linguistics, text linguistics, language of action, speech theory, pragmatics, etc. Theoretically, the main lexical-semantic approaches have been known throughout history mainly as the following approaches.

- 1) syntactic-lexical-semantics
- 2) cognitive-lexical-semantics
- 3) functional lexical-semantics

In this regard, the research has been generalized in the genealogy and typology of comparative linguistics. In other words, as a result of the analysis of the origin of languages, independent research areas such as genealogical linguistics and typological linguistics have emerged.

**Keywords:** lexical-compatibility, equivalence, semantic fields, the principle of assimilation

## **TAM METİN**

Leksik uyğunluq, bir-birinə yaxın sözlərin birgə leksik vahid kimi eyni mənaya malik olmasıdır. Mənası eyni, lakin formaca fərqli iki və ya daha çox əşyalar leksik uyğunluğa malikdir. Leksik uyğunluq çox vaxt sinxronizasiyaya daxil olur və tarixən istiqamətləndirilmiş bölgüsünə baxmayaraq, uyğunluq sinxron səviyyədə işləyir.

Həm sintaktik, həm də semantik birləşmədə leksik uyğunluq sözlərin yalnız məhdud sayda və ya vahidlərlə birləşməsinə qoşulma qabiliyyətinə aiddir. Bu, əsrlər boyu gündəlik tətbiqetmə prosesində formalaşmışdır. Ancaq sözləri nitqdə düzgün istifadə etmək üçün onların mənalarını bilmək kifayət deyil. Sözlərin uyğunluğuna diqqət yetirmək üçün ifadələr hazırlamaq da lazımdır. Nitq prosesində daha çox sinonimlərlə diqqətli olmaq lazımdır. Məsələn, "həqiqi" sifəti eyni mənada müxtəlif sözlərlə ifadə olunur, ancaq "əsl dost" və ya "əsl sənəd" demirik, çünki bir dost doğru ola bilər, sənədlər də doğru ola bilər. Bu leksik uyğunluqdur.

Leksik uyğunluq fərqli sintaktik sıralanmada özünü göstərir və bu sıralanma arasındakı əlaqə də maraqlıdır. Bəzən sintaktik söz sırası düzgün olmadığından cümlənin mənasını

anlamaq olmur. Burada maraqlı cəhət cümlədə olan ilkin sözün və söz birləşmələrinin düzgün uyğunluqda işlənməsidir.

Nitqdəki sözlər ayrı-ayrılıqda, tək-tək deyil, birləşmələrdə istifadə olunur. Onların hamısı bir-biri ilə sərbəst bağlanmır. Semantik birləşmə dil vahidlərinin kombinatorikasının öyrənilməsi, sözün mənasına istinad edilmədən, bir dilin simvolları, mənaları və dil istifadəçiləri arasındakı əlaqələrin öyrənilməsi ilə ziddiyyət təşkil edir.

Semantik birləşmələr də sözlərin və ifadələrin arasında mənə əlaqələrinin yaradılmasıdır. Bu səbəbdən semantika və leksikoqrafiya uzun müddət bir-birindən müstəqil şəkildə inkişaf etməyə başladı. Lakin, bütövlükdə, XXI əsrdə dilçilik semantika və leksikoqrafiyanın əks inkişafı ilə səciyyələnir ki, bu da L.V.Şerba, Ş.Bally, E. Sepir, K. Erdman, J. Firth, V.V. Vinogradov kimi görkəmli dilçilərin əsərlərində öz əksini tapmışdır. Yu.N. Karaulov yazır: "Semantik əlaqə heterojen və qeyri-mütləq bir anlayışdır. Çox mərhələli və ya spektral quruluşa malikdir və dəyişkən bir intensivlik ilə xarakterizə olunur, halbuki bir-birinə bağlı olan vahidlər həm intensivliyə, həm də əlaqələrin sayına görə fərqlənir" .

Leksik birləşmə bir sözün bir mətnədə digər sözlərlə əlaqələndirilmə qabiliyyətidir. Mətnədə müəyyən sözlərin birlikdə meydana gələ bilməsi kifayət deyil, çünki leksik birləşmə semantik uyğun sözlərin birliyidir. Digər hallarda, belə bir əlaqə nitqin qrammatik və mənalı bağlantılarını, məzmunundakı ifadələrin düzgünlüyünü təmin edir.

Leksik birləşmədə V. V. Levelskiyə görə mənaların qruplaşması üç parametr ilə xarakterizə olunur: genişlik, intensivlik və selektivlik. Hər üç parametr kəmiyyət metodlarının köməyi ilə öyrənilə bilər. Leksik birləşmənin genişliyinə təsir göstərən amilləri daha da təhlil etmək lazımdır. V.V.Levits'kiyə görə birləşmənin öyrənilməsi zamanı üç anlayışı fərqləndirməyə dəyər: birləşmə, paylama və ekvivalentlik.

Leksik birləşmə söz ehtiyatında sintaqmatik əlaqələrin bir növü kimi başa düşülür. Söz mənası anlayışına bənzər şəkildə, leksik birləşmə anlayışı alimlərin daim diqqətini çəkir, çünki sözün birləşməsi onun mənası ilə sıx bağlıdır.

Leksik semantikada paylama dedikdə, müəyyən bir sözün işlənilə biləcəyi mühitlərin məcmusu başa düşülür. Sözün bir mətnədə fərqli leksik mühitdə paylanması yarana bilər. Bu, sözün leksik mühitin hər bir elementi ilə birləşməsi adlanan xüsusi semantik və sintaktik münasibətlərə aid olması anlamına gəlir.

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- 1) sintaktik-leksik-semantika
- 2) koqnitiv-leksik- semantika
- 3) funksional leksik-semantika

1) Sintaktik leksik-semantika sözün qrammatik sinfi səviyyəsində, yəni bir sözün potensial mümkün sintaktik münasibətlərinin cəmində digər sözlərlə sintaqmatik münasibətlərə girmək qabiliyyəti kimi nəzərdən keçirilir. German dillərinin inkişafının müxtəlif dövrlərində lüğətin təhlili və öyrənilməsi, qədim sənət əsərlərində lüğətin innovativ dərk edilməsini tələb edən anlayışların əsaslı yeni qurulmasını zəruri edən şeir və nəsr dilində baş verən prosesləri əks etdirir. Dilçiliyin ayrıca sahələrindən biri olan sintaksisin, onun bir bölməsi olan söz birləşməsinin də özünəməxsus problemləri mövcuddur. Söz birləşmələrinin quruluşu, növləri və leksik-semantik xüsusiyyətləri, işlənmə yerinin müəyyənləşdirilməsi mühüm məsələlərdən biridir.

2) Koqnitiv leksik-semantika, dilçiliyin formal əhəmətlərini, modulizasiyasını fonologiyaya, sintaksisə, praqmatikaya uyğun, daha ümumi desək, insanın idrak qabiliyyətinin bir hissəsidir. Buna görə də, koqnitiv semantika əhəməti olaraq semantika ilə yanaşı praqmatikaya həsr olunan sahənin çox hissəsini öyrənir. Beləliklə, idrak semantistləri leksik uyğunluq prinsipləri üzrə idrak psixologiyası və idrak antropologiyası haqqında bir çox nəzəriyyənin dilçilikdə öyrənilməsini təklif etmişlər.

Ç. Kaplan, C. Çarlz, C.Filmor (Charles J., J.Charles, C. Fillmore, 2014) dilin koqnitiv və funksional növləri haqqında öz mülahizələrində yazırlar ki, koqnitiv cəhətdən leksik-semantika söz mənalarının kodlaşdırılmasını əhatə edir, yəni bəzi semantik xüsusiyyətlərə daxildir (məsələn, + animasiya, + obyekt, hərəkət. Koqnitiv semantik, dilin daha çox ümumi idraki qabiliyyətlərinin bir hissəsidir və buna görə hər bir insanın düşüncəsi dünyanı təsvir edə bilər. Bir çox semantiklərin “əks mənalılıq” leksik cəhətdən hər dildə təcəssüm etdirdiyinə dair güclü bir fikir mövcuddur (məs: Cruse, 1986, 2011; Lyons, 1977; Murphy 2003).

Funksional leksik-semantika. Koqnitiv semantikadan fərqli olaraq, funksional semantika fikir və arqumentlərin leksik təbiətini göstərir. Marios Andreu (Marios Andreou, 2017) dilin leksik-semantik təqdimatını iki hissədən: semantik-qrammatik (skeleton) və semantik-pragmatik (bədən dili) olmasını qeyd edir. Skeleton sözün sintaktik əlaqəsini iyerarxik şəkildə təşkil edir. Bədən dili isə sözlərin hissi, mədəni və ensiklopedik məna olan bütün aspektlərini kodlaşdırır. Dilin leksik uyğunluq prinsipi sözün leksik-semantika mənasını, cümlədəki söz və söz birləşmələri arasında olan əlaqənin, müxtəlif icmalarda fərqli mədəniyyətlərin dilinin o dilin qanunauyğunluqlarına görə öyrənilməsidir.

İndiki dilçiliyin inkişaf dövrü, dil fənləri dairəsində mərkəzi mövqe bilavasitə meydana çıxan semantika dövrüdür ki, onun əsas funksiyasında insan dili ünsiyyət vasitəsi, müəyyən məlumatların kodlaşdırılması və dekodlanması vasitəsidir.

Leksik-semantik vahidlərin bəziləri çox aydın, ciddi və sistemli kateqoriyaya malikdir. Məsələn, bir hərəkəti göstərən fellər üç elementdən fərqli olan bir ardıcıl sistemdir: 1) hərəkət rejimi (getmək, sürmək, sail, uçmaq və s.-gehen, reiten, segeln, fliegen); 2) hərəkətin təbiəti - müstəqil və asılı olması (getmək, gəzmək və daşımaq, daşımaq, daşıma və s.- gehen, spazierengehen und bewegen, bewegen, tragen); 3) hərəkət istiqaməti (səyahət etmək, sürmək, hərəkət etmək, buraxmaq, ayrılma və s.-reisen, sich bewegen, sich bewegen, verlassen,

verlassen). Bunun üçün alman dilində lemanton kateqoriyalar mövcuddur ki, onlar leksemleri morfoloji, sintaktik xüsusiyyətləri açır.

L.V.Şerba leksik-semantik sistemin özünəməxsusluğunun səbəbini "birbaşa təcrübəmizdə bizə verilən, hər yerdə eyni qalmış dünya fərqli dillərdə fərqli şəkildə qavranıldığına" görürdü.

Bu baxımdan, aparılan araşdırmalar müqayisəli dilçiliyin geneologiyası və tipologiyası tədqiqatlarında ümumiləşmişdir. Başqa sözlə, dillərin mənşəyi ilə əlaqədar aparılan təhlillərin nəticəsi olaraq geneoloji dilçilik və tipoloji dilçilik sahələri kimi müstəqil tədqiqat istiqamətləri yaranmışdır.

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**TƏLİMDƏ ŞAĞİRD LƏRİN ELMİ-TƏDQIQAT BACARIQLARININ  
FORMALAŞDIRILMASINA YÖNƏLDİLMİŞ  
METODLARDAN İSTİFADƏNİN XÜSUSİYYƏTLƏRİ**

**CHARACTERISTICS OF USING METHODS FOR TRAINING  
STUDENTS 'SCIENTIFIC SKILLS IN TRAINING**

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**ÖZET**

İnteraktiv metodların xüsusiyyəti qarşılıqlı təsir subyektlərinin qarşılıqlı yönəlməli fəaliyyətinin yüksək səviyyədə olması, iştirakçıların emosional, mənəvi birliyi.

İnteraktiv təlim zamanı tələbələr tənqidi düşünməyi, şəraitin və müvafiq mə-lumatların təhlili əsasında mürəkkəb problemləri həll etməyi, alternativ fikirlər irəli sürməyi, düşünülmüş qərarlar qəbul etməyi, müzakirələrdə iştirak etməyi, digər insanlarla ünsiyyət qurmağı öyrənirlər.

İntellektual- tədqiqat bacarıqları tədqiqat fəaliyyətinin həyata keçirilməsi üçün zəruri olan bacarıqlardır.

Tədqiqat fəaliyyəti fərziyyələr irəli sürmək və sübut etmək, səbəb-nəticə əla-qələrini qurmaq, müəyyən bir vəziyyətin şərtlərini təhlil etmək, nəticələri ümumi-ləşdirmək, nəticələr və yeni problemləri formalaşdırmaq kimi araşdırma bacarıq-ları ilə fərqlənir.

Müasir təlimdə tədqiqat fəaliyyətinin həyata keçirilməsi üçün sərbəst təh-sil və elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəldilmiş metod və texnikalarından - "Problemin həlli (problem solving)", "Kublaşdırma (The cube)", "Konkret hadisənin araşdırılması (Case study)", "Venn diaqramı (Venn diagram)", "Layihələrin hazırlanması (Projects)", "Sosioloji sorğu (sorğu vərəqləri)", "Müsahibə (Interview)", "Qərarlar ağacı", "İdeyalar xalısı", "Refleksiya"(Ref-lection), "Sualların tərtibi", "Açar sözlü suallar", "Müxtəlif əsaslar üzrə təsnifat", "Təqdimat", "Alqoritm üzrə təsvir", "T-cədvəl" istifadə olunaraq dərslər müasir tələblər səviyyəsində təşkil olunur.

Bu texnikalardan istifadə etdikdə şagirdlərdə idrak fəallığı yaratmaqla problemi yaradan ziddiyyətləri aşkar edib, onun həllinin səmərəli yolunu tapmaq, yaradıcılığı stimullaşdırmaq, ilkin vəziyyətin dərinlən tədqiqi və məlumatın seçilməsi, həll yollarını müəyyən-ləşdirmək, ideyaları ümumilləşdirib problemin həllinin səmərəli yolunu əsaslandırmaq, məntiqi və tənqidi təfəkkürü inkişaf et-dirmək, təhlil etmək, səhvləri aşkarlamaq, ümumiləşdirmək, seçilmiş həll yolları və nəticələrin qiymətləndirilməsi və yoxlanılması kimi intellektual-tədqiqat bacarıqlarını formalaşır.

Bu metod və texnikalardan istifadə şagirdlərin idrak fəaliyyətinin yüksəl-məsinə, müstəqilliyinin artmasına səbəb olur, şəxsiyyətini, onların intellektual, emosional və iradi xüsusiyyətlərini, yaradıcılıq qabiliyyətlərini, öz fəaliyyətlərini planlaşdırma, proqnozlaşdırma və tənzimləmə qabiliyyətlərini inkişaf etdirir.

### **ABSTRACT**

The peculiarity of interactive methods is the high level of interaction of the subjects of interaction, the emotional and spiritual unity of the participants.

During interactive learning, students learn to think critically, solve complex problems based on the analysis of circumstances and relevant information, come up with alternative ideas, make informed decisions, participate in discussions, and communicate with other people.

Intellectual-research skills are the skills necessary for the implementation of research activities.

Research activities are characterized by research skills such as making and proving hypotheses, establishing cause-and-effect relationships, analyzing the conditions of a particular situation, summarizing the results, and formulating results and new problems.

Among the methods and techniques aimed at the formation of free learning and research skills for the implementation of research activities in modern training - "Problem solving", "The cube", "Case study", "Venn diagram", "Projects", "Sociological questionnaires", "Interview", "Decision tree", "Carpet of ideas", "Reflection", "Questions", "Keywords", "Classification on various bases", "Presentation", "Algorithm description", "T-table" lessons are organized at the level of modern requirements.

When using these techniques, students discover cognitive contradictions by creating cognitive activity, find effective solutions, stimulate creativity, in-depth research and selection of information, identify solutions, generalize ideas and justify an effective solution to the problem, logical and develops intellectual research skills such as developing critical thinking, analyzing, detecting errors, generalizing, evaluating and checking selected solutions and results.

The use of these methods and techniques leads to the development of students' cognitive activity, independence, develops their personality, their intellectual, emotional and volitional characteristics, creative abilities, the ability to plan, predict and regulate their activities.

### **TAM METİN**

İnteraktiv metodların xüsusiyyəti qarşılıqlı təsir subyektlərinin qarşılıqlı yö-nəlmiş fəaliyyətinin yüksək səviyyədə olması, iştirakçıların emosional, mənəvi bir-liyidir.

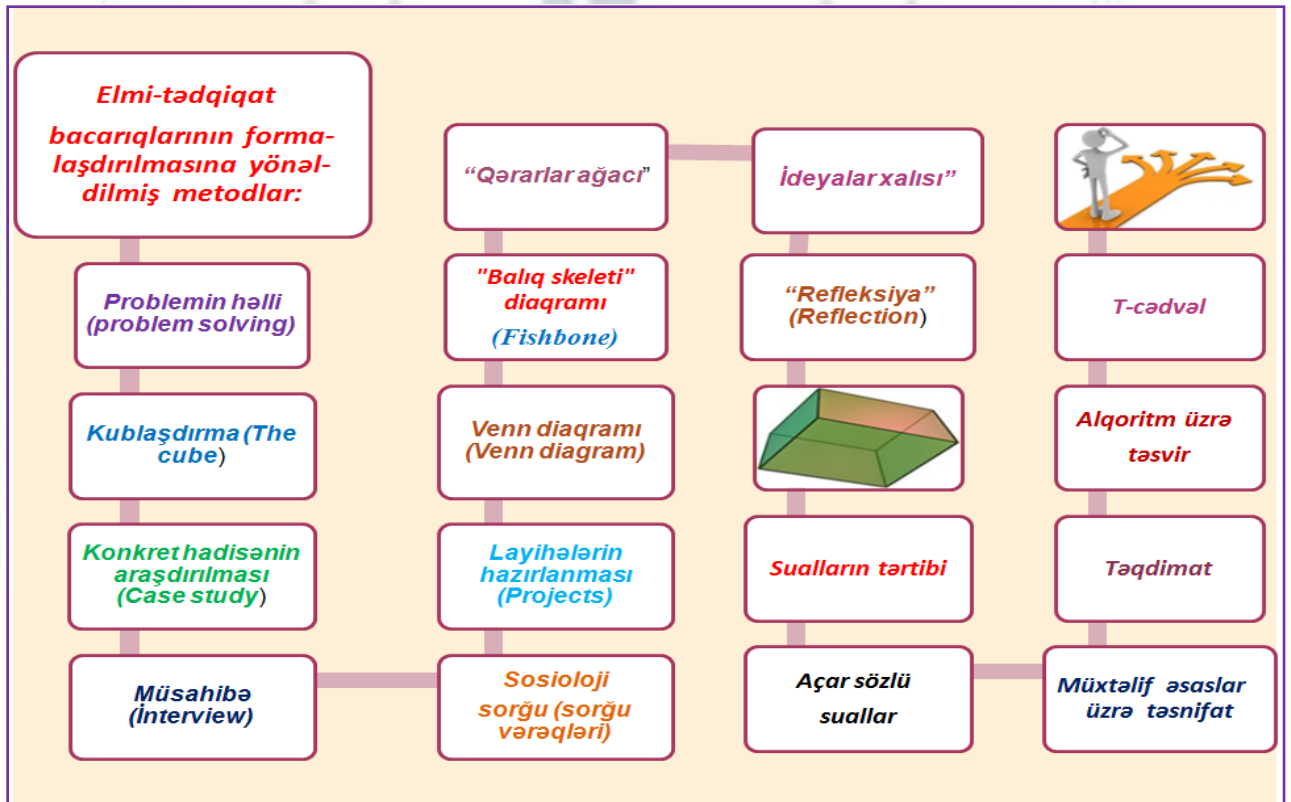
İnteraktiv təlim zamanı təhsilənlər tənqidi düşünməyi, şəraitin və müvafiq məlumatların təhlili əsasında mürəkkəb problemləri həll etməyi, alternativ fikirlər irəli sürməyi, düşünülmüş qərarlar qəbul etməyi, müzakirələrdə iştirak etməyi, digər insanlarla ünsiyyət qurmağı öyrənirlər.

Bu gün təlimdə çevik, düşündürücü idrak fəallığını artıran metod və texni-kalar təhsilalanların marağını təmin etdir, onları motivasiya edir, aktiv fəaliyyətə sövq edir.

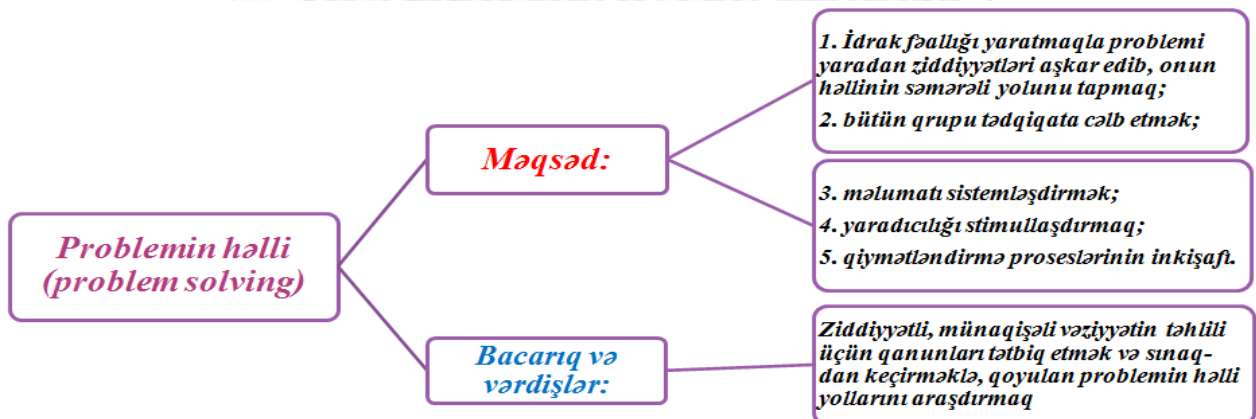
İntellektual- tədqiqat bacarıqları tədqiqat fəaliyyətinin həyata keçirilməsi üçün zəruri olan bacarıqlardır.

Tədqiqat fəaliyyəti fərziyyələr irəli sürmək və sübut etmək, səbəb-nəticə əlaqə-lərini qurmaq, müəyyən bir vəziyyətin şərtlərini təhlil etmək, nəticələri ümumiləş-dirmək, nəticələr və yeni problemləri formalaşdırmaq kimi araşdırma bacarıqları ilə fərqlənir.

Müasir təlimdə tədqiqat fəaliyyətinin həyata keçirilməsi üçün sərbəst təh-sil və elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəldilmiş metod və tex-nikalarından istifadə olunaraq dərslər müasir tələblər səviyyəsində təşkil olunur.



**Elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəldilmiş texnikaların məqsədi, inkişaf etdirdiyi bacarıq və vərdişlər:**

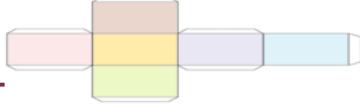




## Kublaşdırma(The cube)

### Bacarıq və vərdişlər:

Təlimdə mürəkkəb və integrativ yanaşmalar üçün tələb olunan bacarıqlar; təsvir, müqayisə, əlaqələndirmə, təhlil, tətbiq, mübahisə etmək bacarıq və vərdişləri



### Məqsəd:

- Mövzuya müxtəlif cəhətlərdən nəzər salmağın asanlaşdırılması;
- məntiqi və tənqidi təfəkkürün inkişafı;
- cisim və ya hadisəyə hərtərəfli baxışın formalaşdırılması;
- qiymətləndirmə bacarığının formallaşdırılması;
- təhlil prosesinin inkişaf etdirilməsi;
- əməkdaşlıq vərdişlərinin formalaşdırılması;

Metod və texnikalar	Məqsəd	Bacarıq və vərdişlər
Konkret hadisənin araşdırılması (situativ praktikum)	<ol style="list-style-type: none"><li>Hadisənin səmərəli həlli yollarını araşdırmaq;</li><li>Məntiqi və tənqidi təfəkkürü inkişaf etdirmək: təhlil etmək, səhvləri müəy-yənləşdirmək;</li><li>Hadisənin səbəbinin həlli vasitəsilə tənqidi təfəkkürü inkişaf etdirmək;</li><li>Tədqiqatçı bacarıqlarını aşılamaq;</li><li>Məlumatı sistemləşdirmək;</li><li>Nəticə çıxarmaq və əsaslandırmaq.</li></ol>	Tənqidi təfəkkür vərdişlərini; təhlil etmə qabiliyyətinin inkişafı; mənəvi dəyərləri, mövqeləri formalaşdırmaq; konkret hadisənin tədqiqi; hadisənin təhlili, qavranılması, səhvlərin müəyyənləşdirilməsi və həlli vasitəsilə tənqidi təfəkkürü stimullaşdıran tədqiqat bacarıqları
Venn diaqramı	<ol style="list-style-type: none"><li>Cisim və ya hadisələri müqayisə etmək və onların oxşar və fərqli cəhətlərini müəyyənləşdirmək;</li><li>Biliklərin aktuallaşması;</li><li>Təhlil proseslərinin inkişafı;</li><li>Qiymətləndirmə prosesinin inkişafı.</li></ol>	Cisim və ya hadisələri müqayisə etmək, müəyyənləşdirmək, mövzunu aktuallaşdırmaq, təhlil etmək, ümumi-ləşdirmə, dəyərləndirmə bacarıqlar və vərdişləri
Layihələrin hazırlanması	<ol style="list-style-type: none"><li>Layihələr şagirdlərin elmi-tədqiqat vərdişlərinin, biliklərə müstəqil yiyələnmə bacarıqlarının formalaşmasında mühüm rol oynayır;</li><li>Ayrı-ayrı faktlar və hadisələrin məktəb təliminin predmetləri və xarici aləmlə əlaqəsini görməkdə şagirdlərə kömək edir;</li><li>Şagirdlərə müstəqil şəkildə öz fəali-yət proqramlarını qurmağa, habelə öz vaxtını və işini qrafik üzrə</li></ol>	Biliklərə müstəqil yiyələnmə bacarıqları; əlavə ədəbiyyatdan istifadə etmək; fəaliyyət proqramlarını qurmaq; öz vaxtını və işini qrafik üzrə planlaşdırmaq bacarığı; qarşılıqlı əlaqə qurmaq və fay-dalanmaq bacarığı; şagirdlərin elmi-tədqiqat vərd-

planlaşdır-mağa kömək edir;

**4. Şagirdlərə müəllimin rəhbərliyi altın-da təlim prosesini idarə etməyə imkan verir;**

**5. Şagirdlərin bir-birləri ilə, eləcə də məktəbdən kənarında müxtəlif adamlarla qarşılıqlı əlaqəsi üçün imkan yaradır;**

**6. Şagirdlərə hadisələrin hər hansı bir aspektini daha dərinədən anlamağa imkan verir, əlavə ədəbiyyatdan istifadə etməyi öyrədir;**

**7. Onlara sosioloji tədqiqat və yaradıcı vərdişləri aşılayır;**

**8. Şagirdlərin öz tədqiqatlarının nəticələrini və öz rəylərini açıq şəkildə təqdim və müdafiə etmək vərdişlərinə yiyələnməsinə kömək edir ki, bu da müstəqil düşüncə şəxsiyyət üçün çox mühüm keyfiyyətdir.**

Sorğu vərəqləri və müsahibə

**1.Şagirdlərlə tez bir zamanda əks-əlaqə yaratmaq;**

**2.Məntiqi və tənqidi təfəkkürün formalaşdırılması;**

**3.Elmi-tədqiqat vərdişlərinin aşılınması;**

**1. Çətin və birmənalı olmayan vəziyyətlərdə qərar qəbul etmək üçün problemlərin bir necə həlli yollarını tapmaq;**

**2. Qərarların qəbul edilməsi zamanı rəhbər tutulan səbəblərin təhlilini və anlamını asanlaşdırmaq;**

**3. Mübahisəli baxışları və qərarları yaxınlaşdırmaq, şagirdlərin biliklərini cəlbəddi formada ümumiləşdirmək və onları**

dışları;

sosioloji tədqiqat və yaradıcı vərdişləri;

tədqiqatlarının nəticələrini və öz rəylərini açıq şəkildə təqdim və müdafiə etmək vərdiş-lər;

tətbiq edilmiş müxtəlif bacarıq və vərdişlərin qiymətləndirilməsi ;

Tədqiqatın nəticəsi hesabat, müzakirə, təsviri vasitələr (xəritə, illüstrasiya, fotoşəkillər, cədvəllər, qrafiklər) formasında təqdim etmə bacarıqları

**Əks-əlaqə yaratmaq;**

**məntiqi və tənqidi təfəkkür bacarıqları;**

**elmi-tədqiqat vərdişlərinin;** şagirdlərə öz fikirlərini, hisslərini, təklif və arzularını ifadə etmək bacarıq və vərdişləri

Səbəblərin təhlili;

problem həlli yollarını tapmaq;

mənbələrlə işləmək;

müzakirə etmək;

bilikləri ümumiləşdirmək və onları qiymətləndirmək;

düşünülmüş qərar qəbul etmək bacarıq və vərdişləri;

fərdi, cütlərlə, qruplarla

Qərarlar ağacı	<p>qiymətləndirmək üçün imkan yaratmaq;</p> <p>4. Bu üsuldan istifadə etməklə şagirdlər mümkün qərarların bütün variantlarını, habelə bu variantlarla əlaqədar müsbət və mənfi cəhətləri (müsbət və mənfi) ətraflı təhlil edirlər. Bununla qərarın qəbul edilməsi asanlaşır, düşünülmüş qərar qəbul etmək bacarığı formalaşır;</p> <p>5. Şagirdlərin bilik səviyyəsini, məntiqi və tənqidi təfəkkürün inkişaf etdirilməsi</p>	<p>işləmək bacarıq və vərdişlərinin formalaşdırılması.</p>
İdeyalar xalısı	<p>1.Diskussiya vərdişlərini inkişaf etdirmək.</p> <p>2.Burada qrupların vahid fikrə gəlməsi önəmli deyil. Başlıcası problemin mü-zakirəsində irəliləmək və düzgün diskussiya aparmaq vərdişlərini nümayiş etdirməkdir.</p>	<p>Öz fikirlərini başqalarına çatdırmaq, onları təsdiq etməyə çalışmaq, faktları təhlil etmək, problemin həlli yollarını təklif etmək bacarıqları;</p> <p>düzgün diskussiya aparmaq vərdişləri.</p>
Təqdimat	<p>1.Şagirdlərə tədqiqat fəaliyyətinin nəti-cələrini müxtəlif yollarla təqdim etməyi;</p> <p>2.Öz fikirlərini dəqiq ifadə etməyi;</p> <p>3.Mükəmməl nəticə çıxarmağı öyrətmək.</p> <p>Formalaşmış ünsiyyət vərdişlərinə malik olan şagirdlərin təqdimatı öz dəqiqliyi və yaxşı təşkil olunması ilə fərqlənir. Təqdimat zamanı şagirdlər bu və ya digər təqdimat formasının keçirilməsi üzrə qaydalara ümumi normalara riayət edirlər. Yaxşı təşkil edilmiş təqdimat onun növündən asılı olmayaraq, şagird-lərin biliklərinin və əqli vərdişlərinin yüksək səviyyəsini göstərir.</p>	<p>Təqdimat hazırlamaq, tədqiqat fəaliyyətinin nəticələrini təqdim etməyi;</p> <p>öz fikirlərini dəqiq ifadə etmək, şagirdlərin biliklərinin və əqli vərdişlərinin inkişafı; əqli biliklər, faktlar, problemlər, anlayışlar, ideyalar, əqli vərdişlər;</p> <p>təhlil, qiymət, göstəricilərin sintezi, yəni məntiqlə düşünmək qabiliyyəti, kommunikativ vərdişlər:</p> <p>informasiyanı aydın şəkildə təqdim etmək bacarığı.</p>
T-sxemlər	<p>1.Müzakirə zamanı müsbət-mənfi cavablar üçün (razıyam, etiraz edirəm),</p>	<p>Müqayisəli fikirlərin müəyyən edilməsi və şagirdlərdə əsas</p>

yaxud müqayisəli fikirlərin qeyd edilməsi və şagirdlərdə əsas biliklərin formalaşdırılması və inkişafı üçün istifadə etmək olar.

2.Şagirdlər faktdan asılı olaraq özünün mənimsəmiş olduğu biliyin əsasında təkliflərini irəli sürür.

biliklərin formalaşdırılması və inkişafı bacarıqları; fikirlərini ümumiləşdirmək , nəticə çıxarmaq, müqayisə və müzakirə etmək vərdişləri.

Cədvəlin təhlili göstərir ki, təlimdə elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəl-dilmiş metodlardan istifadə təhsilalanlarda bir sıra mühüm bacarıq və vərdişlər formalaşır və inkişaf etdirir. **Bacarıq və vərdişlər:** Tənqidi təfəkkür vərdişlərini, təhliletmə qabiliyyətinin inkişafı, mənəvi dəyərləri, mövqeləri formalaşdırmaq, konkret hadisənin tədqiqi, hadisənin təhlili, qavranılması, səhvlərin müəyyənləşdirilməsi və həlli vasitəsilə tənqidi təfəkkürü stimullaşdıran tədqiqat bacarıqları, cisim və ya hadisələri müqayisə etmək, mövzunu aktuallaşdırmaq, ümumiləşdirmə, dəyərləndirmə bacarıqlar və vərdişləri, biliklərə müstəqil yiyələnmə bacarıqları, əlavə ədəbiyyatdan istifadə etmək, fəaliyyət proqramlarını qurmaq , öz vaxtını və işini qrafik üzrə planlaşdırmaq bacarığı, qarşılıqlı əlaqə qurmaq və faydalanmaq bacarığı, şagirdlərin elmi-tədqiqat vərdişləri, sosioloji tədqiqat və yaradıcı vərdişləri, tədqiqatlarının nəticələrini və öz rəylərini açıq şəkildə təqdim və müdafiə etmək vərdişlər, tətbiq edilmiş müxtəlif bacarıq və vərdişlərin qiymətləndirilməsi və s.

Bu gün təlimdə təhsilalanların problemlərin yaranma səbəblərini, amillər arasındakı mən-tiqi əlaqələri təhlil etmək, problemin həlli üçün doğru və səmərəli yollar tapmaq bacarıqlarının inkişafı etdirilməsi baxımdan "Balıq skeleti"("Balıq sümükləri"), **Fishbone** diaqramı adlanan təlim strategiyasını nəzərdən keçirək.

"Balıq sümüyü" strategiyası (İngilis dilindən tərcümədə "balıq sümüyü" və ya "balıq skeleti" mənasını verir) problemin təfərrüatlı təsvir edilməsinə və bir sıra problemlərin həl-linə imkan verən problemin qoyulması və həlli üçün bir modeldir.

Yapon professoru Isikava keçən əsrin ortalarında, elmi və tətbiqi tədqiqatlarda ortaya çıxan problemlərin səbəblərini müəyyənləşdirmək üçün intensiv yollar axtararkən səbəb -arışdırma diaqramı ilə məşhurlaşdı. İşikava sistemdə mövcud problemlərin əyani şəkildə göstəril-məsi üçün istifadəsi mümkün olan təhlili metodunu inkişaf etdirməyi qarşıya qoydu.

Isikava metodunun əsas tətbiq sahəsi sistemin təhlili, dərhal səbəblərini müəyyən etmək, məhsulların keyfiyyəti və kompleks istehsalında mövcud problemlərinin həllini həyata keçir-məkdir.

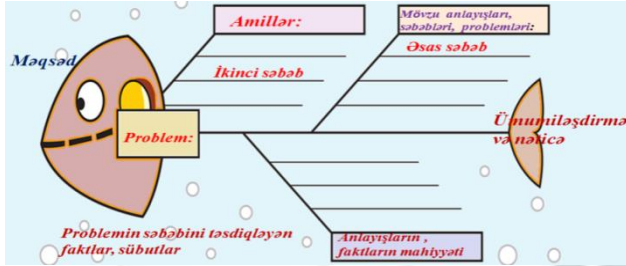
Fishbone diaqramı işi sadə yollarla və üsullarla sistemləşdirməyə, problemin əsas səbəb-lərini vurğulamağa və bunları aradan qaldırmaq üçün iş planı hazırlamağa imkan verir.

Diaqramın məqsədləri :

- mövcud problemlərin yaranma səbəblərini müəyyən etmək;
- problem və ona təsir edən müxtəlif amillər arasındakı məntiqi əlaqələri təhlil etmək;

- hər hansı bir fəaliyyətin nəticəsinə təsir göstərən bütün vacib amillərə aydınlıq gətirmək;
- problemin həlli üçün doğru və səmərəli yollar tapmaq.

Bu qrafik texnika problemin mümkün səbəblərini müəyyənləşdirməyə, hədəflər qoyma-ğa, problemin müxtəlif hissələri arasındakı daxili əlaqələri göstərməyə kömək edir.



### "Fishbone" strategiyasının algoritmi :

- 1) Problemi "balıq başında" yazırıq.
- 2) Üst "sümüklər" də problemin səbəbləri, al-tındakılar - problemin bu səbəblərinin mövcud olduğunu təsdiqləyən faktlar

yazılmışdır.

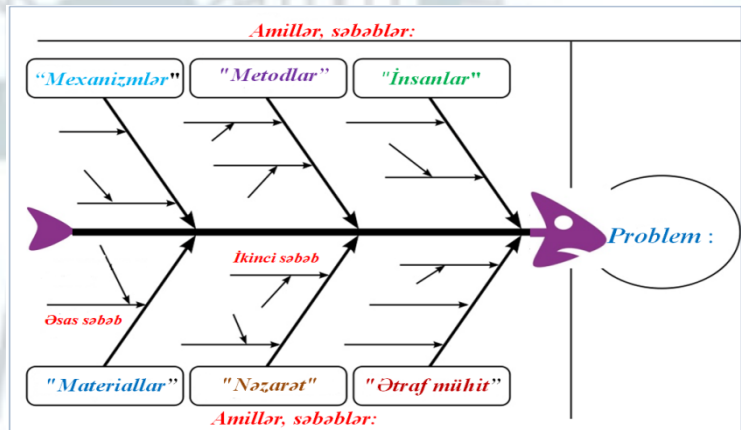
Balıq quyruğu - nəticə.

- 3) "səbəblər - mübahisələr" əlaqəsini təhlil edərək, skeletin son hissəsində (quyruğunda) yazılmış nəticəni sintez edirik.

**1. Problemin təsvir edilməsi:** Bu diaqramla işləməzdən əvvəl dərsin mövzusu ilə əlaqədar problem müəyyənləşdirilir. Müəyyən edilən problem balığın baş hissəsində qeyd olunur. Məsələn: **Birhüceyrəli (ibtidai) heyvanların törətdiyi xəstəliklərə tutulmamaq**

### 2. Əsas amillərin müəyyənləşdirilməsi.

Üfüqi xəttin yuxarısında və aşağısında nəticəyə təsir edən əsas amillər kateqoriyası göstərilir. Burada adətən "insanlar", "üsullar", "mexanizmlər", "materiallar", "nəzarət" və "mühit" kimi kateqoriyalarından istifadə olunur:



1. "İnsanlar" – insan amilinin təsirin-dən yaranan səbəblər;
2. "Metodlar" – işin aparıldığı üsulun yaratdığı səbəblər, proseslə bağlı əməliyyatların dəqiqliyi və ya yerinə yetirilməsi ilə bağlı olan hər şey ;
3. "Mexanizmlər" – bu prosedə istifadə edilən avadanlıq, avadanlıqlarla əlaqəli səbəblər qrupu; 4. "Materiallar" – prosedə iştirak edən materialın ölçülə bilən parametrlərini və keyfiyyətlərini müəyyən edən amillər;

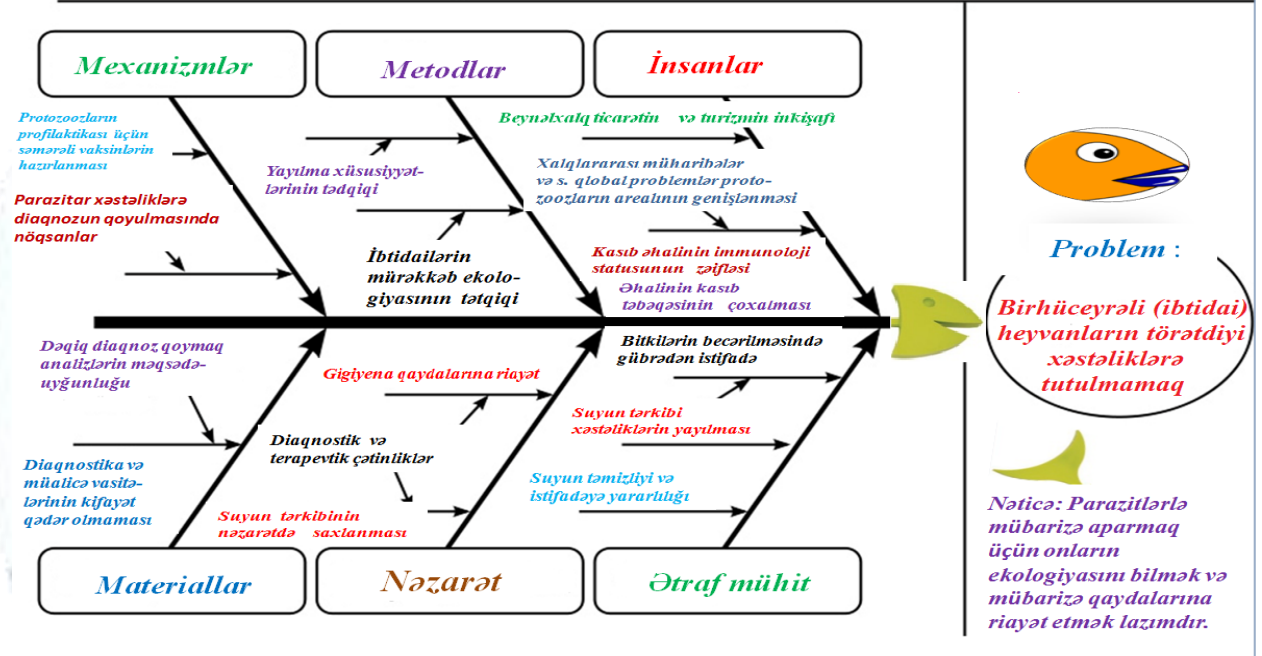
5. "Nəzarət" – düzgün nəzarətin olmaması nəticəsində problemlərin vaxtında aşkarlanmaması kimi hallar

6. "Ətraf mühit" – təbiət qanunları nəticəsində yaranan amillər;

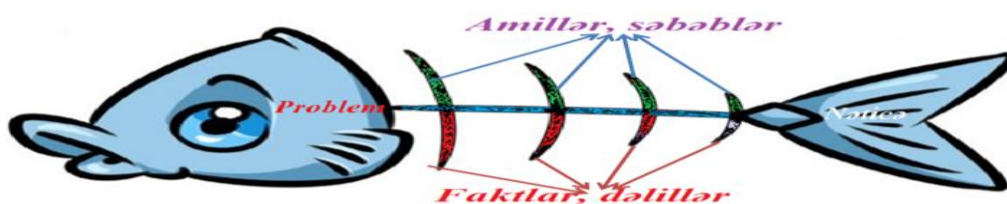
Bu kateqoriyalar mövzuya uyğun olaraq dəyişdirilə, həmçinin artırıla və ya azaldıla bilər

3. Əsas amillərin daha ətraflı təsvir edilməsi. Tədqiq olunan problemin səbəbləri müvafiq kateqoriyaların (əsas amillərin) altından qeyd olunur. Əsas səbəblər müəyyən edilənə qədər fikirlərin diaqramda qeyd olunması davam etdirilir. Bütün amillər müəyyən edilməli və diaqramda qeyd olunmalıdır.

**Mövzu: Birlüceyrəli (ibtidai) heyvanların törətdiyi xəstəliklər** Amillər, səbəblər



4. "Niyə?" sualının verilməsi. Hər bir səbəb üçün "niyə?" sualı soruşulur (məsələn, Əhalinin kasıb təbəqəsinin çoxalması birlüceyrəli (ibtidai) heyvanların törətdiyi xəstəliklərə tutulma-maq üçün səbəb deyilsə, bu zaman "niyə?" sualı verilir). "Niyə?" sualı səbəbin kökünü müəyyən etməyə imkan yaradır. Hər dəfə analizin bu və ya digər mərhələsində "niyə?" sualını vermək lazım gəlir. Məsələn: Niyə bu səbəb konkret bu problemin yaranmasına gətirib çıxarır? Hər bir amili araşdırarkən, suallar təkrarlanır ki, bu səbəblərin daxili əlaqəsi müəyyən oluna bilsin.



**Faktlar:**

1. İnsan orqanizmində ibtidailərin 30 növü parazitlik edirdir ki, onlardan bəziləri olduqca təhlükəli protozooz xəstəliklərini-amöbiyaz, tripanosomoz, leyşmaniozlar, lyamblioz, trixomoniaz, malyariya, toksoplazmoz, balantidiaz əmələ gətirirlər.
  2. Ümumdünya Səhiyyə Təşkilatının məlumatlarına görə, hazırda 100 milyonlarla insan malyariya, tripanosomoz, toksoplazmoz və digər protozoozlarla xəstədir.
  3. Azərbaycan öz iqlim şəraitinə görə əsrlər boyu parazitər xəstəliklərin endemik regionlarından olub, malyariya, leyşmanioz, toksoplazmoz və s. kimi xəstəliklər çox geniş yayılıb.
  4. Ümumdünya Səhiyyə Təşkilatının məlumatlarına görə, parazitər xəstəliklərin artmasının əsas səbəblərindən biri də əhalinin kasıb təbəqəsinin çoxalmasıdır.
  5. Toksoplazmoz heyvan infeksiyası kimi 80 ildən, insan xəstəliyi kimi isə 50 ildən artıqdır ki, məlumdur. Bu zoonoz infeksiya insana 3 yolla – generalizə olunmuş bitki, ət məhsulları və vertikal – bətdaxili yolla yoluxur.
  6. Yayılmasına görə digər çoxsaylı insan parazitləri arasında ağız boşluğunun amöb və trixomonadaları birinci yerdədir.
  7. Praktik olaraq Yer kürəsində elə bir ölkə yoxdur ki, onun əhalisi arasında bu parazitlərə rast gəlinməsin.
  8. Birlüceyrəllilərin parazitlik etdiyi orqana uyğun olaraq aşağıdakı kimi qruplaşdırmaq olar.
  9. Müxtəlif toxumalarda və qanda parazitlik edənlər (Tripanosom-sinir sisteminə qanla daxil olur)
- Bağırsaqda parazitlik edənlər (amöb, lyambliya)  
Ağız boşluğunda parazitlik edənlər (amöb və trixomonada)  
Sidik-cinsiyyət orqanlarında parazitlik edənlər (trixomonada)

**“Balıq skeleti” (Fishbone) diaqramının üstünlükləri:**

nəticə və onun səbəbləri arasındakı əlaqəni aydın şəkildə göstərməyə kömək edir;

problemə təsir edən amillər zəncirini təhlil etməyə imkan verir;

yaradıcı təfəkkürü stimullaşdırır;

tənqidi təfəkkürü inkişaf etdirir;

problemə həllində öz məsuliyyətini dərk etməyə və gələcək fəaliyyəti planlaşdırmağa kömək edir.

Elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəldilmiş metodlardan istifadə xüsusiyyətləri:

Mövzunun hərtərəfli öyrənilməsi üçün şagirdləri onu təsvir və müqayisəyə, əlaqələndirməyə, təhlilə, tətbiq və mübahisəyə istiqamətləndirmə, şagirdlərin şəxsiyyətini, onların intellektual, emosional və iradi xüsusiyyətlərinin inkişafı, şagirdlərə öz fikirlərini, hisslərini, təklif və arzularını ifadə etmək, problem həlli yollarını tapmaq, mənbələrlə işləmək,

müzakirə etmək, bilikləri ümumiləşdirmək və onları qiymətləndirmək, düşünülmüş qərar qəbul etmək və s. xüsusiyyətləri ilə fərqlənir.

Bu texnikalardan istifadə etdikdə şagirdlərdə idrak fəallığı yaratmaqla pro-blemi yaradan ziddiyyətləri aşkar edib, onun həllinin səmərəli yolunu tapmaq, yaradıcılığı stimullaşdırmaq, ilkin vəziyyətin dərinəndən tədqiqi və məlumatın seçilməsi, həll yollarını müəyyənləşdirmək, ideyaları ümumiləşdirib problemin həllinin səmərəli yolunu əsaslandırmaq, məntiqi və tənqidi təfəkkürü inkişaf etdirmək, təhlil etmək, səhvləri aşkarlamaq, ümumiləşdirmək, seçilmiş həll yolları və nəticələrin qiymətləndirilməsi və yoxlanılması kimi intellektual-tədqiqat bacarıqlarını formalaşdır.

## **NƏTİCƏ**

**Məqalədə** təlimdə şagirdlərin elmi-tədqiqat bacarıqlarının formalaşdırılmasına yönəldilmiş metodlardan istifadənin xüsusiyyətləri açıqlanır.

Bu metod və texnikalardan istifadə şagirdlərin idrak fəaliyyətinin yüksəlməsinə, müstəqilliyinin artmasına səbəb olur, şəxsiyyətini, onların intellektual, emosional və iradi xüsusiyyətlərini, yaradıcılıq qabiliyyətlərini, öz fəaliyyətlərini planlaşdırma, proqnozlaşdırma və tənzimləmə qabiliyyətlərini inkişaf etdirir.

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## **UTILIZATION AND EFFECTS OF CARRAGEENAN IN MILK AND MILK PRODUCTS**

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### **Abstract**

Carrageenan is a linear sulfated polysaccharide derived from various edible red algae species belonging to the Rhodophyceae family and is widely used as a thickener, stabilizer or gelling agent in food products, pharmaceutical applications, and cosmetics. It is highly biocompatible and is used extensively in the biomedical field. Carrageenan, a shaping biopolymer, is highly soluble in water and removes chemicals that do not contain homogeneous hydrogels for chemical and / or physical modification in its structure. Also, the presence of sulfate groups in carrageenan has the potential to mimic negatively charged macromolecules. It is classified according to various types of carrageenan, but kappa carrageenan and iota carrageenan are the most common types used in the industry. They are commonly used in dairy products, bakery products, confectionery products, meat and poultry products, some beverages, sauces and dressing in the food industry. In terms of product variety and applicability, dairy products are one of the most suitable products for carrageenan usage. Like many stabilizers, carrageenan is known to cause changes in the protein structure of foods. It is known that as a result of the interaction of carrageenan with milk proteins, a long-range network structure is formed, thanks to this structure, water retention increases and texture improves. Under different conditions, it may cause different changes in foods depending on the amount or type of carrageenan. In this study, the effects of carrageenan use on milk products such as milk, milk proteins, milk powder, cream, yogurt, buttermilk, cheese, milk desserts and ice cream were compiled according to changing conditions.

**Keywords:** carrageenan, milk, milk proteins, milk products

### **Introduction**

Carrageenan is a linear sulfated polysaccharide derived from various edible red algae species belonging to the Rhodophyceae family and is widely used as a thickener, stabilizer or gelling agent in food products, pharmaceutical applications, and cosmetics (Blaszak et al., 2018; Wurm et al., 2019). It is known that carrageenan has also been used for encapsulation in recent years (Marengo et al., 2019). It is highly biocompatible and is used extensively in the biomedical field. The molecular structure of carrageenan is based on a disaccharide repeat of alternative D-galactose and 3,6-anhydro-galactose (3,6-AG) units joined by  $\alpha$ -1,4 and  $\beta$ -1,3 glycosidic linkage (Li et al., 2019). Carrageenan, a shaping biopolymer, is highly soluble in water and removes chemicals that do not contain homogeneous hydrogels for chemical and / or physical modification (Dong et al., 2019). In addition, the presence of sulfate groups in carrageenan has the potential to mimic negatively charged macromolecules (Dargahi et al., 2019). It is classified according to various types of carrageenan, but kappa carrageenan and iota carrageenan are the most common types used in the industry (Bui et al., 2019).

The objective of this study was presentation of possibility of use carrageenan in dairy product varieties and its effects on these products. For this purpose, use and effects of carrageenan in milk and milk proteins, milk powder, cream, yogurt, ayran, cheese, milky desserts, and ice cream were compiled.

### **Milk and milk proteins**

In the research conducted by Langendorff et al. (2000), it was stated that the presence of  $\lambda$ -carrageenan, i-carrageenan and k-carrageenan in milk cooled from 60°C to 20°C changed the apparent hydrodynamic diameter of casein micelles depending on different temperatures. As a result of the analysis, it was explained that all three types of carrageenan were adsorbed by casein micelles. It has been stated that  $\lambda$ -carrageenan, which was always in the form of coils, was adsorbed at all temperatures studied, and i-carrageenan and k-carrageenan could only be adsorbed at temperatures below the beginning of the coil-to-coil transition.

Rodd et al. (2000) stated that as a result of the interaction of carrageenan with milk proteins, a long-range network structure was formed and this structure changed depending on the type of carrageenan used.

In the study conducted by Schorsch et al. (2000), the phase behaviors of the system formed from pure casein micelles, k-carrageenan and water were investigated at 5°C and 60°C. It has been reported that polymer adsorption could occur in casein micelles at a low concentration of k-carrageenan at a temperature of 5°C. It was noted that as the concentration of k-carrageenan increases, the system becomes trapped in a gel state. At 60°C, it was reported that carrageenan chains take the form of a bobbin.

In the study conducted by Tziboula and Horne (2000), the effects of various heat treatments on the temperature-dependent gelling property of k-carrageenan in milk were investigated. As a result of the research, it was reported that the gel strength increased with heat treatment and reached its maximum at about 110°C. Prolonged heating at high temperatures caused a loss of gel strength. It was stated that changes in ionic balances due to the decrease in pH value of milk and heat treatment did not have a significant effect on the gelation of k-carrageenan. It was concluded that the heat treatment caused physicochemical changes in the casein micelles, which in turn affected the hardness and flexibility of the milk-carrageenan gel network. It was reported that k-carrageenan was separated from casein micelles at high temperatures.

In the study conducted by Thaiudom and Goff (2003), the effects of using k-carrageenan (0%, 0.025%, 0.05%) on phase separation in solutions containing different polysaccharides and milk protein were investigated. In this context, as a polysaccharide; 0.36% locust bean gum, guar gum and xanthan gum were used. It was determined with the help of electron microscopy that k-carrageenan prevented the visible phase separation at all concentrations, but phase separation was observed at microscopic rate. It was reported that a weak gel structure was formed with the use of 0.05% k-carrageenan and other polysaccharides, but the use of guar gum or locust bean gum with 0.025% k-carrageenan provided more concentrated solutions.

In the study conducted by Trckova et al. (2004), the effect of milk protein concentration on the rheological properties of carrageenan (0.1-0.5%) contained in permeate (0% casein) and retentate (2.7-8.3% casein) was investigated. Permeate and retentate were prepared by ultrafiltration (1.6% fat) of homogenized milk. As a result of the research, it was reported that low concentration carrageenan in permeate formed a weak gel structure with low storage modulus. It was described that the storage modulus of gels changes depending on the

carrageenan and protein concentration. It was reported that gel strength increased and fracture depth decreased with increasing carrageenan concentration.

Tijssen et al. (2007) examined the changes in the gelling properties of UHT milk added with carrageenan during storage. As a result of the research, it was reported that severe heating causing protein denaturation, lowering the pH or the use of k-carrageenan instead of i-carrageenan caused excessive gelation.

Alexa et al. (2009) examined the ionic responses of k-carrageenan in media containing milk protein. In the study, the effects of ionic strength on the properties of k-carrageenan in the presence of calcium chloride, sodium chloride, potassium chloride, sodium citrate or simulated milk ultrafiltrate were investigated. It was reported that as the amount of salt increases at 22°C and pH 6.7, the relative viscosity of k-carrageenan significantly decreased, and the maximum decrease was seen with calcium chloride.

In the study conducted by Acero-Lopez et al. (2010), the effect of the presence of k-carrageenan on casein micellar stability and rennet-derived aggregations was investigated. In this context, different concentrations of k-carrageenan were added to skim milk at pH 6.7. As a result, it was stated that when the k-carrageenan concentrations were below 0.015%, no change was observed in casein stability and aggregation kinetics of casein micelles. Then, the effects of mixing different concentrations of high methoxyl pectin (0.04%, 0.12% and 0.18%) with skim milk containing 0.015% k-carrageenan were investigated. It was determined that k-carrageenan inhibited instability due to high methoxyl pectin.

Liu et al. (2013) created a milk protein-konjac glucomannan multi-component system containing k-carrageenan in order to obtain healthy ice cream and examined the phase characteristics of this system. As a result of the research, it was stated that casein micelles were concentrated in an irregular phase and phase separations occurred to a large extent in systems where k-carrageenan was not added.

Matignon et al. (2014) examined the effects of interactions between modified waxy corn starch, k-carrageenan, and skim milk on the microstructure of mixed systems. As a result of the research, it was stated that in starch-k-carrageenan mixtures, k-carrageenan was adsorbed by starch granules, but no interaction was observed between starch and milk proteins. In the mixtures prepared in triplicate, it was reported that although the milk proteins were added later, no interaction occurs between k-carrageenan and starch, instead, interactions between milk proteins and k-carrageenan were observed.

In the study conducted by Wang et al (2016), rennet-derived aggregation properties were investigated by adding k-carrageenan, i-carrageenan and  $\lambda$ -carrageenan to skimmed milk samples. As a result of the study, it was found that the release of caseinomacropptide was slowed for recombined samples containing k-carrageenan and low concentrations of i-carrageenan and  $\lambda$ -carrageenan; however, emitted wave spectroscopy and the development of rheological parameters were reported to be similar to that of the control sample. It was stated that the most important advantage provided was the increase in the rate of assembly of proteins with calcium bridges and hydrophobic interactions.

Agoda-Tandjawa et al. (2017) investigated the rheological synergistic results of starch-carrageenan-milk protein mixed systems, taking into account the role and intrinsic properties of each biopolymer type. As a result of the research, it was reported that starch endogenous proteins did not affect the viscoelastic properties of starch-carrageenan mixed systems in the presence or absence of milk proteins. However, it was emphasized that the carrageenan variety used on these features was of great importance. It was demonstrated that i-carrageenan provides weaker viscoelastic properties than k-carrageenan.

Tang et al. (2019) examined the thermal, linear and nonlinear rheological and microstructural properties of casein-k-carrageenan mixtures. As a result of the research, it was reported that the addition of k-carrageenan greatly influenced the rheological behavior of the casein. A positive relationship was found between the storage modulus, loss modulus and apparent viscosity and k-carrageenan concentrations.

### **Milk powder**

In the research conducted by Foerster et al. (2017), it was stated that the appearance of surface fat during the atomization process in the spray drying of milk particles generally impairs the functional powder properties. In order to investigate a possible approach that could minimize the formation of fat on the surface, the interaction between a whole milk model emulsion and various concentrations of  $\lambda$ -carrageenan, as well as how it affects atomization behavior and the resulting particle properties was investigated. In line with the findings obtained, it was reported that carrageenan could stabilize emulsions by adsorption to milk fat globule membranes in the presence of milk protein. It was stated that if too little or too much of the polysaccharide was added, bridging flocculation or depletion flocculation occurs in the emulsions, respectively. It was demonstrated that the best stability and minimum fat globule size in emulsions were obtained with the use of 0.3% carrageenan. As a result of the rheological analysis, it was explained that the elongation viscosity might be an important factor affecting the emulsion breakdown behavior during atomization. It was reported that emulsions stabilized with  $\lambda$ -carrageenan had higher viscosity values, provided better fat encapsulation and increased oxidative stability. However, as a result of the research, it was stated that carrageenan also had negative effects and damages the structure of milk powder by forming dense particles in emulsions.

### **Cream**

In the research conducted by Precht et al. (1988), it was reported that unwanted fat layers were formed after long-term storage (2-7 weeks) in UHT creams obtained without increasing dry matter and cooling. It was stated that the desired creaming property could only be achieved by the combination of carrageenan and whey protein. It was stated that the combination of k-carrageenan and i-carrageenan used at the same rate was quite effective on the creaming properties of creams without causing excessive viscosity increase.

Camacho et al. (2001) investigated the effects of locust bean gum and  $\lambda$ -carrageenan mixture concentrations on freeze-thaw stability in milk creams. In line with the results obtained, it was reported that the freezing process caused collapse in the foam structure of milk creams, but the use of  $\lambda$  carrageenan over 0.085% increased the viscosity structure by increasing the firmness. It was stated that all  $\lambda$ -carrageenan concentrations had the same effect on freeze-thaw stability.

### **Yogurt and Ayran**

Sağdıç et al. (2004) used different proportions (0.01%, 0.03%, 0.05% and 0.08%) of k-carrageenan in yogurt production. Yogurt samples produced with two different starter culture groups (A: *Streptococcus salivarius* spp. *thermophilus*-*Lactobacillus delbrueckii* spp. *bulgaricus* and B: *Streptococcus salivarius* spp. *thermophilus*- *Lactobacillus delbrueckii* spp. *bulgaricus*- *Lactobacillus acidophilus*) were stored for 21 days and some changes in their physicochemical properties during storage were investigated. Some of the upcoming changes were studied. As a result of the research, it was reported that the use of k-carrageenan at different rates had statistically significant effects on the growth of *Streptococcus salivarius* spp. *thermophilus*, *Lactobacillus delbrueckii* spp. *bulgaricus* and *Lactobacillus acidophilus* during storage. In addition, it was stated that the effects of the use of k-carrageenan at

different rates on the pH, titration acidity, serum separation, structure and appearance values of yogurt samples were important, but did not affect the total amount of dry matter and ash. As a result, it was stated that it was appropriate to use 0.01% and 0.03% k-carrageenan in yogurt production.

Engez et al. (2006) investigated the effects of the use of different stabilizers on the consistency properties of ayran samples in low-dry matter prepared by diluting yogurt with water in different proportions. In this context, as a stabilizer; xanthan gum, carboxyl methyl cellulose CMC, k-carrageenan, locust bean gum, agar-agar and modified starch were used. As a result of the research, it was stated that all stabilizers increase the consistency of low-dry matter ayran samples. However, its use was not recommended due to the difficulty of preparing the k-carrageenan solution and the fact that it causes less consistency increase in ayran samples compared to other stabilizers.

Hematyar et al. (2012) examined the effects of different concentrations of xanthan gum and carrageenan on the rheological, microbiological, chemical and sensory properties of yogurt. As a result of the research, it was reported that the viscosity of the samples containing gum increased compared to the control sample. It was stated that less serum separation occurs during storage in samples with gum added. The use of gum did not change the pH and total dry matter values of yogurt samples. As a result, it was reported that the use of xanthan gum in yogurt samples had obtained more positive results than carrageenan.

Carrageenan was used as a stabilizer in the production of yogurt powder in a study by Pratama et al. (2018). In this context, 1.0%, 2.0% and 3.0% carrageenan was added to the yogurt samples and the samples were dried in a cabinet dryer. As a result of the research, it was reported that the highest bulk density and the best particle size distribution were obtained with the use of 2.0% carrageenan, it was revealed that phase separation was not observed for 3 hours with the use of 2.0% carrageenan in yogurt powder samples diluted at 50°C.

### **Cheese**

In the research conducted by Brummel and Lee (1990), the possibilities of using hydrocolloid as a fat substitute in cheese making were investigated. It was reported that with the use of hydrocolloids, the fat content of cheese was reduced by about 40-50% and the moisture content was increased to 62-68%. In the research, the cheeses had a moisture content in the range of 0.18-4.1%; xanthan gum,  $\lambda$ -carrageenan, three types of high methoxylated pectin, propylene glycol alginate, low viscosity guar gum and Zooglan 115 gums were used. It was stated that high fat and dense cheeses were obtained by using 2.2%  $\lambda$ -carrageenan, 1.7-2.2% pectin and 1.7% low viscosity guar gum. It was stated that the firmness of the cheeses increased and the melting rate decreased by increasing the amount of gum added.

In the research conducted by Kampf and Nussinovitch (2000), the effects of coating process of pickled white cheeses salted with semi-hard dry salting method with k-carrageenan, alginate and gellan based hydrocolloid films were investigated. It was reported that each coating film used in semi-hard cheeses during 46 days of storage reduced weight loss. There was no significant difference between the coating films in terms of weight loss. It was stated that the coating film provides a better color and gloss formation in cheeses. After the coating process, the roughness of the cheeses decreased and the surface gaps were filled with the film. It was reported that film-coated cheeses were advantageous in terms of textural properties, the coated cheeses lost less water and thus the desired softer and less crispy structure was formed. When evaluated in terms of elasticity, it was stated that no advantage was found in the coated cheeses. In the research, drying process was not applied to the cheese covered with film, while weight loss occurred in all films, it was reported that the most advantageous film was k-carrageenan based film. It was stated that the use of coating film causes less decrease in pH

level, but provided better quality cheese. As a result of the sensory analysis, it was stated that the cheese covered with film was more appreciated.

Swenson et al. (2000) investigated the effects of the use of emulsifying salts and hydrocolloids, cooking time, cooking temperature and pH value on the hardness, solubility and spreadability of fat-free cheeses. As a hydrocolloid; gelatin, carrageenan, locust bean gum and guar gum were used. As a result of the research, it was reported that all hydrocolloids increased the hardness and spreadability values of the cheeses and decreased the meltability values.

Jhonston et al. (2002) examined the changes in cheese by adding k-carrageenan as a hydrocolloid to milk just before pasteurization during the making of Mozzarella cheese. As a result of the research, it was stated that the addition of 0.025% k-carrageenan increased the moisture content of cheese and improved the stability of the cheese, but it decreased the curd strength during the breaking phase of the curd and the amount of fat loss increased with the whey. It was stated that the addition of k-carrageenan reduced the pore size of Mozzarella cheeses, increased their whiteness and transparency. In addition, it was determined that the viscosity feature of the mouth was improved without damaging the textural structure of the cheese. As a result of chemical analyzes made in whey, it was reported that more than 95% of k-carrageenan remained in the cheese.

Černíková et al. (2010) examined the effects of replacing phosphate and citrate-based emulsifier salts used in cheese production with different hydrocolloids. For this purpose, modified starch, low methoxyl pectin, locust bean gum, k-carrageenan and i-carrageenan (all of which were 1.0%) were used as hydrocolloid. It was reported that, with the use of k-carrageenan or i-carrageenan, homogeneous cheeses with a dry matter of 40% and a fat content of 55% were obtained, the cheeses had a very hard structure that can be broken.

Hanakova et al. (2013) examined the effects of different hydrocolloids on the rheological properties of cheeses and cheese analogues containing different oils (butter, coconut oil and palm oil). In the study, 1.0% (w/w) j-carrageenan, i-carrageenan, k-carrageenan, gum Arabic and locust bean gum were used as hydrocolloids. It was reported that the complex module ( $G^*$ ) increased with cooling in all samples. It was stated that the highest increase in  $G^*$  value was detected in samples produced using j-carrageenan. This sample was also the one with the highest hardness value.

In the research conducted by Hladka et al (2014), the effects of using emulsifying salts and k-carrageenan instead of traditional emulsifier salts on some properties of cheeses during storage were investigated. It was reported that the hardness levels of cheeses using k-carrageenan instead of emulsifier salt were 5 times higher than cheeses produced using phosphate salts. It was reported that the solubility feature of cheeses using k-carrageenan was low, and that these cheeses remain unchanged in terms of texture throughout the ripening period.

Ahmad et al. (2016) examined the effects of k-carrageenan use on the physicochemical and sensory properties of Cheddar cheeses. As a result of the research, it was stated that the hardness values of the cheeses increased and the meltability values decreased with the increase of the added k-carrageenan concentration. It was stated that the most preferred Cheddar cheese sample in terms of physicochemical and sensory properties was 0.15% k-carrageenan and 2.00% emulsified saline sample.

Benjamin et al. (2018) examined the effects of using polysaccharides such as k-carrageenan, i-carrageenan, locust bean gum, sodium alginate and low acyl gellan on the salt release and textural properties of fresh cheeses prior to the treatment of milk with rennet. As a result of the research, it was stated that the use of k-carrageenan and locust bean gum caused

large clumps in the milk clot just before cheese formation. It was reported that the use of carrageenan varieties affected rennet coagulation by forming a softer gel. It was stated that the cheeses containing locust bean gum, k-carrageenan and low acyl gels had higher humidity, softer and lower storage modulus than control cheese. In addition, it was emphasized that the use of polysaccharides could be applied to reduce the amount of salt in dairy products.

Chatziantoniou et al. (2019) examined the properties of cheeses by using 0.8% xanthan gum, guar gum, locust bean gum, k-carrageenan and a 1: 1 mixture of each of these stabilizers in whey cheeses. As a result of the research, it was reported that the chemical composition and final pH values of the samples remained constant. Stabilizer use of cheeses; it was emphasized that it caused significant changes on rheological properties, fat globule size and sensory properties. It was stated that the data of the rheological properties of the cheeses and the findings of the sensory properties were parallel. While mixtures of locust bean gum with xanthan gum or k-carrageenan exhibited strong synergistic effects in the samples, these samples were rated as the hardest and least spreadable. Partial mixtures of k-carrageenan with xanthan gum and guar gum decreased the firmness values of the samples, while increasing the spreadability and smoothness values. It was stated that the mixture of k-carrageenan with locust bean gum produced the smallest fat globules.

Rubel et al. (2019) tried the use of different hydrocolloids in order to increase the spreadability of Ricotta cheese, which is a compact, syneresis-prone and limited shelf-life cheese variety. In this context, as a hydrocolloid; high gelling capacity gelatin, low gelling capacity gelatin, xanthan-guar gum mixture and carrageenan were used. As a result of the research, it was stated that the addition of hydrocolloid improved the microstructure and rheological properties of cheeses. It was reported that the hydrocolloid added samples were acceptable in terms of physicochemical properties during storage when compared to the control sample. Hydrocolloid addition reduced syneresis in cheeses.

### **Milky Desserts**

In the research conducted by De Vries (2002), the relationship between carrageenan and other ingredients found in milky sweet gels was investigated. As a result of the research, it was stated that the interaction of carrageenan with starch and protein had a very important role in dairy products. It was reported that the minimum concentration of carrageenan required for gelling was much lower in milk compared to other solvents. It was stated that all carrageenan types showing the gelling feature showed the same properties. However, it was demonstrated that carrageenan mixtures showed unexpected synergistic effects. The synergistic effect of casein micelles on carrageenan gelation was higher than any other protein. It was stated that starches and locust bean gum had negative effects on the gelation of k-carrageenan, but positively affected the gelling property of i-carrageenan. It was also reported that cocoa particles adversely affect the gelling property of k-carrageenan.

Lethuaut et al. (2003) investigated the relationship between sweetness and texture in milky desserts produced using different carrageenan types and sucrose ratios. In this context; k-carrageenan, i-carrageenan,  $\lambda$ -carrageenan and a complex carrageenan variety in which they were mixed in equal proportions were used. As a result of sensory analysis and texture analysis; although interactions were observed between sweetness and texture, it was stated that no common relationship was found. With increasing concentration of sucrose; it was stated that the firmness of k-carrageenan desserts, the elasticity and firmness of i-carrageenan desserts, the fragility of  $\lambda$ -carrageenan desserts, and the fragility and crispness of desserts with carrageenan were reported to increase. It was stated that the sweetness ratio of milk desserts produced using  $\lambda$ -carrageenan was the highest, while the milk desserts produced with i-carrageenan had the least sweetness ratio.

In the study conducted by Verbeken et al. (2004), pudding was obtained using k-carrageenan, skimmed milk powder, natural corn starch, sucrose and water, and the effects of k-carrageenan, skimmed milk powder and corn starch on the textural properties of the pudding samples were investigated. As a result of the research, it was stated that more positive results were obtained with the use of starch with k-carrageenan, and the swollen starch granules in the pudding helped to concentrate the k-carrageenan in the continuous water phase. The concentration of carrageenan in the water phase of pudding samples; it was reported to have significant effects on gel strength, complex modulus and gelation temperature. When the large deformation behaviors of the pudding samples were examined, it was stated that skimmed milk powder and starch did not have a significant effect on this behavior, and k-carrageenan alone was sufficient to prevent large deformations.

In the study conducted by Verbeken et al. (2006), sterilized milk desserts samples were prepared using five different components: k-carrageenan, skimmed milk powder, waxy corn starch, sucrose and water. In this context, an experimental mixture design was used to examine the effect of different concentrations of k-carrageenan, milk powder and starch on the dessert properties, while the sucrose and water content was kept constant. As a result of the research, it was stated that increasing the amount of carrageenan and starch caused a decrease in syneresis. Based on the results, it was reported that the interaction between casein and carrageenan occurs in sterilized milk desserts.

Arltoft et al. (2008) investigated the effects of the addition of pectins with low ester amidates with different calcium reactivity on the microstructure, rheology and sensory properties of model milk desserts containing carrageenan and starch. As a result of the research, it was stated that at the point where the gelation temperatures of pectin and carrageenan were the same, the microstructure of milk desserts was strengthened and phase separation was prevented in these desserts. In addition, it was reported that gel strength and stickiness values increased, a drier and longer chewing product was obtained.

Chye et al. (2013) examined the effects of adding carrageenan (0.1-0.7%) and jacquard fruit puree (10-20%) in varying proportions to Dadih, a traditional dairy dessert of Malaysia produced with goat milk, on the texture profiles of dessert samples. As a result of the research, it was stated that while the hardness value was significantly affected by the concentration of both carrageenan and jack fruit puree, the stickiness and elasticity values were only affected by the carrageenan concentration. As a result, it was stated that the best structural properties could be obtained by adding 0.2% carrageenan and 14.9% jacquard fruit puree.

Sheidaei et al. (2020) studied the effects of k-carrageenan, modified starch and inulin supplementation on the rheological and sensory properties of fat-free and unsweetened dairy desserts. It was reported that all samples showed a viscoelastic gel structure that was higher than the loss modulus of the storage modulus, and the use of increasing amounts of k-carrageenan and modified starch caused an increase in the storage and loss modulus values as well as a decrease in the loss angle tangent, as well as the complex viscosity. In addition, it was stated that the hardness and stickiness values were increased with the use of stabilizers. It was emphasized that milk desserts produced using 0.1% k-carrageenan, 2.5% starch and 5.5% inulin got the highest sensory score and this sample was the best example with the desired properties for lean production. It was suggested that the concentration of k-carrageenan and starch strongly influences the rheological and textural properties of milk desserts.

### **Ice Cream**

In the study conducted by Güven and Karaca (2003), the effects of the use of different stabilizers on the physical and sensory properties of vanilla frozen yogurt samples were investigated. In this context, in ice cream samples; karaya gum, guar gum, gelatin, salep,



carrageenan and CMC were used. In line with the findings obtained, it was reported that the use of stabilizers were significantly effective on titration acidity, first drip time, complete melting time, volume increase rate, penetrometer degree and viscosity of frozen yogurt. As a result of sensory analysis, it was stated that all stabilizers used provide a consumable product. However, it was reported that the physical and sensory properties of frozen yogurt using carrageenan alone were negatively affected.

In the study conducted by Badem (2006), ice cream with carob molasses was produced and the effects of stabilizers used in different proportions on ice creams were investigated. In this context, as a stabilizer; k-carrageenan (0-0.2%), xanthan gum (0-0.2%) and locust bean gum (0-0.6%) were used. As a result of the research; samples produced using 0.1% k-carrageenan, 0.1% xanthan gum and 0.4% locust bean gum were reported to be the most popular ice cream samples. It was stated that the use of stabilizers decreased the pH values of the samples. It was reported that the sample with the lowest dry matter value contained 0.1% k-carrageenan and 0.1% xanthan gum. It was stated that ice cream samples containing 0.2% k-carrageenan, 0.1% xanthan gum and 0.4% locust bean gum had the least protein value. It was stated that the highest hardness value was found in samples containing 0.1% k-carrageenan, 0.2% xanthan gum and 0.2% locust bean gum.

Soukoulis et al. (2008) examined the effects of using different hydrocolloids on the rheological, physical and sensory properties of ice cream samples and ice cream mixes. In this context; CMC, guar gum, sodium alginate and xanthan gum were used as primary stabilizing agents, while k-carrageenan was used secondarily. As a result of the research, it was reported that the addition of sodium alginate, xanthan gum and k-carrageenan significantly strengthened the shear-thinning behavior of the samples. It was emphasized that the presence of k-carrageenan played very important role in terms of cryoprotection.

Tekinşen et al. (2011) examined the effects of adding carrageenan and xanthan gum to konjac gum in ice cream production. In this context; a total of five different experimental groups were formed by adding 0.8% salep, 0.35% konjac gum, carrageenan and xanthan gum to form 10% and 20% of the konjac gum. It was determined that the use of konjac gum together with other stabilizers increased the viscosity value, first drop and melting times in ice cream. It was stated that the addition of 10% carrageenan and xanthan brought the volume increase of the ice creams to the same level as the control sample. In addition,; it has been reported that the use of stabilizers in ice creams improved sensory properties such as color-appearance, texture-consistency and taste-odor.

Pintor and Totosaus (2012) examined the effects of the interaction of i-carrageenan and l-carrageenan with locust bean gum and CMC on freezing properties. In this context, stabilizers at the rate of 5.0% were used in the ice cream samples and the effects of hydrocolloid mixtures on the freezing properties (base viscosity, volume increase, hardness, first drop and complete melting times) were determined. As a result of the research, it was reported that l-carrageenan used at the same rate created higher viscosity values than i-carrageenan. However, it was stated that mixtures with a higher ratio of i-carrageenan increased the melting properties of ice creams resulting in a softer texture. It was stated that the interaction between locust bean gum and CMC and i-carrageenan reduced the formation of ice crystals during ice cream production and improved the melting properties and structure of the formulated ice cream.

Bahram Parvar et al. (2013) examined the use of different stabilizers as well as the presence of k-carrageenan in ice cream samples. For this purpose, as a stabilizer; 96.94% basil seed gum, 3.06% guar gum and 0%, 0.01% and 0.02% k-carrageenan were used. As a result of the research; it was stated that the melting rate of ice creams increased with storage, but the addition of k-carrageenan did not have a significant effect on this factor. As a result, it was

reported that all stabilizers used were suitable stabilizers and k-carrageenan played very important role in increasing the effectiveness of these stabilizers.

Skryplonek et al. (2019) investigated the effects of using 0.05%, 0.10% and 0.15% k-carrageenan and 1.00%, 2.00% and 3.00% corn starch in lactose-free frozen yogurts; on acidity, texture, viscosity, increase in volume, melting time, color and sensory properties. As a result of the research, it was reported that the addition of stabilizer did not affect the volume increase and melting properties of frozen yogurt, but it changed the pH, titration acidity and color values significantly. It was stated that the highest hardness and stickiness values were found in frozen yogurt samples containing 0.15% k-carrageenan. In addition, it was stated that the use of k-carrageenan increased the sensory acceptability of frozen yogurt samples and improved their textural properties. As a result, the use of k-carrageenan in the production of lactose-free frozen yogurt was recommended in terms of obtaining a quality and nutritious product

Suryani et al. (2019) examined the effects of different carrageenan concentrations on ice cream properties. In this direction; four different ice cream samples were produced: k-carrageenan added, i-carrageenan added, k-carrageenan and i-carrageenan added and gelatin added control sample. As a result; it was stated that the combination of k-carrageenan and i-carrageenan had low fat, high protein and fiber content, and this combination could be used instead of gelatin in ice cream making.

### **Conclusion**

Strong interaction of carrageenan with milk proteins and compatibility with many dairy products shows that it is an important component for the dairy industry. The use of naturally sourced products such as carrageenan should be encouraged instead of using artificial products in this area. Apart from dairy technology, it is used in many areas such as food, medicine and cosmetics. The absence of toxic effects and studies showing that it is beneficial for health encourages the use of carrageenan. It can be used as a stabilizer and fat substitute especially in products such as cream, yogurt, ayran, ice cream and low fat cheeses where textural defects can often be seen. Thus, the texture problem, which is one of the major quality defects for the dairy industry, can be avoided. It increases the quality as it reduces the formation of surface fat in products such as milk powder and cream. With the use of carrageenan, fat-reduced products can be obtained. Thus, products with lower calories, more beneficial and healthier in terms of nutrition can be developed. It is possible to reduce the salt content by using carrageenan in cheeses that may contain high amounts of salt. Thus, a more beneficial product can be obtained in terms of health. It enables the production of better quality ice cream in terms of physical and sensory aspects by decreasing melting rate, increasing viscosity, reducing formation of ice crystals and strengthening cutting-thinning behaviors.

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## RÜYALARI ÇALINAN İNSANLARIN ÜLKESİ: MOZAMBİK

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### Giriş

Afrika yerli inançlarında yasak meyvenin yenilmesi hikâyesi vardır. Mozambik ve Kongo'daki bazı kabilelerin inançlarında, Cennet yaratılınca "tahu" ağacının meyvesinin yenilmemesi konusunda yasağı çiğneyen insanoglu meşakkatli bir hayatı yaşamak zorunda bırakılmıştır. Bu meşakkatli hayat düşüncesi tam da Mozambik ve çevresindeki bölgeler için geçerli.

### Araştırmanın maksadı ve yöntemi

Bu araştırma literatür taraması yapılmak suretiyle, Mozambik ve çevresindeki yaşanan olaylar ve sorunlara yoğunlaşmayı ve yaşananlardan ve açıklamalardan yararlanarak, bu bölgelerdeki karışıklık ve nedenlerini ortaya koymayı ve çözüme yönelik önerileri sunmayı amaçlamaktadır.

### Bulgular

İsviçreli Psikiyatrist Carl Gustav Jung (1875-1961), Doğu Afrika'da bir kabile ile ilgili araştırmalar yaparken, bu insanların "rüya görmediklerini" söylemeleri karşısında şaşırıldığını ifade eder. Konuyu derinliğine araştırdığında ise değişikliğin yabancı güçlerin bu bölgeye geldiklerinde başladığını, İngilizlerin bu bölgeye gelişleriyle birlikte artık anlamlı rüya görmediklerini ve sorumlu İngiliz Yönetim Memurlarının kabilenin davranışlarını yönlendiren "büyük rüyalar" görme işlevini devraldıklarını öğrenir (Jung, 2017:48). Oysa Afrika "Bantu" inancında insanların atalarıyla iletişimde en önemli işlevi rüyalar görüyordu. Diğer taraftan İnsan umutsuzluğu benimsemişe kendi kaderini değiştirmek için hiçbir çabanın içine girmez. Jung, insanın çevresini değiştiremeyeceğini, ancak kendisinin yaratmadığı dünya üzerindeki koşullarda, kendi doğasıyla barışarak mutlu yaşayabileceğini söylemişti (Jung, 2015:53).

Mozambik 31 milyonu aşan nüfusa sahip ve birçok Afrika ülkesi gibi rüyaları elinden alınmış bir ülke. Ülke eski bir Portekiz sömürgesi. Gerek sömürge dönemi gerekse sonraki dönemde yapılan müdahaleler sonucu bir türlü istediği rüyayı göremeyen bir ülke. Genelde ülkenin kuzeyinde yer alan topraklarda yaşayan Müslümanlar ise sömürge dönemi ve sonrasında sıkıntılar yaşayan ve adeta yok sayılan bir grubu oluşturuyor. Oysa bir ülkenin dini ve kültürel zenginliği uygun şekilde değerlendirilirse o ülke için büyük bir zenginliğe dönüşebildiği görülmüştür.

Bu açıdan değerlendirildiğinde Mozambik'te gelir dağılımında ve aidiyet duygusunda bazı sorunların olduğu görülüyor. Doğal kaynaklara ve verimli topraklarına rağmen ülkenin kaynakların tam olarak ülkede yaşayanlara yansımadağı bir gerçek. Kullanılan kısımdan ise toplumun en fazla %20 kadarı yararlanıyor ve geri kalan %80'lik kesim bundan mahrum gözüküyor. Ülkenin kuzeyinde yaşayanlar ise bu kaynaklardan hemen hemen hiç istifade etmiyor. Bu bölgede genelde Müslüman nüfus yaşıyor ve refahtan en az faydalanan kesim. Bu

bölgelerde işsizlik had safhaya ulaşmış durumda. Devletlerine olan güven ise en düşük düzeyde ve her şeyin ötesinde umutları kaybolmuş durumda.

Sosyolojik açıdan bu dengesiz durum düzelmediği sürece sıkıntıların bitmeyeceği açık. Hele hele başka ülkelerin uzmanlarının bu ülkeyi dizayn etme çalışmalarının bir sonuca varması zaten mümkün değil. Çünkü uygulamalardan açıkça görülüyor ki, bu planların temelindeki düşüncede, Mozambik'te istikrar ve gelişmenin sağlanmasından ziyade "nasıl en ucuz şekilde bu kaynakları ele geçirebilirim" arka planı var.

Operasyonlar için neredeyse 6 milyar avro ayrılmış durumda. Bu Mozambik'in yıllık ihracatının çok üstünde. Ancak uygulamada operasyonlar için harcanacak miktar en az 5 katına çıkacak. Belki de bu para bölgenin kalkınmasına harcansa terör ve şiddeti yaratan koşullar engellenecek ve sorun kendiliğinden sona erecek. Niyet iyi olduktan sonra çözüme ulaşmak hiç de zor değil.

Ne yazık ki, çoğu zaman adaletsiz bir düzen; ölüm, çaresizlik ve sefaletle beslenen ve çoğu zaman sahte bir "yüce gönüllülük" kılıfına gizlenerek karşımıza çıkıyor. Oysa gerçek "yüce gönüllülük" tam olarak sahte yardımseverlikle beslenen nedenleri yok etme mücadelesidir. Gerçek iyilik ister birey isterse halkların yardımına onları kendisine yeter hale getirerek yardım edene daha az gereksinim duyacak hale getirmektir (Freire, 2000:27). Oysa yardımseverlik kılıfının arkasına sığınarak müdahale isteyen ülkelerin Mozambik'te askeri güç kullanma düşüncesinin nereye varacağı şimdiden belli. Askeri üsler kurulacak, yabancı askerler gelecek, savaş uçakları ayırım gözetmeden bombalar yağdıracak, insanlar evlerinden yurtlarından olacak ve bazıları bu insanlara ait kaynakları alıp giderken, bu ülkenin çocukları yıllar sonra her yerde olduğu gibi acılar içinde ellerinden her şeyleri alınmış bir şekilde ortada öylece kalacak.

Kitle hareketleri genelde aynı düşünce tarzındaki kişilere odaklanır. Umutsuzluğu körükleyenler kitleleri de yanına alır. Zorbalığa ve haksızlığa karşı mücadele insanları her zaman kendisine çeker. Zamanla macera arayanlar dahi bu harekete katılır. Hayal kırıklığına uğramış kişiler içinde buldukları durumu düzeltmek isterler. Onlar için hareket vaat ya da umut edilene bir yürüyüştür. Kendisini değersiz gördüğü oranda uğruna savaşıacağı değerler bulur ve bu değerleri yüceltir. Ezilmiş bir toplumda özellikle gençlerin mucizelere inanmak, bir grubun üyesi olarak kutsal bir amaç uğruna kendi kişiliklerini bir tarafa bırakmak eğiliminin son derece güçlü olduğu görülür (Hoffer, 2007: 5).

Zulme karşı tepki ve öfke dışı karşı şiddet olarak yansıyabilir. Ezilenler er ya da geç kendilerini bu hale getirenlerle mücadeleye girer. Sırf müdahaleye zemin hazırlamak için DAESH algısı yaratmak yüzeysel bir değerlendirmeden ve sorunu daha da büyütün müdahalelerden öteye gitmiyor. Bunun örneği birçok bölgede görüldü ve şiddet azalmak yerine daha da büyüdü. Bir kısım analist yapılan araştırmalara dayanarak Mozambik'te bu şekilde şiddet yaratan gruplara genelde umutsuz fakir gençlerin katıldığını ve IŞİD bağlantısı konusunda elde yeterli delil bulunmadığını söylüyor (Ehlert, 19 Şubat 2021). Yapılan araştırmalara göre grubun küresel olmaktan ziyade daha yerel ve tepkisel dinamiklerle hareket ettiği göze çarpmaktadır.

Oysa hiçbir inceleme yapılmadan DAESH deyip geçmek belki de en tembel ve kolay çözüm gibi duruyor. Oysa Mozambik'te yaşanan sorunlar konusunda çeşitli araştırmalar var ve bu bilimsel raporlara göre huzursuzluk ve sıkıntıların kaynağı sadece bu bölgede terör yaratan gruplara bağlanamayacak kadar derin. Örneğin bu bölgeyi ve insanları iyi tanıyan ve sorunun kaynağı konusunda araştırmaları bulunan Mozambikli sosyolog Joao Feijo'ya göre yerel halk bölgedeki kalkınmadan eşit şekilde yararlanamıyor, dışarıdan gelenler yerli halk arasında çok büyük bir eşitsizlik yaratılmış durumda. Bu durum öyle bir düzeye ulaşmış

durumdaki beklentiler karşılanmıyor, açlık ve sefalet özellikle genç nüfusu şiddet yanlısı gruplara yönlendiriyor. Güvenlik güçleri ise terörü önlemek adına halka ve insanlara çok kötü muamele ediyor ve son derece acımasız davranıyor. Bu ise giderek halkta bir tepki yaratıyor. Din toplum yaşamını düzenleyen en önemli kurumlardan birisi ve Mozambik bölgesinde de bu durum geçerli. Eğer Müslüman toplumun inançlarına saygı gösterilir ve güçlü bir şekilde örgütlenmelerine izin verilirse bu her alanda Mozambik'in gelişmesine fayda sağlayacağı gibi bölgeye terör örgütlerinin girişi de zaten bu teşkilatlanma sayesinde kolayca önlenir. Oysa yapılan bunun tam tersi. Bugün olayların meydana geldiği Cabo Delgado bölgesinde Müslümanları organize eden Abul Rogo 2012 yılında eşini hastahaneye götürürken aracına yönelik suikast sonucu öldürüldü ve bu Müslümanlar arasında tepkilere neden oldu. Burada kendilerine yaşam hakkı tanınmayacağına dair bir inançtan kaynaklanıyordu ve 2017'de bazı grupların bu bölgeye girmesinde daha iyi anlaşıldı. Oysa kendini özgürce ifade eden ve inançlarını yaşayan toplumlarda bu tür faaliyetlere katılım bir yana şiddetin her türlü doğa ortamı içinde zaten reddedilecekti.

### Sonuç ve teklifler

Sonuç olarak, doğruların yanlış, yanlışların doğru gibi kabul ettirilmeye çalışıldığı günümüz dünyasında modern dünyanın bir bunalım geçirdiği açıkça görülüyor ve az çok derin bir dönüşümün şu ya da bu şekilde kısa vadede kendisini göstereceği açık (Rene, 2005:30). Bu yanlışlığın en fazla yaşandığı bölgelerin başında ise Afrika kıtası geliyor. Bu açıdan bakıldığında antropologlar ilk insanın Afrika kıtasından Mozambik kuzeyinden ve Kenya civarından dünyaya yayıldığını kabul eder. Muhtemelen insanın ortaya çıkışından sonraki 5 ya da 6 milyon yıl insanlık tarihi Afrika'da geçti (Diamond, 2010: 30-39). Mozambik'in bulunduğu bölgenin hemen kuzeyinde yer alan bölgede 6 milyon yıl öncesine ait insan çene kemikleri bunu doğrular (Alpar, 2014: 2). Mozambik zengin kaynaklara sahip ve insanların inancın ve düşüncesi ne olursa olsun tarihin derinliklerinden gelen büyük kültürü ile barış içinde bir arada yaşatacak güzel bir ülke. Kimsenin dışlanmadığı ve demokrasi ve insan haklarının tam olarak uygulandığı böyle bir ülkede herkes aynı doğrultuda Mozambik'in refahı ve gelişmesi için çalışacağı kesin. Bunun için de öncelikle ülkeyi eskiden olduğu gibi karıştırmak ve kaynaklarına el koymak isteyen güçlerin bu ülke üzerinden bir an önce elini çekmesi de gerekiyor.

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**NESNELERİN İNTERNETİ KULLANILARAK DIŞ MEKAN'DA  
HARİTALANDIRMAYA YENİ BİR YAKLAŞIM İLE GERÇEK  
ZAMANLI ARAÇ/PERSONEL TAKİP VE GÜVENLİK SİSTEMİNİN  
GÖMÜLÜ TASARIMI VE GELİŞTİRİLMESİ: BİR UYGULAMA  
ÇALIŞMASI**

**DESIGN AND DEVELOPMENT OF EMBEDDED REAL-TIME  
VEHICLE/PERSONNEL TRACKING AND SECURITY SYSTEM  
WITH A NEW APPROACH TO OUTDOOR MAPPING USING  
INTERNET OF THINGS: AN IMPLEMENTATION STUDY**

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**Özet**

Günümüzde mobil nesnelerin takibi bir zorunluluk haline gelmiştir. Bu ihtiyacı karşılamak için çeşitli çözümler geliştirilmiştir. Özellikle Mobil İletişim için Küresel Sistem (GPS) ve Küresel Konumlandırma Sistemi (GSM) teknolojisini kullanan bir hibrit dijital haritalama sisteminin geliştirilmesi bu çözümlere büyük katkı sağlamıştır. Ayrıca son yıllarda kolaylık, düşük maliyet ve verimlilik nedeniyle Nesnelerin İnterneti (IoT) tabanlı teknolojilerin kullanımı artmaya başlamıştır. Bu çalışmada, GSM/GPS, Radyo Frekansı Tanımlama (RFID) kart okuyucuları, Yerleşik Tanılama (OBD) ve enerji modülleri IoT teknolojileri ile birleştirilerek gelişmiş bir Araç/Personel Takip ve Güvenlik (VPTS) sistemi geliştirilmiştir. Veri işleme amaçları için gömülü sistem teknolojileri, mikro denetleyiciler ve Linux tabanlı mikro bilgisayarlar kullanılmıştır. Geliştirilen modüller sayesinde araçların lokasyon bazlı takibi, araçtaki personel ve görevlilerin takibi, acil durumlar için panik (SOS) butonu ve aracın teknik verilerinin izlenmesi için gelişmiş bir sistem tasarlandı. Sistem, açık kaynaklı yazılım ve donanım teknolojileri kullanılarak geliştirilmiştir. Geliştirilen sistemde Coğrafi Bilgi Sistemi (CBS) yazılımı üzerinden araç konumunun temel CBS hesaplamaları



yapılmaktadır. Modüllerden elde edilen veriler anlık GIS hesaplamaları ve web tabanlı takip sistemi ile gönderilerek detaylı araç ve personel takibi, analizi ve raporlaması yapılabilmektedir. Geliştirilen sistem ile araçların CBS teknikleriyle gerçek zamanlı izlenebildiği, araç ve personel güvenliğini artırmak için hızlı, güvenilir ve etkili bir sistem olarak kullanılabilmesi gösterilmiştir. Önerilen sistem, kablosuz iletişim, konum belirleme ve gömülü uygulamalar dahil olmak üzere çeşitli hibrit teknikler kullanılarak geliştirilmiştir. Bu çalışma, VPTS sisteminin arzu edilen bir amacına ulaşmak için birkaç modern teknolojinin bir uygulamasını sunmaktadır.

**Keywords:** VPTS, GPS, GSM, IoT, RFID, OBD.

### **Abstract**

Nowadays, tracking mobile objects has become a necessity. Various solutions have been developed to meet this need. Especially, the development of a hybrid digital mapping system using the Global System for Mobile Communications (GPS) and Global Positioning System (GSM) technology has made a great contribution to these solutions. Besides, the use of Internet of Things (IoT) based technologies has started to increase in recent years due to the convenience, low cost, and efficiency. In this study, an advanced Vehicle/Personnel Tracking and Security (VPTS) system by combining IOT technology with GSM/GPS, Radio Frequency Identification (RFID) card readers, On-board Diagnostics (OBD), and energy modules is developed. Embedded system technologies, microcontrollers, and Linux-based microcomputers have been used for data processing purposes. Thanks to developed modules, an advanced system has been designed for location-based tracking of vehicles, tracking of personnel and officers in the vehicle, panic (SOS) button for emergencies, and the monitoring technical data of the vehicle. The system has been developed by using open-source software and hardware technologies. In the developed system, basic GIS calculations of the vehicle location are performed through the Geographic Information System (GIS) software. The data obtained from the modules are sent by instant GIS calculations and a web-based tracking system, so detailed vehicle and personnel tracking, analysis, and reporting can be accomplished. With the developed system, it has been shown that vehicles can be monitored in real-time with GIS techniques and can be used as a fast, reliable, and effective system to increase vehicle and personnel safety. The proposed system has been developed by using several hybrid techniques including wireless communication, geolocation, and embedded applications. This study presents an implementation of several modern technologies to achieve a desirable goal of the VPTS system.

**Keywords:** VPTS, GPS, GSM, IoT, RFID, OBD.

## **1. GİRİŞ**

Gelişen ve hızla nüfusu artan kalabalık şehirlerde güvenlik önemli bir gereklilik haline gelmiştir. Günümüz dünyasında, ülkelerdeki suç oranlarının artmasıyla birlikte, insan can güvenliğine ve araç güvenliğine karşı alınan tedbirlerin önemi de giderek artmaktadır. Ayrıca günümüzde birçok kurum ya da kuruluş, filo işlevleri, yönlendirme, sevkiyat ve güvenlik gibi operasyonel amaçlara bağlı olarak araçları uzaktan izleme, kontrol etme ve yönetme ihtiyacı duymaktadır. Bu nedenle geliştirilen VPTS sistemi, maddi ve insan kayıplarını önlemek için

elektronik bir sistem olarak tasarlanmış olup, mevcut durumun aktif ya da pasif olarak izlenmesini ve raporlanmasını sağlamayı amaçlamaktadır.

Modüler bir araç ve personel takip sisteminin CBS ile desteklenmesi, sistem kullanıcısının veriler üzerinde mekânsal analizler yaparak ve konumsal verileri çok daha verimli kullanarak doğru kararlar almasını sağlar. Bu nedenle geliştirilen sistem, araçları ve personeli güvenli bir şekilde takip etmek isteyen kuruluşlara raporlama ve idari yardım sağlamayı da amaçlamaktadır. Konum belirleme sistemi, elektronik cihazların olduğu donanım kutusu (araca yerleştirilir), harita üzerinde gerçek zamanlı konum tespiti ve görselleştirme sağlayan Google harita sunucusu ile tüm sisteme her yerden erişilebilmesini sağlayan bir CBS web yönetim platformundan oluşur. IOT, maliyet açısından daha uygun, boyut olarak daha kullanışlı hale getirilen mevcut teknolojilere uyarlanma kabiliyetinden dolayı son yıllarda çok popüler olmuştur. Bu çalışmada, hassas konum bilgisi sağlayan GSM/GPRS ve GPS modülleri, araç verilerinin alınmasını sağlayan OBD modülü, RF teknolojisini kullanarak nesne tanımlama yapabilen RFID modülü, birbirleri ile haberleştirilerek personel takibi, araç takibi ve dış haritalama için araçlara entegre edilecek şekilde tasarlanmıştır. Geliştirilen sistemin prototipi Şekil 1'de gösterilmiştir. Ayrıca sistem mimarisini sunan blok diyagram Şekil 2'de gösterilmiştir.

Sunulan çalışmada, bir araç takip ve güvenlik sisteminin donanım ve yazılım tasarımı verilmiştir. Tasarlanan sistemde GPS-GSM ve RFID teknolojileri kullanılarak araçların ve yolcuların harita üzerinde konumlarının takibi ve tespiti sağlanmaktadır. Ayrıca, CBS analizi ve raporlamasına izin veren web tabanlı GUI sisteme dahil edilmiştir. Sunulan sistemde coğrafi koordinatlardaki araç konum bilgilerinin düzlemsel koordinatlara dönüştürülmesi ile OBD modülü üzerinden gerçek hız okuma, RFID modülü üzerinden yolcu tespiti, GSM modülü üzerinden acil SMS alma gibi lokasyon bazlı hesaplamalar ve raporlama yapılabilmektedir. Belirtmekte yarar vardır ki, bu çalışmada kullanılan algoritmalar ve teoriksel hesaplamalar anlatılmamış ve modüllerin bir arada çalışmasını sağlayan anakart devre çizimleri gösterilmemiştir. Mümkün olduğunca, ürün tasarımı adımları üzerinde durularak ürün geliştirilmesine odaklanılmıştır.



Şekil 1: Araç/Personel Takip ve Güvenlik (VPTS) Sisteminin Prototipi

### 1.1. Geliştirilen Sistemin Amaçları ve Avantajları

Bu çalışma, bir nesnenin, kişinin veya başka bir varlığın kesin konumunu belirlemek için GPS kullanan bir izleme sistemi uygulamasıdır. Bu çalışmada, GPS ve GSM gibi çeşitli teknolojiler kullanılarak herhangi bir aracın takibi ve konumlandırılması için kullanılan gömülü bir araç takip sisteminin tasarımı önerilmektedir. Sistemin temel amacı tüm araçların, sürücülerin ve yolcuların takibini ve güvenliğini sağlamaktır. Geliştirilen VPTS sistemi, gerçek zamanlı parametrelerle nesnelerin takip edilmesini ve gözlemlesini sağlar, devam eden yolculuklar hakkında en güncel bilgileri sunar. Sistem, güçlü yönetim sağlamak için kablosuz teknolojilerden yararlanır ve sistem yetkisiz araç kullanımını da azaltır.

### 1.2. Gömülü Sistem Kısıtlamaları ve Problemleri

Gömülü aygıtlar, hesaplama yetenekleri, bellek ve güç tüketimi açısından sınırlı olan küçük işlemcilerle sahiptir. Bu nedenle, güvenlik ilkelerinin ve protokollerinin kullanımı sınırlıdır. Çoğunlukla sadece sınırlı olanaklara ve harici iletişim için sınırlı bant genişliğine sahiptir. Yani donanım ve yazılım güncellemeleri sınırlıdır. Tasarım ve geliştirme aşamalarında bu kısıtlamalar önceden göz önüne alınarak sonradan oluşabilecek problemlere önceden tedbir alınabilir. Bu çalışmada kullanılan GPS modülü, sinyalin doğruluğu ve hassasiyeti kriterlerini yüksek düzeyde karşılamalıdır. Mikrobilgisayar, işlemci üzerinde çalışan parçalı işlemleri zorlanmadan yapabilmeli ve modüller ile uyum içinde çalışmalıdır. Mikrodenetleyici seçerken RAM/ROM boyutları ve bit işleme değerleri dikkate alınmalıdır. Regülasyon devresi ve UPS modülü uyumlu çalışacak şekilde tasarlanmalıdır. UPS modülü, sistemin kesintisiz olarak istenilen seviyede çalışmasını sağlayarak mikrobilgisayarın akım ve voltaj dengesini gerçekleştirebilmelidir. RFID modülleri, organizasyonların yaygın olarak kullandığı frekansta çalışan RFID kartları dikkate alınarak seçilmelidir. OBD modülü, sistem gereksinimlerini karşılayabilen Bluetooth iletişim protokolünü desteklemelidir.



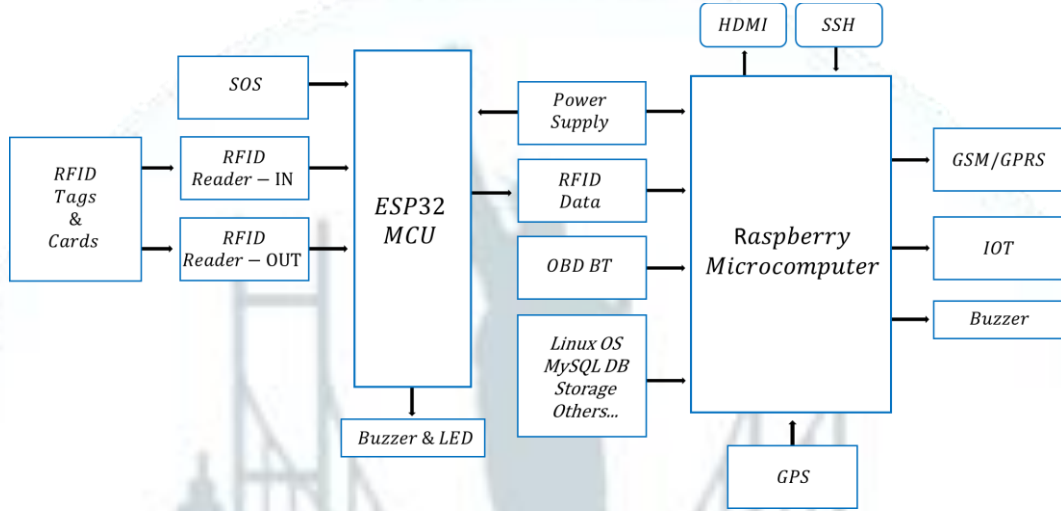
Şekil 2: Araç/Personel Takip ve Güvenlik (VPTS) Sistem Diyagramı

## 2. LİTERATÜR TARAMASI VE BENZER ÇALIŞMALAR

Araçların gerçek zamanlı takibi ve yönetimi son yıllarda araştırmacıların ilgi alanı olmuş ve bu alanlarda birçok araştırma ve geliştirme tamamlanmıştır. Özellikle GPS ve dijital haritalama sistemleri bu çözümlere büyük katkı sağlamıştır (Medany ve diğ., 2010; Jie ve diğ., 2012; Verma ve Bhatia 2013; Brown ve diğ., 2007). Günümüzde GPS/GSM/GPRS tabanlı uygulamalar günlük yaşamın birçok alanında kullanılmak üzere geliştirilmiştir (Aydın ve Bay, 2016; Khedher, 2011). Dış mekan haritalama ve nesne izleme için çeşitli gömülü iletişim teknolojileri sunulmuştur (Lin ve diğ., 2004; Fan ve diğ., 2006; Hsiao ve Chang, 2006). Pek çok amaç için geliştirilen araç takip sistemleri çok ihtiyaç duyulan ve birçok alanda kullanılan bir sistem haline gelmiştir. Bu tür sistemler, araçların yakıt tüketiminin kontrolünde, akıllı ulaşım sistemlerinde, teslimat hizmetlerinde, yangın ve ambulans araçlarının uzaktan yönlendirilmesinde ve araçlara karşı işlenen suçların önlenmesinde kullanılmaktadır (Chadil ve diğ., 2008; McDonald ve diğ., 2006; Maurya ve diğ., 2012). Araç takip sistemlerini mevcut bilgi sistemlerine entegre ederek daha gelişmiş sistemler üretme çabaları devam etmektedir (Khoury ve Zgheib, 2018). Gelişen mobil iletişim teknolojileri sayesinde, araç takip ve yönlendirme sistemlerinin uygulama alanları büyük ölçüde genişlemiş, konumsal verilerin çok daha verimli kullanılmasını ve veriler üzerinde mekânsal analiz yapılmasını sağlamıştır (Stillwell ve Clarke, 2003). Bu çalışmada, literatür taramasında incelenen çalışmalarda görülen eksiklikler ve yetersizlikler göz önüne alınarak çözüm yolları sunan hibrit teknoloji bir sistem geliştirilmiştir.

### 3. ARAÇLAR VE YÖNTEMLER

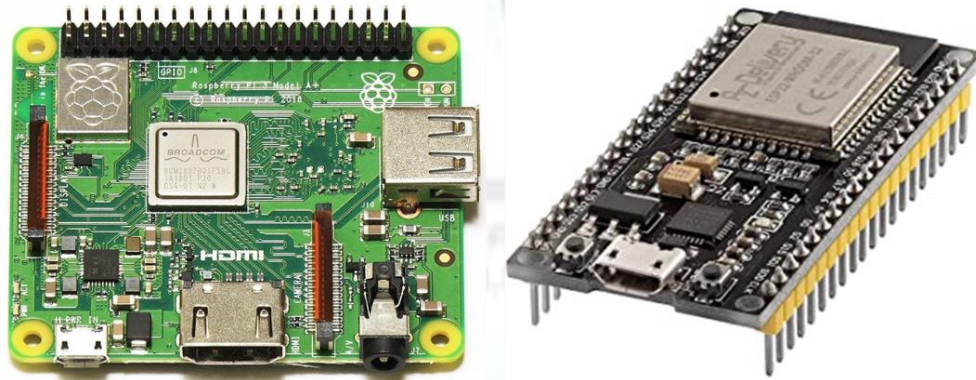
Bölüm 1.2’de açıklanan gömülü sistem tasarım kısıtlamaları ve problemler dikkate alınarak sistem tasarımı yapılmıştır. Modüler bir yapıda tasarlanarak geliştirilen VPTS sistemin simülasyonu PROTEUS yazılımı ile gerçekleştirilmiş ve testleri yüksek başarımla oranın ile tamamlanmıştır. Sistemin yazılım ve donanım geliştirme ve tasarım aşamaları bu bölümde açıklanmıştır. Tasarlanan sistemin blok diyagramı Şekil 3’de sunulmuştur.



Şekil 3: Tasarlanan sistemin blok diyagramı

#### 3.1. Donanım Bileşenleri ve Tasarımı

Geliştirilen sistemin donanımı, aracın kontrol ünitesine bağlanarak araç hakkında bilgi toplayan ve bu verileri GPS/GSM modülü aracılığıyla merkezi sunucuya gönderen elektronik bileşenlerdir (Kodavati, 2011). Esnek bir yapı sağlamak için geliştirilen sistemin devre bileşenleri ve modülleri eklenecek veya değiştirilecek şekilde tasarlanmıştır.



Şekil 4: Raspberry-Pi 3A+ Microcomputer & NodeMCU ESP32 Mikrodenetleyici

##### 3.1.1. Raspberry Pi-3 Geliştirme Kartı

Raspberry Pi-3, kredi kartı boyutunda, giriş/çıkış pinlerine sahip tek kartlı bir mikrobilgisayar olup, elektronik geliştirme projelerinde sıklıkla kullanılmaktadır. Açık kaynak kodlu çalışmaların yapılabildiği Raspberry Pi, Linux tabanlı özel bir işletim sistemine sahiptir. Bu çalışmada küçük boyutu, kolay taşınması ve ekonomik olması nedeniyle tercih edilmiştir. Bu

çalışmanın ihtiyaçları doğrultusunda mikro denetleyici ile seri veri yolu üzerinden haberleşmek üzere USB portlu 3A+ modeli seçilmiştir. Pi-3A+ geliştirme kartının teknik özellikleri Tablo 1'de sunulmuştur. Şekil 4, Raspberry Pi-3A+ kartını göstermektedir.

### 3.1.2. NodeMCU ESP32 Mikrodenetleyici

NodeMCU ESP32, Wi-Fi ve Bluetooth modüllerini içeren bir geliştirme kartıdır. Bu çalışmada ESP32 mikrodenetleyicinin Raspberry mikrobilgisayar ile iletişim kurması ve modüllerden veri okuması için çeşitli kütüphaneler kullanılmıştır. Arduino IDE ile programlanmıştır. RFID okuma modülleri ile kartlardan alınan kimlik bilgileri mikrobilgisayara gönderilir ve ESP32 kartı iletim sırasında karışıklığı önlemek için tampon bellek olarak kullanılır. Cihazların birbirleri ile haberleşmesi sırasında kesinti olmaması, veri kaybı olmaması, ayrı bir güç kaynağı kullanılmaması ve hızlı iletişim için USB üzerinden bağlantı sağlanmıştır. NodeMCU ESP32 mikro denetleyicisi Şekil 4'te gösterilmektedir.

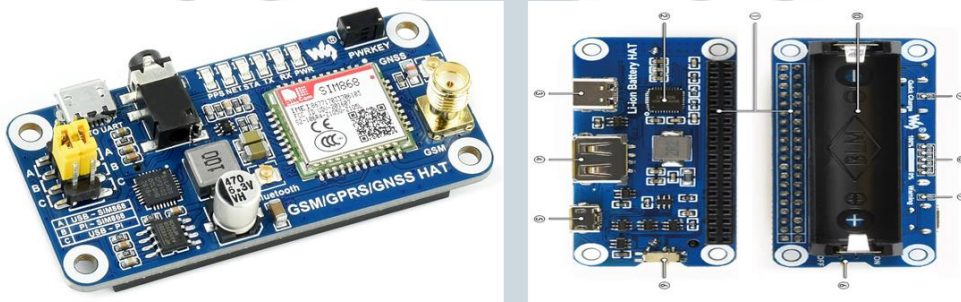
**Tablo 1:** Raspberry-Pi 3A+ kartının teknik özellikleri

Microprocessor	Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC
Processor Operating Voltage	3.3V
Raw Voltage input	5V, 2.5A power source
Maximum current through each I/O pin	16mA
Maximum total current drawn from all I/O pins	54mA
Flash Memory (Operating System)	Micro SSD memory card (32GB)
Internal RAM	512Mbytes LPDDR2 SDRAM
Clock Frequency	1.4GHz
GPU	Dual-Core Video Core IV® Multimedia Co-Processor, Provides Open GLES 2.0, hardware-accelerated Open VG, 1080p H.264 decode.
Wireless Connectivity	2.4GHz and 5GHz IEEE 802.11.b/g/n wireless LAN, Bluetooth 4.2/BLE
Operating Temperature	-50°C to +85°C
USB	2.0 (single socket)
Audio Output	3.5mm Jack and HDMI
Video output	HDMI
Camera Connector	15-pin MIPI Camera Serial Interface (CSI-2)
Display Connector	Display Serial Interface (DSI) 15-way flat flex with two data lanes and a clock lane.
Memory Card Slot	Push/Pull Micro SDIO

### 3.1.3. GSM/GPS Modülü

Bu çalışmada, araçlardaki personel, konum ve araç verilerinin hızlı ve güvenli bir şekilde merkezi takip sistemine anlık olarak gönderilmesi için GPS modülü kullanılmıştır. Geliştirilen sistemde koordinat bazlı araç takibi yapabilmek için uydu haberleşmesi ile konumu belirleyen bir GSM/GPS modülü kullanılmaktadır. Kullanılan bu modülde SIM karta erişim, SMS gönderme, arama yapma, ses gönderme ve veri aktarma gibi birçok teknik özellik desteklenmektedir. Bu uygulamada, GPS modülünün yönetimi AT komutları kullanılarak yapılmıştır.

Güvenlik açısından her durumda devreye giren panik butonu gibi kritik veriler de bu modül üzerinden gönderilmektedir. Bu çalışmada, küçük veri boyutu, Python 2.7 teknolojisini desteklemesi ve gerekli AT komutları için hazır kütüphaneler sağlaması nedeniyle daha düşük hızlarda haberleşme bandı olan 2G (GPRS/EDGE) teknolojisinin kullanılması yeterli görülmüştür (Telit Easy Script, 2017; Telit AT Komutları, 2016). GSM/GPS modülü olarak Raspberry-Pi uyumlu SIM868 tercih edilmiştir. Raspberry-Pi uyumluluğu sayesinde ayrı bir devre kartı imalatı veya kablo ihtiyacını ortadan kaldırır. SIM868 modülü Şekil 5'te gösterilmektedir.



Şekil 5: SIM868 2G (GSM/GPRS/EDGE) Modülü ve Raspberry-Pi UPS Modülü

### 3.1.4. UPS Modülü

UPS sistemleri, elektrik kesintileri veya dalgalanmalar durumunda devreye girerek gücün sürekli ve kararlı olmasını sağlar. Bu çalışmada, araç içerisinde bulunan sigorta kutusundan akü bağlantısı ile sisteme güç akışı sağlanmaktadır. Veri paketlerinde kesintiyi ya da bozulmayı önlemek, aracın durakladığı anda verileri iletmek için bir UPS modülü kullanılmıştır. Bu modül, şarj edilebilir pil kullanır ve araç kapalıyken sistemi korumaya devam eder. Araç çalışırken, UPS modülündeki pil de şarj olur ve tekrar kullanıma hazır hale gelir. Raspberry-Pi UPS modülü Şekil 5'te gösterilmektedir.



Şekil 6: RFID kart okuyucu modülü ve Regülatör Modülü

### **3.1.5. Regülatör Modülü**

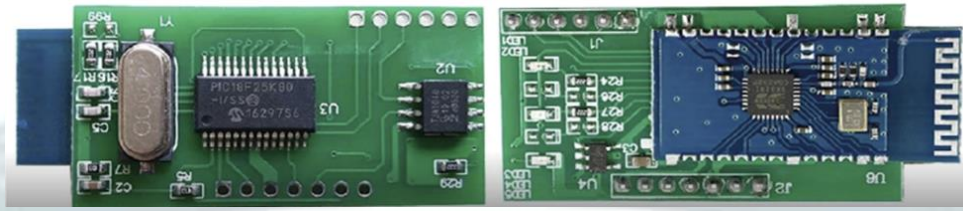
Regülatör modülünde anahtarlamalı voltaj regülatörü bulunur. Vidalı terminal giriş ve çıkış portlarına ve adaptör güç girişine sahiptir. Böylece açık uçlu kablolar modüle kolayca bağlanabilir veya adaptör portu üzerinden voltaj verilebilir. Gerilim beslemesini azaltmak veya sabit bir değerde tutmak için çeşitli projelerde de kullanılabilir. XY-3606 regülatör modülü Şekil 6'da gösterilmiştir.

### **3.1.6. Wireless RFID Kart Okuyucu Modülü**

RFID 125KHz frekansında çalışan kablosuz kart okuyucu modülü, ATMEGA8 mikrodenetleyici tarafından çalıştırılır ve Wiegand 26/34 protokollerini destekleyen bir kontrol kartıdır. Bu modül, Raspberry-Pi ile uyumludur. İletişim hızı 9600 ve 19200 baud olarak ayarlanabilir. Modül üzerinde bir konektör vardır ve bir anten bağlanabilir. Kablosuz RFID Kart Okuyucu Şekil 6'da gösterilmiştir.

### **3.1.7. OBD Modülü**

OBD, araçların veri yolu üzerinden teknik bilgi almak için kullanılan, modern araçlar tarafından desteklenen evrensel bir otomotiv haberleşme protokolüdür. ELM327 olarak da bilinen OBD modülüne, Bluetooth, Wi-Fi ve USB kablosu ile bağlantı yapılabilmektedir. Bu çalışmada geliştirilen sistem için Bluetooth iletişim teknolojisine sahip bir OBD modülü ve sistem yapısına göre modifiye edilmiş Bluetooth kart kullanılmıştır. ELM-327 OBD modülü Şekil 7'de gösterilmiştir.

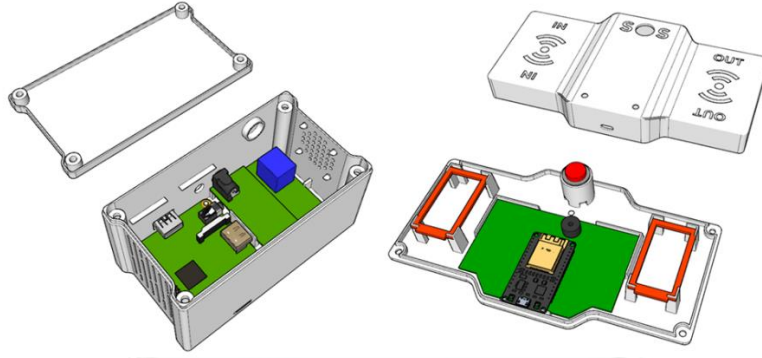


**Şekil 7: ELM-327 OBD modülü**

## **3.2. Kutu Tasarımı ve 3D Modellenmesi**

Ürün kutusu bilgisayar destekli çizim (CAD) yöntemi ile modellenmiştir. Modelleme yapılırken birden fazla yazılım kullanılmaktadır. Eskiz çalışmaları SketchUp ve nihai ürün çalışmaları SolidWorks aracılığıyla gerçekleştirilmiştir. Geliştirilen cihaz araçta kullanıldığından, kutunun yüksek sıcaklıklara uygun malzemelerden imal edilmesi gerekmektedir. Araştırma sonucunda ABS filamentinin yüksek sıcaklıklara (90-120 Santigrat) dayanma kabiliyeti sonucunda bu malzemenin bu çalışma için uygun olduğu tespit edilmiştir. Ana ünite kutusu ve yardımcı ünite kutusu modellemesi Şekil 8'de sunulmuştur.





Şekil 8: Ana ünite ve yardımcı ünite kutusu modellemesi

### 3.3. Yazılım Geliştirme ve Uygulama

Bu çalışmada, dış mekan haritalama sistemlerinin geliştirilmesinde Google Map kullanılmış, güçlü kaynağı ve kodlaması nedeniyle PHP Laravel yazılım teknolojisi tercih edilmiş ve çalışmada veritabanı yönetim sistemi olarak MySQL tercih edilmiştir. Ayrıca, bu çalışmada sistem performansını artırmak için paralel hesaplama, çoklu iş parçacıklı programlama ve işleme teknikleri kullanılmıştır. Uzak yönetim sunucusu, araçlarda geliştirilen sistemden verileri kontrol etmek ve almak için veritabanı sunucusu ve web sunucusu olmak üzere iki görevli olarak tasarlanmıştır.

#### 3.3.1. Mikrobilgisayar İşlemleri

Bu çalışmada, Linux-RaspiOS işletim sistemi Python programlama dili kullanılmıştır. RaspiOS işletim sistemi, hem başlatma süresi hem de Raspberry-Pi ile tam uyumluluğu dikkate alınarak seçilmiştir. Python programlama dili, kapsamlı dokümantasyonu ve kolay programlanabilir altyapısı nedeniyle tercih edilmiştir. RaspiOS, görev zamanlayıcı (crontab) kullanarak, bir GUI altyapısı olmadan, önyükleme sırasında otomatik olarak bir Python programını çalıştıracak şekilde tasarlanmıştır.

#### 3.3.2. GSM/GPS/GPRS İşlemleri

Aynı anda birden fazla görevi gerçekleştirmek Python Threading özelliği kullanılır. Raspberry-Pi mikrobilgisayarının 4 işlemci çekirdeğine sahip olması sayesinde asenkron yapıda programlama yapılmıştır ve aynı anda birden fazla thread işlenebilir. Bu çalışmada, birden fazla modülden gelen bilgiler, farklı çekirdek ve kod parçacıkları ile işlenmiştir. SIM868 GPS Modülü, RFID ve OBD modülleri için 3 farklı iş parçacığı oluşturulmuştur. SIM868 Modülü için programlanan kod blokları, 2G modem bağlantı kodlarını, GPS veri okuma kodlarını, verilerin NMEA standartlarında parçalanmasını ve merkeze 2G modem ile GPS verilerinin gönderilmesini içerir. Ayrıca diğer 2 çekirdekte çalışan OBD ve RFID verileri thread ile okunur ve 2G modem ile gönderilir. SIM868 modülündeki GPS verileri NMEA standardında okunur. NMEA standardında gelen veriler üzerinden enlem, boylam koordinatları, zaman, bağlı GPS uydularının sayısı, irtifa, stabilite, fixmode vb. değerler okunur. Okunan değerler, GSM/GPRS ile gönderilmeden önce veri tabanında saklanır.

#### 3.3.3. OBD İşlemleri

OBD cihazı araçtaki OBD soketine bağlanır ve veriler OBD cihazı içerisindeki Bluetooth bağlantısı ile alınır. OBD kodlarının çalıştığı işlemci çekirdeğindeki çalışma süresi, hızı, motor

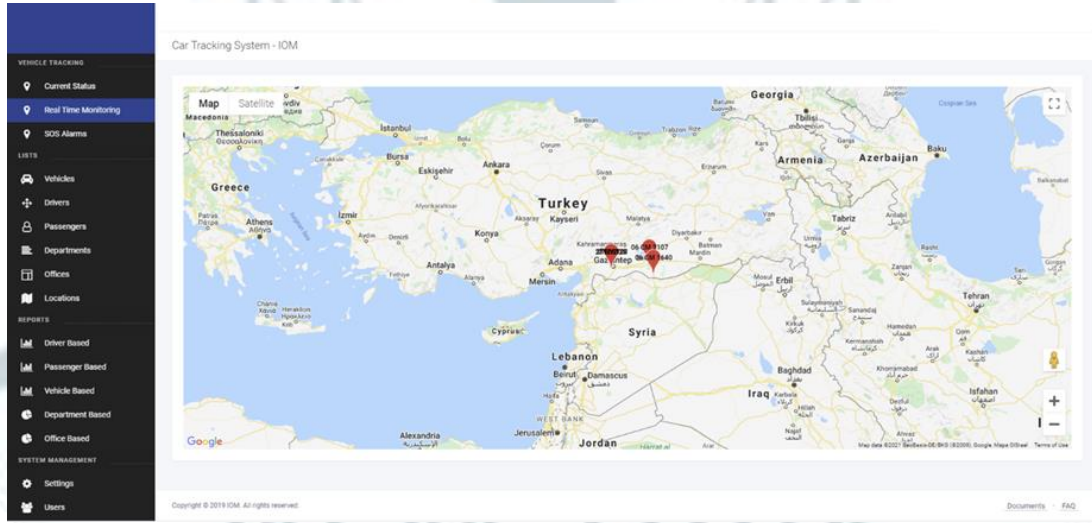
RPM değeri ve yakıt durumu araçtan alınır ve birinci işlemci çekirdeğindeki 2G modem değişkenlerine gönderilir.

### 3.3.4. RFID İşlemleri

Bu çalışmada, 2 farklı (giriş, çıkış) RFID modülünün verileri ESP32 mikrodenetleyicide saklanır. Verilerin okunması ve gönderilmesi için Seri/USB üzerinden mikrodenetleyici ile iletişim kurulur, daha sonra bu veriler mikrodenetleyiciden silinir. Mikrobilgisayar açıldıktan sonra cihazdan verilerin okunması ve okunan verilerin silinmesi için gerekli kod parçacıkları hazırlanır. Bu görevler için, C programlama dili ile CP2104 programlanabilir çipler kodlanmıştır.

### 3.3.5. Mikrodenetleyici İşlemleri

ESP32'nin bu çalışmadaki görevleri genel olarak şöyledir. 2 farklı (giriş, çıkış) RFID modülünün sürekli dinlenmesi, kart okunduğu takdirde RFID verilerinin saklanması, aynı anda birden fazla okuma olasılığının engellenmesi ve sesli uyarıların verilmesidir. Veriler, mikrodenetleyicinin belirli zaman dilimlerinde gönderdiği okuma ve silme komutları ile mikrobilgisayarlara aktarılır. Bu işlemler için Raspberry Pi ve ESP32 USB soketi ile haberleştirilir.



Şekil 9: Web tabanlı GUI ve merkezi yönetim yazılımı

### 3.3.6. Grafik Kullanıcı Arayüzü (GUI) ve Merkezi Yönetim

Merkezi izleme sistemi, özelleştirilmiş bir bulut sunucusundaki bir Ubuntu (Linux) işletim sistemi üzerinde çalışır. Yazılım altyapısı, Laravel Framework ve açık kaynaklı PHP Programlama dili kullanılarak geliştirilmiştir. Veritabanı olarak açık kaynaklı MySQL veritabanı ve Redis tamponlama sistemi kullanılmaktadır. Bulut teknolojisinin avantajları kullanılarak araç ve veri artışına göre işlemci sayısı ve ram kapasitesi ayarlanabilmektedir. Sistem, mobil cihazlarla uyumlu olacak şekilde tasarlanmıştır. HTML5 ve React altyapısı ile GUI iyileştirmeleri yapılmıştır. Gerçek zamanlı izleme web socket teknolojileri kullanılarak gerçekleştirilir. Web tabanlı merkezi yönetim yazılımı birçok alt modüllerden oluşmaktadır. Yazılım ana ekranı Şekil 9'da sunulmuştur.

### **3.3.6.1.Araç Bilgileri Ekleme**

Departman ve şehir gibi bilgiler seçilerek araçlar sisteme eklenebilir. Eklenen her araç için otomatik olarak benzersiz bir anahtar oluşturulur. Bu benzersiz anahtarlar, mikrobilgisayar üzerindeki konfigurasyon dosyasına tanımlanarak hangi mikrobilgisayarın hangi araca ait olduğu takip edilebilir. Ayrıca tüm araçlar departmanlarına, şehirlerine göre filtrelenebilir ve durum bilgileri alınabilir.

### **3.3.6.2.Lokasyon Ekleme**

Google Maps altyapısı kullanılarak haritaya konum eklenebilir. GPS verilerinin aynı konuma yakın noktalarda gönderilmesi nedeniyle, konum bölgesi dikdörtgen bir seçici ile işaretlenerek, dikdörtgenin dört kenarındaki GPS koordinatları veri tabanına kaydedilir. Bu sayede alınan koordinat verilerine göre aracın önceden tanımlanmış pozisyonlarda olup olmadığı kontrol edilebilmektedir.

### **3.3.6.3.Gerçek Zamanlı Rota Takip Modülü**

Gerçek zamanlı takip modülünde aktif olarak veri gönderen araçlar, harita üzerinde konumları ile birlikte işaretçilerle gösterilir. Mikrobilgisayarlardan gelen en son verilere göre lokasyonlar anında güncellenir. Mikrobilgisayarlar tarafından sürekli 5-15 saniyede gönderilen GPS verilerinin belirli zaman dilimlerinde haritada listelenmesi sağlanmıştır. Bu sayede araçların takip ettiği rotalar detaylı bir şekilde takip edilebilmektedir. Ayrıca, aracın teorik hız bilgisi, iki GPS Koordinatı arasındaki fark ve zaman hesaplanarak belirlenebilmektedir. OBD cihazı üzerinden alınan bilgiler, hız ve yakıt durumu gibi araç bilgilerinin takibi için rota takip modülünde işlenebilmektedir.

### **3.3.6.4.Personel Ekleme**

Personel bilgileri, RFID Okuyucular üzerinden veya RFID kart üzerindeki proximity numaralar ile sisteme tanımlanır. Personel ve sürücü olmak üzere iki farklı kategoride kayıtlar eklenebilmektedir. Bu sayede, mikrobilgisayarlar tarafından gönderilen RFID verileri eşleştirilerek araç içerisindeki personel ve sürücü bilgileri anlık olarak izlenebilmektedir.

### **3.3.6.5.Raporlama Modülü**

Merkezi takip sistemine kaydedilen veriler detaylı olarak işlenebilmekte, departman, araç, sürücü, şehir, personel vb. türlerde raporlanabilmektedir. Ziyaret edilen bölgeler, sürücü ve personelin gideceği yerler detaylı olarak takip edilebilmektedir.

### **3.3.6.6.Acil Durum (SOS) Modülü**

Cihazlardan alınan Acil Durum Butonu (SOS) verileri doğrultusunda sistem otomatik olarak belirtilen numaralara SMS gönderilebilmektedir. GUI aracılığıyla görsel olarak alarm bilgisi verilebilmektedir. SMS içeriğinde aracın mevcut konumu, araçtaki kişilerin bilgileri ve araç plaka bilgileri yer almaktadır. Ayrıca veriler, güvenlik birimlerine e-posta ile de gönderilebilmektedir.

## **4. SONUÇLAR VE TARTIŞMALAR**

Çalışma sırasında beş yüz binden fazla GPS bilgisi elde edilmiştir. Bu kayıtlar 8 aylık bir süre içinde toplanmıştır. Geliştirilen VPTS sistemi, güvenilir ve istikrarlı bir şekilde çalışmaktadır. Araçların coğrafi koordinatları, koordinat dönüştürme yöntemleri yardımı ile düzlemsel

koordinatlara dönüştürülerek tüm veri analizi ve raporlama işlemleri gerçekleştirilebilmektedir. Geliştirilen sistem, yüksek riskli güvenlik alanlarına uygulanabilir. Personel, sürücü ve araçların güvenliğini en üst seviyede tutmak isteyen organizasyonlara uygulanabilir. Güvenlik birimlerinin dış mekan haritalama ve raporlama ihtiyaçlarını tam olarak karşılamaktadır. Bu uygulama çalışması ile personel, araç, departman vb. bazlı raporlama ile kuruluşların ihtiyaçlarına hızlı ve sağlıklı bir şekilde cevap verilmesi hedeflenmektedir. Ayrıca, güvenlik nedeniyle oluşabilecek hasar ve sorunların en aza indirilmesi amaçlanmaktadır.

Geliştirilen sistem ile kayıtlı araçlar web sitesi üzerinden kolaylıkla görüntülenebilmektedir. Coğrafi koordinatların ondalık formatta CBS teknikleriyle UTM koordinatlarına dönüştürülmesi ile aracın hız hesaplamaları yapılabilmektedir. Ancak bu çalışmanın ayırt edici teknolojik özelliklerinden birtanesi de, aracın elektronik aksamına bağlanan OBD modülü ile aracın hız bilgisinin gerçek zamanlı olarak görüntülenmesidir. Yakıt durumu gibi araçla ilgili diğer önemli bilgiler OBD modülü ile elde edilebilmektedir.

Geliştirilen sistem, araç park halindeyken çalışmasını engellemek için motor kontrol ünitesine (ECU) bağlanır ve sistemin ECU ile bağlantısı kesildiğinde kullanıcıya uyarı mesajı gönderilebilir. Bu çalışma, araç ve personel bilgilerini paylaşmak istemeyen ve güvenliğe önem veren kuruluşlar için geliştirilmiştir. Geliştirilen sistemi gerçek hayatta birçok alana uygulamak mümkündür. Örneğin, okul otobüsleri ve filo yönetimi bu sistemin iyi adayları olarak düşünülebilir. Beklenmedik bir durumda gözlemciler, sürücülerin önceden belirlenmiş rotayı değiştirip değiştirmediğini veya sürücülerin hız sınırlarını aşıp aşmadığını kontrol edebilir. Çalışanların yol görevlerini minimum sürede tamamlama maliyetini ve çabasını en aza indirebilir ve mevcut araç konumuna göre görevler iletililebilir.

GPRS bağlantısının kesilmesi durumunda, araç üzerindeki cihazın depolama birimi ile yerel bir sunucusu yoksa veri kaybı kaçınılmazdır. Veri kaybını önlemek için sisteme bir mikrobilgisayar entegre edilmiş ve veri tabanına veri kaydetmek için küçük bir SQL Server yapılandırılmıştır. Bu sayede veri bütünlüğü ve güvenliği sağlanmıştır. GPS modülünden toplanan veriler öncelikle veri tabanına kaydedilir ve veri aktarımı GPRS modülü üzerinden gerçekleştirilir. GPRS sinyalinin zayıf olduğu veya bağlantının koptuğu durumlarda veri kaybı olmaz. Bu teknolojik farkındalık, bu çalışmadaki önemli yeniliklerden birisidir.

Benzer dış mekan haritalama çalışmalarında nadiren karşılaşılan ve takip cihazlarından ayrı olarak sağlanması gereken bir hizmet olan SOS modülü sayesinde aracın konumu ve içerisindeki personellerin bilgileri ilgili güvenlik birimlerine SMS ve e-posta yoluyla iletilmektedir. Bu sistemin faydalarından birisi de, acil durumlarda müdahale edilmesi gereken kişi bilgilerine ve araç lokasyonuna ilgili birimlerin doğrudan ulaşması, daha hızlı ve daha kesin güvenlik çözümleri sunabilmesidir.

## **5. ÇIKARIMLAR**

Bu çalışma ile geliştirilen VPTS sistemi, güvenlik konularına öncelik veren kuruluşlar için önemli bir varlık olarak değerlendirilmektedir. Mevcut dış mekan haritalama teknolojisindeki personel, lokasyon, güvenlik gibi sorunlara yeni yöntemlerle çözümler getirilmiştir. Ayrıca bu

çalışma, iletişim ve veri aktarımı sorunlarının çözümlerine yeni yaklaşımlar sunarak katkı sağlayan bir çalışmadır. Yerel veya ulusal düzeyde benzer bir sistem altyapısının olmaması ya da yetersiz olması, bu çalışmanın gerekliliğini göstermektedir. Ayrıca geliştirilen sistem, modüler yapısı ile düşük maliyetle güncelleme ve yükseltme imkanı sağlamaktadır. Bu çalışmada, araçların hareket sürelerini, hızlarını, rotalarını ve yolcu bilgilerini sürekli olarak kaydetmek için kullanılabilir bir VPTS sistemi tasarlanmış ve uygulanmıştır. Bu bağlamda, GPS verilerini merkezi bir sunucuya kaydetmek için modüler yapı bir devre tasarlanmış ve izlenen aracın rotaları Google Earth üzerinde görselleştirilmiştir.

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## VİCDANÎ ZEKÂ ve ÖRGÜTSEL DAVRANIŞTA YANSIMASI: 2020 İZMİR DEPREMİ ÖRNEĞİ

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### Özet

Vicdanî zekâ kavramı son yıllarda literatürde yer alan kavramlardan biridir. Bireyin iç sesini dinlemesi, kendine ve topluma karşı sorumluluk bilinci ile hareket etmesi, hesap verebilme, dürüstlük ve ilkeli olma gibi nitelikleri içeren anlamlara karşılık gelmektedir. Yapılan araştırma ile vicdanî zekânın örgütsel davranış içindeki yeri ortaya konulmaya çalışıldı. Acil bir olay ya da bir afet durumunda faaliyet göstermekte olan arama kurtarma ekiplerinden, İstanbul İtfaiyesi Arama Kurtarma Ekibi içinde yer alan Muammer Çelik ve çalışma arkadaşları araştırmanın örnek olayını oluşturmuştur. Özellikle çalışmalarını hem profesyonel olarak ve hem gönüllü olarak acil bir durumda arama kurtarma ekibi içinde yer alarak yapan Muammer Çelik, İzmir’de 30 Ekim 2020’de meydana gelen depremde görev almıştır. Arama kurtarma faaliyetleri esnasında yaşamış olduğu tecrübe örnek olay kapsamında analiz edilerek vicdanî zekânın örgütsel davranış içindeki yeri ortaya çıkarılmaya çalışılmıştır. Elde edilen bulgular, arama kurtarma faaliyetlerinde bulunan bireyler açısından değerlendirildiğinde, vicdanî zekâ bağlamında bilinçli farkındalık, toplumsal duyarlılık ve merhamet boyutlarının öne çıktığı görülmektedir. Bu bulgular oldukça zor şartlarda faaliyet göstermekte olan bireyler açısından değerlendirildiğinde hem hizmet ettikleri kitle açısından hem de içinde buldukları örgüt açısından değerli çıktılar ortaya koymaktadır. Elde edilen bulgular, bireylerin vicdanî duyarlılıklarının hayatlarının her alanında yapmış oldukları işlere yansıdığını ve kararlarını bu duyarlılıkla aldıklarını göstermektedir. Bu duyarlılıkla yapılan faaliyetler iş açısından değerlendirildiğinde kolaylaştırıcı bir dinamiğe dönüşmektedir. Örgüt açısından değerlendirildiğinde de örgüte itibar kazandıran bir mekanizma olmaktadır.

**Anahtar Kelimeler:** Vicdan, Zekâ, Vicdanî Zekâ, Örgütsel Davranış, Arama-Kurtarma.

## REFLECTION OF CONSCIENTIOUS INTELLIGENCE AND ORGANIZATIONAL BEHAVIOR: 2020 IZMIR EARTHQUAKE CASE STUDY

### Abstract

The concept of conscientious intelligence is one of the concepts having been found in the literature in recent years. It corresponds to meanings that include qualities such as listening to the inner voice of the individuals, acting with a sense of responsibility towards themselves and the society, being accountable, honest and principled. In this study, the place of conscientious intelligence in organizational behavior was tried to be revealed. Among the search and rescue teams operating in the event of an emergency or a disaster, Muammer Celik and his colleagues, who are employed in the Istanbul Fire Department Search and Rescue Team, constituted the case study. Muammer Celik, who especially works both professionally and voluntarily by taking part in the search and rescue teams in an emergency, took part in the

earthquake that occurred in Izmir on October 30, 2020. The experience he had during search and rescue activities was analyzed within the scope of the case study and the place of conscientious intelligence in organizational behavior was tried to be found. When the findings are evaluated in terms of individuals engaged in search and rescue activities, it is seen that the dimensions of conscious awareness, social sensitivity and compassion stand out in the context of conscientious intelligence. When these findings are evaluated in terms of individuals operating under very difficult conditions, they show valuable results both in terms of the people whom they serve for and the organization which they are in. The findings obtained suggests that individuals' conscientious sensitivity is reflected in their work in all areas of their lives and that they make their decisions with this sensitivity. When evaluated in terms of business, activities carried out with this sensitivity turn into a facilitating dynamic, and when evaluated in terms of the organization, they are a mechanism that add credibility to the organization.

**Keywords:** Conscience, Intelligence, Conscientious Intelligence, Organizational Behavior, Search and Rescue.

## **GİRİŞ**

Donanımlı bireyler insan kaynakları açısından bir organizasyonun en önemli unsurunu oluşturmaktadır. Birey doğuştan ya da sonradan edindiği donanımlarla örgütsel yaşamda var olmaktadır. Bu kazanımlardan biri de sahip olduğu zekâ ve vicdan yeterliliğidir. Zekâ en genel ifadesi ile bireyin değişimlere ayak uydurabilme kapasitesini oluşturan unsurlarla ortaya çıkmaktadır (Gürel ve Tat, 2010). Vicdan ise doğruyu yanlıştan ayırt edebilme yeterliliği olarak ifade edilmektedir. Her iki kavramın özelliklerinin bir arada bulunması durumu ile vicdanî zekâ kavramı ortaya çıkmaktadır (Urgan, 2020).

Bireylerin sahip olduğu vicdanî zekâ örgütsel davranışı oluşturan temel yapıyı olumlu etkilediği görülmektedir. Özellikle bazı meslekler vardır ki hem biçimsel olarak icra edilerek profesyonel bir meslek grubunu oluşturmaktadır. Hem de yapılan faaliyetler, insanların en zor durumlarında yardımcı olacak şekilde icra edilmektedir. Bu meslek grupları sağlık ekipleri, itfaiye ekipleri ve arama kurtarma ekipleri gibi örnekleri verilebilecek meslekleri ifade etmektedir. Bu ekipler içinde yer alan bireyler hem teknik bilgi hem de vicdan, merhamet ve duyarlılık gibi manevi yeterlilik ile de faaliyet göstermektedir. Bu bireylerin manevi donanımlarını mesleklerine yansıttıkları görülmektedir.

Bu araştırmada, vicdanî zekâ donanımına iyi bir örnek olduğu öngörülen, arama kurtarma ekipleri içinde yer alan bir çalışan olan Muammer Çelik ele alınmıştır. İzmir'de 30 Ekim 2020 tarihinde 6.9 şiddetinde bir deprem meydana gelmiştir. Bu depremde yapılan bir arama-kurtarma faaliyeti ile vicdanî zekâ kavramı ele alınmaktadır. Yapılan bu faaliyetlerin vicdanî zekâ bağlamında örgütsel davranış içerisindeki yeri ifade edilmeye çalışılmaktadır.

## **1. VİCDANÎ ZEKÂ ve ÖRGÜTSEL DAVRANIŞA ETKİSİ**

Birey bir organizasyon içinde faaliyet yerine getirirken, bu organizasyon için gerekli yeterlilikleri ortaya koymak durumundadır. Bu yeterlilikler doğuştan ve sonradan kazanılan yeterlilikler olmaktadır ki aile içinde, okul ile ve hayat tecrübesi ile elde edilmektedir. Bir de bireyin bireysel özellikleri vardır ki o da soyut kavramlar olarak bireyin donanımlarını oluşturmaktadır. Bu donanımlardan biri aslında insanlığın doğuşundan beri varlığı hissedilen ancak son yıllarda literatüre girmiş olan vicdanî zekâdır.

Tarhan (2015) vicdanî zekâyı ruhsal bağlamda ifade ederek birey ile ilişkilendirmiştir. Bireyin iç sesi olarak, kendine ve çevresine karşı etik kurullarla hareket etmesi anlamına

gelmektedir. Vicdanî değerlere sahip olma, bu değerlerle hareket etme ve hesap verebilir olma gibi çeşitli unsurları içermektedir (Aktı vd., 2017; Urgan, 2020). Vicdanî zekâ, doğruyu yanlış biribirinden ayırma niteliği olan vicdan (Ulucan, 2017) ile zihnin öğrenme, öğrenilenden yararlanabilme, yeni durumlara ayak uydurabilme ve problemlere çözüm bulabilme anlamlarına gelmekte olan zekâ (Gürel ve Tat: 2010) kavramlarından köken almaktadır (Boz, Duran ve Narin, 2019; Urgan, 2020; Aktı vd., 2017). Vicdanî zekâyı oluşturan unsurlar etik değerler, ahlaki duyarlılık, yaratıcıya karşı sorumluluk, merhamet, bilinçli farkındalık, toplumsal duyarlılık ve bilgeliktir (Aktı vd., 2017).

Örgüt için en önemli sermaye nitelikli insan kaynağıdır. Bu bağlamda vicdanî zekâ donanımına sahip birey işletme için önem arz etmektedir. Vicdanî zekâyı oluşturan unsurların hepsi gönüllülük temelinde de değerlendirilebilmektedir. Gönüllülük, bireyin diğer bireylerle, gruplarla veya organizasyonla ilişkilerinin düzenlendiği bir sürece karşılık gelmektedir (McAllum, 2017). Örgütler için vicdanlı bireylerin yapmış oldukları faaliyetlerin örgüt çıktıklarına katkısı da çok olmaktadır. Bu bireyler disiplinli ve çalışkandır (Tambe ve Shankar, 2014). Ayrıca örgütsel vatandaşlık kavramının da temel unsurlarından birini oluşturan vicdanlılık, örgüt içinde formal ve informal tüm faaliyetlerin değerlendirilerek organizasyon lehine yapılan tüm davranışları ifade etmesi bakımından önem arz etmektedir (Özler, 2010). Bununla birlikte özellikle arama kurtarma gibi acil bir durumda müdahale eden bireyler için de çok değerli bir donanım olmaktadır. Çalışmanın ikinci bölümünde bir deprem örneği üzerinden vicdanî zekânın önemi vurgulanmaktadır.

## **2. ÖRGÜTSEL DAVRANIŞTA VİCDANİ ZEKÂ: 2020 İZMİR DEPREMİ ÖRNEĞİ**

Araştırmanın bu bölümünde örnek olay kapsamında, Muammer Çelik için oluşturulmuş açık uçlu görüşme sorularına kendisinin vermiş olduğu cevaplar değerlendirilmektedir. Bu sorular; kendisini tanıttıcı sorular ve olayın gelişimi ile ilgili sorulardan oluşmaktadır.

### **2.1. Örnek Olay Metni**

Örnek olay metni Muammer Çelik'in el yazısı ile çalışma sonunda "örnek olay" başlığı altında verilmektedir.

### **2.2. Yöntem**

Çalışmada Yin (1981) tarafından geliştirilen örnek olay analizi kullanılmaktadır. Örnek olay yönteminde veriler, görüşme kayıtları, inceleme ve arşiv kayıtları ile elde edilmektedir (Köklü, 1994; Özbakır ve Velioğlu, 2010). Örnek olay yöntemi ile bir durumdan yola çıkarak genellemeler yapılabilmektedir. Bu amaçla "nasıl", "niçin" ya da "neden" sorularıyla literatür bulguları elde edilmeye çalışılmaktadır (Yıldırım ve Şimşek; 2013). Bu amaçla aşağıda belirtilen araştırma sorusu oluşturulmuştur.

#### **2.2.1. Araştırma Sorusu**

Muammer Çelik'in arama kurtarma faaliyeti ile yapmış olduğu faaliyetler vicdanî zekâ kapsamında değerlendirilebilir mi?

#### **2.2.2. Güvenirlilik ve Geçerlik**

Nitel veri analizlerinde güvenirlilik için araştırma tekrarlandığında benzer sonuçların elde edilmesi önemli olmaktadır. Bu amaçla araştırmada yapılan çalışma süreçleri açık bir şekilde ifade edilmelidir. Nitel araştırmalarda, yapı geçerliği, iç ve dış geçerlik dikkate alınmaktadır. Yapı geçerliğinde toplanan verilerin kanıtlanması, iç geçerlikte ortaya çıkan sonuçlara nasıl ulaşıldığının açıklanması, dış geçerlikte de genellenebilir sonuçlar açısından değerlendirme önem arz etmektedir (Yıldırım ve Şimşek, 2013). Çalışmanın yapı geçerliği



için olaya tanık olanların beyanlarına başvurulmuştur. İç geçerlik için bulgular açıkça ifade edilmiştir. Dış geçerlik için teorik genelleme oluşturulmuştur.

### 2.3. Araştırma Bulguları

Örnek olay analizi ile elde edilen bulgular, örnek olay ve araştırmanın ana sorusu bağlamında bu bölümde verilmektedir.

Araştırmanın ana sorusu örnek olayın vicdanî zekâ bağlamında değerlendirilip değerlendirilemeyeceği idi. Örgütsel alanda manevi değerlerle donanımlı bireyler gönüllülük temelli faaliyetlerde bulunmaktadır (Güzel, 2015; McAllum, 2017; Ardahan, 2016; Urgan ve Erdoğan, 2019). Profesyonel olarak, acil durumlarda hizmet veren bireylerin temel kişilik özellikleri de önem arz eden bir unsurdur (Urgan, 2020). Vicdanî zekâ kavramının temel unsurları literatürde verilmektedir. Tüm bunlardan hareketle vicdanî zekânın unsurlarından olan “bilinçli farkındalık”, “toplumsal duyarlılık” ve “merhamet” alt boyutları (Aktı vd., 2017) örnek olayda açık bir şekilde görülmektedir. İlgili boyutlarla ilişkilendirilerek kavramın daha açık bir şekilde ortaya konulması için bazı örnekler Muammer Çelik’in ifadesi ile aşağıda verilmektedir:

“Deprem olmadan önce grup amirimizden senelik izin talebinde bulunmuştum, iznimi onaylatmak için grup amirinin yanına gittiğimde televizyonda İzmir’de deprem olduğunu duydum. Bir anda oraya gitmeye istekli olup iznimi iptal ettirdim”. “Vicdanlı, merhametli, işini severek aşkla yapan biriyim”. “Kurtarma ekibinde çalışan bütün personel buldukları ortamı çok iyi bildikleri için ona göre hazırlanır ve mücadelede aynı hassasiyeti gösterirler”. “Her insan hangi işi yaparsa yapsın görev verilmişse bunu severek aşkla yapmalıdır. Almış olduğumuz eğitimleri bizden sonrakilere aktarıp, onların da bu bilinçle yetiştirilmelerini sağlamalıyız. Şu bilinmelidir ki sizin bitirdiğiniz yer diğer bir kişinin başladığı yerdir”. “Elif Bebeğin yüzündeki deprem tozunu temizlemek için elimi uzattım. Bir anda gözlerini açarak başparmağıma tutundu. Bir anda canlı diye bağırıldı. Üzüntümüz sevince ve gözyaşına dönüştü. Tüm ekip olarak sevinçten ağladık”.

## SONUÇ

Bireylerin sahip olduğu manevi donanımlarından biri olduğu öngörülen vicdanî zekâ örgütler açısından değerli çıktılar meydana getirmektedir. Yapılan bu çalışma ile vicdanî zekânın örgütsel davranıştaki yeri bir örnek olay yardımı ile ortaya konulmaya çalışıldı. Araştırmada Muammer Çelik ve ekibinin İzmir depreminde yapmış olduğu arama kurtarma faaliyetlerinin vicdanî zekâ örneği olarak değerlendirilmesi durumu analiz sonuçları ile ortaya konuldu.

Araştırma sonuçları literatür çalışmalarıyla karşılaştırıldığında yapılan çok az çalışma dikkati çekmektedir. Boz ve arkadaşları (2017)’nin yapmış olduğu çalışmada vicdanî zekânın iş performansı ile ilişkisi ele alınmıştır. Bu çalışma ile ortak sonuçlar elde edilmiştir. Aynı şekilde Urgan (2020)’ın yapmış olduğu çalışma ile de paralel sonuçlara ulaşıldığı görülmektedir. Her iki çalışma vicdanî zekâ donanımlı bireylerin sahip olduğu bu niteliklerinin iş performanslarını etkilediğini göstermektedir.

Araştırma sonuçları itibariyle manevi donanımlara sahip bireylerin bu niteliklerinin örgütsel performanslarına oldukça olumlu yönde yansıdığı göstermektedir. Hizmet sektörleri ya da arama kurtarma gibi acil bir durumda faaliyet göstermekte olan mesleklere sahip olan bireyler yapmış oldukları işler dolayısıyla oldukça zorlu süreçlerle karşı karşıya kalmaktadır. Bu mesleklerin sadece biçimsel bir meslek olmalarının çok ötesinde duygularla, vicdanla ve merhametle yapılan işlerle ilgili olarak yapıldığı görülmektedir. Bu bireylerin yapmış

oldukları zorlu işlerde sahip oldukları vicdanî zekâ, onlara, zorluklarda tahammül etme gücü vermektedir.

İşletmeler açısından ele alındığında, bu meslekleri icra eden bireylerde kendiliğinden bulunan vicdanî zekâ gibi özellikler yaptıkları işleri çok değerli kılmaktadır. Aynı şekilde içinde bulunduğu örgüt için bu bireylerin varlığı eşsiz bir insan kaynağı olarak değerlendirilmektedir.

Çalışmanın farklı evren, örneklem ve araştırma yöntemleri ile yapılması literatürde oldukça az olan bu alanda yapılmış çalışmalara zenginlik katacaktır.

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## AZƏRBAYCAN XALQININ MILLI IDEALLARININ FORMALAŞMASINDA M. ŞAHTAXTLININ PUBLISISTİK ƏSƏRLƏRİNİN ROLU

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### Xülasə

Məqalədə Azərbaycan xalqının milli ideallarının ədəbiyyatda formalaşmasında milli intibah dövrünün tanınmış ziyalılarından olan Məhəmmədəğa Şahtaxtlının (1846-1931) müstəsna xidmətlərindən bəhs olunur. Şahtaxtlı həm Azərbaycan, həm də Şərqi ədəbi-mədəni, ictimai gerçəkliyinin tanınmış qələm sahiblərindən, fikir adamlarından biri olmuşdur. O, islam xalqlarının geriliyinin, tənəzzülünün aradan qaldırılması, tərəqqiyə nail olması uğrunda öz qələmi, ideyaları ilə mübarizə aparmışdır. Şahtaxtlının mütərəqqi ideyalarının təcəssüm tapdığı publisistik əsərlərində, risalələrində milli ideal, milli məfkurə məsələləri məqalənin əsas araşdırma mövzudur.

Məqalədə Şahtaxtlının ədəbi və ictimai fəaliyyəti əsasında milli ideallarının əsas istiqamətləri, xətləri, detalları aydınlaşdırılır. Müəllifin konkret əsərlərinə, məqalələrinə, risalə və silsilə yazılarına istinad edilir, həmçinin bu mövzuda onun yaradıcılığından bəhs edən araşdırmalar diqqət mərkəzində saxlanılır.

**Açar sözlər:** Azərbaycan ədəbiyyatı, M.Şahtaxtlı, milli intibah, milli ideal, publisistika, nəsr

## THE ROLE OF M. SHAHTAKHTLI'S PUBLICISTIC WORKS IN THE FORMATION OF THE NATIONAL IDEALS OF AZERBAIJANI PEOPLE

The article discusses the exceptional merits of Mahammadagha Shahtakhtli (1846-1931) - one of the famous intellectuals of the National Renaissance, in the formation of the national ideals of the Azerbaijani people in literature. Shahtakhtli was one of the famous writers and thinkers of Azerbaijan and the East. He fought with his pen and ideas to eliminate the backwardness and decline of the Islamic peoples and to achieve progress. The main research topics of the article are questions of national ideology in Shahtakhtli's journalistic works, embodying his progressive ideas.

Based on Shahtakhtli's literary and social activities, the article defines the main lines of his national ideals. The research work cites articles, treatises and serial works of the writer, and also examines research works on his work.

**Key words:** Azerbaijani literature, M. Shahtakhtli, national revival, national ideal, journalism, prose

### Giriş

Məhəmmədəğa Şahtaxtlı Azərbaycanın Avropa mühitində yetişmiş böyük ziyalılarının biri, dilçi, publisist, filosof, ictimai xadim olmuşdur. Məhəmmədəğa Məhəmmədəğa Sultan oğlu Şahtaxtlı Azərbaycanda ədəbiyyatşünaslıq elminin və publisistikanın səviyyəsini yüksəklərə qaldırmışdır. Xalqını dövrün mövcud cəhalətindən, qəflət yuxusundan xilas etmək üçün Qərbi qabaqcıl maarifçilik ənənələrini ölkəsinə gətirmiş, Şərqi Qərb mədəni inteqrasiyası üçün böyük idealarla mübarizə meydanına atılmışdır. Şahtaxtlı ərəb, fars, türk dillərini mükəmməl şəkildə öyrənmişdir. “Görkəmli ictimai xadimin

Almaniya və Fransanın qədim elm mərkəzlərində aldığı təhsil, Avropa klassiklərinin əsərləri ilə tanışlıq, alman və fransız ictimai fikrinin görkəmli nümayəndələri ilə sıx əlaqəsi onu elmi və mədəni cəhətdən kamil bir şəxsiyyət kimi yetişdirmişdir. Məhəmmədəğa Şahtaxtlı 1871-1873-cü illərdə Almaniyanın Leypsiq Universitetində, 1873-1875-ci illərdə isə Fransada Parisdə təhsil almışdır. Leypsiq Universitetində M.Şahtaxtlı dilçilik elminə xüsusi maraq göstərmişdir (Həsənova, Cəfərova, 2020; 2).

Şahtaxtlının publisistik yaradıcılığı XIX əsrin sonu, XX əsrin əvvəllərində baş verən ictimai-siyasi prosesləri, xalqın inkişafı, tərəqqisi naminə milli ideallar uğruna mübarizəni ehtiva edir. “M.Şahtaxtlı 1870-ci ildə Almaniya elmi-publisistik fəaliyyətə başlamışdır. Qəzet və jurnallarda Şərq ədəbiyyatı və tarixi ilə bağlı oçerk, məqalələrlə çıxış etmişdir.” (Şahtaxtinski, 2005; 1). O, Mirzə Fətəli Axundzadədən başlayan maarifçilik hərəkatının davamçısı olaraq bütün ədəbi yaradıcılıq istiqamətlərində olduğu kimi, publisistikasında da milli düşüncə, yeni məktəb, yeni əlifba, mətbuatın yaradılması, geniş anlamda xalqın tərəqqisi uğrunda hərtərəfli mübarizə əks olunmuşdur. O, “1879-cu ildə Tiflisdə “Təkmilləşdirilmiş müsəlman əlifbeyi” adlı kitabını çap etdirir. Burada öz fikirlərini elmi şəkildə əsaslandıraraq türk xalqlarına bu əlifbaya keçməyi təklif edirdi. M.Şahtaxtlı bütün ömrü boyu bu problemlə məşğul olmuşdur. XIX əsrin 80-ci illərindən İstanbulda “Moskovskiye vedemosti” qəzetinin xüsusi müxbiri, 1891-93-cü illərdə isə “Kaspi” qəzetinin redaktoru olmuşdur” (Şahtaxtinski, 2005; 1).

### **Məhəmmədəğa Şahtaxtlının publisistik əsərləri**

Göründüyü kimi, bir neçə dil bilən Məhəmmədəğa Şahtaxtlının publisistik əsərlərinin bir qismi rus, bir qismi isə Azərbaycan dilindədir. Onun başqa dillərdə də risalə və məqalələr yazdığı bəllidir. M.Şahtaxtlı irsinin tədqiqatçısı və tərtibçisi Akademik İsa Həbibbəyli Şahtaxtlının publisistik yaradıcılığını xarakterizə edərək yazır: “Məhəmmədəğa Şahtaxtlının publisistikası zəruri informasiyaların, yaxud gündəlik həyat həqiqətlərinin sadəcə obyektiv təqdimi ilə deyil, qaldırdığı aktual problemlərlə, müraciət etdiyi mövzu ilə bağlı dərin analitik təhlili ilə yadda qalır (Həbibbəyli, 2012; 20).

“Kəşkül” qəzetindən sonra milli-ictimai fikrimizdə Azərbaycan türklərinə verilən adda “ümmətçilik” anlayışı ilə “millətçilik” anlayışını fərqləndirən, bu barədə konkret təkliflə çıxış edən M.Şahtaxtlı olmuşdur. 1891-ci ildə onun “Kaspi” qəzetində (№93) “Zaqafqaziya müsəlmanlarını necə adlandırmalı?” sərəlvhəli məqaləsi dərc olunmuşdur (Həbibbəyli, 2007; 23). Məqalədə din, dil, millət, xalq anlayışlarının yanlış dərk edilməsinin milli kimliyimizin, ana dilimizin, milli mədəniyyətimizin yanlış anlaşılmasına yol açdığından bəhs olunur, bu vəziyyəti yaradan mövcud səbəblər gözdən keçirilir, çıxış yolları axtarılır. Göstərilir ki, Zaqafqaziya yaşayan türkləri bəzən “Qafqaz müsəlmanları”, bəzən də “tatar” adlandırırlar. Onların dilinə isə “müsəlman dili” və ya “tatar dili” deyirlər. Birinci yanlışlıq bu regionun sakini olan müsəlman türklərin özündən qaynaqlanır. Belə ki, onlar din, dil və millət anlayışlarını bir-birinə qarışdırıb özlərinin etnik mənsubiyyətinə görə hansı xalqa mənsub olduğu barədə dürüst təsəvvürə malik olmadıqları kimi, danışdıqları dillərinin adını da düzgün bilmirlər. Məsələn, onlardan soruşduqda ki, “Hansı xalqa mənsubdurlar və hansı dildə danışirlər?”-onlar həmin suallara belə cavab verirlər: “...O, müsəlmandır və müsəlmanca danışır”. İkinci yanlışlıq isə rus ictimai-siyasi dairələrindən gəlir. Belə ki, ruslar bizi Krım və Volqaboyu tatarları ilə eyni xalq hesab edərək bizə “tatar”, dilimizə isə “tatar dili” deyirlər. Bizə bu anlayışların şamil edilməsində bir həqarət, aşağılayıcı münasibət də vardır. Sonra Şahtaxtlı izah edir ki, “müsəlman” bizim dinimizlə bağlı anlayışdır və bizim milliyyətimizi ifadə edə bilməz. “Tatar” isə başqa bir türk qövmünün adıdır, bizim adımızı bir termin kimi ehtiva etməkdən uzaqdır. Buna görə də müəllif xalqımızın və dilimizin konkret istilahlı ifadəsi barədə belə bir qənaətə gəlir: “Zaqafqaziya müsəlmanlarını azərbaycanlılar, onların dilini isə Azərbaycan dili adlandırmaq çox yerinə düşərdi” (Şahtaxtlı, 2006; 29). Göründüyü kimi, M. Şahtaxtlının milli idealının mərkəz nöqtəsi xalqın öz milli mənsubiyyətini dərkindən

başlayır. Sonra isə xalqın yolunda nəzəri və əməli istiqamətdə hansı işlər görmək lazım olduğu barədə təkliflərə, tövsiyələrə, mülahizələrə yer verilir. Haqlı olaraq Şahtaxtlı milli kimliyin, ana dilinin doğru idrakının digər qaranlıq və tənəzzülə aparan yolları aydınladacağı qənaətinədir.

Mövcud vəziyyətdən xalqı xilas etmək, hərtərəfli inkişafa nail olmaq üçün Şahtaxtlı yollar arayır və bu xilas yollarını publisistik əsərlərinin, risalələrinin mövzusunda çevirir. Fransız dilində qələmə aldığı “Türkiyəni necə xilas etməli?” başlıqlı risaləsində xalqın hərtərəfli inkişafını təmin edəcək, milli ruhunun əzmini, xalqın rifahını yüksəldəcək məsələləri, istiqamətləri göstərir. M.Şahtaxtlı İslam Şərqini geridə qoyan, tənəzzülə uğradan səbəbləri də şərh edir və həmin səbəbləri bu şəkildə müəyyənləşdirir: “Hər şeydən əvvəl, xalqın tərəqqisinə iki şey maneə yaradır: Birincisi, bu, ictimai hökmranlığı ələ alan və onu xalqın mənafeyinə deyil, əksinə, öz arzu və istəklərini yerinə yetirmək naminə, xalqı istismar və tabe etmək üçün istifadə edən despotizmdir. İkincisi isə ruhanilər hakimiyyətidir” (Şahtaxtlı, 2006; 43-44). Risalədə, əsasən, Türkiyə türklərinin ictimai-siyasi və mədəni həyatından danışılsa da, buradakı fikirləri Azərbaycan türklərinə də şamil etmək olar. Xilas və milli nicat barədə müəllifin qənaətləri belədir: “...Öz milli azadlığını qoruyub saxlamaq istəyən türklər təcili surətdə və yubanmadan milli həyatlarını yenidən qurmalıdır” (Şahtaxtlı, 2006; 30).

Publisistik yazılarında, felyetonlarında Avropa dəyərlərini, demokratiyanı, vətəndaş azadlığını və hüquqlarını əsas götürən publisist, təəssüflə bildirir ki, müsəlman şərqində adamlar var, lakin vətəndaşlar yoxdur. Çünki Şərqin ictimai-siyasi mühiti vətəndaşlar yox, yalnız ağalar və qullar, hakimlər və məhkumlar, zalımlar və məzlumlar, despotlar və nökrələr yetişdirir. Vətən bütün vətəndaşlara yox, ancaq həmin ağalara, hakimlərə, despotlara mənsub olur. Nəticədə Vətən vətəndaşsız, millət dayaqsız qalır. Bunun səbəbi isə zülm, xürafət, mənəvi və cismani əsarətdir. “Xürafatın və zülmün əsarətini qıraraq insanı daxili və xarici azadlığa çıxarmadan” (Şahtaxtlı, 2006; 38) heç bir tərəqqiyə, milli dirçəlişə nail olmaq mümkün deyil.

Qeyd edək ki, müəllif milli oyanış və yüksəlişdə inqilab yolunu deyil, təkamül yolunu məqbul hesab edir. Avropa inqilablarını alqışlasa da, Şərq xalqlarının təkamül yolu ilə getməli olduğunu israr edir. “Avropalaşma”nı Şərqin nicatında, tərəqqisində və istiqlalıyyətə qovuşmasında mütləq və zəruri çıxış yolu hesab edir. Daha dəqiqi, məsələni belə qoyur: “Həqiqətən, milli istiqlalıyyətin yükü bizim dövrdə elə ağırlaşmış ki, onu Avropa mədəniyyətinin köməyi olmadan daşımaq mümkün deyil” (Şahtaxtlı, 2006; 43). Müəllif göstərir ki, avropalılar yalnız biri digərinə yardımçı olan bu ikili zülmü aradan qaldırırdıqdan sonra azadlığa, inkişafa və ictimai səadətə nail oldular. Şərq despotları və müsəlman ruhaniləri də demokratik hakimiyyəti və idarəetmə sistemini, azad fikri, azad düşüncəni, öz ağılından istifadə hüququnu xalqa rəva bilmirlər. Bununla onlar elmin, mədəniyyətin inkişafının da qarşısını alırlar. Elmsiz cəmiyyətdə isə tərəqqi, azad düşüncə, yüksək zəka, intellektual səviyyə, bəxtiyar həyat ola bilməz və beləliklə bunlar olmadan millət bəxtiyar ola bilməz.

Şahtaxtlının publisistikasında qadın azadlığı mövzusu tərəqqiyə aparan başlıca amildir. Müəllif qeyd edir ki, mənəvi və cismani əsarətə məhkum edilib evdə bir növ həbsxana həyatı yaşayan müsəlman qadınları “özlərində yaranmış ruh düşkünlüyü və hərəkətsizlik kimi çatışmazlıqları uşaqlarında da tərbiyə edirlər” (Şahtaxtlı, 2006; 47).

M.Şahtaxtlının milli idealları azad millət, azad cəmiyyət, azad hakimiyyət və ədalətli, xalqın öz seçiminə bağlı dövlət quruluşu və idarəetmə sistemini ehtiva edir. Müəllifin ölkənin idarə olunmasında xalqın qabaqcıl düşüncəli insanlarına güvənilməsi barədə qənaətləri belədir: “Dünyəvi bir hökumətin nəzarəti altında ölkə xalqın nümayəndələri tərəfindən yaradılmış qanunlarla idarə olunmalıdır. Ruhani qanunlarının idarə nümayəndələri öz siyasi və hüquqi səlahiyyətlərini dövlət tərəfindən təşkil edilmiş, dini əsası olmayan hakimiyyətlərə verməlidirlər” (Şahtaxtlı, 2006; 49).

Şahtaxtlının milli ideal hədəflərindən biri də islam coğrafiyasında, o cümlədən türk xalqlarının inkişafına əngəl olan fikir, düşüncə, iradə azadlığının olmamasıdır. Müəllif bunun səbəbini cəmiyyəti əhatə edən despotizmdə və fanatizmdə görür. 31 dekabr 1903-cü ildə “Şərqi-rus” qəzetində dərc olunmuş “Türk və tatar qövminə müraciət” sərlövhəli məqalə məhz millətinin, xalqının fikir və iradə azadlığından bəhs olunur. Məqalədə müəllif qonşularımızın, məsələn, ermənilərin, gürcülərin “əsri-hazırda” “təməddün cəhətdən” bizdən xeyli irəli getdiklərini söyləyir. Bu geriləmənin səbəbini bizdə fikir və iradə azadlığının olmaması ilə izah edir. Belə ki, bu yöndə inkişaf etmiş cəmiyyətlərdə hər hansı qövmi işi, ümumi cəmiyyətə aid məsələni həll etmək istədikdə insanların çoxluğunun ümumi fikri, həmin məsələyə münasibəti öyrənilir. Müxtəlif fikirlər, rəylər içərisindən ən münasib, uyğun və faydalı olanı seçilir. Problem də həmin ümumi rəy əsasında həll edilir. Bizdə isə məsələlər yalnız ixtiyar sahibi kimsələrin iradəsinə bağlıdır. Çünki despotizm və fanatizm fikir, iradə azadlığını əsrlər boyunca özünün “dəyirman daşlarının altında əzib” məhv etmişdir. Halbuki “bir millətin, həqiqətən, təməddün edə bilməsi üçün ümdə şərt odur ki, ümumə aid məsələlərdə hərə fikirlərini, rəy və əqidəsini kamali-azadlıq və hürriyyətlə bəyan edə bilsin” (Şahtaxtlı, 2006; 90).

Məhəmmədəğa Şahtaxtlı həmçinin “Şərqi-rus” qəzetinin naşiri idi. O, qəzetdə ayrıca “Hər gün bir az” başlığı altında silsilə publisistik yazılarını dərc etdirirdi. Həmin yazılarda o, xalqın dərdi, problemləri, həyatı, məişəti, çağdaş dünyaya münasibəti, həmçinin bir sıra milli ictimai problemlərlə bağlı məsələlərə toxunurdu. “Hər gün bir az” başlıklı silsilə yazılarında işıqlandırılan milli problemlərdən biri də fərd və cəmiyyət məsələsi, onun islam mühitindəki mənzərəsinin təhlilidir. Burada qoyulan məsələ əslində maarifçi mütəfəkkirin milli idealının ağırlı-acılı bir məziyyətidir. Avropadan örnək gətirən müəllif izah edir ki, Avropada “bir nəfər hamı üçün, hamı bir nəfər üçün” prinsipi ilə yaşayır, hər bir fərd özündən əvvəl cəmiyyətin mənafeyini düşünür. Anlayır ki, cəmiyyətin mənafeyi həm də onun mənafeyi deməkdir, cəmiyyət xoşbəxt olarsa, onun içərisində bir fərd olaraq onun xoşbəxtliyi də təmin olunur. Lakin təəssüf ki, islam mühitində belə deyil. Burada kollektivin, bütöv cəmiyyətin xoşbəxtliyini düşünən, öz səadətinin, firavanlığının da ona bağlı olduğunu düşünən, dərk edən insanlar azdır. Şəxsi mənfəətpərəstlik, cəmiyyətin mənafeyini unudub yalnız öz mənafeyini güdmək, paxıllıq, həsəd, kin-küdurət, bədxahlıq, bədbinlik “bizdə hübbi-vətən yerinə bığazi-vətən, milləti dostluq əvəzinə öz millətimizə düşmənçilik” hissi yaratmışdır. Halbuki millətin tərəqqisi və səadəti yalnız “ol zaman hüsulə gələ bilər ki, millətin əfradının hamısında təbii o əqidə ola ki, “mənim öz xoşgüzeranlığım içində yaşadığım camaatın xoşgüzeranlığına bağlıdır” (Şahtaxtlı, 2006; 112). Yəni cəmiyyətin xoşbəxtliyi üçün, “ümumun rifah halı nəyi icab edirsə”, o yolda da “canü dil ilə” çalışmaq lazımdır. M.Şahtaxtlı çox gözəl anlayırdı ki, milli kimliyini dərk etməyən fərd cəmiyyətin şərəfi, uralığı, sevinci, mənfəəti üçün çalışa bilməz və beləliklə firavan, xoşbəxt cəmiyyətə nail olmaq mümkün deyil. Bu yöndən Şahtaxtlının publisistik yaradıcılığında milli özünüdərk məsələsi xüsusi xətlə seçilir. O, belə hesab edir ki, fərd öz etnovarlığını dərk etməsə, onda etnik cəhətdən mənsub olduğu cəmiyyətə məhəbbət də ola bilməz. “Şərqi Rus” qəzetinin 25 iyun 1904-cü il sayında “Hər gün bir az” silsiləsinə daxil olan məqalələrdən birində Şahtaxtlı milli özünüdərk düşüncəsi barədə mülahizələrini oxuculara təqdim edir. Göstərir ki, bir millətin uğur qazanması üçün milləti təşkil edən fərdlərin hamısı bütövlükdə və əlbir şəkildə onun uğuru üçün çalışmalıdır. Bu, yalnız o zaman mümkün olur ki, fərd öz milli kimliyini dərk edib öz etnik həmcinslərinin də rifahı, gələcəyi, mənfəəti barədə düşünür. İdrak, düşüncə axarını belə bir dərk olunmuş duyğu təşkil edir: “Mən cüzəm, nasion külldür...Öz mənfəətimi nasionun mənfəətinə fəda etməliyəm. Həm də edərsəm, böyük-böyük fədakarlıq etmiş oluram” (Şahtaxtlı, 2006; 129). Müəllif daha sonra izah edir ki, etnodərk fərdi doğru, qürurlu, şərəfli düşüncəyə və yola təhrik edir: “Çün mən özüm, aba və əcdadım və övlad-əyalım hamımız nasionun ayrılmaz parçası deyilməyiz” (Şahtaxtlı, 2006; 129). Bu məqalədə daha sonra müəllif fərdlərin ana dilinə münasibəti, onun öz sözləri ilə desək, “dil dərdi” üzərində dayanır. Ana dilini xalq ruhunun

təzahürü hesab edən müəllif hər bir fərdin onu qorumalı, yaşatmalı olduğunu iqrar edir. Digər tərəfdən maarifçi ideoloq “qövmü baqi saxlamaqdan ötrü” dildən əlavə onun “ruhi-küllisini” də hifz etməsini zəruru şərt sayır. Bu anlayışla o, xalqda mövcud olan, onu başqa “nasionlardan” fərqləndirən milli ruhu, milli mentaliteti nəzərdə tutur (Şahtaxlı, 2006; 150).

Dövrünün digər türkçü, turançı ziyalıları kimi böyük ideoloqu düşündürən məsələlərdən biri də ortaq türk dili məsələsi idi. “Şərqi-rus” qəzetinin 29 avqust 1904-cü il sayında “Hər gün bir az” silsiləsinə daxil olan digər bir məqaləsində M. Şahtaxlı “Türk xalqları üçün ortaq dil lazımdır?” sualı ətrafında öz mülahizələrini qələmə alır. O, belə hesab edir ki, əgər belə bir ortaq türkcəyə ehtiyac olarsa, bütün türk qövmləri üçün ən münasib danışıq dili oğuz türkcəsi ola bilər. Bu şərtlə ki, həmin türkcədə müəyyən dil islahatları həyata keçirilsin. Gərəkdir ki, ortaq türkcə türkcənin qəliz variantında, yəni ərəb-fars kəlmələri ilə ağırlaşdırılmış variantda deyil, xalq dilində yaradılsın.

Şahtaxlının milli tərəqqi məramnaməsinə həmçinin Azərbaycanda müasir təhsil şəbəkəsinin yaradılması daxildir. Dünyəvi maarif və məktəb şəbəkəsinin yaradılmasını o, dəfələrlə öz publisistik yazılarında bəyan etmişdir. Müəllifin “Kavkaz” qəzetində (1982, 7, 15 aprel, 9,16 may,4,17 iyun, 25 noyabr) silsilə şəklində çap olunan “Müsəlmanlarda məktəb həyatı” “Школьная жизнь у мусульман” (Qarayev, 1995; 23) başlıqlı rus dilində qələmə alınan məqaləsində köhnə, ənənəvi məktəblərin, yəni mollaxana və mədrəsələrin mahiyyətini, təhsil prinsiplərini, yeni dövrə uyğun olmadığını, milli inkişafa əngəl olduğunu qeyd edir, həmçinin yeni, Avropa tipli təhsil ocaqlarının yaradılması barədə təkliflərini irəli sürür. Təhsilin inkişafı ilə bağlı digər “Azərbaycan darülfünunu” məqaləsində isə Azərbaycanda milli ali təhsil müəssisəsinin yaradılması barədə mülahizələrini söyləyir. Bunu milli tərəqqi yolunun vacib, təxirəsalınmaz vəzifələrindən hesab edir.

### **Nəticə**

Bilindi ki, XIX əsrin II yarısı Azərbaycanda milli intibahın təşəkkül və ilkin inkişaf mərhələsidir. Bu həm də milli ideal məfkurəmizin müasir mənada ilkin nəşət və formalaşma çağıdır. Bu məfkurənin təşəkkülündə, formalaşmasında milli ideologiyamızın sütunlarının, təəssübkeşlərinin qələmə aldıkları publisistik nəsr əsərlərinin böyük rolu vardır. Ümumiyyətlə, bu ideallar ilk növbədə ədəbi-bədii düşüncə məhsullarında özünü büruzə verdi. Başqa sözlə, bədii və publisistik əsərlər milli ideal düşüncəsinin ifadə edicisinə, təbliğat və təşviqat vasitəsinə çevrildi. Milli məfkurənin ilk elementləri ilk maarifçilərin yaradıcılığında özünü göstərdi. Daha sonra M.F.Axundov, H.Zərdabi başda olmaqla “Əkinçi” qəzetinin əməkdaşları, “Ziya”, “Kəşkül” qəzetləri, M.Şahtaxlı, C.Əfqani və b. ziyalılar onun boy atmasında əhəmiyyətli işlər gördülər. Məhz onların ədəbi-ictimai fəaliyyətlərinin sayəsində “Millətçilik” [“milliyyətçilik”] düşüncəsi “ümmətçilik”dən ayrılmaya başladı, azərbaycançılığın, türkçülüynün təzahürləri özünü büruzə verdi, “milli birlik” fəlsəfi formalaşdı.

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## MOBİL MÜZİK UYGULAMALARI İÇİN GENEL BİR SINIFLAMA ÇALIŞMASI

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### Özet

Teknolojik ilerlemelerle özellikleri ve işlevselliği sürekli artan mobil cihazlar, insanın ayrılmaz bir parçası haline almıştır. Farklı ihtiyaçların çözümü için oluşturulmuş mobil uygulamalar bu durumun önemli etkenlerindedir. Android ve iOS işletim sistemlerine ait mobil uygulama marketlerin en yoğun bölümlerinden birisini de müzik uygulamaları oluşturmaktadır. Amatör veya profesyonel kullanıma olanak vererek her seviyede müzikal ihtiyaca cevap vermek için hazırlanmış mobil müzik uygulamalarının sayıları ve kullanım alanları gittikçe artmaktadır. Bu çalışmanın amacı, mobil uygulama marketlerinde bulunan müzik uygulama türlerinin ve kullanım alanlarının belirlenmesidir. Bu sebeple müzik araştırmalarında da yoğun ilgi görmeye başlayan mobil müzik uygulamaları için güncel bir sınıflama yapılmaya çalışılmıştır. Sınıflandırma çalışması için Google Play ve App Store uygulama marketlerinde bulunan 799 mobil müzik uygulaması araştırma kapsamında incelenmiştir. En popüler müzik uygulamaları başlığı altında yer alan, ücretli ve ücretsiz olarak sunulan bütün müzik uygulamaları çalışmaya dahil edilmiştir. İncelenen bütün uygulamalar kullanım amaçları ve teknik özelliklerine göre etiketlenmiştir. Benzer amaçlarla hazırlanmış uygulamalar aynı çatı altına alınarak gruplar oluşturulmuştur. Hazırlanan gruplar; grup üye sayısı, teknik özellikler, kullanım durumu başlıkları altında incelenerek sınıflandırılmıştır. Araştırma sonucu elde edilen sınıflandırma: müzisyenler ve müzik eğitimcileri için yeni kullanım alanları yaratması; uygulama geliştiriciler ve müzik araştırmacıları için veri kaynağı sağlaması bakımından önem taşımaktadır.

**Anahtar Kelimeler:** Müzik yazılımları, müzik uygulamaları, sınıflama, mobil müzik

### Abstract

Mobile devices, whose features and functionality are constantly increasing with technological advances, have become an integral part of human beings. Mobile applications created to solve different needs are among the important factors of this situation. One of the busiest parts of the mobile application markets of Android and iOS operating systems is music applications. The number and areas of use of mobile music applications, which are prepared to meet musical needs at all levels by allowing amateur or professional use, are increasing. The aim of this study is to determine the types of music applications available in mobile application markets and their usage areas. For this reason, an up-to-date classification has been tried to be made for mobile music applications, which have started to attract great attention in music research. For the classification study, 799 mobile music applications available in Google Play and App Store application markets were examined within the scope of the research. All music applications under the title of the most popular music applications, which are offered as paid or free of charge, have been included in the study. All applications examined are labeled according to their intended use and technical specifications. Groups were formed by taking the practices prepared for similar purposes under the same roof.



Prepared groups; the number of group items, technical features, and the use case are examined and classified under the headings. The classification obtained as a result of the research is important both in terms of providing a data source for application developers and music researchers, and creating new usage areas for musicians and music educators.

**Keywords:** Music software, music applications, classification, mobile music

## **Giriş**

İçinde bulunduğumuz döneme etki eden en önemli araçlardan birisi de kuşkusuz akıllı telefonlar olmuştur. Dünya nüfusunun yaklaşık yarısının kullandığı akıllı telefonlar; özellikle 2007 yılında günümüzdeki versiyonlarının ortaya çıkmasıyla, insan hayatının ayrılmaz bir parçası haline gelmiştir. İletişim ihtiyacına cevap vermek üzere üretilen cep telefonları zaman içinde gelişerek, bilgiye erişimde en önemli araç olmaya başlamıştır.

3.2 milyar akıllı telefon ve 1.14 milyar tablet kullanıcısı olduğu düşünüldüğünde, mobil cihazların en yaygın teknolojik araçlardan birisi olduğu söylenebilir. İş yerinde, evde, yürürken, koşarken, yemek yerken, yatarken, araba sürerken insanlar sürekli mobil cihazlarını kullanır hale gelmiştir. Araştırmalara göre kullanıcılar akıllı telefonlarını her dört dakikada bir kontrol ederken, kullanım zamanının %88'ini ise mobil uygulamalarla geçirmektedirler (Buildfire, 2021).

Song ve Kim, (2015) mobil uygulamayı, “kullanıcılara belirli görevleri yerine getirmede yardımcı olmak için geliştirilmiş mobil cihaz tabanlı bir yazılım” (s. 34) olarak tanımlamışlardır. Eğitimden sağlığa, finanstan spora her ihtiyaç alanı için geliştirilmiş mobil uygulamalar, insan hayatına büyük kolaylıklar getirmektedir. En popüler uygulama marketlerine bakıldığında Google Play’de 2.7 milyon, App Store’de ise 1.82 milyon kullanıma hazır mobil uygulama bulunmaktadır (Statista, 2021).

Mobil cihazlar ve uygulamaların kullanım oranı artmasıyla, eğitim alanında da yoğun ilgi görmeye başlamıştır. Dil eğitimi (Eisenlauer, 2014), matematik (Khoo, 2016), kimya (Melo & Çomo, 2016), coğrafya (Crompton, 2016), tarih (Pegrum, 2019), beden eğitimi (Crawford & Fitzpatrick, 2015) gibi birçok akademik disiplinde mobil cihazların ve uygulamaların kullanımlarıyla ilgili çalışmalar yapılmıştır. Eğitimle ilgili çalışma sayısı artmasıyla mobil eğitim uygulamalarıyla ilgili farklı sınıflamalar yapılmıştır. Cherner, Dix ve Lee (2014) “beceri temelli, içeriğe dayalı, işlev tabanlı”; Notari, Hielscher ve King (2016) “bilgi ve beceri geliştirme, iş birliği, öğrenme ve öğretme destek, iletişim, destek” olmak üzere mobil eğitim uygulamaları sınıflamaları yapmışlardır. Yapılan sınıflama çalışmalarıyla mobil uygulamaların kullanım alanları, yeni uygulama ihtiyaçları, uygulama eksikliklerini ve faydalarını belirleme gibi amaçlar için veri toplama çalışmaları yapılabilmektedir. Bu sayede sosyal bilimler araştırmaları, eğitimciler ve uygulama geliştiriciler için önemli bir veri kaynağı sağlanmaktadır.

Uygulama marketleri incelendiğinde, müzik uygulamalarının önemli bir yere sahip olduğu görülmektedir. Doğru orantılı olarak müzik alanıyla ilgili mobil cihaz ve uygulamaların etkisinin incelendiği birçok çalışma yapılmıştır. Genel olarak bakıldığında

- İtme, ritim çalışması, şarkı söyleme (Burton & Pearsall, 2015; Chen, 2015; Miller, 2012)

- Enstrüman eğitimi (Palazón & Giráldez, 2018; Ng, Lui, & Kwok, 2015)
- Teori çalışmaları (Chong, 2019; Ng, Lui, & Lo, 2013) gibi alanlarda akademik araştırmalar yapılmıştır.

Literatür incelendiğinde mobil müzik uygulamalarına ait bazı sınıflama çalışmalarının yapıldığı görülmektedir. Kell, Wanderley ve Kit (2013) App Store özelinde piyano, dj, ses kayıt ve düzenleme, müzik prodüksiyon, gitar, davul, sentezleyici, sequencer, karaoke, amplifikatör ve diğer olarak bir mobil müzik uygulamaları sınıflama çalışması yapmışlardır. Fulcher (2017) ise müzik öğretmenlerinin kullanımları üzerine sınıf yönetimi, sosyal, oyun, çoklu ortam, müzik değerlendirme, müzik üretim, müzik performans, müzik teori, bilgi ve yardımcı uygulamalar olarak bir sınıflama yapmıştır.

En yoğun kullanılan Google Play ve App Store uygulama marketlerinde bulunan müzik uygulamaları üzerine yapılmış güncel bir sınıflama çalışmasına ise rastlanmamıştır. Yeni ve kapsamlı bir sınıflama çalışmasının müzik araştırmacıları, eğitimciler, uygulama geliştiriciler ve kullanıcılar için önemli bir ihtiyacı karşılayacağı düşünülmektedir. Bu bağlamda araştırma kapsamında en yoğun şekilde kullanılan uygulama marketlerinde bulunan müzik uygulamaları için güncel bir sınıflama çalışması gerçekleştirilmeye çalışılmıştır.

### **Yöntem**

Araştırmada hedeflenen mobil müzik uygulamaları sınıflarının belirlenmesi için 799 mobil uygulama incelenmiştir. İncelenecek uygulamalar: Mart 2021 tarihinde Türkiye’den erişilebilen, App Store ve Google Play uygulama marketlerinde bulunan “En Popüler Ücretli” ve “En Popüler Ücretsiz” kategorileri ile sınırlandırılmıştır. Google Play en popüler ücretsiz kategorisinde diğer kategorilerden fazla uygulama listlendiği için ilk 200 uygulama çalışmaya dahil edilmiştir. Diğer 3 kategoride listelenen bütün uygulamalar çalışma kapsamında incelenmiştir.

**Tablo 1**  
**İncelenen Müzik Uygulamaları**

Market	En Popüler Ücretli (f)	En Popüler Ücretsiz (f)
Google Play	200	200
App Store	199	200

Tablo 1’de görüldüğü üzere App Store uygulama marketinde listelenen 399 mobil müzik uygulaması ve Google Play uygulama marketinde listelenen 400 mobil müzik uygulaması çalışma kapsamında incelenmiştir. Uygulamalar; tanıtım videoları, uygulama açıklamaları veya araştırmacı tarafından indirilip kullanılarak incelenmiştir. Belirlenen kullanım amaçları yeniden taranarak aynı çatı altında ifade edilebilecek uygulamalar ile ilgili gruplar oluşturulmaya çalışılmıştır. Bu şekilde bir etiketleme ve iki grupta işlemi gerçekleştirilmiştir. Yapılan tarama işlemlerine ait frekans yüzde analizleri tablolaştırılarak bulgular kısmında verilmiştir.

### **Bulgular**

Araştırma kapsamında 799 mobil müzik uygulaması incelenmiştir. Birinci taramada bütün müzik uygulamaları kaydedilmiş ve uygulamalar kullanım amaçlarına göre etiketlenmiştir. Yapılan incelemeye ait örnek veriler Tablo 2 ve 3'te gösterilmiştir.

Tablo 2  
App Store En Popüler Ücretli Kategorisi Örnek Etiketleme

S.No	Uygulama Adı	Etiket
1	iPracticePro	Referans
2	Pure Acid	Sentezleyici (Synthesizer)
3	Tenuto	Teori İşitme
4	Zurna	Enstrüman
5	Türkü Sözleri	Söz Sağlayıcı
6	Korg ielectribe	Sentezleyici
7	Guitar Pro	Referans
8	Drummer ITP	Davul Eğitim
9	MusicView	Müzik Çalar Kontrolü
10	Tuneln	Radyo
11	Ringtone Designer	Zil Sesi Üretim
12	Kanun	Enstrüman
13	SoundHound	Müzik Tanımlama
14	Bağlama Tuner	Akort Aleti
15	PocketGuitar	Enstrüman
16	ClearTune	Akort Aleti
17	Ney	Enstrüman
18	iReal Pro	Referans
19	Akort Aleti	Akort Aleti
20	Tap Dj	DJ (Disk Jockey)

Tablo 2'de App Store müzik bölümünde bulunan en popüler ücretli müzik uygulamaları kategorisinde listelenen ilk 20 uygulama ve ilgili etiketler gösterilmiştir. Tablo 2'de gösterildiği şekilde App Store müzik uygulamaları kategorisindeki 399 uygulamaya etiketleme çalışması yapılmıştır.

Tablo 3  
Google Play En Popüler Ücretli Kategorisi Örnek Etiketleme

S.No	Uygulama Adı	Etiket
1	Poweramp	Müzik Çalar
2	FL Studio	DAW
3	USB Audio	Müzik Çalar
4	BubleUP	Ses Aktarma
5	iReal Pro	Referans
6	audioPro	Müzik Çalar
7	Guitar Pro	Referans
8	radio net	Radyo
9	PowerAudio	Müzik Çalar
10	Koala Sampler	DAW
11	jet Audio	Müzik Çalar
12	TonalEnergy	Akort Aleti
13	Black Player	Müzik Çalar
14	Pulsar	Müzik Çalar
15	PlayerPro	Müzik Çalar
16	Neutron	Müzik Çalar
17	Audyssey	Ekolayzer
18	Gone	Müzik Çalar
19	PowerAudio Plus	Müzik Çalar
20	MediaMonkey	Müzik Çalar

Tablo 3'te Google Play müzik bölümünde bulunan en popüler ücretli müzik uygulamaları kategorisinde listelenen ilk 20 uygulama ve ilgili etiketler gösterilmiştir. Tablo 3'te gösterildiği şekilde Google Play müzik uygulamaları kategorisindeki 400 uygulamaya etiketleme çalışması yapılmıştır.

App Store uygulama marketinde yapılan birinci tarama ile elde edilen müzik uygulamaları çeşitleri Tablo 4'te verilmiştir.

Tablo 4  
App Store Birinci Graplama

S.No	Uygulama Adı	f	%	S.No	Uygulama Adı	f	%
1	Müzik Çalar	74	18,55	24	Ses Kaydedici	4	1,00
2	Akort Aleti	45	11,28	25	Ses Aktarma	4	1,00
3	Radyo	33	8,27	26	Kulaklık Kontrol	4	1,00
4	Enstrüman	30	7,52	27	Ses efekt	4	1,00
5	Looper	18	4,51	28	Besteleme	3	0,75
6	Ekolayzer	17	4,26	29	Transkript	3	0,75
7	Müzik oluşturma	14	3,51	30	Video Oluşturma Oynatma	3	0,75
8	Efekt-Amfi Modelleme	12	3,01	31	Akor Eğitimi	3	0,75
9	Zil Sesi	12	3,01	32	Ritim eğitimi	3	0,75
10	Sentezleyici	11	2,76	33	Davul Eğitim	3	0,75
11	Teori ve İşitme	13	3,26	34	Nota Yazım	2	0,50
12	Metronom	10	2,51	35	Nota Görünteleme ve Çalma	2	0,50
13	Dj	8	2,01	36	Canlı Müzik	2	0,50
14	Şarkı Söyleme	8	2,01	37	Gürültü engelleyici	1	0,25
15	Ses Analiz Spektrum	6	1,50	38	Müziğe Görsel	1	0,25
16	DAW	6	1,50	39	Otomatik Notaya Alma	1	0,25
17	Piyano Eğitimi	6	1,50	40	Ses Düzeltici	1	0,25
18	Müzik Tanıma	5	1,25	41	Frekans İşitme	1	0,25
19	Gitar Eğitimi	5	1,25	42	Frekans Ölçme	1	0,25
20	Yazılım Kontrol	4	1,00	43	Desibel Ölçer	1	0,25
21	Referans	4	1,00	44	Müzik Sosyal Ağ	1	0,25
22	Akor Bulma	4	1,00	45	Müzik Çalar Kontrolü	1	0,25
23	Söz-Akor Gösterme	4	1,00	46	Format Dönüştürücü	1	0,25
TOPLAM						399	100

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Tablo 4'te App Store uygulama marketinin müzik bölümündeki uygulamalara yapılan etiketleme sonucunda oluşan gruplar verilmiştir. Toplamda 46 çeşit uygulama türü tespit edilmiştir. En yüksek oranda uygulama türünün müzik çalar (%18,55) olarak kullanıldığı; 10 uygulama türünün ise birer örneğinin bulunduğu tespit edilmiştir.

Tablo 5  
Google Play Birinci Gruplama

S.No	Uygulama Adı	f	%	S.No	Uygulama Adı	f	%
1	Müzik Çalar	82	20,50	23	Efekt-Amfi Modelleme	4	1,00
2	Radyo	26	6,50	24	Müzik Tanımlama	4	1,00
3	Ses Kaydedici	26	6,50	25	Ses Analizi	4	1,00
4	Ekolayzer	25	6,25	26	Gitar Eğitimi	4	1,00
5	Müzik İndirme	23	5,75	27	Transkript	3	0,75
6	Enstrüman	22	5,50	28	Format Dönüştürücü	3	0,75
7	Akort Aleti	21	5,25	29	Referans	2	0,50
8	DAW	18	4,50	30	Piyano Eğitimi	2	0,50
9	Zil Sesi	17	4,25	31	Ses Eğitimi	2	0,50
10	Looper	13	3,25	32	Yazılım Kontrol	2	0,50
11	Metronom	12	3,00	33	Müziğe Görsel	2	0,50
12	Müzik Oluşturma	10	2,50	34	Frekans İşitme	1	0,25
13	Kulaklık Kontrol	9	2,25	35	Nota Yazım	1	0,25
14	Şarkı Söyleme	7	1,75	36	Canlı Müzik Dinle	1	0,25
15	Ses Aktarma	7	1,75	37	Besteleme	1	0,25
16	Akor Eğitimi	7	1,75	38	Bağlama Öğren	1	0,25
17	Sentezleyici	6	1,50	39	Video Müzik Ekle	1	0,25
18	DJ	6	1,50	40	Akor Bulma	1	0,25
19	Söz-Akor Gösterme	6	1,50	41	Ritim Eğitimi	1	0,25
20	Nota Göster	5	1,25	42	Davul Eğitimi	1	0,25
21	Teori İşitme	5	1,25	43	Desibel Ölçer	1	0,25
22	Ses değiştirici	5	1,25		TOPLAM	400	100

Tablo 5'te Google Play uygulama marketinin müzik bölümündeki uygulamalara yapılan etiketleme sonucunda oluşan gruplar verilmiştir. Toplamda 43 çeşit uygulama türü tespit edilmiştir. En yüksek oranda uygulama türünün müzik çalar (%20,50) olarak kullanıldığı; 10 uygulama türünün ise birer örneğinin bulunduğu tespit edilmiştir

Gerçekleştirilen etiketleme ve ilk gruplama işleminin ardından, yeniden bir gruplama çalışması yapılmıştır. Benzer amaçlara hizmet ettiği değerlendirilen mobil müzik uygulamaları için birer üst kategori belirlenmeye çalışılmıştır.

Kullanım amaçları değerlendirilerek yapılan üst gruplar şöyle belirlenmiştir:

- **Dinleme:** Müzik dinleme genel amacı için hazırlanmış uygulamalar
- **Eğitim:** Müzik teorisi, işitme, enstrüman eğitimi amacıyla hazırlanmış uygulamalar
- **Üretim:** MIDI ve/veya harici ses kayıt teknolojileri kullanılarak müzikal üretim imkanı sağlayan uygulamalar ve nota yazım uygulamaları
- **Performans:** Metronom, akort aleti, çeşitli efekt cihazları ve amfi modellemelerini içeren canlı kullanıma olanak veren uygulamalar
- **Sanal Enstrüman:** Çeşitli müzik aletlerinin modellemelerini içeren uygulamalar
- **Diğer:** Format dönüştürme, Hz ve desibel ölçme, çeşitli yazılımlar için uzaktan kontrol gibi farklı müzikal ihtiyaçlara çözüm üretmek için oluşturulan uygulamalar

Tablo 6  
Müzik Uygulamaları Sınıflamasına Ait Dağılımlar

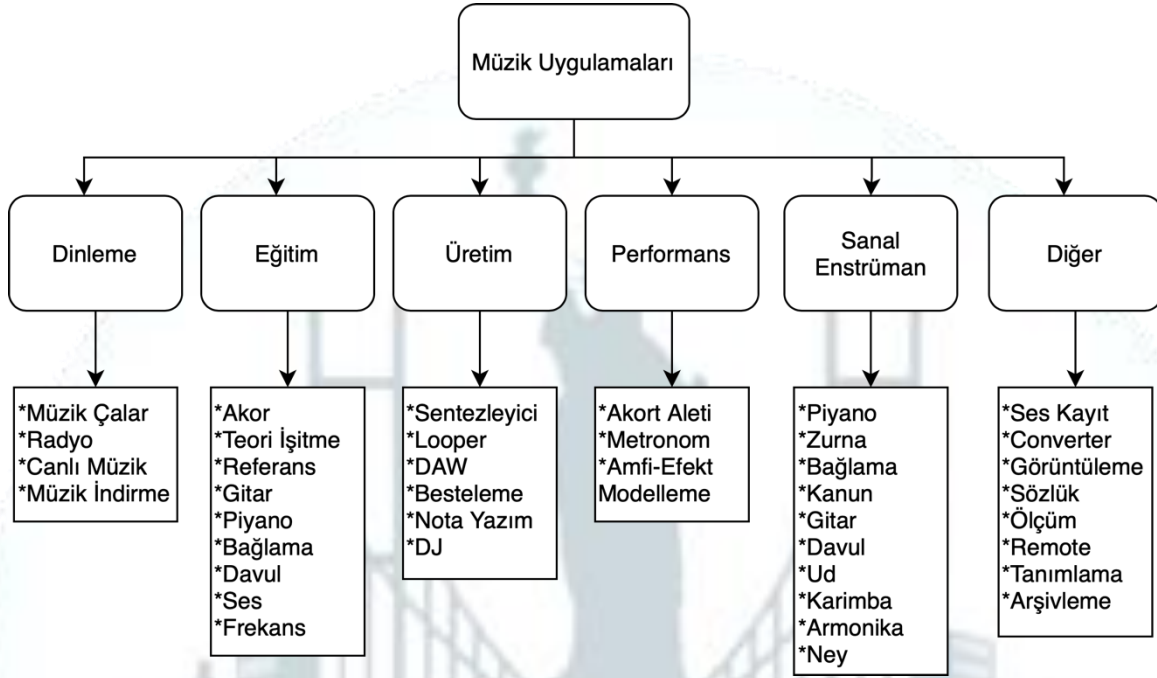
Sınıf	App Store		Google Play		Genel	
	f	%	f	%	f	%
Dinleme	109	27,32%	132	0,33	241	30,16%
Eğitim	38	9,52%	29	0,0725	67	8,39%
Üretim	62	15,54%	55	0,1375	117	14,64%
Performans	67	16,79%	37	0,0925	104	13,02%
Sanal Enstrüman	30	7,52%	22	0,055	52	6,51%
Diğer	93	23,31%	125	0,3125	218	27,28%

Tablo 6'da mobil müzik uygulamaları sınıflamasına ait dağılımlar verilmiştir. Tablo incelendiğinde mobil müzik uygulamaları arasında en yoğun grup dinleme uygulamaları (%30,16) olurken, sanal enstrüman grubu (%6,51) en az uygulama barındıran grup olmuştur.

## Sonuç

Araştırma kapsamında mobil müzik uygulamaları için kapsamlı ve güncel bir sınıflama çalışması yapılmıştır. Bunun için Mart 2021 tarihinde Türkiye'den erişilebilen, App

Store en popüler ücretli (199), en popüler ücretsiz (200) ve Google Play en popüler ücretli (200), en popüler ücretsiz (200) kategorilerinde yer alan toplam 799 müzik uygulaması incelenmiştir. Öncelikle 799 uygulama kullanım özelliklerine göre etiketlenmiştir. Etiketleme çalışmasının ardından mobil uygulamalar, kullanım amaçları ve sayıları göz önüne alınarak uygulama marketleri özelinde gruplandırılmıştır. Yapılan gruplama çalışmalarının ardından mobil müzik uygulamalarının 6 sınıf altında toplanabileceği belirlenmiştir.



Şekil 1. Müzik Uygulamaları

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## A NOVEL SYSTEM FOR FIGHTER AIRCRAFT CONCEPTUAL DESIGN AND ANALYSIS

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### Abstract

Throughout aircraft development process, the conceptual design phase is a very important milestone; hence, the quality and success of this step directly effect the overall cost and lead time of the project. The main goal of HAKTAS Software (Hava Aracı Kavramsal Tasarım ve Analiz Sistemi – Aircraft Conceptual Design and Analysis System) which is under development, is to provide some outputs and suggestions to the designer regarding the requirements for reducing the overall design time, reducing the design costs and creating a best design at the early phases of project by optimizing the aircraft development process.

This software was prepared parametrically and gives the optimum design parameters, and possible performance, aerodynamics, weight and fuel consumption values in line with the requirements of the users and customers. At the same time, software gives a 3D sketch geometry of aircraft and  $C_L$ ,  $C_D$ ,  $C_L/C_D$  max values related this geometry.

This software has been developing under the roof of MATLAB, and also integrated some other software too. MATLAB is used for main software and code studies created on it. More than 6.000 lines of code developed under the main structure of MATLAB. Also some GUI screens created for being more user friendly. All these studies collected under a MATLAB application which is named “Aircraft Conceptual Tool” and can be selected from applications bar.

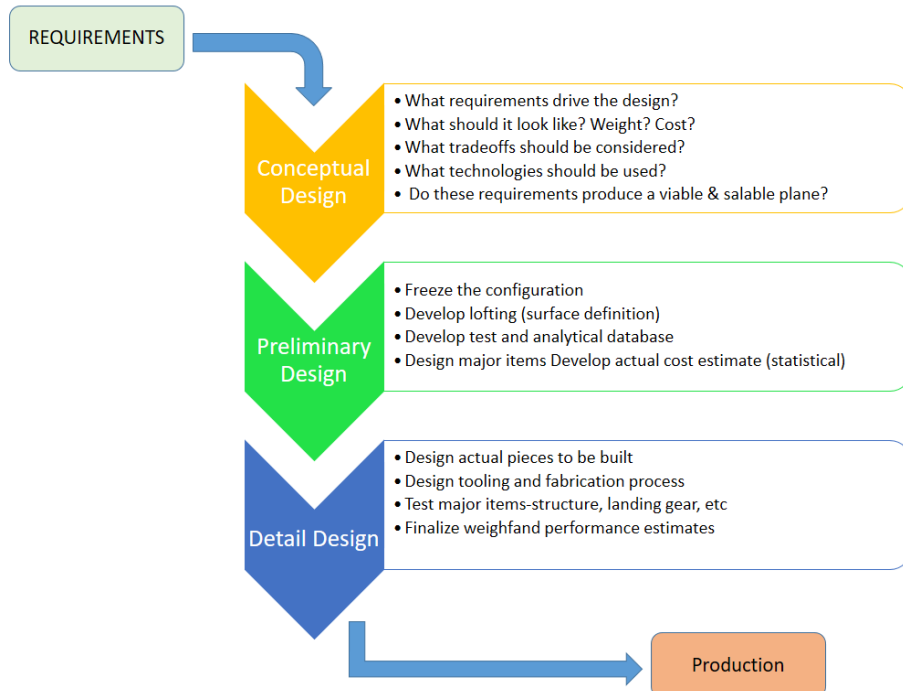
In this study, the modules and functions of the software are introduced one by one, a conceptual design study has been carried out on a fighter aircraft example and the results are shared.

**Keywords:** Conceptual Design, Conceptual Design Software, Aircraft Parametric Forecasting

### INTRODUCTION

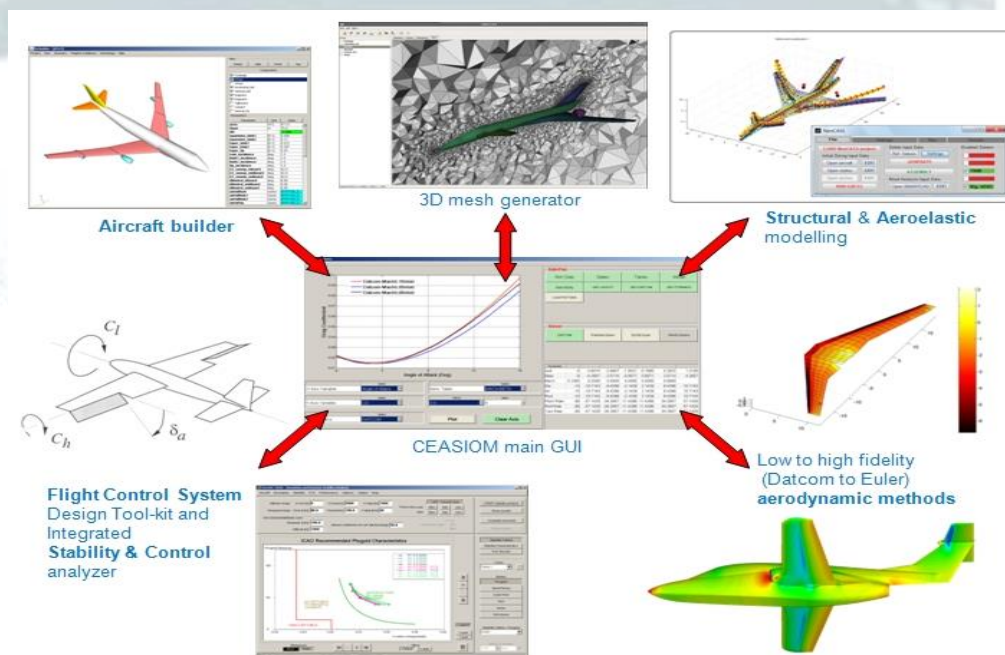
Product innovation is an important aspect for attaining a quality product. Conceptual design, design concept or conceptualization is the beginning phase of the design process normally after the recognition of need. Creativity is related to conceptualization because conceptualization is a means to identify viable solutions by considering alternatives. Creativity is a means to generate alternative solutions (Ertaş and Jones, 1996).

The conceptual design phase of an aircraft design process is very important because of directly effecting the all subsequent stages of the whole process. Because it's the zero point of all design steps and directly feeds the “Pre Design” and “Detail Design” Phases. (Raymer, 1992)

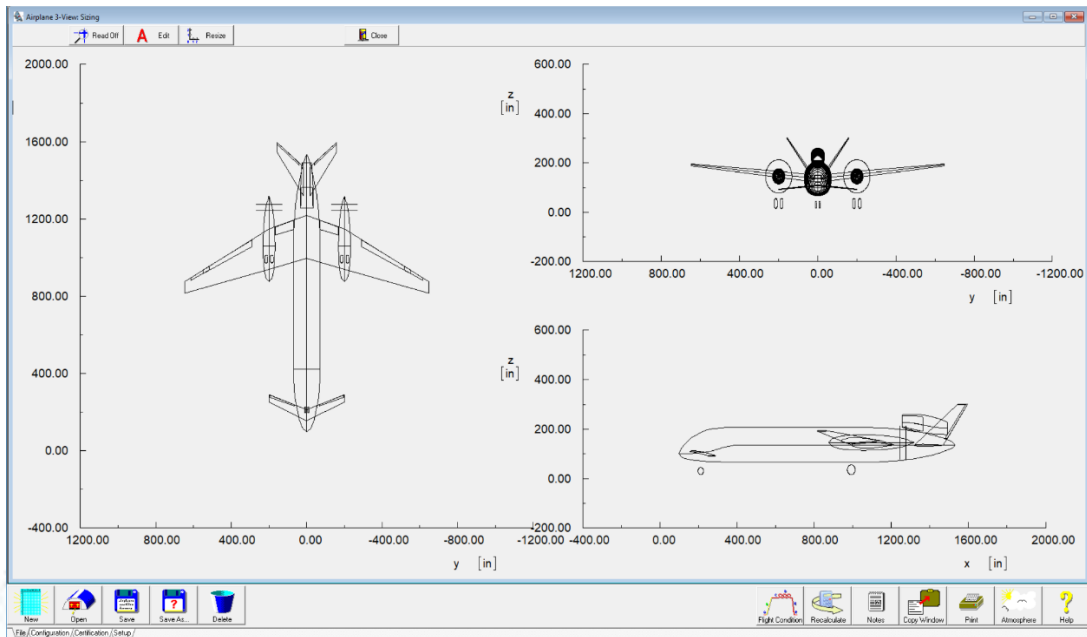


**Figure 1.** Three Phases of Aircraft (Raymer, 1992)

At recent years, the software usage for conceptual design processes have been increasing dramatically depending on the importance of cost reduction at aviation. Comprehensive and important projects initiated like SimSAC, which is supported by European Comission (EC SimSac project web site, 2021). Depending on this project many of softwares developed like Agile, Ceasiom, Suave which are created by Pyton and Matlab code structure. Apart from these, a few number of commercial software developed also. DAR Corporation’s product AAA (Advanced Aircraft Analysis) software can be an example of this. (DAR Corporation,web site, 2021)



**Figure 2.** The Modules and Interactions of CEASIAM Software (EC Ceasiom project web <https://ceasiom.com/> site, 2021)



<https://www.darcorp.com/advanced-aircraft-analysis->

**Figure 3:** A Screen View of AAA Software (DAR Corporation web site, 2021)

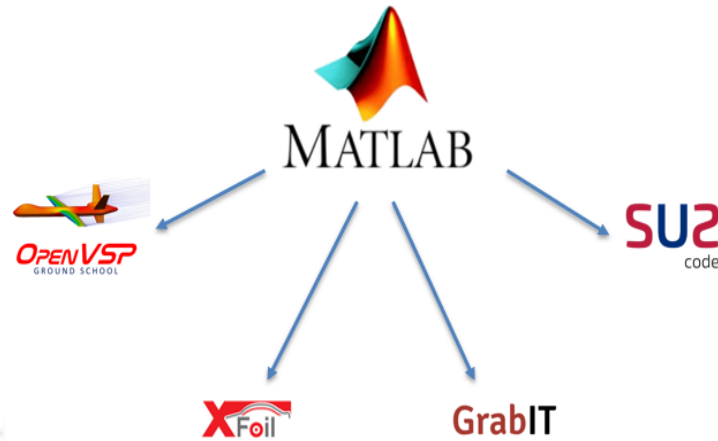
Exept these, aviation companies create and developed their own softwares internally like Airbus, Boeing and Lockheed Martin. But reaching some informations about these softwares are impossible because of being created in-house.

HAKTAS software, developed internally to meet some requirement through the product development process like other enterprise aviation companies.

## **MATERIALS AND METHODS**

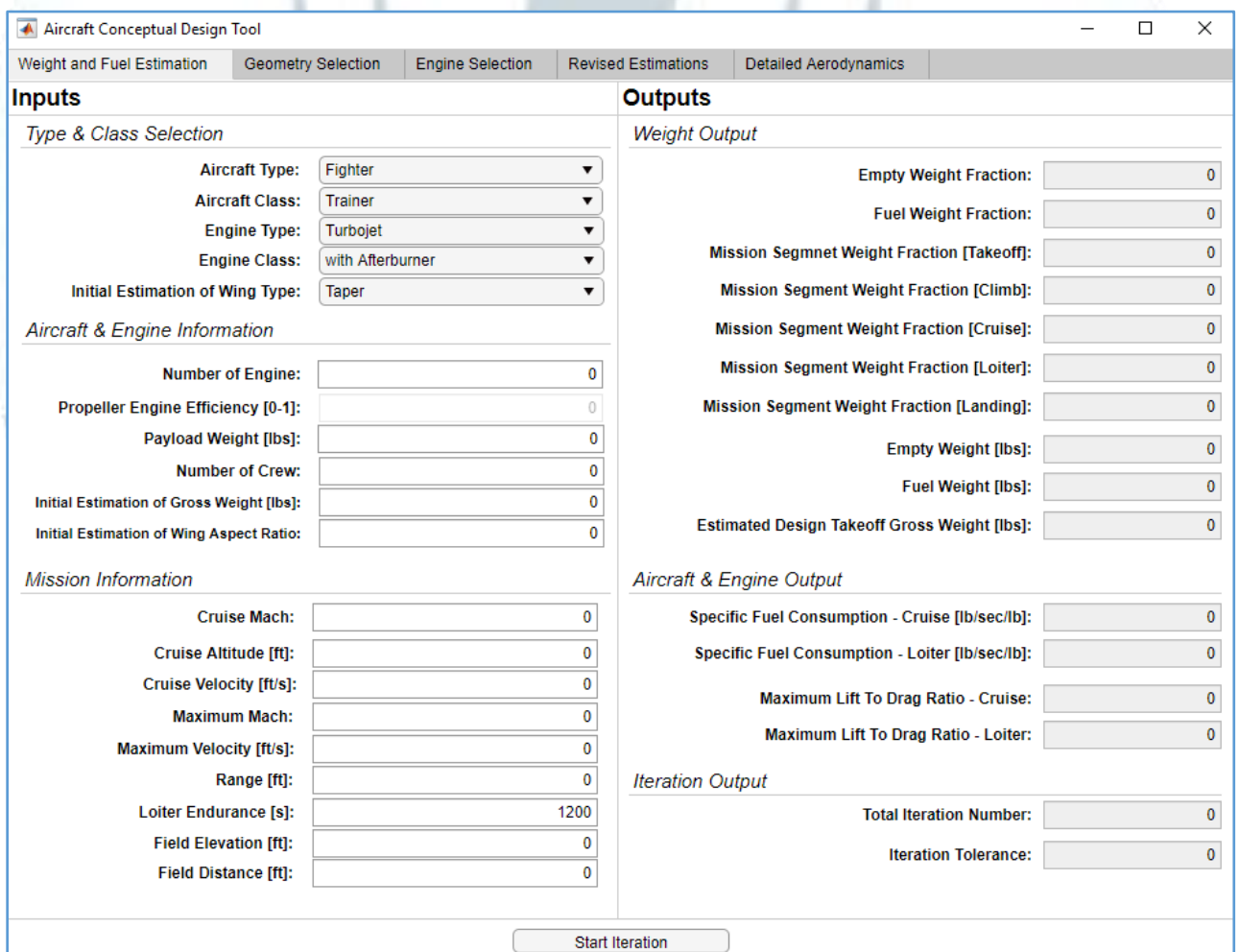
Many of conceptual design software was developed on MATLAB and Pyton platforms because of integration abilities to other softwares, machine learning and simulation capabilities and flexibilities. HAKTAS software is developed under the roof of MATLAB, and also integrated some other software.





**Figure 4.** The Software Structure of HAKTAS

MATLAB is used for main software and code studies created on it. More than 6.000 lines of code developed under the main structure of MATLAB. And also some GUI screens created for being more user friendly. All these studies collected under a MATLAB application which is named “Aircraft Conceptual Tool”.



**Figure 5.** The Main Screen View of HAKTAS

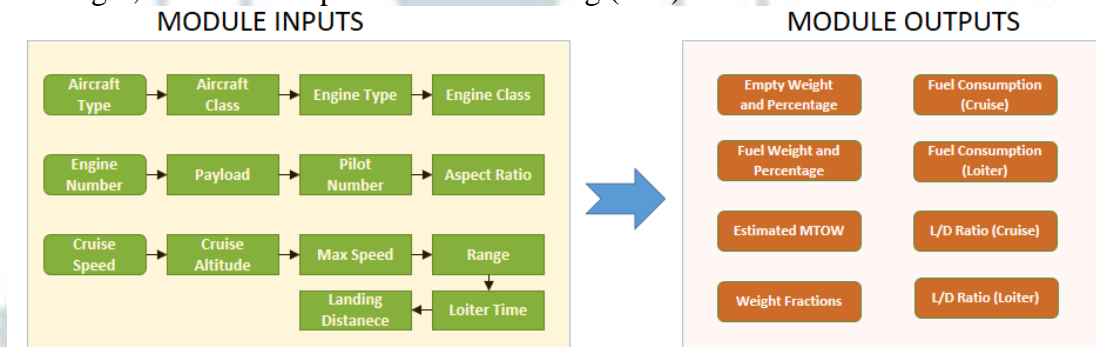
Open VSP is used for getting a 3D geometric sketch in line with the inputs of designer and related outputs of software. X-Foil is used to analyze the airfoil of the aircraft to be

designed. All airfoil types are installed to main software and they are easily can selected by designer. This software also can give  $C_L$ ,  $C_D$  and  $C_L/C_D$  max ratios and graphs. GrabIT software's function is creating parabolic and hyperbolic graphs for the some modules of the HAKTAS. Because the main data which are taken from the formulations and graphics from Raymer's Book is not enough for all conditions. GrabIT is completing the missing data. SU2 is an open source aerodynamic software is linked with HAKTAS. The main function is supporting the software for wing  $C_L$ ,  $C_D$  and  $C_L/C_D$  max values if the designer wants to make a correction on a CFD solver.

### Modules of software

The software has five main modules for different goals. All these modules are talking and feeding each other. The detailed informations about all modules and input – output relationship between them are given bellow.

**Weight and Fuel Estimation** is the first screen of software and the main selections and inputs are given in this module. At this screen, designer defines some inputs like aircraft type, engine type and number, aspect ratio and desired payload, maximum speed, cruise speed, altitude and range. And system gives some outputs like estimated empty weight, MTOW, Fuel Weight, Fuel Consumption and Lift to Drag (L/D) ratio informations.



**Figure 6.** Inputs and Outputs of Module 1

**Geometry Selection**, is the second screen of software and consist of five different submodules. At first submodule, designer selects the airfoil type from the database and additionally defines the Reynold's Number and some special angles like root/tip incidence degrees. The second submodule is wing selection screen and the designer assigns some informations about wing geometry like Aspect Ratio, Sweep Angle, Taper Ratio and Dihedral Degrees. The third submodule is fuselage length definition screen which allows this both manuel or automatically. The fourth screen is Tail & Canard Screen and the designer defines the tail informations such as single or twin vertical tail and if they have horizontal tail or not at this screen. Designer can also enter information about whether there is a canard or not. Geometry Generation is the last submodule and it gives an automated 3D sketch in line with the all inputs of designer.

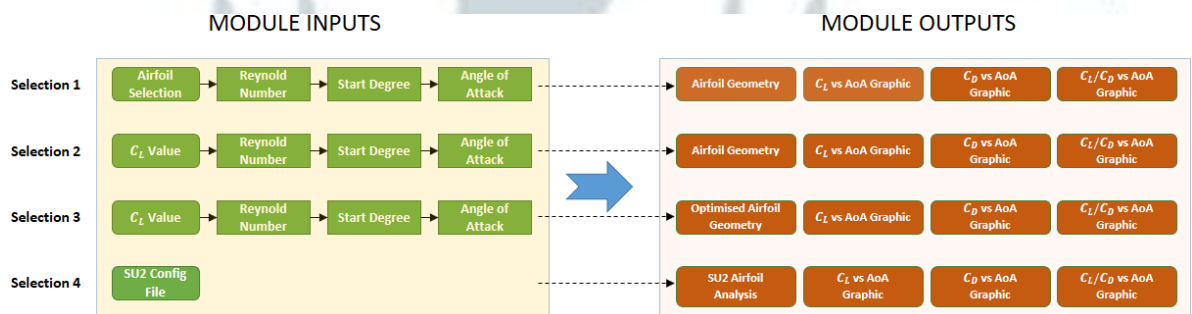
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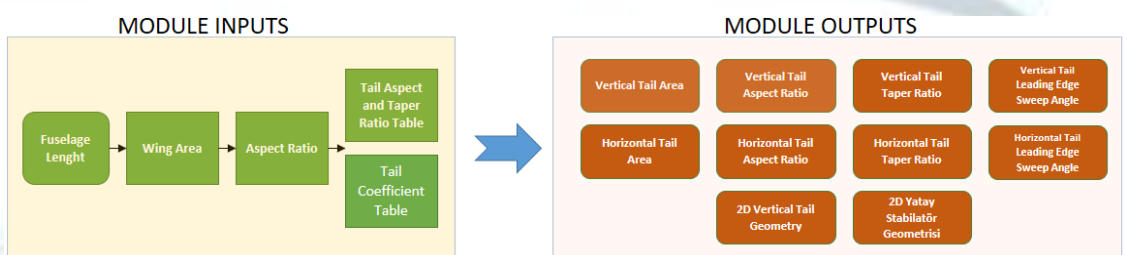
2.



**Figure 7.** Inputs and Outputs of Module 2 / Wing Selection Submodule



**Figure 8.** Inputs and Outputs of Module 2 / Airfoil Selection Submodule



**Figure 9.** Inputs and Outputs of Module 2 / Tail&Canard Selection Submodule

**Engine Selection**, is the third screen of the software, allowing the designer to choose the engine model and engine brand. All engine models and specifications at literature has been defined to the software database and the designer is free to select any of them. After selecting brand and model of engine, this module gives the thrust, dry weight, fuel consumption and Thrust to Weight ratio (T/W) values of selected engine.

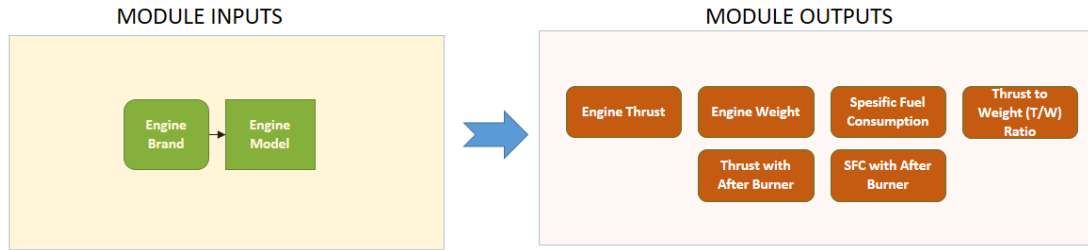


Figure 10. Inputs and Outputs of Module 3

**Revised Estimation**, is the fourth screen of the software, allowing the designer to choose the mission profile of aircraft. According to the chosen profile, system makes some corrections and optimisations, so it calculates new values like weight fractions, wing informations, fuselage and tail informations. At this screen, designer must define the combat turn, sustain turn, approach/acceleration and dash informations in line with mission profile. These informations are detailed features that vary according to the area of use of the aircraft. (Özgen, 2017)

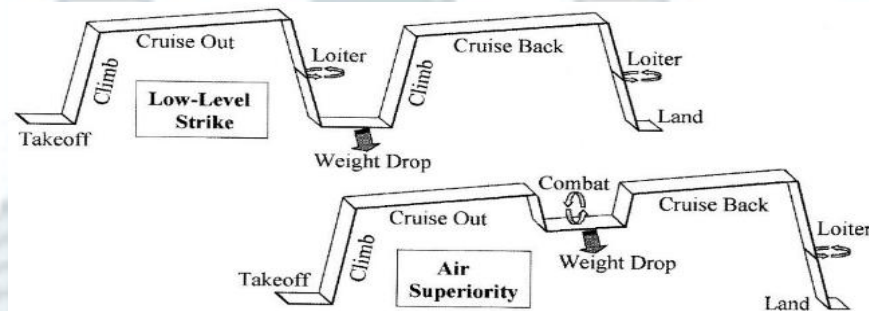


Figure 11. Two Types of Fighter Jet Mission Profile (S. Özgen)

**Detailed Aerodynamics**, is the last screen of the software and gives the  $C_L$ ,  $C_D$  and  $C_{Lmax}$  values of aircraft finally and generates a  $C_L$  vs AoA graph. Hence, designer can calculate the most efficient point of the cruise for designed aircraft. Also this module gives a 3-axis graphic of  $C_L - AoA - Velocity$ , so the designer can define an equations which consist of these three parameters and can detect the most efficient conditions during the whole flight.

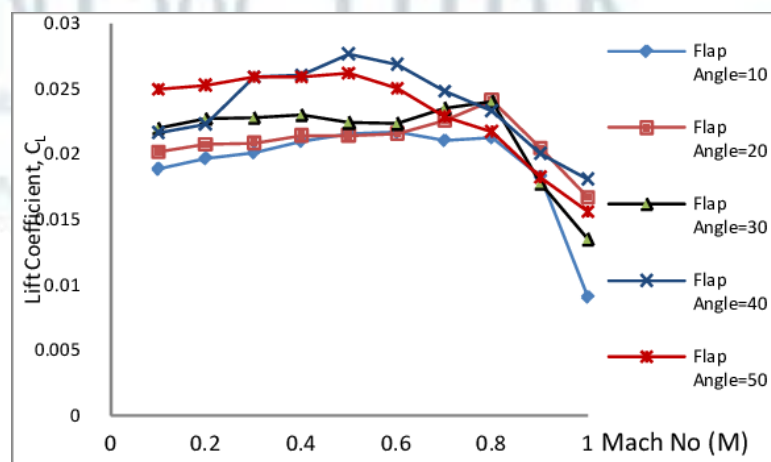


Figure 12. A sample of  $C_L - AoA - Velocity$  Graph (Ahmed et al., 2013)



**Equations & Calculation Methods**

The software based on the methods and formulations of Raymer’s Aircraft Design book and all calculation technical interpreted from this source.

As it mentioned above, more than 6.000 line codes created, more than 350 equations and more than 45 tables used on software, so its impossible to give all of them. But some of them are given bellow as example.

**Gross Weight Fraction**  $W_0 \frac{W_{crew} + W_{payload}}{1 - (W_f/W_0) - (W_e/W_0)}$  (1)

**Empty Weight Fraction**  $\frac{W_e}{W_0} = A \cdot W_0^C \cdot K_{VS}$   
(2)

**Fuel Weight Fraction**  $\frac{W_f}{W_0} = 1.06 \left(1 - \frac{W_x}{W_0}\right)$   
(3)

**Wing Loading for Turbojet / Turbofan**  $W/S = (TOP)\sigma C_{L_{TO}} (T/W)$   
(4)

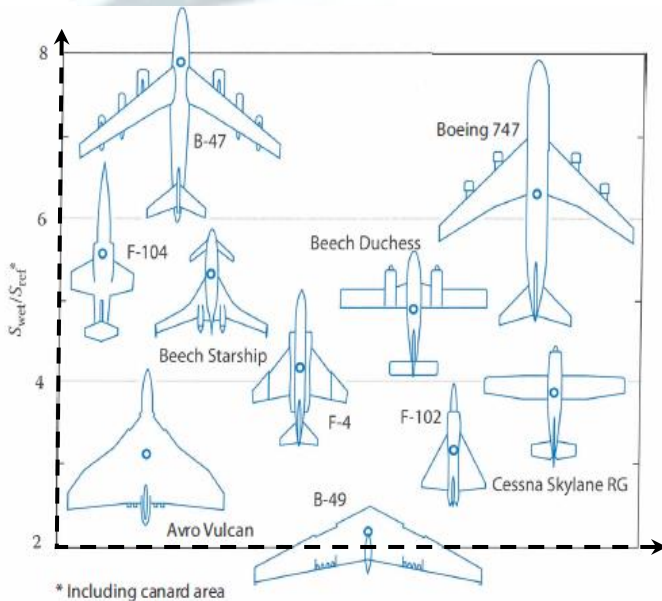
**Vertical Tail Area**  $S_{VT} = \frac{c_{VT} b_w S_{VT}}{L_{VT}}$   
(5)

**Specific Fuel Consumption**  $C = C_{bhp} \frac{V}{550 \eta_p}$  (6)

**Lift / Drag Raito**  $\frac{L}{D_{max}} = K_{LD} \sqrt{A_{wetted}} = K_{LD} \sqrt{\frac{A}{S_{wet}/S_{ref}}}$  (7)

**Wing Span**  $b = \sqrt{S \cdot AR}$  (8)

**Table 1.**  $S_{wet}/S_{ref}$  Graphic and A Created Table From This Graph (Raymer, 1992)



	Wing Type	Swet/Sref
Fighter	Taper	5.60
	Trapezoid	4.15
	Delta	3.25
	Ogive	3.50
	Sweptback	4.85
Bomber	Taper	3.80
	Delta	3.10
	Ogive	2.20
	Sweptback	7.90
	UAV	Taper

	Delta	2.20
	Rectangular	4.90
	Sweptback	7.90
Military Cargo/Tanker	Sweptback	7.90

**RESULTS AND DISCUSSION**

This software gives the opportunity of reducing design time and facing with the performance parameters at the beginning of study to the designer. The only way to prove that this software is working correctly is comparing the outputs of system with a real fighter aircraft. Lockheed Martin F-16 is the most popular fighter aircraft and because of this, it is easy to find the real flight parameters.

So, at this step; real F-16 data are taken and compared with HAKTAS software outputs. There are lots of F-16 variations all over the world, but a popular version that is F-16 C Block 50 is choosen. (Internet links of these features are given at references)

**Table 2.** F-16 Data Sheet (General)

GENERAL FEATURES	
<b>Length</b>	49 ft 5 in (15.06 m)
<b>Wingspan</b>	32 ft 8 in (9.96 m)
<b>Height</b>	16 ft (4.9 m)
<b>Wing area</b>	300 sq ft (27,88 m <sup>2</sup> )
<b>Empty weight</b>	18,900 lb (8,573 kg)
<b>Gross weight</b>	26,500 lb (12,020 kg)
<b>Max takeoff weight</b>	42,300 lb (19,187 kg)
<b>Fuel capacity</b>	7,160 pounds (3,250 kg)
<b>Powerplant</b>	Turbofan (x1)
<b>Thrust</b>	17,155 lbf
<b>Wiht Afterburner</b>	29,500 lbf
<b>Crew</b>	1 person
<b>Lenght</b>	49.33 ft (15.03 m)
<b>Height</b>	16.33 ft (5.09 m)

**Table 3.** F-16 Data Sheet (Wing&Tail)

WING&TAIL FEATURES	
<b>Root Airfoil Section</b>	NACA 64A204
<b>Tip Airfoil Section</b>	NACA 64A204
<b>Wing Area</b>	300.0 ft <sup>2</sup> (27.88 m <sup>2</sup> )
<b>Aspect Ratio</b>	3,2
<b>Sweepback Angle</b>	40° at leading edge
<b>Tailplane Span</b>	18.29 ft (5.57 m)
<b>Tailplane Area</b>	63.7 ft <sup>2</sup> (5.92 m <sup>2</sup> )
<b>Tailfin Area</b>	43.1 ft <sup>2</sup> (4.00 m <sup>2</sup> )
<b>Wing Taper Ratio</b>	20°
<b>Wing Dihedral</b>	~-4°
<b>Horizontal Tail</b>	Yes
<b>#Vertical Tail</b>	1
<b>Canard</b>	No Canard
<b>Horizontal Dihedral</b>	~-4°

**Table 4.** F-16 Data Sheet (Performance)  
(Weight&Loadings)

**Table 5.** F-16 Data Sheet

PERFORMANCE FEATURES	
<b>Maximum speed</b>	Mach 2,05 (@40.000)
<b>Maximum speed</b>	Mach 1,2 (@Sea Level)
<b>Combat range</b>	295 nmi (339 mi, 546 km)
<b>Ferry range</b>	2,277 nmi (2,620 mi, 4,217 km)
<b>Service ceiling</b>	50,000 ft (15,000 m)
<b>G limits</b>	+9.0
<b>Rate of climb</b>	72,000 ft/min (370 m/s)
<b>Wing loading</b>	88.3 lb/sq ft (431 kg/m <sup>2</sup> )
<b>Thrust/weight</b>	1.095

WEIGHTS & LOADINGS	
<b>Empty Weight</b>	18,900 lb (8,573 kg)
<b>Normal Takeoff</b>	27,100 lb (12,295 kg)
<b>Gross weight</b>	26,500 lb (12,020 kg)
<b>Maximum Takeoff</b>	42,300 lb (19,185 kg)
<b>Fuel capacity (int.)</b>	7,160 pounds (3,250 kg)
<b>Fuel capacity (ext.)</b>	8,015 lb (3,645 kg)
<b>Payload (with fuel)</b>	10,600 lb (4,808 kg)
<b>Payload (without fuel)</b>	3,490 lb (1.583 kg)
<b>Wing loading</b>	88.3 lb/sq ft (431 kg/m <sup>2</sup> )

Real F-16 Weight&Loadings data defined to the first module of the software and system outputs are taken. (Figure 13) To find real aircraft data for inputs, several web sites used and these sources are added into references.

Field elevation information was defined the same value with Ankara Mürted Airbase that is 2.765 ft. Field distance information is taken 902 ft which is main spec of F-16 C Aircraft. Loiter information is generally used like 20-30 minutes for all types of aircrafts and at this study, 1200 seconds value was entered to system.

At the table bellow (Table 6); Real F-16 data and HAKTAS early estimation values are listed. These HAKTAS outputs are the first module outputs and have not yet been optimized. These are the initial values obtained based on some superficial and rough information. The software will update these results in line with the new requests entered in the later stages and following modules.

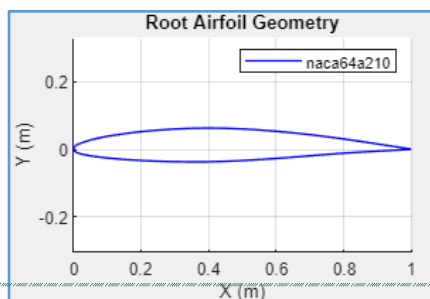


**Figure 13.** F-16 Real Data and HAKTAS Outputs (Module-1)

**Table 6.** F-16 Weight&Loadings Data and HAKTAS Module-1 Data (Rough Data) Comparison

	F-16	HAKTAS
Empty Weight (lb)	18.900	19.980
Gross Weight (lb)	26.500	33.020
Fuel Weight (lb)	7.160	9351

Real F-16 airfoil information are defined to system and system gave the real airfoil geometry,  $C_L$  vs AoA graph,  $C_D$  vs AoA graph, and  $C_L/C_D$  vs AoA graph both for root and tip airfoils.

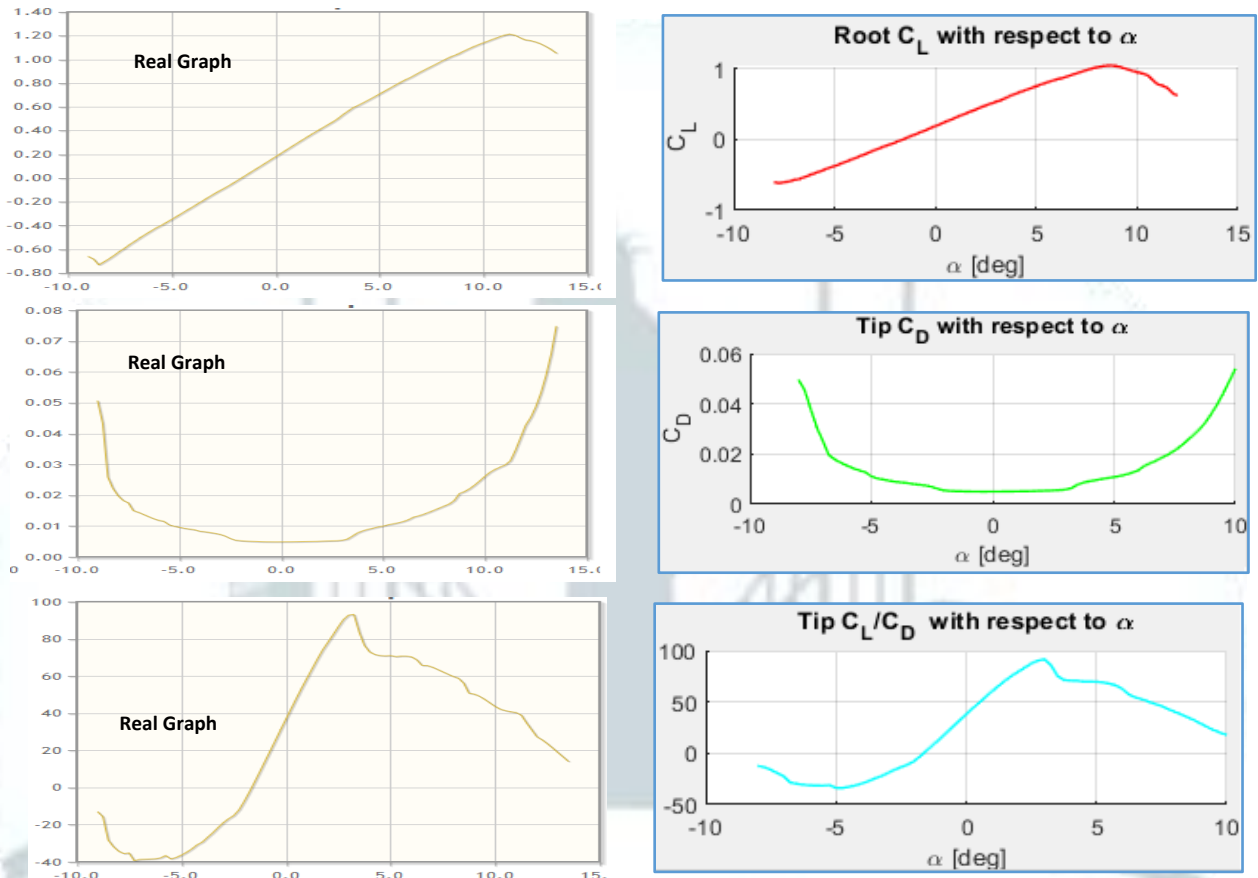


The system has given the same geometry with real aircraft airfoil.

System Geometry

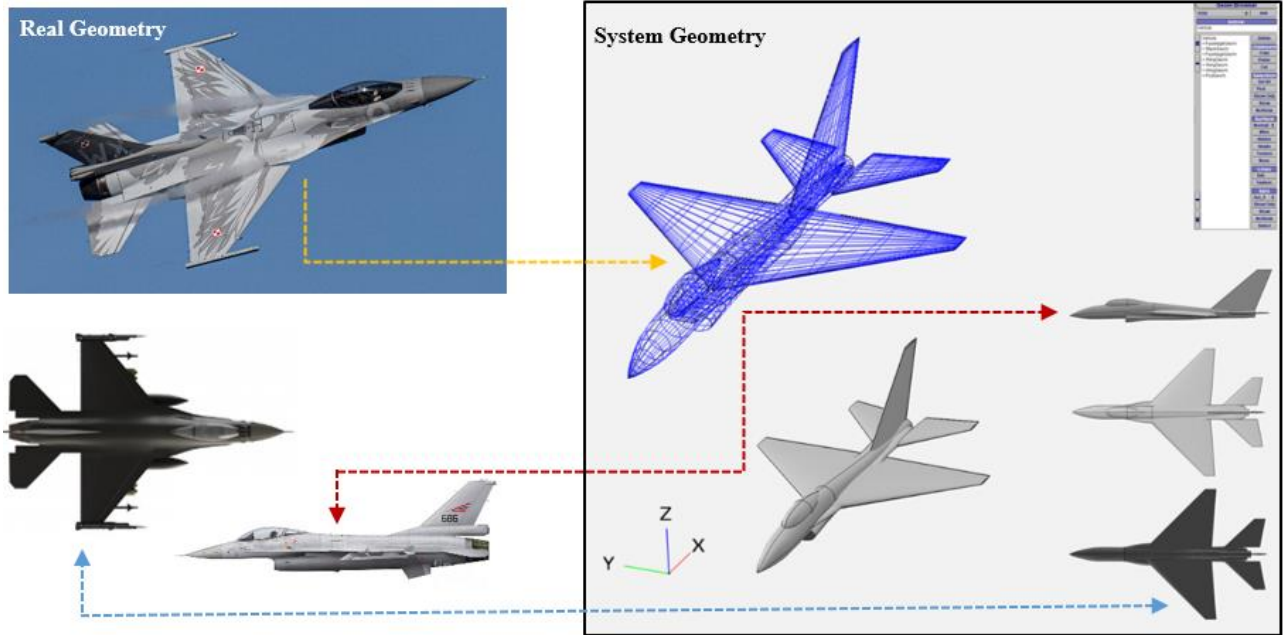
**Figure 14.** F-16 Real Airfoil Geometry and HAKTAS Geometry Comparison

The system has given very near results with real aircraft airfoil  $C_L$ ,  $C_D$  and  $C_L / C_D$  parameters.



**Figure 15.** F-16 Real Airfoil  $C_L$ ,  $C_D$  and  $C_L / C_D$  Graph and HAKTAS Solution Comparison

The system has given very near 3D images with real F-16 aircraft.



**Figure 16:** F-16 Real Geometries and HAKTAS Solutions Comparison

Detailed Engine Selection Inputs	
Brand Name:	General Electric
Model Name:	F110GE129
Detailed Engine Selection Outputs	
Thrust [lbf/SHP [hp]:	1.7e+04
Weight [lb]:	3980
Engine Specific Fuel Consumption[lb/sec/lb]:	0.0001889
Thrust to Gross Takeoff Weight	0.5149
Thrust when AF open [lbf]:	2.9e+04
SFC when AF open [lb/sec/lb]:	0.0005278

These data taken from various engine spec web sites and embedded in software. Designer can choose all engine types from database and call specs automatically.

**Figure 17.** F-16 Engine Data on HAKTAS (Module 3)

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Inputs for Revised Estimations (Req's)	Whole Revised Outputs
<p align="center">Detailed Mission Profiles <span style="float: right;">Air Superiority</span></p> <p><b>Combat Turn (Instantaneous Turn) Informations</b></p> <p>Combat Turning Rate (psidot) [deg/sec]: 20            Combat Altitude [ft]: 2e+04            Combat Mach Number: 0.55            Combat Velocity [ft/sec]: 570.2            Combat Time [sec]: 180</p> <p><b>Sustain Turn Informations</b></p> <p>Max. Allowable Turning "g" [g]: 6            Sustain Turn Altitude [ft]: 5e+04            Sustain Turn Mach Number: 0.8            Sustain Turn Velocity [ft/sec]: 774.4</p> <p><b>Approach, Acceleration and Dash Informations</b></p> <p>Approach Speed [ft/sec]: 220            Dash Distance [ft]: 3.083e+05            Dash Mach Number: 2            Dash Velocity [ft/sec]: 1936</p> <p><b>Informations Coming from First Module</b></p> <p>Cruise Vel [ft/sec]: 774.4    Cruise Mach: 0.8            Max Vel [ft/sec]: 1984    Max. Mach: 2.05            Cruise Altitude [ft]: 5e+04    Cruise Range [ft]: 5e+06</p> <p align="center">Start Whole Iteration</p>	<p><b>Weight Fractions</b></p> <p>Empty W. Frac.: 0.6463            M. Segment - Takeoff: 0.98            M. Segment - Climb: 0.9805            M. Segment - Cruise: 0.954            M. Segment - Accel.: 0.9556            M. Segment - Dash: 0.9708            M. Segment - Combat: 0.9806            M. Segment - Loiter: 0.9861            M. Segment - Descent: 0.993            M. Segment - Land: 0.995            Fuel W. Frac.: 0.2976</p> <p><b>Weights</b></p> <p>Empty Weight: 1.841e+04            Fuel Weight: 9375            Gross Weight: 3.149e+04</p> <p><b>General Aircraft &amp; Engine Specs</b></p> <p>*Aircraft Type: Fighter            *Aircraft Class: DogFighter            *Engine Type: Turbofan            *Engine Class: Low By-Pass wtl            Thrust: 1.7e+04            Thrust with Af: 2.9e+04            SFC: 0.0001889            SFC with Af: 0.0005278            L/D Ratio (cruise): 12.96            L/D Ratio (dash): 2.836            L/D Ratio (loiter): 13.95</p> <p><b>Wing Information</b></p> <p>*Root Airfoil Name: naca64a210            *Tip Airfoil Name: naca64a210            Wing Twist: -3            Wing Loading: 54.12            Wing Ref Area: 581.9            *Wing Aspect Ratio: 3.2            *Wing Le. Sweep: 40            Wing Span: 43.15            *Wing Dihedral: -4            *Wing Taper Ratio: 0.2            Wing M.A. Chord: 13.48            Wing Root Chord: 22.47            Wing Tip Chord: 4.495</p> <p><b>Fuselage &amp; Tail Information</b></p> <p>Fuselage Length: 52.82            H.Tail Ref Area: 160.6            H. Tail Span: 19.84            H. Tail Aspect Ratio: 2.45            V. Tail Ref Area: 81.96            V. Tail Span: 15.15            V. Tail Aspect Ratio: 1.4</p>
<b>NEW MISSION PROFILE INPUTS</b>	<b>REVISED OUTPUTS</b>

**Figure 18.** Revised Estimation Screen View (Module-4)

At this module, system optimizes and revises the first inputs at the Module-1 according to the mission profile and related new inputs. Combat turning rate, combat mach number, combat altitude, combat time, G load, approach speed, dash distance, dash mach number are very important requirements that determines and changes all weight and fuel information of the aircraft.

**Table 7.** F-16 Data, HAKTAS First Estimated Data and HAKTAS Revised Data Comparison

	F-16	HAKTAS 1. Estimation	HAKTAS Revised Estimation	Improvement Rate (%)
Empty Weight (lb)	18.900	19.980	18410	7,86
Gross Weight (lb)	26.500	33.020	31490	4,63
Fuel Weight (lb)	7.160	9.351	9375	-0,26
Max L/D Ratio (Cruise)	N/A	12,03	12,96	7,73
Max L/D Ratio (Loiter)	N/A	13,89	13,95	0,43
SFC Cruise	N/A	0,00020	0,00018	10,00
SFC Loiter	N/A	0,00017	0,00016	6,82
Fuselage Length	49,33	53,8	52,82	1,82
Horizontal Tail Area	182	194,2	160	17,61
Vertical Tail Area	186	198,2	163,92	17,30
Wing Area	600	668,6	581,9	12,97
Wing Loading	88	98,77	54,12	45,21
Thrust/Weight	0,94	0,87	0,92	5,75

### CONCLUSION

HAKTAS Software (Hava Aracı Kavramsal Tasarım ve Analiz Sistemi – Aircraft Conceptual Design and Analysis System) provides some outputs and suggestions to the designer regarding the requirements for reducing the overall design time, reducing the design costs and creating a best design at the early phases of project by optimizing the aircraft development process.

In this study, a small demo application was performed, and it was observed that the system gave realistic performance values and created a realistic geometry.

In addition to these, system made some improvements and optimizations in line with chosen mission profile. The observed improvement rates ranged from 0,43 percent to 45,21 percent. The system has been proven to work correctly according to the trials made and all the results obtained.

### ACKNOWLEDGEMENTS

This study has been prepared by benefiting from the study on "HAKTAS - Aircraft Concept Design and Analysis Tool" conducted under the Directorate of Innovation Department, Advanced Air Vehicles Concepts Technology Center, which operates within the Turkish Aerospace Industry. We would like to thank the research staff of the study Mustafa Çağatay ŞAHİN, Kaan YUTÜK, Engin TAŞKIRAN and Alpay DEMİRCAN for their hard work. Also I would like to thank my guide and responsible lecturer Assistance Professor Tuğrul OKTAY for his great supports for all steps of study.



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**Internet:** URL: Available at: [https://cdn.cloudflare.com/steam/apps/343953/manuals/F-16\\_Fighting\\_Falcon\\_Manual.pdf?t=1537344633](https://cdn.cloudflare.com/steam/apps/343953/manuals/F-16_Fighting_Falcon_Manual.pdf?t=1537344633) [02.02.2021]

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# ANALYZING THE EFFECTS OF AIRFOIL SELECTION TO THE LIFT COEFFICIENT AND DRAG COEFFICIENT ( $C_L$ and $C_D$ ) OF THE AIRCRAFT

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## Abstract

Airfoil is a very important component of the aircraft and has a direct impact on flight performance. Although airfoil technology has existed since the first aircraft design, it has advanced in line with technological developments and reached a computational arithmetic level.

Today, many types of airfoils are used and the most suitable profile is selected according to the characteristics, size, purpose of use and flight regime of the aircraft. For cargo, passenger or bomber aircrafts that will travel long distances and have high payload, laminar flow capable and thick-section airfoils are used. On the other hand, fighter planes that do not need to stay in the air for a long time, but require a lot of supersonic speed and maneuver capability, use thinner airfoils suitable for flow. Today, the most popular airfoil class is the NACA group and different classes such as GOE and EPLER are also currently used. In addition, own airfoil designs of aircraft companies are available today.

In this study; 5 different airfoils were determined for a sample combat aircraft and the effects of these profiles on the aircraft's final performance were analyzed. During the analysis, in-house developed HAKTAS (Hava Aracı Kavramsal Tasarım ve Analiz Sistemi – Aircraft Conceptual Design and Analysis System) software was used, and the effects of 5 types of airfoils on the lift and drag coefficients of the aircraft were examined and the results were compared. Also, some open source CFD studies applied for verification of the HAKTAS software outputs and the results of the study.

**Keywords:** Airfoil, Airfoil Selection, Aircraft Coefficient of Lift, Aircraft Coefficient of Drag

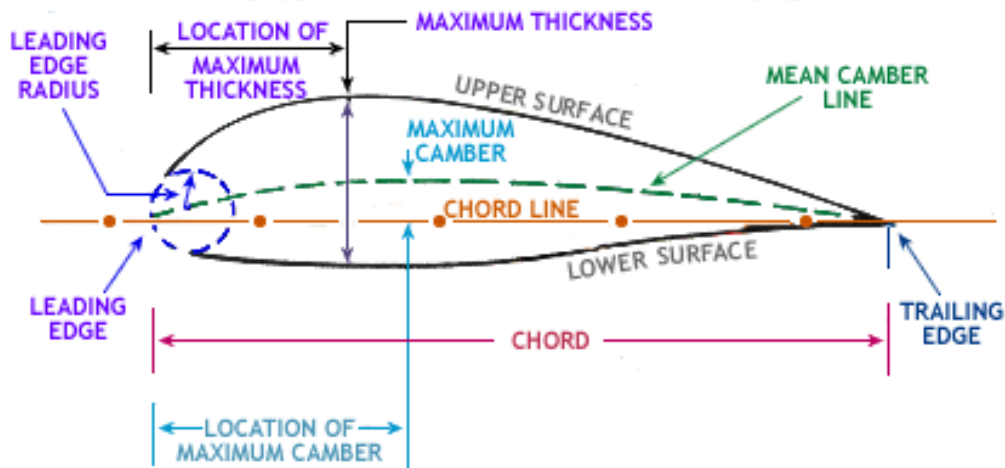
## INTRODUCTION

The airfoil, in many respects, is the heart of the airplane. The airfoil affects the cruise speed, takeoff and landing distances, stall speed, handling qualities (especially near the stall), and overall aerodynamic efficiency during all phases of flight (Raymer, 1992)

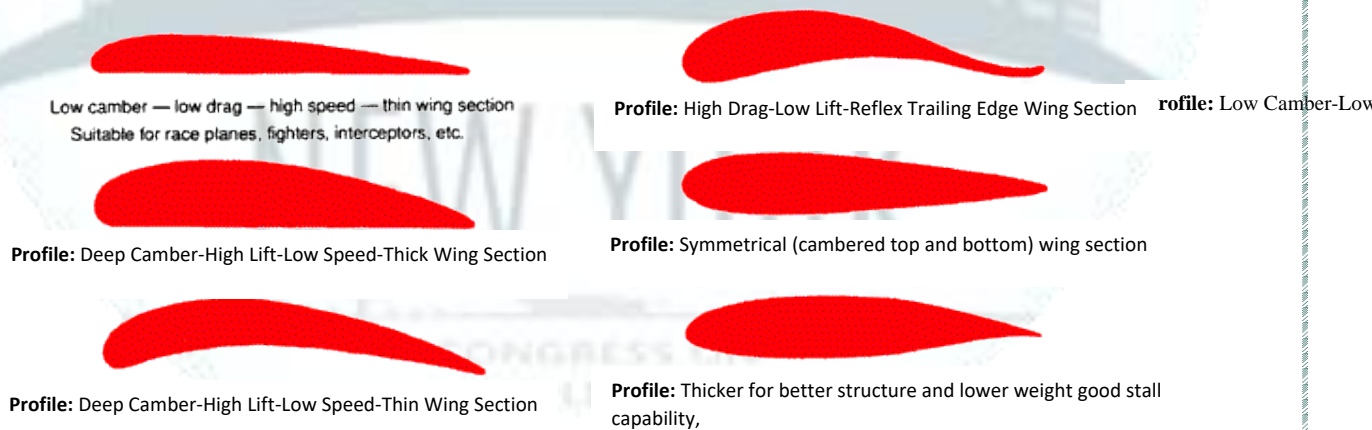
Today, many types of airfoils are used and the most suitable profile is selected according to the characteristics, size, purpose of use and flight regime of the aircraft. More than 1600 kinds of airfoils are in use now and the letters from “A” to “Y” (Airfoiltools.com web Site 2021) classify them. The most popular class is NACA class, which is under “N” letter group, consists of name (NACA) and some digits near its name such as NACA0018, NACA2410 and NACA4421. These are the NACA “4 digit” group and first digit describes max camber as per percentage of chord. Second digit describes the distance of camber from

the airfoil leading edge in tens of percent of the chord and last two digits describe max thickness of the airfoil as percent of the chord. Except 4 digit group, there are 5, 6, 7 and 8 digit groups under the NACA class.

Chord, chord line, leading edge, lower surface, mean camber line, maximum camber, maximum thickness trailing edge and upper surface definitions are main indicators and determining factors of an airfoil. These parameters directly affect the speed, drag and lift characteristics of not only the airfoil, but also the aircraft. The image below shows a airfoil sample and its parameters.



**Figure 1.** The Main Indicators of A Sample Airfoil (Aeroforum.com web site, 2021)



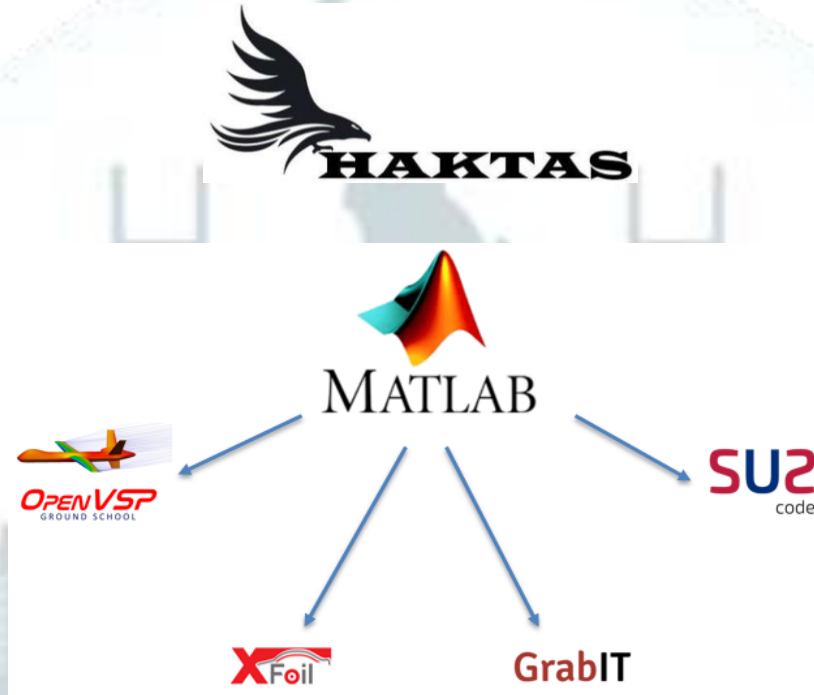
**Figure 2.** Airfoils Depicted According to Purpose (Leary, 2010)

### MATERIALS AND METHODS

In this study, in-house developed software HAKTAS (Hava Aracı Kavramsal Tasarım ve Analiz Sistemi – Aircraft Conceptual Design and Analysis System) is used. HAKTAS software is developed under the roof of MATLAB, and also integrated some other software. (Ünal , 2021)

MATLAB is used for main software and code studies created on it. More than 6.000 lines of code developed under the main structure of MATLAB.

And also some GUI screens created for being more user friendly. All these studies collected under an MATLAB application which is named “Aircraft Conceptual Tool”.





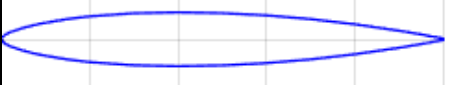


**Figure 3.** The Software Structure of HAKTAS

**Figure 4.** The Main Screen View of HAKTAS

The software has five main modules for different goals. All these modules are talking and feeding each other. The modules are; “Weight and Fuel Estimation”, “Geometry Selection”, “Engine Selection”, “Revised Estimation” and “Detailed Aerodynamics” modules.

In this study, the effects of the airfoil type on the final performance of the aircraft were analyzed by keeping all parameters constant. While doing this, a sample aircraft design will be selected and the performance values caused by five different airfoil types will be examined. NACA64a210, NACA001234, NACA64210, EC863914 and GOE652 airfoil types selected for this study. As the naca family is the most popular class, three types were selected from this class. In addition, the NACA64a210, the official airfoil type used by the F-16 fighter aircraft, and the NACA64210 close to it were specially selected. Strange geometries have also been specially selected to see the effect of the airfoil type on performance, like EC863914 and GOE652.

**Table 1.** Five Airfoil Types Selected For Study

GROUP	FAMILY	CODE	SHAPE	
N	NACA	NACA64a210		→ F-16 Real Airfoil
N	NACA	NACA64210		→ Very similar to F-16 Airfoil
N	NACA	NACA001234		} Random selected airfoils
E	EPLER	EC863914		
G	GOE	GOE652		

All parameters except the airfoil type were kept constant as follows, this is for observing the effects of wing type on aircraft performance;

**Table 2.** “Geometry Selection Module” Parameters (Module 2)

Geometry Selection	
Airfoil Type	5 different airfoils
Root airfoil incidence (deg)	4
Tip airfoil incidence (deg)	1
Wing Leading Edge Sweep (deg)	45
Wing Taper Ratio	0.2
Wing Dihedral	-4
Fuselage Length (ft)	53,8
Tail	Single Tail with Vertical Stb.
Horizontal Tail Dihedral	-4
Canard	No

**Table 3.** Weight and Fuel Estimation Module Parameters (Module 1)

Weight and Fuel Estimation	
Aircraft Type:	Fighter
Aircraft Class	Dog Fighter
Engine Type	Turbofan
Engine Class	Low By-pass with After Burner

Wing Type	Delta
#engine	1
Payload (lbs)	3490
#Crew	1
Initial Gross Weight (lbs)	35000
Wing Aspect Ratio	3,2
Cruise Mach	0.8
Cruise Altitude (ft)	50000
Max Mach	2.05
Range (ft)	1.1e7
Loiter Endurance (sec)	1200
Field Elevation (ft)	2765
Field Distance (ft)	902

**Table 4.** “Engine Selection Module” Parameters (Module 3)

Engine Selection	
Brand Name	General Electric
Model Name	F110-G-129

**Table 5.** “Revised Estimation Module” Parameters (Module 4)

Revised Estimation	
Combat Turning Rate (deg/s)	20
Combat Altitude (ft)	20000
Combat Time (sec)	180
Combat Mach	0.55
Max G	6
Sustain Turn Altitude	50000
Sustain Turn Mach	0.8
Approach Speed (ft/sec)	220
Dash Distance (ft)	3,08E+5
Dash Mach	2
Cruise Range (ft)	5,00E+06

**Table 6.** “Detailed Aerodynamics Module” Parameters (Module 5)

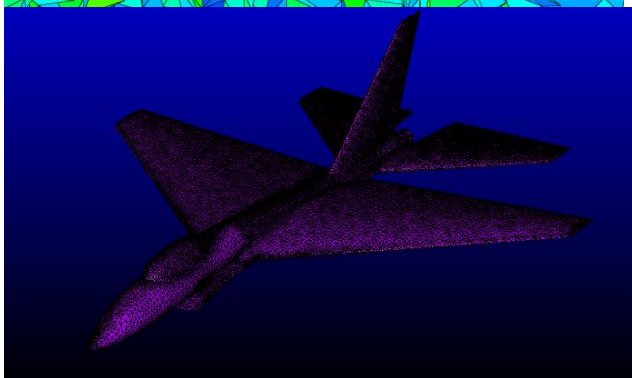
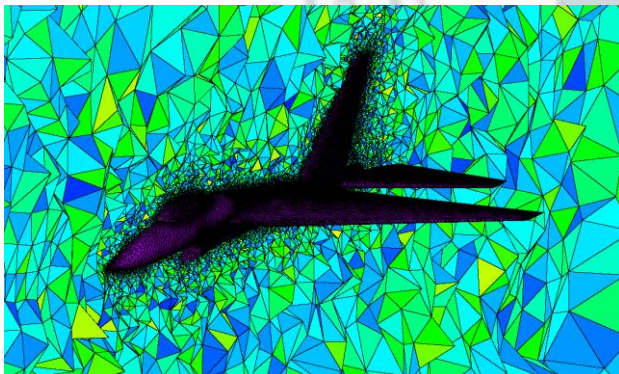
Detailed Aerodynamics	
Min Angle of Attack (deg)	0
Max Angle of Attack (deg)	12
AoA Step Size	2
Min Mach for Analysis	0,2
Max Mach for Analysis	0.8
Mach Number Step Size	0,2
Min AoS for Analysis	0
Max AoS for Analysis	0

AoS Step Size	1
Estimated Cg Location - X	27
Estimated Cg Location - Y	0
Estimated Cg Location - Z	-0,8
Altitude for Analysis	Sea Level

All these parameters kept constant to understand and examine the real effects of airfoil types to aircraft performance. And at module 2 (Geometry Selection), five sample airfoils those stated in the *Table 1* selected and the software has been run.

Apart from these, CFD analysis was performed on SU<sup>2</sup> software by using the 3D geometry provided by HAKTAS software in the third module. How realistic the aerodynamic values that the software will give us in the fifth module is confirmed in this way. Because, today the most reliable aerodynamic performance values like C<sub>L</sub> and C<sub>D</sub> are calculated using a CFD software. Since HAKTAS software is not a CFD software, it is necessary to examine how close the values it gives are.

SU<sup>2</sup> is an open source CFD Analyzer that developed by Standford University and written in C++ and Python. (SU<sup>2</sup>code web site, 2021)





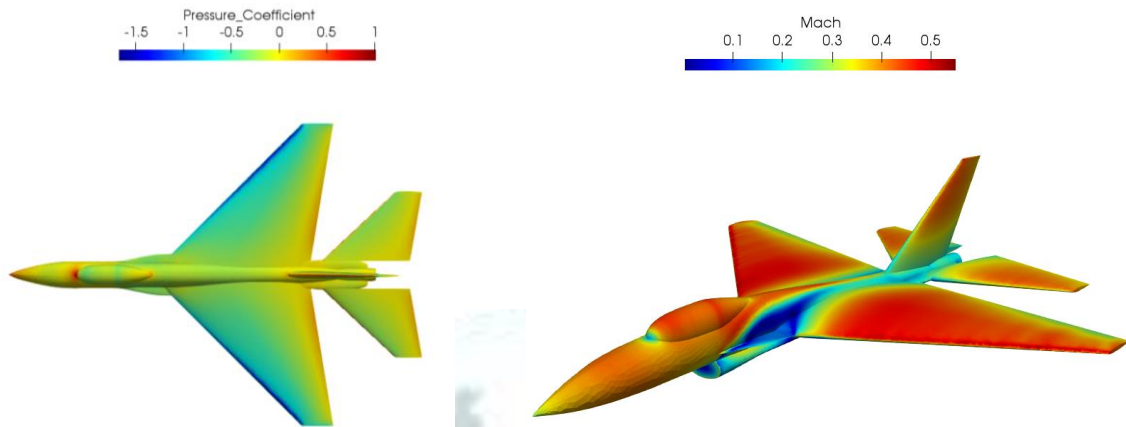


Figure 5. SU<sup>2</sup> Verification Studies (Mesh, Mach and C<sub>p</sub> Analysis) by using HAKTAS 3D

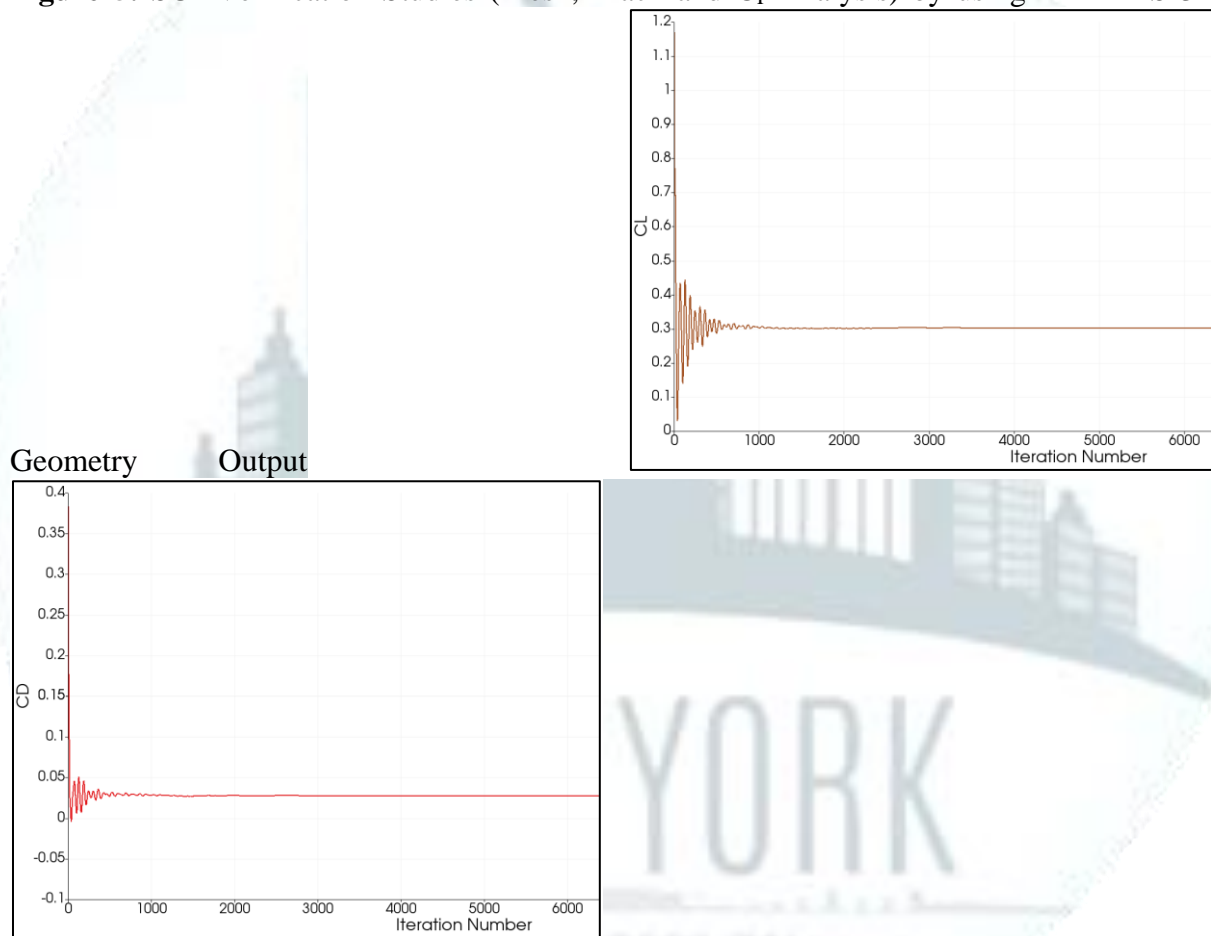


Figure 6. SU<sup>2</sup> Verification Studies (C<sub>L</sub> and C<sub>D</sub> Analysis) by using HAKTAS 3D Geometry  
Output

## RESULTS AND DISCUSSION

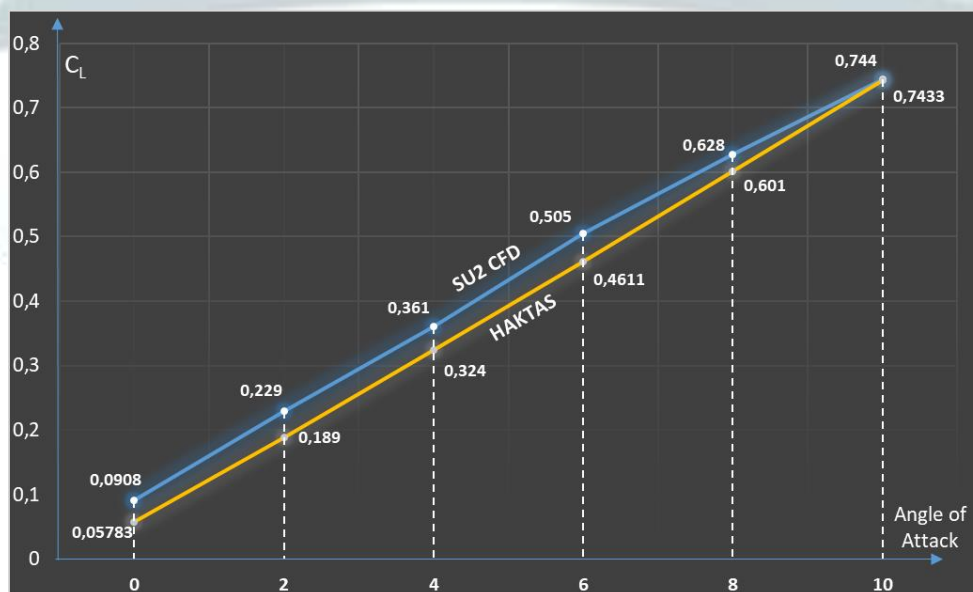
This software gives the opportunity of reducing design time and facing with the performance parameters at the beginning of study to the designer. Although HAKTAS is not a pure CFD software, it is not expensive and cumbersome like other CFD software. However, it offers very practical solutions compared to them. Geometry cleaning, meshing and analysis time, which took minimum 5 days with a CFD software, decreased to 2.5 hours with HAKTAS

software. Of course, the quality of the solution is not as good as a CFD software because of this much earnings.

The following table compares the exact aerodynamic results of the CFD software for the same geometry and how similar the practical results given by the HAKTAS are.

**Table 7.** Comparison Chart of SU<sup>2</sup> and HAKTAS C<sub>L</sub>, C<sub>D</sub> and C<sub>L</sub>/C<sub>D</sub> Values

Angle of Attack	Mach	C <sub>L</sub>		C <sub>D</sub>		C <sub>L</sub> /C <sub>D</sub> Max	
		HAKTAS	SU <sup>2</sup>	HAKTAS	SU <sup>2</sup>	HAKTAS	SU <sup>2</sup>
0	0,4	0,05783	0,0908	0,02122	0,01713	2,72	5,3
2	0,4	0,189	0,229	0,0229	0,0214	8,25	10,67
4	0,4	0,324	0,361	0,0266	0,0306	12,14	11,79
6	0,4	0,4611	0,505	0,0323	0,0459	14,26	11
8	0,4	0,601	0,628	0,0399	0,0685	15,03	9,17
10	0,4	0,7433	0,744	0,0495	0,101	14,99	7,31



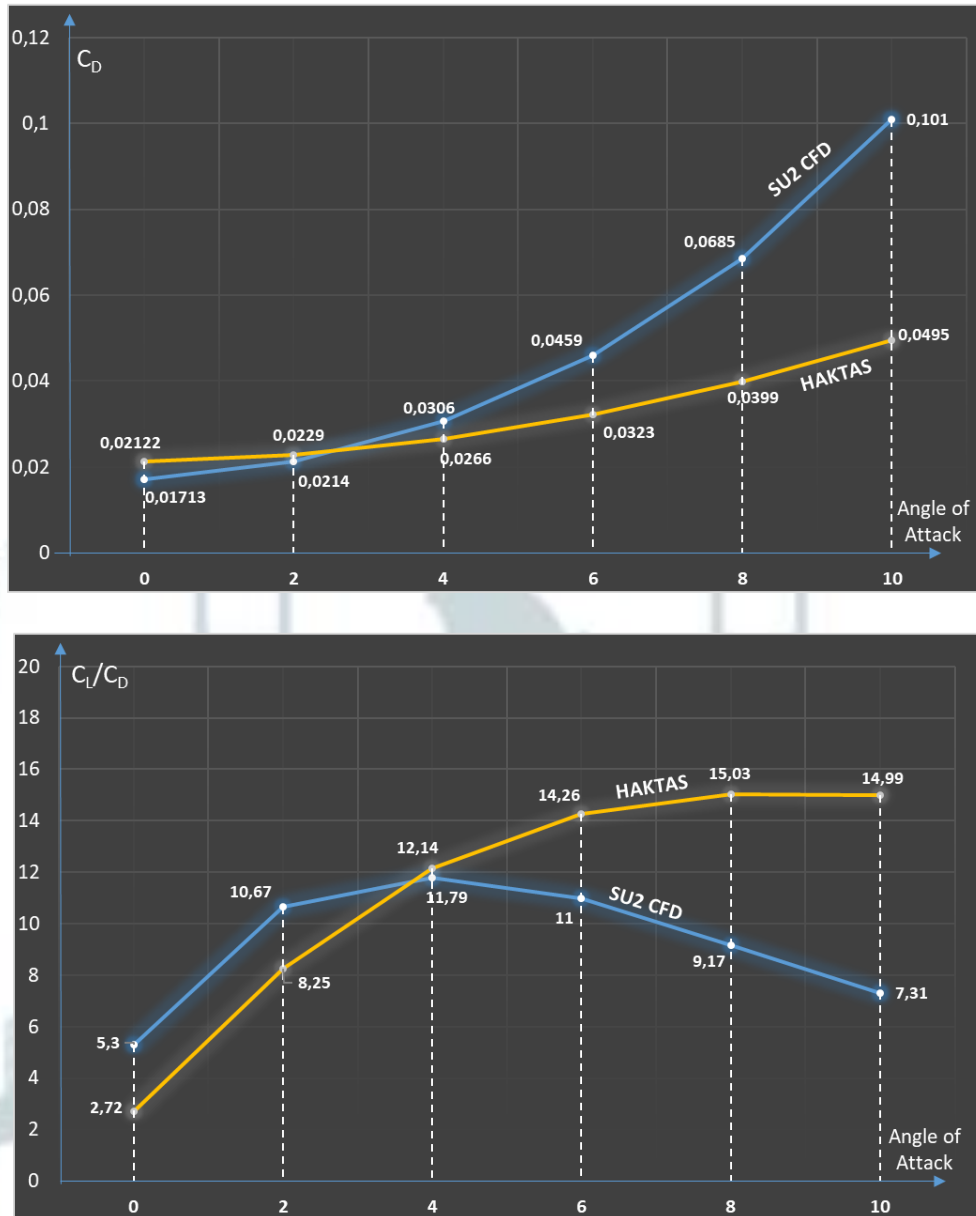
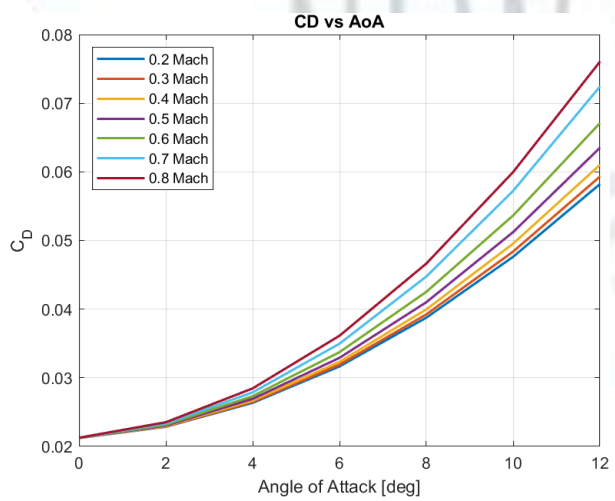
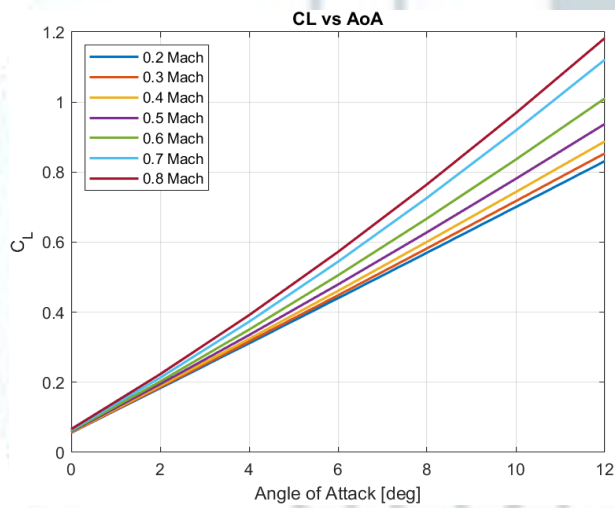
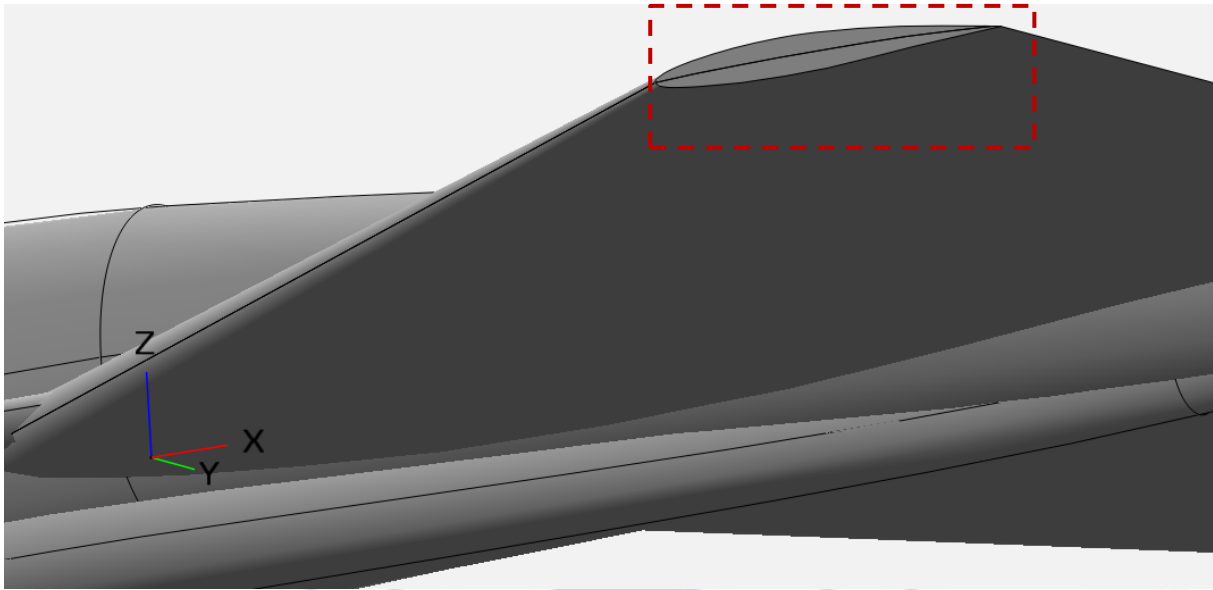


Figure 7: Comparison Graps of SU<sup>2</sup> and HAKTAS  $C_L$ ,  $C_D$  and  $C_L/C_D$  Values

After understanding that the results of the software were at an acceptable level, the analysis results for 5 airfoil types were compared.

**NACA64a210:**



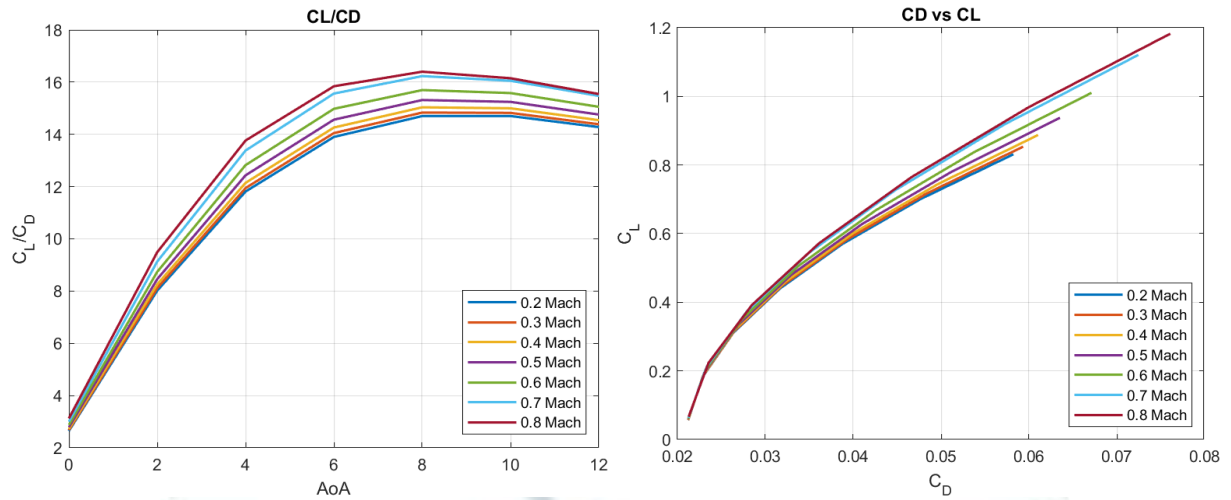
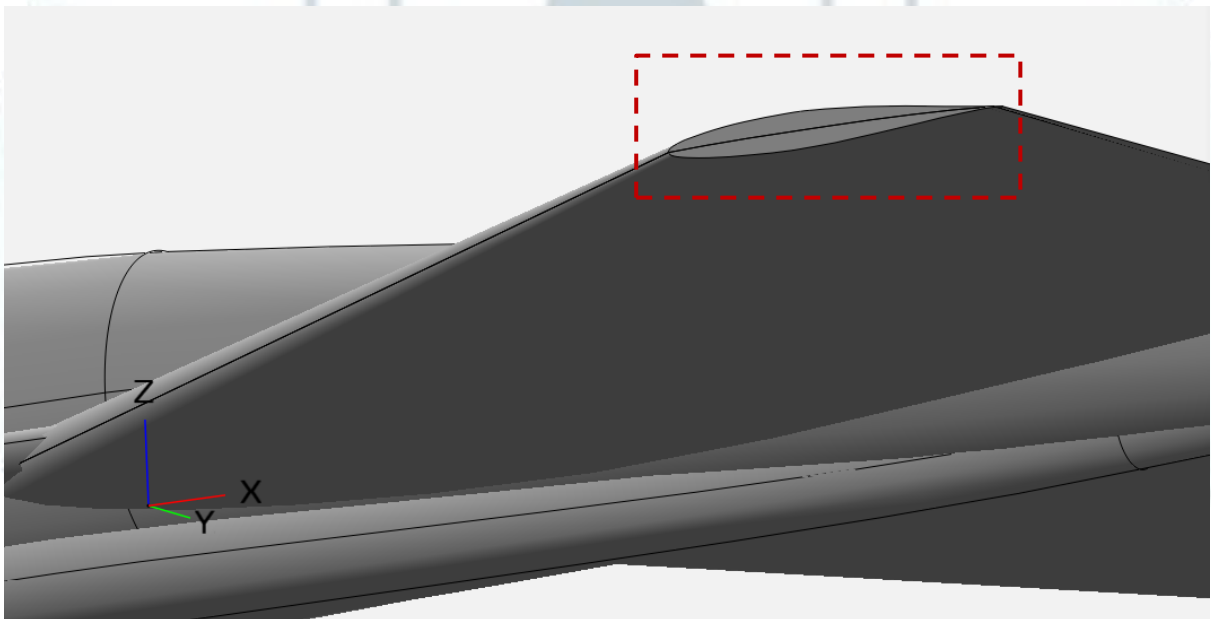


Figure 8. NACA64a210 Airfoil Geometry and Performance Results

**NACA64210:**



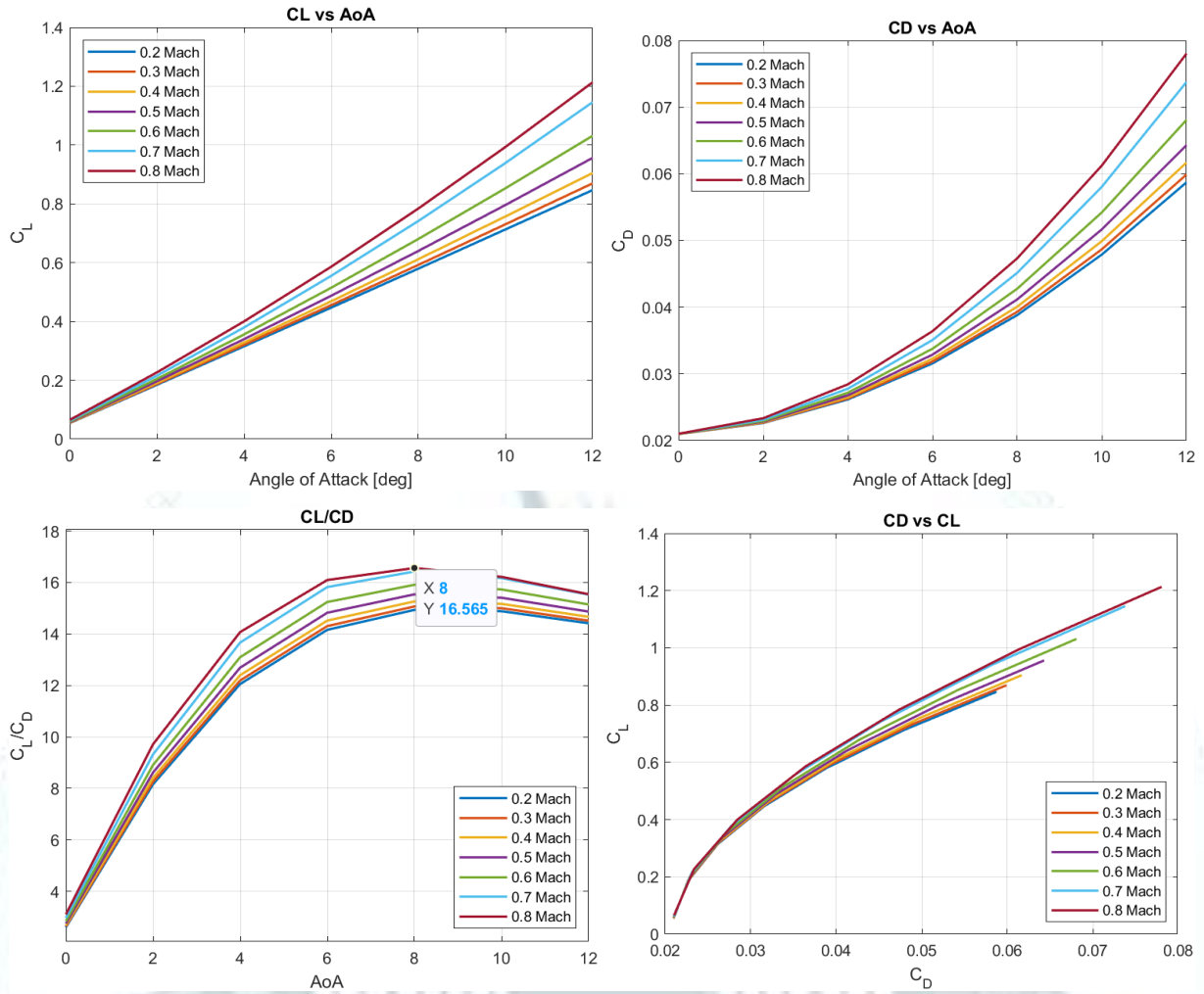
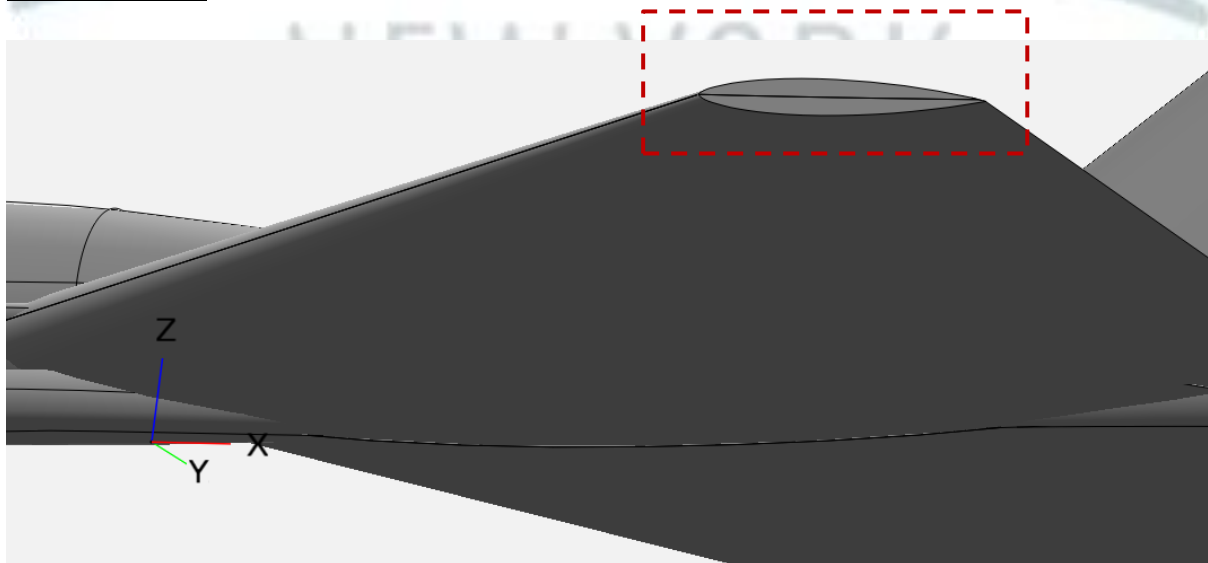


Figure 9. NACA64210 Airfoil Geometry and Performance Results

**NACA001234:**



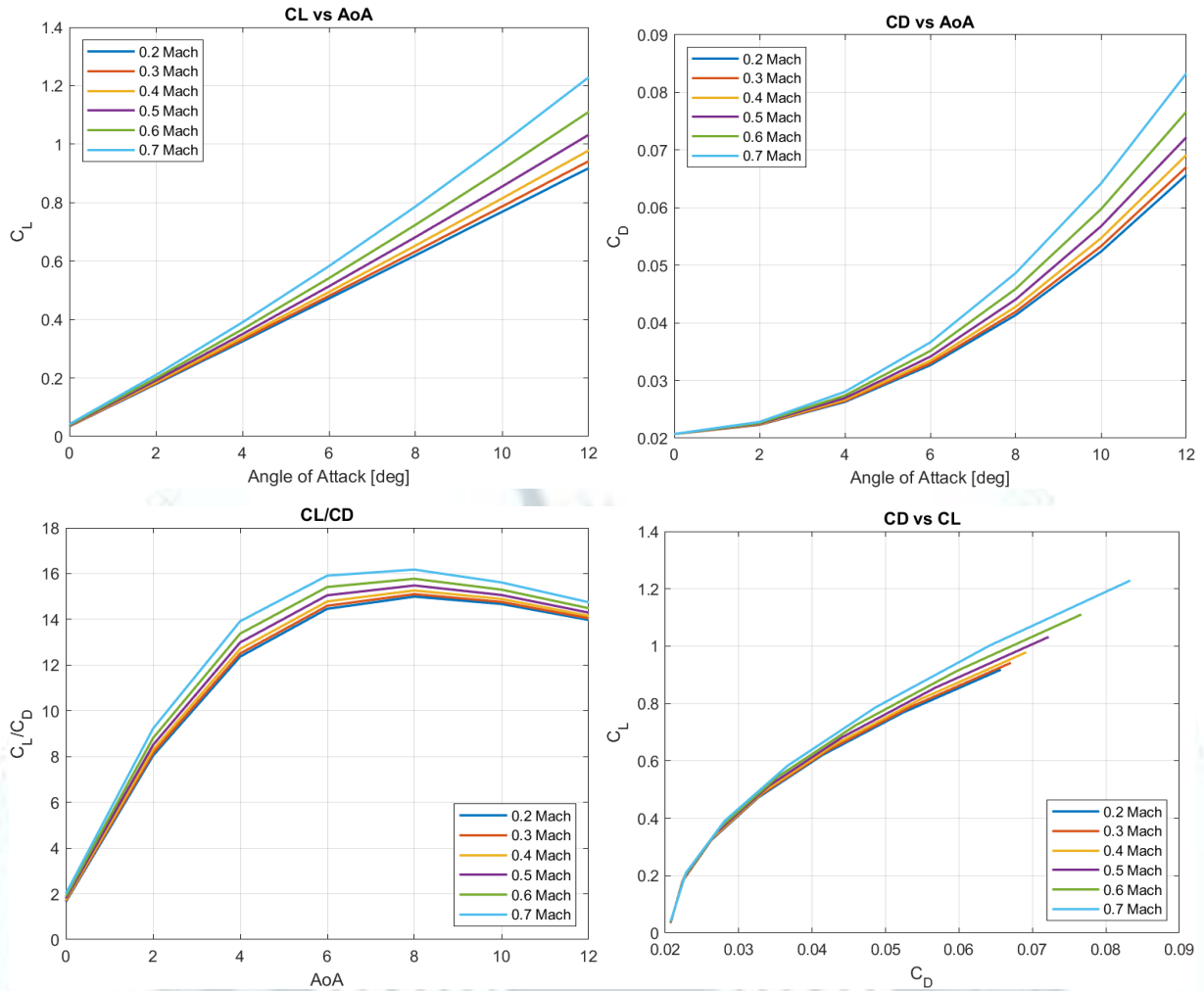
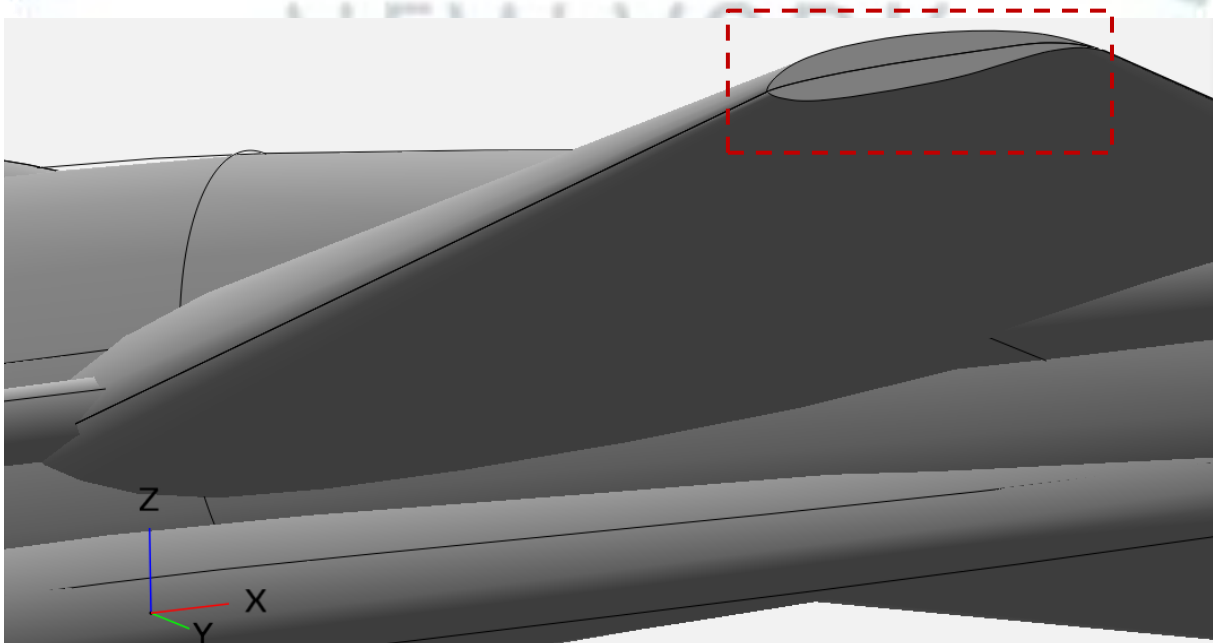


Figure 10. NACA001234 Airfoil Geometry and Performance Results

**EC863914:**



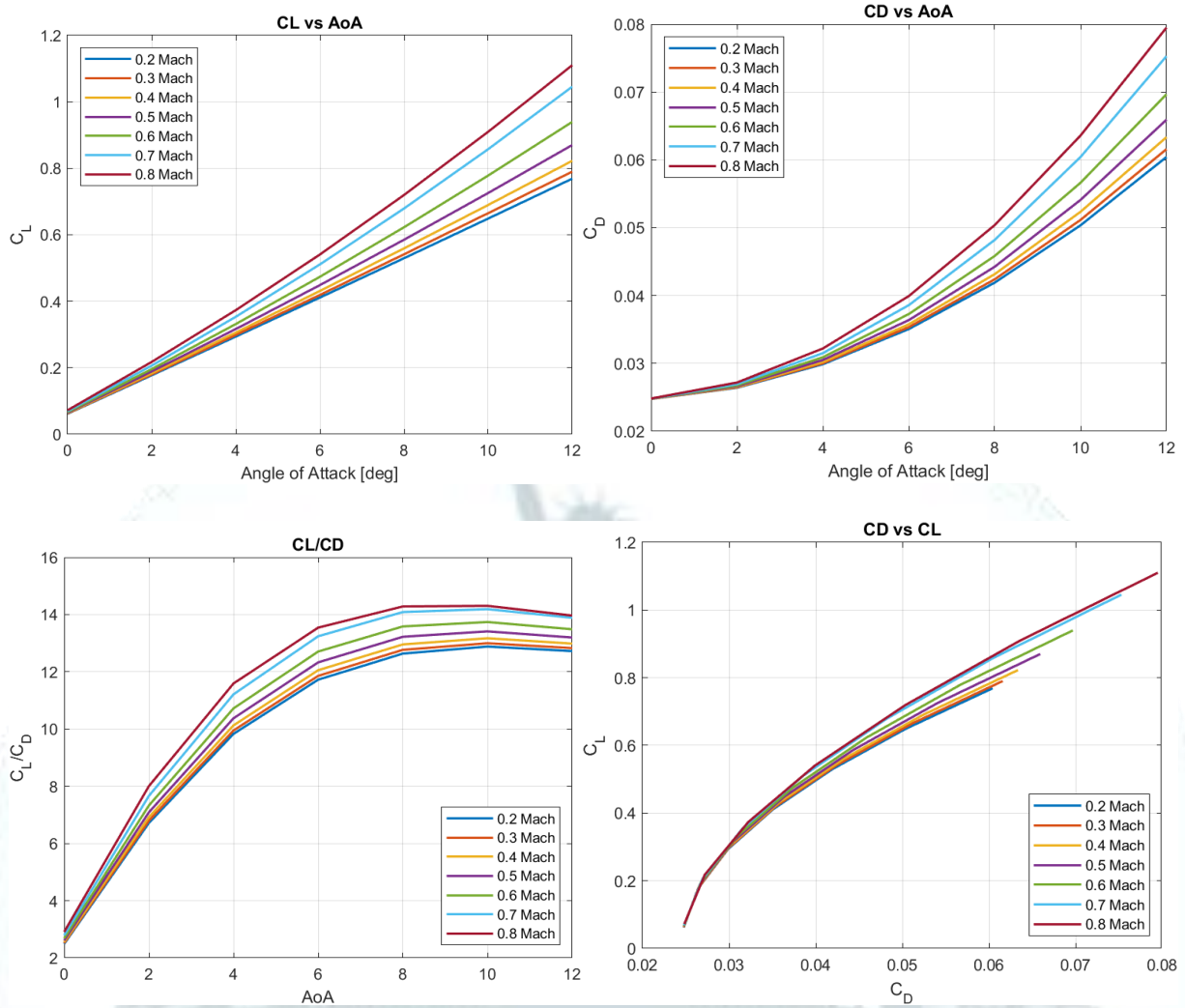
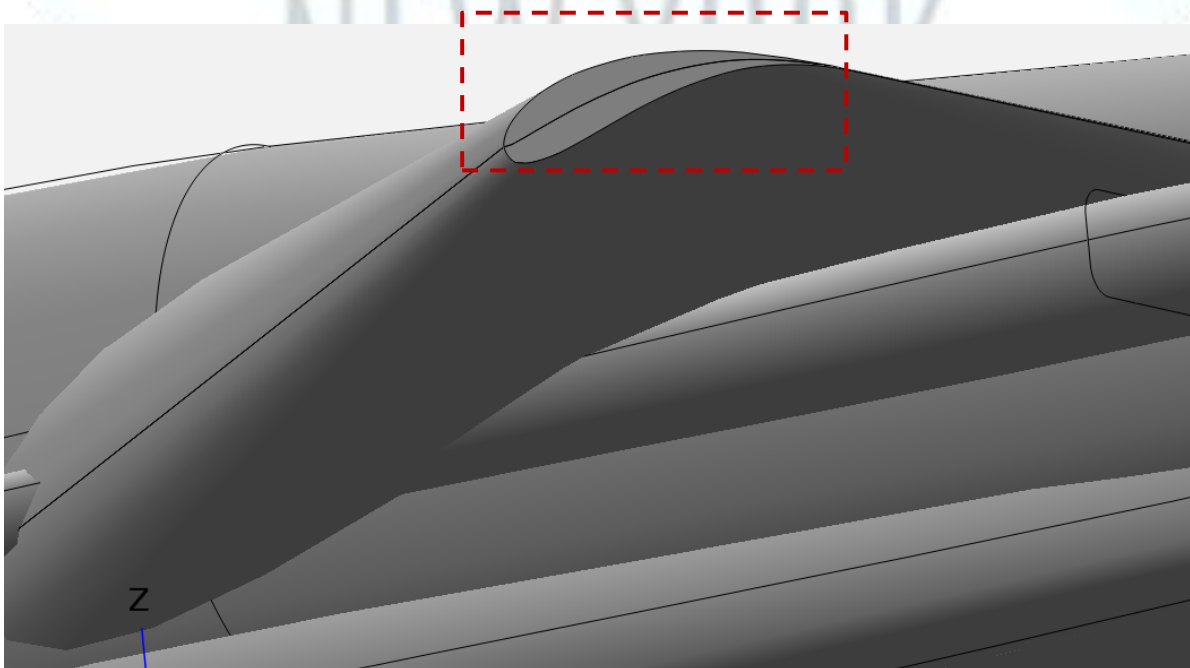
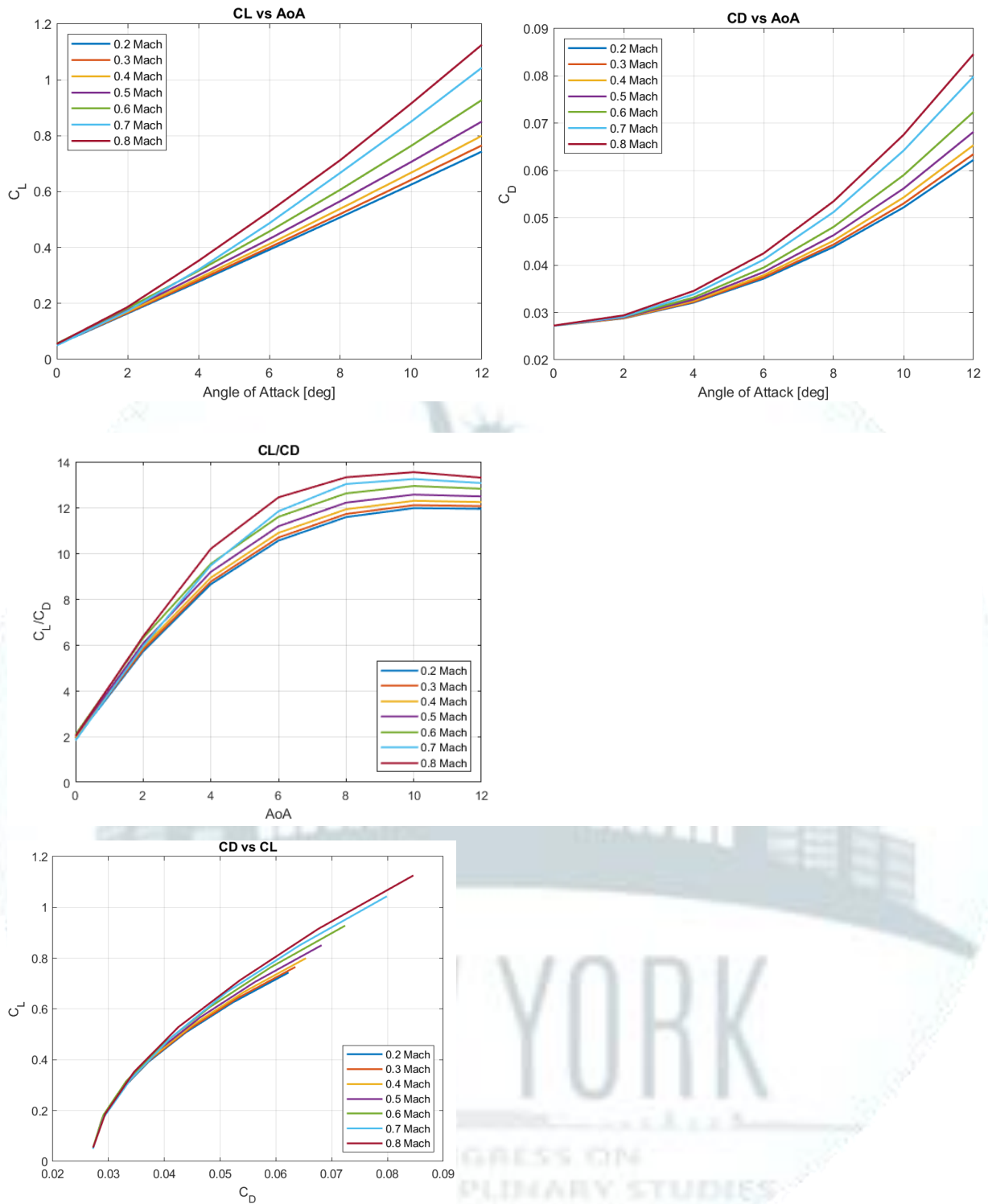


Figure 11. EC863914 Airfoil Geometry and Performance Results

**GOE652:**












**Figure 12.** GOE652 Airfoil Geometry and Performance Results

## CONCLUSION

The aerodynamic performance values given by the HAKTAS software and the values given by the CFD software are close, and the minor difference is tolerable. Therefore the performance results of the airfoil types given by the software can be compared in a table.

Table 8.  $C_L / C_D$  Max Scores of Airfoils at Different Machs

GROUP	FAMILY	CODE	SHAPE	Angle of Attack	$C_L / C_D$ Max
N	NACA	NACA64a210		8°	0,2 Mach: 14,70 0,4 Mach: 15,03 0,6 Mach: 15,69 0,8 Mach: 16,40
N	NACA	NACA64210		8°	0,2 Mach: 14,93 0,4 Mach: 15,26 0,6 Mach: 15,91 0,8 Mach: 16,56
N	NACA	NACA001234		8°	0,2 Mach: 14,99 0,4 Mach: 15,26 0,6 Mach: 15,77 0,8 Mach: 16,17
E	EPLER	EC863914		8°	0,2 Mach: 12,63 0,4 Mach: 12,95 0,6 Mach: 13,58 0,8 Mach: 14,28
G	GOE	GOE652		8°	0,2 Mach: 11,58 0,4 Mach: 11,92 0,6 Mach: 12,61 0,8 Mach: 13,32

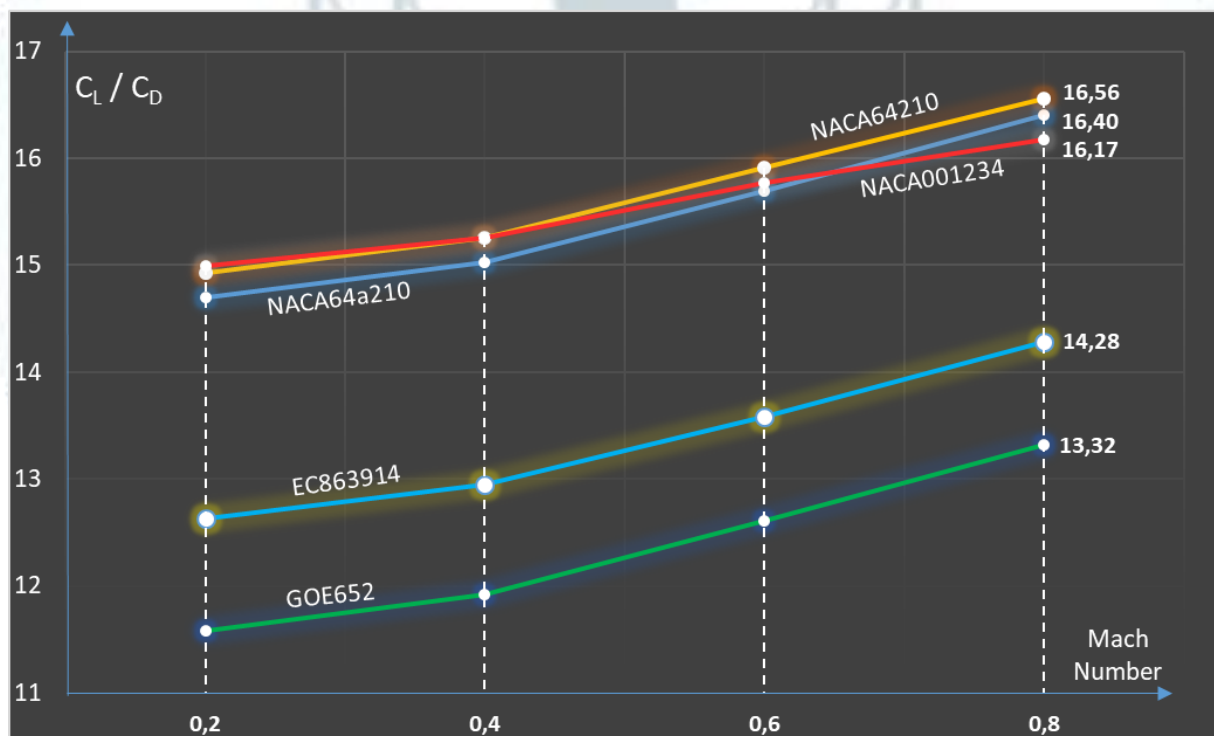


Figure 13. Graph of Airfoil  $C_L / C_D$  Max Scores

As can be seen from the graph, at high speeds like 0,8 Mach and above, the most efficient airfoil is NACA64210 (blue line). Other NACA airfoils are not bad either at these speeds. NACA001234 (red line) is a symmetrical airfoil, so its efficient at medium speeds like 0,2-0,4 Mach. As velocities above 0.6 Mach will approach the transsonic regime, its efficiency decreases after this value.

Eppler and Goe group are not feasible for Fighter aircrafts. It can be seen also from the Graph. These groups are generally suitable for aircrafts flying for a long time, need high lifts and don't need high speeds and maneuverability.

To summarize, HAKTAS software is a very compact, light, fast and cheap software compared with commercial software. It can be used for aircraft conceptual design, calculating performance of the design and gives values close to the truth. Because of that, it can be used for airfoil performance analysis at the beginning phases. Via this software, the performance values of the concept aircraft can be predicted according to different airfoil types selected by keeping some parameters constant.

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## **KURUMSAL İMAJ PENCERESİNDEN FENERBAHÇE SPOR KULÜBÜ'NÜN MESUT ÖZİL TRANSFERİ**

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Bu araştırmanın amacı Fenerbahçe spor kulübünün 2021 yılında yapmış olduğu ve dünya çapında yadsınamaz bir etki yaratan Mesut Özil Transferini Kurumsal İmaj çerçevesinden incelemektir. Kurumsal imaj, firmanın kendisi için önemli olan çeşitli izleyiciler nezdindeki itibarıdır. Şirkette pay sahibi olan bu gruplar, paydaşlar olarak bilinir. Paydaşlar şirketin eylemlerinden etkilenir ve dolayısıyla eylemleri şirketi etkileyebilir. Dolayısıyla paydaşları nezdindeki imajı şirket için önemlidir. Çoğu büyük şirketin ilgilenmesi gereken ana paydaşlar şunlardır: müşteriler, distribütörler ve perakendeciler, finansal kurumlar ve analistler, hissedarlar, devlet düzenleyici kurumlar, sosyal eylem kuruluşları, genel kamu ve çalışanlar. Kurumsal imaj kavramı günümüz dünyasında çok sık karşılaşılan ve gerek kurum gerekse şirketler tarafından merkezi önem noktasında bulunan bir kavramdır. Son yıllarda kurumsal imaj kavramının öneminin artması ve medya boyutunun kurumsal imaj ile iç içe hareket etmesi ve bunun yanı sıra olarak spor kulüplerinin özellikle kurumsal imaj açısından transfer politikalarını araç olarak kullanması sebebi ile araştırmanın konusu kurumsal imaj çerçevesinde şekillendirilmiştir. Spor Kulüplerinin Kurumsal İmaj çerçevesinde transferleri araç olarak kullanmasının altında; kulüp gelirlerini arttırmanın yanı sıra kulüplerin tanınırlık seviyelerini arttırmak istemeleri yatmaktadır. Araştırmanın amacına etkili bir şekilde ulaşması ve bilim dünyasına bundan sonraki çalışmalarda ışık tutulabilmesi açısından araştırma deseni türlerinden derleme yöntemi uygulanmış ve teorik bir çözümleme yöntemi kullanılmıştır. Araştırmanın elde edilen bulguların analizleri sonucunda Fenerbahçe spor kulübünün Mesut Özil transferi sayesinde dünya borsalarındaki değer artışının yanı sıra kulüp gelirleri, forma satış oranları, lisanslı ürün satış oranları ve son olarak sosyal medya hesaplarının takipçi sayılarında artış ve bu artışa bağlı olarak sosyal medya kanallarından elde edilen gelirlerin arttığı sonucuna varılmıştır.

**Anahtar Kelimeler:** Fenerbahçe, Mesut Özil, Kurumsal İmaj

## **MESUT OZIL TRANSFER OF FENERBAHÇE SPORTS CLUB FROM CORPORATE IMAGE WINDOW**

The purpose of this study is to examine the Mesut Özil Transfer, which Fenerbahçe sports club made in 2021 and has an undeniable impact worldwide, from the framework of its Corporate Image. Corporate image is the reputation of the firm with a variety of audiences that is important to it. These groups, which have shares in the company, are known as stakeholders. Stakeholders are affected by the company's actions and therefore their actions can affect the company. Therefore, its image before its stakeholders is important for the company. The main stakeholders that most large companies should deal with are: customers, distributors and retailers, financial institutions and analysts, shareholders, government

regulators, outreach organizations, the general government and employees. The concept of corporate image is a concept that is frequently encountered in today's world and is of central importance by both institutions and companies. The subject of the research has been shaped within the framework of corporate image due to the increase in the importance of the concept of corporate image in recent years and the fact that the media dimension is intertwined with the corporate image, as well as sports clubs use transfer policies as a tool, especially in terms of corporate image. Under the Sports Clubs' use of transfers as a tool within the framework of Institutional Image; In addition to increasing club revenues, clubs are willing to increase their recognition level. In order to reach the purpose of the research effectively and to shed light on the scientific world in the future studies, the compilation method, one of the types of research designs, was applied and a theoretical analysis method was used. As a result of the analysis of the findings of the research, the increase in the value of Fenerbahçe sports club thanks to the transfer of Mesut Özil in the world stock markets, as well as club revenues, uniform sales rates, licensed product sales rates and finally the increase in the number of followers of social media accounts and the revenues from social media channels due to this increase. It is concluded that it has increased.

**Keywords :**Fenerbahçe,Mesut Özil, Corporate image

## **GİRİŞ**

Yapılan bu derleme çalışmasında elde edilen literatür taramaları sonucunda; daha önce ülkemizde bu konuya ışık tutacak herhangi bir çalışma olmazken bazı kitap, dergi ve spor gazetelerinin köşe yazılarında bu konuları değinilmiş ve spor camiasının gözünü bu noktaya çevirmesi hedeflenmiştir. Kurumsal imaj kavramı son zamanlarda kurum ve kuruluşların olmazsa olmaz süreçleri arasında yer almaktadır. Kurumsal imaj kavramı bir kurum veya bir şirketin satış oranlarından tanınırlık seviyesine kadar her süreci etkileyen bir kavramdır.

Özellikle son zamanlarda gelişen teknoloji ile birlikte kurumsal imaj süreçlerinin önem seviyesi giderek artarken spor kulüpleri kurumsal imajlarını etkili bir hale getirmek ve kurumsal imaj çerçevesinde kulübe ekonomik anlamda katkı sağlamak adına transfer süreçlerini sportif yönünün yanı sıra kurumsal imajlarını etkili hale getirmek adına yaptıkları görülmektedir. Bu araştırmanın amacı bu bağlamda Fenerbahçe Spor Kulübünün Mesut Özil Transferini Kurumsal İmaj Kavramı çerçevesinde değerlendirmektir.

Araştırmamızın bilim dünyasına ışık tutması adına incelenen her kaynak titizlikle incelenmiş olup araştırma çerçevesinde verilen satış rakamları, borsa hisse değerleri ve lisanlı ürün satış oranları Fenerbahçe Spor Kulübü A.Ş'den resmi olarak alınmış ve aynı zamanda dünya çapında önemli bir yere sahip olan medya kuruluşlarından faydalanılmıştır. Araştırmamızın sonucunda ise Fenerbahçe Spor Kulübünün Mesut Özil transferinin sportif yönünün yanı sıra Fenerbahçe Spor Kulübünün Kurumsal İmajının gelişmesine merkezi önem noktasına sahip katkıda bulunduğu görülmektedir. Bu transferin bundan sonraki transferlere ışık tutacağı düşünülürken spor sektörünün kurumsal imajı iyileştirip geliştirmede vazgeçilmez ve gözden gelinemeyecek kadar önemli bir sektör olduğu düşünülmektedir.

## **1.İmaj Kavramı**

Günümüzde imaj kavramı, enformasyon devrinin bir yansıması olarak, üzerinde çok durulan ve daima tartışmaya açık bir kavram olarak karşımıza çıkmaktadır. Bireyler, hizmetler, ürünler, olaylar, fikirler, kurumlar, uluslar, ülkeler ve devletler hakkında edinilmiş olan algı, izlenim, genel kanı ve beyinde dizayn edilen kurguya imaj denilmektedir. Basit bir tabir ile imaj, kısa veya uzun vadede bir bireylerin, kurumların, objelerin veya ülkelerin sahip olduğu genel değerleriyle ilgili ikonların algılanış biçimidir (Gültekin, 2005: 127). İmaj, karşıdakilerin durumlarını yansıttığı kadar imaj yapıcının kendi alımlama durumlarını da yansıtmaktadır. Ayrıca imaj kavramı, gerçeğin tam bir ifadesi olmadığı gibi, alımlayıcı tarafın, bu doğrultuda genel bir kaniya varanın algısına göre de gerçeklikten uzaklaşabilir.

İmaj kavramını özetleyecek olduğumuzda, kurum içerisinde çalışan bireylerin kuruma karşı olumlu izlenimlerinin kurumların amaçladığı hedef kitlenin izlenimlerini kendileri açısından olumlu yönde şekillendirmede rolünün önemli olduğu söylenebilir. Çalışanlar tarafından ortaya konulan etkili ve yaratıcı bir imaj beğenebilirlik ve güvenilirlik algısını seviyesini de dış paydaşların huzurunda kurum lehine şekillendirebilir. Ayrıca imaj kavramı, çalışanların fiziki görünüşleri ve kişisel bakımları, eğitim düzeyi, iletişim becerisi, beden dilleri, yaratıcı çözümler ortaya çıkartması ürün ve hizmetleri satın alacak paydaşların tercih sebeplerinde de büyük bir paya sahiptir (Gökçe Ateş Ç.,2016).

İmaj kavramı son dönemlerde futbol kulüpleri açısından da vazgeçilmez bir kavram haline gelmiştir. Kulüplerin transfer politikaları, sponsorluk anlaşmaları vb. gibi süreçleri imaj kavramının bileşenleri çerçevesinde değerlendirilmekte ve imaj kavramının bileşenleri doğrultusunda şekillenmektedir. Özellikle gelişen teknoloji dünyasında futbol kulüplerinin sosyal medya platformlarında da imaj kavramının bileşenleri üzerinden yol haritaları çizilmekte ve bu doğrultuda süreçler planlanmaktadır.

## **2.Kurumsal İmaj Kavramı**

Uluslararası platformda “ Corporate İmage” olarak tanımlanan kurumsal imaj kavramı geçmişten günümüze önem seviyesi giderek artan ve kurum veya kuruluşların vazgeçilmezi olarak ön plana çıkan bir kavram olarak sivrilmiştir. Kurumsal imaj kavramı çerçevesinde literatür incelendiğinde farklı kesimlerden olan araştırmacılar tarafından ve alana hâkim uzmanlar tarafında birçok tanımlama yapıldığı görülmektedir.

Karşımıza çıkan kurumsal imajın ilk tanımına baktığımız zaman bireysel algıların dışında grupların algılarına yer verilir. Bu ışıktaki bireylerin kuruluşu nasıl algıladığı değil grupların kuruluşu nasıl algıladığına yer verilirken, ona yönelik tecrübe, değerler bütünü, inanç seviyesi, yargıları, hissiyatları, bilgi ve kanaatlerini de içerdiği, gruplar üzerinde oluşan pozitif ya da negatif fikirlerin bütünü olarak ortaya çıktığı belirtilmektedir (Çetin, Tekiner, 2013: 423; Bolat, 2011: 109).Bu tanımlama doğrultusunda kurumsal imaj, grupların algılama seviyelerinin sonucunda ortaya çıkan, tanımladıkları ve hatırladıkları ile ilişkilendirebildikleri fikirlerin bütünü olarak ortaya çıkmaktadır.

Literatürde yer alan farklı bir kurumsal imaj kavramını incelediğimizde kurumsal imaj kavramına dair önümüze çıkan farklı bir tanımlamada kurumsal imaj kavramı, “müşteri olarak tanımlanan bireylerin algılarında kurum ya da kuruluş ile ilgili meydana gelen tecrübelerin, inanç seviyelerinin, duygu durumlarının, bilgilerin ve uyarınların bir bütünü” (Çetin, Tekiner, 2013: 419) olarak tanımlanmaktadır. Bu tanımlama ışığında kurumsal imaj kavramını örnek

ile destek verecek olursak, kurumsal imaj ile ilgili alanda söz sahibi olan ve kurumsal imaj çerçevesinde gelişmeleri dikkate alan Andreassen ve Lindestad, zaman içerisinde satın alma düzeyi ve tüketim tecrübelerinin yanı sıra birikiminin bir fişlevi olarak kurumsal imaj kavramının tanımlanabileceğini ortaya koymuşlardır (Panagopoulos ve Stergiou, 2007: 88).

Kurumsal imaj kavramı çerçevesinde yapılan tanımlar incelendiğinde bir takım farklı özelliklerin yer aldığı, bu özelliklerin kurumsal imaj kavramını idrak edebilmesinde son derece önemli değerler bütünlüğü oluşturduğu ortaya çıkmaktadır. Ortay çıkan bu tanımlamalar ışığında kurumsal imaj kavramının somut bir etken olmamasının yanı sıra kurumsal imaj kavramının rasyonel ve duygusal bağılıklarla sivrildiği ortaya çıkmaktadır. Bunun yanı sıra farklı kurumlara ilişkin algı seviyelerinin olası kitlenin kalıcı belleğinde varlığının yer edinmiş olması ve kurumsal imajın kurum ve kuruluşun hedef kitlesinin bir bölümünde değil tümünde ortaya çıkan bir etken olmasıdır (Alkibay ve Ayar, 2013: 30).

Özellikle Bilgi Teknolojilerinin görmezden gelinemez bir gerçek olduğu günümüz dünyasında bu görüntülere erişim sağlayabilmek hızlı ve kolaydır. Bahsi geçen bu görüntülerin kurum ve kuruluşların kurumsal imaj kavramının etkili bir biçimde yürütmede ve kurumsal imaj penceresinden hedeflenen verilere ulaşmada önemli bir role sahip olduğu bilinmektedir. Tüketiciler nezdinde bu görüntüler olumlu yönde bir mesaj barındırıyor ve akılda kalıcılığı etkili bir şekilde sağlıyor ise kurum ve kuruluşlar kurumsal imaj sürecini iyi yönettiğinin kanıtıdır ve bu kanıtlar kurum ve kuruluşlara önemli katkılar sağlamaktadır (Bolat, 2011: 109).

Gelişen bilişim teknolojileri dünyasında kurumsal imaj kavramının kalite ile gözle görülebilir bir ilişkisin olduğu yapılan tanımlamalardan anlaşılmaktadır. Bu hususta kurum ve kuruluşlar çerçevesinde yer alan spor kulüplerinin kalitelerini arttırmak ve hayran kitlelerini ulaşmada kurumsal imaj kavramının yerinin merkezi bir önem noktasına sahip olduğu aşikardır. Bu doğrultuda kalitelerini arttırmak ve etkili bir biçimde kar elde etmek isteyen spor kulüpleri kurumsal imaj kavramını attığı her adımda hissetmesi ve kullanması gerekmektedir.

### **3.Mesut Özil ve Kariyeri**

Bu bölümde Çalışmamızın ana unsurlarında bir tanesi olan Mesut Özil'in kariyer geçmişi anlatılmaktadır.15 Ekim 1988 yılında Almanya'nın Gelsenkirchen kasabasında dünyaya gelen Mesut Özil aslen Türkiyeli'dir. Zonguldaklı türk asıllı bir ailenin çocuğu olan Mesut Özil Futbol kariyerine ilk olarak Almanya'nın DJK Westfalia 04 Gelsenkirchen futbol takımında başlamıştır. Bu yerel takımda 3 yıl forma giydikten sonra birer yıl süreyle DJK TEUTONIA Schalke Nord ve DJK Falke Gelsenkirchen takımlarında kariyerine devam etmiştir. Kariyerine devam ederken babası tarafından futbolunun gelişmesi ve futbolun eğitimini alması açısından Rot-Weiss Essen altyapısını yazdırıldı. Bu dönemlerde Mesut Özil'e birçok takımdan profesyonel tekliflerde bulunulsa da Mesut Özil'in babası olan Mustafa Özil gelen tekliflerin hiçbirini kabul etmeyerek oğlunu alt yapıda tutmaya devam etmiştir.2001 yılında Rot-Weiss Essen tarafında profesyonel sözleşme teklifi gelince Mustafa Özil bu sözleşmeyi kabul etmemiştir ve Mesut Özil Schalke 04 takımının yolunu tutmuştur. Burada futbol oynamaya başladıktan sonra dönemin Schalke 04 kulüp başkanı Gerhard rehberg Mesut Özil'in Fenerbahçe ve Galatasaray gibi iki büyük Türk kulübüne önerilmiş fkat kulüplerden denemeye bile gerek cevabının alınmasının ardından Mesut Özil kariyerine Schalke 04'te devam etmiştir.

2006-2008 yılları arasında Schalke 04 formasını giyen Mesut Özil burada çeşitli başarılarla imza atıp kendine alman futbol camiasına kanıtlayarak 2008 yılında Almanya bundesliga takımlarından köklü bir geçmişe sahip olan Werder Bremen ile 4.3 Milyon dolarlık bir sözleşme imzalayarak Schalke 04 kariyerine son noktayı koymuştur.2008-2010 yılları arasin Werder Bremen ile çıktığı 71 Lig maçında 13 gol atan Mesut Özil 2 yıl boyunca orta saha ve oyun kurucu mevkiinde oynadı. Bu yıllarda A Milli takıma çıkmayı başaran Mesut Özil kendini Alman Futbol Camiasına kanıtlayarak ilk resmi milli maçını 11 Şubat 2009 da Norveç Milli Takımına karşı oynamıştır. 2009 yılından hemen sonra 2010 yılında gerçekleşen Dünya Kupasında Alman Milli takım formasını giyen Mesut Özil takımının dünya üçüncüsü olmasında önemli katkı sağlayarak turnuvada altın Top ödülüne aday gösterilerek bu başarıyı perçinlemiştir. Dünya kupasının hemen ardından köklü kulüplerin transfer için sıraya girdiği Mesut Özil transfer dönemin İspanya'nın köklü kulüplerinden olan Real Madrid ile yıllık 5 Milyon Avroluk bir teklif ile kendisini 6 yıllığına Real Madrid'e bağlayan sözleşmeyi imzalamıştır. Burada taraftarlar tarafından Mesut Özil'in göçmen olması sebebi ile Mesut Özil'e Alman Zidane lakabı veriliyor. Real Madrid ile ilk resmi maçına3 Ekim 2010 yılında çıkan Mesut Özil Deportivo La Corunaya karşı ilk 11 de çıktığı karşılaşmada Real Madrid forması ile ilk resmi golünü atmıştır. Real Madri kariyerine toplamda 159 karşılaşmaya çıkan Mesut Özil toplam da 27 gol ve 82 asist yaparak takımına katkıda bulunmuştur.

Real Madrid kariyerinden sonra 2013 yılında İngiltere Premier Ligin köklü ekiplerinden olan Arsenal futbol Kulübü ile anlaşarak İngiltere Kariyerini başlatan Mesut Özil Burada ilk karşılaşmasına 14 Eylül 2013'te Sunderland takımına karşı oynamış ve bu karşılaşmada bir asist yapmıştır. Başarılı grafiği sebebi ile Arsenal ile 2018 yılının hemen başında Sözleşmesini 3 yıl uzatarak Haftalık kazancını 350 bin paunda çıkartmıştır. 2019 yılında Arsenal kulübü ile araların da problemler yaşayan Mesut Özil Uzun bir süre takım ile iletişim konusunda problemle yaşamıştır. Sorulan her transfer sorusuna 2021 yılına kadar Arsenal de kalacağını belirten Mesut Özil sportif açıdan maç eksikleri ile gündeme gelmiştir. Andemi sürecinin araya girmesinin ardından takımla kopma noktasına gelen Mesut Özil Kulüp tarafından aldığı ücretlerde indirim yapılmasını teklifini kabul etmemiş ve kulüp ile olan ilişkilerini ileri derecede sorunlu hale gelmesine sebep olmuştur. Daha sonra yapılan açıklamada Mesut Özil tarafına süreçlerin detaylı bir şekilde anlatılmadığı bu yüzde iletişim kopukluğunun olduğunu detaylı bir şekilde anlatılsa indirime gitme taraftarı olacağını belirten Mesut Özil'in 2020 sonlarında ismi artık Fenerbahçe Spor Kulübü ile anılmaya başlamıştır.

Nitekim 24 Ocak 2021 tarihinde Mesut Özil kariyerinde ilk Türk Takımına Transferini gerçekleştirmiştir. Fenerbahçe ile 3,5yıllık sözleşme imzalayan Fenerbahçe Spor kulübü hem sportif hem de kurumsal imaj açısından Mesut Özil transferinde gelir ve başarı elde etmeyi planlayarak bu transferi yapmıştır. Mesut Özil'in başarıları arasında; Almanya Kupası, Avrupa 21 Yaş Altı Şampiyonluğu, Almanya Kral Kupası, La Liga Şampiyonluğu, İspanya Süper Kupa, FA cup, 2014 Dünya Kupası, İngiltere Süper Kupası yer almaktadır.

#### **4.Mesut Özil'in Fenerbahçe'ye Transferinin Dış Basında Yansımaları (3 Sayfa)**

Fenerbahçe Spor Kulübünün Mesut Özil transferi sonrasında gerek dünya basını gerekse de yurt basınında transfer konulu birden çok haber yayınlandı. Bu haberlerin Fenerbahçe'nin tanınırlık seviyesine ve tanınırlığa paralel olarak kurumsal imajını geliştirmesine katkıda bulunduğu düşünülürken bu başlık altında dış basın da yer alan transfer haberlerini işleyeceğiz.



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İlk olarak Fenerbahçe spor kulübünün Mesut Özil'i İstanbul'a getirmesini içeren transfer haberini görsel ekleyerek sosyal medya kanallarından paylaştı ve bunun ilk etkisini dünya çapında 14 Milyon takipçisi olan FIFA'nın resmi twitter hesabı paylaştı. Böylelikle Fenerbahçe ilk olarak transferini dünya üzerinde bu paylaşım aracılığı ile dünya basınına duyurmuş oldu.



([www.turkish.aawsat.com](http://www.turkish.aawsat.com),02.04.2021)

Bu twitt atıldıktan sonra dünya basınının önemli ve etkili medya kuruluşları Fenerbahçe spor Kulübünün Mesut Özil transferini haberleştirerek takipçilerine duyurmaya başladı. Almanya'nın önde gelen ve günlük tirajı basılı gazete bazında 1,5 Milyon dijital ortamda ise günlük 400.000 kişiye(<https://www.eurotopics.net>) ulaşan Bild gazetesi Mesut Özil'in Fenerbahçe spor Kulübüne olan transferini hem gazetede hem de dijital ortamda bulunan haber sitesinde yer verdi. Gazete "Dünya Şampiyonu Fenerbahçe'ye Transferini Doğruladı" manşeti ile hafta boyunca Mesut Özil'in Fenerbahçe'ye transfer olacağının sinyalleri verilirken haber içerisinde ayrıca Mesut Özil'in Fenerbahçe Spor Kulübüne olan transferinden duyduğu memnuniyete de yer verilmiştir. Haber yayınlanması ile Fenerbahçe Spor Kulübü adından dünya basınında bahsettirmeye başlamıştır ([www.fotomaç.com.tr](http://www.fotomaç.com.tr)). Fenerbahçe spor Kulübü bu haber ile gazete tirajları ve haberin Bild gazetesinin sosyal medya hesapları üzerinden paylaşılması ile sadece bu haber ile uluslararası basın camiasında doğrudan 3,5 Milyon kişiye ulaşmıştır.

WELTMEISTER BESTÄTIGT FENERBAHCE-WECHSEL 

## Das steckt hinter diesem Özil-Tweet



Tschüss Arsenal, hallo Istanbul! Mesut Özils Wechsel zu Fenerbahce ist so gut wie durch

<https://www.fotomac.com.tr/galeri/fenerbahce/fenerbahcenin-mesut-ozil-transferi-dunya-basininda/2>

Fenerbahçe spor Kulübü'nün Mesut Özil transferi dünya basınında önemli ölçüde yer bulmuştur. Almanya'nın bir diğer önde gelen spor dergisi olan Kicker dergisi Mesut Özil'in transferini hafta içi baskısında yer vermiştir. Kicker dergisi Haftalık 2 adet olarak çıkmakta ve haftalık tirajı 500.000 bandında olan uluslararası bir spor dergisidir([https://tr.qaz.wiki/wiki/Kicker\\_sports\\_magazine](https://tr.qaz.wiki/wiki/Kicker_sports_magazine)). Kicker dergisinin haftalık 500.000 tirajının yanı sıra sosyal medya hesaplarında Instagram 857 bin, Instagram 31.000, Facebook 519.000 takipçi olmak üzere toplamda sosyal medya kanallarında 1 Milyon 400 bin aktif kullanıcıya sahip olan kicker dergisi bu haberi sosyal medya hesaplarından da paylaşmıştır. Doğal olarak yapılan haber ile birlikte Fenerbahçe Spor Kulübü adını uluslararası arenada 1 Milyon 400 bin kişiye duyurmuştur.



<https://www.fotomac.com.tr/galeri/fenerbahce/fenerbahcenin-mesut-ozil-transferi-dunya-basininda/2>

Dış basında transferin etkileri önemli ölçüde yankılanırken ve Fenerbahçe Spor kulübü açısından sadece bu transfer ile milyonlarca kişiye dünya çapında ulaşılmıştır. Bunun ışığında kurumsal imaj çerçevesinde önemli katkılar doğurduğu ortaya çıkmaktadır.

Dünya basınında Mesut Özil transferine yer veren bir diğer önemli ve İngiltere'nin en önde gelen gazetelerinden olan "The Sun" Mesut Özil transferini "Türk Lokumu" başlığı ile yayınlarak günlük tiraj açısından günlük 1.207.000 kişiye ulaşmıştır. Bu haber ile sadece

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gazete ile Fenerbahçe spor kulübü futbolun önde gelen ülkelerinden olan İngiltere gibi bir ülkede adından bahsettirmiştir. The Sun gazetesinin günlük tirajının yanı sıra sosyal medya hesaplarından bu haberi dijital ortamlarda paylaşması da kitleyi arttırmaktadır. The Sun gazetesinin sosyal medya hesaplarını incelediğimizde Instagram;354.00 Facebook 3.3 Milyon ve son olarak Twitter 1 Milyon 850.000 kullanıcı olmak üzere toplamda aktif olarak 5 milyon 504.000 kullanıcıya sahip olduğunu görmekteyiz. Bu bilgiler ışığında Fenerbahçe Spor Kulübü Sosyal Medya kanalından yalnızca Mesut Özil transfer haberi ile uluslararası basın arenasında 5 milyon 504 bin kişiye ismini duyurmuştur ki buda kurumsal imaj çerçevesinden önemli bir rakamdır.



(<https://www.fotomac.com.tr/galeri/fenerbahce/fenerbahcenin-mesut-ozil-transferi-dunya-basininda/7,5.04.2021>).

Dünya basınında bir diğer haber ise dünya çapında okur kitlesi bulunan BBC Sport'dan geldi. BBC sport Mesut Özil'in Fenerbahçe Spor Kulübüne olan transferini dijital medya aracılığı ile duyurdu.BBC Sport haberin detayında ise Mesut Özil'in eski kulübünde olan huzursuzluğunun sona erdiğini ve artık yeni kulübüne doğru yol aldığını üzerinde durdu. Fenerbahçe spor kulübü bu transfer sayesinde dünya üzerinde etkili bir okur kitlesine sahip olan BBC Sport'un haber bültenlerinde yer alarak dünya çapında ismini duyurarak önemli bir kurumsal imaj sürecine imza attı.



(<https://www.fotomac.com.tr/galeri/fenerbahce/fenerbahcenin-mesut-ozil-transferi-dunya-basininda/7,5.04.2021>).

Dünya basınında yer alana haberlerin yanı sıra Türkiye’de ve Yurt dışında birçok medya kuruluşu Mesut Özil’in Fenerbahçe Spor Kulübü’ne olan transferini canlı olarak yayınladı. İspanya’nın önde gelen spor gazetelerinden olan AS gazetesi Mesut Özil’in Fenerbahçe’ye spor kulübüne olan transferini hem dijital medya kanallarında hem de gazetesinde yer verdi(www.ajanspor.com). Bunun yanı sıra Mesut Özil’in Fenerbahçe Spor Kulübü ile gerçekleşen imza törenini de AS TV’den canlı olarak yayınladı. Bu bilgiler ışığında Fenerbahçe Spor Kulübü bu transfer ile kurumsal imaj yönünde ne kadar doğru bir strateji geliştirdiği aşikardır.



<https://www.fotomac.com.tr/galeri/fenerbahce/fenerbahcenin-mesut-ozil-transferi-dunya-basininda/7,5.04.2021>

## SONUÇ

Araştırmamızda elde edilen sonuçlara göre; Fenerbahçe Spor Kulübünün Mesut Özil transferini duyurmasını ardından sadece sportif açıdan değil ekonomik açıdan da getirileri olmuştur. Özellikle Fenerbahçe Spor Kulübünün Borsadaki değerlerinin artışa geçtiği ve lisanslı ürünlerin satışında artış olduğu yapılan araştırma sonucunda elde edilen veriler arasındadır. Yapılan tarama sonuçları gösteriyor ki Mesut Özil Fenerbahçe Spor Kulübüne sadece sportif katkı değil ayrıca marka değerini arttırmasında da etkili olmuştur. Fenerbahçe Spor Kulübü transfer sürecini duyurur duyurmaz Borsadaki değerlerinde olumlu yönde hareketlenmeler gerçekleşmeye başlamıştır. Mesut Özil’in İstanbul’a geldiği hafta olan 18 Ocak günü Fenerbahçe Spor Kulübün hisse değerleri önceki haftaya göre günlük %7 oranında bir artış ile başlamıştır. Fenerbahçe Spor Kulübü Mesut Özil’in İstanbul’a getirmesinden önceki hafta borsa değerleri haftayı %2,70 artışla 41,90 puanla kapatmıştır. Mesut Özil transferinin hafta sonu sosyal medya hesaplarından duyurulması ve hafta başında Mesut Özil’in İstanbul’a getirilmesi ile birlikte Fenerbahçe Spor Kulübünün Haftalık Borsa değeri %7 oranlık bir artışla haftaya geçen haftadan 2,90 puanlık artışla 45,10 puanla başlayarak hafta boyu bu yükselişi devam etmiştir. Uzman ekonomistlerin yorumları dikkate alındığında bu gelişme ara transfer döneminde spor kulüpleri açısından alışlagelmişin dışında bir artış olarak yorumlanmaktadır. Mesut Özil transferinden sonra artan hisse değerleri 2020 yılının eylül ayından itibaren %50’lik bir artış performansı ile en yüksek seviyeye ulaşmıştır. Bu artışın alt yapısı incelendiğinde Mesut Özil’in tanınırlığı, dünya basınında yer alan haberlerin etkili olduğu sonucuna varılmıştır.

Fenerbahçe Spor Kulübünün Mesut Özil transferinin ekonomik etkisinin yanı sıra günümüz dünyasında kurumsal imaj çerçevesinde önemli bir role sahip olan sosyal medya penceresinden de etkili bir süreç işlediği araştırmada elde edilen bir diğer sonuçtur. Gelişen teknoloji dünyasında kurumların kurumsal imajlarını etkileyen ve kar elde etmesini sağlayan önemli etkenlerden bir tanesi sosyal medya platformlarıdır. Bu platformları etkili kullanan spor kulüpleri gelirlerini hatırı sayılır derecede arttırmaktadır. Araştırmamızda ulaştığımız sonuca göre Fenerbahçe Spor Kulübü Mesut Özil transferi sayesinde tüm sosyal medya platformlarında etkili bir süreç yöneterek kurumsal imajına katkıda bulunmuştur. Fenerbahçe Spor Kulübünün transfer ile attığı ilk twitt olan “ gel gündüzle gece olalım” paylaşımı 218.000 kişi tarafından retweet edilirken aynı tweet 610.000 beğeni ve 61.000 yorum almıştır. Bu rakamlar Fenerbahçe Spor Kulübünün son 10 yılda sosyal medya platformu twitter’da ulaştığı en yüksek etkileşim oranıdır. Fenerbahçe Spor Kulübünün en fazla etkileşim aldığı paylaşım ise Mesut Özil’in Fenerbahçe Atkısı ile verdiği pozda almıştır. Bu fotoğraf toplamda twitter üzerinden 328.000 beğeni alarak kulübün twitter hesabının aldığı en yüksek beğeni oranıdır. Toplam olarak baktığımızda ise transfer haberinin dışında sadece iki gönderi ile Fenerbahçe Spor Kulübü’nün Twitter üzerinden yaptığı paylaşımlar 339.000 Retweet, 1 Milyon 390.000 Beğeni ve 80.000 yorum alarak Türkiye tarihinde daha önce bir spor kulübünün almadığı bir rakama ulaşarak kurumsal imajını sosyal medya üzerinden verimli kılmıştır. Bunun yanı sıra You Tube üzerinden toplamda transferinde etkisi ile 1 Milyon 950 Bin aboneye ulaşan Fenerbahçe SK kanalı transferden sonra kanalını ücretli hale getirerek abonelik ile üyelere içerik sunulmaya başlandı. Türk spor tarihinde ilk defa böyle bir uygulamaya giden Fenerbahçe Spor Kulübü ilk etapta buradan 4 Milyon 487 Bin TL kazanarak sosyal medya gelirlerini arttırmıştır.

Fenerbahçe Spor Kulübü’nün Instagram hesabı verileri incelendiğinde Mesut Özil’in İngiltere’den çıkış yaptığı fotoğrafı 1 Milyon 250 Bin beğeni alırken Fenerbahçe atkısı ile verdiği pozda ise 1 Milyon 248.000 beğeni alarak Instagram platformu açıldığından bugüne en yüksek beğeni rakamlarını alarak toplamda 2 Milyon 498.000 bin kişiye doğrudan ulaşarak bu transferi kurumsal imaj çerçevesinde sportif başarıdan önce kurumsal imaj açısından başarıyı yakalamıştır. Yine sosyal medya platformu olan twitter’dan yapılan “gel gündüzle gece olalım tweete” dünyaca ünlü futbolcu Cristiano Ronaldo’nun Real Madrid’den Juventus’a transferinin ilan edildiği tweete’de geçti. Cristiano Ronaldo’nun transfer paylaşımı 2018 yılında 24 saatte 535 beğeni alarak etkileşim rekoru kırmıştı. Fenerbahçe Spor Kulübünün Mesut Özil Transfer Paylaşımı ise toplamda 24 saatte 592 bin 100 kişi tarafından beğenildi. Bu paylaşım Cristiano Ronaldo’nun transfer paylaşımını geride bırakmanın yanı sıra Türk Spor Tarihinde etkileşimi en çok olan paylaşım ve bunu ilk olarak Fenerbahçe Spor Kulübü Gerçekleştirmiştir. Bu rakamlar ve rakamların sonuçları dikkate alındığında Fenerbahçe Spor kulübü sadece transfer yaparak kurumsal imajını güçlü hale getirmiştir ve dünya çapında adından söz ettirerek kurumsal değerini yükseltmiştir.

Araştırma verilerinin sonuçlarına göre ortaya çıkan bir diğer sonuç ise Fenerbahçe Spor Kulübünün Mesut Özil transferi sayesinde lisanslı ürün satışlarının transfer ile birlikte tavan seviyelerini görmesidir. Bu kapsamda özellikle lisanslı Mesut Özil forması satışları rekora ulaşmıştır. Mesut Özil transferi kulüp tarafından ilan edilir edilmez 130.000 forma satışı yapılırken forma adet fiyatı 315 TL’den satılırken transfer duyurulduğunda toplamda Forma satışından kazanılan miktar 4 Milyon 950 bin TL olarak kayıtlara geçmiştir. Bu rakam Fenerbahçe Spor Kulübünün Mesut Özil’i İstanbul’a getirdiği gün olan 24 Ocak 2020 günü 200.000 forma satış barajına ulaşarak daha önce ulaşmadığı bir rekora imza atmıştır. Sadece

Mesut Özil Formasından Fenerium 6 Milyon 300 Bin Tl gelir elde ederken bu rakam her geçen gün artmaktadır. Pandemi sebebi ile maçların seyircisiz oynanması ve taraftarların forma satışlarına ilgisini azalmasına rağmen bu rakamlarda yapılan forma satışı Fenerbahçe Spor kulübünün bu transfer doğrultusun Kurumsal İmaj sürecini ne kadar iyi yönettiğinin göstergesidir. Forma satışlarının yanı sıra Fenerbahçe Spor Kulübü bu transfer çerçevesinde ‘‘MESUTOL’’ kampanyasına transfer sonrası Fenerbahçe Taraftarlarından Hem Yurtiçi Hem de Yurtdışı olmak üzere 150.000 sms atılmıştır.150.000 sms’in Fenerbahçe Spor Kulübüne olan getirisi ile toplamda 3 Milyon TL’dir.

Tüm bu veriler ve rakamlar incelendiğinde Fenerbahçe Spor Kulübünün Mesut Özil transferinin Kurumsal imajını tazelemesi ve güçlendirmesi adına bir süreç olduğu ortaya çıkmaktadır. Fenerbahçe Spor Kulübü bu transfer sayesinde Yurtiçi ve Yurtdışında milyonlarca futbol ve spor tutkunlarına ulaşarak Kulübün tanınırlık seviyesini arttırmının yanı sıra dünya çapında olan imajını yükseltmiştir. Araştırmamızın sonucu gösteriyor ki bu transfer doğrultusunda spor sektörü kurumsal imajı geliştirmede çok yönlü bir sektör olarak karşımıza çıkmaktadır. Futbol kulüpleri gelişen dünyada transferlerini sportif yönünün yanı sıra kurumsal imaj kavramının geliştirilmesi ve etkileşimi arttırmak adına yaptığı gözlemlenmiştir.

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## **WOMEN IN AZERBAIJAN AND NORTH AMERICAN INDIAN FOLKLORE: COMPARATIVE ANALYSIS**

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### **Abstract**

Azerbaijan and North America are geographically far apart. There are religious and cultural differences between the two peoples. A comparative study of the folklore of the two peoples contributes to the development of world folklore. Mythological, anthropological, sociological, psychological and ideological research on women has been conducted in Azerbaijani oral folk literature. From a traditional point of view, it is argued that women are economically backwards under the male rule, unable to express their identities, or, conversely, from a conservative point of view, women socially dependent on men in our history. There is only one ideological direction in these two approaches. Looking at this issue in more detail, it is clear that men and women have lived together independently, even in a sacred, historical period, in public life. In particular, it is clear that patriarchal and matriarchal qualities associated with holiness are intertwined. This study compares the place and position of women in Azerbaijani and North American Indian folk literature and the attitudes of women in the approaches of both peoples. Mythological narratives may explain the instruction or warn about certain behaviours or characteristics to avoid, such as cannibalism—considered by many cultures as one of the vilest crimes that can be committed. The research findings show that there are both similarities and differences of folklores between two cultural systems.

**Keywords:** Holy Women forces, Evil Women forces, Important Roles of Women

### **INTRODUCTION**

There are the images of the devoted, self-sacrificing woman throughout both Azerbaijan and North American Natives popular cultures, which is created and performed by men. Like Azerbaijan, North American Natives' folktales and tales are riddled with the female goddess, ghosts and spirits, and people are fascinated by them since childhood. Similarly, in Azerbaijan, American Natives' folk tales and ghost stories feature many female spirits.

Traces of the mythological-artistic worldview are still manifested in folklore and classical literature. Azerbaijani mythology is not as systematic and complete as ancient Indian and ancient Greek mythology. However, it is possible to find traces of Azerbaijani mythology in Azerbaijani folklore. They are more cosmogonic and seasonal, as well as certain details of ethnographic myths. In the mythical worldview, the cosmos, a set of rules covers the leading order of society - the family, life, the processes of mutual understanding between man and nature. Certain elements of the mythological worldview have been preserved in the texts of folklore examples. Ancient Turkish mythological thought is the leading motive in most Azerbaijani mythological texts. This can be seen in the cosmogonic myths associated with the creation of the world, in the ethnographic myths associated with the origin of the ethnos, and in the calendar myths associated with seasonal processes. The creation of mythological texts and their preservation in the form of elements in folklore texts is closely connected with the view of primitive man on nature and the forces of nature. The desire to influence the forces of

nature through words, actions, and games, primitive men created and performed mythological texts.

The legends of the ancient genres of folklore speak of unimaginable, miraculous, fantastic events. Legends are created in connection with the people's worldview, way of thinking, desires and aspirations. The main feature that distinguishes the legend from other genres is that the legend depicts unusual, supernatural stories and events that are beyond the real world, which the modern mind perceives as fiction. Various planets, objects, animals and birds have human characteristics in legends. Legends have a love of good, a love of beauty, a hatred of evil and ugliness.

The most popular and largest genre of the epic genre is the fairy tale. Tales created by people from ancient times have been passed on by word of mouth, changed, enriched and reached our time. Good and evil, light and darkness, life and death, truth and injustice fight, and good always triumphs over evil, truth over injustice, and light over darkness in fairy tales. Magic, spells, sorcery, enchantment, dragons, etc. are fantastic forces that are common in most fairy tales. All events are related to the main character in these examples. This hero is often idealized. The positive hero of the tale overcomes all the difficulties he faces, disappears from the forces of evil and achieves his dream.

The purpose of this article is to study the ideological, social, metaphorical and disciplinary levels between women in Azerbaijan people and Hindu tribes of North America.

The image of the devoted, self-sacrificing woman can be observed throughout Azerbaijan popular culture, which is created and performed by men. Azerbaijan folktales and tales are riddled with female goddess, ghosts and spirits, and people are fascinated by them since childhood. Azerbaijan folk tales and ghost stories feature many female spirits. Taking on human form as they do, these spirits are very well informed about the nature of the ideal Azerbaijan woman: she must be beautiful, quiet, perceptive, hard-working, and devoted to her husband. The people around this "ideal woman" exploit these characteristics to take advantage of and deceive her. People speak about the true form of ghost woman as terrifying. People want to show more of these women's true selves. We learned long, long ago from stories that there is always another side to this figure of the ideal woman.

Folklore provides a way for people to see and understand life from many different perspectives, both personal and cultural (Virtue & Vogler, 2008). Folklores teach people about human heritage, moral world, and way of behaving. Through the examination of some traditional Azerbaijan folklores and tradition folklores from North American Native Tribes' cultures and the research questions in the study are presented as follows:

Q1: What are the distinction and similarities between selected Azerbaijan folklores and North American Natives' folklore?

Q2: What traditional cultural and spiritual values does Azerbaijani folklore contain?

#### **.MATERIALS AND METHODS**

The theoretical and methodological basis of the research is an objective approach to the problem. The research topic was studied using a systematic approach, analogy and comparison, comparative-historical-traditional-geographical methods.

#### **RESULTS**

Ten selected folklore samples from both Azerbaijan folklore and North American Natives' folklore are presented in this research work. Each group contains five tales from both cultures, and the grouping was based on the similarity of the tales in characters, plot, or values. Some of the tales was briefly interpreted. Both the comparison of similarities and differences are presented. In addition, some of the tales motives represented its unique cultural symbols are stressed as well.



## **DISCUSSION**

Over the history, a wide range of literature has emerged on the position of women, especially as a result of the feminist rule, presented as collector, gatherer, hunter, farmer, and later in society as slaves, labor, warriors, and wives. Although it is claimed that there are traces of matriarchal structures in primitive societies, some researchers also claim that there has never been a matriarchal society, when maternal nobility should be given priority. [E.B. Tylor, 1865]

Azerbaijani woman is the backbone of the family and typically value being mothers, caretakers, and social transmitters of cultural knowledge in Azerbaijan folklore. The woman's identity is generally rooted in her spirituality, extended family, and community. "The hand that shakes the cradle of the baby will rule the world.", "The captain controls the ship, and the mother controls the house"

There are many women of warriors, chiefs, leaders, medicine woman, and other high statuses in Azerbaijan and North American Native tribes' folklore.

A man married a beautiful woman, who appears as if from nowhere, but every day she goes to the spring for bringing water. Believing that she is cheating, the man follows her secretly and sees that woman gives water to wounded soldiers and takes medical care to them. "Because you just disappeared!" says the man! "Don't bother to come back again!" At this, the woman becomes angry, transforms into a huri and disappears. After that, there is hunger and misery in the house. the man regrets, but the woman never returns.

The next story from folktales a young boy wants to rule Angel-mother's tribe and rebels against her. When Angel-mother hears about it, she leaves her throne, turns into a dove and flies to the mountains. Angel-mother becomes peace bird and protects his son's kingdom.

A woman's long pregnancy and child-rearing period, and therefore her inability to stay away from home as a man and to bring home foods such as carrots, fruits, and vegetables, confirmed her important role in primitive collectivist societies. In particular, with the beginning of the cultivation of the land, the transition to agriculture, the woman was sacred because she was the producer of the land. Due to natural conditions, it was not always possible for a man to bring food home by hunting. The child's lineage ancestry was determined not by the man who stayed away from home for a long time, but by the woman who worked near the house, brought food home, and looked after the children. However, later domestication of animals in groups and the use of them in agriculture weakened the importance, respect, and sanctity of women in primitive society. The power brought about by land production and trade, especially in slavery societies, strengthened the patriarchal system by making man an object of property. Women's social status is largely limited to housing. However, the development of industrialization brought with it the entry of women into economic and political life.

The attitude towards women has a dual character in Both nations' oral folk literature.

1. Holy Women forces
2. Evil Women forces

Around our world, good and evil still go hand in hand. Both are essential for us to comprehend the universe because, without evil, we will never be able to comprehend what good is.

However, it's possible that the most prevalent notions of evil are shared by both countries. Indeed, when we look at Azerbaijani and Native American mythology, we can see how difficult it is to draw a straight line between good and evil because they are not only intertwined but also hold the universe in balance.

The representations of Holy Women are often transferred to healing plants and fruit-bearing trees, noble animals in nature, and springs, and they protect their tribe, family, and community from evil powers, diseases, and calamities in Azerbaijani tales. All of nature's

medicinal plants are focused on women with kind and gentle souls. Blond Spike Woman from Azerbaijan folklore and Corn Mother from North American Natives' folklore are at the heart of women with kind and gentle souls. They are mythical female characters who serve as representations of holy women.

Blond Spike Woman brings grains to the hungry people and gives her life to ensure their survival. She teaches people how to cultivate grain, and help them to have grain at their home. People perform various rituals and sing songs to protect it.

I am a magic spike,  
I am a good spike  
The fields are my home,  
The slopes are my plateau.  
People need me  
I am blessings and bread.

In the North American native Abenaki and Penobscot creation stories, the first woman is known as First Mother or Corn Mother. The facts of First Mother's life differ dramatically from one story to the next. First Mother is said to have been created by the Great Spirit, the culture hero Glooscap, or both in various cultures, or to have actually sprung to life spontaneously from the morning dew.

The second goddess woman Ayizit is a symbol of Turk beauty as Sumerian and Greek goddess Ishtar and Aphrodite (Venus). She pours milk into the child's mouth, which comes from a lake of milk and endows the child with a spirit. Human infants, females, and young animals are all protected by Ayizit. Its emblem is a pair of swans. Swans, which represent Ayst, are sacred and untouchable. In fact, the swan is a holy girl. When she wears the swan's white veil, she transforms into a swan.

According to Seyidov [Seyidov M., 1983], Humay-Umay, one of Azerbaijan Turk's holy woman images, is a woman who descended from the land of Heaven with the World Tree on the rainbow to the Earth. Humay-Umay is the guardian of newborn children and their mothers and her name means "capable mother," "powerful creator," "capable goddess," as well as "a mother's position in the womb" and "a mother's womb in Turkic languages." Both mother goddesses are depicted as a guardian of children in the fairy tales like "Angel Mother."

Women play an important role in the myths surrounding the existence of the first Native tribes in North American Indian folk literature too. Spider-Woman was often depicted as a kindly being who aided or advised people in need in various tales from across North America. Dawn E. Bastian and Judy K. Mitchell (Dawn E. Bastian and Judy K. Mitchell, 2004) The image of the Spider-Woman goes to the Great Spirit of Heaven to bring life to earth in the Hopi stories. In Hopi legends, the image of the Spider-Woman is presented to the Great Spirit of Heaven to bring life to Earth. The image of the Spider-Woman goes to the Great Spirit of Heaven to bring life to earth in the Hopi stories. In Hopi legends, the image of the Spider-Woman is presented to the Great Spirit of Heaven to bring life to Earth. When she returns, she discovers that the world is not yet ready for life, which makes her sad. All was tense and agitated. Finally, Spider-Woman experiences the joys of life and gives birth to twin sons. She named his first-born son Hardener because the earth was warm and soft at the time. Spider-Woman instructs his son to harden the earth with his cool hands and help it to harden. [Dawn E. Bastian and Judy K. Mitchell, 2004] She names his second son Soundmaker and tells him that from that day everything on earth will reckon with him. From that day, the twins work hard every day until the earth's crust hardens. Hardener goes to the south to form the South Pole and Soundmaker to the north to form the North Pole. Both poles control the world from where they are located, warning people about earthquakes and volcanic eruptions. [3. 16.]

You can see dead women are transferred to the tree and distinguished by their beauty in "Lonely Tree", "Orphan Girl", "Three Sisters", "Envious Sisters" and other fairy tales.

Innocent murdered women turn into willow, plane, apple and poplar trees in Azerbaijan folklore. Traces of the worship of the tree in Azerbaijani Turkish mythology still retain their signs and significance. After being transformed into a tree, women had a strange power of magic and charm.

Table 1 shows the differences and similarities which found while comparing the images of holy mother-women in both nations' folklore:

**Table 1: Differences and similarities between North America Indian tribes and Azerbaijan nation's holy women characteristic features in folkre**

Similarities:	Differences:
Both mothers have divine powers	Spider mother goes to heaven from earth, but mother Umay comes to earth from heaven.
Both mothers know that the world is anxious and angry place	Spider mother uses her twin sons to order to the world, but Umay mother tries to regulate the world and protect the children from the evil forces
Both mothers are protectors	Spider mother goes to heaven to bring life to earth, and mother Umay comes to earth from heaven to protect the life
In both cultures, women take their power from the sky	Spider mother's sons help her, but Umay mother works alone

The second type of woman is **Evil women**. The most prominent evil women among Azerbaijan folklore is Cannibal Woman- Halana (Force Mother), Angry Hazelnut Maiden, Guldesta Maple Tree, Ugly Thistle and North American Native tribes' folklore is Cannibal Woman- Dzonokwa. Walking Head, Spirit Woman and North American Native tribes' folklore is Cannibal Woman- Dzonokwa Walking Head, Spirit Woman.

Halana is a woman with disheveled hair, big head, tall, dressed in white, with a devilish face, walking around with her big breasts over her shoulders. Halana is considered the mother of the demons living underworld. Halana, like all evil forces, does the opposite of sayings: when you say go, she comes, when you say come, she goes. It often emerges in the dark, enters the room through the house's chimney, and removes the livers of new birthgaven mothers and newborn infants, washing them in the river before eating them. Since it was thought that Halana lived near a river, the new birthgaven woman was not allowed to go to a river or spring for water until she had been pregnant for 40 days. An old broom, scissors, a knife, and a rifle were placed in the house to keep the mother and child safe, and a needle was inserted into the mother's underwear and a pin was attached to the newborn's pillow. Halana is a beautiful woman in some stories and she is scary in many stories. She is a visible creature, and man attaches a pin to her cloth when she is seen and brought home. Halana takes care of him and gives birth to a dragon-sized child. Both peoples worship evils as well as good, believing it is better to appease the wrath of the evil, than to incur its enmity.

Dzonokwa was a hideous looking giantess who carried children away to her home deep in the forest. Kwakiutl parents warned their children what would happen to them if she caught them alone. Adults feared Dzonokwa, too, and blamed their nightmares on her. The Alsea have a similar legend about A'sin, the Monster Girl of the Woods, who was feared by all. Anyone who disappeared was believed to have been carried off by her. Children were rarely left alone, since they were especially vulnerable.

Table 2 shows the differences and similarities which found while comparing the images of both evil mother-women in both nations' folklore:

**Table 1: Differences and similarities between North America Indian tribes and Azerbaijan nation's evil women characteristic features in folkre**

Similarities:	Differences:
Both are cannibal women	Dzonokwa eats all people, but Halana eats women and newborn children
Both women are giant	Dzonokwa carries children away to her home deep in the forest, but Halana removes the liver of women and newborn children, brings it near the river.
Both are dangerous	Dzonokwa lives in the forest, but Halana by the water.
Both are the evils	Halana can marry and has the ability to give birth, but Dzonokwa not

One of many sources of information about negative behavior of women is myths and those myths provide us with a whole list of behaviors which are considered negative, vicious and sinful. A special attention is paid to the religious component: "people who found no time to sing praises to the Creator" [6. 20]. The "sins" mentioned above can be shortened to murder, cruelty, and aggression.

The civilized idea of 'evil' has no place here: Indian religion is founded on a belief in the existence of two halves of the universe which fit together like night and day, summer and winter, seed-time and harvest and keep the mechanism of the cosmos in motion" [7. 187]. For them, the universe is also "an orderly, all-inclusive unity of interrelated elements. It contains both good and evil, which are complimentary yet embodied in each other in an intricate duality. Evil is the absence of control. Control depends upon knowledge. Good is that which has been brought under control. Evil can be brought under control by investing it with holiness" [8. 138].

## CONCLUSIONS

Comparing women's responsibilities in the both nations-North America Indian tribes and Azerbaijan nation were as follows: Women worked mainly at home and in the fields. Their work was extremely hard. Azerbaijan oral folk literature consists of very rich examples and has a very ancient history, as North American Native tribes have. Both Azerbaijani and North American Native tribes folklore is the richest and most profound example of their literatures. These examples acquaint us with the traditions, origins, history and views of our people, as well as our heroism, honesty, humanity, kindness, conscience, etc. Like Azerbaijan culture Women have played an important role in the Laguna Pueblo tribe's culture throughout its history. Women's status among both people has always been strong, with a matrilineal focus and matrilocal residence, with women owning the houses and gardens.

There are many important roles of women in both, Azerbaijan and North American Natives' folklore.

**Cooking** - a woman cooks and sets the table. These are included skinning, cleaning, gathering fruit and nuts, lighting a fire, and smoking meat to prepare for the winter.

**Handicrafts** - Women weaved baskets, cloth, made clothes, dried animal skins and made various household utensils.

**Harvesting** - In many tribes, women had to harvest food crops. Men could help them, but the work was entirely the responsibility of women.

**Other work** - The woman was raising children, collecting firewood for the stove. As the tribe moved from place to place, the women packed up everything in the house and rebuilt the house in the new area.

The women of the both peoples make ceremonial decorations and organize ceremonies. Women are responsible for household chores. They were in charge of all domestic affairs. Women were the most respected members of the tribes, as they did the hard work of managing the farm and providing for the family. Men and women had equal rights, although they had different roles. Some tribes were headed by men, but they were chosen by the women of their tribes.

Thus, despite some general similarities (partially due to the influence of modern religious) with the Azerbaijan people's perceptions of what is considered good and what – evil, there is a significant difference in the attitude to that: in contrast to the Azerbaijan position, which is to fight evil, punish and eradicate it with all possible means, for Native Americans it is more relative, and they accept it as an integral part of the world balance. Good cannot exist without evil, and the harmony of the universe is feasible only in the balance of these opposites, counterpoising the impact of each other on the world and people.

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**THE AFRICAN UNION HISTORY IN THE CONTEXT OF  
INTERNATIONAL RELATIONS DEBATES**

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**Abstract**

The OAU and AU have been started under different motivation and circumstances. The event of the post-modernism with the end of the Cold war and the end of the Apartheid in South Africa rendered the OAU obsolete. New ambitions and ad perspective have arisen across Africa. As the OAU was a creature of its time, the AU is also a product of the post-modernism period. The continent has changed its objective from an end to colonialism under the OAU and Apartheid to an African development and progress under the AU. The first part of this paper ends with the organizational structure of the AU. In the event of post-modernism new incentives such as human right, a politically and economically stronger, prosperous union and stronger judicial structure have arisen across the continent. Modern era's related problem is also challenging the continent such as terrorism and cybersecurity. Burden with organizational and funding problems and unable to deal with the new aspirations and challenges alone, the AU manage to maintain a strong partnership with international partners whether government and institutions. It is argued that given the difficulties and the AU's relatively short life, the union has been proven to be relatively successful in handling peace in the continent. The Agenda 2063 is a manifestation of a rising aspiration from the continent and can be considered as a step forward a better future. Observers have an optimistic view about the future of the AU, thought it requires stronger will and determination from African leaders.

**Keywords:** African Union, International Relations, Post Modernism

**1 INTRODUCTION**

Africa is a fascinating continent, not only from its fauna and flora but also from its history and culture. Paradoxically, the African continent is left behind in term of development despite the abundance of natural resource. On the geopolitical map, the African Union is the official representative of the continent. The African Union also shapes the general policy across the continent in order to maintain harmony inside the continent and to defend the interest of the continent during international debates.

This paper is dedicated to the African Union's history with a focus on the place of the union in the international relations debates during the post-modernism period. For this purpose, this work is divided in three main part. The first part is deals with the pan-Africanism current of idea, from the origin of the Organization of African Unity till the establishment of the African Union. The second part is focused on the evolution of the African Union during the post-modernism period. Mainly, this part will sort out the motivation to enhance the former Organization of African Union and the new challenges brought by the modern era which led to the establishment of the African Union. This is followed by the place of the union globally

by the relation it entertains with other international organizations. Finally, the main problem impeding the organization is going to be sorted out in the final part. The study ends up with a perspective of the African Union, especially the challenges ahead and the action taken to tackle those challenges. A general conclusion is going to close the paper.

## **FROM THE ORGANIZATION OF AFRICAN UNITY AND PAN-AFRICANISM TO THE ESTABLISHMENT OF THE AFRICAN UNION**

### **1.1 The Organization of African Unity**

The Organization of African Unity (OAU) was created on May 25, 1963 in Addis-Abeba Ethiopia, on the spirit to get rid of the colonialism in Africa. The idea of a united Africa was originated from new presidents of some freshly independent countries such as Léopold Senghor of Senegal, Houphouët Boigny of Ivory Coast, Modibo Keita of Mali, Kwame Nkrumah of Ghana and Haïlé Sélassié from Ethiopia. The main goal is: for African nations to regroup and act together [1], [2]. 32 African states participated in the creation of the OAU, gradually more nations joined the Union. South Africa became the 53<sup>rd</sup> member of the OAU in 1994 [3], (a). Unfortunately, the initiators of the OAU did not always agreed on how to implement the idea of a unified Africa. Some known as “Group of Casablanca” wanted to make the OAU as a confederation of African states while the known as “Group of Brazzaville” wanted to maintain their national sovereignty and make the OAU as a platform for discussion and inter-state cooperation [1].

Added to the fact that, African leaders did not always share the same vision nor the same interest during the post-colonial period. As a matter of fact, some head of states wish to maintain their traditional relationship toward their former colonial power for economic diplomatic and economic reason [1]. In the end, 32 countries settled and started the OAU, though the fore-mentioned differences have crippled the Union all through his history. As for example Morocco has to leave the Union in 1982.

### **1.2 The OAU and pan-Africanism**

The African continent, through its history, has experienced slavery and colonialism. During Slavery and colonialism period, African culture was undermined by European settlers. African people have lost not only their cultural identity but also, they lost control of their land and natural resources. This was taken as a collective humiliation of the African people. In order to regain dignity and to restore the African culture and value, a pan-African movement through a Union was necessary [4].

*But what is pan-Africanism?* Historically speaking, pan-Africanism started during the early 1900’s the Caribbean while African-Americans and black people were claiming for racial equality and human dignity. The movement was initiated by West Indians, like George Padmore and Marcus Garvey, and African-Americans, such as W. E. B. DuBois and Sylvester Williams [4], [3]. The primary goal of the early pan-Africanists was to recover the dignity, respect, and emancipation of the people of African descent. For example, DuBois was seeking to achieve at least two objectives: The first is to establish a historical and cultural connection between Africa and the African diaspora. His second objective is to draw the world’s attention to the fact that Africans had a history, culture, and values that were equal to those of other races and must, therefore, be respected [4]. Gradually pan-Africanism has spread across the world and started being used by group of people and governments in order to shape the future of African people and the African continent.

In the African continent, pan-Africanism is a movement aimed to restore the lost humanity

and dignity of the African person which was lost during the enslavement and colonial period that the continent has gone through [5]. It is difficult to give an exact definition of pan-Africanism, however [4] defines it as “a belief in the uniqueness and spiritual unity of black people; and acknowledgment of their right to self-determination in Africa, and to be treated with dignity as equals in all parts of the world”. It can be developed in three levels [4]: the reconstruction of identity, the research of human dignity and finally the seek for global equality. The latter can also be interpreted as the search for self-government. Those three manifestations of pan-Africanism are the main motivation that fuelled the OAU.

During the ninety’s, and under the influence of the Libyan leader Mouammar Kadhafi, African leaders decided to enhance the OAU based on the pan-Africanism philosophy [1].

Despite the above-cited motivation, the OAU was mainly hindered by two main problems throughout its history. The first problem was that during the Cold War African countries were not having the same interest. Each country has forged an alliance toward weather the United States and its ally or the Soviet Union and its ally. Members of the OAU did not share the same interest and this weakened the Union and its regional and international power. For example, this split went through the conflicts in the Democratic Republic of the Congo, during Somalia’s invasion of Ethiopia in 1978, and during a conflict between Uganda and Tanzania in 1978 and 1979 [6].

The second handicap for the OAU is the instability of African states and the weak norm of democracy. The Union has been forced into a compromise even at its very start. As a matter of fact, it has been agreed that the OAU would not interfere in the internal affairs of other member states. This was an understandable condition, given that all country members just freshly got their independence and very sensitive about their own sovereignty. Added to the UN declaration grating sovereignty to all people and their territorial integrity. The OAU had no authority to punish nor to intervene in case of civil war or genocide. Because of that, the OAU ended up being called the “dictator’s club” [6].

Despite the split among its members, the OAU managed to mediate some security disputes in the continent. Mainly it helped to resolve the border disputes between Algeria and Morocco in 1964 and 1965, and the dispute among Somalia, Ethiopia and Kenya. The African Liberation Committee initiated by the Union in 1963 helped to fight against the Portuguese colonial rule in Guinea Bissau, Angola and Mozambique. It also devoted a considerable of effort to fight Apartheid in South Africa alongside the United Nation [4], [6]. According to the UN Secretary-General Koffi Annan, the OAU managed to give a voice to the African continent and made African concerns heard in the international debate [3].

### **1.3 TO THE ESTABLISHMENT OF THE AFRICAN UNION**

The Africa Union (AU) was established in four summits, each of them installing an instrumental part of what the Union is today [1], [3], [5], [6].

- The OAU’s Sirte Extraordinary Session of 1999, during which the establishment of an Africa Union was officially decided. This is only the fourth of such session of OAU’s history.
- The Lome Summit of 2000, during which the Constitutive Act of the Union was adopted.
- The Lusaka Summit of 2001, during which the road map for the implementation of the AU was drawn.
- The Durban Summit of July 9, 2002, the AU was officially launched, and the first Assembly of the Heads of States of the Africa Union took place. With the AU in place, the OAU ceased to exist. All Fifty-three members of the OAU took part in the creation of the African Union having Thabo Mbeki, from South Africa, as first chairman.



While the OAU stood against colonialism, apartheid, and dependence on foreign countries. The OAU's aspiration for pan-Africanism, liberation and integration is stated in its charter [4]. On the other hand, the AU emphasizes on democracy, human right, and economic development. The AU work toward a greater unity and cooperation among country members, in order to improve the living condition on the continent. African nations hoped that through the Union, it would be possible for African countries to be heard and to play a role in global discussions and negotiations. Those wishes are clearly stated in the Constitutive Act as to [6]:

- Achieve great unity and solidarity between the African countries and peoples of Africa;
- Defend the sovereignty, territorial integrity, and independence of its Member States;
- Accelerate the political and socio-economic integration of the continent;
- Promote and defend African common positions on issues of interest to the continent and its peoples;
- Encourage international cooperation, taking due account of the Charter of the United Nations and the Universal Declaration of Human Rights;
- Promote peace, security, and stability on the continent;
- Promote democratic principles and institutions, popular participation, and good governance;
- Promote and protect human and peoples' rights in accordance with the African Charter on Human and Peoples' Rights and other relevant human rights instruments;

#### **1.4 STRUCTURE OF THE AU**

The newly installed AU is structured as follow [1], [3]:

- The Assembly. This is the supreme organ of the Union. Its members consist of state and government leaders. They have a meeting at least once a year in order to define the general policy for the Union.
- The Executive Council. Members are foreign affairs ministers from country members. They have a meeting twice a year. This organ is in charge of the policy coordination of the Union in different areas such as trade, education, health, population...
- The Permanent Representatives Committee. This Committee is in charge of the preparation of the task of the Executive Council. Mainly composed of specialists, they are also play as supervisor for the Union's project.
- The Commission which is the equivalent of secretary for the Union.
- Specialized Technical Committees.
- The Pan-African Parliament which is active since 2004. Members are deputies from member state. The mission of the Parliament is to draw recommendations concerning peace keeping, safety and food program and climate change.
- The Court of Justice.
- The Economic, Social and Cultural Council. This is an advisory body and aims to guide the Union in term of Human Right, democracy, gender equality...
- Financial Institutions: Such as the African central bank, African Monetary fund and African Investment Bank. Those institutions mainly work toward an economic integration of the country members as stated in Abuja treaty of 1991.
- The Peace and Security Council, with 15 members. Three members from central Africa, three from east and three from South Africa. Two seats are assigned to the north part of the

continent and finally four seats are assigned to the West Africa. The Peace and Security Council play similar role as the United Nation Peace and Security Council i.e. supervising peace across the continent and finding a solution in case of crisis and conflict.

For the next part is dedicated to a discussion about the actual implementation of the AU vis-à-vis the post-modernism current after the end of the cold war.

## **2 THE AU'S ESTABLISHMENT IN THE CONTEXT OF THE POST-MODERNISM DEBATES**

What started in 1989 was a new world order, it was not only the end of the Cold War but also the collapse of the global balance of power and the imperial urge. I was the end of the unified global political system turning around fear of a nest world war [7].

Late in the nineties, 30 years after the founding of the OAU, the continent remained in a precarious state: both economically and politically weak. Moreover, when the Cold War was over, the global superpowers seemed to be withdrawing from the region. New incentives arose among African leaders in order to revive the continent: good government, free market, and thus, a stronger Union. South African president Mbeki in 1999 stated that the “OAU needed to strengthen so that in its work, it focuses on the strategic objective of the realization of the African renaissance” [8].

### **2.1 NEW INCENTIVES**

Besides the identity issues and new interests following the post-Cold War period, the AU is a response to the globalization and democratic and liberal principles which spread around the globe [4]. There was also a sort of rivalry among African leaders. Competition in term of ideology, regional economic influence and geopolitical issues mainly happened among Libya's Muammar Gaddafi, Nigeria's Olusegun Obasanjo, South Africa's Thabo Mbeki. Those were among the strongest economy in Africa during that period, moreover, Nigeria and South Africa were both targeting a permanent seat at the UN.

The OAU position about human right is not well defined even in its Charter, it is only felt through the position of the union strongly against colonialism and apartheid. One vehicle of human right was the concept of self-determination. It is good to mention that in order to help African fellow states to gain their independence, the OAU found it legitimate to use both diplomacy and armed struggle. Another vehicle is taken from the fact that the OAU found the apartheid to be incompatible to its political moral obligations. OAU member states were enforcing the sanction put upon the South African apartheid regime. Few key evolutions of human right in Africa [9]:

- 1981: Establishment of the African Charter on Human and Peoples' Rights (AHCPR).
- 1990: Adoption of the African Charter on the Rights and Welfare of the Child (ACRWC).
- 1998: Adoption of the Protocol establishing an African Court on Human and Peoples' Rights by the Assembly of the OAU.
- 2003: Adoption of the Protocol on Women rights.

Long before the dissolution of the OAU, African leaders felt the need to enhance the Union and aspired to a new model. Among new ambitions are good government, economic development, social progress and especially to have a more powerful and cohesive and notorious organization. It can be said that those aspirations were shared among members, since it took only one year for all members to adopt the Constitutive act, the founding document of the African Union. it is also good to mention that the Constitutive Act reaffirms

the principles of domestic sovereignty and nonintervention. It states that all members recognize the sovereignty of member countries, their right to have their borders respected, and their independence [6].

During the OAU period, state members already started to feel the need to bypass the protection of sovereignty. In some occasions the union has to be more active in the business of peace keeping. The most notable case of a regional intervention during the period of OAU was the Economic Community Monitoring Group (ECOMOG) peacekeeping intervention in Liberia in 1990 and Sierra Leone in 1997 [2]. Moreover, it has also been felt that African countries were more receptive of an intra-African intervention in their territory rather than an intervention coming from outside the continent. The Constitutive Act of the latter African Union allows it to intervene in a member State following a decision of the Assembly in respect of grave circumstances, such as: war crimes, genocide, and crimes against humanity. Any other interventions require an approval from the Union's head of states [8].

The first judicial body within the AU was the African Court of Justice and Human Rights (ACJHR). The protocol establishing the ACJHR was opened for signature in June 1998. and it only entered into force in 2008 [10]. In 2014, the AU adopted the Protocol on Amendments to the Protocol on the Statute of the African Court of Justice and Human Rights called Malabo Protocol [11]. To the preexisting two sections of the ACJHR (the general affairs section and the human rights section) the Malabo Protocol added a third section which is the international criminal law section. Observers were reluctant about the Malabo Protocol. Observers were unsure whether to be hopeful or doubtful. The public suspected that the Malabo Protocol is a shield for African leaders to be held accountable for their crime. And through the Malabo Protocol, they can escape from international justice. However, the Malabo Protocol has made some positive impact [10] which can be explained as such:

- Having a regional court capable of investigating mass atrocities committed in Africa could help shrink the impunity gap on the continent.
- There may be some benefit in having cases arising out of African situations prosecuted in Africa.
- The Malabo Protocol will grant to the ACJHR the ability to prosecute some crimes that are outside the jurisdiction of the International Criminal Court (ICC), but are relevant in an African context.
- It is based on a good to from the AU to promote peace, security and stability and more importantly to condemn and reject any kind of impunity.

## **2.2 New challenges**

Terrorism is among the new challenges awaiting the Union. Does the AU have the capacity to fight against jihadist threatening peace in Libya, Egypt, Tunisia, Burkina, Somalia, Cameroon, Nigeria, Tchad, South Sudan, Ivory-Coast, Mali, Congo, Niger and Kenya?

Three key measures to fight against terrorism can be retained [1]:

- In 2009: A decision forbidding any payment of ransom in order to terrorist group in order to retrieve hostages.
- 2010: Appointment of an official representative at the head of the cooperation against terrorism.

- July 2011: Adoption of a general law against terrorism. This would help members to adjust the law in their own country in order to fight efficiently against terrorism and to ease the coordination of the fight.

It is hard to say that the AU is useless in the matter of fight against terrorism. However, the Union is still unable to fight efficiently against terrorism since only 41 out of its 53 members have ratified the Alger Convention against terrorism. It has also been reported that, despite the effort implemented by the Union, state members still prefer to rely on occidental counter-terrorism intelligence, instead of the regional expertise.

Through the year, the security environment on the continent has become more and more complex. Battle are more ferocious, weaponry is more advanced and more importantly organization involved in ware are more complex. In the matter of peace keeping, the African Standby Force (ASF) is a key component of the peace and security architecture of the AU. It has been demonstrated that the ASF failed to be efficient at its task. This led to the to the establishment of the African Capacity for Immediate Response to Crises (ACIRC) in 2013. In the beginning, the ACIRC faced controversy, however, it was proven to be efficient by giving swift response during crisis in Mali and African Central Republic. Still the ACIRC is not perfect yet as suggested in [12], interdepartmental coordination and an adoption of common objectives is required to render it more efficient.

### **2.3 RELATION WITH OTHER INTERNATIONAL ORGANIZATIONS**

African has been seen as recipient of, rather than a contributor to, the development of international law, it has been stated that the common positions taken by the OAU members within the UN have made it possible for the OAU to exercise a significant influence of international law in the field of human rights [9].

Cooperation between the AU and USA is mainly focused on peace operations and conflict prevention and mitigation thought the US has developed a cooperation with the AU in various area such as health, governance, criminal justice... The US president George W. Bush was the first to recognize the AU as an international organization in 2005. In 2006, an US mission to the AU was established, making the US the first country to have an accredited diplomatic mission to the AU. The mission's key goals under the Obama Administration have been to [13]:

- support the AU in playing a lead role in democratic and electoral reform;
- develop inclusive economic development through improved trade and investment;
- strengthen Africa's capacity to address peace and security challenges;
- accelerate implementation of the AU's human capacity and educational development projects; and
- increase public diplomacy and multilateral engagement to further U.S. interests.

The AU might be inspired from the performance and the result from the EU however the AU and EU differ fundamentally. The EU stands on the unification of European countries and the establishment of a unique general policy. On the other hand, the AU can be qualified as an organization where member states make their resources available in hope that the union will help the agenda of the country in return [3]. The ASEAN (Association of South East Asian

Nations) is closer to the AU in term of ideology and structure. Consequently, it is quite impossible to draw a comparison between the EU and AU. Nonetheless, the two organization are cooperating toward a common vision.

In order to have a permanent presence on the continent, on January 2008, the EU opened a Delegation to the African Union, based in Addis Ababa. It is the Representative of the EU toward the bodies of AU in order for a better coordination of action and decision making. Moreover, both European Commission and the European Parliament actively engage with their African counterparts [14]. The two Union work of joint priorities as for the summit of 2017, it is summarized by the title “Investing in Youth for Accelerated Inclusive Growth and Sustainable Development”. Shortlist of joint priorities are [15]:

- Growth, investment, Infrastructure and skills;
- Resilience, peace and security;
- Migration and mobility;
- Governance;
- Climate change and natural resources management;

The NATO is also involved in the continent had made its relationship with the AU in 2014. On the other hand, China is also a partner of the AU for its pace and security mission. For example, China contributed US\$1.2 million to run the African Union Mission to Somalia (AMISOM) [12]. Moreover, other nations such as Japan, Russia, Turkey and India are also involved in the continent, through different strategic partnership.

Finally, it is good to mention that, while the original military mission of the AU was to protect civilian and to safeguard peace, mainly a defensive mandate, the AU is now engaged in more aggressive and offensive mission with the Multinational Joint Task Force (MNJFT) fighting against the terrorist group Boko Haram [12].

## **2.4 HINDERS OF THE AU**

The 2017 budget [16] is \$US 850,808,582 this amount almost twice as the previous year’s budget. The man source of funding are member states which contributes to the main fund, but also other contributors through gift and donations. Finally, a part of the income come from commercial activities. The AU is weakened by the failure of member states to pay their dues and assessed contributions. 70% of its budget relies on external states and international organizations such as the EU, and this impede the union’s ability to act as an autonomous and notorious actor. In [1], [3] states that, the first reason why the OAU failed is the financial burden that the organization put on its members. At the final year of the OAU, the unpaid contributions and arrears amounted to \$50 Million. This was not allowing the Union to execute any decision on the field. The Union was heavily dependent on the help from international community. A report from President Kagame stated that in 2016, 60% of the AU’s US\$417 budget were from donors [2]. In 2017, member states were expected to contribute 26% of the budget while the remaining 74% are taken from donors. This heavy dependence on external help and funding put the union in a tricky position because it gives foreign powers too much influence over the AU’s affairs.

Another problem of the AU is that member states hardly act together. They do not speak in one voice and sometimes undermine the decision and the AU institutions. Member states often act on the basis of their own interest in term of foreign policy making the Effort from AU to establish a common foreign policy in vain. Compared to the EU fundamental

difference between the two organizations is that the EU, according to the Lisbon Treaty, is a legal unit [17]. African leaders, in order to maintain their sovereignty and also afraid to give the Union too much power, were not keen to give the African Union a legal status. Secondly, as opposed to the EU, the AU do not have a strict criterion for its new members, which is understandable since it is quite difficult for a new member to fulfill all criteria required by the status.

Every branch of the AU: its managerial structure, its military force and the its judicial structure inherit suffer from the above-cited problem of the AU.

### **3 THE FUTURE OF AU**

The African Union is stated as still in its formative stage; however, it has already harvested significant achievements. During the first decade of its existence existence, the AU managed to [18]:

- Set up a Socio-economic development plan under the NEPAD umbrella;
- Set up an African Peer Review Mechanism (APRM) to strengthen governance and accountability and hence reduce impunity;
- Set up key organs to underpin the African Union vision including a Peace and Security Council to manage inter-African conflicts based on negotiations, dialogue and peaceful settlement of disputes.

#### **3.1 “USUAL” CHALLENGES: POVERTY AND BAD GOVERNANCE**

The African Union Summit of January 2018 in Addis Ababa was under the theme: “Winning the Fight against Corruption: A Sustainable Path to Africa’s Transformation”. Apart from corruption, current issues that the Union has to face include: health issues such as combating malaria and the AIDS/HIV epidemic; political issues such as confronting undemocratic regimes and mediating in the many civil wars; economic issues such as improving the standard of living of millions of impoverished and uneducated populations; ecological issues such as dealing with recurring famines, desertification, and lack of ecological sustainability; as well as the legal issues regarding territorial disputes.

Poverty remains the biggest challenge of the African continent. The 48 countries making up the Sub-Saharan Africa are home to the 10 per cent of the world's population, struggling to survive on 1 per cent of the world's income [3]. Other human indicators report shows that in Sub-Saharan countries, half of children fail to complete primary education. School enrollment is falling, and illiteracy is common. HIV/Aids still have deep impact on the continent, Africa still accounts to 71% of Aids related death in the world and 91% of new infections affect children. Report from the UN about human development states that the last 25 countries having the lowest rank about human development are in Africa. Finally, the continent desperately lacks skills and infrastructure to attract foreign investors [8].

Another long-term problem of the African continent is a mix of corruption, bad governance and a forever dependence in international aid. A report prepared for the AU in 2002 estimated that corruption costs \$148 billion annually to Africa, which is more than a quarter of the

continent's entire gross domestic product. In 2010, it was estimated that at least \$850 billion has been siphoned off from Africa since 1970 only by corruption. In other hand, Africa has received far more foreign aid than any other region in the world. Before the 1990 Africa received international government, aid averaging \$16.4 billion per year but so far without any discernible result [8].

### **3.2 NEW CHALLENGES: TERRORISM, CYBERSECURITY**

New challenges arise with the technology advancement and globalization. Added tho the "usual" challenges cited above, the continent also has to prepare for Cybersecurity and terrorism.

The AU Convention on Cybersecurity and Personal Data Protection adopted in 2014 addresses the issue of new technology of information in the continent. The convention seeks for the establishment of an "appropriate normative framework consistent with African legal, cultural, economic and social environment" in the matter of cyber security and data protection [18].

Given the difficulties, it is argued in [6] that the AU has been successful in conflict resolution across the continent. For example, it managed to deploy a peacekeeping troop in Burundi in 2003, before handing the mission to the UN troops. The AU has also been proved to be successful in Chad, Somalia, and Ivory Coast which were under different stages of civil war. The AU's intervention in Darfur was less successful due to lack of troop on the ground.

### **3.3 RISING AWARENESS**

As expressed by [18]: "The African Union is in charge of spearheading Africa's rapid integration, prosperity and sustainable development by promoting political and economic unity, solidarity, cohesion and cooperation among the peoples of Africa and African States, as well as developing new partnership worldwide." And despite the above-cited problems, awareness has arisen among state members of the Union. Fresh ambitions are written down in the Constitutive Act of the African Union, which was adopted by all 53 members in 2000 at the Lome Summit (Togo). The Constitutive act which entered into force in 2001 states that state members are [19]:

- Determined to take up the multifaceted challenges that confront the continent and peoples in the light of the social, economic and political changes taking place in the world;
- Convinced of the need to accelerate the process of implementing the Treaty establishing the African Economic Community in order to promote the socio-economic development of Africa and to face more effectively the challenges posed by globalization.

The awareness displayed in the Constitutive Act of the AU is recently updated and emphasized by the Agenda 2063. The Agenda 2063 is a strategic framework for the socio-economic transformation of Africa over the next 50 years. Its builds on and seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development (a). Subtitled as "The Africa we Want", the Agenda 2063 express the long term aspirations of Africans toward their continent, which are [20]:

- A prosperous Africa based on inclusive growth and sustainable development;
- An integrated continent, politically united based on the ideals of Pan;

- Africanism and the vision of Africa's Renaissance;
- An Africa of good governance, democracy, respect for human rights, justice and the rule of law;
- A peaceful and secure Africa;
- An Africa with a strong cultural identity, common heritage, values and ethics;
- An Africa, whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children;
- Africa as a strong, united, resilient and influential global player and partner.

Due to previous lack of tangible result, the AU is considered as mainly ideological but without any tangible outcome in the field. Part of the will to empower the UA is the existence of a regular feedback report on its activity. For example, the 2014 - 2017 plan was adjusted by the following terms [18]:

- Demonstrate impact on the ground rather than report on the legal instrument;
- Insist on outcome that have impact at the regional and country level;
- Articulate the output into the wider AU organ map to drive results;
- Smart objectives and coherent articulation between all levels of activity framework;
- Transparent, efficient and prudent utilization of resources to mobilize additional financial resources from Member States and development and strategic partners.

## **CONCLUSION**

The OAU and AU have been started under different motivation and circumstances. The event of the post-modernism with the end of the Cold war and the end of the Apartheid in South Africa rendered the OAU obsolete. New ambitions and ad perspective have arisen across Africa. As the OAU was a creature of its time, the AU is also a product of the post-modernism period. The continent has changed its objective from an end to colonialism under the OAU and Apartheid to an African development and progress under the AU. The first part of this paper ends with the organizational structure of the AU.

The second part deals with the AU in the context of post-modernism. It starts with the new incentives such as human right, a politically and economically stronger, prosperous union and continent and finally for a stronger and judicial body. This is followed by the new challenges awaiting the continent: terrorism, and the hard task of peace keeping with an increasing complexity of modern conflict. The place of the AU in the context of modern geopolitics constitute the next part. This part has showed that not only the AU has entertained a good and strong relationship with its European counterpart the EU, but it is in good term with other countries and organizations as the USA, China, Turkey, the UN and NATO. The last part deals with the problem of the AU. It showed that the AU inherited the same problem as the OAU which are mainly organizational and financial. The union need more cohesion from its members in order to be stronger and valid in the international debate. Furthermore, the union also need to secure a proper fund for it to be able to implement its policy properly on the ground.



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For the future, the Continent will still have to face the previously unresolved problem burdening the continent: poverty and bad governance. Rising awareness and gradual awakening among African leaders to tackle new challenges of modern era. This is mainly expressed by the 50-years common vision of the Agenda 2063. However, observers are optimistic and convinced that the African continent is currently on a sustainable path to an increased peace, stability, security and prosperity. But the main question is how fast it would be implemented [18]. The transition of African nations to self-reliance and good economic will require patience, good will and ongoing planning.

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### Webography

- (a) African Union website - <https://au.int/> - Accessed on 25th December 2018.

## **A REVIEW OF MODELING THE EFFECTS OF CLIMATE CHANGE ON THE QUALITY AND QUANTITY OF GROUNDWATER**

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### **Highlights:**

- Presents a comprehensive review on modeling for groundwater vulnerability assessment to climate change.
- Highlights the research gaps
- Proposes a new integrated methodology to assess the vulnerability of groundwater resources to climate change

### **Abstract**

**Purpose:** groundwater is an important source of water supply around the world, especially in arid and semi-arid areas. The aim of this study is a review of modelling on the impact of climate change on the quality and quantity of groundwater.

**Design/methodology/approach:** many software has been used for modeling as MODFLOW, geographic information system (GIS), general circulation model (GCMs), etc. for quantity monitoring of parameters as precipitation and water table but for quality monitoring, many special parameters have been considered as nitrate and electrical conductivity (EC).

**Findings:** groundwater vulnerability is expected to have higher variations in future periods due to climate change. Meanwhile, groundwater pollution, associated with urbanization, is likely to exacerbate groundwater vulnerabilities. Decision-makers must identify potential future groundwater vulnerabilities and take steps for protecting groundwater resources. Although there is not any single approach to relieve pressures on groundwater resources given the intrinsic variability of both groundwater systems and socio-economic situations, incremental improvements in resource management and protection can be achieved now and in the future under climate change.

**Conclusion:** Future sustainable development of groundwater will only be possible by approaching adaptation through the effective engagement of individuals and stakeholders at community, local government, and national policy levels. Studies on groundwater quality were limited so it can be a good title for future researchers.

**Keywords:** weather condition, terrestrial water, characteristics of aquifer, GIS, Groundwater vulnerability

### **Introduction**

The combination of climate change with extensive extraction of groundwater from the shallow aquifers for anthropogenic purposes is one the most important causes of the shortage of groundwater storage and the decline in water level as well as depletion in the groundwater

quality.

In recent years, global warming together with climate change has led to the deficit of precipitation and an increase in evapotranspiration through a temperature rise directly influencing the recharge of the groundwater (Halder et al., 2020). It is obvious that water resources would be affected by climate change, which in turn affect the components of the water cycle such as precipitation, evapotranspiration, and evaporation and lead to large-scale alterations in water present in oceans, lakes, rivers, and glaciers (Ghazavi and Ebrahimi, 2019). Climate warming can make many problems like a rise in the average ocean level, air temperatures, and general melting of ice but groundwater can be affected by that both in quantity and quality. Li and Merchant (2013) suggest that the combined effects of population growth, global warming, and land-use change will, in the near future, lead to even greater reliance on groundwater for public water supply. Not much is known about how groundwater will respond to climate change coupled with human activities.

Today, climate change may account for approximately 20% of projected increases in water scarcity globally (Green et al. 2011). Political decision-makers around the world must become aware of the sustainable use of groundwater resources. Many investigations on climate change and groundwater have led policymakers to prioritize the protection of groundwater resources. However, further development requires the support of these international researches and projects, especially in arid and semi-arid regions of the world. Groundwater quality is a function of the chemical, physical, and biological characteristics of the resource. Thus, groundwater quality can be expected to respond to changes in climate and linked human activities because of the influences of recharge, discharge, and land use on groundwater systems. Groundwater quality is a value-specific concept because the quality of water is related to specific water-use standards.

The protection and enhancement of groundwater quality have been a high-priority environmental concern because of the direct implications for drinking-water health standards (Green et al. 2011). Most studies of the impact of climate change and variability on groundwater have focused on processes that affect recharge, discharge, changes in storage, and the associated physical processes that govern groundwater flow.

Scientists who study the Earth's climate generally concur that human activities are enhancing the Earth's natural greenhouse effect and that these activities will likely lead to increased global warming. Because the atmospheric capacity to hold moisture increases exponentially with temperature, global precipitation is expected to increase.

However, spatial variability in projected precipitation indicates both negative and positive alterations in regional precipitation, as well as changes in seasonal patterns (Green et al. 2011).

There are many models which are practical for the quality and quantity of groundwater. For instance, GIS is very popular for quality modeling as in Li and Merchant (2013).

Also, drastic method is very common to assess intrinsic vulnerability (Asadi et al. 2017). For quantity modeling, many models can be used as GCM (Hosseinizadeh et al. 2019), MODFLOW (Ghazavi and Ebrahimi 2018), and hydrological model HELP 3 (Jyrkama and Sykes. 2007).

To model and predict the impact of climate changes on the quality and quantity of groundwater, the researcher uses different steps. For example, to predict the quality, most of the time one or more parameters can be chosen as Nitrate (Li and Merchant 2013) or monitoring of heavy metals (Sobhanardakani et al. 2016). But for quantity, some other data are more significant as recharge and irrigation.

Examples of groundwater management effects are provided, with recommendations for sustainable groundwater management. Groundwater is important for both ecosystem and economy. In the future, groundwater must be managed in a multidisciplinary manner to provide efficient solutions. Numerical models will be crucial for understanding complex interactions in groundwater-dependent ecosystems (GDE), while simple indicators will help

monitor policy outcomes in GDE. As the study of GDE is new, more research and development are needed.

This should include the development of scientific methodologies and national monitoring activities (Kløve, B. et al. 2014). In this review article, studies about the effect of climate change on the quality and quantity of groundwater have been categorized. Also, there are some studies that predicted future groundwater vulnerabilities under an ensemble of climate change scenarios and urban-related land-use change scenarios.

The gaps and problems faced by researchers have also been investigated. It is hoped that in the end, it will be clear what the gaps are to complete with future researches.

### **Materials and method**

the method of this research includes collecting information from the articles in the reference section and reviewing the studies conducted on the trend of changes in the quality and quantity of groundwater in different parts of the world based on climate change.

In other words, the study of research conducted in this field and the summary and classification of research along with their comparison and the results obtained in this research has been done. Obviously, such a study paves the way for future studies in order to complete and find the optimal solution for similar research. In the final section, the collected information is analyzed.

For instance, the effect of climate change factors such as precipitation and temperature on groundwater quality and quantity have been studied. This means that based on the previous studies, other methods can be selected for future research. In the end, the details of the results and suggestions based on the available information are discussed.

### **Result**

#### **Impact of climate change on the quality of groundwater**

Groundwater vulnerability to climate change is one of the most important concerns of researchers and they used many methods to predict it. Thus, one of the serious problems in optimal groundwater management is the need for a lot of monitoring data. So Azadi et al. (2020) found the optimum number and location of monitoring wells after one to a few monitoring periods.

By their method, lots of costs and time will be saved. Gamma test theory (GTT) was introduced as a new method for determining the optimal number and location of groundwater monitoring wells without the need for temporal monitoring data. It is based on a statistical calculation, named gamma, for the data of a monitoring period.

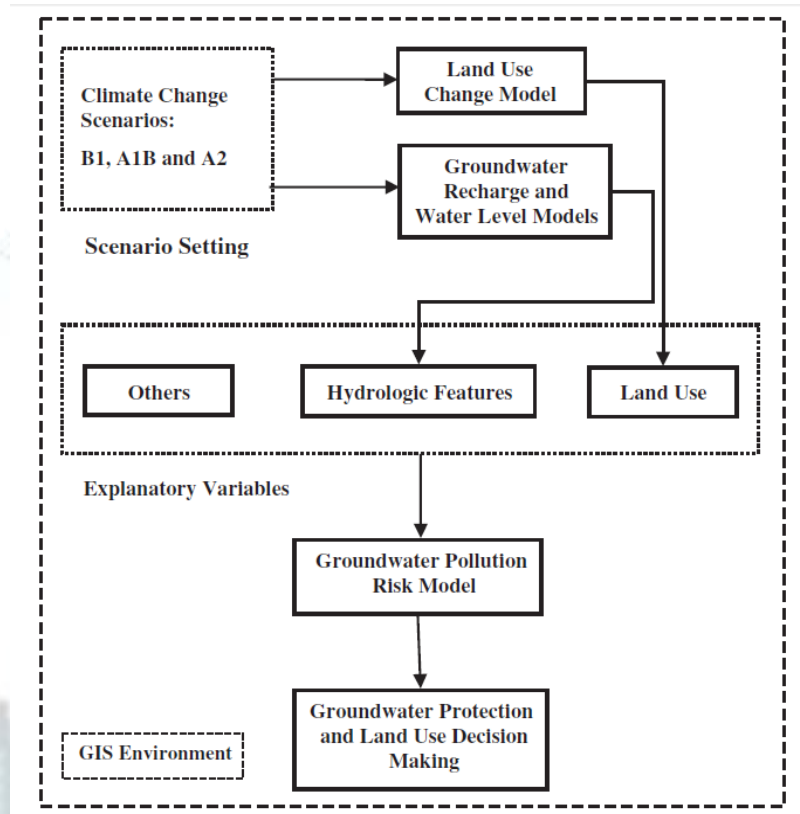
Optimal wells are selected in such a way that while they have the lowest gamma value, further increases in the number of wells do not cause much change in their gamma value. The method was used to design an optimal monitoring network for groundwater electrical conductivity (EC) on Kish Island, Hormozgan, Iran. EC is an indicator of water salinity.

The water EC of 55 wells, selected from 244 existing wells, was measured during a monitoring period on Kish Island, and their longitude and latitude were recorded. A GTT-based optimization algorithm was used to optimize the groundwater EC monitoring network. According to the results, >110 wells were necessary to be monitored to estimate the spatial distribution of groundwater EC on Kish Island with the highest accuracy.

Finally, the water EC of the wells was monitored in 3 monitoring periods and the proposed network was assessed in these periods. Results showed that the proposed wells are optimum in these periods and the spatial distribution of groundwater EC can be estimated with the highest accuracy using the EC data of 110 wells. The study provided a cost- and time-effective method for efficiently monitoring groundwater especially when there are limited

data.

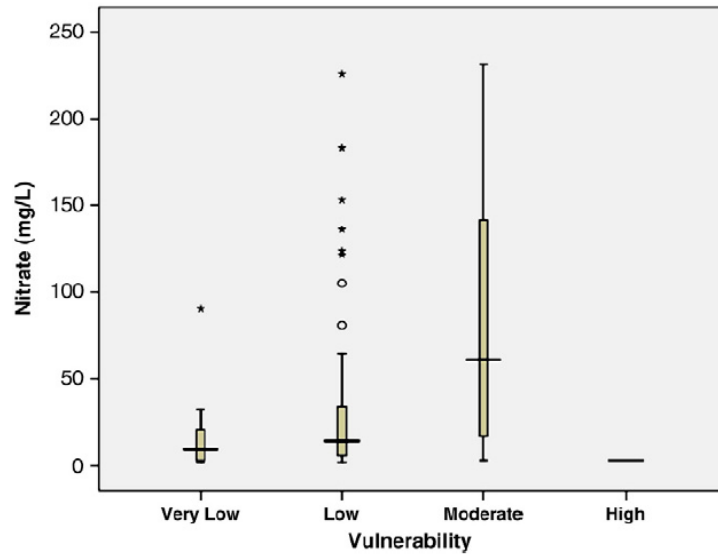
In Li and Merchant's (2013) study, we see most attention to unconsolidated and unconfined aquifers due to our focus on nitrate contamination. General modeling framework for model integration (Li and Merchant, 2013)



**Figure 1:** A framework included three sets of models

According to figure 1, three sets of models, linked within a GIS environment, were used to forecast groundwater vulnerability for two future periods (years 2020 and 2050) under three scenarios proposed by the Intergovernmental Panel on Climate Change (IPCC) Special Report on Emission Scenarios (SRES).

The results revealed that high-vulnerability areas expand northward and/or northwestward in Eastern North Dakota under diverse scenarios. GIS-based models that address future climate changes and land use can help decision-makers identify potential future groundwater quality threats and take early steps to protect this critical resource. Figure 2 displays that the detected nitrate concentration increased with the overall vulnerability rating.

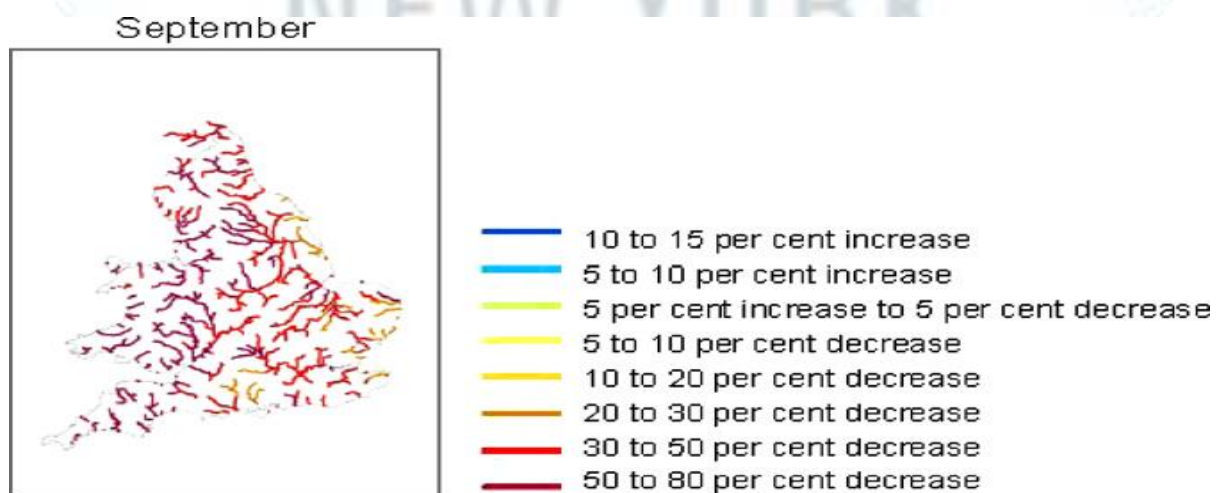


**Figure 2:** Boxplot of Nitrate-N concentration by groundwater vulnerability ratings

Data were retrieved from the Ground Water Data Portal and North Dakota State Water Commission Surface. The modeling results showed that in all future scenarios evaluated, most parts of the site will be increasingly susceptible to groundwater contamination from nitrates. The study also suggested that biofuel crops, traditionally known as climate-friendly, may act as a double-edged sword. With biofuel crops displacing other crops like alfalfa and wheat in the studied area, there may be a significant increase in fertilizer inputs to the farmlands. One of the most important pollutants for groundwater is nitrate.

Asadi et al. (2017) researched the evaluation of the vulnerability of urban groundwater resources to nitrate. DRASTIC method that evaluates intrinsic vulnerability, is very popular and it is compatible with different aquifer types such as fractured bedrock, carbonate, sedimentary, and karstic. Considering the wastewater discharge into recharge parameter leads to the increased correlation coefficient.

Sensitivity analysis reveals that the recharge and the land use are both the most significant parameters for evaluating the vulnerability. Some investigations have been performed on land use and quality of groundwater. For instance, Lerner and Harris (2009) focused on the relationship between land use and groundwater resources and quality.



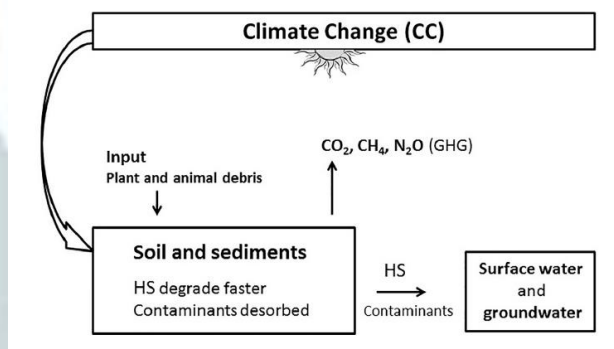
**Figure 3:** Percentage change in mean monthly flow between now and the 2050s using the medium-high UKCIP02 scenario

They studied the current effect of land use on groundwater and they predicted future relationships between the quality of groundwater and land use. One cannot discuss the future impact of land use on groundwater without considering the expected effects of climate change on its quantity and quality. With hotter, dryer summers, climate change is predicted to reduce summer river flows.

The problem in aligning groundwater vulnerability and land use is the conflict between groundwater protection and diffuse agricultural pollution. This is due to the scale of agriculture in vulnerable regions. Also, heavy metals have a great impact on groundwater quality. According to Sobhanardakani et al. (2016) based on the correlation matrix, Pb and Cd have a great role in the quality of water samples.

In their study, the Heavy metal potential index (HPI) and the heavy metal evaluation index (HEI) were assessed for their suitability for contamination monitoring of heavy metals (As, Zn, Pb, Cd, and Cu) contamination in groundwater resources of Asadabad Plain during spring and summer in 2012. Thus, the water quality indices are useful tools in assessing overall groundwater pollution. Another studied pollutant is humic substances (HS).

Lipczynska-Kochany (2018) studied the effect of climate change on HS and related effects on the quality of groundwater and surface water. HS plays a key role in the generation of greenhouse gases (GHG). It is a highly transformed part of nonliving natural organic matter (NOM), comprise up to of dissolved organic matter (DOM) in groundwater.



**Figure 4:** Impact of CC on HS in soil and sediments

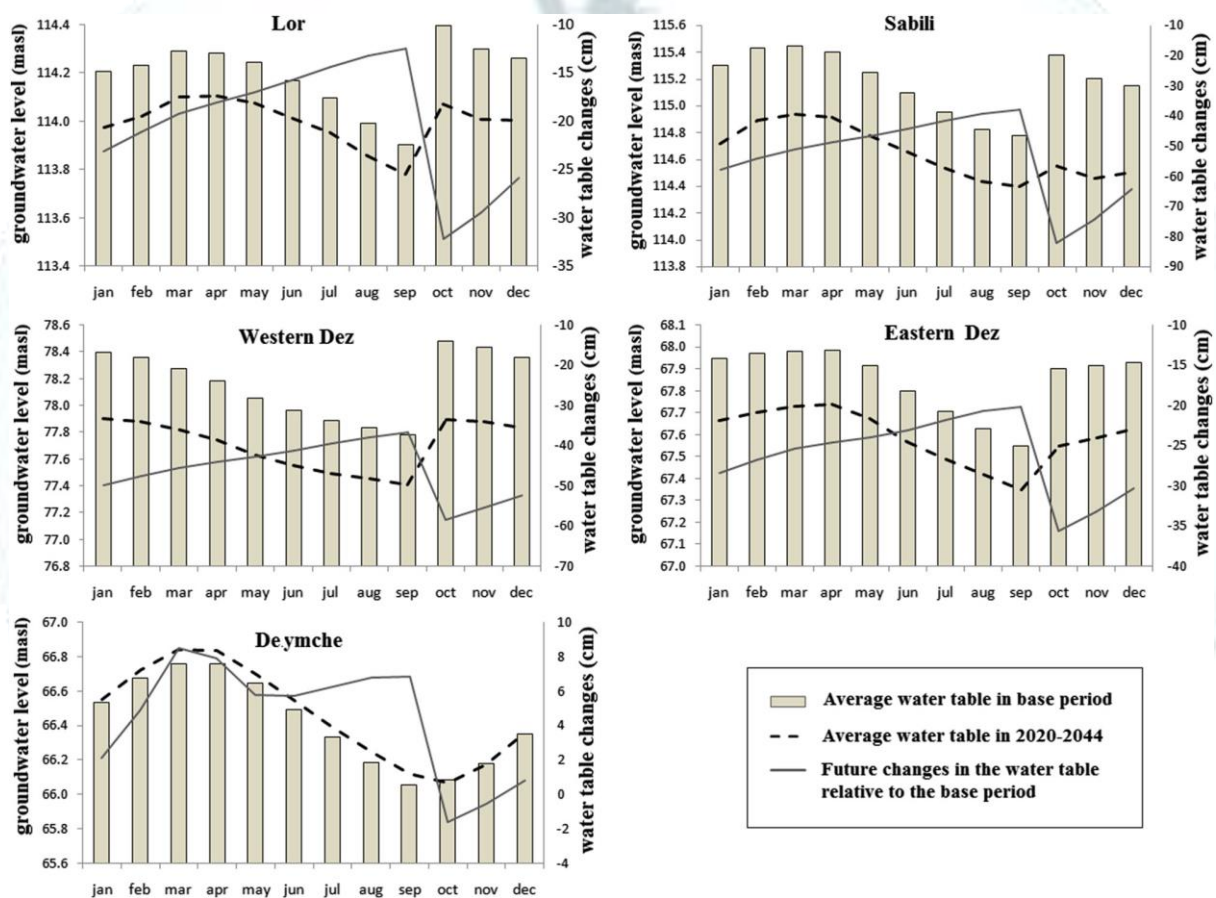
They significantly contribute to climate change (CC) by generating GHG. Moreover, CC affects the reactivity and structure of HS. HS's significant role in global warming has been accepted and widely investigated. Nevertheless, much less attention has been paid to effects on the freshwater quality, which may be due to the climate-induced impact on HS, and HS interactions with contaminants in groundwater, soil, and surface water.

It is expected that an increased temperature and enhanced biodegradation of soil organic matter (SOM) will lead to an increase in the production of DOM. One of the parameters that has been traced in groundwater is temperature. Kurylyk et al. (2014) considered the influence of future climate change on subsurface thermal regimes in cold-temperate regions.

Emerging comprehensive field datasets and powerful hydrogeological numerical models are enhancing their understanding of climate change impacts on subsurface thermal regimes in cold-temperate areas. Such knowledge provides a greater understanding of the interrelationships between climate change and permafrost degradation, the sensitivity of cold regions infrastructure to climate warming, the potential changes to surface and subsurface hydrological conditions in cold regions, and the deleterious effect of warming groundwater on ecosystems relying on cold groundwater discharge.

### Impact of climate change on the quantity of groundwater

There have been many researches for the prediction of the relation between climate change and quantity of groundwater and researchers used many software with different methodologies as GCMs. Hosseinizadeh et al. (2019) aimed at implementing a physically-based groundwater model to investigate the effects of climate change on groundwater systems under some general circulation models (GCMs) in a semi-arid region between 2020-2044. In this study, a groundwater model (MODFLOW) was used to investigate the effect of climate change on groundwater in the future. The methodological framework of this study is as follows: (i) Collecting and preparing observed data: 1) climate data, 2) the data related to both surface and sub-surface characteristics of plains as topography, bedrock aquifer, the thickness of aquifer and soil type 3) hydraulic data as groundwater recharge, irrigation, and drainage systems, river hydraulic. Results revealed that the rise in temperature is more pronounced in the wet season compared to the dry season.



**Figure5:** Groundwater level changes in the future compared to the base period affected by climate change

The results as figure 5 indicate that the pattern of changes in recharge follows the rainfall patterns. There is a shift in precipitation from fall to the late summer. The pattern of change in recharge follows the precipitation pattern of change. Another example of using MODFLOW is by Ghazavi and Ebrahimi (2018) that the purpose of their study was to predict the impact of climate change on groundwater recharge in an arid environment in Iran. This study was conducted in three main parts: (1) First, the annual rainfall in the area (2011-2050) was generated using the climatic model, LARS-WG, under different scenarios. (2) Then, groundwater recharge from the irrigation and rainfall in the study area was estimated



using remote sensing and inverse modeling approach. (3) Finally, after confirming the model, using the generated weather data and calibrated hydrological model, the future condition of the aquifer and groundwater recharge from the predicted rainfall was simulated. Annual groundwater depletion should increase over the next 16 years through climate change.

Climate change adaptation policies in the basin should include changing the crop type, as well as water productivity, and increasing irrigation efficiency at the farm and regional scales. Some interesting integrated studies have also been conducted. For example, (Salem et al. 2018), in addition to studying the effect of climate change on the quantity of groundwater, has used modeling to predict the cost of irrigation.

The lowering of the groundwater table due to alterations in precipitation patterns and rises in temperature may reduce well yield and increase pumping cost, which may seriously affect the livelihood of farmers in the regions where groundwater is used as the main source of irrigation. An ensemble of general circulation model (GCMs) was used to project climate, an empirical hydrological model based on a support vector machine (SVM) was used to simulate groundwater levels from climatic variables, and a multiple linear regression (MLR) model was utilized to estimate the irrigation cost due to the changes in groundwater levels.

Four factors were considered in this study for modeling groundwater level through the accurate assessment of all anthropogenic and natural phenomena that may affect the groundwater level in the region namely, groundwater abstraction, crop evapotranspiration (ET), the total monthly rainfall, and irrigation return period from the paddy field. A water balance model (FAO-56) was used to estimate irrigation water demand or groundwater abstraction.

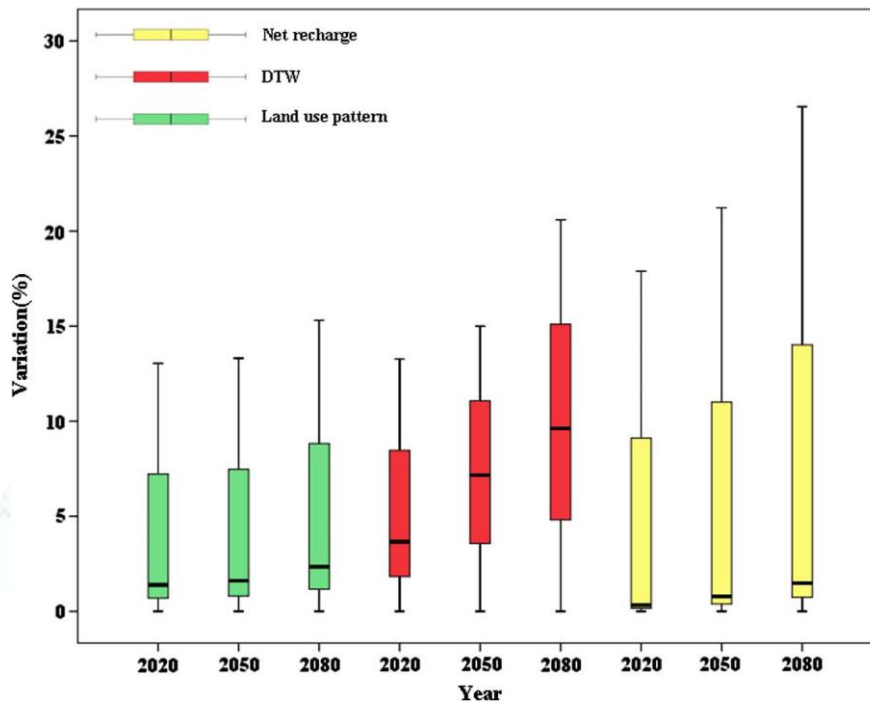
The study concludes that the impact of climate change-induced fluctuations in groundwater level on crop production cost is much less compared to other costs, but it may be significant in places where the groundwater levels are rapidly declining. Halder et al. (2020), analyzed groundwater level trend and groundwater drought using Standard Groundwater Level Index.

To study groundwater degradation, some wells from a river basin were selected to examine their seasonal groundwater level trends using Mann-Kendall test statistics from 1996 to 2018 where more than half of wells were showing a decline in water level, particularly in the post-monsoon season. Finally, Standard Groundwater Level Index was used to evaluate the groundwater drought years.

Standard Groundwater Level Index was calculated to observe the groundwater drought within the study area. Wells located in densely populated centers showed positive values that were a greater deviation from the normal depth and indicated a further decrease in water level. The study outcome can be an elementary step to improve the sustainable groundwater management strategy.

To mitigate such groundwater problems, managed aquifer recharge, and aquifer yield testing can be the important solution together with rainwater harvesting techniques. A study by Huang et al. (2017) predicted the future groundwater vulnerability under an ensemble of climate change scenarios and urbanization. They summarized the changing trends of future climate change scenarios, future groundwater net recharge, depth-to-water table change, and future urban-related land-use patterns. The results showed that vulnerability classes had an increasing trend from low to high vulnerability in future scenarios.

The study site may face high groundwater pollution risks in the future. The sensitivity analysis showed that the depth-to-water table may be the main factor, and the land-use pattern was the most sensitive parameter for the predicted future groundwater vulnerability in Hunan province.



**Figure 6:** Sensitivity analysis of change parameters to future groundwater vulnerability

Decision-makers must identify potential future groundwater vulnerabilities and take steps for protecting groundwater resources. Many countries as Iraq, use groundwater for growing crops and making food. So, Salman et al. (2020) studied the recent changes in climatic water availability (CWA) (and crop water demand (CWD) during growing seasons of major crops was evaluated for Iraq where rapid climate changes have been noticed in recent decades.

The Mann-Kendall test and one of its modified versions that can consider long-term persistence in time series, were utilized to estimate the CWA trend between 1961-2013. Also, the Wilcoxon rank test was used to assess changes in CWD between the early (1961-1990) and late (1984-2013) periods. The results showed that there is a shortage of water in all the seasons in most of the country, while a surplus was observed in the northern highlands in all the seasons except summer. The results showed sufficient CWA for rain-fed agriculture in the mountainous regions in the north of Iraq for all seasons except summer.

In contrast, a deficit in CWA was noticed in the southwest for all the seasons even in wet winter. Trends in CWD and CWA in Iraq showed a significant reduction in spring and annual in the south and west. In winter, it was found to decrease in a small region in the east.

One useful model for estimating the response of groundwater recharge to potential climate change is the hydrologic model HELP3. Jyrkama and Sykes (2007) modeled the effect of climate change by perturbing the HELP3 model input parameters using potential changes in the climate of the Grand River watershed. HELP3 needs different design, soil, and climatic data to generate daily estimates of water movement through a soil column.

The results showed that climate change may have both negative and positive effects on the hydrology of the Grand River watershed. The results of the HELP3 simulation showed that increasing precipitation will lead to increased groundwater recharge, evapotranspiration, and surface runoff. Increasing temperature due to global warming, on the other hand, allowed precipitation to fall as rain rather than snow, thereby reducing the amount the water stored in the snowpack and decreasing surface runoff in the spring.

Warmer winter temperatures reduce the amount of ground frost and allow more water to penetrate the ground, which leads to increased groundwater recharge. As the above text, climate change can affect precipitation. Ahmed et al. (2019a) modeled climate change

impacts on precipitation in arid regions of Pakistan. They used General Circulation Models (GCMs).

GCMs and Earth System Models (ESMs) are primarily used to project future climate on regional or global scales. However, GCM outputs are available on coarse grid scales and cannot be directly used for climate impact assessment at local scales. Ahmed et al. (2019b) also studied the changing characteristics of groundwater sustainability in Pakistan from 2002 to 2016.

In their study, the concept of reliability-resiliency-vulnerability (RRV) was adopted to evaluate the spatial variations in the aquifer stability for different periods to identify the major factors that affect groundwater stability in Pakistan. The satellite-based gridded Gravity Recovery and Climate Experiment (GRACE) groundwater anomaly data for the period 2002-2016 were used for this spatial assessment.

The results showed precipitation as the dominant factor associated with changing groundwater storage in Pakistan. A large decrease in aquifer storage was found over the study period. In the area where agriculture is more intense, the decline in the level of groundwater is greater that leads to the overexploitation of groundwater for irrigation.

The effect of climate change on basin hydrology is typically evaluated by forcing climate change scenarios onto a calibrated hydrological model. In Sathya and Thampi's (2020) study, HEC-HMS is used for rainfall-runoff and sediment routing. Results of the study indicate that annual streamflow is likely to increase. The increase in annual sediment load is projected.

Also, it is seen the increase in streamflow the results of the study will be useful in creating awareness as to how projected climate change can affect streamflow and sediment yield at the local level. As you see not only groundwater but also runoff and sediment yield from river basins can be affected by climate change. Sediqi et al. (2019) evaluated the spatial changes in the availability and sustainability of water resources in Afghanistan.

They conducted to map the spatial patterns of terrestrial water storage changes from three spherical harmonic Gravity Recovery and Climate Experiment (GRACE satellite) solutions and assessment of sustainability in water resources over Afghanistan for the period 2002 to 2016. The rate of change was assessed using Sen's slope method, and the significance of trends in Terrestrial Water Storage (TWS) was evaluated using the Modified Mann-Kendall (MMK) test. Then, the reliability-resiliency-vulnerability (RRV) was used to assess the spatial distribution of sustainability in water resources.

The results revealed a significant decrease in water availability in the country over the last 15 years. MMK was used to verify the significance of trends at a 95% level of confidence. Eckhardt & Ulbrich (2003) carried out a regional climate impact study for a European catchment and thereby evaluated the sensitivity of an eco-hydrologic model for the assumed response of plants to increased levels of CO<sub>2</sub>.

According to the results of recent plant physiological research, more noticeable reductions are predicted in groundwater recharge and streamflow. They showed the importance of an adequate description of the complex response of the land cover to changes in atmospheric boundary conditions. They used the SWAT-G model of the 'Soil and Water Assessment Tool' SWAT.

SWAT has been developed to evaluate the impact of land-use change on water resources, erosion, and non-point source pollution in meso- to macro-scale catchments. The model includes approaches describing how CO<sub>2</sub> concentration, precipitation, humidity, and temperature affect plant growth, evapotranspiration, snow, and runoff generation, and therefore is also used to investigate climate change effects.

they assembled results of plant physiological studies showing how climate change might influence the model parameters of stomatal conductance and leaf area in order to improve the reliability of their simulations. Jeihouni et al. (2019) evaluated the effects of two climate parameters (i.e., temperature and precipitation) in groundwater levels for the

Shabestar Plain, Iran.

The results of the climate model illustrate a decrease in precipitation and an increase in temperature for a future period (2006-2100) in the study regions. A simulation for five observation wells illustrates a trend of decline in groundwater level continued in the future period. Zhou et al. (2020) investigated the impacts of long-term climate change on the regional groundwater flow in Alashan, China to show the spatial variability of groundwater flow response to climate change and dynamic patterns of both shallow and deep groundwater flow velocities. It was found that groundwater level dynamics were significantly affected by climate changes; the time scale and initial pattern of cyclical climate change affect the amplitude and average level of groundwater fluctuations. Moreover, the results showed that, for a regional groundwater system, climate change effects on groundwater level has noticeable spatial variability. Groundwater levels in discharge and recharge regions are sensitive to wetting and drying climates, respectively. Therefore, the spatial variability of groundwater level dynamics reflects climate change information. In addition, groundwater flow velocity dynamics are affected by climate change.

### Discussion

Tables 1 and 2, which are included in this section, summarize the research that is included in the results section. Table 1 summarizes the information related to the effect of climate change on groundwater quality, and Table 2 contains the effect of climate change on the quantity of these waters. These researches are listed in the order of the year from the newest to the oldest in the tables

nom	Reference	Soft wares, tools and methodology	parameters	result
1	Azadi et al. (2020)	Gamma test theory	EC	The study provided a cost and time effective method for efficiently monitoring groundwater especially when there are limited data.
2	Lipczynska-Kochany (2018)		Humic substances (HS)/ dissolved organic matter (DOM) in groundwater/ soil organic matter (SOM)	Increased temperature and enhanced biodegradation of SOM increase the production of DOM.

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3	Asadi et al. (2017)	DRASTIC method	nitrate	sensitivity analyses reveal that both recharge and land use are parameters for vulnerability assessments.
4	Sobhanardakani et al. (2016)	Heavy metal potential index and the Heavy metal evaluation index	Heavy Metals	According to the correlation matrix, Pb and Cd have a great role in the quality of water samples. Hence, the water quality indices are useful tools in assessing overall groundwater pollution.
5	Kurylyk et al. (2014)	groundwater flow and heat transport models	Temperature	This was the first synthesis of studies regarding the effect of future climate change on subsurface thermal regimes in cold-temperate areas.
6	Li and Merchant's (2013)	GIS	nitrate	Most parts of site will be increasingly vulnerable to groundwater contamination from nitrates.
7	Lerner, David N., and Bob Harris (2009)	predicted future relationships between land use and groundwater	Many pollutants as nutrients, heavy metla etc.	The problem in aligning groundwater vulnerability and land use is the conflict between groundwater protection and diffuse agricultural pollution. This is due to the scale of agriculture in vulnerable regions.

**Table 2:** brief information for quantity studies

nom	Reference	Soft wares, tools and methodology	parameters	result
1	Halder et al. (2020),	Groundwater Level Index - Mann–Kendall test	Groundwater Level	The study outcome can be a basic step for the improvement of a sustainable groundwater management

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				strategy
2	Salman et al. (2020)	Mann–Kendall (MK) test	CWA (climatic water availability) and CWD (crop water demand)	The results showed that there is a shortage of water in all the seasons in most of the country
3	Sathya and Thampi's (2020)	HEC-HMS	Annual sediment load, annual stream flow	Not only groundwater but also sediment and runoff yield from river basins can be affected by climate change.
4	Zhou et al. (2020)	numerical groundwater flow modeling	hydrogeologic conditions/climate evolution/groundwater level dynamics (including flow velocity and groundwater level)	The groundwater level in the recharge area featured with low hydraulic conductivity was sensitive to the drying climate condition, and the rapid depletion of groundwater levels in low-permeability recharge area can be a warning for drought; the significant increases in shallow groundwater levels in the downstream

discharge area could effectively reveal long-term wetting climate conditions.

- |   |                             |   |  |  |
|---|-----------------------------|---|--|--|
| 5 | Ahmed et al. (2019a,b)      | General Circulation Models (GCMs). and Earth System Models (ESMs) | Groundwater level  | A large decrease in aquifer storage was found over the study period. In the area where agriculture is more intense, the decline in the level of groundwater is greater that leads to the overexploitation of groundwater for irrigation. |
| 6 | Hosseinizadeh et al. (2019) | general circulation models (GCMs) / MODFLOW                       | Climate data, topography, bedrock aquifer, thickness of aquifer and soil type 3) hydraulic data as groundwater recharge, irrigation and drainage systems, river hydraulic. | the rise in temperature is more pronounced in the wet season compared to the dry season. There is a shift in precipitation from autumn to late summer. The pattern of change in recharge follows the precipitation                       |

				pattern of change.
7	Jeihouni et al. (2019)	General Circulation Models (GCM)/Representative Concentration Pathway (RCP)/Least Square Support Vector Machine (LSSVM)/Adaptive Neuro-Fuzzy Inference System (ANFIS)/and Nonlinear Autoregressive Network with Exogenous inputs (NARX)	Temperature, precipitation, groundwater level	<p>Analysis of the results illustrates increased temperature and decreased precipitation for the study region in the future period times.</p> <p>These results would lead to continuous groundwater depletion. These findings emphasize the importance of extraction policies in the management of water resources.</p>
8	Sedighi et al. (2019)		Terrestrial Water Storage	<p>The results demonstrated a significant reduction in water availability in the country over the past 15years.</p>
9	Ghazavi and Ebrahimi (2018)	MODFLOW, LARS-WG	Rainfall, groundwater recharge	<p>Annual groundwater depletion should increase in future years</p>



10	Salem et al. 2018	general circulation model (GCMs), support vector machine (SVM), multiple-linear regression (MLR)	precipitation patterns, temperature, cost of irrigatio	through climate change.  The impact of groundwater level fluctuations resulted from climate change on the cost of producing crops is much less than other costs, but it may be significant in places where the groundwater levels are rapidly declining
11	Huang et al. (2017)	future groundwater net recharge, , and future urban related land-use patterns	depth-to-water table change	Decision- makers must identify potential future groundwater vulnerabilities and take steps for protecting groundwater resources.
12	Jyrkama and Sykes (2007)	hydrologic model HELP3	Precipitation, surface runoff, evapotranspiration and groundwater recharge	Warmer winter temperatures reduced the amount of ground frost and allowed more water to penetrate into the ground, thus increasing groundwater recharge.

13	Eckhardt, , & Ulbrich (2003)	eco-hydrologic model, SWAT-G model of the 'Soil and Water Assessment Tool' SWAT	CO2 levels, groundwater recharge, and streamflow, snow, evapotranspiration, plant growth, and runoff generation	Results show how climate change might influence the model parameters stomatal conductance and leaf area in order to improve the reliability of their simulations.
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As can be seen in Tables 1 and 2, most researchers have studied the quantity of groundwater, and the research on qualitative studies listed in Table 1 is far more limited than quantitative studies.

### **Conclusion**

As written before, Climate change can affect groundwater and dependent ecosystems. According to Kløve, B. et al. (2014), several gaps in research are identified. Uncertainty about management techniques such as numerical modeling is high due to the lack of understanding of various key processes. The roles and possibilities of new methodologies such as modeling methods and indicators are discussed in the context of the management of integrated groundwater resources.

For the quantity of groundwater and its level, it is proposed to develop the other type of AI (Artificial intelligence) methods in order to understand the dynamics of the groundwater level (Jeiouni et al. 2019). About temperature tracing in groundwater based on Kurylyk et al. (2014), the recommendations are made to improve future research by linking atmospheric global climate models to subsurface heat transport models that consider heat advection through groundwater flow. It is also observed that the main studies are about discussing the quantity of groundwater, especially the water table.

Studies in the field of water quality are more active in discussing parameters such as salinity and heavy metals as well as physical parameters such as temperature and the effect of temperature on aquatic systems. So, it is suggested to discuss other parameters as Nitrate and Phosphate. Also, the relation between these parameters and the quantity of water and climate change can be modeled.

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## **ABDOMINAL OBESITY AND ITS ASSOCIATION WITH SOCIOECONOMIC INDICATORS AMONG MULTIPAROUS WOMEN**

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### **Introduction**

Obesity is an important but modifiable risk factor for chronic non-communicable diseases, whereas socioeconomic status (SES) is a determinants of health and has major influence on morbidity and mortality. The role of parity and socioeconomic status in the development of abdominal obesity in women is yet to be established, despite the belief of some women that childbirth alter their shape and increase abdominal fats. The aim of this study was to evaluate the association between parity, different socioeconomic indicators, with abdominal obesity and adiposity in multiparous women.

### **Material and Methods**

The population for the study included multiparous women who presented between 2015 and 2020 to a tertiary hospital in south- south Nigeria. Simple random sampling technique was used to recruit a sample size of three hundred and eighty-two (382) apparently healthy multiparous women who were not pregnant and who met the inclusion criteria. Socioeconomic indicators were measured using a self-reported questionnaire to assess the social status of the women. Chi square test was used to assess bivariate relationship between abdominal obesity and socio-economic status. Data on abdominal circumference, body weight, height, subcutaneous abdominal fat (SAF), skin fold thickness, waist and hip ratio (WHR) and socioeconomic status were collected. Measurement of intra-abdominal fat (IAF) and deep abdominal adipose-tissue at L4-L5 area was studied using CT scan.

### **Results**

The study revealed that about 5.2% were from upper class SES homes, 13.8%, 28.3% and 41.6% are from upper middle class, lower middle class, and upper lower class respectively, and the remaining 11% from lower SES homes. The sample population of 6.8% and 33% had abdominal fat and abdominal circumference respectively at risk levels. It was also observed that the deep abdominal adipose-tissue size was significantly higher in the lower socioeconomic class. In bivariable models controlling for socio-economic status and abdominal obesity, it was found to have a strong and dependent association between abdominal fat and circumference with SES among multiparous women.

## **Conclusion**

In conclusion, the study established that parity and increased abdominal obesity was positively associated with lower socioeconomic indicators.

**Keywords:** Visceral adipose tissue, subcutaneous adipose tissue, Multiparity, Socioeconomic status, BMI

## **INTRODUCTION**

Obesity is a major risk factor for numerous non-communicable chronic diseases and leads to increased morbidity and mortality. The prevalence, especially in women, is reaching epidemic proportions worldwide. Body mass index (BMI) is commonly used to diagnose obesity, whereas other anthropometric measurements such as waist circumference (WC) and waist-to-hip ratio (WHR) are also utilized to measure abdominal adipose tissue distribution. Nowadays, it is accepted that the measurements of abdominal adipose tissue correlate better with cardiovascular risk factors than BMI. Moreover, recent epidemiological studies suggest that another abdominal adiposity marker, the waist-to-height ratio (WHtR) is a better predictor of metabolic and cardiovascular risk than BMI, WC and WHR. The association between reproductive factors such as parity with weight gain and obesity prevalence in women has been intensely investigated with controversial results. However, it is not clear if biological changes that occur during pregnancy, including hormonal adaptations and postpartum behaviour, influence the regional distribution of adiposity, by promoting an abdominal or peripheral pattern. In fact, the relation between parity and regional adiposity accumulation has barely been investigated (Kim *et al.*, 2007). Also there seem to be a dearth of information on the association between abdominal adiposity and socio-economic status. Therefore this study was aimed at assessing the association between abdominal fat, abdominal circumference, parity and socio-economic status in multiparous women.

## **MATERIALS AND METHODS**

This cross-sectional study was conducted among 382 randomly selected women between 2015 and 2020. Prior to commencement of the study, participants were assured and reminded of confidentiality. All participants filled the demographic and consent form, gave answers for the socio-economic class assessment questions and then had their anthropometric measurements taken. The study population was made up of women that have had a number of pregnancies.

### **Inclusion criteria**

Female adults who have had at least three (3) pregnancies and are within the age range for the selection (ii) multiparous women (iii) having signed an informed consent form.

### **Exclusion Criteria**

Participants who are a primigravida or pregnant at the time of the study were excluded from the study.

### **Sample and Sampling Technique**

The sample size was determined using Lorentz's formula as follows:

$$N = Z^2 (P) (1 - P) / d^2$$

where **N** is the estimated minimum sample size, **P** is the proportion of population having a good level of knowledge, **Z** is the statistic for desired level of confidence (1.96 for 95% confidence level), and **d** is the accepted margin of error (5%).

So.  $Z = 1.96$ ,  $P = 0.538$ ,  $d = 0.05$

Therefore,  $N = 1.96^2 (0.538) (1 - 0.538) / 0.05^2 = 381.9$

Since non whole number cannot be used, the figure was rounded up to the nearest whole number which gave a sample size of 382. For the socio-economic factors, each participant answered a structured questionnaire administered face-to-face that included the following; personal data on age in years, place of birth, educational level, type of education, occupational status, and monthly income. The modified Kuppuswamy scale was used to classify their socio-economic status.

### **Anthropometric Measurements**

Measurements are undertaken by researchers trained for the purpose, stadiometer was used to measure height in barefooted subjects standing straight at the level of the head, the weight was assessed using a weighing scale to the nearest 0.1 kg, the waist circumference was measured at the midway between coastal margin and iliac crest while the hip circumference was measured at the widest region of the greater trochanter using non elastic tape. Height and weight information were also measured and used to calculate the participants' body mass index (BMI), which is used to identify adults as underweight, normal, overweight, or obese. Screening for abdominal obesity was carried out in these subjects using waist and abdominal circumferences (The National Cholesterol Education Program Third Adult Treatment Panel criteria were used). The abdominal skin fold thickness was measured using a calliper.

### **Radiological Assessments**

Intra-abdominal fat and subcutaneous adipose tissue (SAT) analysis were established using CT Scan. Visceral fats area (VFA) was assessed at the level of L4 which represents the best site to examine total VAT volume, with a multi slice to note the intra-abdominal fat accumulation and abdominal visceral fat volume. Their hands were positioned above the heads and in sustained inspiration. Visceral Adipose tissue (VAT) in this study is the intra-abdominal fat found within the rectus sheath of the abdomen.

### **Statistical Analyses**

Analyses were performed using SPSS version 22 (SPSS, Inc., Chicago, IL, USA). Data are presented as mean  $\pm$  standard deviation and percentages. Differences between abdominal adiposity were calculated using the Analysis of Variance (ANOVA) test. The Chi-square test

was used to test if the variables followed a normal distribution curve and to decide whether there was an association between SES, parity and abdominal adiposity.

## RESULTS

**Table 1: Participants Demographic Characteristics (n = 382)**

<b>Characteristics</b>	<b>Mean <math>\pm</math> SD</b>
Age (years)	36.8 $\pm$ 2.40
BMI (Kg/m <sup>2</sup> )	22.69 $\pm$ 0.96
Abdominal Circumference (cm)	122.86 $\pm$ 1.05
Abdominal skin fold thickness (mm)	5.13 $\pm$ 1.34
Parity	4.84 $\pm$ 0.65

**Table 2: Distribution of Respondents according to Age of the Study Population (n = 382)**

<b>Age (years)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
18 – 25	124	32.5
26 – 30	34	8.9
31 – 35	32	8.4
36 – 40	40	10.5
41 – 45	44	11.5
46 – 50	36	9.4
51 – 55	56	14.7
56 – 60	16	4.2
<b>Total</b>	<b>382</b>	<b>100.0</b>

**Table 3: Socio-demographic Profile of Study Population**

<b>Characteristics</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
BMI (kg/m <sup>2</sup> )		
Underweight	14	3.7
Normal weight	186	48.7
Over weight	112	29.3
Obese	44	11.5
Extremely obese	26	6.8
ABDCIR		
Excellent	58	15.2
Good	66	17.3

Average	132	34.6
At risk	126	33
<b>ABDFAT</b>		
0mm – 20.99mm	32	8.4
21mm – 40.99mm	92	24.1
41mm – 60.99mm	145	38.0
61mm – 80.99mm	55	14.4
81mm – 100.99mm	32	8.4
101mm – 120.99mm	18	4.7
121mm – 140.99mm	8	2.1
<b>Parity</b>		
Multiparity	328	85.86
Grand-multiparity	54	14.14
<b>Socio-economic Class</b>		
Upper-class	20	5.2
Upper Middle class	110	28.8
Lower Middle class	108	28.3
Upper Lower class	140	36.6
Lower class	54	1.0

**Table 4: The Differences in the Socio-demographic profiles**

Socio-demographic profile	Mean $\pm$ SD	ANOVA	P-Value
<b>ABDCIR (cm)</b>			
Upper class	92.60 $\pm$ 0.94	10.027	0.000
Upper Middle class	98.40 $\pm$ 0.97		
Lower Middle class	101.11 $\pm$ 0.86		
Upper Lower class	103.03 $\pm$ 1.15		
Lower class	124.00 $\pm$ 0.70		
<b>ABDFAT (mm)</b>			



Upper class	4.00 ± 1.72	0.862	0.487
Upper Middle class	4.60 ± 1.33		
Lower Middle class	5.14 ± 1.38		
Upper Lower class	6.21 ± 1.28		
Lower class	6.00 ± 0.20		
Parity			
Upper class	2.40 ± 0.503	5.497	0.00
Upper Middle class	2.76 ± 0.69		
Lower Middle class	3.82 ± 0.64		
Upper Lower class	4.97 ± 0.59		
Lower class	4.50 ± 0.58		

**Table 5: The Distribution of Abdominal Fat measured by CT scan (n=382) subjects**

Visceral/subcutaneous adipose tissue	Mean ± SD	ANOVA	P-Value
VAT (cm <sup>2</sup> )			
Upper class	166.5 ± 0.94	0.1718	0.000
Upper Middle class	171.2 ± 0.97		
Lower Middle class	182.6 ± 0.86		
Upper Lower class	220.8 ± 1.15		
Lower class	206.5 ± 0.41		
SAT (cm <sup>2</sup> )			
Upper class	198.2 ± 1.72	0.3427	0.042
Upper Middle class	210.3 ± 1.33		
Lower Middle class	268.3 ± 1.38		
Upper Lower class	277.8 ± 1.28		
Lower class	310.2 ± 0.73		

**Table 6: Association between SES classes and Abdominal Circumference**

**Chi-Square Tests**

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	77.696 <sup>a</sup>	12	.000
Likelihood Ratio	83.834	12	.000
Linear-by-Linear Association	22.274	1	.000
N of Valid Cases	382		

There was a significant association between abdominal circumference and social economic status in this study ( $X^2 = 74.70, p < .001$ ).

**Table 7: Association between SES classes and Parity**

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.538 <sup>a</sup>	8	.001
Likelihood Ratio	29.488	8	.000
Linear-by-Linear Association	17.143	1	.000
N of Valid Cases	382		

There was a significant association between parity and social economic status in this study ( $X^2 = 27.54, p < .001$ ).

**Table 8: Association between SES classes and Abdominal Fat Categories**

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	92.274 <sup>a</sup>	24	.000
Likelihood Ratio	89.067	24	.000
Linear-by-Linear Association	.832	1	.362
N of Valid Cases	382		

There was a significant association between abdominal fat and social economic status in this study ( $X^2 = 92.27, p < .001$ ).

## **DISCUSSION**

This study examined the association between abdominal fat, abdominal circumference and socio-economic status in multiparous women. Abdominal visceral and subcutaneous adiposity has been consistently linked to cardiovascular events and metabolic disorders but not much has been said about its association with parity and socioeconomic status. However, contention exist with the belief that woman of the lower socioeconomic class tend to accumulate more abdominal fat.

The data from this study revealed that there was a significant association between abdominal fat accumulation and socioeconomic variables. Therefore, the current study supported previous studies that SES is associated with abdominal obesity. The study showed that majority of the multiparous women (85.86%) were younger than grand multiparous women (14.14%), also grand multiparous women showed greater prevalence of low SES. The classification of the subjects based on their age into various levels of abdominal obesity was not very efficient, this may be due to fat atrophy associated with increasing age. The mean age of the study subjects was  $36.8 \pm 2.40$  years.( Table 1)

The study shows that majority of the women 34.6% (n=132) had an abdominal circumference at average levels.  $X^2 = 74.70, p < .001$ ). Analysis of abdominal fat shows that about 38% (n=145) of women had abdominal fat within the range of 41mm-60.99mm, with the least prevalence of 2.1% (n=8) at 121mm-140.99mm.

This findings showed positive association between abdominal circumference and the socioeconomic parameters, with lower SES having increased abdominal circumference and fat deposition. Association between SES, Parity, Abdominal Circumference and Abdominal fat showed significant relationships between SES and these variables at  $X^2 = 27.54, p < .001$ ).

This finding agrees with several other studies conducted among parous women, in which there was an association between SES and abdominal obesity. Socio-economic status is significantly associated with abdominal adiposity. Radiological findings among the women of low and high socioeconomic status showed a VAT of  $206.5 \pm 0.41$  cm<sup>2</sup> and  $166.5 \pm 0.98$  cm<sup>2</sup>; and SAT of  $310.2 \pm 073$  cm<sup>2</sup> and  $198.2 \pm 0.73$  cm<sup>2</sup> respectively. These findings are significantly associated at ( $X^2 = 92.27, p < .001$ ).

## **CONCLUSION**

Conclusively, this study to the best of our knowledge is the first in Nigeria to examine the association between SES and abdominal obesity in multiparous women, which has been a topic of enormous interest and controversy as it predisposes to certain health conditions and unwillingness of some women to get pregnant. The current study established from the findings that intra-abdominal adiposity as measured using VAT, SAT, abdominal circumference, and abdominal fat is significantly associated with women of lower socio-economic status.

## **RECOMMENDATION**

We recommend greater awareness programme that will educate and inculcate in these women various fitness and abdominal weight control measures to engage in, irrespective of their SES, and also screen them regularly for the cardio-metabolic health risks associated with abdominal obesity.

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## POSTMODERN CHARACTERISTICS OF YUSIF SAMADOGLU'S NOVEL EXECUTION DAY

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### **Abstract**

Intertextuality, chaos, hyperreality, playfulness, fragmentation, pastiche, palimpsest, irony, parody, distortion of time, transformation of mythological thinking are the main characteristics of postmodernism. Famous Azerbaijani writer Yusif Samadoghlu's *Execution Day* maintains most of these features.

Chaos is the main peculiarity of this novel.

The time is chaotic and is not chronological in postmodernist novels. The time periods intertwine so that they could replace each other. In the novel *Execution Day* the time is boundless. Rejecting the time boundaries has considerable significance in this novel. The events in the novel take place in three different periods (old times, middle ages and modern times) but not in the chronological way.

Irony is a very important technique in this novel. The author used this technique to expose the wickedness.

D.G.Muecke wrote about irony and its types in the book called *Irony and the Ironic*. He mentioned one of the verbal irony type called irony of self-betrayal in this book. Irony of self-betrayal is also used in *Execution Day*. The shah does bad deeds and then says "see, no one says even a word". He reveals his cruelty with these words.

Intertextuality is also used in this novel. The author was influenced by different myths and literary works.

**Keywords:** *postmodern, Execution Day, Yusif Samadoghlu, irony, chaos, intertextuality*

### **INTRODUCTION**

*Execution Day* is the novel written by famous Azerbaijani writer Yusif Samadoghlu. The author has used the layers of historical and cultural memory (cultural and historical memorial layers) in this work. Archetypes were also used in this novel. Symbolic characters and expressions, mythical images and artistic details used in the work play an important role in the expression of ideas. *Execution Day* reflects three historical period. The novel draws the reader's attention to the fact that the sins of people disrupt the world order. The main theme reflected in the work is the struggle between good and evil.

### **POSTMODERN CHARACTERISTICS OF THE NOVEL EXECUTION DAY**

Intertextuality, chaos, irony, parody, hyperreality, playfulness, fragmentation, pastiche, palimpsest, distortion of time, transformation of mythological thinking are the main features

of postmodernism. Great Azerbaijani writer Yusif Samadoghlu's *Execution Day* maintains most of these characteristics.

The time is chaotic and is not chronological in postmodernist novels. The time periods intertwine so that they could replace each other. "Many writers prefer a progression without chronology, using the so-called polychrony, a heterogeneous temporality and chronological distortions (anachronies). For this purpose, they break the sequence, put things out of order, locate events from the present back into the past, describe a variety of temporal experiences, produce new experiences of time, temporal and causal relationship become indistinguishable." (Fedosova, 2015: 86).

In the novel *Execution Day* the time is boundless. Rejecting the time boundaries has considerable significance in this novel. The events in the novel take place in three different periods (old times, middle ages and modern times) but not in the chronological way. In postmodern novels times are mixed and places can also be different. Here together with concrete real spaces, abstract utopian spaces may also be present. "In analyzing the works of postmodernists, it is necessary to note that time in the postmodern text is presented as a complex phenomenon becomes more complicated in a person's mind, and, hence, gets various forms of expression in the text, as a product of the mind." (Fedosova, 2015: 86-87).

*Execution Day* has a complex structure. The plot line of the work is multifaceted. Thus, here are the socio-political events of three time periods, of people facing eternal questions of life tragedy is reflected. The content of this novel not only the daily events and details of everyday life, but also directly nationwide and expresses universal problems. The structural content of the work evokes such deep inner ideas as a result of which the horizons of not only artistic thinking, but also logical cognition is extended. The author used substantive plot conflicts. He touched on complex and contradictory realities of life and makes reader think. The struggle between good and evil is the main conflict of the work. *Execution Day* embodied the socio-political and moral problems of society at different times. The work reflects the events took place in three different time periods. The past is not a lost being, always is a living force that influences the work of the present, where the past and the present communicate. Here the history is presented in parallel. The novel shows the sudden passage of time, the events that took place at different times, and the fact that people do bad deeds at all times. It serves to convey the general idea of the writer. Although time changes the deeds of men do not change. Each era has its own Hormuz and Ahriman. The parallelism of times is very common in postmodern novels.

The work reflects various historical events. However, human stories are at the forefront here. Retrospection is directly a time element in the structure of the work. Time parallelism, multi-layered spatial dimensions, interchangeable characters' polyphony makes the novel more interesting.

In this work time, places and events are chaotic. Chaos is the main feature of postmodernism. Time and space are not constant, they often change. Despite the connection between events, the rapid change of time and space makes chaos. "In literature of the given direction there is a tendency to the so-called narrative chaos. Writers intentionally break off a

chronological narration with reminiscences of characters in of prospection.” (Fedosova, 2015: 79).

Hyperreality is one of the most important features in postmodern literature. What is fiction and what is real is blended in hyperreality. This technique is also used in the novel *Execution Day*. The character called Kirlikir (the fat rat) speaks with people in hyperreal way. Kirlikir said that he has come and talked to people about their sins for ages. These scenes are very confused, the readers cannot determine whether it is reality or dream. This is not the only scene about hyperreality in this novel. The novel is fond of hyperreal scenes. The novel is fond of hyperreal scenes. Mystical cave called Baba Kaha and the wind of this cave (this wind blows angrily and speaks people in order to remind them their sins) is also described in hyperreal way. Reality and hyperreality are mixed masterly by the author.

The transformation of mythological images is used in postmodern literature. “Mythology and Sufism are irreplaceable treasures for postmodernism, which accepts the lasting and stabilized shapes as a ready-made legacy and puts them in a shape suitable for itself. The spacelessness and infinity, the tendency to intuition, the closedness in the openness, the openness in the closedness, the mystery in the continuation of events which created by postmodernism in literature bring it closer to both mythology and Sufism.” (Məmməd, 2016: 78). In *Execution Day*, mythological motifs are connected with memory and the fate of the people. The transformation of mythological images in the novel is of particular importance. In *Execution Day*, mythological motifs are connected with memory and the fate of the people. In the novel, symbolic expressions, mythical images and artistic details play an important role in revealing the ideas expressed in the work. Archetypes were also used in this work. The archetype is the spiritual realm of human evolution that emerges in every brain creation. K.Jung stated that archetypical ideas and images can often be found in dreams, literature and religion. He identified several archetypes: I, Persona, Anima/Animus and Shadow and so on. K.Jung taught that all human beings have the innate ability to "generate" any common character. The scientist called the unexplained features of the symbols "archetypes" and said that they manifest themselves primarily in the process of sleep.

There are archetypes such as wolf, tree, mountain, light, forest in *Execution Day*. The wolf archetype in the work has a symbolic meaning. The existence of Bozkurt in Turkic mythology indicates that the Turkic tribes had a special respect for this animal. In the Turkic mythological system, the Gray Wolf, who performs such functions as a cultural hero, ancestor, guardian spirit, has many other functions, including the guardian of the mountain, and therefore the motherland, the spirit of the earth, the guardian of the homeland, and so on also includes. Because, in this system, the mountain spirit (guardian) is also thought of as the guardian of the land, the homeland [Bəydili, 2007: 65]. During the Goyturk period, the wolf became more than a sacred totem. This was the reason why the Goyturks put the image of a wolf on their flags. The wolf was one of the most important magical animals of the Yakut shamans [Ögəl, 2006: 55]. In this novel the mighty Gray Wolf in Turkic mythology replaced by the hair shed wolf that was far from humans. It is forgetfulness and it shows that humans are moving away from their ancestor. This indicates a lack of memory and a person's alienation from his ancestor. In this regard, the words of Jamil Merich are very true: “Today's man is an uprooted tree. It has become alien to itself and to nature.”

(<https://www.testbook.az/proverb/aphorismtype/76/insan-haqqinda-aforizmler> 15.05.2021).

At the same time, Yusif Samadoghlu the author of *Execution Day* urges people to stay away from evil and showing that the wolf-ancestor resents people for their evil deeds. Because the actions of these "two-legged slaves" have brought the world to a point where the wolf no longer has the strength to show the way.

Irony is the very important technique in this novel. The author used this technique to expose the wickedness. D.C.Muecke wrote about irony and its types in the book called *Irony and the Ironic*. He mentioned one of the verbal irony type called self-betraying irony in this book. (Muecke, 1986: 10). Self-betraying irony is also used in *Execution Day*. The shah does bad deeds and then says "see, no one says even a word". He thinks that he can do whatever he wants and no one can say a word. He reveals his cruelty with these words. Kirlikir (the fat rat that his name means dirty) is an ironic character in the work. His name is an irony of people's bad deeds. Kirlikir's closing his one eye and itching his stomach means the irony of people's closing eyes for wrongdoings. People close their eyes to shah's, Samandarov's, Salahov's bad deeds and so on. Kirlikir knows all of them and in people's dreams he wants to inform them about these sins.

Intertextuality is also used in this novel. The author was influenced by religion, different myths and literary works. "Julia Kristeva coined the term "intertextuality" in 1966, explaining that there are two relationship going on whenever we read a text: there is the relationship between us and the author (the horizontal axis) and between the text and other texts (the vertical axis)." (Postmodern literature characteristics, <https://www.shmoop.com/study-guides/literary-movements/postmodern-literature/characteristics> 15.05.2021). "We know that a text is not a line of words releasing a single 'theological' meaning (the 'message' of the Author-God) but a multi-dimensional space in which a variety of writings, none of them original, blend and clash." (Barthes, 1977: 146). *Execution Day* has a deeper philosophical meaning nourished by literary and religious texts. The ideas in the work coincide with the ideas in these texts. "Angela Carter notes that reading is a creative act that the development of ideas highly depends on the re-reading of the ancient texts." (Залманова, 2015: 24). This leads to such a result that a text is the embodiment of numerous texts, countless or, to be more precise, lost codes, in the proses of both in writing and in reading. Thus, each text is an intertext. Other texts manifest themselves at different levels in the existing text." (Quliyev, 2019: 246).

## CONCLUSION

Overall, the article investigated the postmodern characteristics of Yusif Samadoghlu's novel *Execution day*. Intertextuality, chaos, irony, parody, hyperreality, playfulness, fragmentation, pastiche, palimpsest, distortion of time, transformation of mythological thinking are the main features of postmodernism. Famous Azerbaijani writer Yusif Samadoghlu's *Execution Day* maintains most of these characteristics.



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**KONVERTOPLAN TIPLİ PİLOTSUZ UÇAN APARATIN  
YARADILMASI  
CREATION OF CONVERTIBLE-TYPE UNMANNED AERIAL  
VEHICLES**

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**Xülasə**

Uçuş aparatlarının (UA) inkişafı planerin enerji və çəki, güc və hərəkətverici sistemlərinin qabarit ölçülərinə nisbətindən, qanadın aerodinamik xüsusiyyətlərindən, həmçinin UA-nın qanadının aerodinamik keyfiyyət əmsalından bir başa asılı olmasıdır. Uçuş zamanı sərf olunan enerji UA üçün seçilmiş qanadın formasından və həmlə bucağından asılı olaraq qanadın yaratdığı qaldırıcı qüvvə əmsalının, qarşı müqavimət qüvvəsi əmsalından neçə dəfə böyük olmasını göstərən kəmiyyətdən bir başa asılıdır. Bu səbəbdən UA layihələndirən zaman uçuş zamanı enerjiyə qənaət etmək imkanına sahib konstruksiyadan istifadə etmək tələb edilir. Həmçinin UA-nın layihələndirilməsi zamanı qanadlarının aerodinamik xüsusiyyətlərinin nəzərə alınması və dayanıqlığın tənzimlənməsi probleminin həlli məsələlərinin vacibliyi ilə qarşılaşılır. Sadalanan bu problemlərin həllinin vacibliyi pilotsuz uçuş aparatlarında (PUA) daha çox özünü biruzə verir. Artıq PUA-larda hərəkətli dönən qanad texnologiyasından, şaquli və üfüqü müstəviyə paralel müxtəlif tip mühərriklərdən istifadə etməklə uzun müddətli uçuşun təmin edilməsinə çalışılır. Sadalanan bu texnologiyaların hər birinin üstünlükləri və çatışmazlıqları vardır. Şaquli uçuşu təmin edən 4 elektrik mühərriki və üfüqü uçuşu təmin edən bir elektrik və yaxud daxili yanma mühərriki olan təyyarə və helikopterin uçuş-texni xüsusiyyətlərini özündə birləşdirən, sabit "uçan qanad" formalı planer konstruksiyasına sahib konvertoplan tipli PUA-nın layihələndirilməsi, hazırlanması, aerodinamik xüsusiyyətlərinin tədqiq edilməsi, həmçinin praktiki uçuşunu keçirtməkdir.

Məqalə *konseptual* və *ilkin layihələndirmə* olmaqla iki əsas hissədən ibarətdir. *Konseptual layihələndirmə* ilkin baza konfigurasiyasının əks olunduğu birinci hissədə verilmişdir. Burada layihələndirməyə başlamazdan əvvəl aparılan təhlil, PUA-nın konstruksiyasının layihələndirilməsinə qoyulacaq əsas tələblərin müəyyənləşdirilməsi və zəruri olan komponentlərin seçilməsi üçün aparılan tədqiqat işlərinin özündə əks etdirir. Baza konfigurasiya əsasında kompüterdə proqram təminatı vasitəsi ilə 3D modelinin tərtib olunması və PUA-nın ilkin layihələndirmə işlərinin aparılması üçün hüsabatların aparılması və alınan ilkin nəzəri nəticələr əsasında modelin sınaqdan keçirilməsi, aerodinamik sınaqların, tamlıq və dözümlülük sınaqlarının, çox funksiyalı dinamik sınaqların, nəzarət və alınan məlumatların emal və analizinin keçirilməsi planlaşdırılır.

İlkin layihələndirmədə əsas diqqət konseptual layihələndirməni aparmaq üçün qoyulan tələbləri həll etmək, tədqiq olunan komponentlərin işləmə planını tərtib etmək, "uçan qanad" formalı PUA-nın texniki imkanlarını qiymətləndirmək, onun əsas xarakteristikalarını qurmaq və təhlil etməkdən ibarətdir. Konseptual layihələndirmə əsasında hazırlanan PUA-nın tədqiqatı zamanı alınan qiymətlər əsasında UA-nın qabarit-ölçü və aerodinamik xüsusiyyətlərini, faydalı yük və enerji sərfiyyatı baxımından tələb olunan hərəkətverici və enerji sistemi göstəricilərini hesablamaqdır.

**Açar sözlər:** konvertoplan, uçan qanad, aerodinamika, pilotsuz uçan aparat, şaquli və üfüqü uçuş.

### **Abstract**

The development of an airplane depends on the ratio of the energy and weight of the airframe to the overall dimensions of the power and propulsion systems, the aerodynamic properties of the wing, as well as the aerodynamic properties of the airplane wing. The energy consumed during flight depends on the wing shape chosen for the aircraft and the angle of attack, which is a measure of how many times the lift generated by the wing exceeds the drag coefficient. For this reason, it is necessary to design an aircraft to use a structure that saves energy during flight. It is also important to take into account the aerodynamic properties of the wings when designing an aircraft and to solve the problem of adjusting stability. The importance of solving these problems is most evident in the case of unmanned aerial vehicles. Efforts are under way to provide long-term flight in unmanned aerial vehicles using moving rotating wing technology and various types of engines parallel to the vertical and horizontal planes. Each of these technologies has advantages and disadvantages. Design, development, aerodynamic design of an aerodynamic fixed-wing unmanned aerial vehicle of the airframe design, combining the performance characteristics of an airplane and a helicopter with 4 electric motors providing vertical flight, and one electric motor or internal combustion engine providing horizontal flight research, as well as also conduct a practical flight.

The article consists of two main parts - conceptual and outline. The first part provides a conceptual design that reflects the original basic configuration. The pre-design analysis here reflects the research required to determine the basic requirements for the design of an unmanned aerial vehicle and the selection of the necessary components. Based on the basic configuration, the computer software is used to create a 3D model and report on the initial design of the unmanned aerial vehicle, as well as to test the model based on the initial theoretical results, aerodynamic tests, completeness and durability tests, multifunctional dynamic tests, control and processing is planned and data analysis.

Initial attention is paid to solving the requirements for the preliminary design, developing a work plan for the components under study, assessing the technical capabilities of an unmanned aerial vehicle "flying wing", creating and analyzing its main characteristics. Based on the values obtained in the study of an unmanned aerial vehicle developed on the basis of a conceptual design, the dimensions and aerodynamic characteristics of the aircraft, the required parameters of the engine and power system in terms of payload and energy consumption are calculated.

**Keywords:** convertible, flying wing, aerodynamics, unmanned aerial vehicle, vertical and horizontal flight.

## **Giriş**

Rayn qardaşları tərəfindən mühərrikli təyyarələrin yaradılması istiqamətində aparılan işlərə başlamasından bir əsrə yaxın müddət keçmişdir. Artıq təkmilləşmiş və üzərində daim yenilənmə işləri aparmaq imkanına malik, qoyulmuş tapşırığın həlli üçün sadə konstruksiyaya sahib olan müasir müxtəlif tip təyyarələr istehsal olunmuşdur. Belə ki, sabit qanadlı təyyarə və helikopterlər PUA-ların hazırlanması üçün uzun müddət əsas baza rolunu oynamışdır.

Hazırlanmış mövcud PUA-ları konstruktiv olaraq multirotsiya əsaslı və sabit qanadlı olmaqla əsasən iki qrupa bölmək olar. Birinci növ PUA-lar daha mürəkkəb manevrləri həyata keçirmək və məhdud ərazilərə enmək və uçmaq imkanına malik olur. İkinci növ PUA-larda isə bu proses qanadların yaratdığı aerodinamik qüvvələr hesabına baş verir. Uçuş zamanı UA-nın uzunmüddətli dözümlülük nümayiş etdirməsi tələb edildikdə uçuş xüsusiyyətlərinə görə ikinci tip UA konstruksiyasından istifadə edilir. Sabit qanadlı PUA-ların əsas xüsusiyyəti sabit hündürlükdə üfüqü və dairəvi dövr etməklə gözləmə və yaxud təyinatına uyğun tapşırığın icrası məqsədi ilə uçmaq xüsusiyyətinə malik olmasıdır.

PUA-nın uçuşunun avtonomluq şərtinin ödənməsi ən vacib və mürəkkəb həllərdən biridir. Bu səbəbdən hazırlanan PUA-lara qoyulan əsas tələb uçuşun avtonomluğunun təmin edilməsi şərtinin ödənilməsidir. Artıq tam və yaxud nisbətən avtonom PUA-lar hazırlanmışdır [4]. Əsas avtonomluq UA-nın uçuşu idarəetmə prosessoru, inersial və təzyiq və s. sensorların iş prinsipi ilə tənzimlənir. Tam avtonomluq şərtinin ödənilməsi halında UA-nın istənilən situasiyaya adekvat cavab vermə və təyyarənin xarici təsir sensorlarına qarşı dayanıqlıq xüsusiyyətlərini (məhdudiyətləri) qarşılama tələb etməsidir.

Avtonom idarəetməyə nail olmaq üçün bir neçə idarəetmə sistemləri təbəqələrindən (İİS-iyerarxik idarəetmə sistemləri) istifadə edilir. Burada əsas prinsip konvertoplan tipli PUA-nın uçuşunu uçuş rejiminə uyğun idarə edilə bilən keçid vəziyyətinə ayıra bilməsidir. İİS-nin növlərinə sadə senarilər, sonlu avtomat maşınlar, iyerarxik tapşırıq planlayıcıları və idarəetmə zamanı davranış interfeysləri daxildir. Bu təbəqələrdə tətbiq olunan ən çox yayılmış idarəetmə mexanizminə PID- proporsional-inteqral-diferensial tənzimləyicisi ilə nəzarəti aid etmək olar. Uçuş marşrutu planlaşdırması, trayektorianın cızılması və tənzimlənməsi orta səviyyəli alqoritmlərinin mövcud verilənləri əsasında formalaşdırılır.

PUA-ların avtonom idarəetmə sistemlərinə uçuşun əməliyyat hündürlüyünün tənzimlənməsi, asılma rejimi, özünü tarazlama, geriye uçuş (evə qayıdış), fasiləsiz çalışma, GPS-qlobal mövqe təyinetmə sistemi ilə nöqtə üzrə uçuş, obyekt ətrafındakı fırlanma, izləmə, gözləmə və s. rejimləri daxildir.

## **Konvertoplaner**

Təyyarə tipli UA-ların qalxma-enmə zolaqları ilə təmin edilməsi probleminin aradan qaldırılması məqsədi ilə uçuş zolaqları tələb etməyən UA-ların (konstruksiyaların) layihələndirilməsi və hazırlanması aviasiya mütəxəssisləri qarşısında prioritet məsələ olaraq qalmaqdadır. Bu məqsəd ilə helikopterlər qismində havaya qalxan və təyyarə qismində planerin aerodinamik xüsusiyyətlərini özündə cəmləşdirən UA-lara təlabat getdikcə daha da artmaqdadır. Bu tip UA-lar uçuş xüsusiyyətlərinə görə, şaquli qalxma-enmə (ŞQE) və qısa

məsafədə qalxma-enmə (QMQE) tipli olmaqla iki fərqli tiptə təsnifatlanırlar. Konstruktiv hazırlanma xüsusiyyətlərinə əsasən sadalanan hər iki kateqoriyaya aid UA-ların xüsusiyyətlərini özlərində cəmləşdirirlər. Həmçinin bu tip UA-ların konstruksiyasının mürəkkəb olması səbəbindən onların hazırlanması, istismarı mürəkkəb olur və istismar zamanı pilot-texnik heyətindən böyük peşəkarlıq vərdişləri tələb edilir. Konstruksiyasına qaldırıcı və dartı mühərrikləri, hava axını istiqamətləndiricisi (eleron, şaquli və üfüqü) və s. daxil olan ŞQE və QMQE tipli UA-ların aerodinamika və güc sisteminin xüsusiyyətlərini özündə cəmləşdirən UA-ya “Konvertoplan” deyilir.

Dartı və qaldırıcı mühərriklər UA-nın manevr imkanlarını artır. Mühərriklərin vəziyyəti (şaquli, üfüqü) və işləmə ardıcılığından asılı olaraq həm qaldırma qüvvəsi, həm də dartı qüvvəsi yaranır. UA qalxması qaldırıcı mühərriklər (fırlanma müstəvisinə paralel), üfüqi uçuşu isə (fırlanma müstəvisinə perpendiklyar) dartı mühərriki hesabına yaranır. Nəticədə UA təyyarə rejimində uçuşu davam etdirir. Əks proses zamanı isə UA şaqüli uçuş (multikopter) rejiminə keçir. Kren mühərrik pərlərinin çarpaz fırlanma mamentlərinin diferensial fərqlənməsi və yaxud yaranan dartı qüvvəsi nəticəsində UA-nın qanadlarının eleronlarının hücum bucaqları istiqamətinin dəyişməsi nəticəsində yaranır. Konvertoplan təyyarə rejimində üfüqi uçuş zamanı helicopter və çoxrotorlu UA-ların məhdudiyyətlərindən (az uçuş məsafəsi və aşağı uçuş sürəti) azad olur.

### **Konvertoplanın uçuş istismar rejimləri**

Konvertoplan tipli UA-ların mühərriklərin bucaq yerləşməsindən asılı olaraq aşağıdakı uçuş rejimləri var.

**-Asılma şaqüli uçuş rejimi (ŞUR).** ŞUR zamanı UA üfüqi vəziyyətdə olan mühərriklərin yaratdığı qaldırıcı qüvvə hesabına şaqülü qalxma-enməni icra edir.

**-Sürətlənmiş üfüqi uçuş rejimi (ÜUR).** Bu uçuş rejimində aerodinamik qüvvələrin meydana gəlməsi və UA-nın sürət yığılması üçün uçuşun ətalətlilik şərti ödənməlidir.

**-Keçid rejimi (KR).** Bu rejimdə UA ŞUR-dan ÜUR-a keçid edir. Yəni qaldırıcı mühərriklər hesabına şaquli qalxan UA üfüqi uçuşu təmin edən dartı mühərriklərinə keçid edir və əksinə. Konvertoplan tipli PUA-ların üstünlüklərinə QEZ-ə olan tələbin aradan qalxması, şəhər ərazisində uçma, enmə və sürət yığılma prosesinə məhdudiyyətin azalması, eləcə də çatışmayan cəhətlərinə isə konstruksiyasının mürəkkəbliyi, istehsal və texniki xidmət xərclərinin yüksək olması və ŞUR-də enerji və yaxud yanacaq sərfiyyatının artması daxildir.

### **Konvertoplanın idarə edilməsi**

Tam avtonom konvertoplan uçuşunun idarə olunmasının təmin edilməsi prosesi tədqiqatçıların əsas tapşırıqlarından biridir. Klassik sabit qanadlı konfigurasiyanın aerodinamik xüsusiyyətlərindən baza qismində istifadə etməklə avtonom keçid manevrlərini həyata keçirmək üçün bir sıra nəzəri yanaşma metodları mövcuddur. Konvertoplan tipli PUA-ların keçid və idarəedilməsi prosesləri ilə bağlı tədqiqat işlərinin əksəriyyətində keçid prosesinin idarə edilməsinə analitik baxılmış və hər iki uçuş rejimi (şaquli və üfüqi uçuş) ayrıca öyrənilmişdir. Keçid prosesinin idarəedilməsi haqqında bəzi tədqiqat işləri və təhlillər aparılmışdır. Elmi ədəbiyyat hər iki dinamika arasında keçid davamlı şəkildə araşdırılmış və tələb olunan hündürlüyü saxlamaqla şaquli rejimindən üfüqi uçuş rejiminə keçid etmək üçün keçid nəzəriyyəsi təklif edilmişdir.

### “Uçan qanad” formalı planer

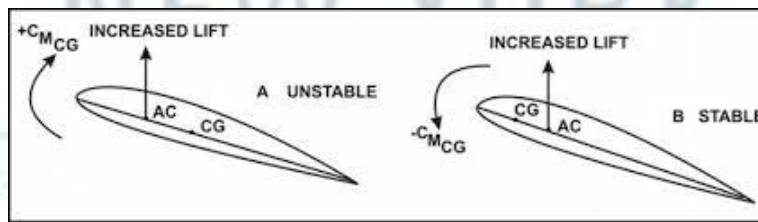
Sabit qanad konfigurasiyalı UA qanad, füzelyaj və quyruq hissəsindən ibarət sadə formada olur. Həmçinin bu tip uçuş konfigurasiyasına “uçan qanad” forması da aiddir. Füzelyajı olmayan “uçan qanad” formalı sabit qanadlı təyyarə modelləri də mövcuddur. Yanacaq, akumulyator batareyası, avionka avadanlıqları, faydalı yük və s. əsasən qanadların içərisində konstruktiv yerləşirlər. Həmçinin “uçan qanad” konstruksiyasına blister, tutacaqlar, asqılar, pod, şaquli stabilizator və ya boom qismində kiçik konstruktiv birləşmələr də daxil ola bilər.

#### “Uçan qanad”-in aerodinamik xüsusiyyətləri və uçuşunun dayanıqlığı

Təyyarə konfigurasiyasında qaldırma qüvvəsini aerodinamik səth yaradır. Lakin bu zaman qaldırma qüvvəsi ilə paralel olaraq müəyyən qədər ona əks olan mənfi qarşı müqavimət və sürtünmə qüvvələri yaranır. Həmçinin standart konfigurasiyada üfüqi, şaquli stabilizator, füzelyaj və s. uçuş zamanı müəyyən əks müqavimət qüvvələri formalaşdırır. Yaranan bu tip mənfi qüvvələrin qiyməti “uçan qanad” formasında aşağı olur. Bu səbəbdən az da olsa yaranan qaldırma qüvvəsi hesabına UA-nın uçuşu təmin olunur.

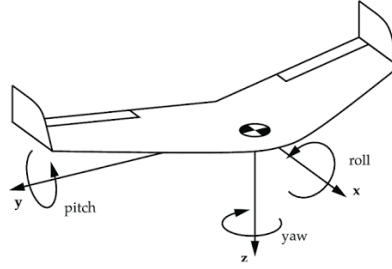
Həmçinin, “uçan qanad” konstruksiyasında qanadın yaratdığı müqavimətdən fərqli daha az əlavə müqavimət yaranır və bütün konstruksiyaya qaldırma qüvvəsi yaratmaq imkanına malikdir. Bu xüsusiyyət adi qanad konfigurasiyaları ilə müqayisədə “uçan qanad”ın səmərəliliyini yüksəldir. Ümumiyyətlə, “uçan qanad” konstruksiyasının aşağı əks müqavimət qüvvəsi, yüksək aerodinamik qaldırma əmsalı, UA-nın aşağı aşkarlanma ehtimalına sahib olma və bu səbəbdən uçuşun məxfiliyinin təmin olması və s. kimi müsbət xüsusiyyətləri ilə xarakterizə olunur. “Uçan qanad” konstruksiyasında sabitləşdirici və idarəetmə səthlərinin sadə olmaması səbəbindən onun forması qeyri-simmetrik hesab

olunur və idarəedilməsi mürəkkəb sayılır. Qeyd edilən çatışmazlıqları aradan qaldırmaq sadə deyildir. Aradan qaldırılmasına çalışıldıqda çəkinin və aerodinamik müqavimətin qiymətinin az olması, eləcə də aerodinamik keyfiyyət əmsalının yüksək olması kimi üstünlüklərin azalmasına, nəticədə digər məqsədlər üçün təyinatlı olan konstruksiyanın layihələndirilməsinə səbəb ola bilər.



Şəkil 1: Uçan qanadların statik qeyri-dayanıqlığı

Hər üç ox üzrə “uçan qanad”ın dayanıqlığı aktiv və passiv dayanıqlıq olmaqla iki fərqli yanaşmaqla təhlil edilə bilər:



Şəkil 2: “Uçan qanad”ın 3 oxlu kordinat sistemində hərəkət dinamikası

### X oxu (roll)

“Uçan qanad”ın X oxu üzrə dayanıqlığı digər tip UA-lara oxşar şəkildə olur. Təyyarənin üfüqi uçuşu zamanı passiv dayanıqlığa nail olmaq üçün sağ və sol qanad sonları maili bucaq şəklində yuxarıya burulmuş şəkildə hazırlanır. Bu səbəbdən, X oxu üzrə üfüqü uçuş zamanı UA-nın idarə edilməsi qanad sonlarında yaranan diferensial turbolentliyin minimum endirilməsi hesabına daha asand əldə edilir. Qanad sonluğuna yaxın yerləşən eleronlar təyyarənin aktiv dayanıqlığının təmin edilməsinə kömək edir. Eleronlar diferensial qalxma prosesini, bu da UA-nın uçuşunun idarə edilməsini və ya pilotun kren (*roll*) sürətini tənzimləməyə imkan yaradır.

### Y oxu (pitch)

Ənənəvi uçuş aparatların çoxunda üfüqi stabilizator var və o, həmin UA-ların Y oxu üzrə passiv dayanıqlığa nail olmasına kömək edir. Digər tərəfdən, aktiv dayanıqlıq bu stabilizatorla yerləşən qaldırıcı servo mühərrikli idarəetmə mexanizimlərinin köməyi ilə əldə edilir. Verilmiş istiqamətdə şaquli qüvvəni artırır və ya azaldır. “Uçan qanad”da üfüqi stabilizator yoxdur. Buna görə də, əsas qanadın arxa hissəsi stabilizator rolunu oynayacaqdır. Bu səbəbdən “uçan qanad”ın arxa hissəsi bir az fərqli hazırlanır və yaranan ümumi fırlanma momenti qüvvəsi (hücum bucağı böyük olduqda) hücum bucağını daim azaldır. Digər tərəfdən aktiv dayanıqlıq, qanadın arxa hissəsində yerləşən nəzarət səthləri, - eleronlar vasitəsilə əldə edilir. Bunlar krenin idarə olunmasını təmin edən eyni nəzarət səthləridir və verilmiş komandaya uyğun olaraq paralel fəaliyyət göstəriirlər.

### Z oxu (yaw- istiqaməti dəyişmə)

Adi UA-larda aktiv və passiv dayanıqlıq istiqamətləndirici sükan və şaquli hava stabilizatoru vasitəsilə əldə olunur. “Uçan qanad” formasına bu konstruksiyayı tətbiq etmək mümkün deyildir. Bəzi “uçan qanad”larda qanad sonluğu olmur və UA müəyyən bir tərəfə meylənsə, böyük qanad məsafəsi hesabına qanadda daha yüksək müqavimət gücü yaranır və bununla da, tələb olunan tarazlaşdırıcı qüvvə formalaşır. Aktiv dayanıqlığa qanad uclarının yaxınlığında yerləşən müəyyən formalı əyləc (eleronlar) vasitəsilə əlavə müqavimət qüvvəsi yaratmaqla nail olunur. Planerə müxtəlif konstruksiyalar, belə ki, ayrı-ayrı hava əyləc sistemi və eleronlar, həmçinin diferensial dartı qüvvəsi yaradan sistemlər tətbiq edilə bilər.

### “Uçan qanaq” konstruksiyasının inkişaf tarixi:

“Uçan qanad” konsepsiyası 2-ci dünya müharibəsindən sonra Alman hərbi konstruktorları tərəfindən qısa məsafəli reaktiv mühərrikli UA texnologiyalarını inkişaf etdirmək məqsədi ilə yaradılmışdı. Bu tip konstruksiyaların ən geniş yayılmış nümunəsi 1944-cü ildə ilk dəfə uçmuş “Horten Ho 229” qırıcı təyyarəsi olmuşdur. Digər bir prototip isə

iki reaktiv mühərrikə sahib “V2” tipli UA olmuşdur. Sınaqlar zamanı UA-nın mühərriklərindən birinin yanması nəticəsində o, qəzaya uğramışdır. Üçüncü prototip olan “V3” isə heç vaxt uçmamışdır. “Northrop N-1M” təyyarəsi üzərində aparılan tədqiqatlar uzun məsafəyə uçan bombardmançı “YB-35” UA-nın yaranmasına səbəb olmuşdur. Daha təkmilləşmiş təcrübi nümunələr artıq 1946-cı ildən yaradılmağa başlamışdır. 1947-ci ildə “YB-49” tipli UA hazırlanmış, lakin uzaq məsafəyə uçuş sınaqlarından keçməmişdir. Bundan əlavə, bu proses istehsalın başlamasına mane olan bir sıra texniki problemlərlə üzləşmişdi. Böyük Britaniyada Roy Chadvik “uçan qanad” konstruksiyasına dair ilk təkliflərini irəli sürmüş və tədqiqat işlərinin nəticəsi olaraq “Avro Vulcan” tipli UA hazırlanmışdır. Həmçinin Türkiyə Respublikasında da “uçan qanad” layihəsi üzərində tədqiqat işləri aparılmış və nəticədə 1948-ci ildə “THK-13” tipli UA istehsal edilmişdir.

Artıq 1980-ci illərdə daha da təkmilləşərək inkişaf etməkdə olan Hava Hücumundan Mübarizə (HHM) və radioelektron mübarizə (REM) vasitələrindən mühafizə məqsədi ilə “uçan qanad”ın konstruktiv və aerodinamik quruluşunun radiolokasiya sistemləri (RLS) tərəfindən az aşkar edilməsi xüsusiyyəti onun inkişafına təkan vermişdir. Bu tip konstruksiyaya sahib UA-nın az aşkarlanması onun hərbi məqsədlər üçün (kəşfiyyat aparmaq üçün) tətbiqini daha aktual edirdi. Çünki onlar radiolokasiya və elektromaqnit dalğalarını yalnız müəyyən istiqamətlərdə əks etdirirdi, qalan vaxtlarda hazırlanma texnologiyasına və səthinin quruluşuna görə bu tip UA-ların aşkarlanması çətinləşdirirdi. “Northrop Grumman B-2 Spirit” şirkəti “stels” texnologiyası əsasında bombardmançı UA-nın hazırlanması zamanı “uçan qanad” konstruksiyasından istifadə etməklə tədqiqatlar aparmış və nəticədə mükəmməl UA hazırlamışdılar.

Konver toplanın hazırlanması zamanı “uçan qanad”ın aerodinamik üstünlüklərindən istifadə edilsə də, digər meyarlar var ki, layihələndirmə zamanı bu şərtlər nəzərə alınmışdır. Layihələndirmə zamanı müasir “uçan qanad” konstruksiyasının aerodinamik çatışmazlıqlarını xüsusi computer proqramları və uçuşun avtomatik idarəetmə prosesinin imkanları hesabına minimuma endirməyə çalışılmışdır. Bu da effektiv, enerji sərfiyyatı və iqtisadi cəhətdən səmərəli, eləcə də dayanıqlı olmaqla bərabər böyük uçuş məsafəsinə malik UA-ların yaradılmasına səbəb olmuşdur.

“Uçuş qanad” konsepsiyalı təyyarənin füzulyajının olmaması, onun avionikasının qanad konstruksiyasında dərin qanadda yerləşməsi bu texnologiyanın infrasəs (stels) təyyarələrin hazırlanması zamanı tətbiqinə zəmin yaradır. Bu səbəbdən də “uçan qanad” konstruksiyasından sənişin və ya yükləri yerləşdirmək üçün qanadın kifayət qədər dərin olduğu tələb olunduğu istiqamətlərdə istifadə olunmasına maraq artmışdır. Belə ki, “Boeing”, “de Havilland”, “McDonnell” və s. şirkətləri “uçan qanad” konstruksiyalı təyyarələrin layihələndirməsi istiqamətində geniş tədqiqat işləri aparırlar. “Uçuş qanad” və kvadrokopterin konstruktiv birləşməsindən hazırlanan konvertoplan tipli hybrid PUA-da əyilmə mexanizmlili mühərriklərin olmaması halı sistemin dayanıqlığının yüksəlməsinə, UA-nın çəkisinin azalmasına və enerji sərfiyyatına qənaətə və s. üstünlüklər yaradır.

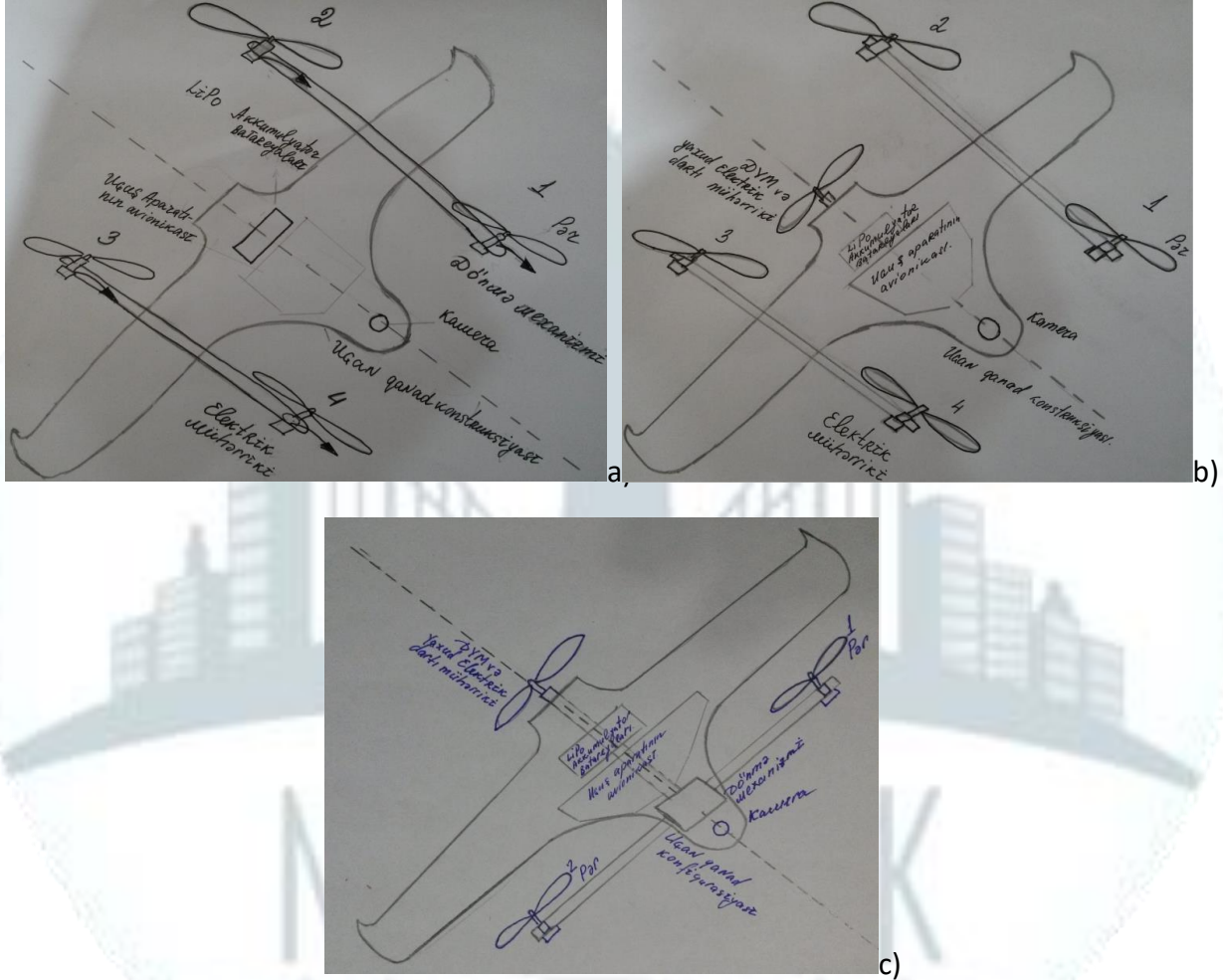
#### **Konvertoplan tipli PUA-nın hazırlanmasına qoyulan əsas tapşırıqlar**

- hərəkət sisteminin konseptual eskizini işləyib-hazırlamaq;
- PUA-nın texniki imkanlarını qiymətləndirmək;



- PUA üçün faydalı yükün seçilməsi;
- “Uçan qanad” korpusunun konstruksiyasının hərəkət dinamikasını hesablamaq;
- müqavimət və qaldırma qüvvələrinin qiymətlərini hesablamaq;
- konstruksiyasında təzyiğin paylanmasını müəyyən etmək;
- üfqi uçuşu təmin edən dartı mühərrikinin elektrik və DYM tipli olan hallarını işləmək;
- uçuş rejimlərinə sürətlə reaksiya verən sistemi işləyib-hazırlamaq.

### “Uçan qanad” və kvadrakopter konstruksiyasının hybrid konfigurasiya variantları



Şəkil 3: “Uçan qanad” və kvadrakopter konstruksiyasının hybrid konfigurasiya variantları

#### Qoyulan tələblər

Qoyulan tapşırığın həll olunması üçün layihələndirilməsi planlaşdırılan yeni konfigurasiyada PUA-nın iş prinsipi, enerji sərfiyyatı və hərəkətverici sisteminin optimal seçimi, ekoloji, sosial və iqtisadi tələbləri, həmçinin məqsədəuyğunluğunun sübuta yetirilməsi.

PUA-nın uçuş tapşırığına dayanıqlı uçuş imkanlarını optimallaşdırmaqla strateji obyektlərin müşahidəsi kontekstində electron-optik müşahidə aparmaq və keyfiyyətli təsvir və görüntü əldə etmək daxildir. Küy effektini əhəmiyyətli dərəcədə azaltmaq üçün PUA-nın enerji sistemini akkumulyator batareyası ilə qidalanan 4 ədəd qaldırıcı və dartı qüvvəsini

yaradan 1 ədəd elektik mühərrikindən, həmçinin uzun müddətli uçuşu təmin etmək üçün darta mühərrikini daxili yanma mühərriki (DYM) ilə əvəz etməyin mümkünlüyü tədqiq olunacaqdır.

PUA-a qoyulan iqtisadi və istehsal tələbləri UA uçuşa tam hazır olduqdan sonra qiymətləndiriləcəkdir. Sistem və qurğulara qoyulan əsas tələblər isə PUA-nın istismarı zamanı onun avtonom uçuşunun təmin edilməsi və pilot-operator tərəfindən istismarının sadə olması şərtidir.

### **Konfigurasiya variantları**

Burada PUA-nın layihələndirilməsi zamanı müqayisə edilən eskiz layihələri təsvir edilmiş və təklif olunan müxtəlif konfigurasiya variantlarının güclü və zəif tərəfləri təhlil edilmişdir. Təklif olunan layihələrin qiymətləndirilməsi əsasında yekun konfigurasiya seçilmişdir.

**Cədvəl 1: Təhlil olunan əyilmə mexanizmlili və dartı mühərrik konfigurasiyalı konvertoplanların üstünlük və çatışmazlıqları**

Birinci variant	İkinci variant	Üçüncü variant
<b>Üstünlüklər</b>		
-əyilmə mexanizmini idarəetmə alqo-ritminin mürəkkəbliyinin azalması; -aerodinamik qüvvə yaratmaq üçün daha böyük səthin olması; -mühərriklərin dönmə bucaqlarını idarə etmək və nəzarət imkanının olması. -istifadəçi dönmə pərlərdən azad olur;	–mühərriki sadə idarə etmək imkanı, manevr elastikliyi; –PUA ümumi ölçüsünü və çəkisini azaltmağın mümkünlüyü; –dönmə mexanizmlərindən azad olmaq; –mövcud konstruksiyalar texniki cəhətdən əlverişlidir; –istifadəçi dönmə pərlərdən qorunur. –UA-nın korpusu tərəfindən axına qarşı müqavimətin az olması.	-bir servomotordan istifadə etməklə çəkiyə qənaət; -əyilmə mexanizminin idarəetmə alqoritminin mürəkkəbliyi-nin azalması; - qaldırıcı qüvvənin əldə edilməsi üçün daha böyük səthin olması.
<b>Çatışmazlıqlar</b>		
- dörd servomotordan istifadə etmək səbəbindən çəkinin yüksəlməsi; - diferensial dişli çarx sisteminin konstruksiyasında mürəkkəblik; - diferensial dişli çarx sisteminin ölçü və material baxımından çəki yaratması. -dönmə mexanizminin əlavə	–Dörd ədəd qaldırıcı və bir ədəd dartı mühərrikindən istifadə edilməsi səbəbindən uçuş aparatının çəkisinin yüksəlməsi; – uçuş zamanı keçid prosesinin idarəetmə alqoritmində xətlərin baş vermə ehtimalının olması.	-mühərriklərin fərdi qaydada əyil-məsinə nəzarətin mümkünsüz-lüyü; -mühərriklər eyni anda eyni bucaq altında əyilir; -diferensial dişli çarx sisteminin konstruksiyasının mürəkkəb olması və nəticədə ölçü və material baxımından izafi çəki

əks müqavimət yaratması

yaratması.

### Seçilmiş konfigurasiya

Şaquli qalxmaq və üfqi uçuşun təmin edilməsi sisteminin üstünlük və çatışmazlıqları müqayisə edilmişdir. Nəticədə ikinci,- üfqi uçuşun təmin edilməsi üçün dartı mühərrikindən istifadə etmək variantı seçilmişdir. Bu variant üçün “uçan qanad” tipli planerdən, 4 ədəd qaldırıcı kollektorsuz elektrik mühərrikindən, 1 ədəd dartı qüvvəsini yaradan elektrik (birinci hal) və yaxud DYM-dən (2-ci hal) və pərlərdən ibarət sistemdir. Burada PUA-nın 4 elektik mühərriki vasitəsi ilə şaqulu qalxma funksiyasını icra etməsi, tələb olunan hündürlükdə dartı qüvvəsini yaradan mühərrikin işə düşməsi ilə üfqi uçuşun təmin olunması və əksinə proses başa düşülür.

Nəticə

Layihələndirmə zamanı baza ölçülər çəki nəzərə alınmaqla müəyyən edilmişdir. PUA-nın tam çəkisi elektrik mühərrikli birinci hal üçün 6 kq-dan və ikinci hal üçün 16.5 kq-dan az hesablanmışdır. Çəkiyə daxil olan komponentlərin seçilməsi aparılmışdır. Bu komponentlərin texniki xüsusiyyətləri dartı qüvvəsinin yaradılması texnologiyasından və nəticədə birbaşa PUA-nın kütləsindən asılıdır. Müqayisə olunan hər bir UA konfigurasiyası üçün üç görünüşlü eskiz layihələri çəkilmişdir. Seçilmiş konfigurasiya üçün çəki hesabı aparılmışdır. Bu çəki göstəriciləri PUA-nın hazırlanması zamanı ilkin layihə olaraq nəzərə alınır. Layihələndirmənin növbəti mərhələlərində yeniliklər edilən zaman bu çəki göstəriciləri dəyişə bilər.

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# INVESTIGATION OF THE CHARGE TRANSFER PROPERTY OF HOLE TRANSPORT MATERIAL SCHIFF BASE DERIVATIVE FROM THE MARCUS ELECTRON THEORY AND DENSITY FUNCTIONAL THEORY FOR OLED DEVICES: STRUCTURE-PROPERTY RELATIONSHIP

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## Abstract

Here in, we explored the electronic and charge transport properties of  $\pi$ -conjugated schiff base derivative molecule through the Marcus Electron Transfer Theory and Density Functional Theory (DFT) for the OLED devices. To further understand the charge transport rate, the theoretical results were compared with the experimental datas obtained from the single crystal x-ray crystallography. The reorganization energy, value of the electron affinity and ionization potential, bond length alternation values (BLA), HOMO-LUMO orbital energies of the compound were determined by the theoretical studies. The main concept of this study is that the charge transport property therefore charge mobility strongly depends on the reorganization energy,  $\pi \cdots \pi$  stacking interactions of the compound and the durability of organic electroluminescence devices depends on ionization potential and electron affinity of the molecule. In addition, the bond length alternation of the compound were calculated by using the optimized geometries of neutr, anion and cation states since reorganization energy is strongly depends on the geometry changes, Our calculated results demonstrate that the charge carriers for the molecule are holes and the molecule has the smallest reorganization energy with the *J type* stacking mode which enhance efficient mobility therefore device performance among the reported similar molecules. The smallest reorganization energy and the *J type* stacking mode provide efficient photoluminescent behavior in the solid phase or device form. Moreover, the molecule has high hole injection for ITO/HTL and HTL/EL. The small LUMO value of the molecule prevents an electron leak from the EL into the HTM layer, also. In addition, it was seen that the incorporation the acceptor group ( $\text{NO}_2$ ) to conjugated skeleton improved the efficient charge injection in electronic devices when it compared with the

similar structure of the literature. We hope that this study shed light on molecular design for an intelligent p-type hydrazone derivatives with the small reorganization energy.

**Key words:** Marcus Electron Theory, Density Functionality Theory, Reorganization Energy, *J Type* Stacking Mode, Charge Transfer Property, OLED.

### Introduction

The organic materials which is designed in  $\pi$ -conjugated structure have been actively studied and have attracted remarkable interest in the area of their possible applications in optoelectronic devices<sup>1-3</sup>. Especially, polyaromatic systems are the most convenient basic structures for the application of the  $\pi$ -conjugated organic molecules since they have combination of stability and structural flexibility and delocalization of charges which represents a basic way of reducing band gap ( $\Delta E$ ), increasing charge transport therefore improving device performance<sup>4-5</sup>. In particular, incorporating the acceptor groups to conjugated skeleton have proven to be very efficient semiconducting materials. Recently, the improves in the development of high performance organic semiconductors for field-effect transistors (FETs) and OLEDs have increased rapidly<sup>6-7</sup>. Due to the great potential of OLEDs, their development has become very important topic in optoelectronic field. The simplest multilayer OLED consists of an anode, an electron transporting material (ETM) layer, a hole transporting material (HTM) layer, and a cathode<sup>8</sup>. One of the key challenges on the path to developing high performance OLEDs is the design of a stable HTM layer that would be characterized by a high efficiency of hole injection and adequate hole mobility. Especially, Schiff base derivatives have received considerable attention in this field as they are an excellent hole transport material that constitutes one of the essential layers of the OLED device.

Theoretical calculation especially electron transfer theory is becoming a powerful tool to determine the charge transport properties of organic semiconductors<sup>9</sup>. Marcus Electron Transfer Theory which plays a central role in optoelectronic provides the understanding of the hole-electron transfer phenomenon and methods for improving electron transfer in materials<sup>10-11</sup>. One of the important factors improving the rate of electron transfer is reorganization energy<sup>12</sup>. The reorganization energy ( $\lambda$ ) includes the molecular geometry modifications when an electron is added or removed from a molecule (inner reorganization) as well as the modifications in the surrounding medium due to polarization effects (outer reorganization). Small reorganization energy is highly desirable in the design of optoelectronic and electronic

materials. In addition to small reorganization energy, the frontier molecular orbitals (HOMO and LUMO) and the control the energy band gap ( $E_{gap}$ ) have an important place in defining the charge transport properties of functional  $\pi$ -conjugated systems<sup>13-14</sup>. The one of efficient strategies for reducing the band gap energy is decreasing the  $E_{BLA}$  (bond length alternation energy). Bond-length alternation (BLA) is defined as the average of the difference in the length between adjacent carbon-carbon bonds in the molecule<sup>15</sup>. Beside the decreasing the BLA energy, the another efficient method is introduced alternate donor-acceptor groups to molecule backbone for obtaining small band gap energy. Introduction of electron-acceptor groups to a conjugated system produces an increase of the HOMO and LUMO level, generally accompanied by a reduction of band gap value<sup>16-17</sup>. In addition the small dihedral angle between the ring and molecular plane confine delocalization of  $\pi$ -electrons along the conjugated structure and provide the molecular rigidity and boosting the charge transport properties of molecule.

Another important issue for organic semiconductor materials is related to ionization potential (IP) and highest occupied molecular orbital (HOMO). A smaller ionization potential (IP) or highest occupied molecular orbital (HOMO) will lead to a smaller energy barrier for charge (hole) injection, therefore higher hole injection efficiency. So the balance between larger IP and charge injection barrier is of great importance for high performance OLEDs.

The optical and electronic properties of  $\pi$ -conjugated materials in devices, which essentially deal with solid film or crystal phase, are determined not only by the chemical structure of the constituent molecules but also by the nature of their intermolecular electronic interactions and packing structures<sup>17-18</sup>. Therefore, the performance of the organic molecule based devices strongly depends on the packing arrangements. Packing structures of the molecule are formed by nonclassical interactions which are hydrogen bonding, intra-intermolecular  $\pi \cdots \pi$  stacking interactions, short interactions between the atoms and  $C-H \cdots \pi$  interactions.  $\pi \cdots \pi$  stacking interactions between the adjacent molecules in the crystal structure are the most important factors to determine the charge transfer process or optoelectronic device performance of the molecules based devices<sup>19-20</sup>. Especially, J type stacking mode makes crystal highly emissive in solid phase<sup>21</sup>. The emission behavior of the molecule in solid phase is more important than that of solution phase since the all optoelectronic devices in the world are used as a solid form.

In present work, we used quantum chemical calculation and Marcus Electron Theory to determine electronic and charge transport property which depends on the reorganization energy, ionization potential, electron affinity and bond length alternation values and energy band gap of the molecule. The study of the ionization potentials (IPs) of the molecule have been carried out by DFT calculations to demonstrate the matching of the HOMO level with the workfunction of ITO electrode, which ensures efficient carrier injection. The results show the efficiency of hole injection from the anode and hole transport into the emitting layer for OLED devices and high electron blocking capability of the hole transport material that this situation increase efficiency of the OLED device. In addition we utilized the single crystal structure of the compound which reported in the our previous study (ref ver) to carry out the relationship between charge transport properties and the packing modes of the molecule. By means of density functional theory calculations and Marcus Electron Theory, we aim to establish structure–property relationships of hydrazone material and shed light on the fundamental research and design of n-type high charge transport materials.

### Computational Details

DFT has been widely used to understand the electronic and optical properties of organic semiconductors with First-principles calculations on the basis. In our study, we applied the B3LYP functional and 6-311G basis set<sup>22-26</sup>. All the calculations have been performed by using Gaussian.

The calculation of reorganization energy in this paper, the inner reorganization energy which reflects the geometric changes in the molecules when going from the neutral to the ionized state and vice versa defined. According to Marcus Theory, the charge transfer rate is determined by the following equation.

$$W = \frac{V^2}{h} (\pi/\lambda k_B T)^{1/2} \exp(-\lambda/4k_B T)$$

Here transfer integral (V) which needs to be maximized and the reorganization energy ( $\lambda$ ) which needs to be small for efficient charge transport. The  $\lambda$  is divided into two parts as  $\lambda_{rel}^1$  which corresponds to the geometry relaxation energy of one molecule from neutral to charged state and  $\lambda_{rel}^2$  which corresponds to the geometry relaxation energy from charged to neutral state.

$$\lambda = \lambda_{rel}^1 + \lambda_{rel}^2$$

In the evaluation of  $\lambda$ , the two terms were computed directly from the adiabatic potential energy surfaces.

$$\lambda_{anion} = \lambda_{rel}^1 + \lambda_{rel}^2 = [E^{(1)}(M) - E^{(0)}(M)] + [E^{(1)}(M^-) - E^{(0)}(M^-)]$$

$$\lambda_{cation} = \lambda_{rel}^1 + \lambda_{rel}^2 = [E^{(1)}(M) - E^{(0)}(M)] + [E^{(1)}(M^+) - E^{(0)}(M^+)]$$

Here  $E^{(1)}(M)$  is the energy of the neutral molecule at the optimized charged (anion or cation) geometry,  $E^{(0)}(M)$  is the ground-state energies of the neutral geometry,  $E^{(1)}(M^-)$ - $E^{(1)}(M^+)$  are the energy of the charged state (anionic and cationic) at the geometry of the optimized neutral molecule and  $E^{(0)}(M^-)$ - $E^{(0)}(M^+)$  are the ground-state energies of charged states.

In the calculation of ionization energy, the adiabatic ionization potential (IP<sub>a</sub>) and vertical ionization potential (IP<sub>v</sub>) have been calculated as the following equation.

$$IP_a = E^0(M)^+ - E^0(M) \text{ and } IP_v = E^0(M)^+ - E^0(M)$$

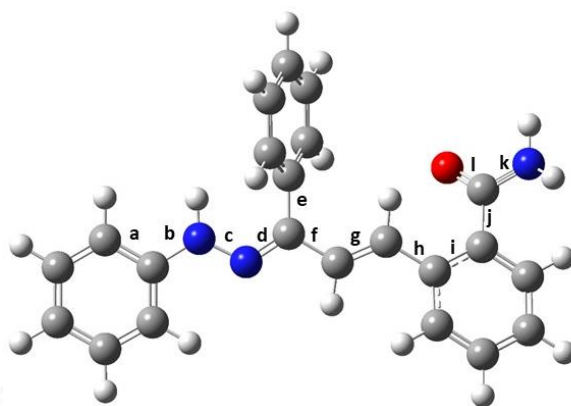
The adiabatic/vertical electron affinity (EA<sub>a</sub>)/(EA<sub>v</sub>) of all molecules have been calculated as following equation;

$$EA_a = E^0(M) - E^0(M)^- \text{ and } EA_v = E^0(M)^- - E^1(M)^-$$

### Result and Discussion

The optimized geometry of the studied compound in the neutral state obtained from the cif file of the x-ray diffraction calculations are depicted in the Figure 1. The molecule shows planar and rigid skeleton with the small dihedral angle of 12° between the rings and the molecule plane. The dihedral angle between the upper phenyl ring and nitrophenyl group was determined as 65° in the molecule.





**Figure 1.** The optimized geometries of the studied compounds with the bond length index

When a molecule gains or loses charges, it will relax its molecular geometry for a new charge distribution. The above mentioned torsional angles in molecule are  $61.9^\circ$  and  $56.2^\circ$  for the cationic state and anionic state, respectively. The bond length changes upon oxidation (losing electron from the neutral to the cation state) and reduction (gaining electron from the neutral to the anion state) of molecule are shown in Table 1. Because of the extended  $\pi$ -system, the bond-length changes upon oxidation and reduction are found to occur over the entire molecule, especially in the fused rings. The bond-length changes upon reduction for the compound are significantly larger than those upon oxidation; this indicates that the reorganization energy for electron is substantially larger than those for hole of the investigated molecule (Table 2).

**Table 1.** Bond Length Alternation Values of the compound

Index	Notr	Anion	Cation	$\Delta(C - N)$	$\Delta(A - N)$
a	1.40280	1.41400	1.40786	5.06E-3	26.2E-2
b	1.39416	1.36821	1.38719	6.97E-3	2.6E-2
c	1.33725	1.37041	1.31122	26.0E-3	3.3E-2
d	1.30287	1.33939	1.33747	34.6E-3	3.7E-2

e	1.49706	1.49599	1.48832	8.74E-3	1.07E-3
f	1.45215	1.41843	1.42265	29.5E-3	3.3E-2
g	1.34850	1.39072	1.36978	21.3E-3	4.2E-2
h	1.46570	1.42434	1.44977	15.9E-3	4.1E-2
i	1.41776	1.45489	1.42294	5.18E-3	3.7E-2
j	1.50594	1.47559	1.50941	3.47E-3	3.0E-2
k	1.37357	1.41174	1.35937	14.2E-3	3.8E-2
l	1.21976	1.22854	1.22348	3.72E-3	8.78E-3

**Table 2 .** The value of the reorganization energies of the compound.

Compound	$(\lambda_{hole})$ Boşluk reorganizasyon enerjisi (eV)	$(\lambda_{electron})$ Elektron reorganizasyon enerjisi (eV)
Hydrazone Derivative	0.24	0.61

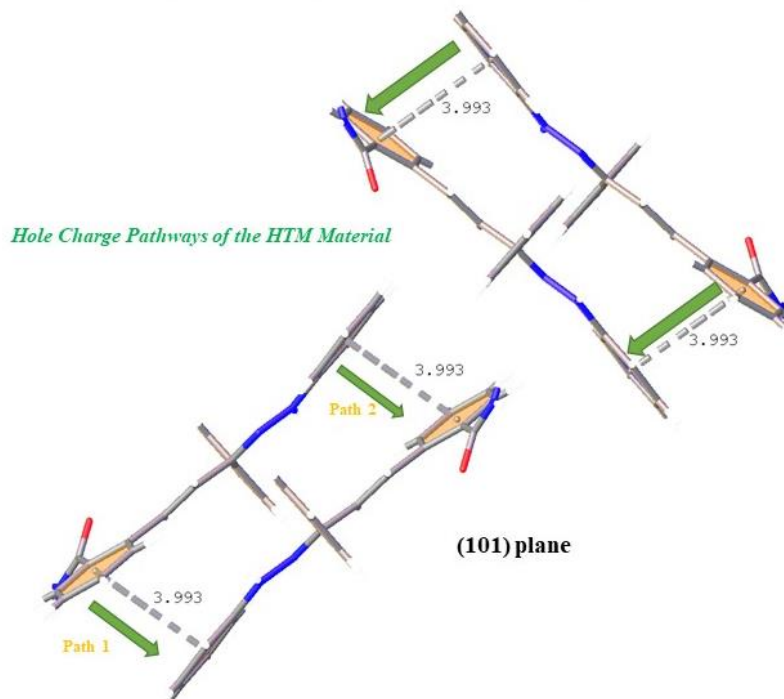
Internal reorganization energies for hole and electron calculated by both adiabatic PES method are listed in Table 2. The reorganization energies for electron are higher than those for hole of the compound. According to following equation, the charge transport rate favors small reorganization energy. From the reorganization energy point of view, the compound is in favor of transporting hole rather than electron. The higher reorganization energy is supported by a larger geometrical relaxation with respect to the neutral geometry, as can be seen in Table 1.

$$W = \frac{V^2}{h} (\pi/\lambda k_B T)^{1/2} \exp(-\lambda/4k_B T)$$

In device applications of organic  $\pi$ -conjugated systems, the understanding of molecular arrangement and assembly of molecules provide to determine the charge transport properties of the molecules in optoelectronic devices. Molecular packing through stacking interactions creates one of the most significant charge transport channels for small molecules. In this

molecule, the charge transport channel was occurred via J type  $\pi \cdots \pi$  stacking interactions which is benefical for improving the device performance in optoelectronic field (Figure 2).

*Antiparallel 2D H Type Strong  $\pi \cdots \pi$  Stacking Interactions*



Compound	IPa(eV)	IPv(eV)	EAA(eV)	EAv(eV)
Hydrazone Derivative	6.29	6.41	0.70	0.39

**Figure 2.** Showing the charge transport paths of the molecule.

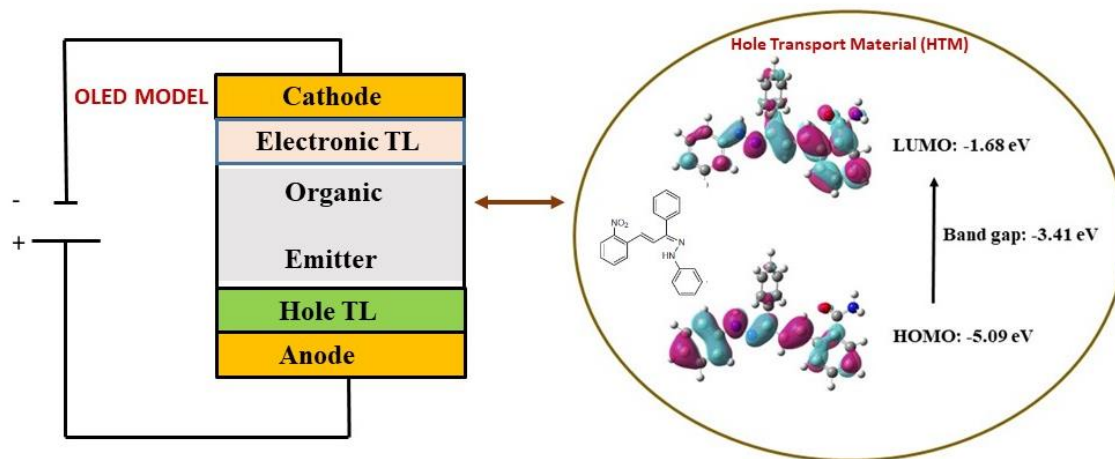
**Table 3.** The value of the ionization potential and electron affinity of the compound.

It is well-known that efficient injection of holes and electrons is important for the rational design of optimized electronic devices. The molecular ionization potential (IP) and electronic affinity (EA) are very key parameters pertaining to charge injection, which can provide useful information regarding the organic device performance and its ambient stability. IPs and EAs are used to estimate the energy barrier for injection of hole and electron into molecule. The calculated IPs and EAs of compounds, both vertical (at the geometry of the neutral molecule) and adiabatic (optimized

structure for both the neutral and charged molecules), are presented in Table 3. The IPa and IPv of the compound are 6.29 eV and 6.41 eV, respectively. The EAa and EAv of the compound are 0.70 eV and 0.39 eV, respectively.

### From Theory to OLED Efficiency

All data obtained from theoretical studies can be used to model an OLED of desired properties (Figure 3). The figure 3 shows a single OLED based on ITO (indium tin oxide) as an anode, Alq<sub>3</sub> (aluminum 8-hydroxyquinolate) as an ETL/EL (electron transporting/emitting layer), Mg/Ag cathode, and some of the studied Schiff base molecule as a HTL (hole transporting layer). The HOMO and LUMO levels for Alq<sub>3</sub> are -5.42 and -1.94 eV, respectively. (ref). The first parameter that was considered in analysis was hole injection from ITO into HTL. Efficiency of this process depends on the energy barrier between the ITO's work function (typical experimental value ca. 4.7 eV) and HOMO level of HTM. The lower the barrier, the higher injection efficiency and lower voltage required to drive the device. The hole injection barrier of the molecule is -0.39 eV which is smaller than results seen in the similar studies<sup>27</sup>. This result demonstrated that the studied HTM has higher injection efficiency.



**Figure 3.** Showing the Model of OLED devices and HOMO-LUMO energy levels of the studied molecule

Another property that must be taken into account is the electron blocking capability of the HTM. This property is related to energy barrier on the HTL/ETL interface. It should be high enough to block migration of electrons from Alq<sub>3</sub> into HTL, as this electron leak would decrease efficiency of the device. In this case, we expect the LUMO energy level to be low.

The energy barrier on the HTL/ETL was calculated as -2.02 eV which is enough to block migration of electrons from Alq3 into HTL. Additionally, a small energy barrier for hole transport on the HTL/ETL interface is required for high efficiency of the device. In other words, the HOMO level of HTM should match the HOMO level of Alq3 to ensure a high hole transport rate into the emitting layer. The HOMO level of the molecule is - 5.42 eV is nearly close the value of HOMO level of Alq3 (-5.42 eV). Among the important properties that HTM should possess is high hole mobility. Because it increases as the hole reorganization energy decreases,  $\lambda$  should also be considered in the process of the OLED design. In this respect, the molecule will perform best. It has been suggested that the durability of organic electroluminescence devices is dependent on ionization potential of HTMs and is related to the HOMO energy. The lower ionization potential,  $I_p$ , the higher durability of the device. In general, good HTM materials should be characterized by low ionization potential. Present calculations confirm that compounds of the studied molecule meet this requirement ( $I_p$  of the molecule: 6.29 eV).

### **CONCLUSIONS**

In conclusion, the electronic and charge transport properties of hydrazone derivative have been investigated by Marcus Electron Theory and DFT calculations. The reorganization energy for hole was found smaller than that of the reorganization energy for electron which implies that the molecule might be suitable as a basic unit of hole transport material or p-type semiconductor. The hole injection barrier of the hole transport material was calculated as - 0.39 eV which is smaller than results seen in the Schiff base molecules given in the literature. This result demonstrated that the studied HTM has higher injection efficiency. In addition, the electron capability of the molecule is enough high that the OLED efficiency is very great. The small  $I_p$  value makes the molecule durable for OLED devices. In addition, the charge transport property of the molecule was evaluated by considering the packing arrangements. The crystal structure of the molecule showed J type stacking interactions which is favourable type for the efficient device performance. Experimental and theoretical results demonstrated that this molecule will be best candidate for the OLED device among the similar Schiff bases. We hope that this study shed light on molecular design for an intelligent p-type hydrazone derivatives with the small reorganization energy.

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## **WOMEN COMPOSERS AND MUSICIANS FROM THE RENAISSANCE TO THE BAROQUE PERIOD**

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### **Abstract**

It is noteworthy that throughout the history of music, the number of female composers and musicians was much lower than that of male composers and musicians. This situation can be explained by the fact that the patriarchal society does not provide opportunities for women in music as in many professions. In addition, as a general trend, music historians have ignored female musicians until very recently and gave very little coverage to existing names. However, female composers who made significant contributions to the history of music from Hildegard von Bingen to Barbara Strozzi, Clara Schumann to Lili Boulanger deserve to be mentioned more and studies in this direction have increased significantly in the last thirty years.

It is particularly striking that the female composers contributed substantially to the history of music throughout the Renaissance and Baroque period. Of course, the effect of the church pressure's decline on art of music cannot be underestimated. The church, which was the main guardian of musical art throughout the Middle Ages, was almost completely closed to the female musicians (the only exception was the nunneries). In the Renaissance, with the revival of secular music, the female musicians gradually began to take place in the history scene. Nevertheless, it cannot be denied that the patriarchal social structure was absolutely dominant in Europe, as in the whole world during the Renaissance and Baroque. Yet female musicians were accepted only in the most intellectual or tolerant circles of the period. Female composers, on the other hand, came from aristocratic or musical families.

In this paper, the lives and creativity of women composers and musicians in the Renaissance and Baroque periods in Western Europe are discussed with their historical and social dimensions.

**Keywords:** Female Composers, Renaissance, Baroque Period, aristocracy.

### **Rönesans'tan Barok Döneme Kadın Besteciler ve Müzisyenler**

#### **Bildiri Özeti**

Müzik tarihi boyunca kadın besteci ve müzisyenlerin sayısının, erkek besteci ve müzisyenlerden çok daha az olduğu dikkati çeker. Bu durum ataerkil toplumun kadınlara birçok meslekte olduğu gibi müzikte de olanak tanımamasıyla açıklanabilir. Ayrıca genel bir eğilim olarak müzik tarihçileri, kadın müzisyenleri çok yakın tarihlere kadar göz ardı etmişler, var olan isimlere de çok az yer vermişlerdir. Oysa ki Hildegard von Bingen'den Barbara Strozzi'ye, Clara Schumann'dan Lili Boulanger'ye, müzik tarihine önemli katkılar sunan kadın besteciler, daha fazla değinilmeyi hak etmektedirler ve bu yöndeki çalışmalar son otuz yılda ciddi bir artış göstermiştir.

Kadın bestecilerin, Rönesans ve Barok dönem boyunca müzik tarihine hiç de azımsanamayacak ölçüde katkıda bulunmaları özellikle dikkat çekicidir. Bunda müzik sanatı üstündeki kilise baskısının azalmasının etkisi elbette küçümsenemez. Ortaçağ boyunca müzik sanatının başlıca koruyucusu olan kilise, kadın müzisyenlere neredeyse tamamen kapalıydı (bunun istisnası olarak yalnızca rahibe manastırlarından söz edilebilir). Rönesansta ise seküler müziğin canlanmasıyla birlikte, kadın müzisyenler de yavaş yavaş tarih sahnesinde yer almaya başladılar. Yine de Rönesans ve Barok Dönemde de ataerkil toplum yapısının tüm dünyada olduğu gibi, Avrupa’da da mutlak bir biçimde egemen olduğu yadsınamaz. Kadın müzisyenler ancak dönemin en entellektüel ya da hoşgörülü çevrelerinde kabul görebilmişlerdir. Kadın besteciler ise ya aristokrat ya da müzisyen ailelerden gelmektedirler.

Bu bildiriye, Batı Avrupa’da, Rönesans ve Barok dönemdeki kadın bestecilerle müzisyenlerin yaşamları ve yaratıcılıkları, tarihi ve sosyal boyutlarıyla ele alınmıştır.

**Anahtar Kelimeler:** Kadın Besteciler, Rönesans, Barok Dönem, aristokrasi.

Müzik tarihi boyunca kadın besteci ve müzisyenlerin sayısının, erkek besteci ve müzisyenlerden çok daha az olduğu dikkati çeker. Bu durum ataerkil toplumun kadınlara birçok meslekte olduğu gibi müzikte de olanak tanımamasıyla açıklanabilir. Ayrıca genel bir eğilim olarak müzik tarihçileri, kadın müzisyenleri çok yakın tarihlere kadar göz ardı etmişler, var olan isimlere de çok az yer vermişlerdir. Ataerkil toplum yapısı “kadın müzisyenler” konusunun ayrı bir kategori olarak ele alınmasını getirmiştir. Bu kategori bir yandan kadınları küçük görmeye sebep olurken, öte yandan onların başarılarını vurgulamaya ve değerlendirmeye de hizmet etmiştir (Tick ve diğerleri, 2001).

Müzik tarihinin erken dönemlerinde, kadın isimlerine oldukça az rastlanmakla birlikte, ismi günümüze ulaşmış olan ilk bestecinin bir kadın olması ironiktir. Kendisi M.Ö. 2300 yıllarında yaşamış Akadlı bir yüksek rahibe olan Ur kentinden Enheduanna’dır. Tanrı Nanna ve Ay Tanrıçası İanna için yazdığı ilahilerin sözleri çivi yazılı tabletler olarak günümüze ulaşmakla birlikte, müziği konusunda bir bilimiz yoktur (Burkholder ve diğerleri, 2010, sf. 7).

Ortaçağ boyunca Batı müziğine kilise egemendi. Katolik Kilisesi kadınların müzik bestelemesine ya da icra etmesine sıcak bakmıyordu (Tick ve diğerleri, 2001). Yine de günümüze kadar besteleri ulaşmış az sayıda isme rastlıyoruz. Önde gelen iki ismin de aristokrasiye mensup olması dikkat çekicidir.

Hildegard von Bingen, 1098-1179 yılları arasında yaşamış bir rahibeydi. Aynı zamanda ilahiyat ve edebiyat alanında da etkinlik göstermiş olan bu kadın besteci, çok sayıda dinsel müzik bestelemişti. O çağda bir kadının yazar ve besteci olarak öne çıkması hoş karşılanmayacağından, şiirleri gibi bestelerinin de ilahi bir vahiyle ortaya çıktığını iddia ediyordu (Burkholder ve diğerleri, 2010, sf. 66).

Ortaçağın diğer önemli kadın bestecisi ise on ikinci yüzyıl sonları ve on üçüncü yüzyıl başlarında yaşamış bir *trobairitz* olan Comtessa de Dia idi. Ortaçağda Fransa’nın güneyindeki çoğu soylu kökenli saz şairleri *troubadur* olarak adlandırılır. Kendi besteledikleri şiirlerinde genellikle şövalye aşkı temasını işlerledi. *Trobairitz* ise kadın *troubadour* anlamına gelir. Bu alanda Comtessa da Dia günümüze adı ve eserleri ulaşmış kadın saz şairlerinin en önemlisi



kabul edilir. Aynı zamanda besteleri günümüze ulaşmış tek kadın *troubadour* da Dia'dır (Aubrey, 2001).

Rönesans'ın -ki bilindiği gibi Fransızca "yeniden doğuş" anlamına gelir- ne zaman başladığı konusu tarihçiler arasında tartışma konusudur. Bir görüş, Rönesans'ı on dördüncü yüzyıl İtalya'sında Giotto, Dante ve Petrarca ile başlatırken, bazı tarihçilere göre on beşinci yüzyıl bile Geç Ortaçağ olarak kabul edilebilir (Burkholder ve diğerleri, 2010, sf. 149). Müzikte Rönesans'ı kontrpuandaki yeni yaklaşımlarla birlikte 1400'lerin başından, 1600'lerin ilk yarısına kadar düşünmek makul bir yaklaşımdır.

Rönesans'la birlikte kilisenin müzik üzerindeki mutlak egemenliği sarsılmış, yeni hümanizm anlayışı seküler müzikte bir canlanmaya yol açmıştır. Kilisede kadınların müzik icra etmeleri kabul edilmiyordu. Kilise korolarında tiz partileri kadınlar değil, erkek çocuklar söylerdi. Fakat Rönesans ile birlikte, en azından belli saray çevrelerinde, seküler müzik icrasında kadınların yavaş yavaş da olsa belirmeye başladığını görüyoruz. Bu gelişme özellikle on altıncı yüzyılda, yeni ortaya çıkan bir tür olan *madrigal*'de kadın ve erkeklerin birlikte şarkı söylemeleri ile belirginlik kazanmaktadır. Bu kadınlar çoğunlukla aristokrasi ya da büyük burjuva kökenliydi.

1580'de Ferrara Dükü Alfonso d'Este, sarayında *concerto delle donne* adlı kadın şarkıcılarından oluşan bir müzik topluluğu kurdu (Burkholder ve diğerleri, 2010, sf. 253). Bu topluluğun tek başına ya da diğer erkek müzisyenlerle gerçekleştirdikleri performanslar tüm İtalya'da o kadar ilgi çekti ki, Mantua'da Gonzagalar ve Floransa'da Mediciler, hemen Ferrara'ya rakip topluluklar kurdular. Böylelikle saraylarda zaten amatör olarak müzik yapan kadınlar, ilk kez profesyonel bir nitelikte karşımıza çıkmış oluyordular.

Bu madrigal geleneği ilk kez bir kadın bestecinin kendisini "profesyonel besteci" olarak tanımlayarak belirmesini de beraberinde getirdi. Birçok kaynağa göre Maddalena Casulana (yak.1544 - yak.1590) eserleri yayımlanan ilk kadın bestecedir. Yaşamı hakkında oldukça az şey biliyoruz. İlk olarak 1566'da bir derlemede dört madrigali yayımlandı. Ardından 1568'de, yayınlayacağı üç madrigal kitabından ilki olan, *Primo libro de madrigali a quattro voci* dönemin müzik yayıncılık merkezi olan Venedik'te basıldı. Casulana ithaf yazısında, müzik alanında kendisini işaret ederek, "dünyaya, yüksek entellektüel kapasiteye yalnız kendilerinin sahip olduklarını sanan erkeklere, kadınlar arasında da eşitleri olduğunu göstermek" amacını taşıdığını da belirtir (Bridges, 2001). O dönem için bu kendinden emin, cesaretli tutum, dikkat ve takdire şâyandır. Casulana madrigallerinde, armoni ve disonansı kullanırken büyük teknik hüner ve orijinallik gösterir. Kromatik alterasyonlar, beklenmedik armonik geçişler ve dramatik kontrastlar madrigallerinin başlıca özellikleridir.

Birçok kaynakta Casulana, besteleri yayımlanan ilk kadın olarak belirtilse de, Garcia Baptista adlı İspanyol bir rahibinin *Conditor alme* adlı ilahinin org düzenlenmesi, 1557'de tarihli bir derlemede yer almaktadır (Tick ve diğerleri, 2001). Bunun İspanya gibi Rönesans'ın etkisinin daha sınırlı olduğu bir ülkede gerçekleşmesi ilgi çekicidir.

Rönesans döneminde kadın besteci sayısı oldukça azdır ve hemen hemen yalnızca İtalya'yla sınırlı gibi görünmektedir. On yedinci yüzyılda ise kadın yorumcu ve besteci isimlerinde bir artış gözlemlenmektedir.

Barok dönemin başlangıcı kabul edilen on yedinci yüzyılda, kadın besteci ve icracıların sayısındaki artışı etkileyen en önemli unsurun, bu yüzyılın başlarında ortaya çıkan

iki yeni tür, opera ve oratoryo olduğu düşünülebilir. Özellikle de opera kadınların katkısının kabul gördüğü bir tür olarak, pastoral drama, madrigal komedi ve *intermedio* gibi öncüllerinin etkisiyle Floransa sarayında ortaya çıkmış, önce İtalya'ya, ardından da diğer Avrupa ülkelerine yayılmıştır. Opera sanatının yaygınlaşması ile beraber, konuları günümüzün film yıldızlarıyla benzerlik taşıyan *diva*'lara rastlıyoruz. Halka açık ilk operanın 1637'de kurulduğu Venedik'te yüzyıl sonunda dokuz opera vardı ve bu kurumlar arasındaki rekabet *diva*'ları ön plana çıkardı (Burkholder'dan aktaran Erişkin Karabey, 2019, sf. 31). *Prima donna* olarak adlandırılan ve operalardaki soprano baş rollerini üstlenen bu şarkıcılar büyük bir etkiye sahipti. Yüksek ücretler alıyorlar ve belli prodüksüyonlarda rol almak için istedikleri bestecinin müzik yazmasını şart koşabiliyorlardı (Burkholder ve diğerleri, 2010, sf. 325). Bu divaların en ünlüsü, Anna Renzi (yak. 1620 – yak. 1691), yalnızca İtalya'da değil tüm Avrupa'da biliniyordu; teknik ve müzikal yeteneğinin ötesinde, zekâsı ve hayal gücüyle de tanınmıştı.

Bazı ironik durumlar da söz konusuydu. Antonio Vivaldi'nin de uzun yıllar öğretmenlik, şeflik ve müzik yöneticiliği yaptığı Venedik'teki *Pia Ospedale della Pietá*, gayrimeşru ve yetim kızlar için bir konservatuardı. Burada yetenekli kız çocukları mükemmel bir müzik eğitimi görüyorlardı. Bu eğitimin sonunda donanımlı şarkıcı ve entrümancılar yetişiyordu. Bununla birlikte Napoli'deki erkek çocuklara yönelik konservatuarı bitirenlerin aksine, bu kurumda eğitim alan kızların, okuldan ayrılırken, sanatlarını toplum içinde icra etmeyeceklerine dair beyanatta bulunmaları gerekiyordu (Burkholder ve diğerleri, 2010, sf.420).

Floransalı Francesca Caccini (1587-1641) Barok operanın önde gelen isimlerinden biriydi. Müzisyen bir aileden geliyordu, babası da ünlü opera bestecisi Giulio Caccini (1551-1618) idi. Francesca Caccini, şarkıcılığının yanı sıra, ilk kadın opera bestecisidir (Carter ve diğerleri, 2001). 1620'lerde Medici ailesinden yüksek ücret alan müzisyenlendendi. Çok verimli bir besteci olan Caccini, 14 dramatik sahne eseri, çok sayıda şarkı, dinsel vokal yapıtlar ve madrigaller bestelemiştir.

Barbara Strozzi (1619-1677) de Barok dönem İtalya'sının önemli kadın bestecilerinden biridir. Şair ve besteci Giulio Strozzi'nin (1583-1652) kızı olan Barbara Strozzi, on yedinci yüzyılda eserlerini yayınlama olanağı bulan az sayıdaki kadın besteci arasında yer alır. Babasının Venedikli entellektüellerden oluşan çevresi, *Accademia degli Incogniti* (Bilinmeyenler Akademisi) çevresinde etkinlik göstermiş, şarkıcı ve besteci olarak eserlerini seslendirmiş, edebiyat, estetik, felsefe ve sanat tartışmalarında yer almıştır (Cypess, 2020). Babasının ve bu aydın çevrenin desteğiyle, vokal yapıtlarını 8 cilt hâlinde yayınlamıştır. Bu ciltler, 100 kadar madrigalin yanı sıra, çeşitli aya, kantat ve motetler içerir. Bir kadın olarak dönemindeki tüm bestecilerden daha fazla kantat yayınlamış olması dikkat çekici bir noktadır (Burkholder ve diğerleri, sf. 334).

Fransız besteci ve klavsençi, Elisabeth Jacquet de le Guerre 1665- 1729 yılları arasında yaşamış, daha çok 1687 ve 1707'de yayınladığı klavsen parçaları ile tanınmıştır. Bir harika çocuk olan Jacquet de le Guerre, 1684'te orgcu Marin de la Guerre ile evlenerek saraydan ayrılana kadar, 14. Louis'nin sarayında şarkıcı ve klavsençi olarak himaye edilmiştir. Daha sonraki yaşamını ise Paris'te dersler ve konserler vererek sürdürmüştür (Cessac, 2001). 1694 tarihli, *Céphale at Procris* adlı yapıtı bir kadın tarafından bestelenen ilk Fransızca operadır. Ayrıca İtalyan stilinde kantatlar, sonatlar ve trio sonatlar da bestelemiştir. Eserlerinin sayısı çok fazla olmamakla birlikte çağdaşları üzerinde ciddi bir etki yaratmıştır.

Bu bildiride ele aldığımız zaman çerçevesinde -on beşinci yüzyıldan on sekizinci yüzyıl ortalarına kadar- ataerkil toplum yapısının mutlak egemenliği devam etmekteydi. Bununla birlikte bahsi geçen bu az sayıdaki kadının, müzik alanında yine de yaratıcı olabilmesi dikkate değer bir husustur. Yalnız şunu da belirtmek gerekir ki, Rönesans ve Barok dönemde etkin olabilmiş kadın müzisyenlerin hemen hepsi, aristokrasiden ya da müzisyen ailelerden geliyorlardı. Ait oldukları ayrıcalıklı çevrelerin onlara en azından kendilerini müzik yoluyla ifade etme şansı sağladığını söyleyebiliriz.

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## **AN OVERVIEW OF HEALTH SERVICES OFFERED IN TURKEY**

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### **Abstract**

In today's world, one of the prerequisites for being accepted as a developed society is that it consists of healthy individuals. In order for individuals to be healthy and live a healthy life, the health services offered must be quality, efficient and accessible. It is of great importance that the health services are of the quality that can be used equally by the society's all segments and that they are provided without delay for the need. It varies according to the type of health services provided by health institutions and the region in which they will be offered. Some services are aimed at treating the individual, helping him to adapt to society or ensuring the continuity of a healthy life while some carry a preventive function by delivering individuals without any health problems. In this sense, each service is shaped according to the need and the conditions. The main objectives of health services are to increase the labor force participation rate by ensuring that the individuals live healthy lives, to reduce the expenditures of health and to help the development of society. The provision of health services at the desired level positively affects the quality of individuals' life and the well-being of the society. Adequate and effective health services guarantee the individual's right of health, making the lives of individuals more efficient. In other words, since the socio-economic development can be made possible by the formation of healthy individuals, the accessibility and quality of health services is very important in improving the quality of individuals' life and therefore in the progress of society. Increasing health services in both quality and quantity is positively reflected in the health services offered to individuals. In this context, it is aimed to reveal in detail the current state of health services offered in Turkey.

**Keywords:** Health, Health Services, Public Health.

### **1. INTRODUCTION**

Thanks to the developing technologies and developments, people attach more importance to their health and therefore try to be aware of all kinds of activities they will do in order to live a healthy life and all the opportunities they can benefit from for their health. Due to the developments in the field of health, the methods, techniques and treatment methods used by health services are also progressing. On the other hand, some conditions that arise due to both environmental and technology advancement can have negative effects on human health. Health services have a very important task in order to prevent these effects or to control the negatives they may create as soon as possible. In this context, the efficiency and accessibility of the health services offered to them by the society in which individuals live comes into play.

Health services cover all kinds of activities for the health of individuals that can protect them from disease, treat them, facilitate their adaptation to society as a result of any health problems they experience, or help them lead a healthy life. This shows how wide the scope of health service is. There are many factors that make a health service useful. It can be

said that health services are effective as long as they are provided equally to all segments of society and each individual benefits from these services in the easiest way. As long as health services are updated in accordance with the conditions of the period to which they belong and the necessary information about the scope area is shared with the community, more effective and efficient studies can be carried out. In this context, it is aimed to reveal in detail the current state of health services offered in Turkey.

## **2. HEALTH CONCEPT**

The World Health Organization (WHO) defines the definition of health; "not only the absence of disability and disease, but also a complete state of well-being socially, mentally and physically" (WHO, 2014:1). According to another definition, it is a positive concept that prioritizes health, social and personal resources and physical capacity (Topbaş,2020:3). Health is defined more comprehensively in the literature not only as feeling good physically or spiritually, but also in the form of a happy life and having a high quality of life in general (Jakab,2011:6). Similar to other concepts, the content and scope of the concept of health is changing and developing with accumulations in the field of social, economic, political, cultural and universal law, in other words, in the historical heritage of humanity (Tapan, 2008:4).

Health can be considered in the most general way as feeling good as a whole in terms of physical and mental as well as not having any health problems in the physical, mental and social perspectives. The definition of health can be considered more comprehensively in the form of normal development starting from prenatal, coming into the world without any physical and mental disabilities and living in accordance with the development periods, as well as establishing good and trouble-free bonds in relations with other individuals when it comes to individual health.

The concept of health is influenced by developments and innovations in many fields and is open to continuous change and development as a result. According to Özkara (2006:3), although there are different ideas about the concept of health today, it is generally accepted that health is not only a personal issue, but also a social issue. Protection of health, reducing the negative effects of economic, social, biological and physical environmental conditions on human health can be achieved by making necessary changes in the behavior and lifestyle of individuals in society and finally by applying the necessary medical methods.

Health and health services are different concepts. Health is the individual capital of the person, while health service is an investment in health capital (Özkara, 2006:5). Today, the desire of individuals to ensure that they continue their lives with better financial and social means is considered a right. Among the elements of having good living conditions is to make adequate and efficient use of health services (Çelebi and Cura, 2013:48).

## **3.HEALTH SERVICES AND THEIR IMPORTANCE**

Health service is a whole of measures and activities taken by the community and is an integral part of health in particular, as well as each individual measure and activity taken to protect and improve the health of other people (Sosic and Donev,2007:343). Health services which cover all services provided in connection with the protection of the individual or society from diseases and the protection and development of the state of health (Çoban,2009:11), are all medical activities carried out by health workers to protect them from the effects of factors that harm the health of individuals, to treat patients, and to recruit those with reduced physical and mental abilities (Özkara, 2006:5).

Health services primarily aim to protect the health of individuals. They are offered to restore the health of individuals as soon as possible by providing treatment services in individuals with health problems. In different situations, they enable individuals to learn healthy living practices or to accelerate their adaptation to society.

In this context, it is possible to mention that health services serve many purposes and to examine the main ones as follows (Karataş,2019:21-22):

- \* To ensure that individuals requesting health service receive in the lowest cost and just-in-time service,
- \* To take measures to prevent or treat the disease with different techniques by taking advantage of technological developments and opportunities offered,
- \* To reach a large number of individuals and ensure that services are used with an accurate financial mechanism.

Health services are offered by public enterprises and private health enterprises affiliated to the Ministry of Health, Universities, Municipalities, Ministry of National Defense and other state institutions in our country, and the Ministry of Health is in the position of planner and supervisor in the delivery of services provided by public and private health enterprises (Karakaya, 2019:28-29).

In order for the health services offered to be efficient and to be taken into account by society, it must have gathered the basic characteristics such as quality, easy accessibility, continuity and effectiveness (Karataş,2019:24). Health service is produced and consumed at the same time, its quality cannot be judged before it can be used like any other product because its consumption cannot be postponed, which indicates that the health service results are variable (Mosadeghrad, 2013:204).

Health services have their own characteristics that distinguish them from other services (Şişman,2010:12-13):

- \* The wholeness of health services,
- \* Health services are in a social structure,
- \* The fact that health services are not a basic requirement,
- \* Failure to determine the demand for health services in advance,
- \* Changes in the price of health services do not affect demand,
- \* The ability of health services to have demand flexibility,
- \* Inability to provide homogeneity in health services,
- \* Lack of replacement of health services,
- \* Health services have a social purpose.

The demand for health service is mostly caused by the occurrence of symptoms of disease or disease. Therefore, the place, time, quantity and extent of the need for health services cannot be predicted (Tıraş,2013:128). Changing technology, information, rise in costs, increase in patient complaints and demands for good care cause health services aimed at providing the services needed by societies to individuals in the expected quality, time and at the least cost (Korkmaz and Çuhadar, 2017:73).

Health services offered to prevent disease or treat existing diseases aim to create a healthier and more productive society by eliminating the negative situation for individuals and society (Tıraş, 2013:128) and to ensure the continuity of their productivity by guaranteeing the right of individuals to live (Özkara, 2006:5).

#### **4. CLASSIFICATION OF HEALTH SERVICES**

Types of services offered in the field of health are covered in four groups as preventive health services, therapeutic health services, rehabilitative health services and health improvement services:

##### **4.1. Preventive Health Services**

The fact that preventive health services are in a more priority position in the delivery of health services than other types of services is due to the fact that protection is much less costly than treatment (Altay,2007:34). Preventive health services are services that aim to improve living conditions by minimizing the risks of various diseases that individuals and society may face in the short and long term and maintaining the potential for healthy living (Ertürk Atabay,2020:21).

Preventive health services are classified as preventive health services for the environment and preventive health services for the person:

##### **4.1.1. Preventive Health Services for the Environment**

Preventive health services for the environment aims to make the environment positive by eliminating, improving the physical, biological and chemical factors affecting the environment or by providing training to individuals to prevent deterioration of their health (Özbay,2019:6). Some of the preventive health services for the environment include drying swamps, supplying and controlling water resources, inspection of solid waste, combating vector and harmful creatures, food health, air pollution control, noise pollution prevention, control of radiologically harmful assets, occupational health (Sarp,2017:32).

Within the framework of environmental services, environmental health departments have been established and trainings aimed at preventing pollution types in the environment are given by experts such as environmental engineers and chemists.

##### **4.1.2. Preventive Health Services for the Person**

Preventive health services for the person which are offered by the people who have completed the training process in the field of health, such as physicians and nurses can be defined as the services which provide to individuals early diagnosis and treatment of diseases, maternal and child health services, family planning services, hygiene related and prevention services using drugs (Karataş,2019:26). Preventive health services for the person include services such as making individuals and indirectly society more resistant to diseases, ensuring treatment with no harm or minimal harm with early diagnosis methods in case of illness, and

immunization for immunity purposes, ensuring a balanced diet of individuals, education on health, family planning, school health, early diagnosis and examination at regular intervals for diagnosis (Şişman ,2010:14).

Preventive health services for the person are provided in places such as main children's health centers, public health laboratories, mobile health teams, health clinics.

#### **4.2. Therapeutic Health Services**

Therapeutic health services which are called as a whole of services covering the test, examination and treatment process with the illness of the individual (Ertürk Atabey, 2020:23) are one of the types of health services that are mostly applied on individuals and where the use of the service depends on the disclosure of individual demand (Özkara,2006:74). In preventive health services, individuals are taken precautions without being sick, while in therapeutic health services, services cover the treatment process of the individual after they become completely sick (Turhan,2015:17).

Therapeutic health services are divided into three groups as first, second and third-line treatment services:

##### **4.2.1. First-Line Treatment Services**

First-line treatment services which cover home or outpatient health services for the diagnosis or treatment of diseases (Yerebakan,2000:20), are known to be lower in cost compared to other steps (Sarp,2017:32).

Some organizations where first-line treatment service is delivered to citizens are health clinics, offices, outpatient clinics, tuberculosis war dispensaries and main-child health centers.

##### **4.2.2. Second-Line Treatment Services**

Health services that enable the diagnosis of diseases and inpatient treatment of patients are named as second-line health services. Some examples of institutions providing second-line health services in our country are provincial and district public hospitals, private hospitals and inpatient health centers affiliated with the Ministry of Health.

##### **4.2.3. Third-Line Treatment Services**

Third-line treatment services are offered for diseases requiring special treatment and requiring advanced technology in cases where second-line treatment services are not enough. Some of the places where third-line treatment services are provided in our country; university hospitals, education and research hospitals and private branch hospitals.

The steps in which health services are offered differ in terms of their content and financing. First-line health service provides the lowest cost and narrowest comprehensive services, while third-line health service provides the widest range of cost coverage. According to Çetiner and Özen (2019:238), in order to benefit from the health services offered effectively and in accordance with its purpose, the inter-step referral chain must be taken into account. It is possible to prevent individuals waiting for health service from piling up in health institutions by acting in a way that fits the referral chain.

#### **4.3. Rehabilitative Health Services**



Rehabilitative health services which include valuable work for both the person and the community, as there are efforts to ensure the individual's reintroduction in the national economy (Özkara, 2006:78) are the services which aim at ensuring that patients are reintegrated into society and thus strengthened economically, socially and culturally after the events especially that occur unexpectedly, such as accidents, wars and disasters, causing people to be disabled and/or hindering their work force and motivation (Altay, 2007:35).

Rehabilitative health services are classified as medical and socially rehabilitative health services:

#### **4.3.1. Medical Rehabilitative Health Services**

As a result of the medical rehabilitation services offered by the health sector and those working in this sector, the individual has the opportunity to continue his daily life and work, albeit at a certain level (Turhan,2015:19). Some of the services offered within the scope of medical rehabilitation services are services that enable the individual to move on with his/her life by re-strengthening the functioning organ with methods such as prosthesis in cases of organ loss or physical therapy (Topbaş,2020:14).

#### **4.3.2. Social Rehabilitative Health Services**

Social rehabilitative health services are social-level studies offered to re-adapt to the condition of the individual or patient or to public life (Sarp,2017:33). They cover the work in the form of providing a job opportunity to individuals who have been physically or psychologically damaged according to their situation or providing their care (Topbaş,2020:14).

Rehabilitation centers, rehabilitation clinics, private offices and nursing care centers constitute some of the environments where rehabilitative health services are provided.

#### **4.4. Health Improvement Services**

Services for the improvement of health are aimed at eliminating factors that can endanger a healthy life and have a negative impact on health (Sarp,2017:33). Health improvement services include services that raise the individual's awareness about living healthier both physically and mentally and allow them to give up their unhealthy lifestyle habits to the extent possible. Examples include health training centers, fitness centers and sports facilities where health promotion services are offered.

### **5. CONCLUSIONS AND RECOMMENDATIONS**

Health can be defined as the ability of the individuals to make the best use of their physical, psychological and mental potential and to be able to best reflect this on their interpersonal relationships in social life. In order to keep the health of the individuals at the best level and to maintain their life properly, they must have taken the necessary measures to protect their health. The protection of health and the necessary measures in this regard are also carried out largely with the help of health services. In this context, the quality of the services offered is of great importance.

The demands of individuals to live healthier and longer periods of time and positive developments in the field of medicine require an increase in the quality of service in the health sector at the same rate. Some of the health services are offered with the aim of providing preventive services before the individuals have encountered the disease. While therapeutic services include the process of diagnosing the disease, determining the treatment method and receiving the appropriate treatment in the process of the individual's illness, rehabilitative health services include the services provided to more easily adapt to the society and business life in the process after the person's health problem is eliminated to the extent that it can be. Health promotion services, which aim to protect and improve health in general, are an increasingly important type of health service.

The common goal of all types of health service is to improve the quality of life of individuals and ensure their continued productivity. It is of great importance to increase the quality of preventive health services in order to minimize the risks that individuals may face in health service and thus to reduce the costs for treatment in health services. The fact that the health services offered are on time and accessible to all segments of society has an effect that will increase the rate of satisfaction of individuals with the service. As the number of innovations in the field of health in Turkey increases, the quality and success of health services increases; it is thought that the health system will reach more advanced levels and this will contribute to the social and economic development of our country.

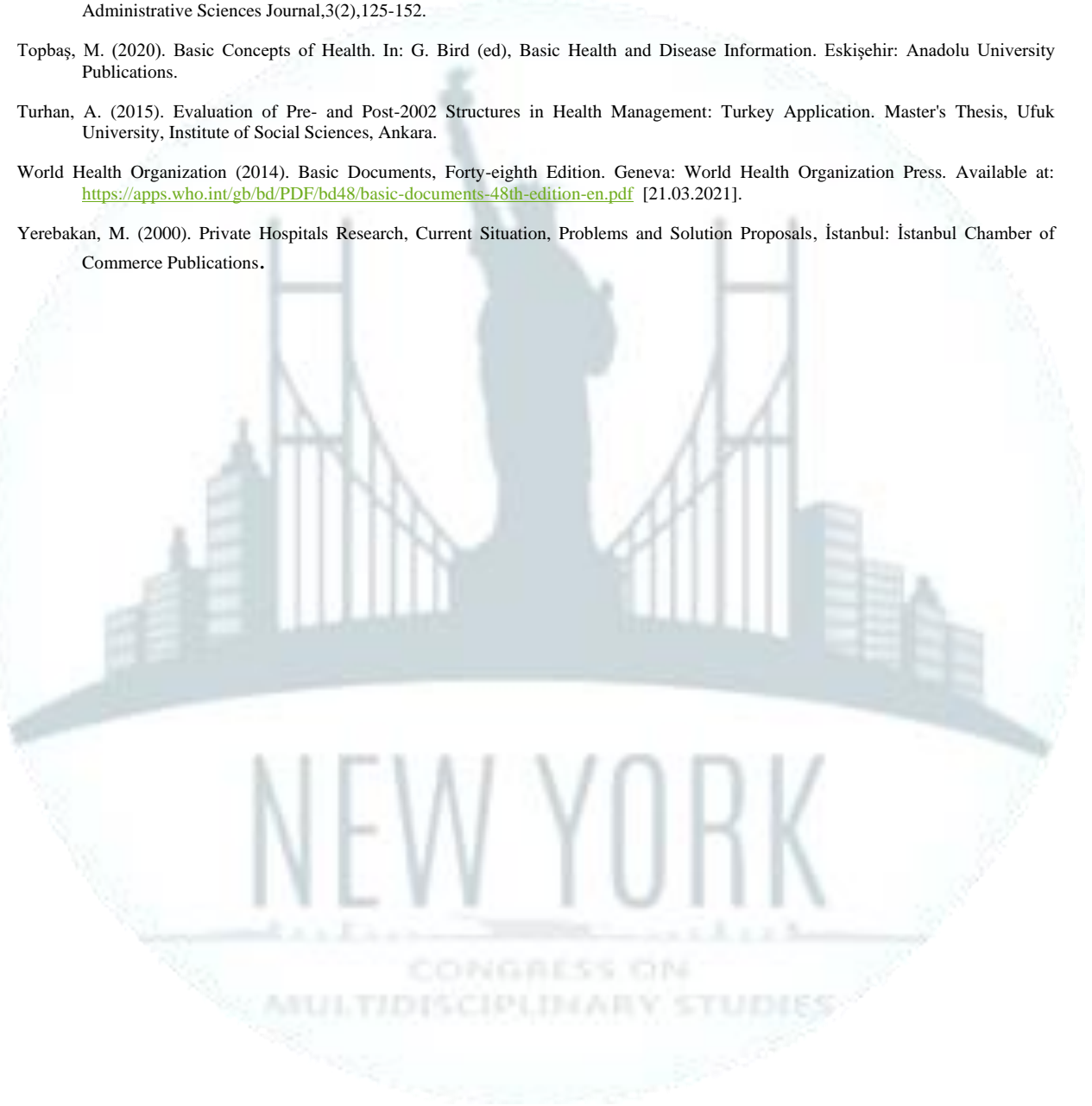
This study is limited by a general perspective of the types of health services offered in Turkey. In this context, it is proposed to carry out a study on the health services of another country other than Turkey or comparing the health services of a different country with Turkey. In addition, it is considered useful to organize informative and educational studies for individuals about the types of health services offered in our country and the conditions for benefiting from these services.

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## **DOMESTIC VIOLENCE AND WELLBEING OF WOMEN: A CASE STUDY ON LIVED EXPERIENCES OF BATTERED WIVES IN TAMALE, NORTHERN GHANA**

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### **Abstract**

Domestic violence is a global issue which cuts across age, socioeconomic status, sexual identity, cultural, racial and class distinctions as well as religious affiliation and national boundaries. Domestic violence is wide spread with serious consequences on the health and well-being of women. The constraints under which those women live ensure their oppression and place them in a lurch, circumstances which is largely ignored. This study explored the lived experiences of battered wives in northern Ghana, thus the health effects and coping strategies used during and after the violent relationship. To ensure a comprehensive analysis of data, a qualitative method and a case study approach was used. Snowball sampling was used to identify 20 interviewees outside the office of the Domestic Violence & Victim Support Unit DOVVSU. Well-situated battered women at DOVVSU were asked to identify who else to talk to. The study dismissed the assertion that battery is a problem of poverty or illiteracy as factors found to trigger battery included suspicion of promiscuity, infertility, traditional beliefs and domestication of women thus the focus of this paper. This study revealed that women experience greater socioeconomic insecurity, emotional trauma and health complications in the area. The study suggests intensive public education on the dangers of wife battery and the need for authorities to modify some traditional norms that justify wife battery. Therefore, battery may undermine socioeconomic development and threaten the welfare and survival of women as it pervades their physical health and emotional fabric.

**Keywords:** Male perpetrators, complications, domestic violence, human rights, infertility, aggressive

### **INTRODUCTION**

Men and women are violent in the domestic sphere but men are however more aggressive and are likely to inflict greater injuries or harm than their female counterparts. Studies reveal that women are as aggressive as men but the difference is that men beat up women and simply inflict more and severe injuries than those employed by women who do the same to men (Bartolomei, 2015; Adebayo, 2014; Benewaa, 2020). For instance, the United Nations Development Programme reported in 2000 that one woman in every three was subjected to violence in an intimate relationship. Recent studies corroborated and that these women have been beaten, coerced into sex, or abused in their lifetime, with the abuser usually known to them (Bartolomei, 2015; Sikweyiya et al., 2020; Ogum Alangea et al., 2020; Adjah, & Agbemafle 2016). The most widespread form of domestic violence is wife battery which is

prevalent in families with low income and unemployment, are isolated from kin and community, and particularly those experiencing a prevalence of high job losses in the cities (Benewaa, 2020; Finnbogadottir et al., 2014; Adjah, & Agbemafle, 2016). Globally, wife battery is the most common type of violence against women and its worldwide prevalence is estimated to be high (UN, 2006; Mishra et al., 2014; Bhatta, 2014; Adebayo, 2014; Ankama et al., 2014; Adu-gyamfi, 2014; Mohammed, et al., 2021). The former United Nations Secretary-General, Kofi Annan, opines that wife battery is most pervasive and knows no boundaries of geography, culture or wealth, thus making it a global problem. It is present everywhere, regardless of culture, ethnicity and socioeconomic status (Pool et al., 2014; Sikweyiya et al., 2020). Globally, it is viewed as a wide reaching family and social issue affecting the socioeconomic, health, cultural life and emotion of people (Finnbogadottir et al., 2014; Torres-Rueda et al., 2020; Sikweyiya et al., 2020).

There is the international concern over domestic violence as a crime against humanity. For instance, the United Nations General Assembly promoted the International Decade for Women (1975 – 1985), paving the way for gender activists to advocate for change. They successfully gained the recognition of women's rights as human rights at the United Nations Conference on Human Rights held in Vienna, Austria 1993. Other platforms were the International Conference on Population and Development in Cairo in 1994, the World Summit for Social Development in Copenhagen in 1995, the Fourth World Conference on Women in Beijing in 1995 in China and the United Nations Conference on Human Settlement in 1996 were instances this issue received global concern and recognition (Salazar, 2014; Adu-gyamfi, 2014; Torres-Rueda et al., 2020). These conferences declared wife battery as a violation of women's rights during the Beijing Declaration and Platform for Action, an issue of global importance. The United Nations General Assembly later adopted a declaration which has been accepted around the globe as the official definition of wife battery (Adu-gyamfi, 2014; Meekers et al., 2013; Adebayo, 2014; Benewaa, 2020).

Wife battery is a serious violation of human rights which is not often discussed openly in society although it raises a lot of concern globally (Ogum Alangea, et al., 2020; Bartolomei, 2015; WHO 2013). As a result, it is very difficult to obtain accurate data on forms of wife battery due to factors like family privacy and the reluctance of law enforcement agents towards family disputes. It is also indicated that wife battery is the most under-reported of all crimes which is linked with the belief that battery is normal in marriages (Bhatta, 2014; Adu-gyamfi, 2014; Gupta et al., 2013; Stark et al., 2013; Bamiwuye & Odimegwu, 2014). Similarly, some researchers think that cases of domestic violence, particularly wife battery, are not reported because of the stigma, shame, fear of retaliation and the potential loss of custody of children as construed by women (Shrestha, 2014; Sikweyiya et al., 2020; Adjiwanou & LeGrand, 2014;). It is important to note that no one has immunity to battery. The circumstances at various environments can trigger battery as such victims might have different experiences due to their economic status, geographical location, family roles as well as community ties. Besides, survivors of wife battery who are reluctant to utilize the criminal justice support are hardly visible in the study area so little is known about their well-being. For the purposes of policy and interventions, it is imperative to look at these causal factors as they exist differently among people in the communities.

## **RESEARCH METHOD**

A qualitative research approach answers the questions of how and what happens, exploration and research topics that require answers in detail (Creswell, 2013). This approach is useful when conducting causal studies on a culturally sensitive issue. It seeks answers to

questions by examining various social settings and the inhabited individuals. A qualitative inquiry is often used to explore areas about which little is known and to understand human behavior that is affected by the meanings that people construct through their personal experiences (Merriam & Tisdell 2015).

Case study provides explanations to why certain incidents occur and also evaluates the individual to open the way for discoveries. Therefore, this study employed explanatory case study because it is useful when conducting causal studies which involve in-depth data collection from multiple sources of information (Creswell, 2013).

### **Population and Sample**

According to Barbie (2010), the population should be the first consideration when searching for the sampling frame, which is a list of the elements composing the study population. The sample comprised of ten married Muslim women who met the research selection criteria. All of them experienced battery or have been abused by their husbands. The researcher interviewed them at different confidential locations including the office of Domestic Violence and Victim Support Unit (DOVVSU) at the Tamale police station. Some respondents were selected and interviewed outside DOVVSU at different confidential locations using snowball technique.

### **Unit of Analysis**

The study focused on married Muslim women who have been beaten by the husband, thus women who have experienced battery and can speak English/Dagbani. The respondents were able to articulate their experience and report battery at the office of Domestic Violence and Victim Support Unit (DOVVSU) at the Tamale police station. The target was married women of 18 years and above.

### **Procedure and Instruments**

A tape recorder was also used by the researcher during the interview. Apart from recording of the interview, the researcher also took notes during the interview using interview protocol. The protocol is a predetermined sheet on which one logs information learned during the observation or interview.

### **Data Analysis**

Thematic analysis was employed for data obtained from the field. The researcher transcribed the interview verbatim for the analysis of the data. Three aspects of data transformation suggested by Walcott (1994): description, analysis and interpretation of the culture-sharing group. The method of qualitative thematic analysis across the cases, known as a cross-cases analysis was used.

## **RESULTS**

The causes of wife battering in Ghana are many and varied depending on the types of abuse and location. Stereotypical roles and traditional attitudes towards women help perpetuate battery which constrains the ability of married women to exercise choices that would reduce the agony of battery. Below are some themes of the causes of battery that emerged through the interviews with the respondents in Tamale.

### **Infertility/Barrenness**

Although a nationwide phenomenon, causes of wife battery vary from region to region and from community to community. In many parts of Ghana, including the study area, the inability of a woman to bear children is a major cause of domestic violence. One respondent shared what the mother-in-law told her on behalf of the son (the husband), that the main objective of the exchange in marriage between two families is to produce children. Filomina (40) shared this: “This woman is not appreciative with the two children we are blessed with and is always telling me to produce for she needs grandchildren and not showing off a woman who cannot produce children is just a waste of resources and family riches resources, which is not even there, ‘my son wants you to make babies for him not fashion, produce babies’”. “The cause of our situation is due to the interference from my mother-in-law (this woman) in our marriage ‘I want grandchildren I want I want I want’ and then my husband also took it instead of him to reason with me he beats me kick and call me useless thing good for nothing woman”

A woman’s status as a wife declines in some communities or families when she does not bear children which may lead to battery or even divorce. The study reveals that wife battery is a sad scourge faced by women without children in Ghana irrespective of age, education, religion, class or tribe. Some husbands have ‘preferred’ children so the woman is not only to bear children but the right kind of children. For instance, giving birth to female children is considered unacceptable to some husbands, particularly those from traditional homes. As such, men who prefer male children may batter the wife for the offence with either the second wife or a replacement by another woman who can produce male children. The experience of Filomina is an indication that the inability of women to conceive a child could be an excuse for wife battery by the husband in the study community.

The respondents revealed barrenness as another cause of battery by the husbands. So women who cannot produce children for the husbands are suspected of barrenness and are treated badly which explains why women, in particular, are still abused. The belief in most Ghanaian communities, including the study area, is that lack of children in the family is the woman’s fault or misfortune and exempts men from any accusation of being the cause. Consequently, a woman in marriage without children has little chance of survival and usually ends in wife battery before divorce or separation. Married women are always suspects whenever the issue of barrenness surfaces, even without medical check-up for both to establish the problem or as evidence. “The cause of this behavior is that my husband is planning to marry another woman so anytime I say I ask him about this lady he gets angry and to defend himself he attacks me out of anger he one day reacted rethought that ‘yes I have gotten a better one’ means that my husband has found a new woman he considers better than me, in what way I cannot tell. When my husband started having an affair with this woman, I became enraged and once ...”

### **Domestication of Women**

Most men who batter their wives do not want them to work outside or take long hours outside or in the market or do things that will make them independent. Such men prefer to have women stay in the house to produce children and look after the house. So women who are industrious and do not yield to the idea of staying indoors or at home are reprimanded violently. One respondent shared with the researcher that the cause of the problems at first was failed promise to allow her to further her studies after marriage but the husband wanted her to stay at home to bear children. Lagfu (40) said that: “... Education, before we married he promise that immediately after marr our wedding whether with child or without child I will continue my education but he didn’t want to hear his promise again did not want to fulfil so that was our first misunderstanding”.

Lagfu indicated that after college, the second problem was the birth issue; the husband always complains about the wife delaying in giving him children in comparison to other couples who married at the same time. This means if Lagfu had also stayed at home she would have been having children like their colleagues. The husband told her that and she commented: “Colleagues have two or more kids and we haven’t because of my selfish ambition school school all the time and that where will I go with my education without children all sort of abusive talks so this leads to him going for going after other women because I cannot give him many children at the right time”. It was clear from the respondents that the roles of good mother or wife are cultural norms which they widely accepted and internalized. This is especially true among Ghanaian families where women are socialized and highly expected to be wives and mothers. In addition, preservation of traditional family structure and values are highly endorsed in many Ghanaian societies.

### **Sexual Gratification and Accusation**

The study reveals that, traditionally, men stamp their authority when it comes to sexual issues as married women do not have rights in that regard. Some of the respondents said that it is disrespectful for a woman to report her own husband of sexual activities perceived to be battery which cause them to internalize sexual act perceived to be battery. Besides, the women stated that after a day’s work in the house, husbands still expect them, as traditionally, to prepare the main family meal and to be available at night to satisfy the husband’s sexual desires; denial normally provokes battery. It is even unthinkable of any normal married woman to deny the husband because it is considered a duty know to every married woman. The only time the women have rights over sexual matters, is when they are menstruating or nursing a baby. Such conditions exempt them from sexual intercourse because the husband cannot make legitimate advances for fear of criticisms. Kande (36) said her husband did not even want to allow her to breastfeed and continued to harass her the following way: “The cause of this beating is as a result of my refusal of his sexual demand, his sexual advances were turned down especially when I had the baby it happened during my first baby and happened this time, this time is worst I asked for divorce for the sake of my life I don’t want to die now being in the marriage means losing my life I don’t think it is the best for me”. Dora (40) also suffered the same way as quoted below: “I was beaten..... He didn’t allow me to sleep whole night. He forced me to have sex with him and ..... me terribly. I asked why he was treating me like that but he just did not bother. I really felt so humiliated.... and so degraded. I am educated, come from a respectful family, and I do not deserve to be treated like this”.

Moreover, promiscuity is revealed as another cause of abuse as some of the respondents often cited it as the cause of the unbearable situation they found themselves in. Some of the respondents complained about the husbands’ usual suspicion of cheating and capitalize on that as an excuse to batter them. The wives further complained and wished they could object to the extra-marital affairs of the husband. The man marrying a second or third wife is another serious condition that most often degenerates into violence and eventual battery even though it is the lesser evil compared to being a concubine. As indicated above by the respondents, husbands justify their violent behavior by citing suspicions of the wife cheating which leads to severe battery by the suspicious husband. With this, the superiority of the husband in the study area is maintained through the practice of polygamy and/or restriction of movement of women.

This case implies that polygamy may also contribute to wife battery considering the unequal power relationship between husbands and wives in marriage in Tamale Metropolis. The respondents with polygamous husbands narrated the sort of unnecessary competition the



husbands create which sometimes leads to animosity between them and eventual physical battering of the less favored wife. The cause of our situation is hypocrisy, my husband and the younger brother are not sincere, especially my husband it is he who has given me out for to be beaten a *yi saagi amang kobo be ni daa yoli* everything about me is bad but that of my colleague of the same thing is good, my colleague yes younger husband's wife does not do anything has no job, no business, she sales nothing and jealous, too envious of me, she uses proverbs to insults me indirectly she will direct the proverbs meant for me to her child and when I am fed up with the insult I confront her, I also use insulting proverbs and it result into fight because if I use yes proverbs then follow beatings from my husband's brother when she the second wife complains to him. He takes side he supports her he supports anything she says negative reactions of women to the husband marrying other women are grounds for battery. The negative repercussion of polygamy for women are sexual and psychological negligence as violent rivalry of wives and if a husband is biased and takes sides to abuse one in favor of the other(s). Bonsudung (44) shared with the researcher the route of the battery as shown below: "The cause of this madness and insults all the ... is that I resisted his marriage to the second and the third wives, you have not been able to cater for our needs all the six children are in school you are not able to meet their needs both at school and home". When Bonsudung reminded her husband to wait until their economic condition is improved so that he can go for as many wives as he wants but he defied the advice and went ahead to marry a second and then a third wife. With the second wife, the husband only informed Bonsudung the day she was formally brought to the house.

#### **Traditional Beliefs and Practices**

The troubling aspect of wife battery is the traditional and cultural acceptance of battery as a corrective measure as well as the husbands' right to correct the wife. The study reveals that some of the respondents shared the notion that the husband has the right to discipline the wife physically. Their responds indicated that any behavior by the wife perceived not to be in conformity with the traditional norms about the roles and responsibilities expected of married women is a justifiable cause for battery. So in such a situation, the informants stated that nobody within the community would sympathize with them or intervene when battery is the result of disobedience of traditional norms. By implication, the privacy of the family is immunity to the husband from public criticisms, formal intervention from NGOs, the police as well as criminal charges. The practice of patrilineal system legitimizes the authority of the husband and as the head of the family who is supposed to protect and control the members with whatever means deem appropriate.

The interview with respondents reveal some common traditional behavior and activities expected of married women like preparing the main meal for the family, caring for children if any, seeking husband's permission before going out, avoiding argument with husband and meeting the sexual demands of the man. Neglecting the wife and children are also the causes of wife battery as stated by some respondents. Some of the men in the study area paid much attention to women outside at the expense of the wife and children and when the women complain of inadequacy of money for their upkeep it may result in battery. "Women outside' refers to concubines and mistresses who are not traditionally or legally recognized as their wives but the men are in intimate relationship with them. Some men hide it from (it is not described as cheating in the traditional set-up) the wife but others engage in such relationship openly and sometimes behave in certain ways to hurt the feelings of the legal wife". This sometimes results to the men making the girlfriends, mistresses or concubines their second wife without consulting the first wife.

### **Coping Initiatives of Battered Women**

This section discusses the themes that emerge out of the informants' responses on the initiatives that they introduced to mitigate the effects of battery on their wellbeing.

#### **Resort to Divorce**

The idea that women subjected to battery have the courage to ask for divorce from the husbands in order to avoid further battery has received support as indicated by respondents. Given that battery rates are rising in the study area; it can be expected that the number of women seeking for divorce<sup>21</sup> to also increase. Some informants recollect the number of times they walk away, flee the matrimonial homes to their mother's house, move out and at the end seek for divorce. With this initiative, women make plans to move away from the husbands just to ensure safety either in the marriage or in divorce. Kalugi (38) did it the following way: "I could not no longer tolerate, withstand or accept such abuse I run to my people after all men in this part of the country do not compensate women in any way so why should I waste time only to be killed or maimed... women can get assistance from DOVVSU but some husbands put fears in them [wives] so they cannot report this to the police or DOVVSU but if you are not a native sometimes some of them do report their husbands but a native indigenous woman unless you want divorce".

#### **Personal Efforts**

The women resort to personal efforts like positive beliefs, problem solving and employing social skills to mitigate the negative effects of battery on their social status. Most of them indicated of being more comfortable relying on their own effort first before seeking any assistance. They tried to change the situation through problem solving, gathering information and carefully looking at available options as well as making a choice and taking action. Damduu (46), a professional teacher told the researcher her way of coping: "What I do to stay strong and live better is to concentrate on my profession my profession, register for courses to enhance myself in terms of broadening my knowledge and looking forward for a serious more serious man if I will remarry at all and look forward to remarrying I'm wiser I have learnt my lesson and that will that can guide me in my future search or selection of husband". Some informants said they sometimes rely on faith through prayer, meditation and faith in God. For example, one woman Dora (40) reported that: "she: ... tried to understand my husband sometimes he will apologies and promised not to behave that way ... yes to lay his hands on me again and I will also have will nurse hope that one day one day it will stop ...he promised to change and will hurt me no more. I followed him home thinking that [dipa taali, di yi pasheli o ni tagi o biehighu] never mind, probably this time he will change". They made these efforts to change their feeling about battery but sometimes reach out for help from others if their initiatives fail to yield the desired goal. Otherwise, this personal effort is used to improve the abusive situation.

### **DISCUSSION**

It is quite clear that the Tamale Metropolis is a patrilineal society where by tradition men are considered head of the family irrespective of age which relegates women to subordination, making them vulnerable to sexual, physical and emotional battery. As a patrilineal society, the controlling behavior is shown in the socio-cultural and economic life of the people just to maintain the status quo of the husbands. The data from the field suggest that wife battery in Ghana is attributable to these socio-cultural attitudes that condone male domination and women subservient. The factors found in this study are similar to several other studies done in Ghana, Côte d'Ivoire and other parts of the world (Adu-gyamfi, 2014; Guzzo, 2014; Pérez, 2014). At the traditional household level, marriage life is based on gender power structure which gives rise to wife battery with its negative consequences on the

socio-economic, health and emotional standing of women. The study reveals further that in marriage the woman surrenders her entire body and soul to the husband which grants them – the husband - the audacity to batter the wife if she fails to fulfil the traditional duties assigned. These findings are in line with others that relate to poverty and gender-based victimization and domestic violence (Sikweyiya et al., 2020; Adjah, & Agbemafle, 2016; Clarke et al., 2014). For instance, in marriage the woman is duty-bound to care for the family, particularly the well-being of the husband and children. With this belief, married women in the Tamale Metropolis endure battery and tolerate every challenge from the husband and immediate family members as a test of womanhood. This could be explained in light of traditional family life education which has supported the rigid patrilineal power structure that makes the husband the head to the wife and children.

Another explanation could be the mother's way of socialization and social factors, where the daughter is taught to obey rather than provoke the husband's anger making the girl-child docile and submissive (Apiribu et al., 2020; Adjah, & Agbemafle, 2016; Sikweyiya et al., 2020). This encourages and compels women to submit to battery and acceptance that it is all right to be battered in marriage. Women who resist this inhuman treatment are labelled as disobedient wives and are punished, causing devastating effects on their social and economic life. In effect, the subordination of women eventually makes them vulnerable leading to the unappreciable position and status these women are accorded. On the contrary, Pierotti, (2013) found that women in most of the countries studied were more likely to reject wife battery during the first decade of the 2000s. In light of the symbolic interactionist perspective, sociocultural norms and values are learned through the process of socialization to guide human behavior (Adjah, & Agbemafle, 2016; Torres-Rueda et al., 2020; Wilson et al., 2014). For the symbolic interactionist, the meaning of objects to individuals is crucial because everybody acts toward things on the basis of the meaning that those things have for them (Harrelson, 2013). For that matter, the way individuals perceive events and objects, for instance marriage relationship, affects the way the husband and wife behave.

Moreover, fear of the husband and safety of the loved ones are reported as the most predominant experience expressed throughout the interview which compelled the majority of the women to stay away from people who could have helped them. These women could not reach out to people for needed assistance because of the threats from the husband to harm anyone who intervenes. Such behavior and attitude make the women contain the violent act rather than jeopardize the safety of loved ones. This paves the way for husbands to sabotage the wives' efforts by controlling their movement and interaction thus limiting any contacts outside the marriage. Studies found other issues like fear of stigma and gender discrimination which cause severe stress and suggest the need for intervention to reduce poverty and negative health and emotional consequences (Sikweyiya et al., 2020; Torres-Rueda et al., 2020; Shrestha et al., 2014; Ogum Alangea, et al., 2020; Verelst et al., 2014). So in an attempt to curtail the life changing opportunities for the women, husbands put up unacceptable and rude behavior just to alienate the wives from their family and friends. This results in loneliness which affects the sleep pattern and brings about recurrent nightmares and may make the women addictive to certain stimulants or increases the dependence on the husband for the non-existent socio-economic and emotional support.

As stated earlier, it is clear from the study that traditional female role conditioning already prepares the minds of women for putting the welfare of the family before theirs, thus placing them in the position of sacrifice. The family is considered the principal responsibility for the majority of women in the study area. For instance, women in Ghana in general and Tamale in particular identify themselves with family members, as mother to her children and

that of colleagues, a wife to the husband and all the siblings and even distant relatives after marriage. As such, the message is transmitted at tender age that welfare of others must always be first before theirs in fulfilling the traditional role of nurturer and caretaker. Studies found that attitude, role responsibility, economic and social gender inequities, together with norms, polygamy and expectations about how men and women should behave make the majority of women to keep silent and make little attempt to defend themselves (Ogum Alangea, et al., 2020; Apiribu et al., 2020; Gupta et al., 2013). The family is considered a source of personal identity, point of reference and emotional security in the study area as such so much emphasis is put on the concept of family honor above every member. The wisdom behind is that the individual behavior and conduct are seen as reflection of the entire family. Therefore, the preservation of family image is emphasized by controlling individual behaviors, especially women to protect the dignity of the family. As a result, wives feel reluctant to disclose incidents of battery because of the fear of humiliating the family of origin. Obviously, the significance attached to the family at the expense of any individual affects the social life of these women leading to ill-health and incoherent interaction on family and public issues. This also result in emotional effect, family disruption, strain on relationships, alterations in self-esteem and deterioration in physical and mental health (Dickson, Ameyaw, & Darteh, 2020; Adjah, & Agbemafle, 2016; Lasiuk et al., 2013). Generally, wife battery places the integrity of the family in question as husbands, wife and children may leave the house, may be killed or disabled in the process. Sometimes family members, most often the wife, may lose valuables during the fight and may lead to either separation or divorce.

It is pointed out that husbands who want to justify act of abuse level accusations of cheating, unfaithfulness and infidelity against their wives. These are unsubstantiated allegations meant to destroy the reputation and social support system by criticizing and accusing the women and people close to them. Such acts prevent the women from spending quality time with members of the society thus discouraging them from being close to anyone. These behaviors go beyond isolation to limiting access to and use of telephone facilities, restrictions on health care, friends, school and even employment opportunities which affect socio-economic interactions. With these tactics, the husband becomes the center of the wife's well-being since people who might help her escape from socio-economic maltreatment are accused and threatened. This study is in support with earlier findings that battery alone does not constitute sufficient grounds for a woman to leave her marital home but has to be complicated by infidelity, sexual demands and lack of care for the children as well as infertility (Gupta et al., 2013; Stern et al., 2020). In such situations, women seek help from their own family or clan and in extreme cases from the chief or head of the community. In ideal situations they have to exhaust the traditional channels of arbitration by complaining to the head of the clan who tries to reach amicable solution; if not successful, then invites other male adults of the clan to contribute ideas. Most often the question is what might have provoked the husband's reaction which results in forced confession and guilt feeling by these women. In most scenarios the women end up rendering unqualified apologies for wrongful behavior. So women who go beyond the traditional arbitration level to the police DOVVSU are likely to be divorced which is not strange to the women in the area. For instance, the majority of the respondents did not report the physical battery of the husband to DOVVSU but reported either negligence of children's education and upkeep or the disturbance of the second wife.

The experience of strain in the marriage results in negative emotional feelings like anger and peevishness due to the adversity imposed by the husband and resentment for unjust treatment by husband and kinsmen. In Ghana, disintegration of marriage used to be unusual due to the concerns parents have about the negative effects of divorce and single parenthood.

However, wife battery has changed the basis of social relationship in the family from loving and caring to hatred and jealousy, hence divorce, single parenting and its negative consequences. In such situations, the couples are likely to have personal maladjusted and delinquent children, considering the continued skirmishes between the parents. For instance, the most painful and disturbing aspect of disruption in marriage as revealed by the respondents include truancy and teenage pregnancy. Besides, several studies highlight the outcomes and consequences of wife battery in relation to single parenting (Böhm, 2020; Olsen et al., 2014; Finnbogadottir et al., 2014; Meinc et al., 2017; Omoniyi-Oyafunke et al., 2014). These outcomes are experienced because guidance from both parents which is very important in child up-bringing is unfortunately missing in cases of single parenting. It means that the effects are not only on the women but also how the perception of the children is shaped about issues in the single parent family. Ideally, the traditional upbringing of children in the Metropolis must include both parents but wife battery has compromised this noble practice in the area creating socialization problems. As such, most of the children of violent parents go through negative ordeal considering the delicate and sensitive nature of their experience. Furthermore, most single mothers without jobs or source of income for sustenance are confronted with problems of childcare. The most concern expressed was children's education because little or no attention is given by some of the current or former husbands. It is extremely difficult for those with two or more children to cope economically on their own without any support which in turn affects their state of emotions and condition of health. This implies that spouses are unable to play the normal parental duties like the usual roles of social control and socialization in the development of the children during and after battery.

### **CONCLUSION**

It is common in the study area to have women still engaged in most of the unpaid jobs at home and men occupied paid work which leads to women economic dependence and control. This related to the social expectation enforced on women to be obedient in marriage and are always reminded of their duties at home results in economic or sexual coercion. As indicated, wife battery which is still seen as a private issue undermines women's rights. It should therefore be treated as a public and societal problem. The ideal way to handle this seemingly public and societal problem is education on gender equality and gendered stereotypes in everyday lives could be done in relation to economic and sexual control to discourage the attitudes of victim blaming. Besides, there must be a deliberate attempt to design activities to address issue of survivors blaming themselves for being abused or battered. Quite apart, a patriarchal society like the study area need a multidimensional approach that integrate human rights into traditional set up and basic schools' curriculums to prepare the minds of the younger ones on the respect of equal rights for all irrespective of gender. Furthermore, research is needed on targeted awareness creation and on designing of practical empowerment and education activities for pupils, students and the general public to understand the various forms of domestic violence, particularly sexual and economic abuse. Better still, education on the dangers of wife battery and the need for authorities to modify some traditional norms that justify wife battery is crucial. These could contribute to promote zero tolerance for wife battery and to strengthen gender equality in the study area. In turning misfortunes to fortunes, women and girls who surfer abuse should be described as survivors and not seen as victims to serve as a morale booster and source of empowerment. Initiatives to enhance the health, emotional and socio-economic life of married women amidst battery is very crucial. It is a fact that vibrant emotional and socio-economic developments of marriage women would not only improve their lives but might infuse spirit of harmony within the family.

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## **THE TAX ON WEALTH OF 11 NOVEMBER 1943, THE SCOPE AND THE APPLICATION OF THE TAX**

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### **Abstract**

The Second World War which occurred between the years of 1939 and 1945 impacted a vast area. All of the countries, regardless of which they were belligerent or not, felt the adverse effects of the war. Turkey managed to maintain its neutrality by means of the balance of power policy. Yet, it was one the countries which was affected by the war. This was because the war approaching its borders compelled Turkey to stand by as if it would fight. Accordingly, a considerable part of the employed population was conscripted with the declaration of mobilization. Production in Turkey declined, black markets thrived, and prices rose substantially. Wanting to bring the situation which emerged as a result of circumstances brought about by the war under control, the Turkish Government took preventive measures in several areas where it was deemed necessary. The Tax on Wealth was one of these measures. Taxes levied in the existing tax system until that moment had been predominantly collected from wageworkers. High-income earners and wealth-holders had been kept outside of this system. For this reason, the Government deemed the application of the Tax on Wealth appropriate in order to levy a tax on the untaxed section. In this study, the emergence of the Tax on Wealth, its scope, the revenue generated to the government, and its abolition were studied. The British National Archives, the General Directorate of State Archives of the Republic of Turkey, the Official Gazette, books, and articles were utilized during this study.

**Keywords:** The Second World, Turkey, internal politics, the Tax on Wealth.

### **INTRODUCTION**

The Second World War was a great war that deeply affected many countries and people in vast geography. Its effects were felt for a long time, both during and after the war.

The Second World War officially started<sup>1</sup> when Germany attacked Poland<sup>2</sup> on September 1, 1939, and then Britain and France declared war on Germany in accordance with the guarantee<sup>3</sup> they gave to Poland on September 3. Germany which expanded the battlefield shortly after the war had begun attacked Norway and France. After establishing his sovereignty in these regions, it attacked England this time, but when it was not successful in the air strikes on London, it turned its direction to the East. Desiring to dominate the Balkan geography before attacking Soviet Russia, Germany started bombing Belgrade on April 6, 1941.<sup>4</sup> These states surrendered when Germany had attacked Yugoslavia along with Hungary

<sup>1</sup> Türkkaya Ataöv, İkinci Dünya Savaşı, Ankara: Birey ve Toplum Yayınları, 1985, s. 83.

<sup>2</sup> A.J.P. Taylor, İkinci Dünya Savaşının Kökenleri, çev. Hakan Abacı, İstanbul: Alfa Yayınları, 2012, s. 347.

<sup>3</sup> It was the assurance given by Britain and France to Poland on March 31, 1939 to protect its territorial integrity. Mustafa Yahya Metintaş, "İkinci Dünya Savaşı Başlarken Türkiye'nin Dış Politikası (1939)", Eskişehir Osmangazi Üniversitesi Türk Dünyası Uygulama ve Araştırma Merkezi Yakın Tarih Dergisi, Cilt 4 Sayı 7, 2020, s. 69. s.s. 54-82.

<sup>4</sup> Büyük Savaş: İkinci Dünya Savaşı Tarihi (1939-1945), çev. Fikret Arıt, İstanbul 1974, s. 157-163.

on April 6, and Bulgaria and Greece on April 17.<sup>5</sup> Now, the necessary conditions had been created for the British to be expelled from the Balkans and to use German air units in the Eastern Mediterranean.<sup>6</sup> The jump of 3,000 German paratroopers to Crete at 08:00 on May 20, 1941<sup>7</sup> ensured German domination in the Balkans and the connection between the Aegean Sea and the Balkans.

The complete settlement of Germany in the Balkans caused anxiety in Turkey. Because there were rumors that Germany would attack Turkey after the Balkan domination, the Soviets taking advantage of this situation would also occupy the Anatolian geography and as a result, Turkey would disintegrate like Poland.<sup>8</sup> With the great fear caused by the rumors, Turkey started to concentrate its troops in Thrace and went into a defensive position.<sup>9</sup> Moreover, the rumors have brought Turkey and the UK closer to each other. Concerned about the Turkish-British rapprochement, Hitler sent a letter to President İnönü and announced that Germany was not in an aggressive manner against Turkey and that the distance of its armies to the Turkish border would be 60 km.<sup>10</sup> Germany, which promised not to attack Turkey but to help, intended to sign a treaty in return.<sup>11</sup>

For Germany's agreement offer, Turkey stated that it would not make any territorial demands, that Germany would not make any demands that would have a negative effect on the Turkish-British alliance, and that it would not be able to make an agreement that includes a secret protocol. Also, if Germany guaranteed that it would not attack Turkey, Turkey would be neutral in any war Germany is in and would not attack Germany. It could make a commitment in this regard.<sup>12</sup>

It was enough for Germany to declare that Turkey would be neutral towards Germany.<sup>13</sup> Taking action to sign the treaty as soon as possible, Germany initiated the negotiations. The talks carried out by the ambassadors between 8-18 June 1941 ensured an agreement between the two countries.<sup>14</sup> After the agreement, on June 18, 1941, the Turkish-German Friendship and Non-Aggression Treaty was signed at the Ministry of Foreign Affairs in Ankara.<sup>15</sup> The agreement removed an attack on Turkey from the Balkans and the obstacle to Germany's attack on Soviet Russia. A few days after the treaty, Germany began to occupy Soviet

<sup>5</sup> Türk Dış Politikası: Kurtuluş Savaşından Bugüne Olgular, Belgeler, Yorumlar, C.I 1919-1980, ed. Baskın Oran, İletişim Yayınları, İstanbul 2009, s. 440.

<sup>6</sup> Hans Adolf Jacobsen, 1939-1945 Kronoloji ve Belgelerle İkinci Dünya Savaşı, çev. İbrahim Ulus, Genelkurmay Basımevi, Ankara 1989, s. 331.

<sup>7</sup> Basil Liddell Hart, II. Dünya Savaşı I, çev. Kerim Bağrıaçık, YKY, İstanbul 2003, s. 187.

<sup>8</sup> Oral Sander, Siyasi Tarih 1918-1994, Ankara 2015, s. 151.

<sup>9</sup> Selim İlkin ve İlhan Tekeli, İktisadi Politikaları ve Uygulamalarıyla İkinci Dünya Savaşı Türkiye'si, C.II, İstanbul 2014, s.196.

<sup>10</sup> Sander, Siyasi Tarih 1918-1994, s. 151.

<sup>11</sup> In the agreement offer, it is stated that all interests and demands of Turkey will be dealt with fairly, that they are ready to help Turkey on the Straits if Turkey wishes and to negotiate various economic and political issues with Turkey, that Germany will provide the necessary support for the security zones, and that the Aegean Islands on the Anatolian coast can be left to Turkey. In return, Germany asked Turkey to allow it to pass war supplies, not soldiers, only in accordance with international trade rules. In addition, Germany will provide war equipment to Turkey in order to improve the friendship and security between the two countries, but its condition in this regard is that Turkey will not use these weapons against Germany. He added that with the agreement, no demands that would harm Turkey's obligations would be made. Raymond Cartier, İkinci Dünya Savaşı, C.1, İstanbul: Meydan Larousse, 1975, s. 310-311.

<sup>12</sup> Yavuz Özgüldür, "İkinci Dünya Savaşı'nda Türk Dış Politikasını Belirleyen İki Antlaşma ve Sonuçları: Türk-İngiliz- Fransız Antlaşması ve Türk-Alman Dostluk ve Saldırmazlık Paketi", Altıncı Askeri Tarih Semineri Bildirileri, C. II, Genelkurmay Basımevi, Ankara: 1999, s.90.

<sup>13</sup> Cemil Koçak, Türkiye'de Milli Şef Dönemi (1938-1945), C.I, İstanbul: İletişim Yayınları, 2012, s.580.

<sup>14</sup> For Papen's correspondence with the Ministry of Foreign Affairs, see: Büyük Belgeler Dizisi, İkinci Dünya Savaşı'nın Gizli Belgeleri: Almanya Dışişleri Bakanlığı Arşivinden Almanya'nın Türkiye Politikası 1941-1943, İstanbul: May Yayınları, 1968s. 26-35.

<sup>15</sup> Kamuran Gürün, Dış İlişkiler ve Türkiye Politikası (1939'dan Günümüze), Ankara Üniversitesi Siyasal Bilgiler Fakültesi Yayınları, Ankara: 1983, s.31.



territory on June 22, 1941<sup>16</sup>, with a plan called Operation Barbarossa<sup>17</sup>. On the day the invasion started, Turkey declared its neutrality.<sup>18</sup>

Germany's attack on Soviet territories eliminated the possibility of invading Turkey. But it could still be occupied by Germany and Soviet Russia. Against such a prospect, he had to mobilize throughout the war and keep his army ready as if to fight at any moment.<sup>19</sup> This necessity, for the first time since 1923, caused Turkey to allocate a significant part of its budget for defense expenditures.<sup>20</sup> Despite the increase in the budget allocated to the army, production fell in industry and agriculture. The decline in the rate of imports and exports made goods and spare parts unavailable. With the inability to export and the loss of most of their foreign markets, the public was encouraged to use more domestic goods. The incentive has caused the public to worry about famine and to stockpile all kinds of goods, supplies, and items. The fact that the desired amount of material could not be found in the market and stocking started to raise the prices.<sup>21</sup> The decrease in the production volume and the withdrawal of many goods from the market were effective in the increase in prices.<sup>22</sup> As a result of the developments, the government resort to take measures to restore stability in the economy, to prevent inflation, black market, and usury. One of the measures taken was the Tax on Wealth.

### **What is The Tax on Wealth and Why Was It Needed?**

During the Second World War, the National Protection Law and Bread Ration application, which was one of the measures taken by the state, were not sufficient in achieving economic stability. Although the state had extraordinary powers with the National Protection Law, the balance between production and consumption could not be fully achieved.

Making preparations as if it would enter the war at any moment and the mobilization brought about by the possibility of war reduced production. As an agricultural country, production decreased in Turkey, but the need for basic consumption materials increased. Despite the increasing demand, insufficient access to the needed materials caused misery among the people. A group of merchants and big landowners who turned the situation in their favor and knew how to profit from this business made high profits while the majority of the people were in misery. Due to the deficiencies in the control mechanism, the necessary tax could not be collected from the earnings obtained, and this caused unfair gain and ended the competitive environment.<sup>23</sup>

Despite the end of the competitive environment, the free-market economy has been implemented and the market has been released. With the release of the market, prices were expected to decline but the opposite happened. For example, the price of wheat per kilogram in the free market rose from 13.50 kuruş to 100 kuruş, and olive oil from 85 kuruş to 350 kuruş per liter. Since the production at the desired level and the extraordinary increase in prices would create problems in feeding the people and the army, some measures needed to be

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<sup>16</sup> İkinci Cihan Harbinde Sulh Teşebbüsleri (1939-1945), çev. Necati A. Mustanoğlu, Genelkurmay Basımevi, Ankara: 1952, s. 131.

<sup>17</sup> It was the operation that Hitler planned to do to the USSR in the spring of 1941 by having convened the German High Command on December 18, 1940. Sander, Siyasi Tarih 1918-1994, s. 141.

<sup>18</sup> BCA, 30.18.1.2.95.54.1.

<sup>19</sup> Murat Metinsoy, İkinci Dünya Savaşı'nda Türkiye, İstanbul 2008, s.132.

<sup>20</sup> Şevket Süreyya Aydemir, Menderesin Dramı, Remzi Kitapevi: İstanbul 1999, s. 116.

<sup>21</sup> Metinsoy, İkinci Dünya Savaşı'nda Türkiye, İstanbul 2008, s.132.

<sup>22</sup> N. İter Ertuğrul, 1923-2008 Cumhuriyet Tarihi El Kitabı, ODTÜ Yayınları, Ankara 2009, s. 67.

<sup>23</sup> Ahmet Kızılkaya, "Ekonomik ve Siyasal Boyutlarıyla Varlık Vergisi", Hak-İş Uluslararası Emek ve Toplum Dergisi, 5/12, (2016), s.88.

taken. The measures to be taken could be in the form of increasing taxes collected from the public or printing money. However, if this was done, it could cause turmoil in the society. In order not to create an environment of turmoil, the state planned to collect taxes from people who still resorted to situations such as the black market or profiteering, earned unfair profits, and did not respond to the call for unity made by the state despite the situation in the country.<sup>24</sup>

The reason for this planning was that the taxes collected in the tax system which existed hitherto were mainly allocated from wage earners. Large untaxed income and wealth holders were excluded from this system. For this reason, the state created a new tax item named "The Tax on Wealth" on November 11, 1942 in order to collect taxes from the non-taxed segment.<sup>25</sup> The Tax on Wealth was a one-off tax to be levied on the wealth and extraordinary earnings of wealth and earners.<sup>26</sup> Making a statement about the tax in the Parliament, Prime Minister Sukru Saracoglu explained from whom and for what reasons the tax would be collected as follows:

"In general, in today's insane increase in the prices of goods, there is a large share of production, lack of imports, wrong measures, especially insatiable greed and profiteering. But there is another fact, as well as the effect of all these, that the Turkish currency in circulation is constantly increasing and approaching 700 million. Of course, it would not be right to neglect this big wound while seeking medication for relatively minor problems. For this reason, we regarded it as our foremost duty to gather all our attention and care on this wound and to find a medicine, along with other works. The only way to do this is to withdraw some of the money in circulation as taxes, and this should be done mainly from those who have made a lot of money during the war years and should be received only once. Based on these considerations, we heard the necessity to prepare a law statement for this work. This law, prepared after long examinations, will mainly collect money from three bases. These bases are, in order of importance: Traders, property and mite owners, large farmers."<sup>27</sup>

The statement made by Prime Minister Saracoglu was interpreted as that those who made great gains by taking advantage of wartime inflation would transfer a significant part of the increase in their wealth to the state through this system to be implemented once. Again, although the government did not make an official statement regarding the application of the tax, it was stated that the Tax on Wealth aimed to break the power of local non-Muslim merchants and industrialists in Istanbul and Izmir in the Turkish economy and to provide a place for Muslim-Turkish businessmen, especially in the foreign trade sector.<sup>28</sup>

### **Scope and Provisions of The Tax on Wealth**

Within the scope of The Tax on Wealth there were Muslims, Non-Muslims, Apostates and Foreigners and they were subdivided into merchants, real estate and property owners, and large farmers. Within the specified criteria, there were building owners with a total annual income of 2,500 lira and landowners with a tax registered value of 5,000 lira. Taxpayers would pay their taxes according to the records kept in 1941. The companies and the cooperatives that distribute income would pay their taxes again according to their 1941

<sup>24</sup> Gürbüz Arslan, Şükrü Saraçoğlu'nun Siyasi Hayatı ve Siyasi Faaliyetleri (1186-1953), Ankara 2017, s. 225-226.

<sup>25</sup> İsmet BİNARK, Türk Parlamento Tarihi, TBMM VI. Dönem (3 Nisan 1939-15 Nisan 1943), C. I, Ankara 2004, s. 1519.

<sup>26</sup> Resmî Gazete, 12 Kasım 1942, Sayı 5255, 4305 Sayılı Kanun.

<sup>27</sup> TBMM Zabıt Ceridesi, 6. Devre, İçtima 4, C. 28, 11 Kasım 1942, s. 21.

<sup>28</sup> İsmet Binark, Türk Parlamento Tarihi, TBMM VII. Dönem (8 Mart 1943-5 Ağustos 1946), C. I, Ankara 2004, s.1570.

earnings. If these taxes were allocated, the tax to be collected would be collected in a way that would not be less than 50% of net earnings and not more than 70% of joint-stock companies. The large farmers' tax amount would not be more than 5% of their assets.<sup>29</sup> Within the scope of the law, which consisted of 17 articles in total, it was explained who the taxpayers were and how they would be subject to penalties if they did not pay their taxes, apart from determining the tax rates.<sup>30</sup> After determining the terms of the law, the taxpayers and the rate, it was unanimously accepted at the meeting held in the Parliament by 350 votes.<sup>31</sup>

After the approval of the tax in the Parliament, it was decided to establish "Tax Assessment Commissions" consisting of local administrative chiefs and financiers in relation to the determination of tax bases and rates to be collected. These commissions would determine the tax amount and then the payment process would be made within 15 days from the specified date.<sup>32</sup> For the taxes not paid within 15 days, 1% increase in the first week and 2% increase in the second week would be applied. Those who did not pay their tax within 1 month could be employed in general or municipal services anywhere in the country.<sup>33</sup> Women and men over the age of 55 would be excluded from this obligation.<sup>34</sup> The manner of application of the obligation to work would be decided by a regulation<sup>35</sup> to be prepared by the Government.<sup>36</sup>

The first study on the regulation to be created by the government was made on December 26, 1942. In this study, a decision was made to prepare a regulation and to form a commission to prepare the instructions for the purpose of determining the employment procedures of those who do not pay the Tax on Wealth. It was decided to have representatives of the Ministry of Finance, Public Works, Interior Affairs and Health in the commission. However, it was deemed appropriate to have a representative from the Ministry of National Defense against the possibility that reserve and active-duty officers and soldiers could be found among those who did not pay their taxes, and the Ministry was requested to send a representative.<sup>37</sup> After the establishment of the commission, a plan was prepared regarding the conditions under which those who do not pay the Tax on Wealth will enter into the working obligation. This plan showed how the 12th and 13th articles containing the provisions of the Tax on Wealth Law on the obligation to work would be implemented.<sup>38</sup>

According to these articles, the obliged parties who did not pay the Wealth Tax until January 20, 1943 (within 30 days) were subject to criminal proceedings such as arrest, being sent to labor camps and confiscating their properties without any right of action. In addition,

<sup>29</sup> Aytekin Çapkın, *Milliyetçilik İlkesinin 1923-1950 Döneminde Türk Devleti'nin Politika ve Uygulamalarına Yansımaları*, Yüksek Lisans Tezi, Erzurum 2014, s.104-105.

<sup>30</sup> Resmî Gazete, 12 Kasım 1942, Sayı 5255, 4305 Sayılı Kanun.

<sup>31</sup> TBMM Zabıt Ceridesi, 6. Devre, İçtima 4, C. 28, 11 Kasım 1942, s. 29-32.

<sup>32</sup> Binark, *Türk Parlamento Tarihi VI. Dönem*, s. 1519.

<sup>33</sup> For those who did not pay their taxes on time, it was requested to prepare an instruction that would determine the application of the obligation to work. BCA, 30.10.0.0.100.110.17.

<sup>34</sup> When the law was passed, women and men over 55 and civil servants were excluded. However, a letter sent in mid-February alleged that men over the age of 55 had been deported prior to the publication of this decree. PRO, FO 371-37402, "Turkish Tax on Wealth", 05.03.1943.

<sup>35</sup> The decree published in the Official Gazette on February 23 and the decree dated January 20 removed the upper limit of age 55 for those who were obliged to work due to non-payment of tax. Some of the Turkish citizens over the age of 55 had already been exiled. PRO, FO 371-37402, "Tax on Wealth", 05.03.1943, BCA, 30.18.1.2.101.10.19.

<sup>36</sup> In order to determine when and where the Commission would convene and how the Prime Ministry would participate in this commission for the preparation of the instruction, an instruction was sent to the Prime Ministry, Ministry of Internal Affairs, Economy, Public Works, Finance, Agriculture, Communication, Justice and General Staff on 13 November 1942. BCA, 30.10.0.0.135.970.8.

<sup>37</sup> BCA, 30.10.0.0.54.353.13.

<sup>38</sup> BCA, 30.18.1.2.100.110.14.

the place where the obliged parties to be sent to the labor camp would be sent was determined as Erzurum / Aşkale.<sup>39</sup> The first group that did not pay taxes and was sent to the labor camp under the law consisted of 32 people. The obliged parties set out from Istanbul on January 27, 1943.<sup>40</sup> Two of them paid their debts while they were in a concentration camp in Sirkeci<sup>41</sup> before being dispatched, and five of them did not go to Askale because they showed sufficient assurance that they would pay the debt.<sup>42</sup> Groups of minorities with Turkish citizenship were sent by train to Askale and Erzurum at intervals of ten or fourteen days. The number of groups sent to Askale ranges from thirty-two to one hundred and sixty people.<sup>43</sup> In a section taken from the "Republique" Newspaper, it was stated that the third group, consisting of one hundred and sixty people who could not pay their debts, left to go to Aşkale, they were held in a concentration camp in Sirkeci and on 26 February 1943 they were taken to Haydarpaşa by boarding the Company Hayriye ferry. It was subsequently alleged that these persons were placed in third-class wagons, and it was stated that the wagons were in the custody of police officers. It was stated that a police commissioner paid 4,059.60 liras to the railway administration for one hundred and sixty tickets and it was decided to add this amount to the debts of the taxpayers.<sup>44</sup> Those with more tax debt were sent first. There were also those who did not have serious illnesses or illnesses among those to be sent.<sup>45</sup> During the period when the The Tax on Wealth was in effect, a total of one thousand four hundred taxpayers were sent to Aşkale.<sup>46</sup>

A total of two thousand and fifty-seven people, who did not pay their taxes from February to September, were detained. One thousand eight hundred and sixty-nine out of these people lived in Istanbul, one hundred in Bursa, and eighty-eight in Izmir. Six hundred and fifty-seven people from this group were taken to the collection center, some of them paid their debts before they went to Aşkale and some of them while they were in Aşkale. Twenty-one people died during their stay in the camp in Aşkale. Nine hundred people who were in Askale on 8 August 1943 were transferred to Sivrihisar.<sup>47</sup> These people were employed in road construction works.<sup>48</sup> Physical working conditions were implemented by taking into account the principles set by the Ministry of Public Works.<sup>49</sup> By September, the number of people in Sivrihisar labor camp is approximately one thousand hundred. One hundred and fifty-eight of them were sent from Istanbul, thirty from Bursa, and ninety from Izmir. The rest are from Erzurum and Aşkale camps.<sup>50</sup>

The law came under criticism, claiming both its structure and its arbitrary practices. In addition, it was widely spoken that the press did not criticize the law too much as per the instructions of the Government and wrote articles in a way that avoided the situation.<sup>51</sup> In addition to the transitive articles, there were also articles that indicate that the tax was

<sup>39</sup> Cemil Koçak, *Türkiye'de Millî Şef Dönemi (1938-1945)*, C.II, İstanbul: İletişim Yayınları, 2012, s. 497-504.

<sup>40</sup> Fourteen of the thirty-two persons sent were reported to be fifty-five years old. PRO, FO 371-37402, "Turkish Tax on Wealth", 05.03.1943.

<sup>41</sup> PRO, FO 371-37402, "Turkish Tax on Wealth", 27 February 1943.

<sup>42</sup> Çapkın, *Milliyetçilik İlkesinin 1923-1950 Döneminde Türk Devleti'nin Politika ve Uygulamalarına Yansımaları*, s.110.

<sup>43</sup> PRO, FO 371-37404, "Tax on Wealth: Treatment Meted Out to Defaulters", 09.06.1943.

<sup>44</sup> PRO, FO 371-37402, "Turkish Tax on Wealth", 27 February 1943.

<sup>45</sup> PRO, FO 371-37404, "Tax on Wealth: Treatment Meted Out to Defaulters", 09.06.1943.

<sup>46</sup> Çapkın, *Milliyetçilik İlkesinin 1923-1950 Döneminde Türk Devleti'nin Politika ve Uygulamalarına Yansımaları*, s.110.

<sup>47</sup> İlhan Tekeli ve Selim İlkin, *İktisadi Politikaları ve Uygulamalarıyla İkinci Dünya Savaşı Türkiye'si*, C.II, İstanbul 2014, s.48.

<sup>48</sup> PRO, FO 371-37406, "Turkish Tax on Wealth: Treatment of Defaulters", 24.08.1943.

<sup>49</sup> Cumhuriyet, "Bedeni Yol Mükellefleri", 08.08.1943.

<sup>50</sup> PRO, FO 371-37406, "Number of Defaulters: Tax on Wealth", 06.09.1943.

<sup>51</sup> Tefvik Çavdar, *Türkiye'nin Demokrasi Tarihi*, Ankara 1995, s. 381.

required. One of them was featured by Falih Rıfki Atay in *Ulus* newspaper on June 16, 1943. Supporting Prime Minister Saracoglu in his article, Atay said, "While responding to the black-intentioned rumors around the Tax on Wealth, we cannot pass without asking everyone to thoroughly understand the comparison made by our Applicant between the share of the abundant earnings of the minorities and the sacrifice endured by the Turkish people".<sup>52</sup> Again, Hüseyin Cahid Yalçın stated in his article dated June 19, 1943 in *Vatan* newspaper that it was not possible to stop meeting the needs of the army, which assumed the task of protecting the independence and existence, but that the Tax on Wealth emerged due to the need for drastic and fundamental measures that would prevent the need for money to increase considerably. He also added that until now, two hundred twenty-five million five hundred thousand liras of income had been obtained with the tax, the money in the treasury increased with this income and thirty-five tons of gold was bought, the gold amount reached fifteen million gold liras and the Turkish currency had never found a solid equivalent as it was at the present time.<sup>53</sup>

Despite the fact that there were supportive articles, there were also critiques published. One of them was written in the monthly magazine titled "Annual Report" published by the British Chamber of Commerce in Istanbul. In the article, it was stated that the expected income from tax could not be provided, comparisons were made among the taxpayers, and the taxpayers were not given the right of appeal in any way, and they were punished with severe punishment and even they were obliged to perform manual labor. It was emphasized that with the tax, not only the traders but also the market was disrupted.<sup>54</sup>

Another newspaper that criticized the tax negatively was *Metapolitefisis*, which was published in Greek in Istanbul. The newspaper stood up for the taxpayers from the moment the Tax on Wealth came into effect. There were articles criticizing the tax and even later demanding a general amnesty for them. This attitude of the newspaper attracted the attention of the General Directorate of Press and Broadcasting, and a report on the issue was prepared and presented to the Prime Ministry.<sup>55</sup>

Most of the tax debtors were non-Muslims. While some of them paid their debts, others were sent to the labor camp because they could not pay them.<sup>56</sup> 3% of the taxpayers were Turkish, and the rest were of Jewish, Greek, or Armenian origin.<sup>57</sup> There were also some who reacted on the grounds that the applied tax system caused inequality among citizens. Many countries, especially Germany, Bulgaria and Greece, gave notes to Turkey to show their reaction to the tax.<sup>58</sup> When the USA and England reacted critically to the law, some regulations were made in the law. At the meeting held on September 17, 1943, it was decided to facilitate some of the obliged parties<sup>59</sup> who had difficulties in paying their tax debt. According to the decision, those who were held to work because they were unable to pay their

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<sup>52</sup> Binark, *Türk Parlamento Tarihi*, TBMM VII. Dönem (8 Mart 1943-5 Ağustos 1946), s. 1162.

<sup>53</sup> Binark, *Türk Parlamento Tarihi*, TBMM VII. Dönem (8 Mart 1943-5 Ağustos 1946), s. 1094.

<sup>54</sup> BCA, 30.10.0.0.85.560.19.

<sup>55</sup> BCA, 30.10.0.0.86. 569.8.

<sup>56</sup> Çavdar, *Türkiye'nin Demokrasi Tarihi*, s. 380.

<sup>57</sup> The rate of tax amounts was 232% of the capital of Armenian companies, 184% of the capital of Jewish companies, 159% of the capital of Greek companies, and 4.94% of the capital of Turkish companies. PRO, FO 371-37402, "Conditions Under the Turkish Tax on Wealth" 26.03.1943.

<sup>58</sup> Edward Weisband, *İkinci Dünya Savaşı'nda İnönü'nün Dış Politikası III*, çev. Ali Kayabal, İstanbul 2000, s.27.

<sup>59</sup> TBMM Zabıt Ceridesi, 7. Devre, İçtima Fevkalade, C. 5, 17 Eylül 1943, s. 102.

debts would be able to return to their families and pay their debts by working close to the area where they lived.<sup>60</sup>

Apart from this application, the state decided to delete the tax debts of some obliged parties, but this decision also caused criticism. Given the growing criticism and what happened during the period when the law was in force, the state decided to abandon the practice that had been in force for sixteen months.<sup>61</sup> With the decision taken on March 15, 1944, the Wealth Tax Law No. 4305 was completely abolished. The decision entered into force after being published in the Official Gazette on 17 March.<sup>62</sup>

The total number of taxpayers obliged by the law was 114,368 and the amount of tax they would pay was 465,384,820 liras.<sup>63</sup> However, 74.11% of this rate was allocated and a total of 314,920,940 liras entered the state's coffers. From this point of view, it can be said that the desired amount of collection could not be achieved with the tax implemented.<sup>64</sup>

## CONCLUSION

Like many countries, Turkey was adversely affected by the Second World War. Since the beginning of the war on September 1, 1939, it managed to stay out of the war with the successful politics it followed in his foreign policy. However, on the one hand, its efforts not to go into war, on the other hand, its being cautious as if it was going to go to war at any time, forced the state's hand throughout the war. The recruitment of the working population to support the army, especially between the years 1939-1945, when the war continued, had a negative impact on the Turkish economy. Because this situation increased consumption in the country and decreased production considerably. In addition, those who earned unfair income during the war, those who made the black market and profiteering, increased and this was tried to be prevented. For this purpose, the state took various measures during the war period. One of these measures was the tax that would be allocated from the wealth and earning holders on their earnings for once, unusually. This tax was accepted under the name of The Tax on Wealth on 11 November 1942 and entered into force, and it was especially aimed at the people dealing with trade.

The reason why the tax was aimed at the people engaged in trade is that the State collected its tax only from the working group in the war environment and those with large incomes and wealth owners were excluded from taxes. However, since the tax to be collected would be allocated from those engaged in trade and the majority of those engaged in trade are non-Muslims, the state was criticized that the tax was directly for the non-Muslims. The purpose of the tax was interpreted as collecting money from non-Muslims and giving it to Muslims.

Another decision taken to collect the tax amount determined by the law was to charge interest on the debt in case of not paying the tax on time. For taxes not paid within fifteen days, 1% interest would be applied in the first week and 2% in the second week. Those who did not pay their tax within a month may be employed anywhere in the country in general or municipal services. Considering that there were cases where the principal could not be paid, it was almost never possible to collect the interest. The debts always extended to the next year

<sup>60</sup> BCA, 30.10.0.0.135.971.24.

<sup>61</sup> Necdet Ekinci, *Türkiye'de Çok Partili Düzene Geçişte Dış Etkenler*, İstanbul 1997, s.232-233.

<sup>62</sup> Resmî Gazete, 17 Mart 1944, s. 6613, 4530 Sayılı Kanun.

<sup>63</sup> 61673 of these taxpayers resided in İstanbul and the total amount of tax to be paid was 345,586,172 liras. Çapkin, *Milliyetçilik İlkesinin 1923-1950 Döneminde Türk Devleti'nin Politika ve Uygulamalarına Yansımaları*, s.105.

<sup>64</sup> Çavdar, *Türkiye'nin Demokrasi Tarihi*, s. 380.

and the citizen had to deal with the tax debt constantly. Although the state resorted to criminal action when it could not collect the taxes on time and in the desired amount, this was not a solution either. On the other hand, the state, which had to form delegations and spend money to collect taxes, had to allocate some of its revenues to these transactions. Despite the expenditures, the desired tax rate could not be collected, and the criticism increased day by day. The state, not wanting to be subjected to further criticism and to confront the public, sought to erase the taxes of those who did not pay their taxes.

Even though the regulations made to overcome the economic difficulties were introduced for the benefit of the public, the desired results could not be achieved due to the conditions of the period. Moreover, as a result of the reaction of the tax from Germany, Greece, Bulgaria, Britain and America, the State found it appropriate to abolish the tax soon due to the increased criticism and the unwillingness to turn the issue into an international issue.

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## **THE RIGHTS OF SENIOR CITIZENS AND THEIR STATUS IN ISLAMIC SOCIETY: IN THE LIGHT OF ISLAMIC TEACHINGS AND SEERAT UN NABI (SAW)**

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### **Abstract**

Senior citizens have a special place in Islamic society. In Islam, they have been described as a source of blessing and mercy. The Holy Prophet (SAW) exhorted them to be respected. He declared that the younger ones should respect the elders and treat them kindly and take care of their status. Prophet Muhammad (SAW) said that "He is not one of us who does not have mercy on our little ones and does not respect our elders. Respect for elders is a pure Islamic ideology. Islam has declared respect for elders as respect for Allah. It is obligatory in Islam to respect honour and serve the elders. Human beings go through different stages and everyone eventually reaches old age. We are in any age group, one day if we live, old age will come. Older people are the assets of any nation. Their experiences are a beacon for young people. Irritability due to old age is a natural instinct. Therefore, Islam has instructed to tolerate temper tantrums against the elderly one so that both home and society can become the cradle of peace and harmony. A descriptive and analytical research methodology will be used in this research to attain the results and recommendations. It is concluded that Islam is a universal religion that provides complete details of all ways of living and fulfillment of human needs. The emphasis on respect for human rights in Islam is unmatched by any other religion. Islam's attitude towards the rights of the senior citizens is not limited to justice but is based on total benevolence. That is why there is no concept of old age homes in Islam.

**Keywords:** Human rights, Status of elders in Islam, Islamic teachings, Prophet's treatment with elderly people.

### **INTRODUCTION**

Allah Almighty has generally divided human life into four stages: childhood, boyhood, youth and old age. From birth to adolescence, in the first three stages, parents would sacrifice all their energies to meet the needs of human beings for food, happiness, education, financial support, marriage and other financial, physical, moral and cultural needs. In some civilizations, the elderly are considered a mere burden, they are completely evicted from the domestic system of life and left forever in the premises of "old homes", where this class has lived and died. Islam treats this class with the utmost respect, commands the believers to speak to them kindly, and have a benevolent attitude to them

Allah Almighty, after His worship, commanded the believers to kind to parents, especially when they grow old. This is the part of life when a person's endurance is low and irritability is high, so Allah Almighty ordered that when parents grow old, they should not be discouraged by their words and do not deprive them of respect.

### **THE IMPORTANCE OF OLD AGE IN ISLAM**

Allah Almighty is so ashamed of the white hair of old age that in return for every white hair he gets a good deed and forgives sin.

عَنْ عَمْرٍو بْنِ شُعَيْبٍ عَنْ أَبِيهِ عَنْ جَدِّهِ رَضِيَ اللَّهُ عَنْهُ قَالَ: قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ لَا تَتَّقُوا الشَّيْبَ فَإِنَّهُ مَا مِنْ مُسْلِمٍ يَشَيْبُ فِي الْإِسْلَامِ إِلَّا كَتَبَ اللَّهُ لَهُ بِهَا حَسَنَةً وَحَطَّ عَنْهُ بِهَا حَاطِيَةٌ.<sup>i</sup>

“Amr ibn Shuayb narrates from his father and his grandfather that the Prophet (SAW) said: Do not cut off the white hair, because whoever is old in the state of Islam, Allah will reward him for every white hair. One writes goodness and one forgives sin.”

عَنْ كَعْبِ بْنِ مُرَّةٍ رَضِيَ اللَّهُ عَنْهُ قَالَ سَمِعْتُ رَسُولَ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ يَقُولُ مَنْ شَابَ شَيْبَةً فِي الْإِسْلَامِ كَانَتْ لَهُ نُورًا يَوْمَ الْقِيَامَةِ.<sup>ii</sup>

“It is narrated on the authority of Hazrat Ka'b bin Mara that I heard the Messenger of Allah (SAW) saying that when a young person grows old in Islam, there will be a light for him on the Day of Resurrection.”

This will be the time when people will wander in darkness and ask believers to let us benefit from their light. What a great reward it will be for God to give light to the elderly in such a time!

Allah Almighty accepts the prayers of the old man.

It is narrated from Anas bin Malik that the Messenger of Allah said:

” إِنَّ اللَّهَ عَزَّوَجَلَّ لَيَسْتَحْيِي مَنْ ذِي الشَّيْبَةِ الْمُسْلِمِ إِذَا كَانَ مُسْتَدًّا لِرُومًا لِلسُّنَّةِ أَنْ يَسْأَلَ اللَّهَ فَلَا يُعْطِيهِ.”<sup>iii</sup>

“Surely Allah is ashamed that an old Muslim who is steadfast in following the Sunnah should pray to Allah and May Allah not accept his prayer” .

It was learned that prayers should be taken from the elders. Also, keep in mind the difference here that there is a difference between praying and receiving prayers.

"Praying "means that you serve someone and he will be happy to bless you, while "to pray" means to ask someone else to pray, although praying is proven, but the real thing is to pray.

#### RESPECT FOR THE OLD MUSLIM

"Respecting the old Muslim is one of the great deeds of Allah, the Lord of Glory, and honouring the moderate scholar and just king of the Holy Qur'an is one of the great deeds of Allah."

It turned out that honouring the elderly is one of the great deeds of God.

#### STATUS OF SENIORS CITIZEN IN THE ISLAMIC SOCIETY

##### 1. Respect for the Elderly is Part of the Divine Glory.

It is narrated on the authority of Abu Musa al-Ash'ari that the Prophet (SAW) said:

” إِنَّ مِنْ إِجْلَالِ اللَّهِ إِكْرَامَ ذِي الشَّيْبَةِ الْمُسْلِمِ وَحَامِلِ الْقُرْآنِ غَيْرِ الْعَالِي فِيهِ وَالْجَافِي عَنْهُ وَإِكْرَامَ ذِي السُّلْطَانِ الْمُقْسِطِ.”<sup>iv</sup>

"Respecting the old Muslim is part of the reverence of Allah Almighty, and so is the respect of the scholar of the Qur'an who does not transgress in it and the respect of the king who does justice."

##### 2. Respect for the Elderly is the Implementation of the Greatness of the Prophet Hood.

Hazrat Anas (RA) narrated that the Prophet (SAW) said:

"Indeed, the honour and respect of the elders of my ummah is due to my greatness."

##### 3. Respect for the Elderly is a Sign of Faith.

Due to the greatness of the elderly, they were given a special place and status. Holy Prophet (SAW) said:

"He is not one of us who does not have mercy on our little ones and does not recognize the right (greatness) of our elders."

##### 4. Respect for the Elderly is the Basis of a Healthy Tradition.

The Holy Prophet (SAW) said:

"The young man who respects an old man because of his old age, Allah Almighty will appoint for the young man, who will respect him in his old age."

##### 5. The Existence of the Elderly is a Blessing.

Hazrat Abu Imama (RA) narrated that the Holy Prophet (SAW) said:

"We are blessed because of our elders. So he is not one of us who has no mercy on our little ones and insults the dignity of our elders. "

Hazrat Abdullah bin Abbas (RA) narrated that Prophet Muhammad (saw) said:

"you are blessed with your elders."

Hazrat Abu Darda (RA) narrated that the Holy Prophet (SAW) said:

"Find me among your weak people because you are given sustenance and help because of the weak people."

Hazrat Abu Saeed Al-Khudri (RA) narrated that the Prophet (SAW) said:

"Get good from middle-aged people and have mercy on young people."

### **RIGHTS OF SENIOR CITIZENS**

1. The Right to Priority in the Provision of Living Facilities.
2. The Right to Exemption from Burdens Beyond One's Means.
3. Give The Old Man A Place In The Gathering.
4. The Right to Respect the Elders In Social Matters.
5. The Younger One Greets The Older One.

#### **1. The Right to Priority in the Provision of Living Facilities**

Islam gives priority to the elderly in the provision of living facilities. This truth is clear from the following verses of the Qur'an:

"And when he came at the water of Madian, there he saw a party of the people watering their animals, and at the other side of them, he saw two women that they are holding back their animals; Musa said, 'what is the condition of you two'? They said, 'we do not water until all shepherds take away their animals after watering, and our father is very old.' Then Musa watered their animals for them both, then turned back towards the shade, and said, 'O my Lord', I am in need of that food which You may send down for me."<sup>v</sup>

This incident of Prophet Moses (AS) provides the basis for giving priority to the elderly. Similarly, regarding the brothers of Prophet Yusuf (AS), the Qur'an says:

"They said, 'O Aziz, he has a father, aged and advanced in years, so take one of us in his place. No doubt we are seeing your favours."<sup>vi</sup>

This verse makes it clear that Joseph's brothers requested a special concession for the release of their brother Benjamin, referring to their aged father, Jacob.

#### **2. The Right to Exemption from Burdens Beyond One's Means**

It is narrated on the authority of Abu Hurayrah (RA) that the Prophet (SAW) said:

It is narrated on the authority of Abu Hurayrah that the Prophet (SAW) said:

“إِذَا أَمَّ أَحَدُكُمْ النَّاسَ فَلْيُخَفِّفْ فَإِنَّ فِيهِمُ الضَّعِيفَ وَالْكَبِيرَ وَالضَّعِيفَ وَالْمَرِيضَ فَإِذَا صَلَّى وَحْدَهُ فَلْيُصَلِّ كَيْفَ شَاءَ.”<sup>vii</sup>  
“When one of you becomes the Imam of the people and leads them in prayer, he should lead the prayer lightly (ie, not too long) because Followers include the weak, the sick, and the elderly.”<sup>vii</sup>

Hazrat Anas bin Malik (RA) narrated that the Holy Prophet (SAW) said:

"Indeed, Allah Almighty is ashamed of not giving it to an old Muslim who follows the Sunnah with perseverance and asks Allah."<sup>viii</sup>

Islam Orders to treat elderly parents with great compassion. The Qur'an says:

"وَقَضَىٰ رَبُّكَ أَلَّا تَعْبُدُوا إِلَّا إِيَّاهُ وَبِالْوَالِدَيْنِ إِحْسَانًا إِمَّا يَبُلُغَنَّ عِنْدَكَ الْكِبَرَ أَحَدُهُمَا أَوْ كِلَاهُمَا فَلَا تَقُلْ لَهُمَا قَوْلًا كَرِيمًا وَاخْفِضْ لَهُمَا جَنَاحَ الذَّلِيلِ مِنَ الرَّحْمَةِ وَقُلْ رَبِّ ارْحَمْهُمَا كَمَا رَبَّيْتَنِي صَغِيرًا"

“And your Lord has commanded that you worship none but Allah, and be kind to your parents. If one or both of them reach old age before you, they shall say: Do not say, and do not shake them, and speak to them both with great politeness. Have mercy on them both as they raised me (with mercy and compassion) as a child.”<sup>ix</sup>

### **3. Give the Old Man a Place in the Gathering**

Where a few people are sitting, if an old man or a scholar or a leader of a nation or community comes, it should be made a place for him to sit in the assembly, because it is a matter of his honour.

It is narrated from Hazrat Abu Hurayrah that the Prophet (SAW) said:

عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللَّهُ عَنْهُ قَالَ: قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ: لَا يُوسَعُ الْمَجْلِسُ إِلَّا لِثَلَاثَةٍ: لِذِي سِنٍ لِسِنِّهِ وَذِي عِلْمٍ لِعِلْمِهِ وَذِي سُلْطَانٍ لِسُلْطَانِهِ.<sup>x</sup>

“Create space for three types of people in the gathering. For the elder because of his age, for the scholar because of his knowledge and for the chief because of his leadership.”

### **4. The Right to Respect the Elders in Social Matters**

The Prophet (SAW) also taught respect for elders' in general social affairs. When Hazrat Abdullah ibn Sahl and Mahisa ibn Mas'ud reached Khyber, they separated from each other in the two gardens. (Meanwhile) Abdullah bin Sahl was killed, then Abdul Rahman bin Sahl and Masood's sons Hawisa and Mahisa (RA) came to the service of the Holy Prophet (SAW). When they talked about his partner, Abdul Rahman started, although he was the youngest. Upon this, the Holy Prophet (SAW) said:

"Take care of the dignity and honour of the elders."<sup>xi</sup>

### **5. The Younger One Greets the Older One**

Considering the age of the elders and their seniority, the younger ones should start greeting so that the natural requirement of the elders is fulfilled and they realize that there is value in our society.

It is narrated on the authority of Abu Hurayrah that the Prophet (SAW) said:

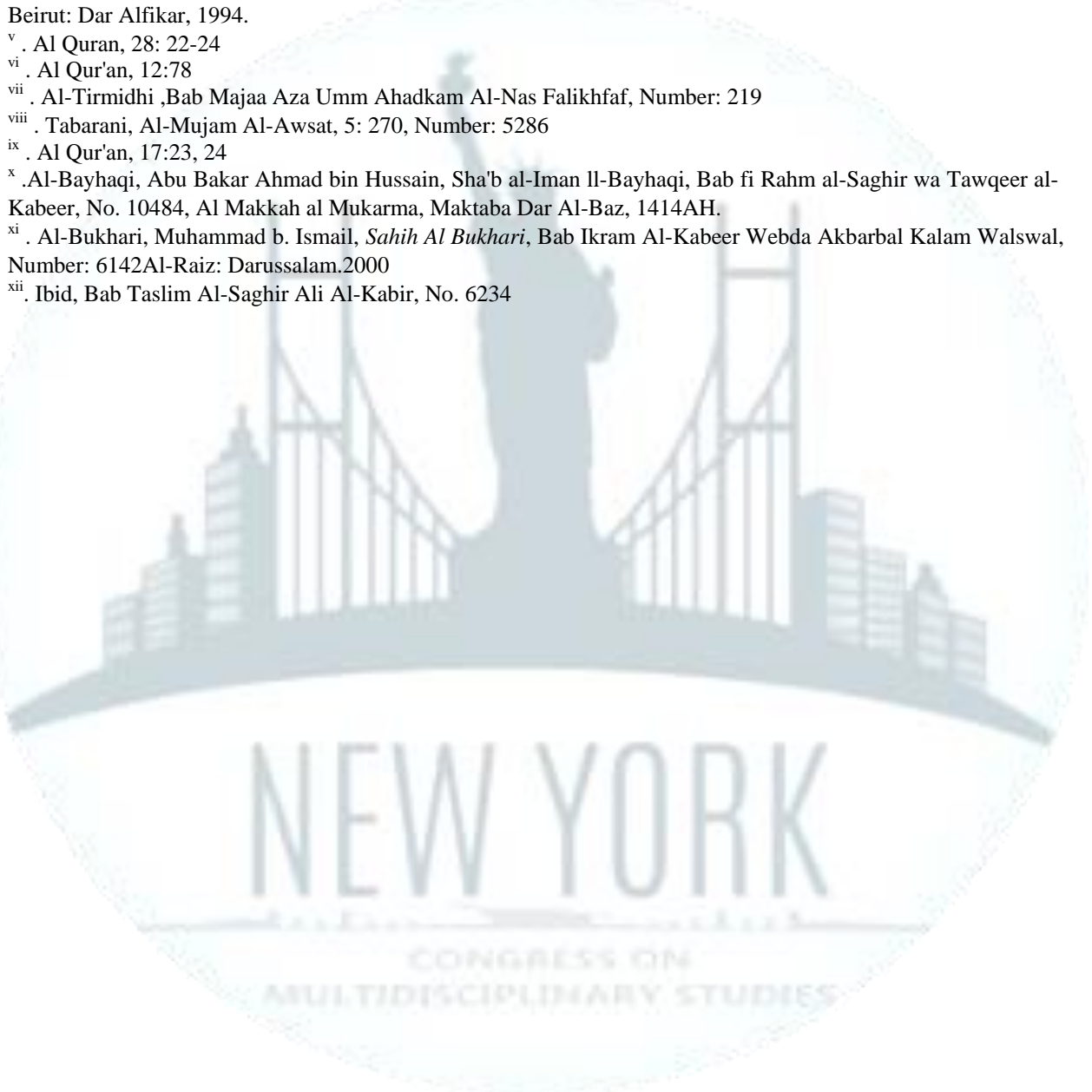
“Young should greet the old.”<sup>xii</sup>

### **Conclusion**

It is concluded that Islam is a universal religion that provides complete details of all ways of living and fulfilment of human needs. The emphasis on respect for human rights in Islam is unmatched by any other religion. Islam's attitude towards the rights of the senior citizens is not limited to justice but is based on total benevolence. That is why there is no concept of old age homes in Islam. Islam treats this class with the utmost respect. The welfare of this world and the hereafter is in the honour and service of the elders, especially the elderly parents. If a person does not respect the elderly, then the meaning of the hadith given at the beginning is excluded from the group of the Holy Prophet (SWA). Therefore, we must serve the elderly at all times and pay their dues.\.

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## **EVALUATION OF EMERGENCY SERVICE ADMISSIONS**

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### **Abstract**

Emergency services crowd is one of the biggest and most important problems faced by emergency services and emergency workers, and it has become an important public health problem all over the world due to the fact that it is a problem that continues to increase day by day. In our country we encounter many problems which are both system errors and reasons based on wrong use in respect to providing health service and use it. One of that reasons is wrong use of emergency services. It is necessary that patients who will be treated in emergency services should be patients who need urgent intervention but we know that many of patient and aren't emergency service patient and family medicine or cut patients also apply to emergency services intensely. Because people who aren't emergency service patients apply, intensity increases. Problems appear that real patients aren't known, diseases of some emergency patients are overlooked and family medicine hasn't enough time for emergency patients. It is aimed to keep light to problems in emergency services by evaluating the analysis in SPSS program and it is taken 6.667 samples from all hospitals presenting emergency services in the city of Sivas in Turkey at 2016. The data were made by using frequency analysis and cross analysis in SPSS program. According to the research findings patients complain that they are treated late, and physicians complain that people who are not really emergency patients use the emergency service. It is revealed that 60.1% of the patients who applied to the emergency department are not really emergency patients.

**Keywords:** Health Management, Emergency Service, Hospital, Triage

### **INTRODUCTION**

Emergency medical conditions are defined as situations in which the risk of serious health problems and loss of body integrity will arise in cases where the necessary medical intervention is delayed or not done immediately in cases of sudden emerging diseases, accidents, injuries and similar situations. Emergency Medicine, which aims to evaluate, treat, direct and prevent these situations from occurring, is a specialty that emerged from the changing conditions of the 20th century (Atilla, 2011). Emergency health services, which are the showcase of health services, are a service where direct and timely interventions save lives and mistakes made are irreversible (Söyük and Arslan Kurtuluş, 2017: 45).

Emergency services are the departments where hospitals have the most contact with the society. The necessity of providing fast, accurate and uninterrupted service to the majority of patients who apply to the emergency department requires that emergency services are different from other medical departments in terms of physical structure and staff strength

(Kılıcaslan et al., 2005: 6). The emergency room crowd is one of the biggest and most important problems faced by emergency services and emergency service workers and has become an important public health problem all over the world due to the fact that it is an increasing problem with each passing period (DiSomma et al., 2015: 171).

In Turkey, the situation is becoming an even more important problem. According to the data belonging to the period of the Ministry of Health (January-October 2017), the total number of examinations, excluding emergency services and dental services, in hospitals affiliated with the Ministry of Health is 110,915,407, and the number of emergency service examinations is 84,545,429 (TKHGM, 2017). According to the data of the Turkish Statistical Institute, the population of Turkey in 2017 is 80 million (TUIK, 2018). Even in a period of 10 months, the number of emergency room examinations has exceeded the population of Turkey. Even in a country such as the USA where emergency service applications are too high, annual emergency service admissions are 136.9 million and constitute 43% of the population (NCHS, 2015).

## **MATERIALS AND METHODS**

The aim of this study is to evaluate the patients who applied to the emergency services of three hospitals in the city center of Sivas in terms of variables such as age, gender, admission date, admission time, hospital selection, and classification according to diagnostic information.

The study is descriptive and retrospective. The universe and sample of the research; Sivas Cumhuriyet University Practice and Research Hospital, Sivas Numune Hospital and Private Sivas Medicana Hospital, located in Sivas city center, creates the records of the patients who applied to the emergency service on Monday, 18.01.2016, Wednesday, 23.01.2016. Statistical package program SPSS-16 was used to analyze the data. Data were evaluated using frequency analysis and cross analysis. While evaluating the diagnoses of the patients who applied to the hospital emergency department, diagnoses were evaluated in 4 classes as “Very Urgent, Urgent, Somewhat Urgent, Not Urgent” with the help of a physician. Percentage rates were obtained by analyzing the data collected by frequency analysis and evaluating the facts such as age, gender, hospital selection, working hours and outside working hours numerically. The relationship between these data and diagnostic evaluation was examined with cross-tab analysis.

## **RESULTS**

Table 1: Distribution of Patients Presenting to the Emergency Department by their Characteristics

<b>Gender</b>	<b>n</b>	<b>%</b>
Female	<b>3486</b>	<b>52,3</b>
Male	3181	47,7
Total	6667	100
<b>Age</b>	<b>n</b>	<b>%</b>

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under 18 age	<b>2171</b>	<b>32,6</b>
18-29 age	1710	25,6
30-44 age	1292	19,4
45-64 age	979	14,7
65 age and over	515	7,7
Total	6667	100
<b>Application Day</b>		
	<b>n</b>	<b>%</b>
Monday	<b>2504</b>	<b>37,6</b>
Wednesday	1963	29,4
Saturday	2200	33,0
Total	6667	100,0
<b>Application Time on Weekdays</b>		
	<b>n</b>	<b>%</b>
During Work	1877	42,0
Out of Work	<b>2590</b>	<b>58,0</b>
Total	4467	100,0
<b>Type of Hospital</b>		
	<b>n</b>	<b>%</b>
Private Hospital Medicana Sivas	710	10,6
Cumhuriyet Hospital University	541	8,1
Numune Hospital	<b>5416</b>	<b>81,3</b>
Total	6667	100,0
<b>Evaluation of Diagnosis</b>		
	<b>n</b>	<b>%</b>
Very Urgent	824	12,4
Urgent	917	13,8
Some urgent	869	13,0
Not urgent	<b>4057</b>	<b>60,8</b>
Total	6667	100,0

When the records taken from the hospitals within the scope of the study were examined, it was found that 81.3% of the patients who applied to the emergency department applied to the Numune Hospital, 52.3% of the applications were female and 32.6% were patients under the age of 18. It was determined that 37.6% of the applications examined for



three days were on Monday and 58% of the applications made on weekdays were out of working hours.

**Table 2: Crosstable of Diagnostic Assessments with Hospital Selection**

		EVALUATION OF DIAGNOSIS					
		Very Urgent	Urgent	Some Urgent	Not Urgent	Total	
<b>HOSPITAL SELECTION</b>	Numune Hospital	<b>n</b>	588	738	704	3386	5416
		<b>%</b>	10,9	13,6	13,0	<b>62,5</b>	100
	Cumhuriyet University Hospital	<b>n</b>	137	88	58	258	541
		<b>%</b>	25,3	16,2	10,7	<b>47,8</b>	100
	Medicana Sivas Hospital	<b>n</b>	99	91	107	413	710
		<b>%</b>	13,9	12,8	15,1	<b>58,2</b>	100
	<b>Total</b>		824	917	869	4057	6667

In Table 2, the cross table of the diagnostic evaluation made with the hospital selection is examined. It was determined that 62.5% of the applications made to Numune Hospital emergency department, 47.8% of the applications made to Cumhuriyet University Hospital emergency service, 58.2% of the applications made to Medicana Sivas Hospital emergency service were in the "not urgent" class.

**Table 3: Cross Table of Diagnostic Assessments with Gender Variable**

		EVALUATION OF DIAGNOSIS					
		Very Urgent	Urgent	Some Urgent	Not Urgent	Total	
<b>Gender</b>	Female	<b>n</b>	419	493	447	2127	3486
		<b>%</b>	12,0	14,2	12,8	<b>61,0</b>	100
	Male	<b>n</b>	405	424	422	1930	3181
		<b>%</b>	12,7	13,3	13,3	<b>60,7</b>	100
	<b>Total</b>		824	917	869	4057	6667

In Table 3, the cross table of the diagnosis evaluation with the gender of the patients who applied to the emergency department was examined. It was found that 61% of female patients and 60% of male patients were in the "Not Emergency" class.

**Table 4: Cross Table of Diagnostic Assessments with Age Variable**

		EVALUATION OF DIAGNOSIS					
		Very Urgent	Urgent	Some Urgent	Not Urgent	Total	
<b>Age</b>	0-17 age	<b>n</b>	201	224	216	1530	2171
		<b>%</b>	9,3	10,3	9,9	<b>70,5</b>	100
	18-29 age	<b>n</b>	133	183	255	1139	1710
		<b>%</b>	7,8	10,7	14,9	<b>66,6</b>	100
	30-44 age	<b>n</b>	117	192	216	767	1292
		<b>%</b>	9,0	14,9	16,7	<b>59,4</b>	100
	45-64 age	<b>n</b>	188	206	119	466	979
		<b>%</b>	19,2	21,0	12,2	<b>47,6</b>	100
	65 age and over	<b>n</b>	185	112	63	155	515
		<b>%</b>	<b>35,9</b>	21,8	12,2	30,1	100
	Total		824	917	869	4057	6667

In Table 4, the cross table of the diagnostic evaluation with the age variable of the patients who applied to the emergency department is examined. 70.5% of patients in the 0-17 age range, 66.6% of patients in the 18-29 age range, 59.4% of patients in the 30-44 age range, 47.6% of patients in the 45-64 age range. The limit was found to be in the 'Not Emergency' class. It was found that 35.9% of the patients aged 65 and over were in the "Very Urgent" class.

## CONCLUSION

Within the scope of emergency health services, emergency services are units that provide 24-hour uninterrupted service. The number of applications to these services cannot be limited. Increasing number of applications to emergency services is a problem in our country as well as in the world. In this study, the applications were examined in order to manage the density in emergency health services.

52.3% of the patients included in the study were women, and 32.6% were individuals under the age of 18. According to the three-day records examined, the highest number of applications was on Monday with a rate of 37.6%. When the applications made on weekdays were examined, it was found that 58% were out of working hours. 81.3% of the patients applied to Numune Hospital, which is a second step hospital. When the diagnostic information obtained from the hospital records was examined, it was determined that 60.8% of the patients were not emergency patients.

It was determined that the majority of the applications made to the emergency services of all hospitals within the scope of the study were non-urgent applications. Proportions of non-emergency patients; 47.8% in Sivas Cumhuriyet University Hospital, 47.8% in Sivas Numune Hospital, and 58.2% in Medicana Sivas Hospital. When the diagnosis and gender of

the patients who applied to the emergency department were examined, it was found that most of both women and men were not urgent. This rate was found to be 61% in women and 60.7% in men.

When the diagnosis evaluation of the patients who applied to the emergency department was examined with the age variable, it was found that most of the patients under the age of 65 were not emergency patients, while 35.9% of the patients over the age of 65 were in the "Very Emergency" class. It has been determined that as the age of the patients increases, the rate of being evaluated in the "not urgent" category decreases.

## **DISCUSSION**

52.3% of the patients who applied in our study were found to be women. In the literature, there are studies that find that women use the emergency service more than men (Sarver, et al., 2002; Çevik and Tekir, 2014; Şimşek, 2017; Dumlu, 2020). They reached the conclusion that they use it frequently (Davis, et al., 2010; Köse, et al., 2011).

It was determined that 32.6% of the patients who applied in our study were under the age of 18 and the level of urgency increased with increasing age. Aydın et al. (2010) found in their study that young patients use the emergency service more frequently. In addition, there are studies in the literature that find age and the level of urgency directly proportional (Sarver, et al., 2002; Kılıçaslan, et al., 2005; Ersel, et al., 2006; Carret, et al., 2007; Çelikten, 2016; Dumlu, 2020).

In our study, the applications to the emergency service on Mondays, Wednesdays and Saturdays were examined and it was found that the highest number of admissions were on Mondays (37.6%) in these three days. In studies conducted in our country, Monday was found to be the day with the highest number of applications (Kılıçaslan, et al., 2005; Çelikten, 2016), Davis et al. (2010) found in their study that emergency room visits were more frequent at the weekend than on weekdays.

In our study, it was found that the most applications were to Numune Hospital, which serves as the 2nd step, with a rate of 81.3%. Şimşek (2017) found in his study that, in support of our findings, emergency service applications were made to the second level hospitals at most. When the diagnostic information obtained from the hospital records was examined, it was determined that 60.8% of the patients were not emergency patients. When the literature on the subject is examined, there are many studies. Liu et al. (1999) conducted a 5-year analysis of emergency room admissions, and the rate of inappropriate use was 54% in 1992; 53.7% in 1993; 52.1% in 1994; 54.7% in 1995; In 1996 they found 54.1%. Afilalo et al. (2004) this rate is 25%; David et al. (2006) 49.9%; Carret et al. (2007) found 24.2%. Similar results are observed in studies conducted in our country. Çevik and Tekir's (2014) rate of unsuitable patients is 24.3%; In Şimşek (2017) study, 54.2%; Dumlu (2020) found that 52.5% in his study.

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**A STUDY ON THE FACTORS AFFECTING PHYSICIANS  
'PRESCRIBING DECISIONS'**

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**Abstract**

Physicians are one of the most important stakeholders in ensuring rational drug use. In this respect, it is important to examine the prescribing behaviors of physicians. This study was conducted to determine the factors that affect the prescribing decisions of physicians. The study population consisted of physicians in Turkey constitute data were collected using a questionnaire method. The data were performed using normality test, factor analysis, Mann Whitney-U, Kruskal Wallis tests in the SPSS 23 program. The study was carried out with 1012 physicians. 69.8% of the physicians work in internal branches, 54.1% are specialist physicians. The tenure of 32% of physicians is 1-5 years, and 31.2% of them have a daily prescription of 41 or more. 66.8% of the physicians stated that the clinical efficacy of the drug, 66.0% of the side effect rate, 62.4% of the drug-patient compliance and 62.4% of the drug-patient compliance determines the safety of the drug. The fact that the name of the drug is similar to the medical name of the disease is not decisive in 43.7% of the physicians' decisions, 42.4% of the drug's name is similar to the original active substance, 38.8% are written materials provided by pharmaceutical companies, containing technical information about drugs (card, brochure etc.), 37.4% of them stated that the support received from the pharmaceutical company in medical congresses was not decisive. As a result, in this study conducted to determine the factors affecting the prescribing decision of physicians; It has been determined that the clinical efficacy of the drug, its side effects, and drug-patient compliance are important in physicians' prescriptions. In addition, it has been determined that while physicians are making their prescribing decisions, pharmaceutical companies are least affected by their promotional activities through their representatives.

**Keywords:** Healthcare, Pharmaceutical Industry, Physicians, Prescribing

**INTRODUCTION**

In the sectoral distribution of the total R&D expenditures in the world; The pharmaceutical and biotechnology sector is at the top of the list (Turkish Pharmaceutical Sector Strategy Document and Action Plan 2013-2016). Brazil, Russia, India, China and Turkey have high growth pharmaceutical markets, according to IMS, a company that tracks drug sales worldwide. Turkish pharmaceutical industry; It is one of the sectors with high added value and the possibility of production and export in significant quantities and diversity.

The pharmaceutical industry, one of the most important sectors of healthcare, is considered a subgroup of the chemical industry. The pharmaceutical industry differs from

other industries both because of its relevance to the health dimension of people and its importance in the national and international economy. Pharmaceutical industry; It is a strategically important sector due to its high cost, long-term R&D studies, employing a large number of qualified workforce, being a sector requiring advanced technology and involving individuals' health (Kaynak, 2016).

Physicians are one of the most important stakeholders in ensuring rational drug use. In this respect, it is important to examine the prescribing behaviors of physicians. When studies on the physician-medical promotion representative relationship in the pharmaceutical industry are examined in terms of prescribing behavior; It is seen that the influence of the medical promotion representative, the participation of the pharmaceutical company in training symposiums and speaker sponsorship, free drug samples, business meals and demographic variables of physicians come to the fore. The most important factors affecting the choice of medical drugs are the clinical efficacy of the drug, the safety of the drug, the suitability of the drug to the patient, the patient's medical history, the diseases he has undergone, the drugs he has used and used, and the bioavailability level of the drug (Demirkıran & Şahin, 2010). Many promotional strategies and activities are implemented to increase sales in the pharmaceutical industry. For this reason, personal sales activities of pharmaceutical representatives are seen as the most important promotional tool (Tosun & Kurtuluş, 2017).

The scientific interest in the pharmaceutical industry is due to the fact that patients, as well as physicians, show a few features such as the open, commercial and social importance of the pharmaceutical market. As a special feature, it is the unique situation where the prescribing decision is given by the specialist physician rather than the paying patients (Stros & Lee, 2015, Basdegirmen, 2019).

Physicians' perception of brand drugs is gradually increasing in their influence on prescribing decisions. The relationships between physicians' perception of brand drugs and the nature of the health system and its level of development differ. For this reason, it has prescribed more generic drugs than branded drugs in countries with better bioequivalence requirements for generic drugs, as well as reliable public control practices. This shows that drug brands can influence physicians' decision to prescribe (Murshid & Mohaidin, 2017).

## **MATERIAL AND METHODS**

This study was conducted to determine the factors that affect the prescribing decisions of physicians. The study population consisted of physicians in Turkey constitute data were collected using a questionnaire method. The study was carried out with 1012 physicians who were randomly selected without using the sample selection method. The data were collected by the researcher herself using the online questionnaire method. The questionnaire is a five-point Likert type. In the first part of the questionnaire, there are questions to determine the demographic characteristics of the participants such as age and gender and questions such as the number of prescriptions per week. In the second part of the questionnaire, there are questions measuring the prescribing decisions of physicians. The data were evaluated by making descriptive statistics in the SPSS 21. Program. The normality test was evaluated with the Kolmogorov-Smirnov Z test. The analyzes were interpreted at a 95% confidence level. Before starting the study, an ethical committee was taken. The purpose of the study was explained to the participants and their verbal consent was obtained.

**RESULT**

**Table 1. Introductory Characteristics of the Participants**

		Frequency	Percent
Gender	Male	586	57,9
	Female	426	42,1
Age	25-35	417	41,2
	36-45	405	40,0
	46-55	157	15,5
	56+	33	3,3
Region	Mediterranean	64	6,3
	Eastern Anatolia	78	7,7
	Agean	76	7,5
	Southeastrn Anatolia	60	5,9
	Central Anatolia	394	38,9
	Black Sea	181	17,9
	Marmara Region	159	15,7
Specialty	Surgical	306	30,2
	Internal	706	69,8
Title	Family physician	126	12,5
	Dentist	58	5,7
	Academic Member	119	11,8
	General practitioner	162	16,0
	Specialist physician	547	54,1
Institution	Oral and dental health center	24	2,4
	Family health center	145	14,3
	Public hospital	344	34,0
	Faculty of dentistry	8	0,8
	Training and research Hospital	140	13,8

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	Private Hospital	133	13,1
	Private Clinic	39	3,9
	City hospital	51	5,0
	Community Health Center	5	0,5
	University Hospital	123	12,2
Tennure of office	1-5	324	32,0
	6-10	299	29,5
	11-15	189	18,7
	16+	200	19,8
Number of Recipes per Day	5-10	166	16,4
	11-20	165	16,3
	21-30	192	19,0
	31-40	173	17,1
	41+	316	31,2
	Total	1012	100,0

The study was carried out with 1012 physicians. 57.9% of the participants are male and 41.2% are in the 25-35 age group. 38.9% of the participants work in the Central Anatolia Region. 34.0% of the participants work in a state hospital. 69.8% of the physicians work in internal branches, 54.1% are specialist physicians. The tenure of 32% of physicians is 1-5 years, and 31.2% of them have a daily prescription of 41 or more.

**Table 2. Physicians' Opinions on Prescribing Decisions**

Sorular	Kesinlikle Katılmıyorum		Katılmıyorum		Kararsızım		Katılıyorum		Kesinlikle Katılıyorum	
	n	%	n	%	n	%	n	%	n	%
The clinical efficacy of the drug is decisive.	9	0,90%	14	1,40%	32	3,20%	676	66,80%	281	27,80%
The safety of the drug is decisive.	10	1,00%	8	0,80%	20	2,00%	631	62,40%	343	33,90%
Medication-patient compliance is decisive.	8	0,80%	18	1,80%	48	4,70%	658	65,00%	280	27,70%



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It is decisive that the drug is the original molecule.	24	2,40%	296	29,20%	188	18,60%	384	37,90%	120	11,90%
The pharmaceutical form of the drug is decisive.	6	0,60%	177	17,50%	122	12,10%	586	57,90%	121	12,00%
It is decisive that the drug has recently been launched on the market.	107	10,60%	380	37,50%	184	18,20%	265	26,20%	76	7,50%
The similarity of the name of the drug with the medical name of the disease is decisive.	234	23,10%	442	43,70%	122	12,10%	177	17,50%	37	3,70%
The similarity of the name of the drug to the original active ingredient is decisive.	174	17,20%	429	42,40%	116	11,50%	247	24,40%	46	4,50%
The multiplicity and success of clinical trials with drugs is decisive.	8	0,80%	20	2,00%	56	5,50%	638	63,00%	290	28,70%
Drug-drug interaction is decisive.	5	0,50%	14	1,40%	45	4,40%	685	67,70%	263	26,00%
The rate of side effects is decisive.	8	0,80%	28	2,80%	48	4,70%	674	66,60%	254	25,10%
Drug-food interaction is decisive.	13	1,30%	92	9,10%	146	14,40%	638	63,00%	123	12,20%
Conferences and courses organized or sponsored by pharmaceutical companies are decisive	149	14,70%	371	36,70%	154	15,20%	274	27,10%	64	6,30%
The support I receive from the pharmaceutical company is decisive in medical congresses.	206	20,40%	378	37,40%	118	11,70%	242	23,90%	68	6,70%
Written materials (cards, brochures, etc.) provided by pharmaceutical companies and containing technical information about drugs are decisive.	109	10,80%	393	38,80%	165	16,30%	302	29,80%	43	4,20%
Clinical research supports (test kit, etc.) provided by pharmaceutical companies are decisive.	80	7,90%	302	29,80%	195	19,30%	343	33,90%	92	9,10%
The social relationship created with medical promotion representatives is decisive.	119	11,80%	317	31,30%	158	15,60%	323	31,90%	95	9,40%
The frequency of the medical promotion representative's visit is decisive.	99	9,80%	238	23,50%	163	16,10%	407	40,20%	105	10,40%

According to Table 2, 66.8% of the physicians stated that the clinical efficacy of the drug, 66.0% of the side effect rate, 62.4% of the drug-patient compliance and 62.4% of the drug-patient compliance determines the safety of the drug. When the answers of the participants are evaluated, the fact that the name of the drug is similar to the medical name of the disease is not decisive in 43.7% of the physicians' decisions, 42.4% of the drug's name is similar to the original active substance, 38.8% are written materials provided by pharmaceutical companies, containing technical information about drugs (card, brochure etc.), 37.4% of them stated that the support received from the pharmaceutical company in medical congresses was not decisive.

## **CONCLUSION**

The pharmaceutical industry is among the sectors that increase its market share and importance in the world. In line with this importance, it is necessary to examine the factors that determine the prescribing decisions of physicians. As a result, in this study conducted to determine the factors affecting the prescribing decision of physicians; It has been determined that the clinical efficacy of the drug, its side effects, and drug-patient compliance are important in physicians' prescriptions. In addition, it has been determined that while physicians are making their prescribing decisions, pharmaceutical companies are least affected by their promotional activities through their representatives.

Vançelik et al. (2006), in their study conducted with 157 physicians in Erzurum, were asked to rank the most important factors that shape prescribing according to their degree of importance, and with 50.7%, being the most important factor was being educated on this subject after graduation, while 40.1% was the most important factor. Company representatives ranked second.

In the studies conducted by Demirkıran and Şahin (2010) with 308 physicians in Ankara, the factors that affect the drug choices the most are; It has been determined that the clinical efficacy of the drug, the safety of the drug, the directions and expectations of the pharmacists, the personal friendship established with the representatives of the pharmaceutical company, the similarity of the name of the drug with the medical name of the disease.

Lieb and Scheurich (2014) in their study with 160 specialist physicians in Germany; 84% of physicians stated that they see their daily pharmaceutical representatives at least once a week, 14% of them see their daily drug representatives, 69% of them accept drug samples, 37% of them accept stationery products, and 39% of them attend educational organizations such as congresses with their sponsors. While 5% of physicians think that the activities of drug representatives are not beneficial, 42% think that occasional or frequent visits to the representatives affect their prescribing habits. In the study conducted by Othman et al. (2015) with 89 physicians in Malaysia and Australia, it was found that personal selling was effective in influencing the prescribing habits of most doctors and in the development of information about the drug.

In line with the findings of this study, it is recommended that the factors that are considered important in the prescribing decision of physicians should be taken into consideration by pharmaceutical companies and they should design their marketing activities accordingly.

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## **ASKERİ GÜVENLİK: ASKERİ KUVVETİN ROLÜ VE DİPLOMASİNİN OLANAKLARI MILITARY SECURITY: THE ROLE OF MILITARY FORCE AND OPPORTUNITIES OF DIPLOMACY**

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### **Özet**

Modern dünyanın değişen jeopolitik manzarası, uluslararası güçlerin jeopolitik çıkarları ve bu çıkarlar için verilen mücadele askeri güvenlik açısından ciddi sorunlar oluşturmaktadır. Devletler için önemli bir görev, dış politika önceliği olarak askeri güvenliği sağlamanın daha etkili yollarını belirlemektir. Ayrıca, sorunun ciddiyeti, onu teorik olarak incelemeyi, bilimsel araştırma nesnesi olarak incelemeyi gerekli kılar. Makale askeri gücün askeri güvenliğin sağlanmasındaki rolünü ve diplomasi ortak kullanım olasılığını açıklıyor. Dış politika ve askeri güvenlik olmak üzere devletin iki faaliyet alanının karşılıklı ilişkisi ve bu ilişkilerin olasılığını gösteren faktörler dikkate alınır. Hedefin gerçekleştirilmesi için önemli görevler: Askeri güvenliğin teorik temelleri ve askeri güç faktörünün ve askeri güvenliğin sağlanmasındaki diplomasi kabiliyetlerinin belirlenmesi. Öncelikle askeri güvenliğin özü anlatılır ve siyasi, diplomatik, ekonomik, askeri, ahlaki ve psikolojik bileşenleri not edilir. Terörle mücadelede devletlerin diplomatik ilişkilerini askeri işbirliğine paralel olarak genişletmesi gerektiği belirtiliyor. Genel olarak, modern zamanlarda askeri güvenliğin sağlanması, askeri tehdit ve tehditlerin önlenmesinde askeri güç ile birlikte askeri güçlerin ortak kullanımının önemli olduğu ve elde edilen olumlu sonuçların bu alandaki devletler için eşit derecede önemli olduğu sonucuna varılmıştır. Sorunların karşılıklı, sistematik incelenmesi, sorunun daha derin bir analizine izin verir. Dolayısıyla siyaset biliminin genel mantıksal ve teorik yöntemlerinin kullanılması, uzmanların teorik görüşlerine atıfta bulunulması önemli avantajlar yaratmaktadır. Özellikle, pratik örneklerin kullanılması, analiz edilen problemin daha net bir açıklamasını verir. Bu konuların incelenmesinin analizi ve açıklamaları, elde edilen olumlu bilimsel sonuçların siyaset bilimi, jeopolitik, uluslararası ilişkiler ve askeri bilim alanlarında kullanılabileceğini söylemeye zemin hazırlamaktadır.

**Anahtar Kelimeler:** askeri güvenlik, dış politika, diplomasi, askeri güç, askeri tehdit.

### **Abstract**

The changing geopolitical landscape of the modern world, the geopolitical interests of international powers and the struggle for these interests pose serious problems for military security. An important task for states is to identify more effective ways to ensure military security as a foreign policy priority. Also, the seriousness of the problem makes it necessary to study it theoretically, to study it as

an object of scientific research. The article explains the role of military power in ensuring military security and the possibility of joint use of diplomacy. The interrelation of the two spheres of state activity - foreign policy and military security and the factors indicating the possibility of these relations are considered. Important tasks for the implementation of the goal: the theoretical foundations of military security and the capabilities of the military force factor and diplomacy in ensuring military security are identified. First, the essence of military security is explained and its political, diplomatic, economic, military, moral and psychological components are noted. It is noted that in the fight against terrorism, states should expand diplomatic relations in parallel with military cooperation. In general, it is concluded that in modern times it is important to ensure military security, joint use of military capabilities in the prevention of military threats and threats, and the positive results achieved are equally important for states in this area. Mutual, systematic study of the issues allows for a deeper analysis of the problem. Thus, the use of general logical and theoretical methods of political science, the reference to the theoretical views of experts creates important advantages. In particular, the use of practical examples gives a clearer explanation of the problem under analysis. The analysis and explanations of the study of these issues give grounds to say that the positive scientific results obtained can be used in the field of political science, geopolitics, international relations and military science.

**Keywords:** military security, foreign policy, diplomacy, military power, military threat

## **1. GİRİŞ**

Modern dünyanın jeopolitik manzarasındaki değişiklikler, jeopolitik-jeoekonomik çatışmalar, eyaletler arası ilişkilerde artan gerilimler, devletlerin dış politikasında güvenliğe daha duyarlı bir yaklaşım benimsemeyi daha önemli hale getirdi. Özellikle son zamanlarda yaşanan uluslararası ve bölgesel askeri çatışmalar, sorunun daha ciddi hale geldiğini gösteriyor. Bu açıdan meselenin aciliyeti, konuyu bilimsel ve teorik açıdan incelemeyi gerekli kılmaktadır.

Askeri güvenliğin sağlanmasında askeri gücün yanı sıra devletler tarafından diplomasinin daha geniş kullanımı, daha etkili ve verimli sonuçlara ulaşılmasına hizmet edecektir. Bu bağlamda makale, askeri güvenliğin sağlanması için bu iki aracın etkileşiminin, özellikle de diplomasinin daha geniş kullanımının önemini incelemektedir. Amaç, askeri güvenliği sağlamanın daha uygun, daha etkili bir yolunu belirlemek ve gerekçelendirmektir.

Dolayısıyla askeri güvenlik, aralarında dış politikanın özel bir konuma ve ağırlığa sahip olduğu çeşitli devlet faaliyet alanlarını kapsayan oldukça geniş bir alandır. Bu faaliyet alanları arasındaki bağlantı tesadüfi değildir ve bir dizi temele dayanmaktadır. Bu vakıflar sadece ulusal sistemin genel kanunları değil, aynı zamanda özel kanunlardır. Askeri politikanın ulusal güvenlik faktörleri sistemindeki rolü, devlet politikası, siyasi partiler, sosyal güçler ve kurumların genel politikasının önemli bir yönü olarak özellikle önemlidir.

Klasik teorisyenlere göre, askeri güvenlik "genel güvenlik" ile eşanlamlı olarak görülüyordu. Bununla birlikte, küreselleşme, uluslararası iş bölümünün genişlemesi, bilimsel ve teknolojik ilerleme ve diğer faktörler, güvenlik konusunun bölünmesine ve daha geniş doğasına yol açmıştır.

Askeri güvenliğe modern askeri-siyaset bilimi açısından yaklaşırsak, bunun sadece fiziksel güvenlik olmadığı, aynı zamanda daha geniş bir anlamı olduğu ve çeşitli alanları kapsadığı sonucuna varabiliriz. Bu uygulama, ulusal güvenliği tamamen askeri alandan çıkarır ve militarizmle birlikte diğer faktörleri de konuya dahil eder [Paleri, 2008: 9]. Böyle bir durumda askeri güvenlik, ulusal devlet güvenliğinin özel bir kolu olarak ayırt edilmeli ve devlet sistemi içinde belirli bir biçimde ele alınmalıdır. **B. Buzan**, ulusal savunmanın kavramsal temellerinin, önemli devlet çıkarlarının askeri güç tarafından korunduğu bir dönemde oluştuğunu yazmaktadır [Buzan, 1991: 277]. Bu nedenle, geniş anlamda askeri güvenlik, devletin kendini koruma ve askeri saldırıyı önleme kabiliyetinin yanı sıra, askeri güçleri kendi çıkarlarını güvence altına almak için rasyonel ve başarılı bir şekilde kullanma fırsatıdır. Bu, **Lipman'ın** askeri güvenlikle ilgili kararlarına uygundur. "*İnsanların ancak hayati çıkarlarını feda etmeye ve savaşı kazanmaya ve onları koruma becerisine sahip olmaya zorlandıklarında tehlikenin dışında kaldıklarını*" belirtmektedir [Lippmann, 1943: 51]. Güvenliğin birincil anlamını tanımlayan **A. Wolfers** şu sonuca varır: "*Güvenlik, devletin çıkarlarına yönelik tehditlerin olmaması veya olası tehditlerin ortadan kaldırılmasıdır*" [Wolfers, 1952: 485]. Askeri güvenliği sağlamak ve tehditleri ortadan kaldırmak için en uygun ve etkili araç olan askeri güç ile paralel olarak diplomasi imkanlarının ortak kullanımınıdır. Ayrıca problemle mücadelede diplomasinin askeri güce dayanması, rasyonelliğini artırmaktadır.

## 2. ASKERİ GÜVENLİK: DOĞA VE BİLEŞENLERİ

Askeri güvenlik açısından, bireyin, toplumun ve devletin çıkarları ve değerleri, bir dizi önemli nedenden ötürü organik olarak bağlantılıdır. Toplumun bir bütün olarak çıkarlarının sağlanması, askeri güvenliğin etkin bir şekilde sağlanmasına bağlıdır. Hukukun üstünlüğünün tesis edilmesinde ve hukukun üstünlüğünün sağlanmasında, bir toplum üyesinin kişisel güvenliğin sağlanmasındaki menfaatleri, toplumun menfaatleri ile tamamlanmaktadır.

Toplum üyelerinin kişisel güvenliği, kamu çıkarlarının koruma düzeyine bağlıdır. Tüm güvenlik eğilimleri genel olarak devletin güvenliğini sağlamaya hizmet ettiği gibi, askeri güvenlik de toplum mensuplarının hak ve özgürlüklerinin ve genel güvenliğin garantörü olarak hareket eden bir devletin varlığının temel koşulu olarak kabul edilmektedir. Dolayısıyla askeri güvenlik, bir toplum üyesinin varlığı için bir ön koşul olarak düşünülebilir [Huseynov, 2018: 69-70].

**Askeri güvenlik** - bir ülkenin güvenliğini ve ulusal çıkarlarını silahlı şiddetle koruma yeteneğini belirleyen ulusal güvenliğin ayrılmaz bir parçasıdır. Bir devletin savaş başlatma, savaşa katılma ve varsa ona karşı çıkma, ülkenin ulusal güvenliği için zararı ve yıkıcı sonuçları en aza indirme yeteneğini karakterize eder. Bu açıdan askeri güvenliğin sağlanmasının amacı, askeri tehditleri devletin emrindeki çeşitli yollarla (esas olarak askeri araçlarla) önleyerek, yerelleştirerek ve etkisiz hale getirerek vatandaşların, toplumun ve devletin hayati çıkarları için koşullar yaratmaktır.

Askeri güvenliğin sađlanması, askeri, politik-diplomatik, ekonomik, ideolojik ve diđer bileşenlerin, devlet kurumlarının amaçlı ve koordineli çabaları ile sađlanır.

**Askeri güvenliğin siyasi ve diplomatik bileşenleri:**

- *yüksek düzeyde kolektif (uluslararası) güvenlik sistemi;*
- *devletin askeri-politik birlikler sistemine entegrasyonu;*
- *dünyadaki askeri-politik güçlerin kabul edilebilir dengesi;*
- *devletin katıldığı uluslararası antlaşmaların ve anlaşmaların garantili uygulanması;*
- *uluslararası silah kontrolünün ve kitle imha silahlarının ve bunların dağıtım araçlarının yayılmasının önlenmesinin daha da iyileştirilmesi.*

**Askeri güvenliğin ekonomik bileşenleri:** [Цымбал и Хрусталеv, 1999: 78-89]

- *ülkenin savunma kabiliyetini sađlayan maddi ve mali kaynaklar;*
- *silahlı kuvvetlerin ve diđer birliklerin niceliksel ve niteliksel parametreleri;*
- *ordu, donanma ve diđer birliklere gerekli olan her şeyi sađlayan askeri-sanayi kompleksinin silahlarının ve askeri teçhizatının seferberlik rezervi;*
- *yeni silahların ve askeri teçhizatın yaratılması için bilimsel ve teknik potansiyel;*
- *silahlı kuvvetlere ve diđer birliklere gerekli miktarda silah ve askeri teçhizat sađlayan sanayi seferberlik yetenekleri.*

**Askeri güvenliğin askeri bileşenleri:**

- *Silahlı Kuvvetlerin komuta ve destek sistemleri, diđer birlikler, askeri birimler ve birimlerle gücü;*
- *muharebe etkinliđi ve muharebeye hazır olmanın bađlı olduđu birlik ve kuvvetlerin hazır olma seviyesi;*
- *Silahlı Kuvvetlerin ve diđer birliklerin teknik teçhizatı (askeri teçhizat, mühimmat, askeri teçhizat);*
- *Cephaneliklerdeki ve üslerdeki silahlar ve askeri teçhizat;*
- *stratejik ve askeri operasyonları yürütmek, askeri tatbikatlar yapmak için tasarlanmış askeri altyapının (sabit tesisler) durumu.*

**Askeri güvenliğin ahlaki ve psikolojik bileşenleri:** [Зеленков, 2000: 61-64]

- *ülke nüfusunun ahlaki potansiyeli, nüfusun ahlaki durumuna ve psikolojik hazırlık derecesine göre belirlenir;*
- *hak ve sorumluluklarının, toplumdaki ve devletteki statüsü ve prestijinin toplamı olan askerlerin sosyal statüsü;*
- *Silahlı Kuvvetlerin ve diđer birliklerin kilit personelinin ahlaki ve psikolojik durumu.*

**Askeri politikanın amacı,** askeri güvenliği sağlamak için askeri güç kullanımının olasılığını, gerekliliğini ve sınırlarını belirlemektir; gerekli ve yeterli askeri gücün niteliksel ve niceliksel özelliklerinin değerlendirilmesi; askeri güç kullanmanın yol ve araçlarının, gerektiğinde askeri gücün potansiyel düşmanı etkileyebileceği anlaşılmaktadır.

Devletlerin **askeri politikasının temel görevleri** şunlardır: *askeri güvenlik alanında birleşik bir devlet politikasının oluşturulması ve uygulanması; iç siyasi istikrarın korunması; ülkenin anayasal yapısının, bütünlüğünün ve dokunulmazlığının korunması; komşu ve diğer devletlerle dostane ilişkilerin geliştirilmesi ve güçlendirilmesi; devlet savunma sisteminin gerekli düzeyde kurulması ve sürdürülmesi; Silahlı Kuvvetlerin, diğer birliklerin, askeri birliklerin ve organların sürekli iyileştirilmesi ve gerekirse koordineli eylemlere hazır olma; önemli nesnelerin çeşitli alanlarda korunması vb.* [Military Doctrine of the Republic of Azerbaijan, 2010].

Devletin askeri politikası, dış ve iç askeri tehditleri güvenliğe değerlendirmeye ve askeri güvenliği sağlamak için askeri olmayan ve askeri araçların oranını belirlemeye izin veren birleşik bir sistemin oluşturulmasını içerir. Askeri güvenliğin sağlanmasında devletin askeri teşkilatının kurulması, güçlendirilmesi ve geliştirilmesine özel önem verilmektedir.

Güvenlik, Silahlı Kuvvetlerin ve diğer birliklerin barışçıl eğitimini organize etmeyi, savaş sırasında görevleri yerine getirmeyi, devlete karşı saldırıyı önlemek ve püskürtmeyi, toprak bütünlüğünü ve anayasayı ihlal eden eylemleri yerelleştirmeyi ve etkisiz hale getirmeyi amaçlamaktadır.

### **3. DIŞ POLİTİKADA ASKERİ GÜÇ İLE DİPLOMASİ ARASINDAKİ KARŞILIKLI İLİŞKİ**

Yukarıda belirtildiği gibi, askeri güvenliğin sağlanmasında önemli bir bileşen, dış politika stratejisi ile ortak bir amaca hizmet eden birleşik bir askeri eylem stratejisi sisteminin oluşturulmasıdır. Uluslararası ilişkilerde strateji sanatı, devletin dış politikadaki hedeflerini ve faaliyet biçimlerini bu hedefler doğrultusunda inşa etmektir. Hedeflere ulaşmak için gereken askeri ve politik önlemlere dayalı olarak hedeflerin değerlendirilmesidir. Bu hedeflere ulaşıldığında, beklenen durum, ilgili gerçek ve potansiyel kaynakları ölçmek ve bu döneme uygun olarak tutarlı bir öncelik şemaları sistemi ve eylem planı oluşturmaktır. Devletin ulusal çıkarları için mücadele ile birlikte bu iki faaliyet biçimini birleştiren kavram, aynı zamanda devletin gücüdür. Aslında savaş ve diplomasi, devlet gücünü kullanmanın iki farklı şeklidir.

**Klausevitz'in** güvenlik araştırması, savaş hakkındaki görüşlerine dayanıyor. Bu toplantılar sosyal gerilimler ve kitlesele psikolojik yüzleşmeyle ilgili değil, diplomasinin ekonomik yaptırımları ve rasyonel bir politika aracı hakkındadır. Bu başka şekillerde devam ediyor. Clausewitz'e göre savaşın kendisi siyasi bir faaliyettir. Bu kanlı bir uzlaşma biçimidir [Clausewitz, 2003: 25]. Askeri bir hedef, yalnızca bir amaca ulaşmak için bir araçtır. Savaş, ulusal hedeflere ulaşmak ve ulusal çıkarları



korumak için büyük ölçekli, uzun vadeli bir askeri operasyondur [Art, 2009: 3]. Ancak, gücün etkili olabilmesi için mutlaka uygulanması gerekmez.

Devletlerarası ilişkilerin tarihine kısaca bakarsak, askeri güvenliğe bir çözüm olarak yalnızca askeri gücün varlığı ve kullanımının daha kabul edilebilir görüldüğünü görebiliriz. Kuşkusuz, bu araç bugün hala etkilidir. Ancak modern çağın jeopolitik manzarası, farklı süreçlerin seyri yeni yaklaşımların ortaya çıkmasını zorunlu kılmıştır. Böylece, Eylül 2001'de Amerika Birleşik Devletleri'nde meydana gelen terör saldırısı, askeri gücün tek başına tüm güvenlik sorunlarını çözemeyeceğini bir kez daha gösterdi. Günümüzün terörist eylemlerinin dünyanın süper askeri, son teknoloji durumuna bile karşı uygulanması, güvenlik yaklaşımını değiştirmeyi gerekli kılmıştır.

Yukarıda bahsedilen terörist saldırının ardından (11 Eylül 2001), klasik savaş kavramının kaybolması ve yeni askeri tehdit biçimlerinin ortadan kalkmasıyla, dış politika ve askeri güvenlik arasındaki ilişkide bazı değişiklikler ortaya çıkmaya başladı [Huseynov, 2009]. Durumu doğru bir şekilde değerlendiren devletler, toplumun tüm önemli alanlarında askeri ve diplomatik yetenekler dahil olmak üzere yeteneklerini sürekli olarak geliştirmeyi bir öncelik haline getirmişlerdir. Yani sorunun daha etkin bir şekilde çözülebilmesi için sadece orduya değil, diplomasi imkanlarının etkin kullanımına da daha fazla önem verildi.

Modern terörizm küresel bir sorun olduğu ve sınırları tanımadığı ve teröristler bir ağ içinde faaliyet gösterdiği için, herhangi bir ülkenin buna karşı verdiği mücadele etkisiz görünüyor. Nitekim ABD liderliğindeki koalisyon güçlerinin 2001 sonrasında Afganistan, Irak, Libya ve Suriye'de askeri operasyonlarının beklenen sonuçları vermemesi bunun açık bir örneğidir. 20 yıldan fazla zaman geçmiş olmasına rağmen, terörizm modern dünyanın en ciddi sorunlarından biri olmaya devam ediyor.

Bu açıdan bakıldığında, modern terörizmle mücadelede, devletlerin askeri işbirliğine paralel olarak diplomatik ilişkilerini genişletmesinin daha da önemli olduğu sonucuna varabiliriz. Deneyimler, uygun ve profesyonel diplomasinin, tüm terörle mücadele önlemlerini ortak ve birbiriyle ilişkili bir biçimde birleştirmeye yardımcı olabilecek araçlardan biri olduğunu [Pesto, 2010: 66] ve daha etkili sonuçlara izin verdiğini göstermiştir.

Şu anda, terörizmle mücadelede devletler arasındaki işbirliği temel olarak aşağıdaki alanları kapsamaktadır: *terörizmle mücadelenin etkinliğini artırmak için terörizme standart bir yaklaşımın koordinasyonu ve müzakere edilmesi; belirli devletlere terörist gruplara herhangi bir siyasi veya maddi destek sağlamama yükümlülüğü getirmek; teröristlerin neden olduğu zararı ortadan kaldırmak için devletlerin karşılıklı yardımlaşması için koşullar yaratmak; terör örgütlerinin varlığı ve faaliyetleri hakkında birbirlerini bilgilendirmek; terörizmle mücadele vb. alanında uluslararası ve bölgesel güç merkezleriyle görüşmeler yapmak.*

Ancak her iki durumda da mücadelenin temel amacı devletin askeri güvenliğini sağlamaktır. Modern yaklaşımda diplomasinin rolü daha kabul edilebilir görülse de, unutulmamalıdır ki, faaliyetlerinin etkinliğini artırmanın ana katalizörü şüphesiz devletin kendisinin gücüdür.

Diplomasinin gücü, devletin kaynaklarına ve kaynak kullanım sistemi ve mekanizmasına bağlıdır. Büyük ve güçlü devletlerin diplomasininin de güçlü bir temeli vardır. Örneğin ABD diplomasininin, gücüne bağlı olarak görece karşılaştırma temelinde tüm ülkelerde güçlü olduğu söylenebilir. Amerika Birleşik Devletleri'nin uluslararası etkisi ve uluslararası arenadaki etkisinin sistematik kaldırıcı, diplomasininin etkisini de artırmaktadır. Diplomasininin aynı zamanda ait olduğu devletin gücünü yaymaya da hizmet eder. Diplomasininin gücü, aynı zamanda devletin güçlü bölgesel çıkarlarından da kaynaklanmaktadır. Diplomasininin, devletin iç politikasını yurtdışına yayılmış çıkarlar üzerinde birleştirme işlevini yerine getirir. Şu anda devletin iç yetenekleri dış politikasını etkiliyor ve güçlendiriyor. Diplomasininin, uluslararası anlaşmazlıkların çözümünde önemli bir rol oynar [Huseynov et al., 2019: 105-115].

Diplomasininin, devletin ulusal çıkarlarını gözetmenin ve dış politikanın siyasi hedeflerine ulaşmanın araçlarından biri olarak kabul edilir. Ancak, savaşa katılanlar arasındaki diyalogun sürekli değişen yapısının kendi "nedeni" ve "mantığı" olması, diplomasininin ile aynı olduğu anlamına gelmez. Öte yandan tehditler ve güç kullanımı göz önüne alındığında, diplomasininin savaşa ilgili olduğunu kanıtlamaz [Watson, 2010: 91]. Bunlar, devletin çıkarlarını birleştiren iki farklı dış politika biçimidir. Akılcılar, savaşların karmaşasına ve silahların sessizliğine rağmen, barışı düşünmenin ve savaşı unutmamanın gerekli olduğuna inanıyorlar. Uluslararası ilişkiler ebedidir; diplomasininin ve savaş onlar için ek faktörlerdir; sırayla, onlar egemen olurlar, ancak hiçbir durumda gündemden hiçbiri diğerinin lehine çıkmaz"[Aron, 2000: 91].

Profesyonel diplomasininin, askeri hedeflere kolayca ulaşılmasına yardımcı olur. Güç ve diplomasininin, samimi ittifaklardan daha çok birbirini destekler, yani bir devletin gücü ve diplomasininin karşılıklı desteği, iki devlet arasındaki yakın ilişkilerin karşılıklı desteğinden daha önemlidir.

Savaş ve diplomasininin aslında belirli yazışmaların alternatif yöntemleri olsalar da, birbirleriyle çok yakından iç içe geçmiştir [Watson, 2010: 48]. Dış politikada, belirli bir devletin şu ya da bu şekilde eğilimi bir dizi faktör tarafından belirlenir. Bunlar, devletin çıkarları, iç siyasi rejim, askeri-politik stratejiyi uygulayan liderlerin kişisel nitelikleri, uluslararası ilişkilerdeki güncel eğilimler ve ülkedeki askeri ve sivil personel arasındaki ilişkilerdir.

Uluslararası bağlamda, güvenlik konuları yalnızca devletlerin iç özelliklerine göre değil, aynı zamanda uluslararası ilişkilerin yapısı ve eyaletler arası ilişkiler sistemi tarafından da belirlenir, çünkü güvenlik ilgili bir fenomendir. Birbirine bağlı uluslararası güvenlik modelini anlamadan herhangi bir devletin güvenliğini anlamak imkansızdır [Aron, 2000: 187].

Ülkedeki askeri-politik durumu analiz etmek için uluslararası sistemin genel yapısını ve işleyişini, devletin uluslararası sistemdeki konumunu dikkate almak gerekir. **Voltz**, uluslararası sistemi devletler arasında ortak bir rekabet kaynağı olarak görüyor. "Güvenlik arayan" devletler, statülerini ve güvenilirliklerini korumaya çalışırlar ve bu tür devletler arasındaki çatışma ve rekabetin nedeni, bir tehdit kaynağı olarak hareket eden uluslararası sistemdir [Waltz, 1979: 105-107]. Bununla birlikte, yapısal gerçekçilikte sistemin devletler üzerindeki etkisi konusunda farklılıklar vardır.

Uluslararası sistem, rekabet ve işbirliğine odaklanabilir. Uluslararası siyasette, devletler bu sistemik eğilimlere rehberlik etmek için çeşitli araçlar kullanırlar. Dış politika ile devletin askeri güvenliği arasında da bir bağlantı vardır, çünkü devletler askeri güvenliği sağlamak için ortak önlemler alırlar ve devletin bu önlemlere katılımı, dış politika kompleksini oluşturur ve sağlar.

Görüldüğü gibi dış politikadaki askeri ve güvenlik unsurları, dış politika unsurlarını içermektedir. Askeri güvenliğin dış politika unsurları arasında öncelikle askeri tehditler yer almaktadır. Askeri tehdit, siyasi ve diğer hedeflere ulaşmak için askeri-politik ilişkiler konularından birinin devlete karşı potansiyel kullanımını karakterize eder [Макаренко и Морозов, 2007: 7-8]. Askeri tehditler dahili veya harici olabilir. Dış tehditler her zaman önemlidir. Devletin askeri gücü, uluslararası siyasette ulusal çıkarlarını gerçekleştirmenin bir aracı olduğu için, devletin askeri tehditlerle karşı karşıya kaldığı alan, öncelikle devletlerarası ilişkilerin alanıdır ve bu tehlide savaş denir. Savaşın teorik ve felsefi temellerini geliştiren Alman teorisyen Clausewitz, savaşı siyasi sendikalar arasında hedefe yönelik ve geniş çaplı silahlı bir çatışma olarak tanımlar [Clausewitz, 2003]. Uluslararası sistemde tek bir fikrin veya etki mekanizmasının etkisizliği "savaşın patlak vermesi için gerekli koşulları yaratır" [Waltz, 2001: 56].

Güvenliğin diğer bir dış politika unsuru, devletin dış politika sistemi içinde, daha doğrusu siyasi faaliyet alanındaki lider konumudur. **Morgentau** barışı sağlamanın birkaç yolunu listeler: *silahsızlanma, toplu güvenlik, hukuk sistemi, uluslararası devlet, dünya devleti*. Ancak, tüm bu yolların yararsız olduğuna işaret ederek, "*egemen devletlerden oluşan bir toplumda barışı sağlamanın en iyi yolu diplomasidir*" [Morgenthau, 2005: 567]. Diplomasi, dünya siyasetinin küresel sisteminin merkezi kavramı ve uluslararası düzeyde devlet sistemindeki diğer katılımcıların ilişkileri, yani diplomasi küresel sistemdeki bir iletişim sürecidir ve daha önce de belirtildiği gibi, dış politika için bir araçtır. **Brayn Vayt**, bu iki kavramı "diplomasi" kavramının makro ve mikro değerleri olarak ayırıyor ve dünya siyasetinde diplomasinin, dünya siyasetindeki çatışmaları güç kullanmadan müzakereler yoluyla çözmek için uluslararası aktörler arasında bir iletişim süreci olduğunu belirtiyor [White, 2005: 388]. Askeri güvenliğin sağlanmasının devletin ulusal çıkarlarının ön saflarında yer aldığı düşünülürse, diplomasi aynı zamanda güvenliğin sağlanmasında bir araç rolü oynar ve bu yöntem ordunun kendisi kadar önemlidir. Tüm yeteneklere sahip ancak uygun diplomasiden yoksun bir ulus, doğal kaynaklar pahasına geçici bir başarı elde edebilir. Uzun vadede, yarısının doğal kaynaklarını uluslararası amaçlar için ayırma gözetmeksizin ve mantıksız bir şekilde israf etmesi muhtemeldir. Milletler, diplomasi güçlerini oluşturan çeşitli unsurlar için üst düzey bir katalizör olduklarına ikna edilmelidir. Başka bir deyişle, uluslararası sorunlara dahil olan araçlar, diplomasi yoluyla kesin bir ulusal güç oluşturur [Detter, 2000: 153-154].

Diplomasinin temel görevi, devletin ulusal çıkarlarını barış içinde sağlamaktır. **Barri Steyner**, "*diplomasinin görevinin savaşı önlemek ve bu yönde genişlemektir*" diye yazmıştır [Steiner, 2004: 499]. Ortak dış politika açısından diplomasi, gerçek ve potansiyel güce dayalı olarak dış politika hedefleri belirlemekle ilgilidir; diğer devletlerin hedeflerini belirlemekten ve bu hedeflere ulaşmak için güçlerini

belirlemekten; bireysel çıkarların ne ölçüde örtüştüğünü netleştirmek; hedefe ulaşmanın yollarını belirlemektir. Bu sorumluluklardan birinin yerine getirilmemesi tüm dış politikayı ateşleyebilir. Diplomasi sanatının profesyonelliği ve inceliği, hangi görevin zamanında vurgulanması ve ele alınması gerektiğini belirleme yeteneğinde yatmaktadır [Morgenthau, 2005: 539-542].

İlgili ulusal çıkarları sağlamak için tehditleri, faydaları ve önerilen önlemleri tam olarak değerlendirmek için diplomatik meslektaşlarla diyaloglar düzenler ve bunlara katılır. *"Açıklamaya rağmen, diplomatların eylemlerinin ardındaki pozisyonunun anlamı askeri güce dayanıyor." Güç olmazsa diplomasi rasyonelitesini kaybeder* [Art, 2009: 35]. Yani, mantıksal olarak, doğrudan askeri güvenlikle ilgili diplomatik faaliyet biçimlerini zorla ilişkilendirmek zorunda kalıyoruz, çünkü belirli bir tehditle mücadele etmek için kullanılan önlemler yeterli olmalıdır.

Bahsettiğimiz alanda güçsüz diplomasinin rasyonel olacağını varsaymak saflıktır. Yeni dönemin diplomatik sorunları, diplomatik sorunların güç ve diplomasi birliği içinde ele alınmasını gerektirmektedir, çünkü "klasik diplomaside olduğu gibi, sadece diplomatların çözebileceği sorular artık çok sınırlıdır. Bu tür diplomasi, müzakereler, zorlayıcı diplomasi ve ilişkileri geliştirme veya uzlaşma şeklinde gerçekleştirilir" [Craig, 1995].

Devletin askeri güvenliğinin sağlanmasında dış politika organları ile askeri yapılar arasındaki ilişki ve etkileşim de bu alanlar arasındadır. "Barışçıl bir biçimden savaşçı bir biçime periyodik geçiş, belki de devletin askeri ve dış politikası arasındaki işbirliğini ve ilişkileri canlandırmanın en büyük nedenidir." Askeri veya diplomatik yolların kullanımına ilişkin tüm kararlar politiktir. Planlama ve karar alma süreçlerine siyasi liderlerin aşırı müdahalesi yıkıcı sonuçlar doğurabilirken, bu planlar ve kararlar üzerindeki kontrollerini kullanma konusundaki çeviklik ve isteksizlik ulusal bir tehdit oluşturmaktadır [Aron, 2000: 362].

Dolayısıyla modern zamanlarda askeri güvenliğin sağlanmasının önemi, askeri tehdit ve tehditlerin önlenmesinde hem askeri güç hem de diplomasi ortak kullanımı ve elde edilen olumlu sonuçlar, bu alanın devletler için eşit derecede önemli olduğunu göstermektedir.

## SONUÇ

Analizden de görülebileceği gibi, devletin askeri güvenliğinin sağlanması, askeri gücü ve diplomatik fırsatları etkin bir şekilde kullanma yeteneğine dayanmaktadır. Bunu yapmak için devletler ulusal ve uluslararası düzeyde stratejiler uygular. Bu stratejilerin ortak temeli, devletin dış politikasıdır. Modern zamanlarda, güç kullanımının normatif ve teknolojik sınırlamaları, kullanımının önünde ciddi bir engel haline geldi. Bu nedenle, devletler artık güç kullanımında eskisi kadar özgür değil ve uluslararası düzeyde önemli bir baskı ile karşı karşıya. Öte yandan, bilimsel ve teknolojik ilerlemenin sonuçları, devletleri güç kullanımında ciddi bir ikileme karşı karşıya bırakmıştır: askeri teknolojik ilerleme ve silahların yıkıcı gücü, güç kullanımının neden olduğu felaket artık olmayacak seviyeye ulaşmış, sadece nesnesini değil

konusunu da etkiler, tüm dünyayı kapsayabilir. Bu nedenle, dış politikada fiziksel güç kullanımına ek olarak, devletler onun kullanımının başka biçimlerini de arıyorlar.

Böylece, dış politika veya başka bir deyişle ulusal güvenlik stratejisi çerçevesinde devlet diplomasisi, askeri güvenlik sisteminin ayrılmaz bir parçası haline gelir ve uluslararası güvenlik stratejisinin ana uygulayıcısı olarak hareket eder. Askeri güvenlik alanları ile devletin dış politikası arasındaki ilişki, devletin ulusal çıkarlarının gerçekleştirilmesinde askeri-stratejik ve siyasi-diplomatik faaliyetlerin bir kombinasyonunu içeren bir dizi faktörden kaynaklanmaktadır; devletin uluslararası dış politika sistemini ve askeri güvenlik önlemlerini sağlamak için devletlerarası ilişkilerde alınan önlemlerin niteliğinden kaynaklanmaktadır.

Bu faktörler, askeri güvenliğin dış politika unsurlarını ve dış politikanın askeri unsurlarını belirler. Askeri politikanın dış politika unsurları askeri tehditlere karşı gerekli bir güvenlik aracı ve devletin diplomatik faaliyetinin askeri güvenliğini sağlayan bir sistem ise, dış politikanın askeri unsuru askeri güce yönelik diplomatik eylemlerin desteklenmesidir. Askeri güvenlik ortamındaki değişiklikler, dış politika ile ilişkilerinde bazı değişikliklere neden oluyor ve askeri tehditler karşısında, diplomasi bunlarla savaşmanın en önemli yolu.

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## **INNOVATIVE TECHNOLOGIES FOR OCCUPATIONAL HEALTH AND SAFETY IN HOTEL AND RESTAURANT COMPLEXES**

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### **Abstract**

The basic innovative technologies of labor protection, that are used in hotel-restaurant complexes, are disclosed. Great attention is paid to automated systems for occupational safety, computer systems for collecting and processing information from security sensors in hotels and restaurants.

**Keywords:** labor protection, hotel, restaurant

### **INTRODUCTION**

Creation of safe working conditions is important and actual in modern conditions at all enterprises. Technological progress makes it possible to introduce innovative technologies in order to create optimal working conditions, living conditions, accident prevention and more.

Hotel and restaurant complexes have certain specifics from the point of view of labor protection. On the one hand, there is a need to use thermal, electrical, chemical and other production equipment. On the other hand, you need to create the safest conditions for guests who don't have special training in occupational safety or health.

V. Kozynets, A. Sirik, O. Yevtushenko covered the problems of labor and life safety in the hospitality industry. O. Slobodian, V. Zaiets, L. Neshchadym revealed the peculiarities of informing people about emergencies in hotel and restaurant complexes. Comfort and safety systems in hotel and restaurant buildings were studied by G. Ashmarina, O. Matyashchuk, O. Borysiuk, I. Zarya and others.

### **MATERIALS AND METHODS**

Our goal is to outline the main innovative technologies for labor protection used in hotel and restaurant complexes.

According to the requirements of labor protection, the employees of the hotel and restaurant complex must follow the norms, rules and instructions on labor protection, correctly apply the means of individual and collective protection. If an accident occurs in a hotel or restaurant, you must immediately notify your immediate supervisor, as well as situations that may be dangerous for the lives and health of visitors.

## **RESULTS**

However, only traditional instructions are not always enough to maximize protection against accidents. Nowadays, the labor protection service in hotel-restaurant complexes uses the automated workplace (AWP) "Labor protection". It allows you to keep list of staff, identify harmful working conditions, schedule medical examinations of employees and more. The specialist, that works with the workstation, can determine which workers should be provided with personal protective equipment, for which categories of workers are provided compensation for harmful and dangerous working conditions, how training should be conducted and etc. [3].

Big attention in hotels and restaurants is paid not only to the workstation "Labor Protection", but also to other security systems. They are multifunctional and can include various elements of protection — from the system of the security-perimeter alarm system to computer systems of collecting and processing of the information. Systems, mentioned above, provide various alarm sensors from which the notification system operates and electronic locks of emergency exits for evacuation of people work.

In hotels of high quality, all engineering systems for labor protection (fire alarm, fire extinguishing, video surveillance, burglar alarm and engineering life support management system) are combined into a single information space. All their signals are sent to the central control room. Such hotels and restaurants also implement the Enterprise Building Integration (EBI) system, designed to provide a comfortable and safe environment for guests and hotel staff.

We also focus on the Fire & Life Safety (FLS) standard, which imposes strict requirements on the safety and life support systems of guests and is strictly observed in all branded world hotels. These hotels accommodate more than three thousand fire detectors, and each sensor is addressed (has an individual addressing) and is monitored in real time [2].

Other technical safety systems aimed at ensuring electrical safety, cybersecurity, protection from criminals, theft and organizational measures for staff (appropriate training, briefings, medical examinations, etc.) of hotels and restaurants are also in focus.

## **DISCUSSION**

At the same time, as foreign researchers claim, it is worth concentrating not only on the security systems, but also to look for innovative technologies for training in occupational safety and health of staff and hotel guests. The hospitality industry needs to be more concerned about prevention of accidents. Thanks to life safety training, managers will achieve satisfaction of employee and guest because the last ones will feel themselves safe as at home. At the same time, it will increase the attention of stakeholders and tourists, as they will know that the hotel has a high level of security organization [1]. Thus, it will be beneficial for the hotel, improve security, increase the economy and the reputation of the hotel or restaurant complex.

## **CONCLUSION**

All things considered, hotel and restaurant complexes use the following main innovative technologies for labor protection such as: automated workplace "Labor protection", computer systems for collecting and processing information from various security sensors and innovative approaches to training staff and guests. At the same time, the safety of guests is attributed both to the culture and to the quality of service. Customers, who know in advance

about the high level of the security systems, have general positive expectations about the appropriate level of service quality, about social responsibility in the hotel. This is one of the components that forms an idea of the service and guests' safety level.

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