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INTERDISCIPLINARY SCIENTIFIC RESEARCH & PRACTICES

JUNE 27-29, 2024



London, UK
PROCEEDINGS BOOK

Editor

Dawid WORTLEY

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International British Congress on Interdisciplinary Scientific Research & Practices

June 27-29, 2024

London, UK

Editor

Dawid WORTLEY

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CONGRESS ID

TITLE OF CONGRESS

International British
Congress on Interdisciplinary Scientific Research & Practices

PARTICIPATION

Keynote & Invited

DATE - PLACE

June 27-29, 2024
London, UK

ORGANIZATION

İKSAD-Institute of Economic Development and Social Researches
&
International Society of Digital Medicine

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Albania, Azerbaijan, Bosnia and Herzegovina, Georgia, Greece,
Hungary, India, Indonesia, Israel, Kosovo, Lebanon, North Macedonia,
Pakistan, Poland, Portugal, Romania, Serbia, Türkiye, United Kingdom,
USA Vietnam

TOTAL ABSTRACTS: 123

The number of abstracts from foreign countries: **69**

The number of abstracts from Türkiye: **54**

LANGUAGES

Turkish, English

BRITISH CONGRESS

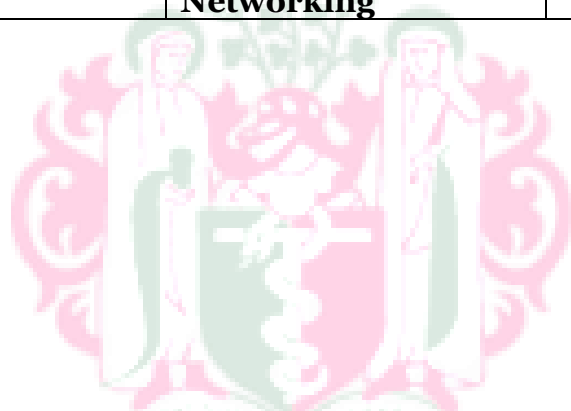
In-Person Program - June 27th



Venue: Royal Society of Medicine
Address: 1 Wimpole Street, London, W1G 0AE

Time	Title	Author/Presenter	Affiliation
09:00	Welcome Address	Mustafa Latif Emek David Wortley	IKSAD
09:05	Active Ageing in the Community	Ian Spero	Active Ageing Alliance
09:20	Lifestyle Medicine and Healthy Ageing	Fraser Birrell	British Society of Lifestyle Medicine
09:35	The Longevity Concept	Neil King	Longevity Group
09:50	Wearable Tech and Remote care	Andrew Cowen	Future Care
10:05	Panel Discussion	All Presenters	
10:15	Refreshment Break		
10:30	Brain Injury Rehabilitation	Ellis Parry	Neumind
10:45	Clinical Hypnosis	Dr. Sarah Partridge	Tranceform Medical
11:00	Virtual Reality Therapies for the elderly	Rebecca Gill	VR Therapies
11:15	Brain Training	Tre Azam	Myndplay
11:30	Panel Discussion	All Presenters	
11:45	Refreshment Break & Networking		
12:30	Religion as a Progenitor and Bearer of Culture	Serdar Demirel	Ibn Haldun University
12:45	The Spirit of Living Together in Anatolia	Muhammed Alparsan Kartal	Kafkas University
13:00	General Safety Rules	Ozlem Kaya	Usak University
13: 15	Early Diagnosis of Helicobacter Pylori	Erisa Grabocka Gentian Stroni	University of Korca
13:45	Networking Break		
14:00	Big Data, AI, Preventative Healthcare	Helen Hobbs	Hobbs Rehabilitation
14:15	Big Data Analytics and Genomics	Steve Gardner	Precision Life

14:30	The Importance of Data	Adam Townsend	VUIT
14:45	AI in Healthcare Education	Dr. Anthony Basiel	Bournemouth University
15:00	Panel Discussion	All presenters	
15:15	Refreshments Break		
15:30	Global Business School for Health	Nora Colton	UCL GBSH
15:45	African Healthcare Challenges	Mary Akangbe	Zenith Global Health
16:00	International health perspectives	Nathan Nagel	Fratrem Group
16:15	Truth and Transformation	Ozge Simsek Mutlu Erbay	Istanbul University
16:30	Panel Discussion	All presenters	
16:45	Closing Remarks	Mustafa Latif Emek David Wortley	IKSAD
17:00	End of Day Networking		



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International

BRITISH

Congress on Interdisciplinary Scientific Research &
Practices

CONGRESS PROGRAM

Meeting ID: 862 1528 3413

Passcode: 272829

<https://us02web.zoom.us/j/86215283413?pwd=zZ8EfUm3k0Ep1NG3ESdT8tnMb12bpY.1>

PARTICIPANT COUNTRIES (21):

Albania, Azerbaijan, Bosnia and Herzegovina, Georgia, Greece, Hungary,
India, Indonesia, Israel, Kosovo, Lebanon, North Macedonia, Pakistan,
Poland, Portugal, Romania, Serbia, Türkiye, United Kingdom, USA
Vietnam,

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- ✓ Kongremizde Yazım Kurallarına uygun gönderilmiş ve bilim kurulundan geçen bildiriler için online (video konferans sistemi üzerinden) sunum imkanı sağlanmıştır.
- ✓ Online sunum yapabilmek için <https://zoom.us/join> sitesi üzerinden giriş yaparak “Meeting ID or Personal Link Name” yerine ID numarasını girerek oturuma katılabilirsiniz.
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- ✓ Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

Points to Take into Consideration - TECHNICAL INFORMATION

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Meeting ID: 862 1528 3413
Passcode: 272829

Session -1 / Hall-1

28.06.2024

Moderator: Assoc. Prof. Dr. Aida Bendo

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
AN OVERVIEW ON SPORTS BROADCASTING IN ALBANIA	Assoc. Prof. Dr. Fisnik Brovina, Msc. Indrit Reka	Sports University of Tirana, Tirana, Albania
ASSESSMENT AND COMPARISON OF RANGE OF MOTION IN MAJOR UPPER AND LOWER LIMB JOINTS AND SPINE IN MASTERS ATHLETES	Patrycja Widlak PhD, Anna Kopiczko Prof.	Józef Piłsudski University of Physical Education in Warsaw, Poland
BE ACTIVE IN A "SMART" WAY	Dimitris Kanaros, M.Sc. & M.Ed Polychronis Bourdaniotis, M.A.	Varvakeio Model High School, Greece. Experimental High School of Patras University, Greece.
EFFECTS OF DIFFERENT HIGH-INTENSITY INTERVAL TRAINING WITH COD RUNNING ON AEROBIC AND ANAEROBIC CAPACITY IN 16-YEAR-OLD SOCCER PLAYERS	Msc Arben Bici, Prof.Dr.Agron Kasa	University of Sport of Tirana, Albania
SOME BIOMECHANICAL ASPECTS OF ANALYSING PERFORMANCE AND ITS INDICATORS IN BASKETBALL GAME	Assoc. Prof. Dr. Aida Bendo, Msc. Eli Papa	Sports University of Tirana, Tirana, Albania Albanian University Sport Federation, Tirana, Albania
A STUDY ON THE 5-YEAR CHANGES ON THE ANTHROPOMETRICS DATA OF ALBANIAN BODYBUILDERS	Dr. Rando Kukeli, Assoc. Prof. Dr. Aida Bendo	Sports University of Tirana, Tirana

All participants must join the conference 10 minutes before the session time.

Every presentation should last not longer than 10-12 minutes.

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Session -1 / Hall-2

28.06.2024

Moderator: Dr. Ana GORENCA

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
SAFEGUARDING TAXPAYER RIGHTS: A COMPREHENSIVE ANALYSIS OF THE RIGHT TO CONFIDENTIALITY OF TAX DATA	Dr. Irena LAVDARI	European University of Tirana, Albania
LEGAL AND TESTAMENTARY INHERITANCE: JUDICIAL PRACTICES IN ALBANIA	Dr. Valentina Memini	"Qiriazi" University College
BITCOIN VOLATILITY ESTIMATION– A GARCH APPROACH	Ardita Todri, Marsel Sulanjaku	University of Elbasan "Aleksandër Xhuvani", Albania
SUCCESSFUL ORGANIZATIONAL INNOVATION AND KEY DRIVING FACTORS IN THE BANKING SECTOR OF ALBANIA	Dr. Ana GORENCA	Mediterranean University of Albania
UNVEILING THE LANDSCAPE: SOCIAL MEDIA MARKETING AND ENTREPRENEURS	Sonia Laskar, Dr. H.R. Laskar	Assam University, Silchar, India
FACTORS AFFECTING THE DEVELOPMENT OF RURAL TOURISM IN THO SON COMMUNE, VIETNAM	Trong Nhan Nguyen, Tri Thong Truong, My Tien Ly	Can Tho City, Vietnam. Kien Giang College, Vietnam
THE STRUCTURE OF HIGHER EDUCATION INSTITUTIONS MARKET AND ITS ADAPTATION TO THE EU ACCESSION: A COMPARATIVE EMPIRICAL STUDY FOR WESTERN BALKANS	Msc. Mishela Rapo	European University of Tirana, Albania
NAVIGATING THE NEW GEOPOLITICAL LANDSCAPE IN THE FACE OF RUSSIA'S GLOBAL ORDER CHALLENGE	Giovanni Di Grezia Ekaterine Lomia	GBSB, MIU, USAC

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Session -1 / Hall-3

28.06.2024

Moderator: Assoc. Prof. Dr. Filiz KARADAĞ

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
BIBLIOMETRIC ANALYSIS OF AUGMENTED REALITY STUDIES IN EDUCATION PUBLISHED IN WEB OF SCIENE DATABASE	Erhan BOSTAN Enver TÜRKSOY	Kırşehir Ahi Evran University, Kırşehir, Türkiye
LEARNING AND TEACHING STRATEGIES FOR TWICE EXCEPTIONAL (2E) STUDENTS	Filiz KARADAĞ İlknur BULUT Elif Naz ÖZBUDAK	Dokuz Eylul University, Türkiye
LANGUAGE TEACHING PROGRAMME PREPARED FOR SYRIAN IMMIGRANT CHILDREN LIVING IN TÜRKİYE	Fatma KARAMAN Selvi Nur YAVUZATMACA	Graduate School of Social Sciences, Western Languages and Literature, German Language and Literature, Elazığ, Türkiye.
INVESTIGATION OF CULTURAL ELEMENTS IN THE “SCHRITT FÜR SCHRITT DEUTSCH” TEXTBOOK USED IN SECONDARY EDUCATION IN TÜRKİYE	Fatma KARAMAN Ali Sıtar ÖLGÜN	Graduate School of Social Sciences, Western Languages and Literature, German Language and Literature, Elazığ, Türkiye.
TEACHERS' VIEWS ON THE GENERAL STRUCTURE AND FUNCTIONING OF SPECIAL EDUCATION PRESCHOOLS	Filiz KARADAĞ Fatma Lale BARDAKÇI	Dokuz Eylul University, Türkiye
IDENTIFICATION OF PEER AND CYBER BULLYING AMONG GIFTED STUDENTS	Filiz KARADAĞ Fatma Lale BARDAKÇI	Dokuz Eylul University, Türkiye
UNDERSTANDING, RECOGNIZING, AND WORKING WITH TWICE EXCEPTIONAL CHILDREN FROM THE PERSPECTIVE OF PROFESSIONALS	Filiz KARADAĞ Elif Naz ÖZBUDAK İlknur BULUT	Dokuz Eylul University, Türkiye

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Session -1 / Hall-4

28.06.2024

Moderator: Prof. Dr. Sedat Cereci

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
HYPERMODERN WORLD STRATEGIES: COMMUNICATION TECHNOLOGIES	Sedat Cereci	Hatay Mustafa Kemal University, Türkiye
DIGITAL WORLD SOVEREIGNTY	Sedat Cereci	Hatay Mustafa Kemal University, Türkiye
EXAMINING THE EFFECT OF MATERIALISM AND INVOLVEMENT ON THE PURCHASE OF FASHION CLOTHING ACCORDING TO MARITAL STATUS	Özge Habiboğlu	Tekirdağ Namık Kemal University, Türkiye
CORPORATE TRANSFORMATION IN THE FACE OF THE CLIMATE CHANGE CRISIS: THE ROLE OF ELECTRIC VEHICLES	Ayşe Meriç Yazıcı	Istanbul Gelisim University, Türkiye
NAVIGATING HUMAN DIGNITY AND ONLINE SPEECH: DEFAMATION LAWS IN THE ERA OF DIGITAL COMMUNICATION	Nisa Huseynzada	Baku State University, Baku, Azerbaijan
ILTIZAM (TAX-FARMING SYSTEM) IN THE DIYARBEKIR PROVINCE IN THE 18TH CENTURY AND THE CHALLENGES ENCOUNTERED	Çiğdem Kavak	Dicle University, Diyarbakir, Türkiye

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Session -1 / Hall-5

28.06.2024

Moderator: Asst. Prof. Dr. Zeynep Ayfer Bozat

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
ROLE of WOMEN in INDUSTRIAL REVOLUTION and LUDDISM MOVEMENT; DO WOMEN STILL RESIST INNOVATION?	Zeynep Ayfer Bozat	Istanbul Topkapi University, Istanbul, Turkiye.
COMPARATIVE STUDY OF ESG MATERIALITY ASSESSMENT METHODS OF VARIOUS CORPORATIONS	Sanjwala Mukund, Sanidhya Mukund	London School of Economics, London, United Kingdom. Symbiosis Law School, NOIDA, Uttar Pradesh, India.
COMPETENCIES IN HOTEL MANAGEMENT PROGRAMS: A COMPARATIVE ANALYSIS OF HOSPITALITY GRADUATES AND RECRUITERS PERCEPTIONS	Maalouf Rania	Saint Joseph University, Beirut, Lebanon
TECHNOLOGY ADOPTION AND CUSTOMER SATISFACTION: A STUDY OF MOBILE PAYMENT SERVICES	Ilkin Namazli, Nihad Ahmadli, Kaan Balcilar	La Sapienza University of Rome.
FACTORS INFLUENCING CAREER CHOICES OF COLLEGE STUDENTS	Shahima Roushon, Dr. H. R. Laskar, Sonia Laskar	Assam University, India
INVESTIGATING THE IMPACT OF BEAUTY PRODUCTS ADVERTISEMENT ON YOUNG WOMEN AND THE SOCIAL MEDIA ENGROSSMENT	H. Saranya, Tiwari Mahalaxmi Shivshankar	Vellore Institute of Technology, Chennai, India
GLOBALIZATION, (DE)GLOBALIZATION AND ECONOMIC GROWTH: AN EMPIRICAL APPROACH	Prof.As.Dr. Mateo SPAHO	Governance and Law “Barleti University”, Albania
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Session -2 / Hall-1

28.06.2024

Moderator: Ms. Leslie Robinson

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 12:30-14:30

Ankara Local Time: 14:30-16:30

TITLE	AUTHOR(S)	AFFILIATION
THE VITAL IMPORTANCE OF AUTHENTIC HUMAN CONNECTION	Ms. Leslie Robinson	Founder of Trance4mation Games – New York, N.Y.
ROLE OF SELF DISCRIMINATION, PERCEIVED PARENTAL CONTROL AND PERCEIVED PERFORMANCE FAILURE IN INDUCTION OF SUICIDAL IDEATION AMONG ADOLESCENTS	Anna Sharif Momna Jamil Hafsa Sajid Wajiha Malik	University of Sialkot University of Gujrat
A STUDY TO EXPLORE THE IDEA OF 'WOMANHOOD BEYOND MOTHERHOOD'	Sayani Paul, Tiwari Mahalaxmi Shivshankar	Vellore Institute of Technology, India
FUTURE TRENDS IN SUSTAINABLE INVESTING: EVOLVING REGULATIONS, TECHNOLOGICAL ADVANCEMENTS, GROWING INVESTOR DEMAND	Prof. Froilan D. Mobo	Philippine Merchant Marine Academy, Philippines
FACTORS INFLUENCING CAREER CHOICES OF COLLEGE STUDENTS	Shahima Roushon, Dr. H. R. Laskar, Sonia Laskar	Assam University, India
GREENE'S TRAVELS IN SEARCH OF A MOOD: JOURNEY WITHOUT MAPS AND THE LAWLESS ROADS	Pürnur TURHAN	Ministry of Labour and Social Security, Ankara, Türkiye
SENSITIVITY OF PROFESSIONALS REGARDING VIOLENCE TOWARDS DISABLED CHILDREN	Arzu TEKELİOĞLU Nevin USLU	Burdur Mehmet Akif Ersoy University, Burdur, Türkiye
PROBLEMS RELATED TO RESEARCH ON EMOTION AND COGNITION INTERACTIONS	Simay Ikier	Marmara University, Faculty of Human and Social Sciences, Department of Psychology, İstanbul, Türkiye
A COMPARATIVE RESEARCH ABOUT PERCEPTION OF BLOCKCHAIN TECHNOLOGY: TÜRKİYE AND PAKISTAN CASE	Ayman FARID, Mustafa SUNDU	Roots IVY High School, Islamabad, Pakistan İstinye University, Istanbul, Türkiye
CHALLENGES IN THE ADOPTION OF INTERACTIVE TECHNOLOGIES IN HEALTHCARE SOLUTIONS	Malak Qbilat, Hugo Paredes	INESC TEC, Porto, Portugal Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal

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Session -2 / Hall-2

28.06.2024

Moderator: Dr. Karimova Rena Jabbar

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 12:30-14:30

Ankara Local Time: 14:30-16:30

TITLE	AUTHOR(S)	AFFILIATION
STUDYING THE RESULTS OF LABORATORY STUDIES OF OPTHALMOXLAMIDIASE BY THE ANALYTICAL-EPIDEMIOLOGICAL METHOD	Aghayeva Gunel Intigam	Azerbaijan Medical University
CROTON BONPLANDIANUS: A POTENTIAL CONTRIBUTOR IN MODULATING IL-6, IL-1 β , and TNF- α gene EXPRESSION IN ARTHRITIS MODEL	Humaira M. Khan, Erum Javed	Lahore College for Women University, Lahore-54000, Pakistan
ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP), CHRONIC PANCREATITIS AND PANCREATIC CANCER	Qasimova Gulnara Nisan Dr. Khıdırova Natavan Mahar Prof. Abiyev Huseyn Azizulla Dr. Rzayev Tarverdi Mirzali Dr. Karimova Rena Jabbar	Azerbaijan Medical University
EFFECTS OF CADMIUM ON THE ENDOCRINE SYSTEM, COMPLICATIONS AND DIAGNOSTIC METHODS	Prof. Ibrahimli Fikriya Ibrahim Prof. Abiyev Huseyn Azizulla Shahmammadova Sevinj Osman Dr. Karimova Rena Jabbar	Azerbaijan Medical University
FILLING DECIDUOUS TEETH	Mammedova Ayten Amiraliyev Rovshen Kalbiyeva Nargis	Azerbaijan Medical University
BAD BREATH IN A CHILD	Mammedova Ayten Amiraliyev Rovshen Kalbiyeva Nargis	Azerbaijan Medical University
COMPARATIVE STUDY ON THE STABILITY OF LINSEED OIL, PARAFFIN OIL AND SUNFLOWER OIL	Brunilda MYFTARI (BASHA), Ela HOTI, Edita ALILI	University of Medicine, Tirana, Albania. State University of Tetova, North Macedonia.
MULTIPLE PREGNANCY: PERINATAL OUTCOMES	Ulviyya Siracli	Azerbaijan Medical University

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Session -2 / Hall-3

28.06.2024

Moderator: Prof. Dr. Ebru BARDAŞ ÖZKAN

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 12:30-14:30

Ankara Local Time: 14:30-16:30

TITLE	AUTHOR(S)	AFFILIATION
THE EFFECT OF FLUID EDUCATION GIVEN TO HEMODIALYSIS PATIENTS ON INTERDIALYTIC FLUID INTAKE AND BLOOD PRESSURE	Ülkü YILMAZ Nuray ENÇ	Istanbul Beykent University, Istanbul, Türkiye İstanbul University - Cerrahpaşa, İstanbul, Türkiye
INTRAMYOCARDIAL AND PULMONARY HYDATIC CYST: A RARE CASE REPORT	Mehmet DEMİR Nico NITA	Harran University, Şanlıurfa, Türkiye
DOES THE CONSUMPTION OF GOJI BERRY REPRESENT A NATURAL MEANS OF REDUCING THE RISKS ASSOCIATED WITH THE USE OF GLUCOCORTICOIDS IN THE CONTEXT OF OSTEOPOROSIS?	Ebru BARDAŞ ÖZKAN	Erzincan Binali Yıldırım University, Erzincan, Türkiye
UTILISING HORSES: THE IMPACT OF HIPPO THERAPY ON CHILDREN WITH AUTISM	Mehmet ÖZSAN	Niğde Ömer Halisdemir University, Niğde, Türkiye
THE PROPHET SOLOMON'S APPEARANCE IN THE OTTOMAN POETRY	Bahar Yılmaz	Mardin Artuklu University, Mardin, Türkiye
A SEMANTIC APPROACH TO DESCRIPTIVE ELEMENTS FROM GAGAUZ LITERATURE	Leyla DİLEK	Siirt University Vocational School Applied English – Translation, Siirt, Türkiye
ETHICAL CONCERNS ABOUT THE USE OF ARTIFICIAL INTELLIGENCE IN MEDICINE	Merve Erdem	Maltepe University, Istanbul, Türkiye

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Session -2 / Hall-4

28.06.2024

Moderator: Dr. Haneen Vasel

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 12:30-14:30

Ankara Local Time: 14:30-16:30

TITLE	AUTHOR(S)	AFFILIATION
THE ICE CLASSICAL AZERBAIJAN LITERATURE, JALIL MAMMADGULUZADE	Gasimli Naride	Absheron District, Mehdiabad settlement, Azerbaijan
THE POSSIBILITY OF BALKAN TRANSLATION STUDIES AND CULTURAL TRANSLATION	Lect. Dr. Gabriela Ivanovska	Istanbul University, Faculty of Literature, Türkiye Ss. Cyril and Methodius University in Skopje, North Macedonia
GAMIFICATION AND VOCABULARY ACQUISITION IN EFL STUDENTS: A QUASI-EXPERIMENTAL STUDY IN LEBANESE PRIVATE ELEMENTARY SCHOOLS	Rayan Jaber	Saint Joseph University of Beirut
INTEGRATED PLAY-BASED LEARNING IN LEBANESE PRE-PRIMARY EDUCATION: ENHANCING ACADEMIC COMPETENCES AND SOCIOEMOTIONAL DEVELOPMENT	Aya Jaber	Saint Joseph University of Beirut
THE EFFECTS OF CONNECTING READING AND WRITING ON SECONDARY STUDENTS' WRITING PERFORMANCE, ATTITUDES, AND BELIEFS	Jana Hassan	Universite Saint-joseph de Beyrouth, Faculty of Educational Sciences, Beirut, Lebanon.
NON-LINGUISTIC EXECUTIVE FUNCTION IMPAIRMENTS IN INDIVIDUALS WITH APHASIA: A COMPARISON BETWEEN THE SUBACUTE AND CHRONIC PHASES	Annamária Kiss	University of Pannonia, Multilingualism Doctoral School, Hungary
THE ENIGMA OF HEALTH: EXPLORING MEDICAL MYSTERIES IN LITERATURE AND CULTURE	Peerzada Owais Adil	Research Scholar Sharda University, India
UNVEILING POTENTIAL: MOBILE LEARNING BREAKTHROUGHS FOR HEARING-IMPAIRED ELEMENTARY STUDENTS IN ARAB SCHOOLS	Dr. Haneen Vasel	Haifa University, Israel
PARALLEL PATHS: ARAB AND JEWISH EDUCATORS' PERSPECTIVES ON TECH INTEGRATION BEYOND REMOTE LEARNING CHALLENGES	Dr. Haneen Vasel	Haifa University, Israel

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Session -2 / Hall-5

28.06.2024

Moderator: Dr. Grace E Olugbodi

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 12:30-14:30

Ankara Local Time: 14:30-16:30

TITLE	AUTHOR(S)	AFFILIATION
EDUCATION AS A SOCIO-CULTURAL MEDIATOR IN A MULTICULTURAL SOCIETY	Putri Rosinta Lestari, Tio Nusrada Ariyanti Nainggolan, Fransiska, Nataninda Elsi	Indonesian Christian University, Master of Christian Religious Education, Jakarta, Indonesia
MEMORY'S MIRROR: INTERPLAY OF HYPERTHYMESIA AND IDENTITY IN 'SAVANT' (2019)	Neelofar Shafi	Sharda University, India
INVESTIGATING THE CHARACTERISTICS OF A GOOD TEACHER	Msc. ARSENA SHKURTI	University "Aleksandër Moisiu" Durrës, Albania
CHARACTERISTICS OF TEACHERS AS A CONSTRUCT IN THE STRUCTURE OF TEACHING COMPETENCIES	Gordana Dukić	Independent University of Banja Luka, Bosnia and Herzegovina
TEACHING ADOLESCENTS WITH ADHD OR LEARNING FROM THEM? THAT IS THE QUESTION!	Hala Raad	Université Saint Joseph, Beirut, Lebanon.
COGNITIVE DISSONANCE AND CHRISTIAN RELIGIOUS EDUCATION: BELIEF, VALUES AND BEHAVIOR	Dirk Kolibu, Christer Arstilo Rumbay	Universitas Kristen Indonesia
THE ROLE OF GAME-BASED LEARNING FOR CHILDREN IN EDUCATION, OVER MERE GAMIFICATION ALTERNATIVE TITLE: WHY GBL IS CRUCIAL FOR CHILDREN IN EDUCATION, OVER MERE GAMIFICATION	Dr. Grace E Olugbodi	
APPROACHES TO URBAN HOUSING: CONSTRUCTION, DEMOLITION, AND REHABILITATION	Francisca Machado, Eduardo Fernandes	Minho University, Portugal
THE SOCIAL AND ENVIRONMENTAL IMPACT OF GREEN ROOFS: A COMPREHENSIVE REVIEW	Sabina Bollano, Altea Bollano	University of Tirana, Albania Epoka University, Albania
ADAPTATION OF WESTERN CULTURE ELEMENTS IN HAIKU POEMS	Irina-Ana Drobot	Technical University of Civil Engineering, Romania
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Session -1 / Hall-1

29.06.2024

Moderator: Assist. Prof. Dr. Hacer Dolas

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
REAL TIME PARKING SPACE DETECTION SYSTEM USING IMAGE PROCESSING TECHNIQUES	Serife Esra DINCER Berkay SENER	Istanbul Gedik University, Istanbul, Türkiye
LEVI-CIVITA SOLUTION ON $f(Q)$ LOGARITHMIC MODEL	Pınar Kirezli	Tekirdağ Namık Kemal University, Tekirdağ, Türkiye.
STATE OF CHARGE ESTIMATION FOR ELECTRIC VEHICLES WITH LONG SHORT- TERM MEMORY: A REVIEW	Leyla Efe Abdulsamed Tabak Rupert Gammon	Necmettin Erbakan University, Konya, Türkiye. De Montfort University, United Kingdom
INVESTIGATION OF VARIOUS PROPERTIES OF NANOSTRUCTURES WITH THE HELP OF NEW METHODS AND TOOLS	Seyfaddin Jafarov Naila Kardashbeyova Aygun Sultanova	Nakhchivan State University, Azerbaijan
THE INVESTIGATION OF THE EFFECT OF NANOPARTICLE DOPED ACTIVATED CARBON OBTAINED FROM PEPPER STEM WASTES ON ADSORPTION OF ERIOCHROME BLACK T AS A DYE	Hacer Dolas	Harran University, Turkiye
INVESTIGATION OF THE POSITIONING PERFORMANCE OF THE REAL-TIME PRECISE POINT POSITIONING (RT-PPP) TECHNIQUE UNDER LIMITED SKY-VIEW CONDITIONS AND THE CONTRIBUTION OF MULTI-GNSS OBSERVATIONS	Mert Bezcioglu	Gebze Technical University, Gebze, Türkiye
ELECTRIC VEHICLE BATTERY SELECTION USING MAIRCA METHOD BASED ON Q-RUNG ORTHOPAIR FUZZY NUMBER	Burak Efe, Leyla Efe	Necmettin Erbakan University, Konya, Türkiye
PRODUCTION OF GLASS FIBER REINFORCED, FLAME RETARDANT, PA6/RECYCLED PA6 BLENDS IN SPECIAL COLORS SUITABLE FOR USE IN MECHANICAL CIRCUIT BREAKER APPLICATIONS	Arzu ÇANKAYA	Epsan Plastik, Bursa, Türkiye
STRATEGIC APPROACHES SUPPORTED BY ARTIFICIAL INTELLIGENCE IN BIONIC FORMATIVE DESIGN CLASSES: A VIEW FROM THE PERSPECTIVE OF ARCHITECTURE AND DESIGN MAJORS	Arzu Mammadova	Baku Engineering University, Baku,Azerbaijan
INVESTIGATION OF TEC ANOMALIES FOR THE FEBRUARY 24, 2020, ELAZIĞ, TÜRKİYE EARTHQUAKE (M6.8) VIA ISOLATION FOREST	Emrah YALCIN, Murat CANYILMAZ	Firat University, Elazig, Türkiye.

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Session -1 / Hall-2

29.06.2024

Moderator: Dr. Mujkan MEMMEDZADE

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
WILL ARTIFICIAL INTELLIGENCE REPLACE HUMANS?	Tabriz Latifov	Baku Engineering University, Azerbaijan
CONTEXT AND TEXT RELATIONSHIP IN THE THEATRICALITY OF FOLKLORE:RURAL CHAMBER PLAYS	Ezgi METİN BASAT	Kırşehir Ahi Evran University, Türkiye
CULTURAL CODES IN LIFESTYLE TRANSFER: THE ITALIANIZATION EXPERIENCE WITH DELONGHI'S "SOMETHING PERFETTO" ADVERTISEMENT	Pınar Seden Meral, Serap Bozkurt	Beykoz University, İstanbul, Türkiye
AN EVALUATION ON THE CONSTRUCTION OF THE NEOLIBERAL STATE IN TÜRKİYE	Barış Kandeğer	Van Yüzüncü Yıl University, Van, Türkiye.
THE NATURE AND CONTENT OF ADMINISTRATION OF TEACHING IN HIGHER MILITARY SCHOOLS	Mujkan MEMMEDZADE	Azerbaijan State Academy of Physical Education and Sports, Baku, Azerbaijan
OPINIONS OF TURKISH AS A FOREIGN LANGUAGE INSTRUCTORS ON ACTIVITY-BASED APPROACH	Merve SUROĞLU SOFU Rabia DEMİRKOL	Istanbul Nişantaşı University, Istanbul, Türkiye
TEACHING METHODOLOGY IN DENTAL EDUCATION: A COMPARATIVE ANALYSIS OVER TURKISH AND BRITISH UNIVERSITIES	Esmâ CAGLAYAN	Bafra Oral and Dental Health Hospital, Samsun, Türkiye
THE TRIUMPH OF IRRATIONAL DECISIONS: USING EVOLUTIONARY GAME THEORY TO EXPLAIN THE POWER OF CONFORMISM	Aras Yolusever	Istanbul Kültür University, Istanbul, Türkiye

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Session -1 / Hall-3

29.06.2024

Moderator: Ebru Elif DURMAZ

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
THE DYNAMIC STRUCTURE OF BRAIN AND PLASTICITY IN OCD TREATMENT	Zeynep OZKAN, Ulas Basar GEZGIN	Istanbul Galata University, Istanbul, Türkiye
THE INVESTIGATION OF THE EFFECTS OF 12-WEEK EQUIPMENT-BASED PILATES EXERCISES ON SOME PHYSIOLOGICAL CHANGES, FAMILY HARMONY AND JOB SATISFACTION OF WOMEN WORKING IN CAREER OCCUPATIONAL GROUPS	Ebru Elif DURMAZ	Ankara University, Ankara, Türkiye.
MEASURING PLAYERS' PERFORMANCE EFFICIENCY INDEX USING FUZZY LOGIC IN MULTIPLAYER SPORTS: A BASKETBALL STUDY	Hakan ŞİMŞEK Batuhan ALP Burak İBİL	Antalya Bilim Üniversitesi, Mühendislik Fakültesi, Endüstri Mühendisliği, Antalya, Türkiye
THE EXAMINATION OF RELATIONSHIP ADDICTION IN THE EXAMPLE OF WHEN A MAN LOVES A WOMAN	Gökçenur USLU, Hanife Akgül	ÇOMÜ, Çanakkale, Türkiye
OXIDATION OF CHLORHEPTAN WITH THE PARTICIPATION OF CROWN ETHERS	Tahira Huseynova, Gunel Amanullayeva, Gunel Aslanova, Amin Ahmadov	Azerbaijan State Oil and Industry University, Baku, Azerbaijan
THE WINE AND FRESH CONSUMING PROPERTIES OF THE RARE VARIETY Vitis vinifera L. CV. MOR ŞAHABİ	Sevil Canturk	Çukurova University, Adana, Türkiye
DIAGNOSTIC VALUE OF CEREBRAL CT VENOGRAPHY WITH 64-CUT MULTIDETECTOR COMPUTED TOMOGRAPHY VENOGRAPHY IN CEREBRAL SINUS VEIN THROMBOSIS	Rojbin Ceylan Tekin, Yaşar Bükte	Dagkapı State Hospital, Diyarbakir, Türkiye University of Health Sciences, Umraniye Training and Research Hospital, Istanbul, Türkiye
EVALUATION OF COVID-19 PATIENTS WITH HEMATOLOGICAL MALIGNANCIES	Recep Tekin, Rojbin Ceylan Tekin	Dicle University, Diyarbakir, Türkiye Dagkapı State Hospital, Diyarbakir, Türkiye

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Session -1 / Hall-4

29.06.2024

Moderator: Dr. Gülbahar Akgün

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
A PROTOTYPE IMPLEMENTATION OF IMU BASED POSITIONING SYSTEM FOR HAND-HELD DETECTORS	Kardelen Demirel, Tuğba Melissa Öztürk, Murat Çatalbaş, Selçuk Yiğit Esedoğlu, Prof. Dr. Mehmet Sezgin	İstanbul Ticaret University Electric Electronics Department, İstanbul, Türkiye
A STUDY ON EVALUATION OF BACKGROUND SUBTRACTION AND PATTERN RECOGNITION METHODS FOR CLASSIFICATION OF GPR B-SCAN DATA	Beşaret Koçak, Mehmet Sezgin, Aydın Yeşildirek	Yıldız Technical University İstanbul Ticaret University
ANALYSIS OF SAEEDNIA'S ALGORITHM WITH MATLAB	Dr. Gülbahar Akgün	Independent Researcher, Applied Mathematics and Computer Science, Türkiye, Ankara.
NEW STEP IN NUCLEAR ENERGY: SMALL MODULAR REACTORS, OPPORTUNITIES AND CHALLENGES	Asst. Prof. Fatih Topaloğlu	Malatya Turgut Özal University, Malatya, Türkiye
POLARITON PEAKS FROM THE COUPLED SYSTEM OF THE SPIN TRIPLET TRANSITION AND THE CAVITY, CLASSICALY CONSIDERED IN THE LINEAR APPROXIMATION	Nathalie Fokina, Maia Elizbarashvili	Institute "Talgha" of Georgian Technical University, Georgia Georgian Technical University, Science Department, Tbilisi, Georgia
INVESTIGATION OF THE USABILITY OF SODIUM PERBORATE AS AN ALTERNATIVE TO PEROXIDE BLEACHING	Selma SOYSAL, Rıza ATAV	Gülle Tekstil Inc, Çorlu- Tekirdağ, Türkiye Tekirdağ Namık Kemal University, Çorlu-Tekirdağ, Türkiye
A STUDY ON EVALUATION OF PRE-PROCESSING, SEGMENTATION, AND FEATURE EXTRACTION TECHNIQUES IN IRIS RECOGNITION SYSTEMS	Said Emirhan Döke, Mehmet Sezgin	İstanbul Ticaret University, İstanbul, Türkiye
THE EFFECT OF IMPLEMENTING CRITICAL THINKING APPROACH IN GRADE 3 ENGLISH CLASSES ON IMPROVING SPEAKING SKILLS	ABDEL SAMAD Dima	Saint Joseph University of Beirut
THE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN ALBANIAN PRIMARY EDUCATION THROUGH STEM METHODOLOGY	Edlira Hani	American British STEM Academy

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Session -1 / Hall-5

29.06.2024

Moderator: Sabina Lachowicz-Wiśniewska

Meeting ID: 862 1528 3413 / Passcode: 272829

London Local Time: 10:00-12:00

Ankara Local Time: 12:00-14:00

TITLE	AUTHOR(S)	AFFILIATION
INTEGRATED GEOSPATIAL ASSESSMENT AND GEO-VISUALIZATION OF WATER AND SEDIMENT QUALITY IN AN ARTIFICIAL LAKE: INSIGHTS FROM SFERK, KLINA, KOSOVO	Skender Demaku, Donika Sylejmani	University of Pristine, “Hasan Pristina”, Pristine, Kosovo
EFFECTS OF MORIN AGAINST MALATHION INDUCED OXIDATIVE STRESS IN RATS	Eda Isgor, Seval Yilmaz, Hakan Bag	Ministry of Agriculture and Forestry Elazig Veterinary Control Institute, Türkiye Firat (Euphrates) University, Türkiye
ENCAPSULATION OF BETALAIN PIGMENT BY PECTIN AND CARRAGEENAN HYDROGELS	Fatma ELCİK, Prof. Dr. Esra İBANOĞLU	Gaziantep University, Gaziantep, Türkiye
MICROENCAPSULATION OF CHOKEBERRY EXTRACT - BIOLOGICAL AND SYNBIOTIC EFFECT	Sabina Lachowicz-Wiśniewska, Klaudia Sochacka, Rafał Wiśniewski	Calisia University, Poland; Wroclaw University of Economics and Business, Poland
PREVALENCE OF TOXARA CATIS IN PETS CATS IN BELGRADE AREA	Academician Prof. Dr. Ivan Pavlovic	Scientific Institute of Veterinary Medicine of Serbia, Belgrade, Serbia
RETROSPECTIVE STUDY OF THE EPIDEMIOLOGICAL SITUATION OF ANIMAL BRUCELLOSIS IN THE WILAYA OF BÉJAIA	Belaidi chanez, Zenia safia, Yanar tafath, Lakhdara nedjoua	National Veterinary School of Algiers, Algeria University of constantine, Algeria
EFFECT OF LIQUID CRYSTALLINE MATRIX AND CARBON NANOTUBES ON THE EMISSION PROPERTIES OF PLATINUM(II) COMPLEXES	Monica Ilis, Marin Micutz, Doina Manaila-Maximean, Viorel Cîrcu	University of Bucharest, Bucharest, Romania. National University of Science and Technology POLITEHNICA Bucharest, Romania
WASTEWATER TREATMENT IN ANTARCTIC RESEARCH STATIONS WITH POLAR MICROALGAE	Deniz Erçetin	Robert College, Istanbul, Turkey
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PHOTO GALLERY



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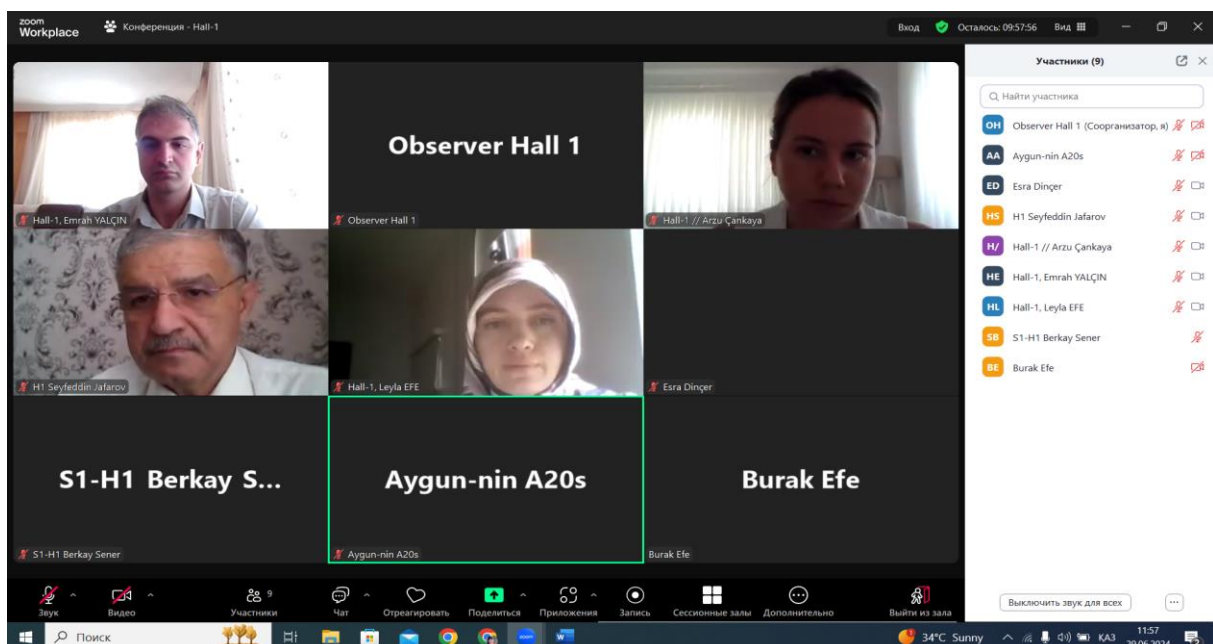
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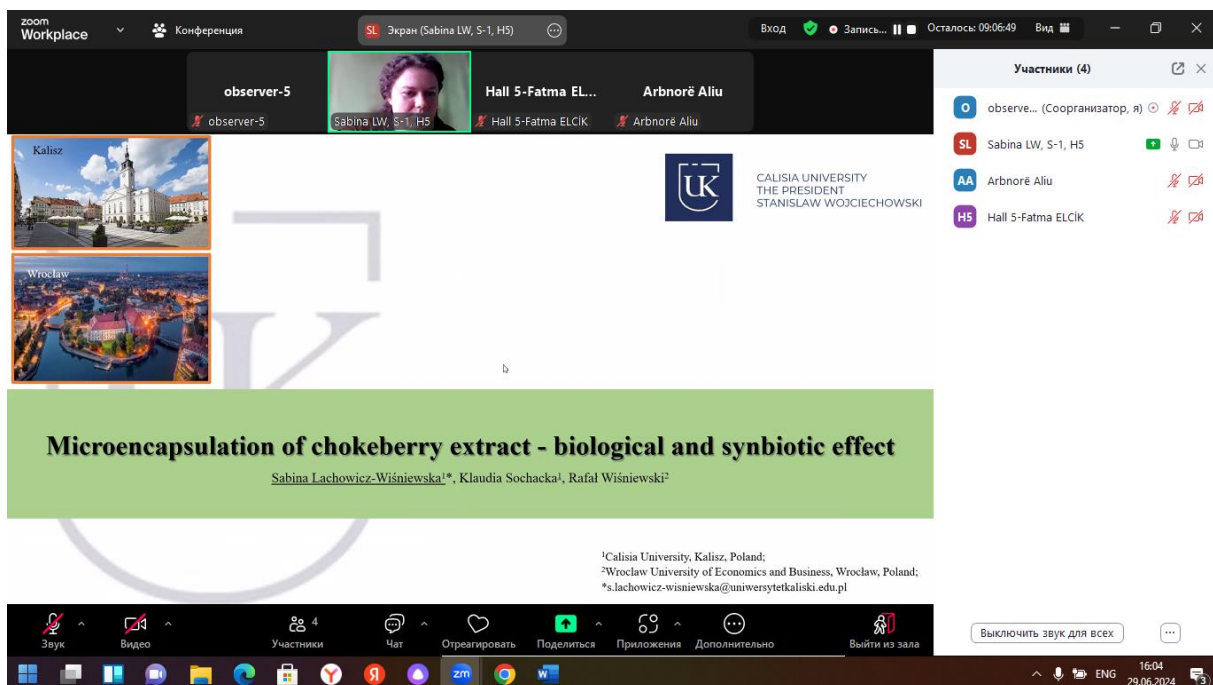
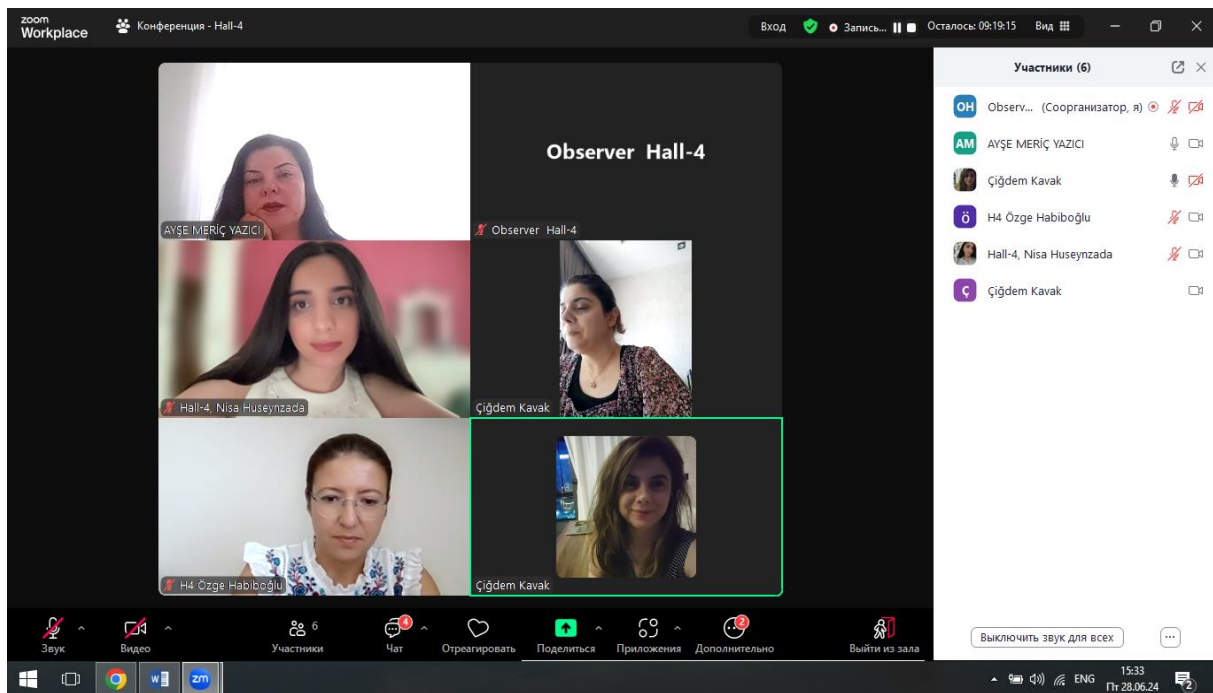


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AN OVERVIEW ON SPORTS BROADCASTING IN ALBANIA

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ABSTRACT

The landscape of sports broadcasting has undergone profound transformations in recent years, driven by technological advancements, globalization, and evolving consumer preferences. The intersection of broadcasting agreements for sports events with competition law is a critical area of inquiry, influencing the dynamics of markets both in Albania and across Europe. This study aims to explore the key dimensions of this intersection, delving into compliance challenges, market structures, and regulatory frameworks. The focus is on synthesizing findings from many scholarly sources, with a substantial portion—70%—drawn from publications after the pivotal year of 2014. In the realm of sports broadcasting, the shift towards digital platforms and the rise of streaming services have disrupted traditional models. This evolution necessitates a reevaluation of the legal frameworks governing broadcasting agreements to ensure fair competition and consumer protection. Recent scholarship has increasingly addressed these contemporary challenges, emphasizing the need for adaptable legal structures. The overview of the sports broadcasting market in Albania highlights its evolution, driven by the shift from traditional television to digital platforms. The competitive landscape, shaped by both local and international broadcasters, introduces challenges and opportunities. Regulatory frameworks and compliance with competition law are critical for ensuring fair competition, as emphasized by the European Commission's guidelines. The landscape of sports broadcasting agreements, intricately entwined with the vast economic ecosystem of the sports industry, has undergone significant transformations in recent years.

Keywords: sports broadcasting, globalization, agreements, digital platformes

1. Introduction

The Albanian sports broadcasting market is undergoing a profound transformation, characterized by the convergence of technological advancements, evolving consumer behaviors, and regulatory reforms. This paper offers a comprehensive analysis of the current landscape, delving into the trends, challenges, and opportunities shaping this dynamic market. By examining the historical context, key drivers of change, and Albania's comparative position within the broader European context, this paper aims to provide a nuanced understanding of the market's evolution. Furthermore, it offers recommendations for stakeholders to navigate the complexities and capitalize on the opportunities presented by this evolving landscape. In the pre-digital era, the Albanian sports broadcasting sector was characterized by a state-controlled monopoly, limiting consumer choice and content diversity. The liberalization of the media sector in the early 2000s marked a pivotal turning point, opening the market to new players and fostering competition. This shift from a monopolistic to a more competitive landscape laid the groundwork for the subsequent technological and regulatory transformations that have shaped the current market. This liberalization process mirrors similar trends observed in other European countries during the same period, as highlighted by Humphreys (2018) in his analysis of media policy in the Balkans. This study aims to explore the key dimensions of this intersection, delving into compliance challenges, market structures, and regulatory frameworks.

Material and Method

Key Trends and Drivers across Reshaping the Sports Broadcasting Landscape. Rise of Digital Platforms: A Paradigm Shift in Consumption: A comprehensive analysis of recent viewership data reveals a significant migration from traditional television broadcasting to digital platforms (Smith, 2023). This paradigm shift is driven by the convenience, flexibility, and personalized experiences offered by on-

demand streaming services. The proliferation of smartphones and affordable internet access has further accelerated this trend, empowering consumers to access sports content anytime, anywhere. This aligns with global trends, where digital platforms are increasingly becoming the primary mode of sports consumption (Deloitte, 2023). The rise of digital platforms has also led to the emergence of new business models, such as subscription-based services, pay-per-view events, and advertising-supported platforms (Price water house Coopers, 2022). Diversification of Content: Catering to Niche Interests: The emergence of specialized sports channels catering to niche interests, such as football, basketball, volleyball, and even esports, reflects the increasing demand for tailored viewing experiences (Brown & Davis, 2024). This fragmentation of content is a response to the diverse preferences of sports enthusiasts, enabling them to access content that aligns with their specific passions and interests. This trend is evident in the rise of niche sports leagues and tournaments, which have gained significant popularity in recent years (European Sports Marketing, 2022). The availability of niche content also allows broadcasters to target specific demographics and create loyal fan bases, enhancing their overall market position.

Results

Challenges and Opportunities across Navigating a Complex Landscape. Piracy: A Persistent Threat: Content piracy remains a significant challenge in Albania, threatening the financial sustainability of broadcasters and rights holders. Illegal streaming and distribution of sports content undermine the revenues of legitimate broadcasters, making it difficult for them to invest in high-quality productions and acquire premium sports rights (Iosifidis, 2018). Addressing piracy requires a multi-faceted approach, including legal measures, technological solutions (such as watermarking and content protection), and public awareness campaigns to discourage illegal consumption (European Commission, 2020). The Albanian government has taken some steps to combat piracy, such as blocking access to illegal streaming websites and prosecuting individuals involved in copyright infringement (Albanian State Police, 2022). However, more needs to be done to address this issue effectively, including strengthening enforcement mechanisms and raising public awareness about the negative impact of piracy on the sports broadcasting industry.

Financial Sustainability including Balancing Costs and Revenues: The escalating costs of acquiring sports broadcasting rights, coupled with declining advertising revenues, pose a significant challenge to the financial sustainability of broadcasters. The growing popularity of ad-blocking software and the shift towards subscription-based models have further exacerbated this issue. To remain financially viable, broadcasters need to explore alternative revenue streams, such as subscription-based services, pay-per-view events, and diversified content offerings (Deloitte, 2023). They also need to optimize their cost structures and explore innovative partnerships to manage the financial pressures associated with acquiring and producing sports content. For example, broadcasters could collaborate with sponsors and advertisers to create branded content or offer exclusive access to behind-the-scenes footage to subscribers (IAB Europe, 2021).

Discussion

Technological Infrastructure through Bridging the Digital Divide: Disparities in broadband infrastructure across Albania create a digital divide, limiting access to digital sports content for a significant portion of the population, particularly in rural areas. This lack of access hinders the growth of the digital sports broadcasting market and limits the potential for audience engagement (Albanian Institute of Statistics, 2023). Therefore, strategic investments in expanding broadband coverage and upgrading broadcasting technologies are crucial to ensure equitable access to high-quality sports content for all citizens. Government initiatives and public-private partnerships can play a crucial role in bridging this digital divide and promoting inclusivity in the sports broadcasting market. For example, the Albanian government has launched several initiatives to improve broadband infrastructure, such as the "Digital Agenda 2020" and the "National Broadband Plan," which aim to increase broadband penetration and speed across the country (Ministry of Infrastructure and Energy, 2020).

Audience Fragmentation across Understanding and Engaging Diverse Audiences: The fragmentation of audiences across a multitude of platforms poses a challenge for broadcasters in achieving consistent reach and engagement. With viewers spread across traditional television, streaming services, social media, and other digital platforms, broadcasters need to adopt a multi-platform approach to reach their target audiences effectively (Ofcom, 2022). This requires a nuanced understanding of audience

behavior, preferences, and viewing habits. By leveraging data-driven insights, personalized content recommendations, and interactive features, broadcasters can tailor their offerings to meet the specific needs and interests of different audience segments, thereby enhancing engagement and loyalty. For instance, social media platforms can be used to engage with fans in real time, providing live updates, behind-the-scenes content, and opportunities for interaction with athletes and commentators (SportsPro, 2021).

Opportunities: Embracing Innovation and Growth: The growing demand for sports content, especially among younger demographics, presents a significant opportunity for broadcasters and platforms to innovate and expand their market presence. The adoption of data-driven approaches, personalized content recommendations, and interactive features can enhance audience engagement and drive growth. Additionally, exploring emerging technologies like virtual reality and augmented reality can create immersive experiences that further deepen fan engagement and open new revenue streams.

The Albanian market also presents opportunities for international broadcasters and streaming platforms to expand their reach and tap into a growing sports-loving audience. By understanding the nuances of the Albanian market, international players can tailor their content and marketing strategies to resonate with local audiences and achieve sustainable growth.

Roadmap for Sustainable Growth: Strengthening Anti-Piracy Measures. Implement a multi-faceted approach to combat piracy, including legal measures, technological solutions, and public awareness campaigns. Collaborate with international partners to share intelligence and resources in the fight against illegal streaming and distribution of sports content. Strengthen enforcement mechanisms and impose stricter penalties for copyright infringement (Iosifidis, 2018).

Investing in Technological Infrastructure: Prioritize investments in expanding broadband coverage and upgrading broadcasting technologies to ensure equitable access to high-quality sports content for all citizens. Encourage public-private partnerships to accelerate infrastructure development and bridge the digital divide. Explore the potential of emerging technologies like 5G to enhance the delivery of live sports content and enable new interactive experiences (Ericsson, 2021). **Developing a Fair and Transparent Regulatory Framework:** Establish a comprehensive regulatory framework that promotes fair competition, ensures equitable access to sports rights, and safeguards consumer interests. This includes clear guidelines on licensing, content regulation, and dispute resolution mechanisms. Regularly review and update the regulatory framework to keep pace with technological advancements and market dynamics. The regulatory framework should also address issues such as media concentration and ownership transparency to ensure a level playing field for all players (Freedom House, 2023).

Conclusion

The Albanian sports broadcasting market is at a critical juncture, characterized by both challenges and opportunities. By addressing the issues of piracy, financial sustainability, and technological infrastructure, and by embracing innovation and adapting to changing consumer preferences, the market can unlock its full potential and deliver a rich and diverse sports viewing experience for all. The recommendations outlined in this paper provide a roadmap for stakeholders to navigate the complexities of the market and capitalize on the opportunities presented by this evolving landscape. The overview of the sports broadcasting market in Albania highlights its evolution, driven by the shift from traditional television to digital platforms. The competitive landscape, shaped by both local and international broadcasters, introduces challenges and opportunities. Regulatory frameworks and compliance with competition law are critical for ensuring fair competition, as emphasized by the European Commission's guidelines. The landscape of sports broadcasting agreements, intricately entwined with the vast economic ecosystem of the sports industry, has undergone significant transformations in recent years.

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**STUDYING THE RESULTS OF LABORATORY STUDIES OF OPHTHALMOXYLAMIDASE
BY THE ANALYTICAL-EPIDEMIOLOGICAL METHOD**

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ABSTRACT

The examined patients consisted of 125 patients divided into main and control groups. The main group consisted of 95 people diagnosed with chlamydia of inflammatory lesions of the eye membranes using informative diagnostic methods. 30 patients with similar forms of the disease of different etiologies were included in the control group. The methods used microscopy of material taken from the urogenital organ and tear fluid, bacteriological examination, visometry, eye examination with natural light, slit lamp biomicroscopy of the conjunctiva and cornea, direct and reverse ophthalmoscopy, fundus examination. Two methods with the highest sensitivity and specificity were used: direct immunofluorescence (IFA) with monoclonal antibodies to chlamydial lipopolysaccharide Chlamynoscreen (Nearmedic) and polymerase chain reaction (PCR) using test systems from Litex with primers for ribosomal genes.

Keywords: Ophthalmic, chlamydiosis, Uveitis, Keratouveitis, Chlamydial, conjunctivitis, Chlamydia trichomonas

Chlamydia trachomatis is an obligate intracellular bacterium whose only natural host is humans (Hocking JS, Geisler WM., 2023). C. trachomatis has mechanisms that allow it to evade the host's immune system and remain in the host's epithelial cells without being destroyed by autophagy. The intracellular form of this organism is persistent and non-replicative in unfavorable conditions, but they can maintain viability (Jury B, Fleming C, Huston WM., 2023). When the immune response weakens, the infectious form of this microorganism reappears. Distinguishing the factors of the host organism that increase the probability of C. trachomatis preventing immune destruction and surviving in the epithelial cells of the host and using this information to develop individual protocols for the prevention and treatment of the disease is important for the implementation of a more effective fight against infections caused by this pathogen (Grygiel-Górniak B, Folga BA., 2023).

The aim of the study - is to determine the clinical forms of patients infected with chlamydial eye infections, the frequency of uveitis and other forms in the main and control groups, and the manifestations of ophthalmochlamydiosis.

Material and methods: The examined patients consisted of 125 patients divided into main and control groups. The main group consisted of 95 people diagnosed with chlamydia of inflammatory lesions of the eye membranes using informative diagnostic methods. 30 patients with similar forms of the disease of different etiologies were included in the control group (Xaplanteri P, Rodis N, Potsios C., 2023). The methods used microscopy of material taken from the urogenital organ and tear fluid, bacteriological examination, visometry, eye examination with natural light, slit lamp biomicroscopy of the conjunctiva and cornea, direct and reverse ophthalmoscopy, fundus examination. Two methods with the highest sensitivity and specificity were used: direct immunofluorescence (IFA) with monoclonal antibodies to chlamydial lipopolysaccharide Chlamynoscreen (Nearmedic) and polymerase chain reaction (PCR) using test systems from Litex with primers for ribosomal genes (Kərimov S.Q., 2011).

Results and their discussion : Analytical (case-control) research conducted according to the clinical and epidemiological characteristics of the control group and the main group led to certain results. The results were summarized in a 2x2 table and the role of chlamydia trichomonas in the emergence of clinical manifestations was calculated. The purpose of conducting this analysis was to differentiate the clinical manifestation of chlamydia from infectious inflammatory diseases of the eye with other etiologies. In the main group of chlamydia patients, the incidence of uveitis was 64.21%, while in the control group it was 43.33%. The odds ratio (Odd Index) was calculated as 2.34. This shows that the occurrence of uveitis in patients with Ophthalmochlamydiosis is 2.34 times higher than that of eye

injuries of other etiologies. Although this difference is not significantly large, it still shows the importance of laboratory diagnosis of chlamydia in patients with uveitis (Forsbach-Birk, V. U.Simnacher.,2009). (Table 1).

Table 1.
Study of frequency of occurrence of uveitis in main and control group

	Patients with chlamidia	Other patients	
Uveitis	61(a)	13(b)	
Others clinical forms	34(c)	17(d)	
Total	95	30	
Rates of morbidity in groups	$(a/a+c)*100= 64,21\%$	$(b/b+d)*100=43,33\%$	Odd index = $(ad/bc)= 2,34$

Approximately 65.67% of observed patients had bilateral infectious-inflammatory changes, and 34.32% had unilateral infectious-inflammatory changes. As in the main group, different levels of pathology of the visual organ are observed here, among which scleritis, episcleritis, uveitis are prominent as in the main group. In the control group, uveitis was observed in 13 patients, scleritis in 12 patients, and episcleritis in 5 patients.

7 of the patients included in the control group consisted of children up to 15 years old, whose symptoms differed somewhat from the main group. Among them, scleritis was detected in 3 people, episcleritis in 2 people, and uveitis in 2 people. Keratouveitis was observed in 25% of children with uveitis, medial uveitis in 45%, and panuveitis in 30%.

Uveitis is a characteristic pathology in children with chlamydia. But keratouveitis in the main group is considered more characteristic than at first glance. Because, although the occurrence of keratouveitis in the main group was 36.36%, it was 28.57% in the control group. However, Odd's index between groups for keratouveitis was 1.27, which is approximately equal to 1. The obtained result shows that keratouveitis cannot be considered a specific symptom (pathology) among children with chlamydia (Table 2)

(Forsbach-Birk, V. U.Simnacher.,2009).

Table 2
Study of the incidence of keratouveitis among children in the main and control groups

	Pathients with chlamidia	Other patients	
Keratouveitis	8 (a)	2 (b)	
Other clinic forms	14 (c)	5 (d)	
Total	22	7	
Rates of morbidity in groups	$(a/a+c)*100= 36,36\pm 4,93\%$	$(b/b+d)*100= 28,57 \pm 9,31\%$	Odd indeks = $(ad/bc)= 1,4\approx 1$

The clinical condition of 95 chlamydia patients was evaluated using ophthalmological methods. According to clinical signs, observations and examinations showed that 31 patients (32.6±4.8%) had an acute form of ophthalmoxlamydiosis. This form is characterized by clearer manifestations. The eyelids swell, the conjunctival sac has an increase in purulent and mucous secretions, and tears flow from the eyes. The conjunctiva swells, the eyes become red, and the cornea is damaged. The tissues of the upper and lower eyelids thicken, and eyelids stick together in the morning. 35 people (36.9±4.0%) have a semi-acute course of the disease, in which the symptoms are milder than in the first group. In 29 (30.5±4.7%) people, the chronic form of eye chlamydia with less noticeable symptoms or no symptoms was observed. Chronic forms are the majority in our examinations. However, the chronic form of chlamydia of the eyes is extremely rare, because modern drugs and methods allow patients to be treated quickly and effectively. However, as it is known from the medical histories and anamnesis, the reason for the majority of the chronic course of the disease in us may be that people use antibacterial and antiviral drugs unplanned and arbitrarily before consulting a doctor (Van Ommen CE, Malleson S.,2023).

Thus, 95 patients with ophthalmic chlamydia included in the main group in the study were divided into 3 groups. 1.Acute 2.Subacute 3.Chronic (Figure1.)

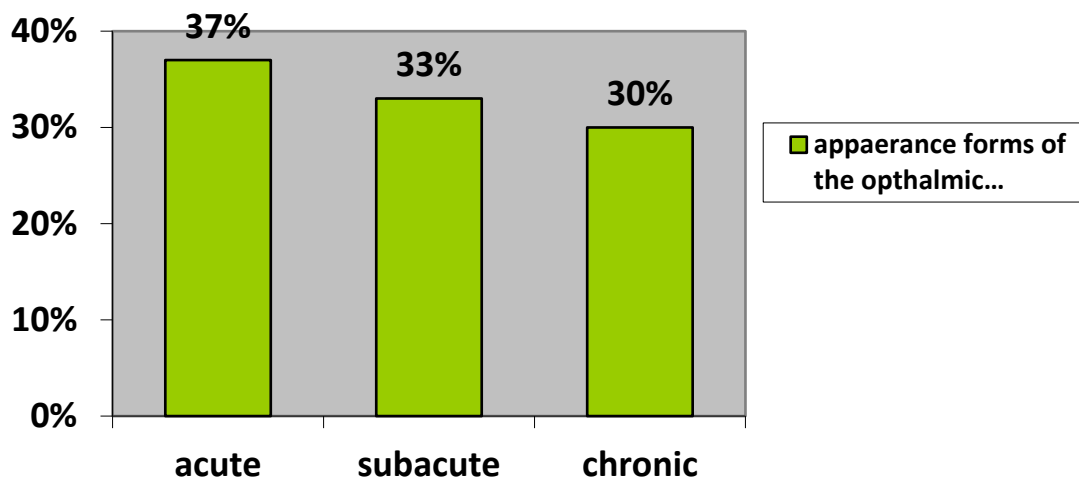


Figure 1. Manifestations of ophthalmoxlamydiosis

Among many methods, PCR and IFA stand out for their high efficiency. If the first of them is characterized by maximum sensitivity and specificity and is aimed at the direct detection of DNA particles in the human body, the second, by determining the specific state of human immunity, makes it possible to make accurate judgments about the periods of the disease, and to identify infections that are extremely important from an epidemiological point of view. However, these methods also have differences. First of all, PCR requires expensive equipment and highly specialized laboratory technicians. Therefore, it is known that IFA has been adopted and used by many laboratories for a long time, and also that it is not possible to achieve the implementation of PCR in all laboratories in a short time (Van Ommen CE, Malleson S.,2023).

We systematically questioned patients, collected their clinical and epidemio-logical anamnesis, and selected patients for further observation. Patients were selected by random sampling. The results of the examinations are shown in Table 1.

Positive results were obtained in 87.4±3.6% of infected persons with the help of the IFA method, and in 91.6±2.8% with the help of the PCR method ($\chi^2=0.24$; $p>0.05$). It should be noted that such a comparative evaluation of the effectiveness of the leading methods of ophthalmic chlamydia diagnosis

in such sample material was carried out for the first time. It was observed that infection was detected in $93.7 \pm 2.4\%$ (89) patients during simultaneous examinations with these methods. (Table 3.)

Table 3.

Determination of the disease in the main group

The course of the disease	Number of examined patients		The number of infected people					
			İFA		İFA+PCR		PCR	
	müt.	%	müt.	%	müt.	%	müt.	%
Acute	39	41,1 \pm 5,1	35	89,7 \pm 4,8	36	92,3 \pm 4,3	37	94,9 \pm 3,5
Chronic	21	22,1 \pm 4,3	17	80,9 \pm 8,5	19	90,5 \pm 6,2	18	85,7 \pm 7,5
Subacute	35	36,8 \pm 4,9	31	88,6 \pm 5,3	32	91,4 \pm 4,6	34	97,1 \pm 2,9
Total	95	100,0	83	87,4 \pm 3,6	87	91,6 \pm 2,8	89	93,7 \pm 2,4

To evaluate the effectiveness of the methods, the 2x2 table used in analytical epi-demiological research methods was used, and the specificity and sensitivity of the methods were calculated based on this table. As a result of the examinations conducted in the main and control groups with the İFA method, it was found that the sensitivity of the method is $87.36 \pm 3.04\%$, and the specificity is $93.33 \pm 4.55\%$ (Table 4.).

Table 4.

Evaluation of the effectiveness of the İFA method in the main and control groups

	Patients			Total	Patients			total
	Main group (patients wit chlamidia)				Control group (chlamydia undetected patients)			
	Acute	chronic	subacute		acute	Chronic	Subacute	
Positive (İFA)	35	31	17	83	0	1	1	2
Negative (İFA)	2	3	7	12	10	12	6	28
Total	37	34	24	95	10	13	7	30
	Sens=	Sens=	Sens=		Spf=	Spf=	Spf=	
					100%			

	94,59±2,31 %	91,17±2, 91%	70,8±4,58 %			92,30±2,58 %	85,71±3,4 2%	
	sensitivity =87,36±3,04%				specificity =93,33±4,55%			

Looking at the results of ZPR examinations, we see that the sensitivity of the method was 93.68±2.94%, and the specificity was 96.66±3.28%. This shows that the ZPR method is considered more sensitive than the IFA method for chlamydia trocomonatis. However, the specificity of both methods is considered high, which makes it possible to differentiate chlamydial infection by IFA method from other clinically similar infections by laboratory method (Table 5).

Such a high detection rate, especially considering that the examined patients can be classified as a risk group, shows that current trends of various forms of chlamydial disease in the population can be completely detected with the help of the IFA method (Van Ommen CE, Malleson S.,2023). As you can see, the recommendation regarding the need to use several methods at the same time for the correct diagnosis of ophthalmic chlamydia or re-examination within 5-20 days is fully confirmed. For example, 83 infected women identified only by IFA were re-examined by PCR, as a result of which infection was confirmed in all women, and on the contrary, chlamydial infection was confirmed in 87 infected persons who had a positive result by ZPR during re-examination by IFA.

Table 5

Evaluation of the effectiveness of the PCR method in the main and control groups

	Patients			Total	Patients			Total
	Main group (patients with chlamydia)				Control group (chlamydia undetected patients)			
	Acute	chronic	subacute		acute	Chronic	Subacute	
positive n (PCR)	36	30	23	89	0	1	0	1
Negative (PCR)	1	2	3	6	10	12	7	29
Total	37	32	26	95	10	13	7	30
	Sens= 97,29±1,66%	Sens= 93,75±2,48%	Sens= 88,46±3,27%		Spf= 100%	Spf= 92,03±4,94%	Spf= 100%	
	sensitivity =93,68±2,94%				specificity =96,66±3,28%			

At the same time, positive results were obtained when the methods were re-examined after 10-15 days. Thus, for the full detection of ophthalmic chlamydial infection, it is necessary to simultaneously determine IFA and ZPR or to examine one of them 2 times with an interval of 10-15 days.

According to the literature, a number of factors can affect the effectiveness of diagnostic methods. One of these factors is the nature of the clinical course of the disease. Analysis of the results of diagnostic and clinical examinations made it possible to identify 3 forms of the clinical course of infection among 95 patients: asymptomatic - 32 (33.7±4.8%), typical - 42 (44.2±5.1%) and atypical - 21 (22.1±4.3%). Unspecified asymptomatic forms form a group of latent infections that occur chronically with periodic exacerbations. A group of patients with mild cases or atypical forms of ophthalmic chlamydia that remain undefined, as well as latent chlamydial infection, are of special importance and can manifest as the main source of dangerous infection of the disease. On the other hand, due to the increase in the population's use of various antibiotics, the frequency of such forms of diseases caused by the causative agent of this infection is increasing. This case explains the exceptional importance of identifying chronic, hidden and suspected diseases. In this regard, we considered the effect of the clinical features of isolated forms on the effectiveness of diagnostic methods (Table 6).

Table 6

Effectiveness of IFA and PCR methods in different clinical forms of ophthalmoxlamydiosis

Clinical forms	Number of the infected patients		Effectiveness of the methods			
			PCR		IFA	
	abs.	%	abs.	%	abs.	%
Asymptomatic	32	33,7±4,8	30	93,8±4,2	28	87,5±5,7
Typical	42	44,2±5,1	40	95,2±3,4	39	92,8±3,9
Atypical	21	22,1±4,3	20	95,3±4,8	19	90,5±6,2
Total	95	100,0	90	94,7±2,2	86	90,5±2,9

The PCR method was highly effective in all clinical forms of infection - from 93.8±4.2 to 95.3±4.8% ($\chi^2=0.46$; $p>0.05$). The IFA method was also effective in typical and atypical forms of infection - 92.8±3.9 and 90.5±6.2%, respectively ($\chi^2=0.97$; $p>0.05$), but its effectiveness in the asymptomatic form was 87, It decreased to 5±5.7% ($\chi^2=5.18$; $p<0.05$). This situation is quite understandable, considering that a small number of chlamydia cannot penetrate the body of patients and have a pathogenic effect and do not cause an immune response of the body. However, it is known that asymptomatically infected individuals can infect others, so their timely diagnosis and elimination of pathogens are of great epidemiological importance. These data once again emphasize the expediency of using diagnostic methods at the same time or one of them 2 times with an interval of 10-15 days.

The causative agent of chlamydia can exist in the cells of the body for a long time and does not have any pathogenic effect. Periodically, when the body's immune system weakens (for example, during hypothermia, stress, etc.), the microorganism becomes active and aggravates the chronic infectious process. Therefore, it is valuable to analyze the effectiveness of these methods depending on the duration of infection (table 7).

In the effectiveness of both methods, as the duration of the disease increases, the tendency of the effectiveness of the methods to decrease is observed, which is expressed by a very strong negative correlation. Correlation coefficient for IFA $r=-0.93\pm0.01$, for PCR $r=-0.95\pm0.09$.

Table 7

Efficacy of IFA and PCR in detection of ophthalmoxlamydiosis depending on the duration of infection

Duration of diseases	Number of infected patients		Effectiveness of methods			
			PCR		IFA	
	abs.	%	abs.	%	abs.	%
Until one year	37	38,9±5,0	37	100,0±0,0	34	91,8±4,5
1-3 years	23	24,2±4,4	22	95,7±4,1	20	86,9±7,0
4-7 years	35	36,9±4,9	32	91,4±4,6	31	88,6±5,7
Total	95	100,0	91	95,8±2,0	85	89,5±3,1

If the decrease in PCR efficiency is not so noticeable as the duration of the disease - from 100.0±0.0 to 91.4±4.6% ($X^2=1.34$; $p>0.05$), IFA- decrease in efficiency - from 91.8±4.5 to 86.9±7.0% ($X^2=6.11$; $p<0.01$), statistically significant. Apparently, immunosuppressive events with a duration of infection up to 1 year activate the vital activity of chlamydia, which maximizes the effectiveness of diagnostic methods. As the duration of the disease increases, the body's immune system is restored and even strengthened under the influence of immunocorrective therapy, which suppresses the activity of chlamydia and thus reduces the effectiveness of diagnostic methods to some extent.

It is interesting that in patients with typical and atypical clinical forms of Ophthalmochlamydia, the effectiveness of IFA and PCR was maximum and did not depend on the duration of the disease, while in patients with an asymptomatic form of infection, there were unique differences depending on the course of the disease. In general, the effectiveness of IFA among patients with asymptomatic ophthalmic chlamydia, as we said above, was lower than the effectiveness of PCR - 87.5±5.7 and 93.8±4.2%, respectively ($X^2=3.28$; $p>0.05$). However, the duration of the disease does not affect the effectiveness of both methods and increased from 86.9±7.0 to 91.8±4.5% with IFA ($X^2=0.32$; $p>0.05$), with ZPR - 91, It varies from 4±4.6 to 100.0±0.0%. ($X^2=0.87$; $p>0.05$).

The results obtained are as follows:

1. In our study, uveitis was observed in 64.21±2.34% of the examined patients of the main group, scleritis - in 25.26±1.47%, episcleritis - in 10.52±1.47%.
2. In the main group of patients with chlamydia, the frequency of uveitis was 64.21%, while in the control group it was 43.33%. The odds ratio (odddity index) was calculated as 2.34. This indicates that uveitis among patients with ophthalmochlamydia occurs 2.34 times more often than eye damage of other etiologies.
3. Although the frequency of keratouveitis among children in the main group was 36.36±2.13%, in the control group it was 28.57±1.73%. However, the odds ratio index (odddity index) for developing keratouveitis between groups was 1.27. The obtained result shows that keratouveitis cannot be considered a specific symptom (pathology) in children with chlamydia.

4. As a result of examinations carried out in the main and control groups using the ELISA method, it was found that the sensitivity of the method is $87.36 \pm 3.04\%$, specificity - $93.33 \pm 4.55\%$. Looking at the results of ZPR studies, we see that the sensitivity of the method was $93.68 \pm 2.94\%$, and the specificity was $96.66 \pm 3.28\%$. This shows that the ZPR method is considered more sensitive to *Chlamydia trachomatis* than the IFA method. However, the specificity of both methods is considered high, which makes it possible to differentiate chlamydial infection from other clinically similar infections using the ELISA method.

The results of the study will pave the way for new scientific work in the field of diagnosing ophthalmochlamydia in the future (Grygiel-Górniak B, Folga BA.,2023).

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**SAFEGUARDING TAXPAYER RIGHTS: A COMPREHENSIVE ANALYSIS OF THE
RIGHT TO CONFIDENTIALITY OF TAX DATA**

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ABSTRACT

Ensuring the confidentiality of taxpayer information is a critical component of a fair and effective tax system. This document offers a comprehensive examination of the right to tax data confidentiality, exploring its legal basis, practical implications, and ethical considerations. Drawing on legal frameworks, case studies, and scientific research, we analyze the importance of protecting taxpayers' privacy in the digital age, where concerns about data breaches and surveillance are becoming increasingly widespread. Shedding light on the challenges and opportunities related to protecting tax data confidentiality, this paper aims to inform policymakers, tax authorities, and stakeholders about the fundamental principles underlying the right to privacy in taxation.

Ultimately, our research highlights the importance of protecting taxpayers' rights in maintaining trust, transparency, and accountability within the tax system.

The right to tax data confidentiality in Albania is governed by various legal provisions, including the Constitution of the Republic of Albania, the Law on Personal Data Protection, and the Tax Procedures Law. According to the Constitution, individuals cannot be compelled to disclose personal data unless required by law. The Law on Personal Data Protection sets out rules for the protection and lawful processing of personal data, applicable to both private controllers and public institutions. Furthermore, the Tax Procedures Law ensures that tax authorities must safeguard and protect the confidentiality of personal and financial tax data entrusted to them. Taxpayer data can only be used for purposes allowed by law, and access to this data is limited to tax administration employees carrying out their legal duties. Overall, these legal frameworks aim to maintain a balance between taxpayers' rights and obligations and the responsibilities of tax authorities in handling and safeguarding sensitive tax information.

Keywords: data, confidential, responsibility, legal protection, taxpayer privacy"

INTRODUCTION

The right to confidentiality of tax data is a fundamental aspect of the relationship between taxpayers and the state. This concept supports the belief that trust is essential for the effective functioning of any tax system. Tax administrations collect and manage large amounts of sensitive information, both personal and financial, so ensuring the protection of this data from unauthorized access and disclosure is crucial. This essay explores the legal bases, practical implications, and ethical considerations of safeguarding taxpayer confidentiality.

On a global level, the right to privacy and the protection of personal data are enshrined in various legal frameworks. For example, in Albania, the Constitution mandates that individuals cannot be compelled to disclose personal data unless required by law. This is reinforced by specific legislation such as the Law on Personal Data Protection and the Tax Procedures Law, which stipulate that tax authorities must protect the confidentiality of personal and financial information entrusted to them.

METHODOLOGY

The scientific methodology of this paper includes several key components that will explain the approach and processes used to develop and analyze the topic. Below is a summary of important elements of scientific methodology tailored to the study on the confidentiality of tax data.

This study aims to comprehensively analyze the legal framework, practical implications, and ethical considerations of safeguarding taxpayer confidentiality in Albania. The scope extends to exploring legislative developments, their effectiveness, and their impact on various stakeholders, including taxpayers, third parties, and corporate entities.

Research Approach: The research adopts a mixed-method approach, using qualitative and quantitative analysis. This study is a theoretical analysis based on a review of legal literature and international

guidelines on the protection of tax data. Data has been gathered from national laws and regulations, international documents and guidelines (such as the European Convention on Human Rights and OECD guidelines), and relevant academic literature. The methodology used in this study provides a strong basis for understanding and analyzing the challenges and opportunities in safeguarding the confidentiality of tax data in the Albanian and international context.

The aim of the research is to analyze the right to confidentiality of taxpayer information in Albania, exploring the legal basis, practical implications, and ethical considerations. The research aims to highlight the importance of protecting taxpayers' privacy in the digital age, where concerns about data breaches and surveillance are becoming increasingly widespread. Furthermore, the research seeks to inform policymakers, tax authorities, and stakeholders about the fundamental principles supporting the right to privacy in taxation. Ultimately, the research emphasizes the importance of protecting taxpayers' rights in maintaining trust, transparency, and accountability within the tax system.

The analysis of the document focuses on the importance of taxpayer information confidentiality within tax systems. It delves into the legal framework, practical implications, and ethical considerations related to tax data confidentiality. The document examines the legal basis and ethical considerations related to safeguarding taxpayers' privacy in the digital age, where concerns about data breaches and surveillance are becoming more widespread. It also highlights the challenges and opportunities related to safeguarding the confidentiality of tax data.

LEGAL FRAMEWORK FOR THE PROTECTION OF PERSONAL DATA IN ALBANIA

In the modern era, where technology and digitalization have become an integral part of our lives, the protection of personal data and the right to privacy have become key issues. Albania, in line with global trends and European Union requirements, has developed a strong legal framework to ensure these rights. This paper examines the legal frameworks that support the right to privacy and the protection of personal data in Albania, including the Law on the Protection of Personal Data and its harmonization with European regulations, as well as the challenges and opportunities for implementing these regulations.

The Constitution of the Republic of Albania, adopted by Law no. 8417, dated 22.11.1998, contains important provisions regarding the protection of the confidentiality of data. Essentially, the Constitution of Albania guarantees the fundamental right to respect for private and family life, correspondence, and personal data of individuals. This includes the right not to be followed, eavesdropped on, or have personal data collected without the consent of the person involved, except in cases and manners specified by the law. To ensure the protection of personal data, the Constitution of Albania envisages the need for specific laws regulating the collection, processing, and use of personal data. This is important to ensure that individuals' personal information is kept confidential and used in accordance with the law. In general, the Constitution of Albania stipulates that individuals have the right to protect their personal data from inappropriate or abusive use and that state authorities must effectively ensure respect for this right and fulfill their legal obligations to protect personal data.

Based on Article 31 of Law no. 9920, dated 19.5.2008 "On Tax Procedures in the Republic of Albania," as amended, the tax administration must ensure and protect the confidentiality of personal and financial tax data entrusted to it or obtained through various means. Taxpayer data will be used by the tax administration only for purposes allowed by law. Article 31 of the Law provides that only tax administration employees who need to consult taxpayer data for the performance of their legal functions will have access to this data (Law no. 9920, 2008). To monitor the correct implementation of taxpayers' rights, tax regional authorities must continuously monitor their internal work processes. In electronic communications sent or transmitted through the electronic tax service system, a balance between taxpayers' rights and obligations and the tax administration must be maintained. The tax administration is obligated to maintain the confidentiality of all tax and financial data, tax assessments, audits conducted, as well as any other information received from the taxpayer or other sources.

The tax administration does not consider as confidential data that are not considered as such under the current legislation, as well as data related to unpaid tax obligations, for which their collection has been forcibly initiated (Law no. 9920, 2008).

In the implementation of point 2 of Article 31 of Law no. 9920, dated 19.5.2008 "On Tax Procedures in the Republic of Albania," as amended, confidential data are considered to be tax and financial data obtained through taxpayers' declarations, tax audits carried out, tax assessments made for these taxpayers, and information received or sent from third parties or various other sources.

Law No. 9887 on the Protection of Personal Data, adopted in 2008 and subsequently amended several times, is the main law regulating the protection of personal data in Albania. This law is designed to ensure that the processing of personal data is in accordance with the principles of fairness, legality, and transparency. The law specifies that any processing of personal data must be done with the individual's consent, except where otherwise provided by law. It also requires data to be kept accurate and up to date, and to be retained for a limited period, in accordance with the purposes for which they were collected. Individuals have the right to access their personal data, request the correction or deletion of inaccurate data, and object to the processing of data for lawful reasons. These rights ensure that individuals have control over their personal information (Law no. 9887, 2008).

The law imposes clear obligations on those who control and process personal data, including requirements to ensure the necessary security measures to protect data from unauthorized access and accidental loss. The Authority for the Protection of Personal Data is the regulatory body responsible for supervising the implementation of the Law on the Protection of Personal Data. This authority has several key functions such as monitoring and ensuring that the processing of personal data in Albania complies with the law. This includes inspections and investigations to ensure that organizations comply with legal requirements. The Authority for the Protection of Personal Data also plays an important role in educating the public and organizations about their rights and obligations in the field of personal data protection. It provides guidance and advice on best practices. When disputes arise regarding the processing of personal data, the Authority for the Protection of Personal Data may mediate to find legally acceptable solutions.

HARMONIZATION WITH EUROPEAN UNION REGULATIONS

Albania, in an effort to join the European Union, has made significant efforts to harmonize its laws with the General Data Protection Regulation (GDPR) of the EU (Regulation (EU) 2016/679). GDPR (General Data Protection Regulation) is considered the highest standard in the world for the protection of personal data, and harmonization with this regulation is a crucial step for Albania on its path towards European integration. Compliance with GDPR requires Albania to adopt high standards of data protection, including principles of transparency, accountability, and limiting the purpose for which data is collected. GDPR requires data controllers and processors to implement appropriate security measures and ensure that data processing is in accordance with the law. This includes conducting privacy impact assessments and notifying supervisory authorities of data breaches. GDPR expands individuals' rights regarding their personal data, including the right to request data deletion (the right to be forgotten) and the right to transfer their data to another service (the right to data portability) (Council of the EU, 2026).

The implementation of legal frameworks for the protection of personal data in Albania faces several challenges. One of the main challenges is the low awareness of the public and businesses regarding their rights and obligations for data protection (European Parliament 2016). This requires ongoing efforts for educating and informing all parties involved. Protecting personal data and the right to privacy are fundamental issues in a society based on human rights and the rule of law. Albania has taken significant steps in developing a strong legal framework to protect these rights, in line with international and European Union standards. However, the effective implementation of these laws faces challenges that require continuous efforts for education, resource enhancement, and adaptation of regulations to address the specific needs of Albania. With a continuous commitment to the protection of personal data and respect for privacy, Albania can progress towards a fairer and more protected society.

PROTECTION OF PERSONAL DATA IN INTERNATIONAL TAX EXCHANGE UNDER THE EUROPEAN CONVENTION ON HUMAN RIGHTS AND OECD GUIDELINES

In an increasingly interconnected world, the exchange of tax information between jurisdictions has become a fundamental tool in the fight against tax evasion and aggressive tax planning. However, this practice raises significant concerns regarding the protection of personal data and the right to privacy. This paper examines the role of the European Convention on Human Rights (Article 8) and the OECD guidelines in ensuring that any exchange of tax information between jurisdictions is carried out within strict confidentiality agreements (Article 8 of the ECHR). Our analysis aims to show how these legal frameworks seek to balance the need for tax authorities to collect and use data with the obligation to protect individuals' privacy rights. International exchange of tax information is a key aspect of tax justice

administration and contributes to the global fight against tax evasion. In this context, confidentiality protection and personal data protection are important issues. Article 8 of the European Convention on Human Rights (ECHR) and the guidelines of the Organisation for Economic Co-operation and Development (OECD) emphasize the importance of protecting these rights.

Article 8 of the European Convention on Human Rights protects the right of every person to respect for his private and family life, home, and correspondence. This article stipulates that interference by public authorities in the exercise of this right can only occur in accordance with the law and is necessary in a democratic society for specific interests such as national security, public safety, or the economic well-being of the country. In the context of collecting and exchanging tax information, Article 8 requires that public authorities respect a careful balance between the need to gather data and the protection of individuals' privacy. The European Court of Human Rights has emphasized in several cases that any interference with privacy must be "in accordance with the law," "necessary," and "proportionate." This means that the collection and exchange of tax information must be regulated by law and justified by a legitimate public interest. The OECD has developed a series of guidelines for international exchange of tax information that include strict confidentiality agreements. These guidelines are part of OECD initiatives to combat tax evasion and promote transparency in international tax relations. The OECD guidelines include frameworks such as the Convention on Mutual Administrative Assistance in Tax Matters and the Common Reporting Standard (CRS), (Decision, No. 178, 2016), which require that exchanged information be used only for tax purposes and protected from unauthorized access.

Both the European Convention on Human Rights and the OECD guidelines aim to strike a balance between the need for tax authorities to collect and use data and the obligation to protect individual privacy rights. Any collection and exchange of information must be proportionate and necessary. This means that only information that is necessary for the stated purpose should be collected and exchanged. Tax authorities must be transparent about how they collect and use individuals' data (Mateli, 2016). They must be accountable for how they handle and protect sensitive information. Establishing strong regulatory frameworks that provide protective measures for individual rights is essential. This includes creating mechanisms for complaints and reviewing decisions related to tax information collection and exchange.

In conclusion, protecting personal data in the context of international exchange of tax information requires a balanced approach that respects individual privacy rights while allowing tax authorities to perform their functions effectively. The European Convention on Human Rights and the OECD guidelines provide a strong framework for achieving this balance by imposing strict rules on confidentiality protection and the use of tax information (Article 8 of the ECHR). In the future, challenges in maintaining this balance will continue to evolve, especially with the advancement of technology and changes in the global tax landscape. Nevertheless, a commitment to the protection of privacy rights remains the foundation upon which every effort to exchange international tax information is built.

PROTECTION OF PERSONAL DATA: EUROPEAN COURT DECISIONS ON HUMAN RIGHTS

The protection of personal data is a fundamental aspect of human rights in the digital age. The European Court of Human Rights (ECHR) has played a significant role in developing standards and jurisprudence for the protection of personal data in Europe. This study examines the importance of personal data protection, mentioning some of the key decisions of the ECHR and their impact on data protection policies and practices. The protection of personal data is a fundamental human right, recognized in Article 8 of the European Convention on Human Rights (ECHR), which guarantees the right to respect for private and family life. According to Westin (1967), privacy and the protection of personal data are essential for individual autonomy and to protect individuals from unauthorized interventions by governments and organizations.

One of the earliest and most important decisions of the ECHR regarding the protection of personal data is the case "Klass and Others v. Germany" (1978). In this case, the ECHR ruled that secret surveillance of communications can only be justified when there are sufficient safeguards to prevent abuse and protect the rights of those affected. This decision has set an important precedent for balancing national security and privacy protection.

The European Court of Human Rights has made several important decisions on the protection of the right to confidential tax data. One of the most well-known decisions is the European Court of Human Rights' ruling in the case "Rotaru v. Romania" (no. 28341/95), where it was emphasized that tax-related information is considered personal data and must be protected specifically by the state under the European Convention for the Protection of Human Rights and Fundamental Freedoms. In the case "Rotaru v. Romania" (2000), the ECHR addressed the issue of processing and storage of personal data by security services. The Court ruled that the collection, storage, and use of personal data must be in accordance with the law and must respect the right to privacy. This decision emphasized the importance of clear and well-defined regulation of the processing of personal data by state authorities.

Another important decision is the case "Libertat v. France" (no. 6263/03), where the European Court of Human Rights noted that the state must ensure a proper balance between the interests of tax authorities and the rights of individuals to privacy and protection of personal data. The decisions of the ECHR have played a significant role in harmonizing European legislation on the protection of personal data. According to a study on the GDPR (2016), the General Data Protection Regulation is a direct result of the jurisprudence of the ECHR and aims to ensure a high level of protection for personal data throughout the European Union.

Protection of personal data is a fundamental component of human rights and a key element for building trust in the digital society. The European Court of Human Rights has played a significant role in developing standards and jurisprudence for the protection of personal data. Its decisions have influenced the harmonization of European legislation and have improved data protection practices in many countries (Bygrave. 2014). For the future, it is important for governments and organizations to continue to respect and implement these standards to ensure the protection of individuals privacy rights.

BALANCING THE NEED FOR INFORMATION AND PRIVACY PROTECTION

In the digital age, balancing the need for information and privacy protection is a critical challenge for governments, companies, and individuals. While information is a valuable resource for decision-making and innovation, privacy protection is essential for safeguarding fundamental human rights. Information is crucial for informed decision-making and effective public policy. According to a study by Davenport and Prusak (1998), data and information help organizations and governments make better decisions, plan and implement policies that meet the needs of citizens, and address social and economic challenges. Information also drives innovation and economic development. McAfee and Brynjolfsson (2012) argue that the use of big data and advanced analytics can create new opportunities for businesses, improve operational efficiency, and stimulate economic growth. Data can be used to uncover new patterns and trends, encouraging the creation of new products and services.

Trust is a key element in the relationship between citizens and institutions. According to a study by Acquisti, Brandimarte, and Loewenstein (2015), the lack of privacy and abusive use of personal data can damage individuals' trust in organizations and governments. Privacy protection is necessary to maintain this trust and ensure that data is used ethically and responsibly. Technology has significantly increased the capacity for data collection and analysis but has also complicated privacy issues. According to Zuboff (2019), surveillance technologies and digital platforms have created an ecosystem where personal data can be collected and used in ways that are often invisible to individuals. This creates a challenge for balancing the need for information with privacy protection.

Regulations and policies play a significant role in balancing the need for information and privacy protection. According to a study on GDPR (2016), the General Data Protection Regulation in the European Union is an example of efforts to ensure that the collection and use of data respect individuals' privacy rights. This regulation requires organizations to be transparent about how they use personal data and provide strong privacy protections for individuals. Data anonymization is another important strategy. According to Narayanan and Shmatikov (2010), anonymizing data can help protect individuals' privacy by removing or hiding identifying information. This allows data to be used for analysis and decision-making without compromising individuals' privacy.

Balancing the need for information and privacy protection is a complex and important challenge in the digital age. To achieve this balance, transparency, informed consent, and the use of techniques such as data anonymization are necessary. Only through a balanced approach can there be fair and ethical use of information, respecting individuals' privacy rights and maximizing the benefits that information can bring to society.

TRANSFORMING TAX SYSTEMS DIGITALLY AS A CHALLENGE AND OPPORTUNITY FOR MAINTAINING TAXPAYERS' CONFIDENTIALITY

In the era of digital transformation, technology is revolutionizing every aspect of society and the economy, including tax systems. The digitalization of these systems brings great advantages, improving the efficiency and transparency of tax processes. However, this transformation is accompanied by significant challenges, particularly in maintaining the confidentiality of taxpayers' data (Aydin 2022). The digital transformation in tax systems brings many benefits that enhance the services and operation of tax administrations. Some of these advantages include the possibility of automating many processes, reducing the time and resources needed for processing tax obligations. This allows for a faster and more accurate response to taxpayers' requests and improves information management.

With digitalization, all tax transactions can be recorded and tracked more easily. This increases transparency and helps reduce corruption and tax evasion by ensuring that all actions are documented and traceable. Digital technologies offer opportunities to provide more personalized and user-friendly services for taxpayers, such as through mobile applications or online portals that facilitate tax declaration and payment. However, along with the benefits of digitalization, significant challenges arise in protecting the confidentiality of taxpayers' data.

CYBER SECURITY REQUIREMENTS

Digital systems are sensitive to cyber attacks that can compromise the sensitive data of taxpayers (Truong 2022). Hackers and other malicious actors may target tax administration databases to steal valuable information or interfere with their operations. With digitalization, the amount of data collected and stored by tax administrations significantly increases. This brings new challenges for managing this data and ensuring that it is protected from unauthorized access and inappropriate use. Even with the most advanced systems, the human factor remains a risk to confidentiality. Errors in access management or data processing can result in the exposure of sensitive data. For this reason, cybersecurity has become one of the most critical issues for organizations, individuals, and governments worldwide (Gordon, L. A., & Loeb, M. P. 2002). Data breaches, where sensitive information is published without authorization, have become more frequent and damaging. The consequences of these breaches include loss of customer trust, damage to reputation, and financial penalties (Anderson, R., & Moore, T. 2009). Governments play a crucial role in improving cybersecurity through legislation and regulations. Laws such as the GDPR (General Data Protection Regulation) in the European Union and CCPA (California Consumer Privacy Act) in the USA set high standards for data protection and require companies to take stricter security measures. International cooperation is also critical to combat cybercrime globally.

Despite the challenges, the digitalization of tax systems also offers significant opportunities to improve the protection of taxpayers data confidentiality. Incorporating technologies such as encryption, multi-factor authentication, and artificial intelligence for monitoring and preventing attacks can significantly enhance data security (OECD, 2017). Automated systems can help detect suspicious activity and prevent attacks before they occur. By adopting strong data protection policies and implementing high standards for access management and data use, tax administrations can create a sustainable framework for data confidentiality protection (United Nations in Albania, 2022). The digital transformation of tax systems offers a wide range of opportunities to improve efficiency and services for taxpayers, but it also brings significant challenges in maintaining data confidentiality. By integrating advanced security technologies, developing strong policies and procedures, and investing in staff education and training, tax administrations can benefit from these opportunities while simultaneously protecting sensitive taxpayer data. Ultimately, the success of digital transformation will be measured not only by the efficiency and transparency of the system but also by the ability to maintain the trust and security of taxpayers."

CONCLUSIONS AND RECOMMENDATIONS

Maintaining the confidentiality of tax data is essential for the trust of taxpayers and the effective functioning of tax systems. If taxpayers do not believe that their personal information is secure, they may become less willing to comply with tax laws and share necessary information with tax authorities.

In Albania and globally, there are strong legal frameworks supporting the protection of personal data and their confidentiality. The Law on the Protection of Personal Data and the Law on Tax Procedures are the main pillars that set the standards for protecting taxpayer information in Albania.

Tax administrations must implement strong measures to protect taxpayer data from unauthorized access and data breaches. This includes using advanced security technologies, internal controls, and regular audits.

Protecting taxpayer data has an important ethical dimension. Respecting privacy and ensuring transparency in the treatment of data are critical in building public trust in tax administrations.

The digitization of tax systems presents both challenges and opportunities. While technology can enhance security and efficiency, it also brings new risks such as cyber-attacks. Tax administrations need to invest in advanced technology and continuously update security protocols to address these challenges. As for the recommendations for this paper, they consist of:

Strengthening Legal Frameworks: Continuous improvement of existing legal frameworks should be pursued to ensure they are in line with international and EU standards. This includes further harmonizing national laws with the General Data Protection Regulation (GDPR).

Increasing Awareness and Education: Organizing awareness campaigns and education programs for the public and businesses regarding their rights and obligations for personal data protection. This will help increase compliance with data protection laws.

Investing in Advanced Technology: Tax administrations should invest in advanced security technologies such as encryption, multi-factor authentication, and artificial intelligence for monitoring and preventing cyber-attacks.

Improving Security Policies and Procedures: Strong policies and procedures for managing access and use of data should be developed and implemented. This includes enforcing high standards for safeguarding and processing personal data.

Enhancing Institutional Resources and Capacities: Strengthening the capacities of the Data Protection Supervisory Authority (DPSA) and other entities responsible for data protection. This includes increasing financial and human resources to ensure the effective implementation of data protection laws.

Promoting Transparency and Accountability: Tax authorities should be transparent about how they collect, store, and use taxpayer data. Clear and open communication with taxpayers will help build trust and security in the treatment of personal data.

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**BIBLIOMETRIC ANALYSIS OF AUGMENTED REALITY STUDIES IN EDUCATION
PUBLISHED IN WEB OF SCIENE DATABASE**

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ABSTRACT

The innovations and developments brought by technology have contributed to the world of education by providing new teaching methods as well as contributing to many fields. The integration of technological developments into education realises a silent revolution by providing qualified and contemporary education opportunities. It is of great importance to make innovations in the field of learning by combining instructional technologies with educational methods. Printed materials, which make information concrete but are open to discussion in terms of usefulness, have now been moved to virtual environments with digitalisation in education and have brought a new dimension to learning. In this study, it is aimed to make a bibliographic analysis of augmented reality articles in education on the Web of Sciene database. In this study, a descriptive research model called general survey model was followed and bibliometric analysis method was used. According to the criteria determined in the study, 1994 articles were analysed. In the analysis, publication years, study types, publication languages, publication languages, publication countries, publication areas, open access status, sustainable development goals, co-authorship links, inter-institutional relationships, inter-country relationships and co-author keyword relationship status of articles in the field of augmented reality in education were examined. According to this analysis, the year with the highest number of publications was 2022 (419), the highest number of article type studies were conducted (1994), the most used publication language was English (1895), the country with the highest number of publications was the USA (278), the most research was conducted in the field of education and education (610), and 1994 open access articles were reached, Among the sustainable development goals, the highest number of quality education (1273), the largest cluster of authors related to each other consists of 7 authors, the largest cluster of institutions related to each other consists of 5 institutions, Spain is at the centre of the countries that are connected to each other, and the most frequently used keyword of the authors is "Augmented Reality" as reached from the analysis. It is expected that this study will guide future studies by presenting current data in the field of augmented reality in education.

Keywords: Augmented Reality, Bibliometric Analysis, Education, Web of Sciene

**THE NATURE AND CONTENT OF ADMINISTRATION OF TEACHING IN HIGHER
MILITARY SCHOOLS**

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ABSTRACT

Formation of the management culture of cadets studying in higher military schools serves to achieve the expected training results, requires efficiency and productivity skills of future soldiers in modern society. The complexity of the situation in the current pedagogical education, the change of social order, norms, rules, values, and modern reforms have caused some concern in the self-management of the educated. Management skills in the pedagogical education system of special purpose educational institutions play a major role in solving the problems encountered in the future career development of students. From this point of view, the problem of formation of professional personnel in the field of management in education is becoming more relevant day by day.

Another element that affects the independence and self-management of learners is the establishment of appropriate behavior patterns. Sometimes the reason there are enough problems in this area is due to inconsistencies in training. For this purpose, scholars began to investigate the influence of modern strategies on the management behavior of learners. One of the best strategies is to learn methods that help prevent behavior problems from occurring. Although the interests and needs of each student are different, teachers should apply appropriate rules to prevent problems.

It is known that the formation of management habits of students in the pedagogical process is also measured by the organization of independent work, its form and the effectiveness of the obtained results. In order to achieve this effectiveness, the main priorities of special purpose higher education institutions are the lack of self-management, self-organization and management culture in young people. In this regard, the experience of students moving from the credit system to the teaching system in higher education revealed the need for their activation and independent work in the educational process. Observations show that the independent work of students promotes more effective learning of the content of education, stimulates informative and professional interests, develops a creative and proactive activity, and makes it possible to increase their motivation.

Keywords: special purpose educational institutions, students, teaching

INTRODUCTION

The formation of the management culture of the cadets studying in special purpose higher pedagogic education serves to achieve the expected learning results, it requires the future soldiers to have efficiency and productivity skills in the modern society. The complexity of the situation in the current pedagogical education, the change of social order, norms, rules, values, and modern reforms have caused some concern in the self-management of the educated. Management skills in the pedagogical education system of special purpose educational institutions play a major role in solving the problems encountered in the future career development of students. From this point of view, the problem of formation of professional personnel in the field of management in education is becoming more relevant day by day.

One of the strategic goals of the "State Strategy for the Development of Education in the Republic of Azerbaijan" is to support the transformation of higher education institutions into educational-research-innovation centers in the context of competency-based personality-oriented education and the training of competitive specialists. For this purpose, the role of higher education institutions as scientific-research and innovation centers in increasing the number of innovative student audiences for training competitive young people is one of the most important priorities of universities.

METHOD

The principles of organization of training in higher military schools should be used to increase the abilities and general quality of life obtained during the training process and during non-training activities. According to K. Ordonez, in order to meet the educational needs of the 21st century, students should imagine their future without a map and start looking for new paradigms that meet their learning

needs as a new example or model. As the research scientist points out, the task of a true leader in management is to go beyond the means of development to express existing goals.

Another element that affects the independence and self-management of learners is the establishment of appropriate behavior patterns. Sometimes the reason there are enough problems in this area is due to inconsistencies in training. For this purpose, scholars began to investigate the influence of modern strategies on the management behavior of learners. One of the best strategies is to learn methods that help prevent behavior problems from occurring. Although the interests and needs of each student are different, teachers should apply appropriate rules to prevent problems.

G.T. Milkovich and J.M. Newman (Milkovich, G.T. & Newman, J.M. 2005) claim that the definition of competence in the management of teaching in higher military schools will replace vague ideas, concepts, characteristics related to motives with behavioral descriptions related to any problem in real life. Learners with higher behavioral self-management competencies demonstrate higher well-being, resilience, academic performance, and adaptability to change.

In addition, the provision of choice for trainees in training reflects the protection of the principle of individuality in the new code of conduct. For example, the participation of students in the choice of topics and activities, in various community projects, is suggested as being organized according to their interests.

It is known that the formation of management habits of students in the pedagogical process is also measured by the organization of independent work, its form and the effectiveness of the obtained results. In order to achieve this effectiveness, the main priorities of special purpose higher education institutions are the lack of self-management, self-organization and management culture in young people. In this regard, the experience of students moving from the credit system to the teaching system in higher education revealed the need for their activation and independent work in the educational process. Observations show that the independent work of students promotes more effective learning of the content of education, stimulates informative and professional interests, develops a creative and proactive activity, and makes it possible to increase their motivation.

As mentioned, the organization of a student-oriented learning environment, the application and presentation of intellectual activities provide a basis for the organization of independent work in them. In the organization of independent work, the participation of the teacher is not taken into account, and at this time, each teacher should take into account the age of the student and his personal qualities. Such intellectual activities help to stimulate learners and involve them in various mental activities, research, problem-solving and independent orientation. It is clear from this that giving students the freedom to choose the methods during the execution of the work correctly directs the organization of independent work. Choosing the right type and category of independent work helps to form their intelligence and abilities. For this purpose, the researchers investigated modern training technologies in the organization and application of independent work, and considered the Flipped Learning method and the content of Project-Based Learning to be the most effective strategy in the formation of management skills.

Recently, the priority issue in higher military schools is to define the socialization of students as a management process. Here, the essence of studying management with students joining the social environment is defined as the process of gaining social experience and their activation in the system of social relations. R.M.Giles and A.F.Ashman inculcate here the main functions, the assimilation of social information, the development of various forms of activity and communication, the formation of social consciousness, empathy, self-awareness, the study of social experience as the management of the socialization process. It is clear that in the application of educational methods, subjectivity, adaptation to the social environment, helping each other, moral support are regarded as respect for national values, and are considered as management of oneself and others.

Other competences in the management of the social environment include the effective use of technological digital tools, the study of various management programs as the most useful elements of the electronic space, research, analytical analysis and solving social problems. Socialization provides cognitive development as a component of the formation of the self-management mechanism of the individual and creates the fundamental basis of mutual communication.

Management of social relations of learners is also the most successful means of influence taking into account psychological factors in the development of mental activities, self-confidence, confidence and decision-making skills. The creation of a community of learners is valued as the most optimal means of influencing the organization of independent work and strengthening the management of the socialization

process. From this, it is known that the formation of management skills in training reflects the appropriate training activity that forms the independent activity of students, the application of tasks, the regulation of behavior, and the normalization of an effective, systematic training environment.

Researchers explain the usefulness of various competencies in the development of management skills of those studying in higher military schools, serve different purposes in their future careers, and demand the selection of necessary useful professional skills. These skills include planning, effective time management, teamwork, conceptual management, and organizing activities outside the team in technology management.

Researchers note the great role of planning the skills of students in their psychological development and in solving health problems. In particular, they need to be aware of certain strategies and methods when preparing for exams. At the same time, students of management activities plan to set the daily routine correctly, get enough rest and even engage in environmental activities. Organizing entertainment hours, spending time in the library, connecting with nature ensures that they have healthy behavior. For example, spending a normal hour at the computer during the day, doing sports, taking time for reading on the weekend, working in a team at least twice a week by being involved in collaborative project work, doing research, being in fresh air, drinking a lot of water, eating right, follow a regular sleep schedule, etc. such useful activities enable learning skills to be acquired more appropriately. In addition, the correct organization of time in the development of management skills of the students is necessary to achieve their future professional and personal goals.

RECOMMENDATIONS

Proper targeting of management skills in education strengthens self-confidence in their future activities and requires them to be competitive. The pedagogical process considers the development of management among students as the most important competence in the realization of their future career goals. Skill, knowledge, experience, flexible action and practical experience are understood as the ability to do any activity well.

The conducted analyzes prove that the formation of the management skills of those studying in higher military schools first requires the correct definition of its essence, content and goals, and examines theoretical ideas from different perspectives. It turns out that management habits serve to form new scientific-political, military, social, economic, cultural and environmental views of those who are educated in accordance with the requirements of modern society.

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THE VITAL IMPORTANCE OF AUTHENTIC HUMAN CONNECTION

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ABSTRACT

“It’s important that we are talking to each other in a way that heals, not in a way that wounds” is a quote by Barack Obama that is especially relevant and necessary in these fraught times. Both as individuals and societies, we are often unable to communicate on a human, compassionate and productive level with one another.

Humans are social creatures with an emotional need for relationships and positive connections to others. Our social brains crave companionship, even when experience has made us shy and distrustful of others. Positive social interaction reduces stress and increases motivation and is an emotional and mental health necessity.

My Restorative Communication board games, card decks and virtual games provide safe, enjoyable, structured spaces for us to engage with one another on much deeper levels than our social masks; to express deep personal truths, process our emotions and experiences together, including our traumas, and to receive acceptance, understanding and support. Also, unique groups have unique problems, which due to stigma and lack of access or resources are rarely addressed and need personalized, specialized, solutions (ie: the Incarcerated, Veterans, At-Risk Youth, Grief & Loss Support, etc.). These games are all designed to be facilitated and played anywhere, with zero to minimal training required; accessible to all!

Play as positive social interaction matters because those who avoid, or who have never learned to play may become lost in the world of fear, rage, and obsessive worry. When we play, we trigger a mix of endorphins that lift our spirits and distractions that distance us from pain, fear, and other burdens. And when we play with other people, we are reminded that we are not alone in this world.

My games, utilized by over one million people in the US, provide players with the opportunity to go beyond the surface and the mundane, beyond the polite small talk to a rich, nuanced experience of one another and to experience the joy of genuine transparency and connection, which in turn increases resilience and mental health outcomes.

Keywords: Connection, Humanity, Healing, Transformation.

RELIGION AS A PROGENITOR AND BEARER OF CULTURE

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ABSTRACT

There is no consensus on the definition of culture. British anthropologist and sociologist E. B. Tylor (d. 1917), in his book "Primitive Culture," equates culture with civilization. His definition exclusively attributes culture to human activities. American anthropologists Alfred L. Kroeber (d. 1960) and Clyde Kluckhohn (d. 1960) have included 164 definitions of culture in their works. These range from "learned behavior" to "ideas in the mind," from "a logical structure" to "a statistical fiction," encompassing various disciplines and perspectives. Like many anthropologists, they view culture as an abstraction or more specifically, an "abstraction from behavior." Their definition, "An abstraction from concrete behavior but is not itself behavior," suggests that culture represents human behaviors, beliefs, values, norms, and traditions. This conceptual framework aims to understand culture at a broader level, beyond the specific behaviors, practices, and interactions exhibited by individuals and groups at a particular time and place. In this sense, culture is seen as general principles, patterns, and systems of meaning derived from concrete examples of social life. Art and music, for instance, are ways through which individuals and communities express their emotions, dreams, and social critiques. These works abstractly reflect a culture's aesthetic values, approaches to social issues, and history. Culture, transcending concrete behaviors and practices, also represents a community's shared values, beliefs, and worldview. Human behaviors are the outcome of mind codes, which in turn are part of this abstract world. Religion plays a significant role in the formation of these mind codes. Religious beliefs, the practices they prescribe, customs, and moral values significantly shape a community's cultural structure. In this context, the abstract metaphysical belief system proposed by the Prophet of Islam and the lifestyle it sustains continue to generate material and spiritual cultural phenomena in the lives of Muslim individuals and communities today, just as they did in the past. This study will examine the relationship between culture and religion in this context.

Key Words: Religion, mind codes, culture

A STUDY TO EXPLORE THE IDEA OF ‘WOMANHOOD BEYOND MOTHERHOOD’

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ABSTRACT

In India, motherhood is revered for its sacred nature, selflessness, and cultural values. Mothers are primary caregivers, maintaining family unity and tradition, but modern lifestyles have influenced mothering practices.

On this area of research, some scholarly studies have been talked about how concept of “Childlessness” has been drawn the attention of modern days mothers and also has contributed on accounting the factors and background behind it. A few studies have highlighted that after child birth mothers are regretting on their reproductive decisions, and their feeling guilty on choosing motherhood as they are not able to fulfill stereotypical role of mother.

This study has tried to investigate how women as well as men are pursuing the idea of motherhood and individuality based on contemporary aspects. The main objective of this study is to draw attention on how people are differentiating in between the idea of motherhood and womanhood based on the arguments on collectivism versus individualism. Also it will examine how glorification of motherhood based on the stereotypical ideas plays significant role, as an affecting factor on maternal mental health in present day context.

By adopting in-depth interview method, this study attempts to address this interdisciplinary argument on ‘Womanhood beyond Motherhood’. This study has relevance on contributing in the field of investigating how women’s perception about themselves as a mother has been influenced by the intersections of maternal duties with societal expectations, cultural norms, and personal goals and lead themselves towards maternal mental health issues. It encourages future study and action in this important field by adding to the existing body of knowledge on parental wellbeing, social wellbeing, gender studies and also women’s studies.

Keywords: Gender role, Maternal mental health, Motherhood, Parenthood, Self efficacy, Womanhood.

**NON-LINGUISTIC EXECUTIVE FUNCTION IMPAIRMENTS IN INDIVIDUALS WITH
APHASIA: A COMPARISON BETWEEN THE SUBACUTE AND CHRONIC PHASES**

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ABSTRACT

The existing literature on aphasia has placed considerable emphasis on the language-centred understanding of aphasia. However, the role that executive functions play in the functioning of aphasic individuals has been neglected. The objective of this study was to examine the impact of non-linguistic executive function impairments in individuals with aphasia, with a particular focus on the differences between those in the subacute and chronic phases. A total of 10 monolingual individuals with aphasia were included in the study, with 5 participants in the subacute phase and 5 participants in the chronic phase. Non-linguistic executive functions were assessed using standardised neuropsychological tests (e.g. Trail Making Test and Rey Complex Figure B) and compared between the two groups. Furthermore, we added linguistic batteries such as the Token and TROG to investigate linguistic impairments. The results revealed significant impairments in non-linguistic executive functions in both the subacute and chronic phases of aphasia. However, the severity and specific executive functions affected differed between the two groups. The subacute phase group demonstrated more severe impairments in executive functions compared to the participants in the chronic phase. This study contributes to the understanding of non-linguistic executive function impairments in individuals with aphasia, highlighting the differences between the subacute and chronic phases. These findings have implications for the development of targeted interventions and rehabilitation strategies to address executive function deficits in individuals with aphasia at different stages of recovery.

Key words: executive functions, aphasia, subacute phase, chronic phase, multiple case study

**BITCOIN VOLATILITY ESTIMATION USING A GENERALIZED AUTOREGRESSIVE
CONDITIONAL HETEROSCEDASTICITY (GARCH) APPROACH**

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ABSTRACT

This paper aims to investigate Bitcoin's daily returns and price volatility from March 2023 to March 2024 at a 95% confidence level. The period under analysis shows that Bitcoin experiences extreme high intra-day fluctuations. This information is crucial for economic agents involved in Bitcoin investments and for regulatory perspectives. To model the daily returns and price volatility of Bitcoin, momentum price data was obtained from BTC charts, and the daily closing prices were constructed from the daily average traded price. The statistical variance function of Bitcoin's daily returns indicates that it is an interesting issue in the market. The statistical analysis suggests implementing a GARCH (1,1) model for predicting Bitcoin's price volatility in a short-term period of one day. The GARCH (1,1) model demonstrates robustness in its parameters. Therefore, this research recommends that economic agents dealing with Bitcoin should implement the GARCH (1,1) model for estimating and forecasting Bitcoin's volatility in the short-term. In the financial context, the analysis also reports that investing in Bitcoin can be considered safe. It can be used for both short and long-term investment purposes. These results emphasize the need for regulators to pay special attention to the Bitcoin market as its trading volume is expected to increase.

Keywords: Bitcoin, GARCH, daily returns volatility, investment strategy.

INTRODUCTION

This research study aims to investigate the daily returns and price volatility of Bitcoin (BTC) expressed in US dollars in the global crypto market over a year. The latter reflects an increase of 5.32% within the last day. This information is crucial for economic agents involved in this type of investment, as well as from a regulatory perspective. By modeling the daily returns of BTC and analyzing its price volatility, it is possible to forecast the price in the short-term, specifically for a one-day period. The statistical variance function in daily returns highlights that the recent performance is what makes this issue intriguing in the market.

A cryptocurrency or crypto coin refers to a digital currency in the form of coins or tokens that are created to function as a means of exchange over a computer network. Unlike traditional currencies, they operate without regulation or control from any central authority, such as a government or bank.

Given the circumstances, people primarily use cryptocurrencies for online transactions created using encryption algorithms. However, they can also be utilized for certain physical purchases. The utilization of encryption technologies in cryptocurrencies allows them to function as both a currency and a virtual accounting system. There are several companies that sell cryptocurrencies.

To utilize cryptocurrencies, a wallet is essential. These wallets can be stored on computers, mobile devices, or cloud-based software. They store the encryption key that verifies the identity of the cryptocurrency owner and connects them to their digital assets. This setup enables investors to conduct transactions independently without involving intermediaries.

BTC, the first cryptocurrency introduced in 2009, remains the most widely traded and is primarily favored for investments. On the other hand, ETH, the second most valuable cryptocurrency, enables intricate transactions. Additionally, there are various altcoins such as Cardano, Solana, Dogecoin, and XRP that are also popular cryptocurrencies.

CoinMarketCap (<https://coinmarketcap.com/>) reports that there are approximately 22,932 cryptocurrencies, with a total market capitalization of \$2.53 trillion. However, what are the risks associated with them?

Firstly, given the fact that cryptocurrencies are still relatively new, their market remains highly volatile. Specifically looking at the BTC price, which is our primary research focus, it currently stands at 67,819.06 USD, a significant increase from its value of 28,264.24 USD one year ago. This represents

a change of 9.15% from yesterday and an impressive 139.9% increase compared to the same time last year.

Secondly, cryptocurrencies are not regulated by banks or any other third party. As a result, it becomes difficult to exchange them for US Dollars or Euros. Thirdly, cryptocurrencies are intangible assets based on technology and can be vulnerable to hacking, just like any other intangible technology asset. Lastly, cryptocurrency investments are stored in digital wallets and if the wallet is lost, the entire investment is lost as well. Consequently, it can be argued that investing in BTC is not a completely "safe haven" investment.

There is a range of evidence regarding the impact on the value of BTC. For instance, technological innovation (Matta et al., 2015), an increase in e-commerce business volume (Polasik et al., 2015), and perceptions of investment (Dyhrberg 2015; Kristoufek 2015) have all been identified as factors. Additionally, Bouoiyour et al. (2016) found that media attention and speculation play a role in the rapid price movements of BTC, along with production costs (Hayes 2015) and cyber attacks (Ciaian et al., 2016). In technical terms, its market volatility is considered complex (Dyhrberg 2015), possessing characteristics of currencies, stocks, and assets combined. It can be categorized as something between a currency and a commodity. Furthermore, studies by Trucíos (2019), Chu et al. (2017), and Liu et al. (2017) demonstrate that various GARCH-type models can be utilized to forecast BTC volatility.

This study aims to determine the suitability of a GARCH (1,1) model in forecasting BTC price volatility over a short one-day time frame, taking into account its significant intra-day fluctuations.

LITERATURE REVIEW

The behavior of Bitcoin (BTC) is inherently complex due to its unique characteristics, including its limited supply and decentralized nature, which distinguish it from conventional currencies. Consequently, it becomes imperative to delve into the factors influencing BTC price dynamics and subsequently examine its daily returns volatility. Yermack's study (2013) posits BTC as a speculative investment, highlighting a low correlation between BTC and traditional exchange rates. Conversely, other research suggests that BTC serves as an asset for transactional purposes (Dwyer 2014). However, the treatment of BTC in terms of tax obligations remains ambiguous. The study by Van Alstyne (2014) delineates the varying regulatory approaches towards Bitcoin (BTC) across different jurisdictions. In the United States, BTC is classified as property, whereas the German government recognizes it as a "unit of account", permitting its utilization for both taxation and trading purposes. Numerous studies (Kristoufek 2013; Ciaian et al., 2014; Bouoiyour and Selmi 2016; Balcilar et al., 2017) have underscored the multifaceted influences on BTC price dynamics. These influences emanate from diverse sources, including fundamental, macroeconomic, and financial factors, as well as speculation and technical contributors.

With special regard to the macroeconomic and financial sources, the Kristoufek (2013) study argues that BTC price cannot be explained through fundamental, macroeconomic and financial sources. It explains that an algorithm sets the supply of BTC and the demand is driven by the investor's expected profit of buying and selling it. While Ciaian et al. (2014) study demonstrated that the BTC price is correlated with the demand and supply fundamentals of this cryptocurrency, including here some global financial indicators (i.e: oil price and the Dow Jones index) as well as depends from its attractiveness for investors (i.e. the volume of daily BTC views on Wikipedia). Indeed, the study conducted by Kristoufek (2015) underscores the dynamic nature of Bitcoin (BTC) and highlights the rapid fluctuations in its price. Moreover, Kristoufek suggests that the factors influencing BTC price dynamics are subject to change over time. Additionally, research by Bouoiyour et al. (2016) provides further evidence suggesting that the swift price movements observed in BTC can be attributed to media attention and speculation surrounding this emerging phenomenon. Consequently, it appears that BTC investment is predominantly driven by short-term investors, given the volatile nature of its price movements and the influence of media coverage and speculation.

Additional research conducted by Eisl et al. (2015), Baur et al. (2015), Dyhrberg (2015), Popper (2015), and Bouri et al. (2016) presents contradictory findings regarding the relationship between Bitcoin (BTC) and stock prices. They indicate a negative correlation between BTC and stock prices, suggesting that BTC can serve as a hedge instrument. Specifically, Dyhrberg (2015) has examined the hedging capabilities of BTC and demonstrated its potential to be integrated into a portfolio to alleviate the adverse impacts of

sudden shocks. This suggests that BTC may offer diversification benefits and risk mitigation strategies for investors amid market volatility.

A substantial body of literature, including works by Dyhrberg (2016), Balcilar et al. (2017), Chu et al. (2017), Katsiampa (2017), Liu et al. (2017), Pichl and Kaizoji (2017), Naimy and Hayek (2018), and Catania et al. (2018), delves into the daily volatility of Bitcoin (BTC). Notably, Balcilar et al. (2017) emphasize the necessity of incorporating nonlinear modeling techniques and accounting for tail behavior when examining BTC price volatility. This highlights the importance of employing sophisticated analytical methods to capture the intricate dynamics and extreme fluctuations inherent in BTC markets. Such insights play a pivotal role in effective risk management and informed decision-making within the volatile landscape of cryptocurrencies.

The studies conducted by Dyhrberg (2016) and Chu et al. (2017) utilize generalized autoregressive conditional heteroscedasticity (GARCH) models to analyze Bitcoin (BTC) volatility, while Katsiampa (2017) employs various GARCH-type models assuming Gaussian errors to estimate BTC volatility, ultimately concluding that the autoregressive (AR) model best captures volatility dynamics. Additionally, Naimy and Hayek (2018) evaluate and compare the predictive performance of GARCH (1,1), exponentially weighted moving average (EWMA), and exponential generalized autoregressive conditional heteroscedasticity (EGARCH (1,1)). Meanwhile, Liu et al. (2017) leverage machine learning models to analyze BTC volatility patterns using big data techniques.

Upon closer examination, Pichl and Kaizoji's study (2017) reveals that artificial neural network prediction methods can approximate the actual log return distribution. However, for enhanced prediction accuracy, more advanced techniques like recurrent neural networks and Long Short-Term Memory (LSTM) methods from deep learning may be required. Expanding on this, Catania et al. (2018) have delved into the impact of incorporating long memory in the volatility process, along with its asymmetric response to past values of the series. Their investigation aims to predict volatility levels for one day, as well as one and two weeks, further enriching our understanding of BTC price dynamics and volatility patterns.

In this research endeavor, our aim is to conduct a statistical analysis to determine the feasibility of employing a GARCH (1,1) model for forecasting Bitcoin (BTC) price volatility over a brief period of one day.

MATERIALS AND METHODS

The GARCH model

The heteroskedastic autoregressive conditional variance models (ARCH models), first introduced by Engle (1982), underwent significant advancements with the pioneering work of Bollerslev (1986). Bollerslev's contributions led to the development of the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models, which have since become widely utilized for modeling and forecasting financial time series data.

In the GARCH (p,q) process, the conditional variance is not only determined by the autocorrelation function of squared Bitcoin (BTC) variables (p-variables) but also by the squared residuals (q-variables). Essentially, these models can be seen as squared Autoregressive Moving Average (ARMA) models. In our research, we apply a GARCH (1,1) model to estimate the volatility of BTC closing prices over a short one-day period with a 95% confidence level. For implementing the GARCH (1,1) model in this study, we utilized the statistical package Gretl.

Dataset

The dataset utilized comprises daily Bitcoin (BTC) closing prices, denominated in US dollars, traded on Bitstamp spanning from March 22, 2023, to March 21, 2024, encompassing 365 observations. Additional momentum price data were sourced from BTC charts, with daily closing prices constructed from the daily average price traded each day. Figure 1 illustrates the trend in BTC closing prices over the past year. The average BTC/USD value stands at \$35,264.05, with a minimum value of \$25,107.75 recorded on June 15, 2023, and a maximum value of \$73,097.77 attained on March 14, 2024.

The daily logarithmic returns of BTC/USD are computed using the formula $rt = \log(P_t) - \log(P_{t-1})$, where P_t represents the closing price on day t . Figure 2 displays the daily log returns of BTC, revealing its high volatility and a subtle asymmetry in the distribution of returns. The average value of daily log returns for

BTC/USD is -0.001, with a minimum value of -0.0404 and a maximum value of +0.373 (refer to Table 1 for detailed data).

Table 1. Summary Statistics, using the observations 2023-03-22 - 2024-03-23
for the variable Log (BTC/USD) (365 valid observations)

Mean	Median	Minimum	Maximum
-0.0010414	-0.00020194	-0.040497	0.037327
Std. Dev.	C.V.	Skewness	Ex. kurtosis
0.010193	9.7880	-0.22640	2.8610
5% Perc.	95% Perc.	IQ range	Missing obs.
-0.019706	0.014270	0.0087572	0

Source: Bitstamp, Authors elaboration with Gretl

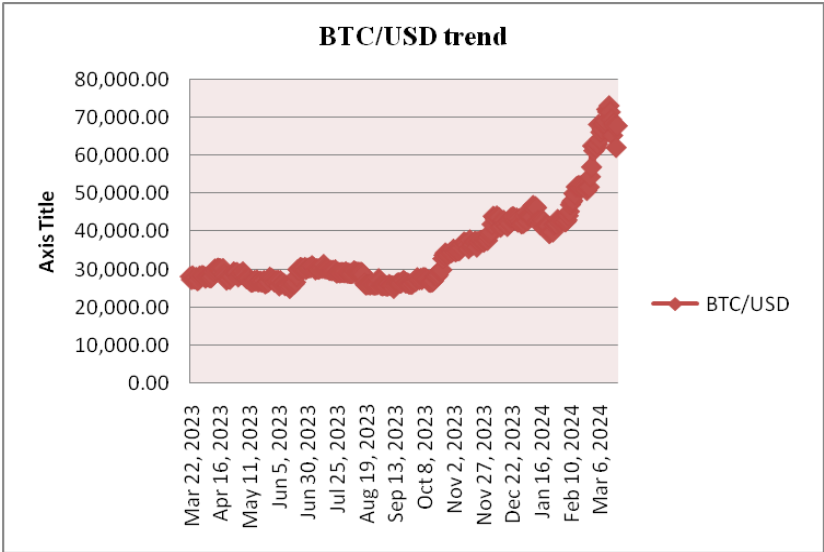


Figure 1. BTC/USD trend

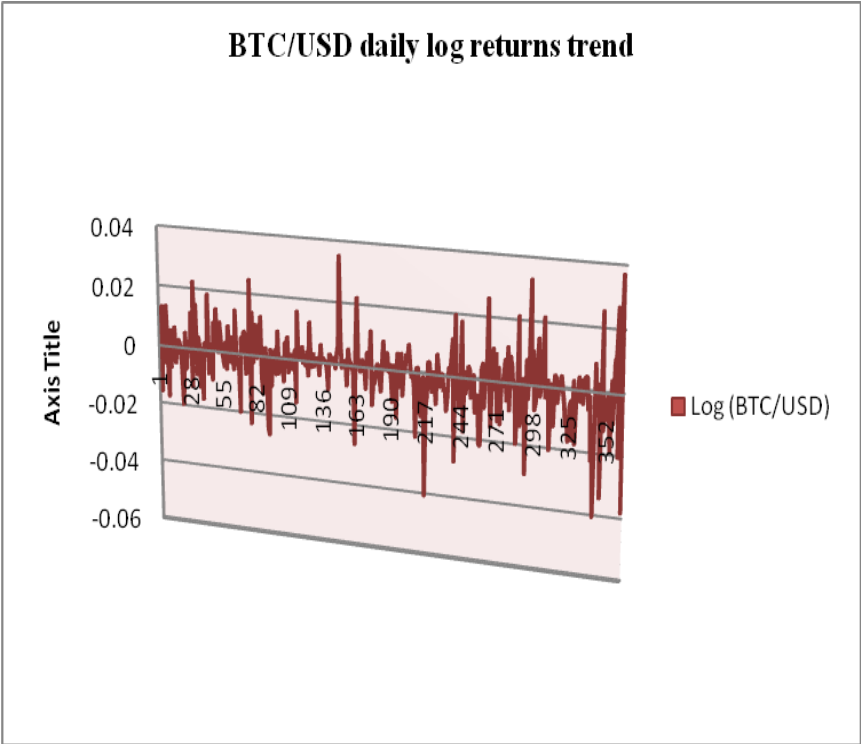


Figure 2. BTC/USD daily log returns trend

RESULTS AND DISCUSSIONS

The first-order autocorrelation of daily log (BTC/USD) returns data, as depicted in Figure 3, indicates the presence of correlation within the analyzed data at a 95% confidence level. This observation suggests that past returns have an influence on current returns, highlighting the potential for serial dependence in the BTC price movements.

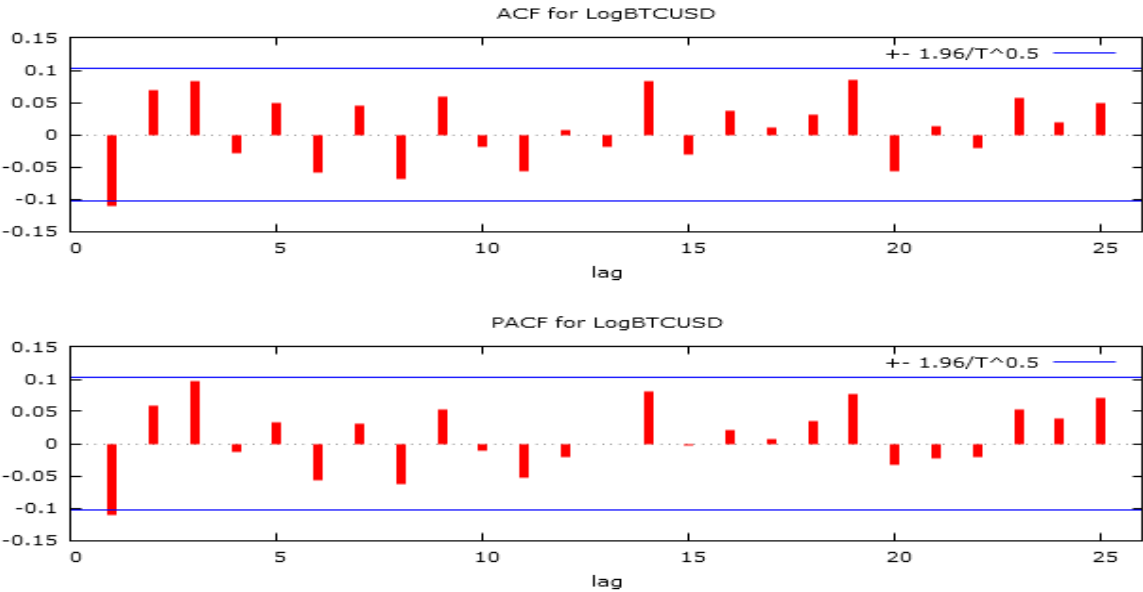


Figure 3. The autocorrelation of daily log (BTC/USD) returns

The identified correlation in the data suggests that a GARCH (1,1) model could be apt for predicting the daily volatility of BTC price. Accordingly, the application of the GARCH (1,1) model to the daily log (BTC/USD) returns is detailed in Table 2.

Table 2. Model 1: GARCH, using observations 2023-03-22:2024-03-20 (T = 365)

Dependent variable: Log(BTC/USD)

QML standard errors

	coefficient	std. error	z	p-value
const	-0.000841874	0.000482087	-1.746	0.0808 *
alpha(0)	0.6832142	0.0236005	24.5	1.11 ***
alpha(1)	0.121317	0.0639200	1.898	0.05001 *
beta(1)	0.672421	0.238681	2.817	0.0048 ***

Mean dependent var -0.001041 S.D. dependent var 0.010193

Log-likelihood 1165.583 Akaike criterion -2321.166

Schwarz criterion -2301.667 Hannan-Quinn -2313.417

Unconditional error variance = 0.00010701

The residuals are standardized

Likelihood ratio test for (G)ARCH terms:

Chi-square(2) = 18.1908 [0.000112179]

Source: Authors elaboration with Gretl

Figure 4 illustrates that the errors of the GARCH (1,1) model are uncorrelated. This finding confirms the suitability of the model for forecasting BTC price volatility over a short time horizon of one day.

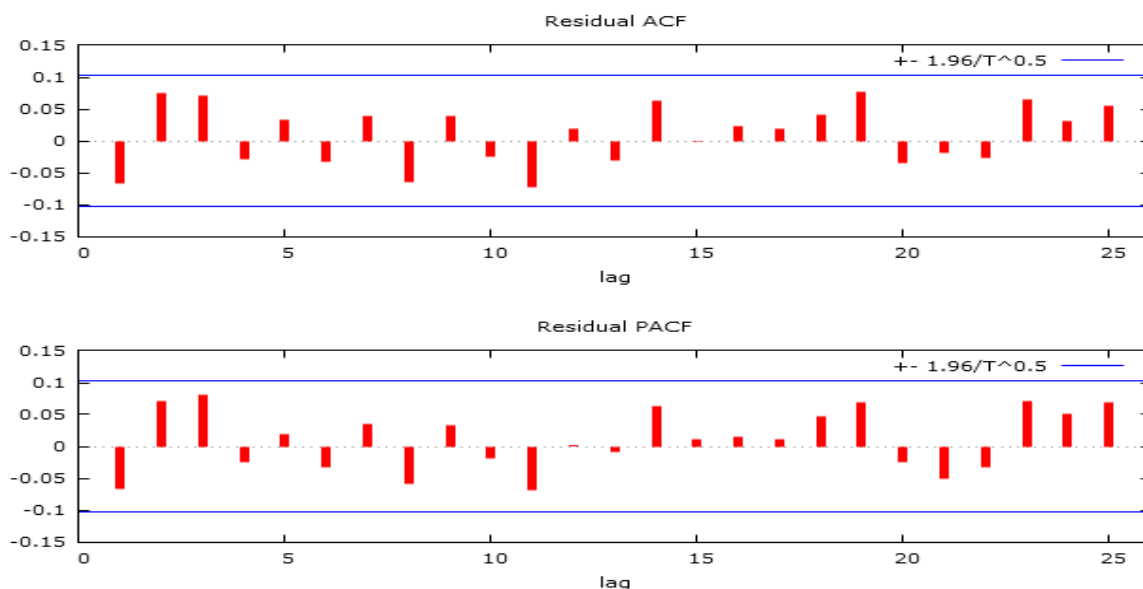


Figure 4. The GARCH (1;1) model residuals full and partial autocorrelation data

Figure 5 demonstrates that the residuals of the GARCH (1,1) model exhibit a close approximation to a normal distribution, characterized by a mean of 0 and a variance of 1. This observation suggests that the residuals behave akin to white noise, further affirming the adequacy of the GARCH (1,1) model for capturing the volatility of BTC price dynamics.

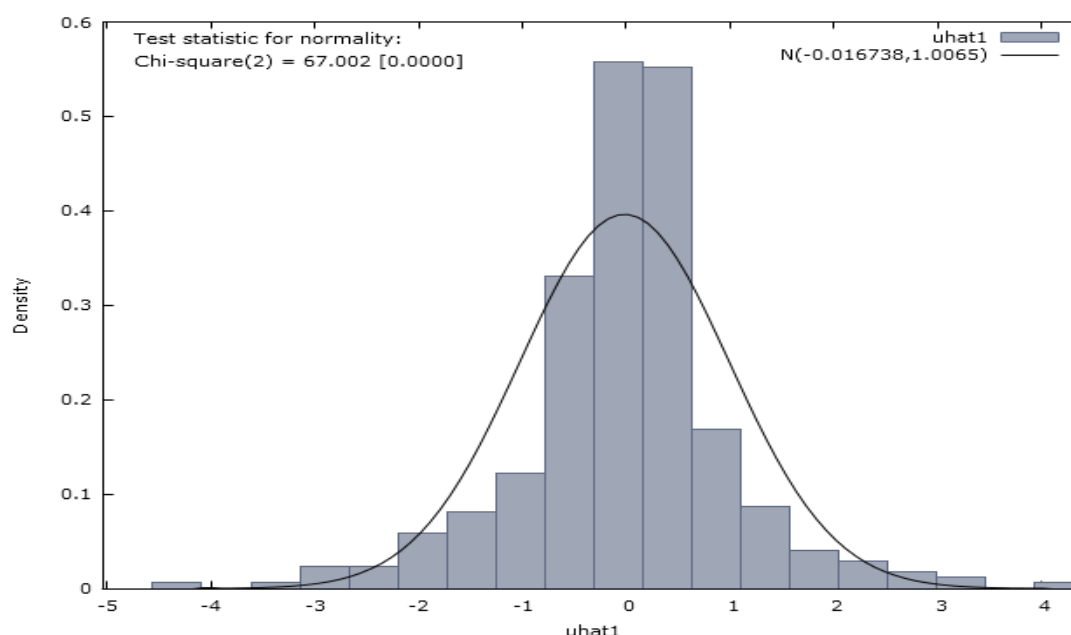


Figure 5. The GARCH (1;1) residuals normality test

CONCLUSIONS

In this research paper, we conducted a detailed examination of the daily statistical behavior of BTC spanning from March 2023 to March 2024, employing a 95% confidence level. Through close analysis of the daily BTC price trend and its corresponding daily logarithmic returns, we implemented a GARCH (1,1) model. Our findings indicate that the GARCH (1,1) model exhibits statistically significant conditional variance and squared residuals of the first order at the 95% confidence level. Additionally, the residuals of the model conform closely to a normal distribution. These results underscore the efficacy of the GARCH (1,1) model in capturing the volatility dynamics of BTC price movements.

This confirmation solidifies the utility of the GARCH (1,1) model for predicting BTC inter-day price volatility, regardless of the extreme intra-day and yearly fluctuations observed. Such findings hold significance, especially considering BTC's classification as currency, asset, or investment vehicle. Within the financial realm, our analysis suggests that investing in BTC can be deemed safe, empowering investors to utilize it for both short and long-term investment objectives. These outcomes also call for heightened regulatory attention to the BTC market, particularly as trading volumes are anticipated to rise.

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**THE WINE AND FRESH CONSUMING PROPERTIES OF THE RARE VARIETY *Vitis*
vinifera L. CV. MOR ŞAHABİ**

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ABSTRACT

Anatolia has a rich genetic potential, as viticulture in this region dates back to ancient times. Quality table and wine grape varieties with a long history are widely grown in the region. In this sense, it is not surprising to be faced with uncommon varieties for local uses. In this study, it is aimed to express some table and wine characteristics of "Mor Şahabi (Mor Şabi)", the rare grape variety of Central Anatolia. The variety is suitable for fresh consumption due to its attractive violet skin color and large berries, but it also has the potential to be used for wine production thanks to its dark skin colour. The grapevines have been grown on their own roots in traditional small vineyards in Yeşilburç village of Niğde province. The region has a typical continental climate and is 1320 m above sea level. Thirty vines of the same moderate vigour were randomly selected in the studied vineyard, and clusters were hand-picked according to the Brix levels and the characteristic of violet skin color. Technological ripeness analyses were carried out in must. The total phenol, total anthocyanin, and soluble anthocyanin content of the berries were determined spectrophotometrically. The cellular maturity index, which is an expression of phenolic maturity, was also calculated using total and soluble anthocyanin concentration. According to the findings, total phenol concentration was determined as 1260.17 mg kg⁻¹. Total and soluble anthocyanin content was determined as 267.46 mg kg⁻¹ and 179.38 mg kg⁻¹, respectively. The cellular maturity index was calculated as %33.04. The average cluster weight was 335.28 g. The total soluble solid content was determined as 19.0 °B, pH of the must 3.41, titratable acidity %0.36 and maturity index %53.77. According to the findings, it was concluded that the variety performed well in terms of phenolic and anthocyanin concentration and could also be evaluated for wine production. However, more detailed studies are needed on the extractability of anthocyanins and tannins to evaluate this variety's oenological potential.

Keywords: Table grape, wine grape, quality, phenolic compounds, anthocyanins, *Vitis vinifera* L.

**SUCCESSFUL ORGANIZATIONAL INNOVATION AND KEY DRIVING FACTORS IN
THE BANKING SECTOR OF ALBANIA**

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ABSTRACT

The present paper examines the primary driving forces that impact innovation success in the Banking sector in Tirana (Albania). Various determining factors and their interconnections will be explored within the work. The correlation between organizational innovation and organizational culture has been a subject of study for an extended period. The achievement of organizational innovation can be assessed through different factors, like the assessment of organizational culture. Throughout the research process, numerous theories were encountered, leading to the utilization of Rao and Weintraub's (2013) model as the basis background for this work. This model outlines six fundamental building blocks of determinant factors essential for fostering a thriving innovative organizational culture. These six pivotal building blocks or factors include *Values, Behaviors, Organizational Climate, Resources, Processes, and Success*. The primary objective of this research is to establish hypothetical relationships among the six major components that drive successful innovation within an organization. A model for successful organizational innovation based on the paper hypothesis was further elaborated. Delving into employees' feedback concerning the factors influencing organizational culture and successful innovation promises to be of significant interest. The model underwent analysis utilizing survey results, with the participation of 100 employees from the Banking sector in Tirana, employing Structural Equation Modelling. The research findings unveil key contributors to successful organizational innovation and the interconnectedness of factors contributing to such success. After the first three monitoring, all Employee groups showed a significant improvement in terms of adherence to innovation ($F=4$; $p=0.032$; $\eta^2=0.013$), enhancement of soft skills ($F=3$; $p<0.004$; $\eta^2=0.625$), fast decision-making processes ($F=3$; $p<0.001$; $\eta^2=0.456$) and proactive engagement with colleagues ($F=3$; $p=0.05$; $\eta^2=0.465$). The outcomes of the chi-squared analysis demonstrated notable variations between the three groups regarding engagement in physical exercise following the completion of the intervention ($\chi^2=7$; $p=0.04$). The study highlights a robust association between innovation success and the innovation processes, which are positively related to organizational values, leaders' behaviors, and organizational resources. The connection between organizational climate and innovation processes appears weak based on the data sample collected, warranting further investigation. The model elucidated in the thesis offers insights into how the six factors collaborate to propel successful organizational innovation.

Keywords: organizational innovation, banking sector, driving factors, soft skills, proactive engagement

INTRODUCTION

This research constitutes an examination of the literature and background terrain pertaining to the analysis and assessment of organizational culture and enhancing soft skills and values in the Banking Sector in Albania. Most research has identified the factors that influence the effectiveness of the Banking Service and E-service in Albania (Ismaili & Spaho, 2021; Mosko & Bozdo, 2016; Çekrezi, 2015; Kristo, 2014), but almost none of them have explored the influence of innovation and organizational climate as seen by the banking staff. The variety of meanings and interpretations associated with the concept of organizational culture and values, along with the diverse perspectives and methodologies used for analysis, make this subject particularly intriguing, resulting in a plethora of published works on the matter (Luu et al., 2023; Opoku et al., 2022; Luu et al., 2022; Ismaili & Spaho, 2021; Barth & Mansouri, 2021; Negi et al., 2021; Hie, 2019; Gopalakrishnan & Damanpour, 2000). Additionally, the significance of organizational culture and values are demonstrated by its status as a topic of investigation by scholars from various fields, ranging from economy, anthropology, sociology and psychology and its crucial relevance for professionals like managers and business consultants. The aim of this paper is to outline the primary approaches to analyzing and evaluating organizational culture and soft skills values and their influence on employee effectiveness of the Banking system. This aim was

accomplished through a synthesis of texts and articles sourced from international literature, spanning from initial research efforts to more contemporary publications and background research with an intentional selected sample. The bibliographic review and background research, while not exhaustive, focused on theoretical and practical insights deemed most suitable for delineating the nuances of organizational culture and values and their interaction to the employee effectiveness particularly exploring the potential for quantitative assessment of this phenomenon. The paper is structured into different sections including commencing from a literature review of organizational culture and banking sector, Rao and Weintraub's model and the background research. Finally, the paper discusses and compares some of the key findings, reflecting the implications associated with their application.

ORGANIZATIONAL CULTURE

In an organizational setting, culture often remains inconspicuous, despite playing a significant role in shaping the interactions among its members. Nevertheless, there are instances where the profound impact of culture becomes unmistakable, necessitating an engagement with the implicit aspects of the organization (Luu et al.,2023; Barth & Mansouri,2021; Memon et al.,2020; Thakor,2015; Guiso et al.,2015; Liao et al.,2012; Patterson et al.,2005; Chen & Huag,2004). The subject of organizational culture has catalyzed a plethora of scholarly works, examined through diverse lenses. Gagliardi and Monaci (1997) underscore how the interplay of economic and sociocultural factors has fueled the proliferation of literature concerning organizational culture. Specifically, challenges within production systems across various industries, leading to organizational dilemmas, have spurred the quest for resolutions, particularly focusing on methods for coordinating and motivating personnel. The increasingly intricate operations of organizations, their expanding global reach, and a growing emphasis on the accomplishments of Japanese firms represent the economic circumstances that, in conjunction with sociocultural influences linked to the prevalence of a "narcissistic" culture and the symbolic nature of interactions among individual and collective stakeholders, have facilitated the growth of studies on organizational culture. The notion that significant advancement in the study of organizational culture was propelled by the excellence of Japanese corporations over American and Western ones is widely supported by research (Barney,2004). Ouchi and Wilkins (1983) emphasize how researchers, unable to account for the distinctions between Japanese and Western companies through structural analysis, have shifted towards exploring the idea that national cultures have shaped the organizational cultures of these companies. Originally attracting attention from anthropologists and sociologists, research on organizational culture has experienced continuous development, establishing itself as a key subject in management education. Schein (1985, pp.29-30) emphasizes the crucial role of culture management within the field of leadership, distinct from management and administration. He suggests that a leader's primary task may lie in the creation and maintenance of company culture. This implies that leaders should possess the skill of effectively managing culture. Viewing culture as a managerial tool has several implications. Culture, as a vital organizational component, must be managed appropriately to function as a social control system, support strategic implementation, and foster member commitment. To achieve this, it is imperative to identify the strategic objectives of each unit, encompassing short-term goals and the means to attain them. Subsequently, the ingrained shared values and norms of the organization should be assessed, highlighting potential obstacles and desirable yet absent elements. Managers are tasked with designing initiatives to shape or cultivate desired norms (O'Reilly,2008; 1989). Concerning the notion of leadership, which is often distinguished from the concepts of management and administration, Schein (1990, pp.29-30) emphasizes the crucial role played by culture within management and organizational contexts. The consideration of culture as a tool for management yields several implications: besides being a key component of an organization, culture needs to be effectively overseen by managers to function as a mechanism for social control, facilitate strategy implementation, and foster the engagement of company members. Hence, it is imperative to identify the strategic goals of each unit, encompassing short-term objectives and the corresponding methodologies for attainment. Subsequently, an examination of the ingrained and communal values and norms that define the organization is essential, followed by the identification of those that may pose hindrances or those that are deemed beneficial but are yet to be integrated within the company. Ultimately, the responsibility falls on managers to devise initiatives aimed at molding or cultivating desired norms (O'Reilly,2008). Willcoxson and Millett (2000) advocate for the concept of culture as a tool for management, exploring the feasible approaches to its administration. They present a set of crucial factors

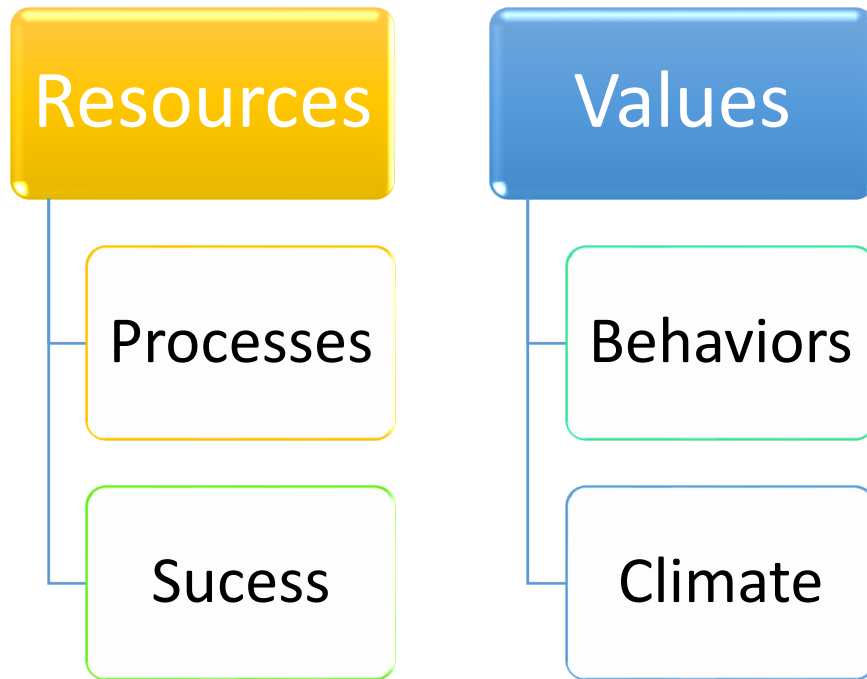
recognized by scholars as the primary drivers for acting (Lannes,2021). Initially, emphasis is placed on recruitment and selection processes, enabling the delegation of responsibilities to either fortify the current culture or facilitate its transformation. Conversely, the replacement and removal of individuals can instigate significant changes within the organization. Effective interpersonal communication not only upholds the prevailing culture but also aids in the assimilation of new members (Maheswari & Tamisharazi,2024). Moreover, fostering socialization promotes teamwork, a challenge often encountered in settings characterized by fragmented organizational cultures. Nonetheless, when successful, teamwork can catalyze change and the dissemination of culture. The cultivation and reinforcement of desired behaviors can be achieved through suitable performance-based reward mechanisms (Maheswari & Tamisharazi,2024). Managers also possess the capability to enhance or subvert existing symbols and values based on the organization's requirements, considering the impact of structures, policies, procedures, and resource distribution. Lastly, the active involvement of all organization members in endeavors geared towards culture modification or preservation is deemed essential. Rožman & Štrukelj (2020) and Schneider et al. (2013) enumerate the factors and motivations that underpin this increasing interest. Beyond the prevailing notion of corporate culture as a mechanism for enhancing competitiveness, it is noteworthy that culture can transcend the constraints of conventional organizational research, often deemed insufficient in offering in-depth and realistic analyses. The cultural approach, in essence, delves into the daily encounters of organizational participants and effectively establishes a bridge between individual behaviors and the organization as a unified entity, thus forming a conceptual nexus between the micro and macro levels of organizational climate and dynamics.

Roa-Weinstraub Six Building Blocks of an Innovative Culture

In their significant research, Roa and Weinstraub (2013) argue that an innovative culture is established on a framework comprising six fundamental elements: resources, procedures, principles, conduct, atmosphere, and achievement (see "*How innovative is your company's culture*"?) The interconnection among these building blocks is dynamic. For instance, the values embraced by the organization influence the behaviors of individuals, the environment within the workplace, and the definition and evaluation of achievements. The authors' model of an innovative culture draws upon a multitude of research conducted by various scholars, revealing that when nurturing innovation, businesses have predominantly focused on resources, procedures, and the assessment of success — the elements of innovation that are more readily quantifiable and tool-centric. Companies have frequently allocated insufficient focus to the more challenging-to-assess, human-centered elements of an innovative culture — such as *values, behaviors, and climate*. Managing matters related to *people's values, behaviors, and the work environment* proves to be abstract and intricate, as many managers have come to realize. Nevertheless, these complex "people-related issues" hold significant influence in shaping an innovative culture and establishing a sustainable competitive edge. Values drive decisions and priorities, evident in a company's allocation of time and finances. Truly innovative organizations invest substantially in fostering entrepreneurship, nurturing creativity, and promoting continuous learning (Andreas & Gumati,2022). A company's values are not merely expressed through leaders' statements or annual reports but are revealed through their actions and investments. Values are reflected in people's behaviors and expenditures more than in their words. Behaviors encompass the actions individuals take in furthering innovation. For leaders, these actions involve discontinuing outdated products in favor of newer, superior ones, motivating employees with a compelling vision of the future, and streamlining bureaucratic processes. Employees demonstrate their support for innovation through persistent efforts to overcome technical obstacles, resourcefulness in financially constrained situations, and attentiveness to customer feedback (Andreas& Gumati,2022; Chen & Huang,2007). **Climate** in the workplace refers to the prevailing atmosphere. The presence of an innovative climate is conducive to fostering engagement and enthusiasm among employees, while also challenging them to undertake risks in a secure setting. Additionally, it promotes a culture of continuous learning and stimulates independent thinking. **Resources** are composed of three key elements: *individuals, systems, and projects*. Among these, individuals, particularly those identified as "innovation champions," play a crucial role as they significantly influence the values and overall climate of the organization. **Processes** serve as the pathways through which innovations progress during their development stages. These processes may involve well-known methods such as the "innovation funnel" for idea generation and selection, or stage-gate systems for project review,

prioritization, and prototyping. The *evaluation of innovation success* can be categorized into three levels: external, enterprise, and personal. External recognition, for instance, provides insights into how innovative a company is perceived to be by its customers and competitors, as well as the financial returns of the innovations (Andreas & Gumati,2022). Overall success reinforces the values, behaviors, and processes within the enterprise, influencing various decisions such as employee recognition, recruitment, and project approval.

Figure 1: Six Blocks of an Innovation Culture



Organizational Culture in the Banking Sector

The concept of organizational culture within the banking sector has recently emerged, significantly impacting the decision-making processes and behaviors of both managers and employees (Maheswari & Tamisharazi,2024; Andreas & Gumanti,2022; Barth & Mansouri,2021; Al-Bilbiese,2017; Guiso et al.,2015). This influence has led to notable transformations in organizational frameworks, and strategies, and a fundamental reassessment of the managerial role in accomplishing strategic goals and enhancing performance levels. Within the banking domain, business models are subjected to constant evolution, marked by innovation, volatility accumulation, and the integration of cutting-edge technologies. In the banking sector, leaders must possess an intricate understanding of the organizational landscape, exhibit visionary attributes, and effectively communicate the necessity for collective involvement in adapting to the new regulations, protocols, and the execution of fresh strategies (Hie,2019). The significance of examining organizational cultures in the banking industry is paramount, considering their pivotal role in achieving strategic objectives and improving overall performance outcomes (Opoku et al.,2022; Imran& Ismail,2021; Negi et al.,2021; Lannes,2021; Memom et al.,2020; Liao et al.,2012). Unveiling the distinctive characteristics and influential components of organizational cultures poses a perpetual challenge for employees and particularly for managers who, in collaboration with leaders, uphold organizational guidelines amidst a dynamic economic and financial landscape characterized by alternating phases of growth, rapid advancement, uncertainty, and crisis. Nevertheless, delving into the concept of organizational culture involves tracing back to its Latin origin, where "culture" is closely linked to art and education. The etymology of the word "culture" can be traced to the Latin verb "colere," signifying the act of nurturing certain aspects to enhance the quality of individuals. This notion resonates with the perspective endorsed by Horace, who emphasized continuous intellectual and moral development. To effectively implement the strategies and policies of each banking institution, it is crucial to have a deep understanding of the operational environment, the prevalent cultural dynamics,

and the specific factors at play including analyzing the necessity for organizational culture change and the strategic implications thereof (Boyd & Richerson, 2005). Understanding the culture of a banking organization necessitates knowledge of various aspects such as bank ownership structure, the national culture, organizational framework, subsidiary network, infrastructure, personnel, and their values (Lannes, 2021). Staff of banking organizations must align their standards of value, knowledge, and behavioral systems to harmonize national cultural elements with the specific organizational culture they belong to. The institutional culture of central banks is highly established, having been endorsed by the public across multiple generations and rooted in the historical practices of these institutions. Independence, stability, accountability, honesty, effectiveness, and professionalism are emblematic of the institutional characteristics of numerous contemporary central banks, elucidating the positive reputation and public esteem they command. When examining the factors impacting culture with respect to organizational frameworks, it is crucial to acknowledge Johnston's cultural framework, which centers on the core concept around which revolve elements such as narratives, symbols, organizational hierarchy, power dynamics, control mechanisms, procedures, routines, and practices, as well as the components of organizational structures delineated by Lynch, specifically: "age, size, context, centralization / decentralization of decision-making, coordination, standardized protocols, organization's functions, culture, and leadership" (Mauer et al., 2023). Also recalling Hofstede's research on the perception of the five key priorities in business is essential: "*continuity and power versus honor, regulations, and ethics; family well-being versus obligations towards staff; competitive spirit and innovation versus national pride; immediate profits versus long-term gains; advancement versus societal responsibility. Another critical aspect is the influence of culture on work motivation and, consequently, on organizational frameworks*" (cited in Leonavičienė & Burinskienė, 2022). Lynch postulated a framework for categorizing various organizational structures within the global banking sector, encompassing: "small organization structure, functional organizational structure - identified as a correspondent in the system, the German banking institutions, the multidimensional structure (M form) - specific to the English and French banking system, the matrix organizational structure - prevalent in the USA's banking sector, the structure of holding company - distinctive to the Japanese banking system, and the innovative organizational structure - observed in most banking systems, excluding those rooted in traditionalism and resistance to change" (cited in Leonavičienė & Burinskienė, 2022). Simultaneously, it is imperative to consider the cultural and societal milieu of the country where the organization functions, shaping its organizational frameworks. It can be posited that beyond recognizing the social and cultural determinants, it is crucial to pinpoint the components of organizational structures, the primary business objectives, and work motivation, to establish suitable structures aligned with the organizational strategy. Only through a comprehensive exploration of the aforementioned factors and grasping the necessity of change introduced to organizational structures, can a potential symbiosis between them and the proposed strategies be achieved (cited in Leonavičienė & Burinskienė, 2022). Management ought to factor in the understanding of these elements when formulating goals and policies, achievable through the amalgamation of responsibility and proficiency within the organizational structures. Considering the restructuring undergone by the Albanian banking system due to privatization after the 1990, it becomes natural to scrutinize the extent to which the organizational culture of foreign banks has influenced local organizational cultures, the driving factors, and the concept of change (Ismaili & Spaho, 2021; Cekrezi, 2015; Kristo, 2014). Charles Handy delineates four cultural categories, namely the *task type culture*, the *power type culture*, the *person type culture*, and the *role type culture* (cited in Nasaireh et al., 2019). The *task type culture* flourishes in enterprises where the organization is perceived as a network of tasks distributed based on individual potential. The *power type organizational culture* is characterized by centralized power, management, and control. The *role type culture* prevails in organizations where the work environment is stringent, meticulously organized, and highly formalized. The culture of a person is typified by individualism, where the interests of the individual take precedence and become the focal point of the organization. Banking management exhibits a distinctive structure comprising three tiers - top managers (such as presidents and vice presidents), middle managers (department heads overseeing front-office and back-office managers), and first managers (lacking subordinates). Their selection criteria encompass their competencies, skills, and demeanor. The impact of managers on organizational culture cannot be disregarded. Their managerial aptitude, background, and cultural origins play a direct role in shaping the organizational culture. Managers are required to effectively engage with individuals from diverse cultures, comprehend their language, interpret

nonverbal cues, recognize cultural norms, and exhibit what is commonly referred to in literature as cultural intelligence. Another significant aspect of bank management is associated with risk. Management is persistently engaged in diversifying portfolios, with a focus on optimizing efficiency, devising tools and frameworks that facilitate ongoing adjustments to the investment structure, while upholding a minimum liquidity level and a suitable capital allocation strategy (Kunz & Heitz, 2021; Endara et al., 2019; Nguen et al., 2019). Furthermore, to effectively steer banking organizations, management must leverage quality policies as a mechanism to propel the organization towards continuous enhancement in planning, coordination, administration, assessment, and oversight. Management is compelled to continuously refine business models in alignment with market demands and the competitive landscape. These leaders serve as the linchpin in instilling confidence among organizational members that the proposed changes are advantageous and that everyone contributes to their realization (Kunz & Heitz, 2020). Frequently, appointed managers, driven by personal aspirations and the desire to uphold their positions, are inclined towards short-term objectives. Consequently, the leader assumes the role of a mediator between managers and employees, guiding the organization toward the objectives set by the managerial team. We may also consider that within banking organizations, deep changes require the presence of three distinct types of leaders. These include *local leaders* who are deeply connected to the organization's realities. Without their involvement, even the most beneficial initiatives would struggle to be implemented effectively. *Network leaders* play a crucial role within the banking system, serving as regional directors that bridge the gap between territorial units and central management. They champion new ideas and practices, facilitating their implementation by fostering connections, sharing information, and training local leaders. Finally, *executive leaders* such as department managers or vice presidents or CEOs are responsible for shaping banking policies and ensuring the achievement of objectives and shareholder strategies. The success of any mission in this context hinges on the collaboration of these different types of leaders. Executive leaders rely on local leaders to translate concepts into tangible outcomes, while also leveraging network leaders to establish networks conducive to change-related enhancements. In the banking sector, leaders are tasked with navigating the risks associated with change. Their ability to influence outcomes and drive process improvements relies on their capacity to guide and develop human resources effectively. Leaders must guide individuals through the turbulent phases of change, encouraging them to embrace new behaviors and appreciate the benefits of departing from routines. As the role of leaders evolves, they must articulate compelling visions for new strategies. By fostering a strong managerial culture, leaders empower organizational members to deliver on their performance commitments. Evaluation of failures among management employees is independent of gender, age, experience, and seniority within the organization, as well as the country of origin of the institution's major capital. In this regard, Austrian-owned banks demonstrate a remarkable ability to adapt to change despite perceiving their operating environment as stable (Kunz & Heitz, 2020). Conversely, French-owned banks view the banking landscape as less stable and readily embrace change, unlike their counterparts in Greek banks who view change as challenging to attain (Butzbach, 2015; Belias, 2015). Employees in Italian-owned banks tend to exhibit dissenting views regardless of the prevailing organizational culture (Beccalli, 2023). In Albanian banks with predominantly domestic capital, there is a strong consensus among personnel, except in cultures that resist change, where a slight divergence in opinions is noticeable. A proficient and effective bank management team must consider the fundamental functions of management along with their various subsystems, including decision-making and information dissemination.

Methodology

The current study will rely on inter-subject correlational ratios between the participants (staff from the Banking system in Albania). Given the current economic context of the country and the renewal profile of joining the EU market, the present research will examine the 100 participants from secondary-level banks in Albania.

Research questions.

Some research questions were raised to examine the research area relevant to this study.

1. *What is the role of innovation in a successful cultural organization in the Albanian Banking system?*
2. *What are the determinants of a successful cultural organization in the Albanian Banking system?*

Hypothesis

Based on the above research questions and a prospective observational study, the following hypotheses were raised:

H₁. Innovation plays a positive and significant role in the overall cultural organization in the Albanian Banking system.

H₂: *Values, Behaviors, Organizational Climate, Resources, Processes, and Success* have a positive impact on the overall cultural organization of the Banking system in Albania.

SAMPLE

The sample selected for this study consists of 100 employees from the Banking sector in Albania. A total of 100 online questionnaires were distributed in the period March-May 2024.

Instrument

Questionnaire to assess organizational innovation and driving factors in the organization.

A questionnaire was utilized to evaluate the innovation within the organization and the factors that drive it. The evaluation of employees' competencies, knowledge, and viewpoints was conducted through peer evaluation queries devised by the author of the current research. The questionnaire comprises three Sections encompassing 1) ***Collection of Demographic Information***, 2) ***Interrogations concerning the Organizational Communication Style and Culture***, assessing fundamental aspects of the institution and its cultural ambiance within the work setting. 3) ***Interrogations regarding the integration of Artificial Intelligence (AI) in the organizational framework***. These inquiries seek to recognize the familiarity of the workforce with AI implementation and the level of innovativeness within the organization. Nevertheless, the assessment of AI, although intriguing, surpasses the limits of the present research and, therefore, was not explored in this paper.

Results

a. Demographic characteristics of respondents

The demographic characteristics of the study's sample are categorized based on gender, age, hierarchical position at work, and tenure within the Banking industry. Most of the respondents, constituting 75%, are female while the remaining 25% are male. The mean age of the participants exceeds 45 years (Mean=45 years; SD=15). Specifically, 19% fall within the 29-33 age group, 18.7% in the 40-45 range, 12% between 23-25 years, 11% within 23-35 years, 9.3% in the 26-28 category, and 5.3% aged 37-40 years. It is noteworthy that there is a consistent distribution across all age groups. Regarding the hierarchical ranking within the workplace, 2.7% hold the position of Chief Executive Officers (CEOs), 5.3% are categorized as Department Employees, and the majority, accounting for 92%, are employed in the banking sector. In terms of experience, 40% of the respondents have amassed over 15 years in the Banking sector, 29.3% hold 5-10 years of experience, 21.3% hold 10-15 years of experience, 6.7% have less than 5 years, and 2.7% report 2 to 4 years of experience.

These data are summarized in the following table:

Table 1: Demographic characteristics of the surveyed respondents

Gender	
Female	75%
Male	25%
Age	
a. 23-25 yr.	a. 12%
b. 26-28 yr.	b. 9,3%
c. 29-33 yr.	c. 18,7%
d. 34-27 yr.	d. 10,7%
e. 37-20 yr.	e. 5,3%
f. 40-45 yr.	f. 18,7%
g. over 45 years old	g. 25,3%

M_{age}=45 y.o.
SD=15

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a. less than 2 years	Working experience	a. 6,7%
b. 2-4 years		b. 2,7%
c. 5-10 years		c. 29,3%
d. 10-15 years		d. 21,3%
e. Over 15 years		e. 40%

Source: *Author elaboration on data*

The following table gives a highlight on the Cronbach alpha reliability scale for the questionnaire items. As can be revealed, innovation, enhancement of soft skills, communication and empathy with the customer, fast decision-making processes, and proactive engagement with colleagues. have a score equal to or greater than 0.8 which is considered a good and reliable value. Items with a score almost or bigger than 0,8 (enhancement of soft skills, communication, and empathy with the customer and innovation) were considered for further analysis.

Table 2: Reliability of measuring variables (Cronbach's Alpha)

<i>Scale of measure</i>	<i>Cronbach's Alpha (a)</i>
Innovation	0.74
Enhancement of soft skills	0.890
Communication and empathy with the customer	0.82
Fast decision-making process	0.645
Proactive engagement with colleagues	0,701

Source: *Author elaboration on data*

b. Analysis of correlation and validity of hypothesis.

To test the validity of our hypothesis a linear regression was computed between the selected variables. Innovation in cultural organization encompasses the constant variable of the first hypothesis which is being examined below:

H₁. Innovation plays a positive and significant role in the overall cultural organization of the Albanian Banking system.

Table 3: Regression results for H₁

Variable	Coefficient of regression (β)	t	F	Sig.	η ²	Remark
Constant	.954	,812	4	,0032	0,013	Significant
Values of clusters	.301	,79		,001		
St. Coefficient	.190					
R square	,72					

The outcomes of the chi-squared analysis demonstrated robust stability for the H₁ ($\chi^2 = 8$; $p = 0.032$). As can be inferred from the above table, the scores of the coefficients for the constant variable have a value of Sig 0.001 < 0.05. So, there is an influence of innovation success and the innovation processes, which are positively related to cultural organization resources for the Banking staff in Albania. The R-squared value produced in the model summary is equal to 0,72, which means that the influence of innovation process to 72%.

Regarding the second hypothesis, the model offers insights into how the six factors collaborate to propel successful organizational innovation. Organizational Climate represents the constant variable of the second hypothesis which is being examined in the following table:

H₂: *Values, Behaviors, Organizational Climate, Resources, Processes, and Success* have a positive impact on the overall cultural organization of the Banking system in Albania.

Table 4: Regression results for H₂

Variable	Coefficient of regression (β)	t	F	Sig.	η^2	Remark
Constant	4.302	1,245	3	,00435	0,625	Significant
Values of clusters	.456	,65		,001		
St. Coefficient	.220					
R square	,80					

As can be inferred from the above table, the scores of the coefficients are known to have a value of Sig 0.001 < 0.05. So, there is an influence of the organizational values and climate on the overall efficacy of the Banking staff in Albania. The R- squared value produced a score of 0,80, which means that the organizational climate in the overall efficacy of the staff is 80%. The outcomes of the chi-squared analysis demonstrated robust stability for the H₂ ($\chi^2 = 10$; $p = 0.0410$).

c. Multiple regression analysis

Regressive analyses of the examined items confirmed that Innovation ($F=4$; $\rho=0.876$; $p<0.001$), the Enhancement of soft skills ($F=3$; $\rho=0.768$; $p<0.001$) and Communication and empathy with the customer ($F=2,98$; $\rho=0.750$; $p<0.001$) are the most significant influencers in the cultural organization and climate in the Banking system in Albania.

Table 5: Multiple Regression of variable-criteria

Measurement scale	Pearson Correlation (ρ)	Multiple Regression
Innovation	.876	R=0.53 R Square=0.72 F=4 P<0.001

Enhancement of soft skills	.768	R=0.204 R Square=0.80 F=3 $P<0.001$
Communication and empathy with the customer	.750	R=0.387 R Square=0.34 F=2,98 $P<0.001$
Fast decision-making process	.320	R=0.065 R Square=0,22 F=0,36 $P>0.05$
Proactive engagement with colleagues	.456	R= 0.044 R Square=0,10 F=0,024 $p>0.05$

Source: Author *elaboration on data*

Conclusive remarks

The main point of this research examines the driving forces of innovation success in the banking sector in Tirana, Albania, with a focus on organizational culture and soft skills values. The study utilizes a wide range of literature reviews and Rao and Weintraub's model of six building blocks for fostering an innovative culture and analyzes survey results to uncover key contributors to successful organizational innovation. The findings highlight the importance of organizational soft skills, values, behaviors, and resources in driving innovation success. In conclusion, the study confirmed the positive role of innovation and enhancement of soft skills determinants of a successful cultural organization in the Albanian Banking system. The results indicated that innovation, enhancement of soft skills, and communication with customers are significant influencers in the cultural organization and climate within the Banking sector in Albania while also suggesting the need for further investigation into the relationship between organizational climate and innovation processes.

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THE SPIRIT OF LIVING TOGETHER IN ANATOLIA AND ABU'L-HASAN KHARAKANI

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ABSTRACT

Anatolia is a geography where different cultures have lived in peace throughout history and where the culture of coexistence prevails. These lands, which were dominated by many different states, have been in the hands of Muslim Turks for more than a thousand years. Especially in this last 1000 years, it can be said that the understanding blended with Sufism, which prioritizes the tolerance of Islam, also called "Anatolian wisdom", away from formalism, puts people at the center and sees them as the representative of God on earth, is the most important element that nourishes the culture of living together in this geography. The most important actors in Anatolia's introduction to Islam were the Sufis who established this Anatolian wisdom before the armies that used weapons. They came to these lands before the armies and won the hearts of the people. Abu'l-Hasan Kharakani (d. 1033), one of the greatest Sufis in history, came to the city of Kars by migrating from the Iranian region and carried out activities here to represent the tolerance, friendliness and forbearance of Islam.. He had open dinner tables set up for everyone; He allowed all people, regardless of religion, race, nationality or color, to benefit from those tables. He ensured that Muslims viewed non-Muslims as human beings. According to him, religiosity is not just about performing some worship and fulfilling formal conditions. Serving all of God's servants, meeting their needs, and winning their hearts is superior to worship, which is merely a form and whose spirit cannot be grasped. This understanding he represents also contains solutions to the problems of today's humanity. There may be lessons we can learn from the past in solving today's problems. We need the practice of the culture of living together rather than its theory. And the geography of Anatolia contains many examples for this.

Keywords: co-existence, Abu'l-Hasan Kharakani, tolerance.

EVALUATION OF COVID-19 PATIENTS WITH HEMATOLOGICAL MALIGNANCIES

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ABSTRACT

Objective: Patients with haematological malignancies were at a high risk of developing severe disease from SARS-CoV-2 infection. The differences in clinical outcomes in hospitalized patients with haematological disorders who developed either SARS-CoV-2 infection are not fully understood. The aim of this study was to assess the clinical outcome and mortality rates of patients with haematological malignancies infected with SARS-CoV-2.

Materials and methods: Fifteen adult patients diagnosed with SARS-CoV-2 were included in the study. The diagnosis of COVID-19 was made with real-time PCR in samples taken by the nasopharyngeal swab method. The diagnosis and status of the primary disease and comorbidities were recorded, together with data regarding symptoms, treatment, and the outcome of SARS-CoV-2 infection.

Results: Our study included 15 patients with COVID-19 infection while being followed in our haematology clinic. The study included ten female patients (66.6%) and five male patients (33.4%), with a mean age of 60.2 ± 17.7 years (range 18-72 years). The most common primary diseases in patients with COVID-19 were leukemia (53.3%), multiple myeloma (26.6%) and lymphoma (20%), respectively. Four patients were asymptomatic at the time of diagnosis of SARS-CoV-2 infection. Pneumonia clinic follow-up was conducted in ten patients. Favipravir treatment was given to nine patients. Four (26.6%) patients had severe and critical disease due to SARS-CoV-2 infection. Mortality related to SARS-CoV-2 infection was 20% in patients with severe or critical disease.

Conclusion: Patients with haematological malignancy infected with SARS-CoV-2 have an increased risk of high rates of respiratory failure and mortality. It is important to note that active immunization by vaccination remains an important element of protection for these patients.

Keywords: Covid-19, hematological malignancies, immunosuppression

**TRUTH AND TRANSFORMATION: RETHINKING MUSEUM EXHIBITION PRACTICES
IN THE POST-TRUTH ERA**

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ABSTRACT

In this paper, the relation between post-truth discourse and Artificial Intelligence (AI) technology in the context of museum exhibition practices is explored. Adopting a qualitative research approach, the paper presents a literature review of relevant articles, books, reports, and other resources. The implications of post-truth principles on exhibition design, text composition, and visitor engagement, emphasizing ethical considerations and performance metrics, are covered. Additionally, it investigates the potential role of AI technology in museums, addressing associated ethical dilemmas and privacy concerns. The insights presented aim to stimulate scholarly discourse and practical implementation strategies within the museum sector. Through its exploration of the implications and possibilities of implementing the post-truth principle and utilizing artificial intelligence technology in museums, this research article aims to offer some insights to the museum community. By inspiring new ideas and innovative approaches to exhibition design, interpretation, and visitor engagement, the article seeks to contribute to the advancement of museum practices in the contemporary information landscape.

Keywords: Post-truth, Museums, Exhibition Practices, Artificial Intelligence.

INTRODUCTION

Post-truth as a cultural and political concept, emphasizing the relative nature of reality and the evaluation of different perspectives, has led to increased scepticism toward reality, particularly with the rapid advancement of technology. According to Oxford Dictionaries, post-truth is an adjective describing the tendency for people to prioritize emotions and beliefs over objective reality. In 2016, it was designated as Oxford Dictionaries' word of the year. This normative word is an expression of concern for those who care about the concept of reality and feel that it is under attack. Harari (Harari, 2018) argues that propaganda and disinformation are not novel phenomena; rather, they have long existed throughout history. In fact, he suggests that humans have always lived in an age of post-truth. Harari contends that Homo sapiens is a species inherently predisposed to post-truth, having dominated the planet due in large part to humanity's unique capacity to create and propagate fiction.

The construction and communication of truth through various channels, such as media, language, and rhetoric, are complex processes shaped by cultural and social contexts. For example, the media can influence our perception of truth by selectively presenting information or framing issues in a particular way. Language and rhetoric also play an important role in shaping truth claims as they can be used to persuade or manipulate audiences. In fact, post-truth is the use of lies to manipulate the other person or for the self-interest of the person who lies, the trivialization of the truth, and the acceptance of the discourses put forward for these interests - if they feel emotionally good - as true without confirmation or research.

MATERIALS AND METHODS

The aim of this article is to explore the significance and practical implications of applying the post-truth principle within museum exhibition practices in our contemporary era, characterized by manipulative truths, as well as the use of artificial intelligence technology in museums. This paper discusses why it is important for museums to adopt the post-truth principle, what the post-truth principle is, and how it can be applied in terms of exhibition design and exhibition texts, including ethical issues and success criteria.

It will also discuss the balance between the post-truth principle and artificial intelligence technology, the use of museum visitor data and privacy concerns, and example exhibitions and practices.

This qualitative research article reviews literature on museum exhibition practices, post-truth, and artificial intelligence technology, synthesizing diverse perspectives and insights. The synthesis provides a comprehensive understanding of the current discourse and valuable insights into these intersecting topics. Sample exhibitions and applications from the literature illustrate potential methodologies and outcomes. The primary objective is to stimulate discourse on implementing post-truth principles and AI technology in museums. By exploring these concepts, the article aims to inspire innovative approaches to exhibition design, interpretation, and visitor engagement, contributing to the advancement of contemporary museum practices.

THE USE OF THE POST-TRUTH PRINCIPLES IN MUSEUMS

Museums promoting social justice and equality amplify voices from historically marginalized communities, mitigating visitors' prejudices and fostering tolerance. Participatory museology attracts new audiences, preserves visitor-contributed content, provides educational experiences, and serves as a community hub. Museums like The British Museum and The International Spy Museum embrace inclusive museology to address post-truth challenges, incorporating multiple viewpoints and encouraging critical evaluation of information. By valuing diverse perspectives and fostering critical thinking, museums can explore and interrogate the multifaceted nature of truth. Initiatives like participatory exhibition design and community-centred programming enhance understanding, empathy, and civic engagement.

Post-truth discourse offers opportunities to enhance museum exhibitions through interactive technologies like audio guides, touch screens, Virtual Reality (VR), and Artificial Reality (AR). These tools facilitate deeper visitor engagement, dialogue, and participation. Re-enactments and performances in living museums provide immersive historical experiences, while VR and AR offer interactive re-enactments, presenting diverse viewpoints and enriching the visitor experience. These techniques promote immersive learning and meaningful dialogues, enriching museum exhibitions.

POST-TRUTH AND EXHIBITION DESIGNS

New museology is divided into changes in 'value, meaning, control, interpretation, authority, and authenticity' in museums, which also involves a redistribution of power within museums and 'curatorial redistribution' (McCall & Gray, 2014). Post-truth exhibitions necessitate thorough research on the subject matter and themes they explore, ensuring the presentation of accurate and authentic information. Visual materials selected for the exhibition must align with the exhibition's theme and message, reinforce the narrative, and enhance visitors' understanding (Angio-Morneau, 2023). Thoughtful consideration should be given to the placement of exhibits within the exhibition space to ensure easy navigation and optimal visibility of each detail for visitors. Given the unique nature of each exhibition, the design process should be tailored to meet the specific needs of the museum and the expectations of its visitors, allowing flexibility and adaptability in creating impactful and engaging experiences. In his book *Exhibition Planning*, Klobe (Klobe, 2012) stated:

"Good design gives importance to the message and artifacts in the exhibition. It reduces 'museum fatigue' by eliminating distractions that subconsciously draw the visitor's attention away from the intended meaning. People often do not know why they are not moved by objects in an exhibition. Often it is an instinctive reaction triggered by visual stimuli. At the root of this reaction lies the insensitivity to design on the part of those who plan and install the exhibition."

Physical safety is an issue, but if the inability to interact with the exhibition leads to frustration, confusion, or misunderstanding, the fault lies with an exhibition developer, not the visitor. In such cases, the responsibility lies with the exhibition developer creating an experience that effectively engages visitors and facilitates their understanding. This may involve designing interactive elements, providing clear signage and instructions, and ensuring accessibility to all visitors. By prioritizing thoughtful design and visitor engagement, exhibition developers can mitigate the risk of negative experiences and foster meaningful interactions that enhance visitor satisfaction and comprehension. As museums grapple with the implications of post-truth discourse, they can prioritize the application of principles such as

objectivity, accuracy, reliability, and accessibility to their exhibition designs, hence fostering a space for critical engagement and informed dialogue.

APPLYING POST-TRUTH PRINCIPLES SUCH AS OBJECTIVITY, ACCURACY, RELIABILITY, AND ACCESSIBILITY TO EXHIBITION DESIGN

In the museum realm, the application of post-truth discourse can be viewed as the art of conveying historical events or objects to visitors with accuracy and integrity. Several key principles can be used as tools for exhibition designs: The first and foremost is objectivity, which dictates that historical content should be presented in a manner free from bias or misunderstanding, ensuring that visitors encounter a balanced and impartial narrative. The concept of objectivity in museum exhibitions is a complex and evolving one. Bergqvist (Bergqvist, 2016) challenges the idea of a single authoritative narrative, suggesting that the meaning of an exhibit is not solely determined by the museum's perspective. Maurstad (Maurstad, 2012) further complicates this relationship, arguing that the identity of objects is shaped by their interaction with subjects and that the expertise of those involved in collection policies is essential. Habsburg-Lothringen (Habsburg-Lothringen, 2015) discusses the shift towards immersive strategies in exhibitions, which can potentially impact the objectivity of the presentation. Wood and Latham (Wood & Latham, 2014) offers a practical approach, presenting the Object Knowledge Framework as a tool for creating richer visitor experiences. These studies collectively suggest that while objectivity is a key consideration in museum exhibitions, it is not a straightforward concept and can be influenced by various factors.

Complementing this is the principle of accuracy, which emphasizes the importance of presenting historical events or objects based on information obtained from credible sources and validated by museum experts. Sullivan (Sullivan, et al., 2018) emphasizes the importance of accuracy in museum exhibits, particularly in the representation of species. Koniusz (Koniusz, et al., 2018) and Fasel (Fasel & Van Gool, 2006) both address the issue of accuracy in museum exhibitions using technology. Koniusz (2018) introduces a dataset for artwork identification, while Fasel (2006) presents an interactive museum guide that uses image matching for accurate object retrieval. These studies collectively highlight the significance of accuracy in museum exhibitions and the potential of technology in achieving this. The principle of credibility is central to fostering visitor trust, which necessitates that exhibitions be founded on reliable information and that museum staff provide accurate and transparent responses to visitors' inquiries. The credibility of museum exhibitions is a complex and multifaceted issue influenced by a range of factors. Sylaiou (Sylaiou, et al., 2019) highlights the role of virtual guides in shaping the credibility of storytelling in virtual museum environments, with the status of the avatar playing a significant role. Rodner and Preece (Rodner & Preece, 2015) emphasize the potential for museums to be influenced by commercial and political pressures, which can impact their credibility as neutral spaces for the dissemination of cultural and historical information. Moreover, the principle of accessibility underscores the need for museums to be inclusive environments that accommodate individuals of diverse backgrounds and abilities through features such as disability-friendly access, multilingual materials, and equitable pricing. A range of innovative technologies are being designed to enhance museum experiences for individuals with mobility disabilities (Sheidin & Kent, 2023). An affordable approach and prototype system has been developed to make museum exhibits more accessible to visually impaired users, combining tactile exploration, audio descriptions, and mobile gestures (Anagnostakis, et al., 2016). However, these initiatives often assume that the goal is to replace or compensate for the visitor's lack of sight, which is underpinned by ableism (Eardley, 2022). Therefore, it is crucial to place access initiatives at the centre of museums' offerings and create them with the intention that they be enjoyed by both blind and non-blind visitors to achieve a truly inclusive experience (Eardley & Kent, 2022). Embracing digital accessibility further extends the reach of museum exhibitions, enabling visitors to engage remotely with content. Younan (Younan, 2015) discussed the potential of digital 3D scanning and printing technologies to foster new forms of creative engagement with museum artifacts.

APPLICATION OF POST-TRUTH PRINCIPLES TO EXHIBITION TEXTS

In museums, the application of the post-truth discourse revolves around the presentation of genuine and precise information, steering clear of disinformation or misinformation. To ensure accurate and reliable information, it is important to conduct research, use clear and understandable language, ensure that exhibition texts are objective and impartial, focus on the theme of the exhibition, are formatted in a way

that is easy to read, are concise and to the point, and finally, undergo editorial control. A more accessible text, avoiding jargon and complex syntax, suggests that museums are trying to adapt their discourse to visitors. For instance, according to "Accessibility Made Easy", using accessible language benefits everyone, including individuals with learning disabilities, cognitive disabilities, vision impairments, and non-native English speakers (Accessibility Made Easy, tarih yok). This involves avoiding jargon, using short sentences, and explaining any necessary acronyms. The goal is to make content clear, concise, and easy to understand. There is no simple or magic formula that defines success or accessibility, and what works for one purpose in one medium will be different from what works in another. However, with a proper metalinguistic understanding of the tools involved, it is possible for authors to have much more control and choice over their texts. According to the explanations in Fethiye Erbay's doctoral course on postmodern museology, age groups should also be taken into consideration. In the coming years, the functional models of museum exhibitions will change according to the aging population. Although traditional long textual explanations in museum exhibitions have completed their historical process due to the aging population in our country, this generation, which is not very familiar with digital technology, is not inclined to use new generation technologies. Therefore, relying solely on digital narratives in exhibition technologies will be insufficient (Erbay & Çetin, 2021).

ETHICAL ISSUES IN THE POST-TRUTH ERA

Ethical concerns can arise in post-truth exhibitions, particularly regarding the provenance of the materials utilized, ownership, conservation, and sharing. These issues hold significant ethical importance and require detailed examination and consideration to maintain the integrity and ethical standards of exhibitions. Guided by a framework of international ethical standards, museums are increasingly active in preserving global cultural heritage both within their collections and through multilateral cooperation programs, extending their efforts beyond museum confines, especially in response to social upheavals, armed conflicts, and natural disasters that jeopardize cultural heritage (ICOM, n.d.).

Identity and representation issues encompass the authenticity of materials exhibited, their cultural portrayals, and the communities they represent, emphasizing the importance of accurate and respectful depictions. In exhibitions that discuss history and memory in the post-truth era, the historical context, background, and social and cultural significance of objects must be meticulously grounded in thorough historical research and analysis. "History in a Post-Truth World: Theory and Praxis" discusses the profound impact of the post-truth environment on historical discourse. The book argues for the critical role of historians in preserving public memory and combating the spread of misinformation, emphasizing that historical narratives must be firmly rooted in factual research and expert analysis to maintain their credibility (ed. Gudonis & Jones, 2022). One critical element in the construction of meaning in museums is the presence or absence of specific objects; the second crucial aspect is the framework of intelligibility within which the collected objects are placed (Farber, 2015). Museums create meaning not just through the objects they display, but also through the narratives and frameworks they use to present these objects. This involves curatorial decisions about what to include or exclude and the interpretive context provided for visitors.

A prevailing argument in the discourse on the ethics and politics of heritage is that marginalized communities whose histories are omitted or misrepresented in official heritage interpretations experience marginalization and detachment from their own cultural heritage. Careful consideration must be given to the political implications and potential manipulation of exhibitions that can be exploited for political agendas (Hameleers, 2024). It is essential to recognize that utilizing exhibitions for political ends can raise concerns regarding the authenticity and accuracy of exhibited materials. In addition to exhibitions organized for a specific purpose that conveys the social concerns of society, exhibitions in ideologically themed biennials can also be given as examples of such exhibitions (Di Domenico, et al., 2023).

WHAT STANDARDS DETERMINE SUCCESS IN A POST-TRUTH CONTEXT?

While curators and exhibition designers assume that authentic objects trigger a wide range of visitor effects, the findings of Hampp and Schwan (Hampp & Schwan, 2014) show that most visitors do not consider authentic objects as important as museum professionals assume. Therefore, a more in-depth

picture of how museum visitors perceive the role of authentic objects in exhibitions is needed. Visitor contentment and involvement serve as indicators of achievement.

Implementing innovative strategies in exhibition design, content development, and presentations can captivate visitors and enhance the effectiveness of exhibitions. One aspect of enabling visitors to interact with, produce, and contribute to 'content' is that it can provide opportunities to encourage and facilitate creativity in museums and galleries. For instance, interactive workshops in museums provide hands-on experiences where visitors can create their own art, enhancing their connection with the exhibits and fostering creativity (Arosio, et al., 2022). Historical reenactments bring history to life, allowing visitors to participate in and emotionally connect with past events. Combining the emotional and intellectual force of objects in museum spaces with the participatory narrative and immersive potential of digital hybrid experiences aims at reconfiguring the relationship between the visitor, the exhibit, and the museum that surrounds them (Mathias & ed. Løvlie, 2022). Compared with virtual reality, which restricts the illusionistic view to be experienced by only one user, immersive exhibitions enable shared experiences and interactions between viewers (Huang, 2022). Museums utilize technological innovations, including virtual materials and content borrowed from other fields, to enrich visitor experiences and enhance the presentation of collections and services (Camarero, et al., 2018).

A critical criterion for post-truth exhibitions is their ability to generate social impacts and raise awareness within society. These exhibitions have the potential to influence visitors' perceptions and behaviours, thereby fostering meaningful changes. Museums can increase public trust by being transparent about how content and exhibits are selected, sharing how perspectives are researched and presented, and using visitors' voices to shape the direction of the museum. For instance, the American Alliance of Museums emphasizes that transparency and public engagement are crucial for maintaining trust. They suggest that museums should communicate openly about their processes and decisions, ensuring that the public understands how exhibits are developed and curated (American Alliance of Museums, 2021). Additionally, a study on unified knowledge-based content management for digital archives in museums discusses how integrating transparency in content management can support the long-term development of academic, exhibition, and educational applications. This involves making the selection and presentation processes clear and involving the public in these decisions (Hsu, et al., 2006). By incorporating these practices, museums not only enhance public trust but also ensure that they remain relevant and responsive to the communities they serve, ultimately enriching the cultural experience for all visitors.

EXEMPLARY EXHIBITIONS AND PRACTICES

“Aftermath: The Fallout of War- America and the Middle East”¹ Brooklyn Museum, New York, USA, 2014: Organized by the Harn Museum of Art, the exhibition brings together the work of international photographers and artists who aim to look closely at the effects of armed conflict. The exhibition illustrates the devastating consequences of armed conflict through images of refugees, casualties, history, environmental hazards, and veterans from the US and the Middle East. The images in the exhibition aim to encourage reflection on loss, comparing the past with the present and encouraging visitors to ask what might happen in the future.

“This is not a Fashion Photograph”² International Centre of Photography, New York, USA, 2014: In the exhibition in question, there are many photographs in which the boundaries between fashion photography and art photography are blurred. Images emphasizing abstract ideas and works of art instead of clothes or fashion objects were prominent in the exhibition. It expands the boundaries of fashion expression and offers visitors an opportunity to consider the connection between fashion and art.

“Art and China after 1989: Theatre of the World”³ Solomon R. Guggenheim Museum, New York, USA, 2017: This museum focuses on the emergence of new art movements in China and is designed in accordance with the concept of true transcendentalism. The exhibition draws attention to political and cultural changes and explores the impact of art on these changes. The exhibition explores the culture of

¹ <https://harn.ufl.edu/exhibitions/aftermath-the-fallout-of-war-america-and-the-middle-east/>, accessed: 2023.

² <https://www.icp.org/browse/archive/collections/this-is-not-a-fashion-photograph-january-16-may-3-2009>, accessed: 2023.

³ <https://www.guggenheim.org/exhibition/art-and-china-after-1989-theater-of-the-world>, accessed: 2023.

artistic experimentation, and its subtitle World Theatre is inspired by an installation of Xiamen-born, Paris-based artist Huang Yong Ping. This symbolizes globalization and competition.

“Post-war: Art Between the Pacific and the Atlantic 1945-1965”⁴ Haus der Kunst, Munich, 2016: The exhibition explores the complex art histories of the post-war period from different perspectives, examining a period when artistic perspectives were intertwined with social, political, cultural, and technological interests as a global phenomenon. Featuring more than 350 works by 218 artists from 65 countries, the exhibition is conceived as an in-depth and global study encompassing painting, sculpture, installation, collage, performance, film, artists' books, documents, and photographic practices. The exhibition is organized into eight thematic sections and sheds light on social changes.

“Truth: 24 frames per second”⁵ Dallas Museum of Art, 2018: Truth: 24 Frames Per Second brought together 24 pioneers of film and video to explore the nature of truth and reality in contemporary life, focusing on contemporary issues such as racial relations, political unrest, sexual identity, and media. Inspired by the museum's film and video collection, Truth is the first major exhibition in the Museum's history dedicated to time-based media.

ARTIFICIAL INTELLIGENCE TECHNOLOGY AND MUSEUM EXHIBITION PRACTICES

In recent years, the integration of artificial intelligence technology into museum exhibition practices has emerged as a pioneering tool. Its applications span from analysing visitor profiles to tailoring museum experiences, managing content, and enhancing storytelling capabilities. Museum exhibition designer Simon Morris (Morris, 2023) compiled an up-to-date list of museum exhibitions in which the cultural and heritage sectors use artificial intelligence technologies:

1. Visitor feedback analysis
2. Improving metadata in collections
3. Analysing and forecasting physical and online visitor engagement
4. Personalized tour guide robots
5. Virtual assistance in native languages
6. Interaction of chat box and visual characters
7. Pepper robots
8. AR (Augmented Reality) immersion and narrative experiences
9. Analysing visitor behaviours, for example in a museum gift shop
10. 3D holograms are interactive
11. Analyse the attention span of individual visitors, for example by age
12. Integration of audio technology into collection data
13. Virtual museums and art exhibitions to increase digital footprint
14. Use facial recognition to customize interactive exhibits
15. Robots providing exhibition translations
16. Immersive simulations with 360-degree virtual reality
17. Assess visitor flow to improve signage and wayfinding
18. Live demonstrations (visual and textual) of COD (User Generated Content)
19. Interactive conversations between AI and visitors
20. Interactive AI screens answer frequently asked questions.

Another recent study showed that enhancing visitor experience using new and innovative technologies such as mixed reality can lead to positive outcomes such as increased visitor numbers and thus contribute to the economic aspects of sustainability, which is particularly important for curators to develop appropriate mixed reality content to increase brand awareness, brand association, and brand loyalty (souvenir purchases) (Liu, 2020). Artificial intelligence technologies are rapidly shaping museum visitor experiences, which will also change exhibition techniques and museum managers' roles. For instance, VR allows visitors to explore digital reconstructions of historical sites, providing a deeper understanding and engagement with exhibits (Recupero, et al., 2019). AI technologies, such as virtual guides, augmented reality (AR), and interactive robots, are being integrated into museums to create personalized and immersive experiences. For example, the Louvre introduced "Leonardo," an AI-driven virtual

⁴ <https://www.hausderkunst.de/en/eintauchen/postwar-art-between-the-pacific-and-the-atlantic-1945-1965>, accessed: 2023.

⁵ <https://www.mariangoodman.com/news/285-truth-24-frames-per-second/>, accessed: 2023.

assistant that offers personalized tours and real-time information, enhancing visitor engagement and satisfaction (MaDesign Studios, n.d.). A holistic approach involving AI includes tools for capturing visitor movements and delivering personalized content via mobile applications, making the museum experience more interactive and tailored to individual preferences (Philippopoulos, et al., 2024). By designing and implementing different technological interfaces, museum managers can change traditional methods of visitor interaction, add new functionality to behavioural interaction, and shift paradigms in museum experiences. According to another study called “The role of digitalization in artwork and audience interaction from the perspective of the production process,” Goren and Tufan (Gören & Tufan, 2021) state that artists who use digital technologies and tools in their artistic practices use digital environments because they find them freer, more democratic, and egalitarian, more accessible, do not require physical commitment, and are easier to distribute.

DISCUSSIONS

By using technology as a tool to enhance the experience, contemporary museums are transforming into spaces that are fun, interactive, inclusive, democratic, open to dialogue, support multi-directional information transfer, and aim to improve the process of receiving simultaneous data from visitors. Balancing artificial intelligence technology with post-truth principles is crucial. While AI can enhance efficiency, an overreliance on it risks creating a sterile, impersonal museum experience. Therefore, it's imperative to integrate AI in alignment with the museum's identity, collection, vision, and mission. This approach ensures that technology complements rather than detracts from the human touch, maintaining emotional resonance while benefiting from AI's capabilities. Geoffrey Hinton, a computer scientist who specializes in artificial intelligence systems, says that competition between technology giants is pushing companies to release new artificial intelligence technologies at an alarming rate, jeopardizing their jobs, and causing misinformation to spread (Heaven, 2023).

The utilization of museum visitor data raises important privacy concerns that require careful consideration. Addressing privacy concerns necessitates the development of comprehensive privacy management plans that ensure that visitors' personal information is sensitive and transparent. The Centre for the Future of Museums (CFM) report discusses future trends in education within museums and includes strategies for handling visitor data privacy and security (American Alliance of Museums, 2024). It emphasizes the importance of transparent policies and comprehensive privacy management plans. The Tate Museum embraced an approach that is audience-centred and insight-driven, constantly assessed and improved, well-designed and architecturally spread across multiple channels, open and shareable, sustainable and scalable, and centrally controlled and devolved across the organization (Nikolaou, 2024).

The relationship and ethical issues between AI technology and post-truth may arise when integrating this technology into the museum experience. The emergence of new technologies and IT players such as Google (offering virtual visits to over 150 museums) and the introduction of robots providing security and/or information services in museums raises questions about how these institutions are evolving. The use of AI in museums should be seen as only a tool in museum experience and controlled by museum management.

By examining the following questions in detail, we aim to shed light on the complex relationship between AI technology and museum practices, offering insights into both the challenges and opportunities that arise from this intersection:

1. What strategies can be employed to strike a harmonious balance between artificial intelligence technology and the principles of post-truth discourse in museum exhibition practices?
2. How can museums effectively address concerns regarding the collection, use, and privacy of visitor data, particularly in the context of integrating AI technology to enhance the museum experience?
3. What potential future opportunities do AI technology present for advancing and innovating museum exhibition practices, and how can museums capitalize on these opportunities while upholding ethical standards and visitor expectations?

CONCLUSION

In conclusion, the convergence of post-truth principles and artificial intelligence technology presents significant opportunities to advance museum exhibition practices. While AI technology holds promise for enhancing museum experiences, it is essential to recognize the enduring value of authenticity and

human connection. The post-truth landscape introduces ethical complexities, including considerations of history, identity, and political implications, while also shaping museums' success metrics regarding social impact, creativity, and cultural value. This dynamic environment has spurred the adoption of innovative techniques such as multiple perspectives, interactive exhibitions, and digital technologies to engage visitors and foster critical dialogue. Moving forward, exhibitions should prioritize promoting critical thinking and media literacy, empowering visitors to question and contribute to narratives. In navigating the challenges of the post-truth era, museums could play a vital role in fostering contemporary awareness and meaningful engagement with truth and misinformation.

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LEGAL AND TESTAMENTARY INHERITANCE: JUDICIAL PRACTICES IN ALBANIA

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ABSTRACT

This study examines aspects of testamentary and legal inheritance in Albania, based on the provisions of the Civil Code and beyond. Testamentary and legal inheritance are the two main pillars of the transfer of property and other ownership rights. The Albanian legislator has provided a clear legal framework for the division of property after an individual's death, where the right to inherit is seen in two aspects: the right to leave property in inheritance and the right to acquire it by inheritance. The study addresses testamentary inheritance, which involves the individual's will to leave their property through a testament, within the lines of inheritance, without affecting the rights of persons who, according to the law, benefit from the legal reserve, or persons incapable of work at the time of the testator's death. Is this a limitation on the testator to respect the lines of heirs called to inheritance according to the law, or the exclusion of these mentioned persons above?. Further analysis will continue with the provisions of civil legislation that determine the order of heirs when the testator has not left a testament, in the absence of a valid testament or partially invalid one. We will examine the order made by the law for heirs, including the spouse, children, parents, and other possible heirs, persons coming by substitution, and the moments of property division among them. Possible conflicts and challenges faced in judicial practice regarding legal and testamentary inheritance will also be discussed. The study includes an analysis of concrete cases and judicial decisions to illustrate how Albanian courts interpret and apply civil legislation related to the inheritance institute. The results of the study emphasize the challenges and complexities in handling inheritance issues, as well as the importance of a clear and consolidated legal framework to ensure a fairer and more efficient process of property and other rights administration in Albania.

Keywords: Inheritance, Testament, Law, Ownership, Judicial Decision, Civil Code, Court

INTRODUCTION

Inheritance is one of the primary institutions of civil law, through which wealth is transferred from one person (the decedent) to one or several other persons (the heirs) after their death. Inheritance arises only after the death of the decedent, and for this, two conditions must be met: first, the verification of the person's death, which includes not only natural death but also legal death when a person is declared dead by a final court decision. Secondly, the verification of the person's property rights and obligations at the time of death. Without property rights and obligations, inheritance cannot exist since there is nothing to pass from the decedent to the heirs.

Inheritance is also one of the methods of acquiring ownership according to civil legislation, which is carried out under the conditions provided by law. Unlike other methods of acquiring ownership, which occur between living persons, inheritance is the only method of acquiring ownership after a person's death, making it unique. Thus, the importance of inheritance as an institution of civil law stands out due to its impact on the acquisition and transfer of ownership after a person's death. As stipulated by the Constitution of the Republic of Albania and the Civil Code (2023, Articles 314-418), inheritance is a classical method of acquiring ownership and has detailed regulation in over one hundred provisions of the Civil Code. Inheritance is treated as a distinct and important part of civil law, reflecting its significance in the civil circulation of wealth. Judicial conflicts around inheritance are a significant part of judicial practice, indicating the practical and theoretical importance of this institution for lawyers and society in general (Nuni & Hasneziri 2010, pp. 7-19).

The main legal source for inheritance law in France is the Civil Code (Legifrance 2023). Referring to the French Civil Code, all provisions related to wills (Legifrance 2023) and inheritance agreements are included, with the exception of the conditions for the validity of international wills, a provision that is present in almost all continental legal systems.

Inheritance represents a key institution of civil law, which is activated at the moment of a person's death and involves the transfer of property rights and obligations to their heirs. This institution is exclusively applicable to natural persons, while for legal persons, the process of liquidation or termination of their activities applies according to the relevant legislation. Inheritance is realized in two

main forms: universal succession, where heirs inherit all the property rights and obligations of the decedent at the moment of death, and particular succession, where only specific and concretely defined properties are transferred to heirs designated by the testator. This transfer of property occurs in accordance with the rules and limitations set by the Civil Code, thus ensuring the respect of the rights of legal and testamentary heirs and ensuring that the inheritance includes the entirety of the property, including financial obligations and property rights.

In the case of legal inheritance, the application of the principle of blood proximity is fundamental, where the closest heirs exclude the more distant ones from inheriting, and the property is divided equally among heirs of the same rank. The law guarantees legal equality between men and women, between male and female children, as well as between children born inside and outside of marriage, thus reflecting the democratic and humanitarian principles of our civil legislation. The same is foreseen in civil legislations, such as Greek (Greek Civil Law), French (French Civil Law), and German (Ruggeri, Kunda & Winkler 2019). Through wills, the decedent has the right to dispose of their property fully or partially according to their wishes, but in the absence of a will, inheritance is regulated according to legal provisions. Thus, the inheritance system ensures the protection and respect of the heirs' rights by following a clear and well-defined legal framework.

Inheritance begins at the time of the decedent's death, marking the moment when the legal relationship of inheritance arises. This determines the transfer of the decedent's property to the heirs, establishing their rights and obligations over the inherited property. The law limits the initiation of inheritance to the time of the decedent's death, rendering any agreement that disposes of inheritance rights before their death invalid. The determination of the place of initiation of inheritance is also important, established according to the decedent's last residence or the location of their property, influencing the jurisdiction for handling inheritance matters.

The institution of substitution in inheritance allows for the replacement of designated heirs with their direct descendants if they cannot or do not wish to inherit. This mechanism is applied in cases where the designated heirs are unable to inherit due to their death before the decedent, renunciation of inheritance, or exclusion from it.

LEGAL ANALYSIS OF SPECIFIC ASPECTS OF THE INHERITANCE INSTITUTION

One of the most important issues in the treatment of the inheritance institution is the determination of the time of the opening of the inheritance. This is crucial because it marks the moment when the legal relationship of inheritance begins, the transfer of the decedent's property to the heirs, and the commencement of the heirs' rights and obligations concerning the inherited property. According to the law, inheritance opens at the time of the decedent's death, creating the legal relationship of inheritance due to death, or "mortis causa." The decedent's death marks the instant the legal relationship of inheritance arises, and from this moment, the heirs' rights and obligations over the inherited property commence. The law stipulates that inheritance cannot be opened before the decedent's death, and any agreement that disposes of rights deriving from an unopened inheritance is invalid (Albanian Civil Law, 2023).

The opening of inheritance is of great theoretical and practical importance because it determines the start of the transfer of the decedent's rights and obligations to the heirs. This implies that for the transfer of rights from the decedent to the heirs, the opening of inheritance is essential; otherwise, any disposition of rights related to the inheritance without its opening is invalid. The time of the opening of the inheritance, which is the time of the decedent's death, is linked to the determination of the circle of persons who will be heirs, the circle of property that will be inherited, and the law that will apply to regulate the legal relationship of inheritance. The law at the time of the decedent's death determines the circle of heirs, the inherited property, and the manner in which the property will transfer from the decedent to the heirs, regardless of when disputes among heirs arise (Decision no. 24, United College of the Supreme Court).

Decisions for issuing certificates of inheritance according to Article 348 of the Civil Code have the character of judicially verifying facts, determining the decedent, the heirs, and their ideal shares in the inherited property according to the law or the expressed will in the decedent's testament. These decisions have legal force until they are challenged by the determined circle of heirs or third parties. In the absence of opposition, they do not have binding force, and as a result, issues related to the identity of the decedent and heirs, their circle, the inherited property, their shares in the property, and claims for

inheritance are resolved by a judicial decision without an opposing party (Decision no. 131, 16.02.2006, Civil College of the Supreme Court).

Upon the death of the decedent, the rights and obligations that the decedent had at the time of death pass to the heirs. However, not all rights and obligations of the decedent transfer to the heirs. Some rights and obligations terminate with the decedent's death, including those of a deeply personal nature or closely tied to the decedent's life. For example, family and political rights do not pass to the heirs. Rights that terminate with the decedent's death also include rights to receive a pension, war veteran compensations, and rights to claim support.

Property rights and obligations, except for those closely related to the personal qualities of the heir, generally transfer to the heirs. This includes the rights to acquire ownership of specific items (Decision no. 14, date 16.02.2001, United College of the Supreme Court), obligations the heir has undertaken due to their particular characteristics, and those expressing their personal choice.

A key aspect of initiating the inheritance process and transferring property from the decedent to the heirs is determining where the inheritance opens. According to the Civil Code, inheritance opens at the place where the decedent had their last residence. If the decedent's residence is unknown, the inheritance opens at the location where all or most of the decedent's property is situated. This determination is crucial as it influences the jurisdiction of the court that will take measures for the administration of the inherited property and handle legal matters related to the inheritance. Therefore, the place of opening the inheritance is always the last residence of the decedent, ensuring that inheritance issues are addressed by the appropriate authorities in the correct location.

In the context of Albanian law, the concept of indignity serves as a legal mechanism to exclude individuals from inheritance in cases where they have demonstrated harmful behavior towards the decedent. The Civil Code clearly defines this category to protect the moral and legal integrity of the decedent. Specifically, the Civil Code (2023, Article 322) stipulates that a person cannot inherit as unworthy if they have intentionally killed or attempted to kill the decedent, the spouse, children, or parents of the decedent; if they have falsely accused or testified against the decedent in a criminal act punishable by death or imprisonment of more than ten years, provided the accusation or testimony is declared false in a criminal trial; if they have coerced the decedent through fraud, threats, or violence to make, change, or revoke a will; if they have forged a will or used a forged will for their own or others' benefit; or if they have treated the decedent in a degrading manner or abused them. These conditions reflect a deliberate approach to safeguarding moral and legal integrity in the context of inheritance, setting clear boundaries on who can benefit from a decedent's estate and under what circumstances such a person can be excluded from inheritance rights.

For example, if fraud was essential and without it, the decedent would not have changed their will, the act of the perpetrator renders them unworthy of inheritance. Similarly, the threat must be serious and genuine, significantly endangering the decedent's life and property, to provide a legal basis for exclusion from inheritance. In cases of physical violence, the person who commits the act and forces the decedent to change the will under physical duress is excluded as unworthy of inheritance, resulting in both criminal and civil liability for violating the testator's will. Degrading behavior towards the decedent differs from abuse and includes actions such as abandonment, failing to meet legal obligations like providing food or medical assistance, which violate the decedent's dignity and make them feel humiliated. The law does not explicitly define this behavior but regulates the issue of indignity for such actions so that the decedent can exclude the unworthy person from inheritance if expressly stated in the will or notarial act, thus protecting their integrity and will.

Renunciation of the right to inherit is an important legal act provided for by the Civil Code, allowing heirs to refuse the inheritance of a deceased person. This action reflects the individual's autonomy to decide on the property received through inheritance. The renunciation must be made through a written declaration, registered with the notary of the local unit where the inheritance is opened, or through a notarial declaration drafted by the notary. It can also be done through a representative with a special power of attorney if the heir is not present in the place of the inheritance. It is crucial that the renunciation is made within the legal time limits, which are 3 months for heirs within the country and 6 months for those abroad. After these deadlines, if the heir has not exercised the right to renounce, it is considered as acceptance of the inheritance according to the law (Albanian Civil Code, Articles 333-340).

This paper briefly presents an overview of inheritance in the European Union, where life has changed profoundly over the last few decades, causing a significant movement of people and property from one country to another (Wouters, 2020, pp. 45-62). Inheritance regulations in EU countries face significant practical challenges, particularly because national inheritance laws vary from one country to another, creating uncertainty and disputes, especially when heirs' rights differ across countries. To address these challenges, efforts have been made to harmonize inheritance law in Europe, including Regulation (EU) No. 650/2012 as an important step towards a common inheritance law (EU 2012, Regulation No. 650/2012). This regulation aims to simplify inheritance procedures in cross-border cases by determining the jurisdiction and applicable law for inheritance matters.

The European Certificate of Succession (ECS) is also a significant innovation for facilitating the documentation of inheritance uniformly across the EU (EU 2012, Regulation No. 650/2012). However, the implementation of the ECS still faces challenges, particularly concerning its coordination with national certificates. Although the difficulties in applying inheritance law in the European Union are well recognized, EU institutions are not yet ready to provide the necessary clarifications and solutions immediately. This is an undesirable situation, as a harmonized inheritance law is urgently needed in Europe today (Smith, 2018).

ANALYSIS OF TESTAMENTARY AND LEGAL INHERITANCE

Both civil legislation and jurisprudence divide the institution of inheritance into two main forms: legal inheritance and testamentary inheritance. Legal inheritance, as the fundamental form of inheritance in Albanian jurisprudence, applies when the decedent has not left a valid will or when their will has been declared wholly or partially invalid by a court decision. In contrast, testamentary inheritance applies when the decedent has left a valid will, a practice that is rare in the context of using a will for the distribution of assets, making testamentary inheritance an exception to the rule. According to the Civil Code, legal inheritance is based on the familial relationship between the decedent and the heirs, including the closest relatives and the state in the absence of legal heirs, a provision similar to German legislation (Bürgerliches Gesetzbuch, 1896). The order of succession is as follows: children of the decedent, born within or outside marriage, legally recognized, the surviving spouse, if there is a legal marriage at the time of the decedent's death, parents, siblings, grandparents of the decedent.

We begin with an analysis of legal heirs, where the children of the decedent are categorized as primary legal heirs. They represent the closest descendants of the decedent, and their connection can be based on blood relations or adoption (German Civil Code, 2009). In practice, the children of the decedent, whether born within or outside marriage and legally recognized, enjoy equal rights concerning inheritance (Constitution of the Republic of Albania, 2017, Article 54).

Regarding the mechanism of calling legal heirs, these categories also include the surviving spouse. The Civil Code stipulates that in the first order of succession, the children and the spouse, whether capable or incapable of working, are called to inherit, each in equal parts. If one of the children has died before the decedent, is deemed unworthy to inherit, has renounced the inheritance, or is excluded from it, their children substitute them, and if they cannot inherit due to the aforementioned reasons, their descendants take their place without limitation.

In the second order, the decedent's parents and persons incapable of working, who lived with the decedent as family members and were dependent on them for at least one year before the decedent's death, are called to inherit. They provide an additional dimension to family inheritance, influencing the direction and distribution of the decedent's property. In the third order, persons incapable of working dependent on the decedent, grandparents, siblings, and the children of predeceased siblings, are called to inherit if there are no second-order heirs. Albanian legislation provides that the surviving spouse inherits equally with the children in the first order, takes half of the inheritance in the second and third orders, and inherits the entire estate if there are no heirs in the first three orders.

Disputes Over Inheritance and Legal Heir Claims

One aspect we will address in this paper is the contestation of inheritance certificates and the claim of being the sole heir or co-heir of the decedent, specifically regarding the opening of legal inheritance. For example, in the case of ShB, the plaintiff in this judicial matter (Decision no. 5, date 20.01.2016, Civil College of the Supreme Court), brought by appeal to the Supreme Court, which experienced a long process to secure her recognition as the legal heir of her husband AL, following his

accidental death in France in 2008. After his death, he received an insurance benefit amounting to approximately 200,000 Euros. ShB had been married to AL from 1996 to 2003, when the marriage was dissolved by court decision (Decision no. 1914, date 10.11.2003, Durrës Court, Albania), without assigning fault. AL was married to AS from 2004 to 2006. Both marriages were childless. AL's parents, NL and XhL, sought the opening of the inheritance certificate in 2009. The first-instance court (Decision no. 294, date 04.02.2011, Durrës Court, Albania) and the appeal court (Decision no. 664, date 09.11.2011, Durrës Appeal Court) ruled in favor of ShB, recognizing her as an heir to a portion of his property, including the insurance, despite opposition from AL's parents, NL and XhL. The Supreme Court reviewed the case, finding that the lower courts had not adhered to legal and procedural provisions, thus rightly remanding the case for reconsideration, ordering a thorough investigation and accurate application of the law to ensure complete justice and legality during the judicial process. This review was conducted to ensure all claims and facts related to inheritance were addressed in accordance with the applicable laws and norms of the Republic of Albania.

When the decedent has not left any direct descendants, parents, or other direct ascendants, nor siblings or their descendants, the decedent's property passes to the closest relatives, without distinction between the paternal and maternal lines, but no further than the sixth degree, comprising the fourth and fifth orders. However, when the decedent has left no heirs up to the sixth degree, the state is called to inherit (Civil Code of Albania, 2023, Articles 360-366).

This paper will also address the aspect of substitution in inheritance. Substitution allows for replacements to take the place, rank, and rights of the person they are replacing. This institution is applied when the heirs designated in the will or legal heirs, due to their death before the decedent or other circumstances, cannot or do not wish to inherit. In such cases, the law stipulates that they are replaced by their direct descendants, such as their children, without limit. The portion of the estate that would have belonged to the intended heir, who cannot or does not wish to inherit, is distributed to these substitutes according to their share in the inheritance. Thus, the substitutes receive what their direct heirs would have received. The law also sets specific boundaries for the applicability of substitution, defining when this institution applies and when it does not, ensuring a clear and fair approach in determining inheritance (Civil Code of Albania 2023, Articles 326-329).

Another important aspect of the inheritance institution is the right of accretion. In cases of both legal and testamentary inheritance, the right of accretion applies when an heir is excluded from inheritance due to unworthiness, death before the decedent, renunciation of the inheritance, or exclusion by the decedent. In such cases, the share of the excluded heir is added to the other co-heirs of the same rank, in accordance with their legal shares of the inheritance. This means that to apply the rules of accretion, two conditions must be met: the heir must have died before the decedent, and there must be no other heirs who can inherit through substitution. In legal inheritance, accretion is applied when substitution inheritance is not possible, while in testamentary inheritance, it applies only if the decedent has not designated a testamentary substitute for the heir who cannot or does not wish to inherit (Civil Code of Albania 2023, Articles 368-370).

As mentioned above, the institution of inheritance usually takes the form of testamentary inheritance. A will is an important legal instrument in Albanian jurisprudence, allowing a person to decide the fate of their property after death in accordance with their voluntarily expressed wishes. As a voluntary legal act, a will allows the testator to freely dispose of their property according to their desires outlined in the testamentary document. This act creates a voluntary legal relationship between the testator and the heirs, who receive the designated property after the testator's death, without the need for their acceptance at the time of drafting the will. A will cannot be made by two or more persons in one document, nor can it benefit a third party, nor contain reciprocal dispositions. Another fundamental characteristic of a will is its unilateral nature, where legal effects are created without the need for the testator's will to directly reach the heirs. This explains that regardless of the heirs' acceptance or refusal to accept the inheritance after the testator's death, the validity and effect of the will remain unchanged.

A will is also a sui generis type, having several legal restrictions that protect the rights of legal heirs and respect public order and morality principles. Additionally, the testator has the right to revoke the will at any time before their death, making this instrument adaptable to possible changes in their expressed wishes. A will is a significant legal act where the testator expresses their will to dispose of their property legally after their death. This act is valid only if it adheres to the form prescribed by law and includes provisions that do not violate legal limitations and reserved shares of inheritance. The

testator can also revoke the will at any time before their death, providing the necessary flexibility to change or cancel the will's provisions according to their varying wishes. These characteristics make a will an essential tool for ensuring and implementing the testator's will lawfully and protecting the rights of heirs in Albanian jurisprudence.

In Albanian legislation, the capacity to dispose of property by will is an important issue and is reserved for natural persons who have reached the age of 18 and are capable of understanding the significance of their actions. A woman under this age, when married, also has the capacity to make a will, except for those aged 14-18, who can freely dispose of property acquired through their work. Persons who are unable to understand the significance of their actions at the time of making the will, due to severe illness or other specific conditions, also do not have the capacity to make a will. In the practical case (Decision no. 308, date 29.05.2014, Civil College of the Supreme Court), the validity of a will was contested through an appeal to the Supreme Court due to the testatrix RK's lack of legal capacity to act. The Supreme Court confirmed the validity of RK's will, in which she bequeathed her property to her son, DK. Although the first-instance and appeal courts had ruled that the will was partially invalid for violating her nephew's reserved share, the Supreme Court overturned this decision. It found that the lower courts' arguments regarding the testatrix's mental state at the time of drafting the will were insufficient, adding that the documents and evidence in the judicial file indicated that RK was capable of understanding and performing legal actions at the time of signing the will. This Supreme Court decision emphasized the importance of adhering to complete legal processes that protect the legal rights and obligations of all parties involved, ensuring justice and legality in accordance with the Constitution and current laws, and remanded the case for retrial to the Korça Appeal Court.

The capacity to inherit by will in Albanian law is detailed in the Civil Code. Persons who have the capacity to inherit by will are those who are legally able to inherit by law, including the unborn children of a specific person, who must be alive at the time of the will's opening, even if they are not yet conceived.

The legal reserve in testamentary inheritance serves as a limitation on the testator's freedom (Legifrance, Civil Code, Chapter III, Articles 912, 930-5) to dispose of their property entirely. The Civil Code provides the legal reserve as a protective mechanism (Decision no. 161, date 27.03.2023, Civil College of Supreme Court) to ensure that certain heirs, such as the minor children of the testator, other minor descendants without limit, and persons unable to work, will necessarily have their share of the inherited property. These individuals must hold this status at the time of the testator's death (Decision no. 399, date 20.06.2023, Civil College of Supreme Court). This protection interacts with the testator's freedom to designate their heirs, preventing the exclusion of the legally protected reserve for those entitled to it.

Historical improvements in legislation have enhanced the clarity and conditions for applying the legal reserve, making it a crucial aspect of judicial practice and protecting inheritance interests through testamentary processes. In the civil case (Decision no. 253, date 15.05.2012, Civil College of Supreme Court) presented to the Supreme Court, the plaintiffs claimed partial invalidity of PB's will, arguing that the will infringed on the legal reserves for some of them, as they were either unable to work or minors at the time of the decedent's death. The Tirana Appeal Court (Decision no. 670, date 01.04.2008, Appeal Court of Tirana) confirmed the decision of the Tirana District Court (Decision no. 2219, date 29.03.2007, Court of Tirana), evaluating the correct application of procedural and substantive civil law. These courts found that the plaintiffs did not meet the criteria to be second or third-order heirs under the Civil Code (Republic of Albania 2023, Articles 360-366) because they did not live with the decedent or were not dependent on them at the time of the will's opening.

The Civil College of the Supreme Court rightly concluded that the Appeal Court's decision was based on the law and did not infringe on the legal reserve of heirs unable to work or minors.

In the discourse of testamentary inheritance, the concepts of "legate" and "charge" are essential for understanding the obligations and privileges the testator may impose on the heirs. A "legate" is an order or obligation the testator sets in the will to provide a property benefit to a specific person or institution, excluding legal heirs. On the other hand, a "charge" defines the distribution of the testator's estate among the legal heirs, including both born and unborn descendants. The main difference between them is that a legate is an obligation unrelated to legal inheritance, while a charge is part of the heir's estate, subject to the legal heirs' obligations.

The Civil Code outlines two main forms of wills: holographic and notarial. A holographic will must be handwritten by the testator, dated, and signed by them to be valid. A notarial will is drafted in the presence of a notary, including necessary details such as the date, location, and identification of the testator, and is more advisable for the security and accuracy of the testator's will.

INTERPRETATION AND LEGAL ANALYSIS OF THE INHERITANCE INSTITUTION IN THE ALBANIAN JUDICIAL SYSTEM

Inheritance, as a fundamental institution of civil law, represents a significant aspect of the Albanian legal system, encompassing the transfer of property rights and obligations from the decedent to the heirs after their death. This legal relationship, deeply regulated by the Civil Code and applied and interpreted by judicial practice, has had its complexities at various levels of the Albanian judiciary, including the determination of heirs, interpretation of wills, and evaluation of legal provisions that prescribe the legal reserve, legate, and burden.

In the context of the Albanian judiciary, the time and place of the opening of inheritance play a critical role in determining jurisdiction and the application of law to inheritance matters. According to the provisions of the Civil Code, inheritance opens at the place where the decedent had their last residence, while in cases of uncertainty about the residence, it opens at the place where all or most of their property is located. This ensures that inheritance matters are handled by competent courts, guaranteeing the protection of heirs' rights and the enforcement of legal justice. Regarding timing, the substantive civil law stipulates that inheritance opens at the time of the decedent's death.

This paper analyzes the decisions of Albanian courts to identify judicial approaches and practices in interpreting inheritance law. Through the examination of inheritance cases, Albanian courts have developed a rich jurisprudence reflecting the application and interpretation of the law in various legal and factual situations. This study aims to identify the challenges and solutions in handling inheritance matters, addressing the importance of clear and fair legal interpretation to ensure justice and equal protection for all parties in the judicial inheritance process in Albania.

In the case (Decision no. 76, date 24.01.2006, Civil College of Supreme Court) appealed to the Supreme Court, the plaintiffs challenged the validity of the will, arguing procedural violations and the testator's lack of understanding of the significance of their action. However, after thorough investigation and signature verification by experts, the Court of First Instance and the Court of Appeal, after reviewing all evidence, ruled that these claims were not supported by law. The Supreme Court, upholding the Court of Appeal's decision, dismissed the legal heirs' lawsuit, confirming the validity of the will and the testamentary heir's right to inherit.

In another case (Decision no. 42, date 26.01.2012, Civil College of Supreme Court), the plaintiffs sought the annulment of the will, arguing that the order of inheritance according to civil law and the timing of the opening of inheritance were not respected. The Supreme Court found that the Appeal Court's decision (Decision no. 1154, date 05.10.2007, Appeal Court of Tirana) and the decision (Decision no. 298, date 30.05.2006, Court of First Instance Kruje) were based on the incorrect application of the law, as these courts referred to the law in effect at the time the will was drafted. HT, as the second wife of the testator, sought the annulment of his notarial will, arguing that it was drafted in contravention of Civil Code provisions, and at the time of his death, the testator had surviving siblings. The Supreme Court ruled that inheritance should open at the moment of the decedent's death, applying the Civil Code provisions in force at that time. Therefore, the previous decisions were annulled, and HT's lawsuit was accepted, confirming that the notarial will was invalid due to non-compliance with legal principles for inheritance, which had disposed of the property for the benefit of the first wife's son. This case demonstrates the importance of the decedent's time of death in determining inheritance, as stipulated by the Civil Code. The Supreme Court found that the lower courts had not properly applied and respected the law, basing their decisions on the time of the will's drafting, whereas the law states that inheritance opens at the time of the decedent's death (Decision no. 9, date 20.01.2016, Civil College of Supreme Court), and failed to respect the order of inheritance according to the law. In resolving this matter, the Supreme Court adhered to the law, the unifying decision of the United Colleges of the Supreme Court (Decision no. 1, date 24.03.2005, United Colleges of Supreme Court), and the principles characterizing the inheritance institution.

Judicial Practice in Albanian Inheritance Law

Judicial practice is heavily laden with claims regarding the infringement of the legal reserve. The Civil Code itself stipulates that the decedent cannot exclude from legal inheritance their minor children or other minor heirs who inherit by substitution, as well as their other heirs who are incapable of work. A will is invalid if it violates the legal share of these heirs. The Civil Procedure Code mandates that the court, in the cases presented for resolution, must conduct a proper legal process, carry out a thorough and comprehensive investigation, and resolve disputes in accordance with legal provisions. The Supreme Court frequently concludes its decisions by ordering the Court of Appeal to repeat the investigation and fully investigate the legal circumstances related to inheritance (Decision no. 216, dated 15.05.2014, Civil College of Supreme Court), including the verification of the full circle of heirs and the respective shares for each.

Case Study on Will Invalidity

In the case (Decision no. 18, dated 01.03.2018, Civil College of Supreme Court) brought to the Supreme Court on appeal for will invalidity, the circumstances are as follows: In the inheritance case of SO, the district courts (Decision no. 170, dated 25.01.2010, Durrës Court) and the appeal court (Decision no. 05, dated 14.01.2013, Appeal Court) in Durrës confirmed the validity of her will in favor of MK, finding it to be drafted in accordance with legal requirements and a clear expression of the testatrix's will to dispose of her property. Despite the plaintiffs, who were fourth-order legal heirs according to the inheritance certificate, challenging the will by arguing that it violated the legal reserve provided by the Civil Code and that MK did not qualify as a legal heir under civil law, the Civil College of the Supreme Court found that the arguments presented in the plaintiffs' appeal did not contain sufficient grounds to invalidate the decision of the Durrës Appeal Court. The court upheld that SO had the legal right to dispose of her property according to her personal wishes, respecting legal provisions.

The Civil Code (Republic of Albania 2023, Article no. 365) stipulates that if the decedent has not left descendants, parents, or other direct ascendants, siblings, or their descendants, i.e., heirs of the first three orders, the estate passes to their closest relatives, without distinguishing between paternal and maternal lines, but not beyond the sixth degree. Thus, in this case, the court decisions clearly demonstrate the application of the law and the rules for disposing of heirs' property through a will, protecting the interests and rights of heirs according to the law.

Further Case Studies and Supreme Court Decisions

In the case (Decision no. 758, dated 20.12.2023, Civil College of Supreme Court) that we will address next, the will, as a legal act drafted by DhK with a notarial act (Law no. 110/2018), in 2002, is her last will. The District Court (Decision no. 1674, dated 30.09.2015, Court of Korça) and the Appeal Court (Decision no. 45, dated 10.02.2016, Korça Appeal Court) rejected GjK's lawsuit regarding the will drafted later in 2008, arguing that his lawsuit lacked a legal basis because he was the owner of the inherited property according to the 2002 will, and the defendants in this case had not raised claims for the return of the property disposed of by the will. The Supreme Court confirmed this approach, applying the principle that a claim for invalidity must show the cause and alleged consequences to evaluate the legitimacy of the claim to declare the 2008 will invalid. The Supreme Court argued that: In view of the Unifying Decision (Decision no. 5, dated 30.10.2012, United Colleges of Supreme Court) of the United Colleges, which unified and normalized the fact that "only the request for the declaration of invalidity of a legal act, which under the law has not produced any legal consequence, without showing the cause of this request and the consequences it may have caused, cannot be taken into consideration by the court." Therefore, from this perspective, this lawsuit cannot be raised since the legal act of making the will sought to be declared invalid has not created legal consequences.

In the judicial case between MB as the plaintiff and BT and GT as defendants, the conflict arose over a will left by the late QT. MB, the son of the late QT's brother, was named the sole testamentary heir in QT's will, excluding her husband, BT, and her adopted daughter, GT, from the inheritance. Previously, the Tirana District Court had appointed BT and GT as QT's legal heirs. MB sought recognition of his rights as the sole testamentary heir and the delivery of the estate according to the will, while BT counterclaimed the will, arguing that he met the legal conditions to be an incapable heir and that the will infringed on his legal rights. The Tirana District Court (Decision no. 10565, dated 21.12.2011, Tirana Court) and subsequently the Tirana Appeal Court (Decision no. 2802, dated

23.11.2012, Tirana Court) ruled against MB's lawsuit, arguing that QT had an adopted child and, according to Article 377 of the Civil Code, she could not dispose of the entire estate by will in favor of MB. The courts concluded that the will was contrary to the law and therefore invalid. In their decisions, the courts confirmed the absolute invalidity of the will, upholding the rights of the legal heirs, BT and GT, to benefit from QT's estate.

The Civil College of the Supreme Court (Decision no. 49, dated 07.06.2018) evaluated that the appeal submitted by the plaintiff MB contained reasons provided by the Civil Procedure Code (Article 472), which justified the invalidation of the Tirana Appeal Court's decision. According to the Civil College's stance, even in other previous cases (Decision no. 238, dated 20.05.2014, Civil College of Supreme Court), the courts failed to fully clarify the significant circumstances related to the adjudication of the case, including elements of the lawsuit and the parties' claims, even for violations of the adversarial principle. This lack of thorough and comprehensive judicial investigation has been considered a serious error in resolving cases, often returning disputes for retrial to the Court of Appeal.

FINDINGS AND ISSUES RELATED TO THE INSTITUTION OF INHERITANCE

Article 377 of the Civil Code, which regulates the disposition of property by will, is one of the most significant and contentious provisions in the field of civil law in Albania. This article, which imposes substantial restrictions on testators, has provoked numerous observations and critical analyses, particularly regarding the infringement of constitutional rights to dispose of one's property after death. According to this article, the testator cannot dispose of their property for the period after their death to their spouse, the children of their siblings, and in cases where there are heirs of the first three orders. At the same time, this provision protects the legal reserve for minors and persons unable to work. The prohibition on testamentary disposition for the mentioned individuals raises questions about the purpose and proportionality of the imposed restrictions, suggesting that this limitation contradicts the legislator's intent to allow the testator to effectively determine their will. This leads to the need for a more detailed and appropriate regulation in inheritance law to address these criticisms and ensure a proper balance between the testator's freedom and the protection of other heirs' rights.

Case Study: Judicial Conflict over Inheritance

The case we present to address the issues encountered in the Albanian judicial system regarding Article 377 describes the legal conflict involving the testatrix ZI and the potential heirs HS and JI, which underwent a lengthy and complex development through judicial instances. The issue began with a conflict over ZI's will drafted in 1993, where she declared her nephew, JI, as the sole heir to her property, excluding HS as a first-order heir. HS, in an effort to prove her legitimacy as a legal heir, filed a lawsuit to recognize her as ZI's legal heir and to have the property handed over from JI.

The District Court (Decision no. 285, dated 05.02.2008, Vlora Court) ordered JI to recognize HS as ZI's sole legal heir and to transfer the property, deeming the will invalid due to violations of the legal provisions at the time of drafting the will and ZI's death. The Appeal Court (Decision no. 402, dated 22.10.2009, Vlora Appeal Court) upheld the first-instance court's decision, while the Civil College of the Supreme Court (Decision no. 115, dated 03.04.2014, Civil College of Supreme Court) overturned the Appeal Court's decision and remanded the case for reconsideration in the same court. The Supreme Court decided that the Vlora Appeal Court needed to conduct a full and comprehensive investigation, ensuring a judicial process in accordance with current legal provisions and analyzing every fact and evidence presented by the parties.

Upon reconsideration, the Vlora Appeal Court, in its decision no. 83, dated 09.07.2014, changed decision no. 285, dated 05.02.2008, of the Vlora District Court, dismissing the lawsuit and accepting the counterclaim, thereby obliging the plaintiff to recognize the defendant as the rightful owner of the immovable property in question. The plaintiff filed an appeal with the Supreme Court against the Appeal Court's decision. In the judicial session dated 06.03.2023, the Civil College, after hearing the parties, declared the judicial review closed and decided to suspend the trial of this case and refer the matter to the Constitutional Court to repeal Article 377 of the Civil Code as incompatible with the Constitution, as it contradicts Article 41 of the Constitution (Decision no. 00-2023, dated 06.03.2023, Civil College of Supreme Court). This request should have been made much earlier to provide legal certainty for subjects whose inheritance rights may have been infringed by decisions of the Albanian courts.

Constitutional Court Ruling on Article 377

The Constitutional Court (Decision no. 69, dated 27.12.2023, Constitutional Court of the Republic of Albania) rightly assessed that Article 377 of the Civil Code limits the testator's right to freely dispose of property after their death. This provision requires the testator to respect the mandatory share of the estate for specific legal heirs, including their minor children and other heirs unable to work. Additionally, it restricts the possibility of testamentary disposition in favor of individuals outside the circle of legal heirs. The Court argued that the restriction on the right of testamentary disposition must be proportional and reasonable in light of a comparative analysis of European legislations such as those of Germany, Italy, and France. While the protection of the interests of legal heirs is important, it is necessary for the law to adapt to social and cultural developments, respecting the individual's freedom to dispose of their property after death.

Findings and Issues Related to the Inheritance Institution

The court, while recognizing the special protection that marriage and family have in our legal order, notes that economic and cultural developments, as well as changes in legislation after the entry into force of the Civil Code, have expanded the traditional concept of family. This concept is widely addressed in the Family Code, where since its approval in 2003, in addition to legal cohabitation (marriage), de facto cohabitation has also received new and special attention from the legislator due to the need to reflect new social developments. However, family legislation urgently needs improvement, particularly concerning same-sex marriages and the implications that may arise in cases of inheritance.

Referring to the analysis of the Constitutional Court, it is observed that although the European Convention on Human Rights does not impose an obligation on states to recognize a specific family regime or partner categories for inheritance purposes, the trend among European states is towards expanding this concept. From the analysis of this study, we have seen that almost all European countries' legislations have foreseen that the right to dispose by will can be limited only by the legal reserve, which includes the surviving spouse, children, registered or unregistered partners (including same-sex partners), or parents, where each state has determined the order of priority for them depending on its culture and tradition, as well as by specifying a quota for these categories.

The Constitutional Court has noted that legally, inheritance implies the lawful transfer of property ownership and that while the legislator can reasonably limit its disposition to that circle of heirs who have a blood relationship, a fair regulation in today's conditions cannot exclude individuals who de facto are family members. Consequently, the legislator is tasked with protecting the traditional essence of the inheritance institution while not overlooking the fact that the law must adapt to social conditions, maintaining a reasonable balance between the categories of legal and testamentary heirs. In reference to legal provisions in Europe, the protection of the right to dispose of property by will can be achieved through the provision of a quota available to the testator, which they can dispose of according to their will or in any form deemed appropriate by the legislator.

The Constitutional Court's conclusions were justified, deeming Article 377 of the Civil Code incompatible with the Constitution due to the legal gap concerning the inheritance institution. This decision mandated the Albanian legislator to fill this gap within one year from the entry into force of its decision. There is also a gap in the provisions regarding the institution of cohabitation, which requires more detailed regulation starting from the Family Code and continuing with the Civil Code in cases of testamentary inheritance.

Exclusion of Women from Inheritance

Another issue in Albania is the exclusion of women and daughters from inheritance due to patriarchal stereotypes and customs (UN Women Country Office Albania, 2016). Despite modern legal regulations, there is still gender discrimination where a parent excludes a daughter from inheritance or the belief that a daughter's property is with her husband. This has led to tensions and conflicts between family members and judicial institutions. Inheritance remains a crucial issue for gender equality and the protection of women's property rights in Albanian society. It is necessary for the law and practice to align with constitutional principles and respect the rights of all parties in a marriage or cohabitation, as previously mentioned.

CONCLUSIONS

Determining the time of opening an inheritance is a crucial element in Albanian jurisprudence. This moment establishes when the rights and obligations of heirs commence over the decedent's estate,

ensuring a clear and orderly transfer of property and eliminating any ambiguity regarding the heirs and the extent of the decedent's estate. The determination of the time of inheritance opening helps identify the competent court and facilitates the proper administration of the inherited estate.

In the context of Albanian law, the concepts of unworthiness and renunciation of inheritance play critical roles in protecting the moral and legal integrity of the decedent. Unworthiness excludes individuals from inheritance if they have acted wrongfully against the decedent, ensuring that justice and legality are upheld in the disposition of the decedent's estate. Renunciation of inheritance must be done within legally defined limits, ensuring that the rights of heirs are protected according to the law in all cases.

Legal and testamentary inheritance are two fundamental forms of inheritance in Albanian jurisprudence, regulated by the Civil Code. Legal inheritance applies when the decedent has not left a valid will or when the will has been declared invalid, following a specified hierarchy for legal heirs. Testamentary inheritance allows the decedent to dispose of their property after death according to their expressed wishes in a will, while respecting legal limitations and the rights of legal heirs.

The Albanian Civil Code also includes protective mechanisms such as substitution and accretion in inheritance, ensuring a fair distribution of the estate when designated heirs cannot or do not wish to inherit. These mechanisms protect the legal integrity of the decedent and ensure that inheritance is fair and orderly for all involved parties.

Article 377 of the Civil Code limits the testator's freedom to dispose of property after death, imposing the obligation to respect the mandatory share of the estate for legal heirs, such as minor children and persons unable to work. This provision also restricts the possibility of testamentary disposition in favor of individuals outside the circle of legal heirs. While the protection of legal heirs' interests is important, it is also necessary for the law to adapt to social and cultural developments, ensuring a balance between protecting the rights of legal heirs and the individual's freedom to dispose of their property freely after death.

In light of the above findings, there should be a review of legal quotas to ensure equality and protection of property rights for all family members, including guaranteeing the freedom of all parties in a marriage or cohabitation. These recommendations aim to ensure a legal framework more aligned with the constitution and new social developments in Albania, maintaining a reasonable balance between the protection of legal heirs' rights and individual freedom in the disposition of their estate.

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**STUDY OF THE PREVALENCE AND DISTRIBUTION OF ANIMAL BRUCELLOSIS IN
ALGERIA - CASE OF THE WILAYA OF BEJAIA (2009-2019)**

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ABSTRACT

Brucellosis is a zoonosis considered as a priority by the OIE. And can have serious consequences for human health and the economy when existing in a country. In Algeria, this disease is still far from being controlled there and its importance seems to be largely under estimated.

In this study, we looked at the evolution of animal brucellosis in the wilaya of Bejaïa over a period of 10 years by calculating the prevalence and the incidence of this disease.

The survey shows that the wilaya of Bejaia is affected by animal brucellosis with 728 cases and 410 declared outbreaks. 90% of the daïras, nearly 80% municipality were affected by animal brucellosis with 55.61% of cases in the south.

This disease occurs throughout the year with a high rate in spring and summer.

Given this situation a review of prophylactic measures is mandatory in this region.

Keywords: Bejaïa, animal brucellosis, zoonosis, disease, prevalence

**CONTEXT AND TEXT RELATIONSHIP IN THE THEATRICALITY OF
FOLKLORE:RURAL CHAMBER PLAYS**

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ABSTRACT

This paper is based on the research conducted in Güleğ and Musallar villages of Kastamonu province in March 2017 and February 2018 in order to examine the theatrical features of folklore. The close relationship of folkloric texts and practices with texture, text and context gives them a performative characteristic. In the aforementioned study, the connection of rural chamber plays, which are a folkloric performance, with living spaces in terms of form and content is analysed. In the aforementioned study, the link between rural chamber plays, which are folkloric performances, and living spaces in terms of form and content is analysed. In this paper, the forms of transformation of the village into a playground as a context, the relationship between the player and the audience, the position of the plays between tradition and daily life are analysed through the data obtained in the field study. In this study, 25 source persons who participated in the plays and at the same time explained the relationship between generations were interviewed. In the aforementioned study, rural chamber plays are analysed in terms of folklore as content and theatrical features as structure. Based on all these, the aim of the paper is to discuss the relations of the informants with the context in the field study and the ways in which this is reflected in the study. In the plays played in the mentioned villages on different dates, the house of one of the village residents was determined as the place of play. However, the rural chamber plays were played separately by men and women, and no men were allowed into the women's plays at the time of the games. In this context, although the place of play and the games are intended for entertainment, the fact that the games are private for the players and the audience, the way the source people look at the games, describe the games, the methods of determining the audience, the forms of communication established by the field guide with the researcher are remarkable in terms of folklore studies.

Key words: Traditional Turkish Theatre, rural chamber plays, folklore

**EXAMINING THE EFFECT OF MATERIALISM AND INVOLVEMENT ON THE
PURCHASE OF FASHION CLOTHING ACCORDING TO MARITAL STATUS**

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ABSTRACT

The study examines the effect of materialism and involvement on purchase intention according to marital status. In the current study, purchase intention was the dependent variable, materialism was the independent variable, and fashion clothing involvement was considered as the mediator variable. An online survey was prepared based on the literature. A total of 323 data were collected in Turkey: 125 single respondents and 198 married respondents. Two groups were asked the same questions for hypothesis testing, but the data were analyzed separately. Exploratory factor analysis, reliability analysis, normality test, and regression analysis were applied for both groups, and the effect of the mediator variable was examined with the SPSS process macro extension. According to the findings, the involvement had a more significant impact on purchase intention, and it was relatively more robust in singles than in married people. Also, involvement partially mediates the relationship between materialism and purchase intention, and it was more robust in single respondents. The main contribution of the study is that it did not take marital status as a variable; it analyzed the data of single and married respondents separately.

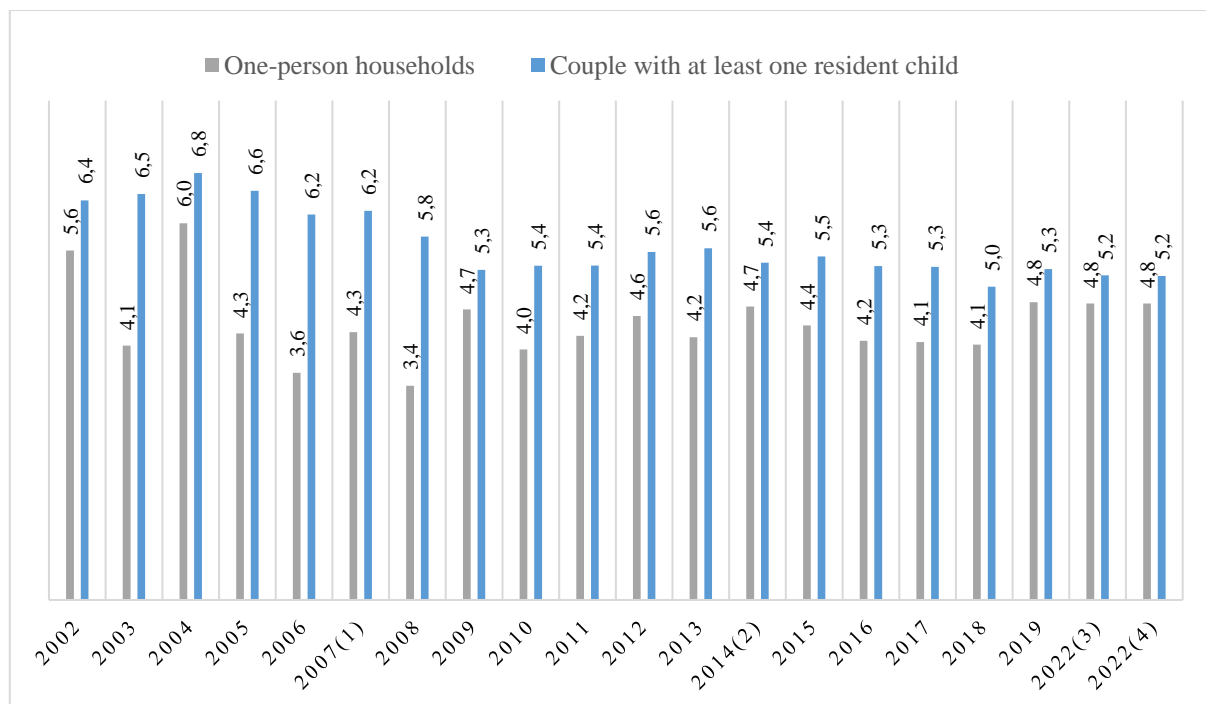
Key words: Materialism, fashion clothing, involvement, marital status, purchase intentions

INTRODUCTION

Every period has an impact on individuals' purchasing decisions. The marital status, whether single or married, also affects the priorities of purchasing products. The current study examined the impact of individuals' marital status on purchase intention. However, this research also discussed two other vital factors affecting purchasing: materialism and involvement. It also examined how marital status is affected by these two factors. Previous studies have examined the relationship between marital status and purchasing. Richa (2012) analyzed marital status and online shopping behaviour. The study findings showed that marital status did not influence online shopping parameters. İşler et al. (2014) analyzed online consumer behaviour on marital status, and the findings showed a difference in buying behaviour. Escobar-Rodríguez et al. (2017) examined marital status as moderating effects on purchase intention. Imelia and Ruswanti (2017) investigated how differences in marital status influence purchase intentions; however, the findings showed there was no difference. Deepak and Velaudham (2017) examined the factors affecting the purchasing decisions of married and unmarried consumers. Onurlubaş et al. (2017) examined consumers' green product behaviour according to marital status, and the findings showed a difference in buying behaviour. Aras and Çelik (2021) investigated the marital status effect on housing preferences. The study stated that marital status did not affect housing decisions. Singh and Kumar (2021) investigated marital status's impact on fast-moving consumer goods. According to the findings, there was no association between marital status and buying behaviour. An essential aspect of the current study is considering a different research sample according to marital status and examining the relationships through 2 different sample groups. Thus, the aim is to determine the effect of marital status differences on purchase intention with the specified variables.

Another important contribution of the study is choosing fashion clothing as the element of interest. The reason is that existing studies show that fashionable clothes have an impact on consumers in materialistic behaviors (O'Cass, 2001, 2004; Handa and Khare, 2013). Graphic 1 shows how clothing consumption is in Turkey according to the person living in the household. These data show the ratio of the two items in the total expenditure. For the purpose of the study, the number of individuals living alone and families with children was taken. The graph shows that the rate of clothing consumption of singles has increased relatively in recent years compared to previous years, and that both groups exhibit similar behavior in purchasing clothes. The graph is included as an example to show clothing expenditures within individual and family expenditures; the data does not overlap with the research data.

Graphic 1. Clothing consumption according to the marital status in Turkey



Resource: Tuik, Data Portal for Statistics, 25.04.2024

The following sections of the study will present the theoretical relationships between variables. Then, the hypotheses will be analyzed. In the last section, the study findings will be discussed.

LITERATURE

Materialism and purchase intentions

Belk (1984, 1985) demarcated materialism as individuals' great attachment to possessions which pushes them to make them visible and communicate with others. Khare (2014) substantiated that individuals attempt to communicate about their status by purchasing luxury products for high social visibility. Clothing is the most subtle means of ensuring the visibility of an individuals' expressive messages. Materialist consumers use clothing as a tool to symbolize social status, prestige, and success (Browne

and Kaldenberg, 1997; O'Cass 2001; 2004; Handa and Khare, 2011; Joung, 2013). Materialism, therefore, represents a key variable in the evolution of a consumers' relationship with fashion clothing (Browne and Kaldenberg, 1997; O'Cass, 2004).

O'Cass (2001, 2004) investigated the effect of materialism on consumers' fashion clothing involvement. Chen and Kim (2013) established the relationship between materialism and intention to purchase luxury fashion products. Handa and Khare (2013) confirmed the relationship between materialism and fashion clothing involvement. Hourigan and Bougoure (2012) analyzed the link between materialism and fashion clothing involvement. Their findings suggested that materialism significantly affects fashion clothing involvement. Based on the literature support given, it is proposed:

H₁: Materialism affects singles' purchase intentions

H₂: Materialism affects marrieds' purchase intentions

Fashion clothing involvement and purchase intentions

Goldsmith et al (1991) emphasized that product involvement had an important role in consumers' attitudes towards the product. Since involvement motivates consumers to buy (Özhan et al., 2018), certain features, brands or categories could be seen in consumers' attitudes towards the product (Kim, 2005). Liapati et al. (2015) claimed that the urge to impulse-buy fashion products can be explained by fashion involvement, which directly and indirectly influences several related behavioral variables, such as shopping enjoyment, brand love, and hedonic consumption tendencies.

Having materialistic possessions, e.g., fashion apparel has some meaning for consumers. As involvement occupies an important place in the symbolic consumption decisions of consumers, fashion clothing is indicated in a similar manner (O'Cass, 2001). The importance of the concept in terms of fashion clothing is due to the effect of the specified product category on the role of the individual in society (O'Cass, 2001). Consumers' interest in fashion is influenced by their sensitivity to the social environment (Khare et al., 2012). The versatility of products such as clothing (Kim et al., 2002), factors such as comfort, fashion, and individuality have significant effects on clothing involvement (Khare, 2014).

Product involvement has been commonly used as a significant variable to understand consumer purchase process (Kim et al., 2002; Hourigan and Bougoure, 2012; Liapati et al., 2015). Also, involvement has been discussed and utilized to examine fashion clothing previous studies (O'Cass, 2000, 2001, 2004 ; Kim, 2005; Summers et al., 2006; O'Cass and Choy, 2008; Hourigan and Bougoure, 2012; Khare et al., 2012; Khare, 2014;). Based on the literature support given, it is proposed:

H₃: Fashion clothing involvement affects singles' purchase intentions

H₄: Fashion clothing involvement affects marrieds' purchase intentions

H₅: Fashion clothing involvement has a mediation role in purchase intention decision of singles

H₆: Fashion clothing involvement has a mediation role in purchase intention decision of marrieds

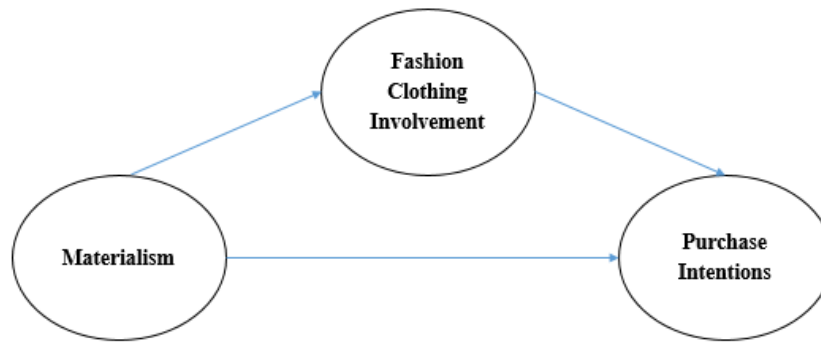


Figure 1. Conceptual model of the study

METHODOLOGY

Data collection

The data was collected from individuals who live in Turkey by online survey. Expressions were created on a seven-point scale: The fashion Clothing involvement scale was derived from O'Cass (2000), and materialism was derived from Richins, M.L. and Dawson, S. (1992), and the purchase intentions scale was derived from Kautish et al. (2021). Scale items were translated into Turkish and then retranslated into English and checked by academics. In survey expressions asked in Turkish. They were included in the survey after semantic drift was prevented. The same survey process was conducted on singles and married ones. However, an analysis of the survey was made separately.

Population and sample

The sample of the study consists of a total of 323 (198 married and 125 single people) Turkish people. Tabachnick and Fidell (2007) propounded a formula to calculate the sample number ($N > 50 + 8M$, M is a number of independent variables). According to the formula current study must be bigger than $(50 + 8 \times 2)$, it has been seen that 323 is sufficient for the analysis. Table 1 shows demographic information of singles and Table 2 shows demographic information of married participants.

Table 1. Demographic information of single participants

Variables	Groups	Frequency	Percentage
Gender	Female	94	75.2 %
	Male	31	24.8 %
Age	18-33	70	56.0 %
	34-49	45	36.0 %
	50+	10	8.0 %
Household income	0-23.000	33	26.4 %
	23.001-47.000	65	52.0 %
	47.001-70.000	9	7.2 %
	70.001-95.000	5	4.0 %
	95.001+	13	10.4 %
N	125		

Table 2. Demographic information of married participants

Variables	Groups	Frequency	Percentage
Gender	Female	140	70.7 %
	Male	58	29.3 %
Age	18-33	23	11.6 %
	34-49	125	63.1 %
	50+	50	25.3 %
Household income	0-23.000	21	10.6 %
	23.001-47.000	74	37.4 %
	47.001-70.000	41	20.7 %
	70.001-95.000	20	10.1 %
	95.001+	42	21.2 %
N	198		

Reliability and factor analysis result

Reliability and factor analysis were conducted separately according to the samples. Table 3 shows single participants' results, and Table 4 shows married participants' results.

Table 3. Single participants' reliability and factor analysis results

Factor Name	Expressions	Loadings	% Variance Explained	Cronbach's α	KMO	x2	df	p
Fashion clothing involvement	FCI 1	0.843						
	FCI 2	0.869						
	FCI 3	0.846	68.4	0.927	0.850	610	15	<0.001
	FCI 4	0.743						
	FCI 5	0.810						
	FCI 6	0.844						
Materialism	M 2	0.840						
	M 1	0.762	56.2	0.786	0.685	111	3	<0.001
	M 3	0.631						
Purchase intentions	PI 2	0.952						
	PI 1	0.908	82	0.931	0.751	308	3	<0.001
	PI 3	0.855						

Table 4. Married participants' reliability and factor analysis results

Factor Name	Expressions	Loadings	% Variance Explained	Cronbach's α	KMO	x2	df	p
Fashion clothing involvement	FCI 1	0.835						
	FCI 2	0.841	65.4	0.916	0.881	820	15	<0.001
	FCI 3	0.836						

	FCI 4	0.770						
	FCI 5	0.815						
	FCI 6	0.749						
	M 1	0.775						
Materialism	M 2	0.834	65.1	0.848	0.729	249	3	<0.001
	M 3	0.811						
	PI 1	0.885						
Purchase intentions	PI 2	0.821	72.8	0.888	0.745	334	3	<0.001
	PI 3	0.852						

According to the analysis results in Table 3 and Table 4, KMO values show that there is a strong relationship between variables, and the p-value less than 0.05 indicates that there is a relationship at a sufficient level for factor analysis. Factor loadings above 0.500 indicate they have sufficient weight (Durmuş et al., 2016). Also alpha values are shows that the scales are reliable (Lorcu, 2015).

Normality Test

Normality tests were conducted separately according to the samples. Table 5 shows single participants' results, and Table 6 shows married participants' results. According to Hair et al. (2010), data accept normal distribution since skewness values are between -2 and +2, and kurtosis values are between -7 and +7. It can assumed that the current study data has normal distribution.

Table 5. Normality test result of single participants' data

	N	Skewness	Kurtosis
Involvement (FCI)	125	0,751	-0,303
Materialism (M)	125	-0,697	-0,323
Purchase (PI)	125	0,082	-1,451

Table 6. Normality test result of married participants' data

	N	Skewness	Kurtosis
Involvement (FCI)	198	1,047	0,615
Materialism (M)	198	-0,078	-1,213
Purchase (PI)	198	0,433	-0,772

RESULTS

Regression analysis and process macro extension were used to test the hypotheses. In regression analysis, for the result to be significant, the p value must be <0.05, and the β coefficient must be positive (Durmuş et al., 2016). Table 7 shows the test results conducted separately based on the data of single and married respondents. According to the findings, the hypotheses were accepted.

Table 7. Regression analysis results

Independent variable	Dependent variable	H	R ²	β	F	t	p	Result
MA	PI	H ₁	0.133	0.408	18.874	4.344	0.000	Accepted
MA	PI	H ₂	0.129	0.324	28.900	5.376	0.000	Accepted
FCI	PI	H ₃	0.555	0.908	153.682	12.397	0.000	Accepted
FCI	PI	H ₄	0.530	0.903	221.194	6.289	0.000	Accepted

When R² values are examined, it is seen that fashion clothing involvement is more effective on purchasing intention than materialism and explains this behavior more.

Table 8. Mediation analysis results

Hyp.	Paths	Effect	BootSE	BootLLCI	BootULCI	Result
H ₅	Materialism>Involvement>Intention	0.2804	0.0605	0.1634	0.3994	Accepted
H ₆	Materialism>Involvement>Intention	0.1604	0.0472	0.0677	0.2546	Accepted

The process macro extension was used to analyze the mediation variable. The fact that the bootstrap confidence interval is not zero in accepting the existence of the mediator variable is sufficient to support the claim of the mediator variable in the effect of X on Y (Hayes and Rockwood, 2017, p.46). It seems that both hypotheses that were tested are accepted. However, when the effect is examined, it is seen that the mediating effect of involvement on the relationship is more vital for single respondents.

DISCUSSION AND CONCLUSION

The current study was conducted to investigate the impact of materialism and fashion clothing involvement on purchasing intention and whether it makes a difference according to individuals' marital status. Additionally, the mediating effect of involvement on the relationship between materialism and purchase intention was also tested. Six hypotheses were tested to achieve the purpose of the research. As a result of the hypothesis tests, all hypotheses were accepted.

In previous studies, the effect of marital status on purchase intention was examined; while in some studies, it was seen to have an effect, in some studies, it was not seen. The expected contribution of the current study is that it took married and single participants as two separate sample groups and conducted two separate analyses with the same variables. According to the results, involvement in fashion clothing is more effective on purchasing intention than materialism for both groups. It is seen that the level of involvement is more effective in influencing purchase intention in singles. This finding shows that consumers' mental states and interest levels are more dominant in their purchasing intentions rather than materialistic elements. Another finding is the mediating effect of involvement. For both groups, it seems that interest in fashion products partially mediates the effect of materialism on purchase intention. Again, the mediating effect of involvement appears to be more effective in single users. According to the findings, it can be said that singles are more influenced by symbolic and emotional elements when purchasing fashion clothing. It seems necessary to examine these elements and understand the importance of differences in behaviour to guide purchasing decisions in terms of marketing management correctly.

Future studies can be conducted on items that evoke materialism and involvement to examine which emotions motivate consumers.

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**GAMIFICATION AND VOCABULARY ACQUISITION IN EFL STUDENTS: A QUASI-
EXPERIMENTAL STUDY IN LEBANESE PRIVATE ELEMENTARY SCHOOLS**

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PhD Dissertation Proposal

ABSTRACT

This quasi-experimental study explores the efficacy of gamification strategies in bolstering a specific learning area, vocabulary acquisition, among upper elementary students, namely Grade 5, in private schools in Beirut. Employing a mixed-methods research design, it combines qualitative and quantitative approaches to offer a holistic understanding of gamification's effects. The research employs intact groups and purposive sampling to ensure internal validity and diversity in participant demographics. By utilizing pre and post-tests, observations, interviews, and focus group interviews, the study will triangulate data sources. Statistical analysis will be conducted to assess the significance of vocabulary acquisition gains. Accordingly, the research intends to bridge the local gap of investigating whether gamification strategies could optimize vocabulary learning outcomes in the Lebanese EFL in private school and an international gap which suggests the incorporation of diagnostic assessments and outcome evaluation to provide a comprehensive understanding of gamification's impact on vocabulary acquisition as pre-tests and post-tests. To align with the literature, the research revolves around 3 main questions: How do gamification strategies influence English as a Foreign Language (EFL) vocabulary acquisition among the students in the experimental groups? To what extent implementation of gamification strategies in the experimental groups affect student's vocabulary acquisition from pretest to posttest test? To what extent do teachers and students in the experimental groups perceive the implementation of gamification strategies as effective in contributing to student vocabulary acquisition, motivation and engagement?

Keywords: Gamification, vocabulary acquisition, motivation, student engagement

THE DYNAMIC STRUCTURE OF BRAIN AND PLASTICITY IN OCD

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ABSTRACT

Obsessive compulsive disorder is known as one of the most tiring mental health disorders to experience. Individuals suffering from this disease have thought patterns that they are obsessed with and have an internal motivation to act according to avoid or follow these thought patterns. Regular behaviors developed by OCD patients to cope with their feelings of fear and anxiety are called compulsions. While compulsive movements provide momentary relief, they do not ensure a definitive solution. At this point, neuroplasticity, which is the dynamic adaptation ability of the brain, opens the door to some studies that can be done on patients with OCD. Obsessive compulsive disorder has associated regions and circuits in the brain. Abnormal fronto-striatal circuitry activity is observed to be parallelly influenced by dopaminergic and serotonergic modulations for most compulsive behaviors. Neuroimaging studies highlight the importance of the orbitofrontal cortex and the caudate nucleus, underscoring the significance of developing psychiatric and neurological treatment methods in this direction. Research on brain regions related to obsessive-compulsive symptoms has advanced pharmacological and CBT therapies for OCD, alongside developments in the field of plasticity. Examples of brain plasticity include deep brain stimulation, transcranial magnetic stimulation, and cortical-brainstem plasticity. Deep brain stimulation involves electrodes implanted into neural regions like the subthalamic nucleus and caudate nucleus to deliver stimuli. Transcranial stimulation induces the induction of electric currents capable of activating local neural circuits through a magnetic field created by a conductive coil. Research on cortical and brainstem plasticity in primates shows that limbic regions induce OCD symptoms. Such plasticity applications are adding new dimensions to the treatment processes of OCD patients.

Key Words: neuroplasticity, OCD, maladaptive behaviors, neuropsychological treatment, plasticity techniques

Introduction:

Obsessive-Compulsive Disorder (OCD) engulfs the individual with anxiety-laden and intrusive thoughts, much like a web of spiders entangling the human mind. Obsessions are thought patterns, impulses, or images that the individual perceives as alien to their sense of self but cannot control. These obsessive thoughts are persistent and repetitive. Compulsions, on the other hand, are acquired behaviors or mental activities inclined to become habitual, serving to calm the internal conflict generated by obsessions (Foa & Tillmanns, 1980; Franklin and Foa, 2007). According to Dollard and Miller (1950), compulsions are generally triggered by a "fear" mechanism; they are a way for the person to prevent potentially risky events. This fear-based approach is known as the "two-stage" theory, originating from Mowrer's research (1939, 1960) on the relationship between fear and avoidance (Franklin and Foa, 2007). When fear arises, escape or avoidance develops as a response or defense mechanism. Mowrer's approach to explaining the formation of compulsions is still accepted today (Franklin and Foa, 2007; Roper et al., 1973).

There are various types of obsessions. Typical types include thoughts of harm, sexual, religious, counting, symmetry, and hoarding obsessions. Examples of obsessive thoughts could be a person who loves children fearing they might be a pedophile or a religious person fearing they are committing blasphemy (Zayman, 2016). These fear-based thoughts create conflicts within the fundamental value systems of individuals with OCD, compelling them to perform repetitive and ritualized activities to protect their values. The article further discusses brain regions associated with OCD and plasticity applications that can be used in the treatment of OCD.

The development of obsessive-compulsive disorder is believed to date back to ancient times. For example, holistic rituals found in religious texts are thought to bear traces similar to obsessive-compulsive neurosis (Freud, 1959; Zayman, 2016). Also, in Shakespeare's "Macbeth," there is a woman who continuously washes her hands, believing them to be dirty, due to the guilt of killing her husband. Obsessions and compulsions, whose presence in humans extends back to the dusty pages of history, were first studied in medicine in 1838 and defined as uncontrollable impulsive actions of healthy people. They found their place in the literature under terms such as "Monomania," "Delire Emotif," and "Psychasthenia" (Öztürk, 2004; Zayman, 2016). In the 19th-century medical world, OCD was seen as a mental weakness akin to neurosis (Akgün, 1989; Okasha et al., 1994; Zayman, 2016). According to Freud, OCD is formed by defense mechanisms directly related to conflicts experienced with aggressive and sexual impulses, unlike a phobic neurosis (Rasmussen and Eisen, 1990; Zayman, 2016). With recent updates, DSM-5 (2013) has moved patients with obsessive-compulsive symptoms from anxiety disorders to Obsessive-Compulsive and Related Disorders. According to the DSM, obsessions are unwanted or forcibly recurring thoughts that cause anxiety. The individual strives to suppress or minimize these thoughts. Compulsions are behaviors such as washing hands, checking things, and mental acts like counting or praying that the individual feels must be performed rigidly. Compulsions are not seen only in OCD symptoms, if the individual has body dysmorphic disorder, they might repeatedly examine their body in the mirror, or if they have hypochondriasis, they might obsess over illnesses. Compulsions develop to reduce or escape from distress and to protect oneself from fear (Zayman, 2016).

Psychologists who work in the cognitive field, such as Salkovskis (1985), in their research on OCD, observed the following in people suffering from OCD: Thinking about an act is equivalent to committing it in terms of guilt. Second, failing to protect something or someone from harm is morally equivalent to causing the harm directly. Third, the punishment for causing harm is never mitigated under any circumstances. Fourth, not completing a compulsion is equivalent to causing the harm one tries to prevent. Lastly, individuals should work on controlling their thoughts (Franklin and Foa, 2007; Salkovskis, 1985). Some research suggests that OCD is triggered when there is insufficient evidence to feel safe and in control because feeling secure is seen as the most certain way to cope with obsessions. OCD is seen as a common neuropsychiatric disorder which affects 2% of adult people around the world (Fineberg et al., 2012). Research shows that in clinical samples, OCD exhibits a 2:1 female-to-male ratio (Franklin and Foa, 2007; Swedo et al., 1989), making it more common in adult women (Franklin and Foa, 2007; Rasmussen and Tsuang, 1986). Obsessive-compulsive thoughts, despite their varying appearances in individuals, share a common feature: they steal from life. These thoughts overshadow the goals and potential that an individual could achieve. Due to the severity of their impacts, causing patients to feel hopelessness, helplessness, and depression, efforts are continuously made to develop treatment methods for this disorder. Biological research on OCD has found that obsessive thoughts are linked to a deficiency in serotonin. However, studies on this matter are ongoing because, although some research suggests the effectiveness of SSRIs, direct serotonin effects have been observed to be unsuccessful. Serotonin platelet uptake in samples did not have a positive effect on obsessive-compulsive behaviors and mental activities (Franklin and Foa, 2007; Insel et al., 1985; Weizman et al., 1986). Moreover, the non-selective serotonergic drug Clomipramine has been found to reduce OCD symptoms more than selective drugs like fluoxetine and fluvoxamine (Franklin and Foa, 2007; Greist et al., 1995).

Research on compulsions seen in obsessions has shown that cortico-striato-thalamo-cortical circuits involved in motor, cognitive, emotional, and motivational activities occur in frontal-striatal circuits. There are direct (emotional) and indirect (cognitive) pathways in the initiation, modification, and inhibition of behaviors. In emotional circuits, glutamatergic signals travel to the striatum and GABAergic signals to the globus pallidus (Heuvel et al., 2016). On the other hand, cognitive circuits inhibit the thalamus due to signals sent from the striatum to the external part of the globus pallidus and the subthalamic nucleus, indirectly affecting behavior patterns. In healthy individuals, there is a balance between these indirect and direct pathways. Abnormalities can lead to conditions such as OCD, Tourette's syndrome, trichotillomania, and addiction. Earlier sources suggested that abnormalities, specifically the overactivity of emotional circuits compared to cognitive circuits, were the root cause of OCD. Ventral (emotional/direct) circuits are linked with limbic brain regions and are important in the formation of reward-based behaviors. Dorsal (indirect/cognitive) circuits are related to cognitive control

over ventral circuits, and the lack of control seen in OCD patients originates from these emotional-behavioral circuits. Recent studies have divided cognitive circuits into ventral and dorsal parts. Additionally, imaging studies have highlighted the role of prefrontal-parietal connections and identified the sensorimotor circuit as the fourth important CSTC circuit. Therefore, the role of structures involved in habit formation in compulsions has been found critical (Heuvel et al., 2016).

Studies on patients suffering from OCD have examined neural correlations provided through cognitive flexibility, response inhibition, and high executive functions. Decreased lateral orbitofrontal activation, increased putamen and anterior cingulate activation, and hypofunction in bilateral orbitofrontal and parietal cortices result in reversal learning impairment, which is the reduced ability to infer from past information. Cognitive flexibility is related to the dorsal parietal cortex and prefrontal cortex. Response inhibition is explained by changes in limbic regions in diseases like OCD, Tourette's syndrome, and trichotillomania and is associated with the right-lateralized inhibition network (Heuvel et al., 2016).

Dysregulations in the interaction between limbic regions and cognitive control circuits are crucial for emotion regulation. This is why one of the main causes of anxiety, addiction, and OCD can be exemplified by the weak functional connection between the amygdala and prefrontal cortex. With OCD being separated from anxiety disorders and included under obsessive-compulsive and related disorders in DSM-5, neuropsychological research has begun to focus more on compulsions. Research on compulsions has observed that the integration of key CSTC regions supports habit learning and the sensorimotor-ventral circuit communication. Another significant finding is that in the later stages of the development of compulsive behaviors, the intensity shifts from ventral to dorsal regions. However, this finding suggests that there needs to be further study on intra- and inter-network interactions (Heuvel et al., 2016). The limbic circuit consists of the amygdala, hippocampus, anterior thalamus, and subcortical structures. However, the structures of the limbic system are still being discovered. The structures of the limbic system may be the fundamental source of the compulsions that are part of OCD. In one study, the blood flow and glucose levels of patients sensitive to emotional stimuli were compared in their resting and triggered states. The examination found consistent differences in the orbitofrontal cortex and caudate nucleus. Other studies have shown that the limbic system activates when OCD symptoms are triggered. Therefore, the limbic system is accepted as having a significant role in OCD (Heuvel et al., 2016).

Neuroplasticity:

Past studies suggested that plasticity was effective only during early childhood. However, recent research has proven that desired results can be achieved at any age (Merzenich et al., 2014). The only factor that varies with age is how the brain regulates plasticity. In young brains, inputs provide a competitive plasticity process, while in older brains, plasticity operates according to behavioral context. The brain changes throughout life. These continuous changes in individuals occur dynamically and cyclically (Li, 2003; Lindenberger and Lövdén, 2019; Lindenberger et al., 2006). The changing brain, integrated with the changing environment, leads to behavioral changes. The brain's development takes its essential shape from the 3rd week to the 52nd week of the embryo's development in the womb, influenced by its phylogenetic structure and specific genetics. However, the brain's plasticity, meaning its morphological change, continues after birth.

Plasticity, in its literal sense, means adaptability. In Greek, "plassein" means to shape, expressing the lack of form (amorphous) (Acikgoz and Madi, 1997). Neuroplasticity refers to the migration of neurons in the brain, their deaths, and the collateral production of axons. A brain that gains functional plasticity positively affects synaptic communication, enabling synaptic structures to acquire specific skills and tasks for particular stimuli. Some sources use the term plastic for the brain. The primary reason for this is that the functional and genetic program in a baby's brain is like a database ready after birth. However, what may be beautiful and perhaps truly separates us from animals is that even the final form of this "plastic structure," programmed and finished, is quite flexible and ready for change. Of course, this flexibility can produce positive or negative results. For example, a trigger element exposed to a high dose might lead to a stronger response in the next exposure because neurons have become stronger against that trigger. Similar to neuronal plasticity, there is a concept called "kindling" in the literature (Acikgoz and Madi, 1997). When neurons are exposed to a weak stimulus for a long time, the neural

pathway changes and can ignite without the stimulus. For example, in patients with epilepsy, recurring seizures constantly trigger the amygdala, so after a while, these patients can experience convulsions without external influence (Acikgoz and Madi, 1997).

Brain plasticity can be used to repair dysfunctional tissues in pathological damage or developmental processes such as learning and memory. Factors such as age, the frequency and quality of experiences that challenge and use the brain's functions, genetics, neurotransmitters and neuromodulators like dopamine and serotonin, and BDNF (brain-derived neurotrophic factor) can positively and negatively affect brain plasticity.

OCD and Plasticity:

Supporting OCD patients with cognitive therapies followed by the use of SSRIs is a common therapeutic approach. However, it has been observed that more than 40% of patients continue to have symptomatic problems when this therapy method is used. This fact encourages the search for more definitive solutions for OCD (Cocchi et al., 2018).

Transcranial Magnetic Stimulation (TMS) is one of the therapy methods used in the treatment of major depressive disorder. Data from a study conducted in the United States showed that repeated TMS sessions provided effective results in major depression patients who did not respond to pharmacological treatments (Horvath et al., 2010; Connolly et al., 2012; Cocchi et al., 2018). Specifically, repetitive TMS (rTMS) has proven effective in treating acute depressive episodes (Cocchi et al., 2018; Fitzgerald et al., 2003; O'Reardon et al., 2007) and in maintenance therapy (Cocchi et al., 2018; O'Reardon et al., 2005). Furthermore, TMS is being tested to determine whether it is also an applicable therapy method for OCD. In TMS treatment, cortical stimulation is applied as a tailored treatment according to the patient's clinical profile and the imaging data of the patient's cortical network activity.

Plasticity Applications In OCD Treatment:

Transcranial Magnetic Stimulation:

This stimulation technique targets neurons in the cortical area where the problem is located. The cortical region stimulated with a coil creates a magnetic field of 100 microseconds by delivering a high current (Cocchi et al., 2018; Hallett, 2007). The electric field perpendicular to this magnetic field generates electromagnetic induction. With the reduction of negative ions in superficial axons, local neural circuits in the cortex are activated. The potential of the TMS method to produce intra-cortical currents depends on factors such as coil type, distance between the brain and coil, and stimulation frequency (Cocchi et al., 2018; Lefaucheur et al., 2014).

The variability of network activities based on the source tightens the TMS interventions to be applied to OCD patients. Therefore, the process will be affected by whether TMS interventions are applied while the patient is at rest or during an active mental task, and by determining the appropriate cortical region. The selection of the appropriate region in OCD patients is based on neuroimaging studies in the resting state and on fronto-striatal functional and anatomical connections (Cocchi et al., 2018). Although most previous TMS procedures on OCD focused on frontal and prefrontal regions involving fronto-striatal networks, the mental state of the patients was not considered. Another point is that medications modulate the activity of neural circuits in patients receiving pharmacotherapy during TMS application. Integrating TMS with proper pharmacological applications yields positive results in OCD patients. For example, paroxetine hydrochloride -an antidepressant treatment applied to individuals with major depression-, obsessive-compulsive disorder, panic disorder, social anxiety disorder, and PTSD, reduces glucose metabolism in the right caudate nucleus, right putamen, thalamus, and bilateral orbitofrontal cortex. In such cases, applying inhibitory TMS to the orbitofrontal cortex can enhance the effectiveness of antidepressant treatment by reducing the activity of prefrontal-striatal-thalamic networks (Cocchi et al., 2018).

Expert opinions on TMS indicate that understanding network principles related to situational brain connections, modulating brain connections, and developing symptomatic parameters specific to patients are the targeted stages. In other words, developing TMS treatment tailored to the symptom and clinical profile is one of the fundamental goals in the neuropsychological field. TMS applications specialized in neuroanatomy through biophysical models are observed as potential future treatment methods for OCD (Cocchi et al., 2018).

Deep Brain Stimulation:

One alternative treatment method for treatment-resistant OCD patients is psychosurgery (Fineberg et al., 2012; Greenberg et al., 2010). A type of psychosurgery is deep brain stimulation (DBS). Small electrodes are integrated into the brain using imaging techniques to stimulate targeted neural connections. In OCD patients treated with DBS, implants have been placed in the ventral striatum, caudate nucleus, subthalamic nucleus, and nucleus accumbens. These procedures have resulted in noticeable changes in OCD symptoms. Data obtained from animal studies have shown parallels with findings from pilot human studies. For example, in rats, high-frequency stimulation of the subthalamic nucleus, nucleus accumbens shell, and core temporarily reduced compulsive behaviors (Djodari-Irani et al., 2011; Fineberg et al., 2012; Klavir et al., 2009; Mundt et al., 2009). Reduced compulsive symptoms were also observed in another study using the "signal attenuation" model, where high-frequency stimulation of the subthalamic nucleus and globus pallidus produced similar positive outcomes. Therefore, deep brain stimulation is considered a potential therapeutic anatomical treatment (Fineberg et al., 2012).

Cortical and Brainstem Plasticity in OCD:

Some studies on primates have shown that bicuculline microinjections into the limbic region can induce symptoms similar to OCD in humans. These findings may stem from altered inputs directed from limbic cortico-striato-thalamo-cortical circuits to dorsomedial prefrontal areas. Thus, it is thought that the obsessions and compulsions observed in OCD result from abnormal activities in the anterior cingulate and orbitofrontal cortex in the brain's frontal region (Suppa et al., 2014). The anterior cingulate is involved in decision-making, empathy, autonomic functions, and emotional processing. The orbitofrontal cortex is involved in reward processing and the regulation of social behaviors. OCD may arise due to a more significant involvement of limbic cortico-striato-thalamo-cortical circuits compared to motor circuits. Motor region and brainstem plasticity are considered applicable and functional (Suppa et al., 2014).

Conclusion:

People with neurological and psychiatric disorders might see limited treatment options, often resorting to cognitive-behavioral therapy or medical support. However, the association of the limbic region with OCD symptoms has been one of the significant questions. According to research, the disruption of meaningful connections between cognitive motor circuits and limbic regions leads to abnormalities in human behavior. Advancements in neuroscience have demonstrated that changes in neurotransmitter and neuromodulator release can alter the functional characteristics of the brain. Furthermore, it has been proven that the frequencies of magnetic fields created using deep brain stimulation (DBS) and transcranial magnetic stimulation (TMS) techniques can induce changes in the brain. This is evidenced by studies on animals showing that neuromodulator and neurotransmitter applications, which establish connections between nerve cells in the brain through chemicals like dopamine, serotonin, norepinephrine, and acetylcholine, can induce compulsion symptoms. On the other hand, stimulation techniques involving the placement of electrode implants or the use of coil-based stimulation in targeted brain regions have also shown effectiveness through correlations obtained from neuroimaging devices. In my view, when it comes to OCD, it is essential to acknowledge the intense and overwhelming psychological process patients experience due to their symptomatic discomfort. The treatment methods applicable to these patients often appear parallel to those for anxiety. However, the DSM-5 emphasizes that OCD is not an anxiety disorder. Therefore, the treatment methods for OCD should be carefully scrutinized. Plasticity, as a treatment method for OCD, should be customized according to the characteristics of the clinical case, and resistant patients should receive neurological treatment. Due to the emphasis placed on insight by the advancing technology and psychology community, plasticity could become a source of hope, combining various approaches for OCD patients.

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**EFFECT OF LIQUID CRYSTALLINE MATRIX AND CARBON NANOTUBES ON THE
EMISSION PROPERTIES OF PLATINUM(II) COMPLEXES**

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ABSTRACT

A series of 5CB and multiwalled carbon nanotubes (5CB-MWCNTs) composites or E7 mixture doped with luminescent cyclometalated platinum(II) complex were studied using a combination of techniques: differential scanning calorimetry (DSC), polarizing optical microscopy (POM), emission spectroscopy and optical transmission vs. temperature and applied voltage. It was found that the added MWCNTs have no effect on the emission properties of the platinum(II) complex. The nematic to isotropic phase transition was detected for all composites using DSC and POM methods and correlated with the optical transmission studies. The values of the temperature of the nematic-to-isotropic transition (T_{NI}) observed for the doped samples with platinum(II) complex by photoluminescence and optical transmission measurements in planar orientation are well correlated with those obtained by DSC. Heating the sample did not result in any detectable shift in the emission. Nevertheless, when the temperature rises, the emission intensity values decline because the emission of the platinum(II) complex is suppressed at higher temperatures due to a non-radiative deactivation mechanism. The low value of the order parameter for the platinum(II) complex in 5CB or E7, calculated from the polarization emission spectra of different samples, is most likely the result of an alignment mismatch between the molecules of the complex and those of liquid crystals (5CB or E7). The emission spectra of platinum(II) complex dissolved in 5CB or E7 has specific vibronic structure with two maxima (535 and 575 nm) and a shoulder (630 nm). The emission spectra of 5CB or E7 doped with MWCNTs composites exhibited unchanged characteristics, indicating that there were no interactions between the platinum(II) complex and the carbon nanotubes.

Keywords: liquid crystals, emission, platinum complexes, carbon nanotubes, nematic, polarised emission.

**DIAGNOSTIC VALUE OF CEREBRAL CT VENOGRAPHY WITH 64-CUT
MULTIDETECTOR COMPUTED TOMOGRAPHY VENOGRAPHY IN CEREBRAL SINUS
VEIN THROMBOSIS**

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ABSTRACT

Objective: Cerebral sinus vein thrombosis is a rarer condition compared to arterial occlusive diseases of the brain. Cerebral venous thrombosis was known as a rare and fatal disease when it was first described, thanks to the diagnostic tools available today, it may present with a wide variety of clinical pictures with mild or severe course and is more common than thought. Conventional cerebral angiography, CT, digital subtraction angiography, MR imaging and MR venography are the imaging modalities that help the diagnosis. The aim of this study determine the findings of cerebral sinus vein thrombosis obtained by multidetector computed tomography with CT venography (MDCT venography) in patients referred to our clinic with a prediagnosis of sinus vein thrombosis or other cerebral pathology.

Materials and methods: Morphological changes detected in the cerebral venous system by MDCT venography included possible pathologies such as thrombus, recanalisation, parenchymal abnormalities, perfusion changes, deep vein occlusion and isolated cortical venous thrombosis.

Results: The study contained 14 female and 9 male patients. Thrombosis was detected in a total of 50 sinuses in 23 patients, and thrombosis was detected in more than one sinus in 17 of 23 patients (73.9%). The most commonly affected venous structure in the brain was the sigmoid sinus with a rate of 32%. Thrombosis was also observed in the jugular vein in five patients. When parenchymal involvement was taken into consideration with the involvement of cerebral venous structures, parenchymal changes accompanied SVT in 10 (43.4%) of the patients with sinus thrombosis.

Conclusion: MDCT venography is a rapid and useful method that provides detailed images of the intracranial venous circulation in consistently high quality. We recommend CT venography for patients with suspected dural sinus thrombosis, acute and severe clinical picture that may require urgent treatment because of its rapid and reliable diagnostic features.

Keywords: Multislice computed tomography, venography, sinus vein thrombosis

INTRODUCTION

The processes leading to the development of thrombi in the cerebral venous system are not different from those that apply to other peripheral venous systems of the body. Venous stasis, acquired or inherited thrombophilia, inflammatory or infectious processes involving the wall of the vein or venous sinuses are the most important causes of thrombosis. As in peripheral veins, the appearance of the thrombus is red thrombus rich in erythrocytes and fibrin and poor in platelets when fresh. As the thrombus ages, it transforms into an organized thrombus rich in fibrous tissue and recanalization may develop. Any dural sinus may be thrombosed alone or multiple sinuses may be occluded simultaneously. The most commonly involved sinus is the Central Nervous System (CNS). Although cortical vein thrombosis usually accompanies sinus thrombosis, cortical veins can rarely be occluded alone. The pathology resulting from cerebral vein thrombosis may be limited to an isolated syndrome of increased intracranial pressure or more severe changes may occur with involvement of the brain parenchyma. Cerebral vein thrombosis leads to venous infarction in the cortex and subcortical white matter or deep hemispheric structures depending on the venous system involved in the brain parenchyma. Venous infarction is mostly hemorrhagic in character.

In Multidetector Computed Tomography, two types of scanning protocols, basically high-speed and high-resolution, have been defined by making appropriate changes to the examination parameters. Large volumes can be scanned in a short time by setting collimation 4x2-2.5 mm and table speed 12-16 mm/rotation. In addition, high spatial resolution can be achieved by setting collimation 4x1-1.25 mm and table speed 6-8 mm/rotation. The advantage of the high-speed protocol is that large volumes can be

scanned in a short time and the use of contrast agents is reduced. The advantage of the high spatial resolution protocol is that even very thin vascular structures can be visualized, but the examination time is prolonged and the amount of contrast material increases in this protocol. It is recommended to administer contrast medium at a rate of 3-6 ml/sec. After contrast medium administration, 40-70 ml of saline solution should be used to flush the peripheral veins of the intravenous connection line. In this way, the plateau of contrast media concentration can be prolonged up to 8sec.

One of the most important points in Computed Tomography Angiography (CTA) is to perform the scan during the highest concentration of the contrast agent in the vascular structures. The maximum concentration of the contrast agent in the vascular structures to be examined varies depending on the cardiovascular status of the patient. In CTA, especially in multidetector devices, it is very important to set an appropriate delay time due to the very short examination time. The delay time can be estimated by considering the patient's age and cardiovascular status. The advantage of this method is that it is easy to apply. However, this method does not always give good results. Another method is the test-bolus method, which is based on administering 10-15 ml of contrast medium before the examination and measuring the circulation time by taking CT sections one after the other. The disadvantages of the test-bolus method are both the prolongation of the total examination time and the increase in the amount of contrast medium used. Apart from these methods, there are systems that automatically detect the arrival of the contrast material and initiate the scan accordingly, such as the bolus capture method, which has become frequently used with the development of multidetector devices.

MATERIALS AND METHODS

A total of 104 patients with clinically suspected sinus vein thrombosis in the radiology service were analyzed by multidetector computed tomography cerebral angiography (MDCTA). Among these patients, 23 patients with positive sinus vein thrombosis were included in the study for prospective evaluation. Image interpretation was performed in a standard PACS workspace. Reading sequences were randomized and a standardized evaluation form was used. Demographic characteristics and premorbid conditions that may lead to cerebral vein thrombosis (CVT) were determined. Presenting complaints, detailed neurologic and systemic examination findings and clinical course were recorded in all patients.

Cerebral MDCTA Extraction Protocol

Patients were placed on the gantry in supine position. Venous access was established with an 18-20 gauge plastic cannula from the antecubital vein. The patency of the vascular access was checked with 20 ml of saline just before the acquisition. MDCTA examinations were performed with a 64-detector CT (Multislice brilliance 5684 PC best, Philips Medical Systems, Cleveland, Ohio) helical device. Starting from the aortic arch, all cerebral vascular structures were scanned in the caudocranial direction. In the study, 80 ml of non-ionic contrast media (Ultravist 350mg/100ml, Iopamiro 350mg/100ml, Telebrix 350mg/100ml, Iomeron 350mg/100ml) was administered as a bolus at a rate of 4-5 ml/sec followed by 40 ml of saline at a rate of 4-5 ml/sec using an automatic injector. The images were initiated with a delay time of 10-12 s after contrast agent administration, using 120-135 kV and 300 mAs, 0.9 pitch, 220 mm FOV, care dose effective mAs down to 120, 64 x 0.62 mm collimation, 0.75 s rotation time, 12 mm feed rotation distance in X-ray tube.

RESULTS

Of the 104 patients who were admitted to our clinic with a prediagnosis of SVT and clinical suspicion of SVT, 23 patients were found to have positive sinus vein thrombosis on MDCT. Of these patients, 14 were female (60.9%) and 9 were male (39.1%). The mean age was 35+ 13.3 years.

A total of fifty sinuses were affected in twenty-three patients. In most cases (73.9%) more than one sinus was affected. The most commonly affected venous structure in the brain was the sigmoid sinus with a rate of 32%, 81.3% of sigmoid sinus thromboses were in the right sigmoid sinus and 18.7% in the left sigmoid sinus. Less frequently, the transverse sinus was affected in 28%, superior sagittal sinus in 22%, sinus confluence in 4%, inferior sagittal sinus in 2% and sinus rectus in 2%. Thrombosis was also observed in the jugular vein in five patients. Thrombosis was found in more than one sinus in 17 of 23 patients (73.9%). Thrombosis was found in isolated sigmoid sinus in three cases, transverse sinus in two cases and only in the superior sagittal sinus in one case.

When parenchymal involvement was taken into consideration with the involvement of cerebral venous structures, parenchymal changes accompanied CVT in 10 (43.4%) of the cases with sinus thrombosis. Ischemia or infarction accompanied SVT in eight cases. Edema was found in two patients, accompanied by subacute hematoma in one patient and hemorrhagic infarction in one patient. One patient had pneumocephalus and this patient also had a bone defect in the sphenoid sinus. Although SVT was more frequently seen in the right side of the brain, CVT was accompanied by infarction or ischemia in the majority of patients with muscle weakness.

DISCUSSION

Our literature review and recent studies have emphasized that MPR or sliding-thin-slab maximum intensity projection MIP (STS-MIP) is the most appropriate imaging technique to evaluate sinus thrombosis in CT angiography. Recent data on MDCTA suggest this imaging technique for the evaluation of cerebral veins and arteries. In our study, in addition to the MPR technique, the VRT technique was also used to evaluate cerebral sinus vein thrombosis. The reason for using the volume rendering technique was that there were cases in which we needed more advanced diagnostic evaluations in SVT. 3D imaging techniques such as volume rendering may increase the diagnostic value of MDCTA. However, as in the literature, we recommend the use of STS-MIP imaging technique in CVT, which is widely used in routine clinical practice and can be obtained directly at the scanner consultation in a very short time. At the same time, the cross-sectional original state of the images remains preserved in the STS-MIP approach. In addition, this method facilitates the visualization of all data by shifting consecutive slices, whereas in the Volume-rendering technique, data can be lost in the cleavage process. The major advantages of MDCTA are the very short duration of the test and the ability to visualize the cerebral vessels and venous system simultaneously by administering a single bolus of contrast medium. This makes it more useful for the diagnostic approach, especially in emergency situations. MR angiographic imaging requires a long test time and good patient coherence to avoid severe motion artifacts. Therefore, it is difficult to use this method in patients with confusion, as is common in SVT. MR venography may fail to show slow-flow sinuses or small veins. Moreover, MR imaging of cerebral venous structures is associated with several diagnostic errors that complicate the diagnosis of SVT; first, a subacute, hyperintense thrombus can potentially obscure flow on T1-weighted TOF MR venography. Second, a lack of flow in the vein may result from acute thrombosis. Failure to visualize a sinus due to lack of flow raises suspicion of thrombosis. However, this finding may be secondary to an artifact or a hypoplastic sinus. Therefore, a multisequence, time-consuming MR protocol is often needed to demonstrate thrombosis. Unlike MR venography, CT venography is not affected by flow artifacts and is therefore superior to MR venography in the detection of slow-flow cerebral sinuses. Since thrombotic material has very complex signal intensity characteristics on MR imaging, sufficient experience is needed to validate these data. Venous edema and intracerebral hemorrhage as sequelae of a thrombosis may be seen on CCTA. In addition, although parenchymal changes are more easily seen on MRI than on CT, additional evaluation of non-contrast CT imaging may increase the detection rate of parenchymal changes.

CONCLUSION

MDCTA is a rapid and useful method that provides detailed images of the intracranial venous circulation in consistently high quality. CCTA has proven to be important for pre-procedural visualization of venous structures, including major cortical vessels, in patients with neoplasms and for the evaluation of suspected thrombo-occlusive cases. For suspected sinus vein thrombosis, CT venography has become the main imaging modality due to its visualization of vascular details, reliability and ease of interpretation. Comparative studies with MR venography and DSA are needed to determine the sensitivity and specificity of CT venography in the diagnosis of cerebral sinus vein thrombosis. However, since SVT is not a common disease, case selection from a large patient population is difficult. Our data should form the basis for larger and, if possible, multicenter studies.

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**ETHICAL CONCERNS ABOUT THE USE OF ARTIFICIAL INTELLIGENCE IN
MEDICINE**

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ABSTRACT

The 2018 European Artificial Intelligence (AI) Commission report defines AI as systems that display intelligent behavior by analyzing their environment and taking action with a certain degree of autonomy to achieve specific goals. This autonomy gives AI a significant advantage in decision-making within a particular framework, leading to its increasing use in various fields, including medicine. There are numerous benefits to incorporating AI technology into the field of medicine. Accuracy in diagnosis, effective triage in the emergency department, time-saving, low misdiagnosis rates in radiological imaging, superior performance compared to professionals in endoscopic and pathological examinations, and minimizing complications in surgery, anesthesiology, and medical rehabilitation are some of the benefits of using AI in healthcare. The utilization of artificial intelligence (AI) in medicine has been a topic of significant interest, as it possesses the ability to make independent decisions. However, this development has resulted in ethical debates, prompting discussions among healthcare professionals, policymakers, and the general public. The autonomous nature of AI in medicine has raised concerns regarding accountability, transparency, and equity. Thus, it is essential to investigate the ethical implications of AI in medicine before determining its widespread adoption. AI in healthcare raises ethical concerns like sharing patient data with big data, lack of information in informed consent, loss of physician autonomy, biased software, and economic regulation. The high cost of accessing robotic surgery is a significant ethical debate. In this particular context, the use of AI can create ethical dilemmas when it comes to the principles of respecting autonomy, harmlessness, and justice. This study will briefly discuss the applications of AI in the field of medicine, followed by an explanation of the ethical issues it raises. Finally, based on these ethical concerns, some suggestions will be provided.

Key Words: Artificial intelligence, medicine, ethics, medicine ethics

THE INVESTIGATION OF THE EFFECTS OF 12-WEEK EQUIPMENT-BASED PILATES EXERCISES ON SOME PHYSIOLOGICAL PARAMETERS AND EMOTIONAL STATES OF WOMEN WORKING IN DIFFERENT OCCUPATIONAL GROUPS

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ABSTRACT

In recent studies in the literature, which developed with the popularity of Pilates, the effects of the Pilates-based exercise method on various health-related outcomes have been. However, despite the increasing popularity of Pilates-based exercises and studies examining their effects on health, studies on the effects of Pilates exercises on working, healthy, adult female populations, especially in terms of psychological variables, are very limited. Accordingly, this study aimed to investigate the effects of 55 minutes of Pilates exercises two days a week for 12 weeks on some physiological parameters and mood states of working women. The participants in the sample group in this study are women who spend one-third of their day at their workplaces. Because women in professional life have high professional responsibilities and related stress and anxiety, as Pilates is a body-mind development exercise, women expect a quest that will relax both their bodies and minds. In this study, embedded design, one of the mixed method designs, was used. A total of 38 women between the ages of 30-45 years and career professionals participated in the study. The sample group was determined by appropriate and purposive sampling methods as an experimental group of 18 and a control group of 20. After the participants were divided into control and experimental groups, Tanita BF-350 measurement, meter measurement, V sit-stand test and Flamingo balance test were performed. Then, the PANAS Scale was applied to both groups at the beginning and end of the process. In addition, in the qualitative phase of this study, individual interviews were conducted with the experimental group at the end of the implementation process. As a result, a significant difference was found between the pre-test and post-test scores of physiological parameters such as weight, fat ratio, balance and flexibility of the experimental group. In the results obtained from the PANAS Scale, an increase was observed in the positive emotional states of the experimental group participants, while a decrease was found in their negative emotional states. Accordingly, it is seen that Pilates exercise for emotional state was effective in favour of the experimental group.

Keywords: pilates, women, emotional states, PANAS, physiological paramaters

**ASSESSMENT AND COMPARISON OF RANGE OF MOTION IN MAJOR UPPER AND
LOWER LIMB JOINTS AND SPINE IN MASTERS ATHLETES**

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ABSTRACT

The range of motion in the upper and lower limb joints as well as the spine decreases with age. This is associated with the aging process of the body, loss of tendon and ligament elasticity, decrease in collagen quantity in tissues, degenerative changes in joint cartilage, and often exacerbating with age hypokinesia. However, this process can be prevented by engaging in systematic physical activity and performing exercises that increase the flexibility of the musculoskeletal system. The aim of the study was to assess the range of motion in major joints in men and women who are elite runners competing in various distances. The study was conducted during the 14th European Masters Indoor Championships in Toruń, Poland. The research material consisted of 76 masters athletes (34 women and 42 men) of various nationalities. The age of the participants ranged from 50 to 80 years old. Range of motion in major upper and lower limb joints was measured using a BaseLine goniometer, and side bend and trunk twist tests were performed in isolated positions. Based on the collected data, it was found that the subjects demonstrated a very good range of motion in major upper and lower limb joints, in most cases within the upper limits of the norm. Men showed slightly greater mobility of upper and lower limb joints compared to women. Meanwhile, the average values of spine range of motion exhibited significant symmetry between the right and left sides and were similar in both groups. Based on the analysis of the collected data, it can be concluded that systematic physical activity has a beneficial effect on joint range of motion and enables the limitation of involutional changes. Thus, it reduces the risk of falls, fractures, and age-related discomfort.

Keywords: range of motion, joint, athlete, masters.

The study conducted as part of the University Research Project No. 4 entitled: "Effectiveness of methods and means supporting sports training, post-exercise recovery, and prevention of musculoskeletal injuries in athletes" / Task No. 2 entitled: "Functional assessment of the musculoskeletal system in athletes practicing various disciplines with consideration of risk factors for sports injuries." / Józef Piłsudski University of Physical Education in Warsaw, Poland

**THE EFFECT OF FLUID EDUCATION GIVEN TO HEMODIALYSIS PATIENTS
ON INTERDIALYTIC FLUID INTAKE AND BLOOD PRESSURE**

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ABSTRACT

The research evaluated the effect of nutrition and fluid restriction training on interdialytic fluid intake and intradialytic hypotension in hemodialysis patients. The study sample, conducted with an experimental design, consisted of 71 patients (36 experimental and 35 control) who received dialysis treatment in a private dialysis centre affiliated with the Istanbul Provincial Health Directorate. Fluid Control Scale in Hemodialysis Patients (HHSÖ), Blood Pressure Control Form, Bioimpedance Analysis, Bioimpedance Analysis Compliance Form, Things to Consider Before Bioimpedance Analysis, and Nutrition Booklet for Dialysis Patients were used to collect the data. Parametric methods were used to analyze the data. Differences between the proportions of categorical variables in independent groups were analyzed with Chi-Square and Fisher's exact tests. The t-test was used to compare quantitative continuous data between two independent groups. A dependent group t-test was used to compare intra-group measurements. After randomization of the experimental and control groups, both groups were measured with the BCM (Fresenius Medical Care Body Composition Monitor) device. The experimental group was given face-to-face fluid restriction training in line with the Nutrition Booklet for Dialysis Patients. At the end of the second month, BCM was measured again in both groups. During the follow-up of the experimental group, training was repeated according to the needs of the patients. Biochemical values of the experimental and control groups were monitored every month throughout the study. As a result of the research, the control group's average age and status of receiving fluid restriction training from a dietitian were high ($p<0.05$), the experimental group's potassium measurement value was low, the HHSS total score, knowledge, behaviour and attitude subscale scores were high ($p<0.05$). It was found to be significant. There was no significant difference in intradialytic hypotension in the experimental and control groups. As a result, providing only fluid restriction training to hemodialysis patients does not reduce interdialytic fluid intake and intradialytic hypotension.

Keywords: Hemodialysis, Nutrition and fluid restriction, Bioimpedance

**CORPORATE TRANSFORMATION IN THE FACE OF THE CLIMATE CHANGE CRISIS:
THE ROLE OF ELECTRIC VEHICLES**

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ABSTRACT

This study explores how businesses are transforming in response to the climate change crisis and what role electric vehicles play at the center of this transformation. The study addresses main topics such as the environmental impacts of electric vehicles, their integration into business strategies and their contribution to sustainability goals. Electric vehicles are notable for their lower carbon emissions compared to fossil fuel vehicles. Therefore, businesses have the opportunity to reduce their carbon footprint and support their sustainability goals by integrating electric vehicles into their fleets. However, this transformation process may face some challenges. The study discusses the barriers preventing the widespread adoption of EVs and how these barriers can be overcome. It also examines the innovative strategies and business model changes that are emerging as businesses adopt EVs. With the adoption of EVs, businesses can develop new approaches and gain competitive advantage in areas such as fleet management, energy supply and charging infrastructure. In conclusion, the study addresses the importance and impact of EVs in corporate transformation, emphasizing the role of businesses in tackling the climate change crisis. This study provides business leaders, policy makers and academics with an in-depth understanding of the environmental and strategic impacts of EVs on businesses.

Keywords: Climate change, corporate transformation, electric vehicles, businesses.

UNVEILING THE LANDSCAPE: SOCIAL MEDIA MARKETING AND ENTREPRENEURS

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ABSTRACT

Research on social media marketing with an entrepreneurial spirit continues to develop. This study, from the perspective of bibliometric analysis, aims to analyse and map the research trends in the field of social media marketing, specifically focusing on entrepreneurial aspects of the field on an international scale. The research is still developing and concentrated in certain regions and countries. The study uses bibliometric analysis and secondary data from Scopus to analyse global research in social media marketing, and then visualizes the data using the VOS Viewer application. This study looked at 693 documents published between 2013 and 2024, i.e., in the last 10 years. The study hotspots cover a wide range of topics, all of which are related to how entrepreneurs use social media, including knowledge exchange, marketing, communication, performance, and others. From having a single concentration, the main study theme now covers a wider range of subjects. Through keyword co-occurrence analysis and cluster analysis, this paper exposes the development pattern of social media and entrepreneurship research and offers some recommendations for future research in this area. The results showed that researchers worldwide are focusing their attention on social media marketing research. Despite the lack of literature and limited author collaboration in this area, Asian nations are making significant contributions to research on social media and entrepreneurship. This study found that there is a lack of studies from a firm perspective, especially for small retailers and women entrepreneurs. The adoption of disruptive technologies such as AI, ML, and blockchain, as well as its impact, need more exploration. **Keywords:** Social media marketing, Social media networks, Entrepreneurship, VOS Viewer, Bibliometric, Scopus.

1. INTRODUCTION

Early in the 1990s, the phrase "social media" gained popularity, and today, with more than 2 billion active users worldwide, it is an essential part of nearly every person's life (Chawla Y, Chodak G, 201). Everyone's perspective on collaborating, communicating, and sharing information has altered with the advent of Web 2.0. Because so many social media sites have recently come into existence, such as Facebook, Instagram, WhatsApp, and Twitter, people now communicate online more than in person. According to (Mangold, 2009), social media, commonly called "user-generated communication," has become a widely used information source. It has also altered the communication tactics and tools businesses employ, emphasizing that customers now influence the information they receive. Direct or indirect marketing uses the social web to increase awareness, recognition, recall, and action for a brand, company, product, person, or other entity (Gunelius, 2011). Examples of such activities include blogging, microblogging, social networking, social bookmarking, and content sharing.

Social media allows for the fastest, easiest, and most explosive transmission and reception of information. Social media has allowed for the integration of several elements of life, including marketing. Social media marketing is the marketing strategy that is currently expanding at the fastest rate. Social media marketing has become a notable tool that businesses and brands cannot ignore (Pang et al., 2020). Marketing's role in business development has changed dramatically since internet communication became widespread, particularly with the emergence of social media. On social media sites, web technologies create and post their content. Their uploaded content is free for millions of people to view, and advertisers don't have to shell out a lot of money to display their advertisements on social media.

Social media technology has opened up a wide range of entrepreneurial opportunities and enabled more stakeholders to participate in the identification process. As (Park et al., 2017) argue, social media is a valuable resource for entrepreneurship, an essential component of business expansion, and a helpful platform for business growth. The widespread adoption and ease of access to social media are driving its growth. Consequently, social media has emerged as the preferred choice for marketers looking to promote their goods and services to their target market (Ghouse et al., 2022). As (Nusair et al., 2019)

point out, social media is now an indispensable tool for companies aiming to increase their sales, reach their target audience, and establish a solid online presence.

(Bashar & Singh, 2022) The increasing use of mobile apps has made businesses rely even more on marketing tools that are immediately accessible to customers. It is essential for marketing communications, as (Kaplan & Haenlein, 2010) point out in their article, for the benefits and drawbacks of social media, to be able to create strong relationships, promote conversation, and contribute to a team effect for the success of marketing operations. Many researchers have utilized social media, specifically, to analyse online purchase behaviour because of the significance of social media as a marketing instrument.

An excellent social media strategy advantages sustainability and profit and also contributes to consumer trust. (Mangold, 2009) highlight the benefits of social media marketing in identifying trends and patterns in user behaviour. (Praja et al., 2023) also highlight its ability to analyse user behaviour and interactions, revealing how users engage with a brand or product. Furthermore, social media marketing can help reach specific target groups, such as communities, minority groups, or sustainability-focused individuals, by analysing comments, content sharing, and other social interactions. In his work, (Cho et al., 2017) emphasize that social media could be ideal for brands to engage with their smallest, most broad target audience, such as the environmental community or ethnic minorities. Due to users' increased use, social media in entrepreneurship is an area of study that is developing quickly. Still, there is a lack of study on social media and entrepreneurship from the perspective of global collaboration.

To fill this gap, the researcher conducted a bibliometric study to investigate the aspects and development of global cooperation in the field of entrepreneurship and social media marketing research. The present study shall motivate readers and scholars by providing a greater understanding of the most popular and influential works on digital marketing in small and medium enterprises, allowing them to carry out high-quality future research in this domain. It would also allow them to identify publication trends, research progression, and influential publications which will help them to understand the research area in the best way. The academicians and scholars shall also better understand the most common thematic clusters and present research trends on social media marketing research by entrepreneurs. It also provides several benefits to the business when attempting to deploy social media marketing practices for their business promotions.

2. BACKGROUND OF SOCIAL MEDIA MARKETING IN ENTREPRENEURSHIP

The research in the area of social media marketing in small businesses started in 1997 with internet marketing and moved to e-commerce, including digital marketing (Kushwaha et al., 2021). Although research in this area began in the 1990s, the number of studies was relatively low until 2010. From 2011 to 2015, the study moved from internet marketing to social media marketing (Dam et al., 2019; Philosophy & Thaha, 2021). During this period, scholars increased the productivity of research in this area and added new dimensions such as interactive, consumer engagement, and participation in marketing activities (Hossain et al., 2022). Scholars have increasingly focused on this study from 2016 to the present. Today, scholars are adding new areas of digital marketing in small and medium enterprises, including marketing strategies, innovation, adoption, performance, and ease of use.

(Delerue et al., 2012) define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user-generated content." Facebook, Youtube, and Twitter are just a few examples of the social media platforms that are widely used in society and a variety of industries, including tourism, accounting, and academic entrepreneurship (Lombardi & Secundo, 2020; Secundo et al., 2021; Shams & Kaufmann, 2016; Vecchio et al., 2018). Social media's openness and connection allow entrepreneurs to overcome their incapacity or difficulty in locating and contacting experts for guidance by utilizing client involvement (Kuhn et al., 2016; Nylander, 2011). Social media technologies are changing how entrepreneurs and businesspeople connect with one another, find opportunities for companies, involve multiple stakeholders, and link to the external ecosystem (Gupta & Bose, 2022; Shams & Kaufmann, 2016).

According to a Schumpeterian definition, entrepreneurship is the capacity to adapt to creative processes of change. It has also been defined as a virtue that combines intellectual capital with opportunities found in the market, as well as the ability to manage under uncertainty, take on the risk of a new venture, and recognize and seize previously undiscovered opportunities (BYERS et al., 2001; Romano et al., 2014;

Venkataraman, 2004). Entrepreneurship, according to (Shane & Venkataraman, 2012), is the process of spotting, assessing, and seizing chances. Since this notion has been widely shared by academics studying innovation and entrepreneurship, the competitive environment has changed, growing more complicated and volatile. Subsequently, (Shane, 2012) stressed that, once an idea is identified, entrepreneurship is a process rather than a one-time occurrence that calls for the entrepreneurs to participate in multiple additional tasks.

The application of artificial intelligence, data-driven marketing, influencer marketing, chatbots, etc. will be the main focus of future research in this field. The internet allowed small and medium-sized businesses to share expertise, which immediately increased productivity and assisted in the early detection and resolution of issues (Kushwaha, 2023). It is believed that using social media for commercial purposes can benefit a business; in particular, it can lower significant marketing expenses and strengthen customer interactions.

3. RESEARCH METHODOLOGY

3.1. Research Methods

This study analyses journal publication results in connection to social media marketing using a bibliometric approach. The objective is to offer a thorough picture of publishing trends, collaborations, and current trends in the industry. VOSviewer is used in the study to help with the bibliometric analysis process. This study's data source is the Scopus publishing database. Scopus is one of the wide-ranging databases of peer-reviewed research papers in science, medicine, technology, engineering, art, the social sciences, and the humanities. The researcher used the following steps to conduct bibliometric research on social media and entrepreneurship:

A. Initial Search Results

The researcher accessed the website www.scopus.com with a subscription account at Assam University to access the data in full and in its entirety. The researcher conducts a literature search, taking into account the title, abstract, and keywords. The initial search string was "Social Media Market*" + "Entrepreneur." The initial search did not include any exceptions for the type of bibliography. The researcher obtained 1016 documents, including articles, books, and conference papers, from the initial database search using the above keywords for the last ten years (2013–2024).

B. Filtering (filtering)

The second step is to determine the study sample by using the String "(TITLE-ABS-KEY((("social media" OR "social network* site" OR "facebook" OR "twitter" OR "Pinterest" OR "Snapchat" OR "Instagram" OR "LinkedIn" OR "YouTube" OR "video sharing site" OR "WeChat" OR "Tiktok") AND ("Entrepreneur*" OR "small business" OR "SME")) AND (LIMIT-TO (SUBJAREA,"BUSI") OR LIMIT-TO (SUBJAREA,"SOCI") OR LIMIT-TO (SUBJAREA,"DECI") OR LIMIT-TO (SUBJAREA,"ARTS")) AND (LIMIT-TO (EXACTKEYWORD,"Social Media") OR LIMIT-TO (EXACTKEYWORD,"Entrepreneurship") OR LIMIT-TO (EXACTKEYWORD,"Entrepreneur") OR LIMIT-TO (EXACTKEYWORD,"SMEs") OR LIMIT-TO (EXACTKEYWORD,"Small Business") OR LIMIT-TO (EXACTKEYWORD,"Social Media Marketing") OR LIMIT-TO (EXACTKEYWORD,"Social Media Platforms") OR LIMIT-TO (EXACTKEYWORD,"Small Businesses") OR LIMIT-TO (EXACTKEYWORD,"Start-ups") OR LIMIT-TO (EXACTKEYWORD,"Social Media Marketings") OR LIMIT-TO (EXACTKEYWORD,"Women Entrepreneurship")) AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (LANGUAGE,"English")) AND (LIMIT-TO (SRCTYPE,"j") OR LIMIT-TO (SRCTYPE,"p")) AND (LIMIT-TO (PUBSTAGE,"final")))".

The research is limited to published articles with a focus on business-related subjects and in English. The filtering process yielded 692 articles, serving as samples for their research. The researcher stores the collected data in a csv file and converts it to an xlsx format to facilitate its processing in Microsoft Excel. Additionally, the analyst processes and filters the data in the xlsx file to meet their needs.

C. Bibliometric Analysis

The bibliometric analysis was performed using VOSviewer. The study used VOSviewer 1.6.20 software to visualize the collected data, find the connections between countries, institutions, and author keywords by visualizing each main cluster, and show how research into social media and entrepreneurship has grown in terms of publications, source journals, institutions, countries/regions, and keywords.

4. RESULT AND DISCUSSION

4.1. Overview of the Annual Publication Trends

Based on Scopus search results that are relevant to the word the key to social media marketing according to the sample criteria, 693 articles were found. From Figure 4.1 it can be seen that the average publication trend average increases every year from 2013. In 2018 it decreased but not significantly while the highest publication was in 2023.

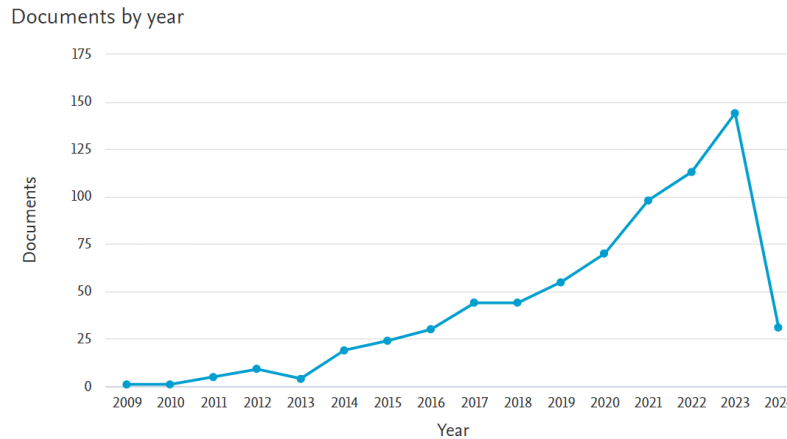


Fig 4.1. Trends in Social media marketing by entrepreneur's research publication

4.2. Overview Of The Top Ten Productive Journals

The top journals that publish articles on social media marketing are presented in Figure 4.2. The most journals that publish articles on social media marketing and entrepreneurs is the Sustainability (Switzerland) which published 37 articles. The top 10 journals published 145 articles.

Name of the Journals	No. of Documents	Total no. of citations
<i>Sustainability (Switzerland)</i>	37	588
<i>Emerald Merging Markets Case Studies</i>	26	14
<i>Technological Forecasting and Social Change</i>	15	647
<i>Journal of Business Research</i>	13	401
<i>Journal of Research in Marketing and Entrepreneurship</i>	10	72
<i>Journal of Small Business and Enterprise Development</i>	10	702
<i>Small Business Economics</i>	10	388
<i>International Journal of Entrepreneurial Behaviour and Research</i>	9	383
<i>Cogent Business and Management</i>	8	29
<i>International Journal of Communication</i>	7	187

Fig 4.2. Top ten Productive Journals

4.2.1 Top Productive Countries

The author presents the top 10 countries in the figure 4.3, the United States ranks first with the publication of 139 articles. Followed by India 65 articles. United kingdom 65 articles , Australia 54 and China 36, Malaysia 32, Canada with 27 articles, Italy and Germany with 28 and 26 articles respectively.

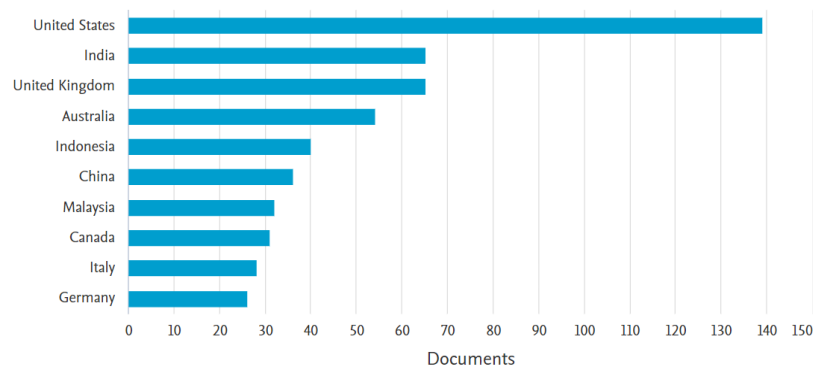


Fig 4.3. Top ten Productive Countries

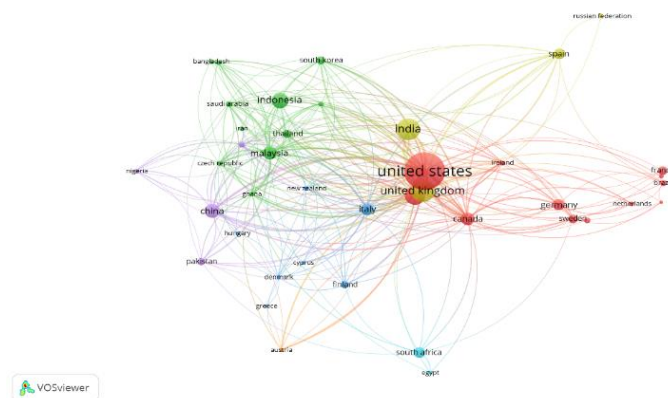


Fig 4.4. Most cited Countries Visualisation

4.3 Analysis of Highly Cited articles

From 2013 to 2024, by analyzing the 10 highly cited publications, as shown in Table 4.4, (Fischer & Reuber, 2011), social interaction through platforms like Twitter has an impact on effectuation processes in entrepreneurs, with community orientation and norm adherence moderating the consequences of this interaction. (Duffy & Hund, 2015) argue that the success of fashion blogging hides the labor, discipline, and capital required to meet its standards. (Cotter, 2019) explores the complexities of algorithmic power and the positive effects of Facebook usage on the performance of SMEs. (Alt, 2015) investigates the potential connection between Fear of Missing Out (FoMO) and social media engagement among university students. (Duffy & Hund, 2015) focuses on the performance of SMEs in digital transformation, particularly the role of gender in digital cultural production. (Rippa & Secundo, 2019) propose a framework for Digital Academic Entrepreneurship, emphasizing the importance of social networking sites in innovation and knowledge.

Rank	Title	Author	Year	Journal	Total Citation
1.	<i>Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?</i>	<i>Fischer E.; Reuber A.R.</i>	2011	<i>Journal of Business Venturing</i>	514
2.	<i>“Having it All” on Social Media: Entrepreneurial Femininity and Self-Branding Among Fashion Bloggers</i>	<i>Duffy B.E.; Hund E.</i>	2015	<i>Social Media and Society</i>	342
3.	<i>Playing the visibility game: How digital influencers and algorithms negotiate influence on Instagram</i>	<i>Cotter K.</i>	2019	<i>New Media and Society</i>	324
4.	<i>Factors influencing the use of social media by SMEs and its performance outcomes</i>	<i>Ainin S.; Parveen F.; Moghavvemi S.; Jaafar N.I.; Shuib N.L.M.</i>	2015	<i>Industrial Management and Data Systems</i>	302
5.	<i>College students' academic motivation, media engagement and fear of missing out</i>	<i>Alt D.</i>	2015	<i>Computers in Human Behaviour</i>	283
6.	<i>Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs?</i>	<i>Bouwman H.; Nikou S.; de Reuver M.</i>	2019	<i>Telecommunications Policy</i>	280
7.	<i>The romance of work: Gender and aspirational labour in the digital culture industries</i>	<i>Duffy B.E.</i>	2016	<i>International Journal of Cultural Studies</i>	277
8.	<i>The usage of digital marketing channels in SMEs</i>	<i>Taiminen H.M.; Karjaluoto H.</i>	2015	<i>Journal of Small Business and Enterprise Development</i>	215
9.	<i>Digital academic entrepreneurship: The potential of digital technologies on academic entrepreneurship</i>	<i>Rippa P.; Secundo G.</i>	2019	<i>Technological Forecasting and Social Change</i>	214
10.	<i>The effect of social networking sites and absorptive capacity on SMES' innovation performance</i>	<i>Scuotto V.; Del Giudice M.; Carayannis E.G.</i>	2017	<i>Journal of Technology Transfer</i>	204

Fig 4.5. Top ten highest cited articles

4.5. Authors collaboration Visualisation Map

The assumptions on VosViewers are set based on each author having at least 2 articles. Found, the results are obtained as shown in Figure 4.5



PROCEEDINGS BOOK

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Cluster	Colour	Items	Keywords
1.	Red	17	China, Crowdfunding, Economics, Entrepreneur, Entrepreneurs, Entrepreneurship, Facebook, Female, Gender, Innovation, Instagram, Internet, Small Business, Social Capital, Social Network, Social Networks, United States
2.	Green	11	Commerce, Digital Marketing, Economic And Social Effects, Entrepreneurial Marketing, Entrepreneurial Orientation, Performance, Smes, Social Media, Social Media Marketing, Social Networking (Online), Technology Adoption
3.	Blue	8	Business, Marketing, Small And Medium-Sized Enterprise, Smes, Social Entrepreneurship, Social Media Platforms, Sustainability, Twitter
4.	Yellow	7	Business Performance, Covid-19, Digital Entrepreneurship, E-Commerce, Electronic Commerce, Small Businesses, Technology

Fig 4.7. Clusters

Four clusters—red, green, blue, and yellow—can be observed in Fig. 4.7, which illustrates the connections between the various topics.

5. CONCLUSION

The study analysed 693 academic publications on social media and entrepreneurship research from 2013 to 2024, focusing on the changing trends in international cooperation and research topics. The research has gained significant attention, with the main countries of social media and entrepreneurship research expanding from the US and India to other countries. Asian countries, particularly India, China, Malaysia, and Indonesia, are increasingly prioritizing this field due to their economies' growth.

The research target platforms have expanded from initial blogs to Instagram, LinkedIn, and YouTube, attracting extensive attention. Research topics have evolved from marketing to innovation, customer management, knowledge management, and starting a business. Crowdfunding research and social commerce research have become popular, with an increasing number of studies focusing on women's issues like feminism and female entrepreneurship.

Future research suggests that countries should actively collaborate with other continents to foster more innovative achievements and diversify research in this field. Future research will focus on the latest popular social media platforms, integrate with other industries or emerging technologies, and focus on topics related to gender or women. Additionally, future research should focus on Asian countries and regions, such as India, China, Southeast Asia, and the Middle East, due to the rapid development of the economy and internet in Asia.

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**A STUDY ON EVALUATION OF PRE-PROCESSING, SEGMENTATION, AND FEATURE
EXTRACTION TECHNIQUES IN IRIS RECOGNITION SYSTEMS**

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ABSTRACT

In this study, the effects of modifications and improvements in the stages of the iris recognition system; preprocessing, iris segmentation, iris normalization, feature extraction, feature selection, and classification results were examined. The CASIA-IrisV4-Lamp dataset, which contains images taken under various lighting conditions, was used. This dataset consists of 7600 images of 441 distinct individuals.

Various pre-processing steps were applied to the images used for segmentation to remove noise. Daugman's Rubber Sheet Model was employed in the iris normalization stage. For feature extraction, the Wavelet transform was utilized, and the frequency components of the iris texture were extracted at this stage. These extracted features were classified using the Random Forest algorithm after removing the unnecessary ones.

In such kind of applications, classical pattern recognition, machine learning and deep learning-based methods can be used in the classification stage. Since deep learning-based methods require large data sets, they not preferred in this kind of studies. Instead, we used the Random Forest method to classify the data, which generally gives high performance in limited data sets.

Future work suggestions will include better filtering of noise, minimizing accuracy loss due to the iris segmentation stage failures, and achieving higher accuracy detection under various lighting conditions. These efforts are considered important steps toward improving the overall performance of iris recognition systems.

Key words: Iris Recognition, Pre-processing, Iris Segmentation, Iris Normalization, Feature Extraction, Feature Selection, Machine learning, Pattern recognition

Introduction

In today's rapidly digitalizing world, biometric authentication systems play a critical role in security and user identity verification. Among these systems, iris recognition technology stands out due to its high accuracy rate and reliability. The iris is a unique, immutable, and easily non-replicable biometric feature for each individual, making iris recognition systems a more secure and effective solution compared to other biometric methods.

This study presents experimental research and findings aimed at enhancing the effectiveness of iris recognition systems. Our research evaluates the interrelationships of existing methods and develops new algorithms and technologies. By doing so, this study aims to make significant contributions to the future applications of iris recognition systems.

In the data analysis and model training processes, Python programming language and relevant libraries (TensorFlow, OpenCV) were utilized. Metrics such as accuracy, error rate, receiver operating characteristic (ROC) curve, and processing time were analyzed to evaluate model performance.

Iris Recognition Systems

The iris recognition system offers a secure and effective biometric method for individual authentication by using iris patterns. This system operates by analyzing the unique structure of the iris and consists of several steps. It is shown in Figure 1 (Malgheet, J. R. et al., 2021). In the first step, an image of the iris is captured. Then, preprocessing is performed to remove noise and interferences. In this process, segmentation methods are used to separate the iris and the pupils. Next, the iris patterns are normalized, and distinct features are obtained using feature extraction techniques. The extracted features are compared with the stored iris patterns in the database, and similarity scores are calculated. At the end of this process, authentication or rejection is performed. The methods used in the iris recognition system are of great importance in terms of reliability, accuracy, and speed, and the techniques used in each step directly affect the overall performance of the system. In this study, we aimed to evaluate the effects and relationships between systems.

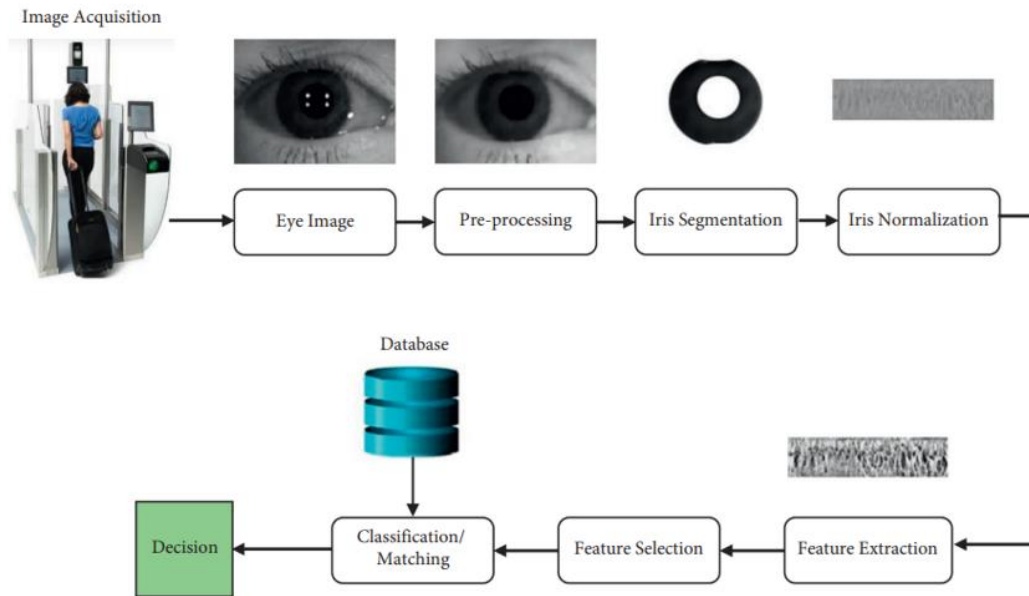


Figure 1. Fundamental structure of the iris recognition system

Preprocessing and Iris Segmentation

At this stage, noise reduction and the detection of iris boundaries are performed. The sequence of operations in the preprocessing and iris segmentation stages is given in Figure 2.

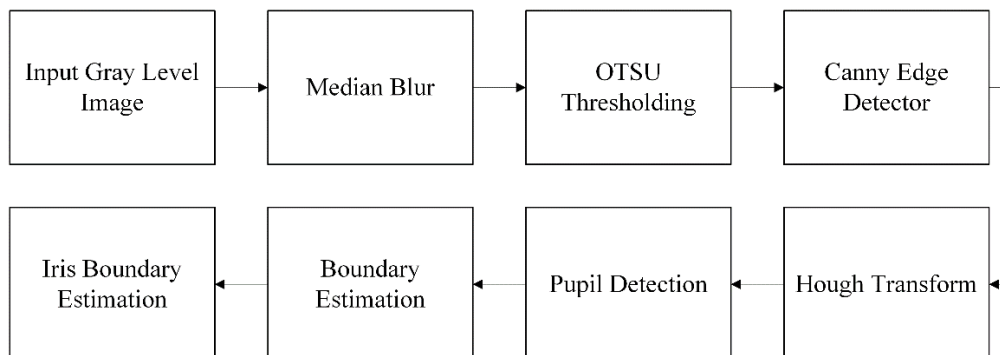


Figure 2. Pre-processing and Segmentation Algorithm

Median Blur

The median blur step is used to reduce noise in the image. (Gonzalez, R. C., 2009), (M. Nixon et al., 2008) Since noise can lead to problems such as incorrect edge detection and faulty iris region identification, this step cleans the image. Median blur replaces the value of each pixel with the median value of the neighboring pixels.

OTSU Thresholding

OTSU thresholding is a technique used to convert an image into a binary image (Otsu, N., 1979). This method automatically determines the optimal threshold value by analyzing the pixel intensity distribution in the image. As a result, the iris and the background are clearly separated. The threshold value obtained from OTSU thresholding is used as the high threshold parameter for the Canny edge detection algorithm. This enhances the accuracy of the Hough transform and improves the quality of the detected circles.

Canny Edge Detector

The Canny edge detection algorithm is an optimal method in image processing, providing high accuracy and precision in edge detection. (Canny, J., 1986) Each step of the algorithm ensures that edges are

detected correctly and consistently. Since the optimal threshold value varies for each image, using it in conjunction with OTSU thresholding allows for automatic determination of threshold values.

The Canny edge detection algorithm consists of five steps to determine edges (Y.-T. Chang et al., 2017), (Y.-T. Chang et al., 2020):

Application Steps:

- 1- Noise Reduction
- 2- Gradient Calculation
- 3- Non-Maximum Suppression
- 4- Double Thresholding
- 5- Hysteresis Thresholding

Hough Transform

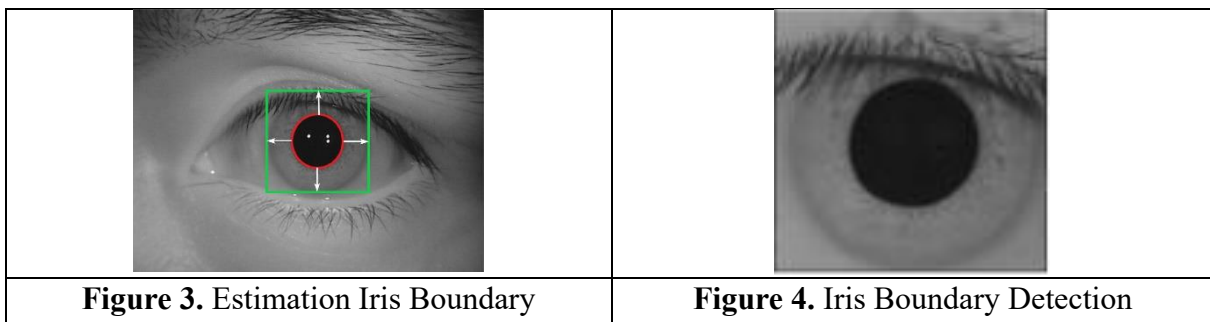
The Hough transform is an effective technique used in image processing and computer vision to detect specific shapes. The fundamental principle of the Hough transform is to convert the edge points in an image into a parameter space and perform a voting process in this space. This transform operates on the assumption that the parameters of a specific shape are located at the position that receives the most votes. (K. A. Bakshi et al., 2015), (Y. Chen et al., 2010)

Application Steps:

- 1- Edge Detection
- 2- Conversion to Parameter Space
- 3- Voting
- 4- Circle Detection

Estimation Iris Boundary

Accurately detecting the boundaries of the iris is challenging because the iris color can resemble the background color, making precise detection difficult. Therefore, in this study, the iris boundaries were estimated. By advancing a certain amount based on the initially estimated boundaries, the iris boundaries are approximately determined. Based on the obtained parameters, a cropping process is applied to the original image.



Looking at Figure 3 and 4, the iris boundaries were determined as an estimate by moving a certain distance (50 pixels in this study) from the pupil boundaries.

Iris Normalization

In the first step, the iris surface is transformed into a fixed reference frame using the Rubber Sheet Model and is normalized to a constant size by converting it to polar coordinates. This approach mitigates potential issues and results in a normalized iris image. Finally, non-feature regions on the normalized image are distinguished, preparing the image for the use of feature extraction algorithms. This process is critical for enhancing the accuracy and reliability of iris recognition systems.

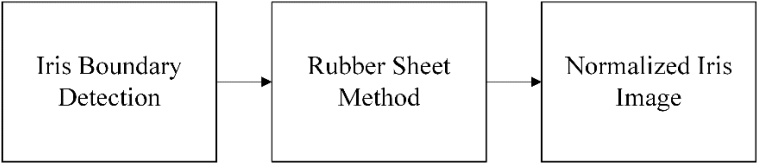


Figure 5. Iris Normalization Algorithm

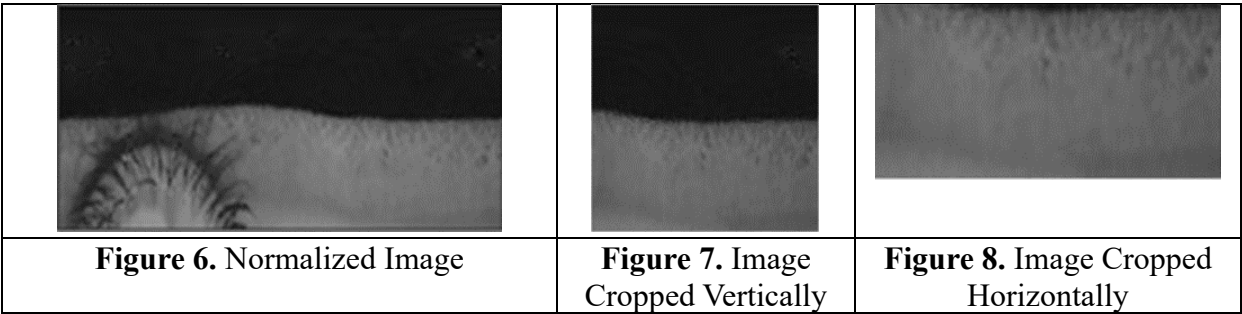
Rubber Sheet Method

Daugman's Rubber Sheet Model is an important method used in the iris recognition process. This model normalizes the iris pattern by transforming the iris surface into a fixed reference frame. During this process, the iris texture is remapped to polar coordinates, and the region between the pupil and the outer boundary of the iris is normalized to a constant size.

This transformation converts each point on the iris surface into a fixed reference frame, resulting in a normalized iris image. The normalized iris image allows for the direct comparison of iris patterns obtained from different individuals. This method plays a significant role in enhancing the accuracy and reliability of iris recognition systems. (Daugman, J., 1993), (J. Daugman, 2009)

Separating Unnecessary Regions

At this stage, non-feature regions in the normalized image have been distinguished. As seen in Figure 6, the image contains eyelashes and the pupil. Since these do not have feature characteristics, they need to be distinguished. In this study, the image was initially divided vertically in half to separate the eyelash region (Figure 7). Then, it was divided horizontally in half to separate the pupil. The resulting image is shown in Figure 8.



Feature Extraction

In iris recognition systems, feature extraction is the process of obtaining attributes that represent the characteristic information of iris patterns. In this study, feature extraction was performed using the 2D Haar wavelet transform. The process sequence used at this stage is shown in Figure 9.

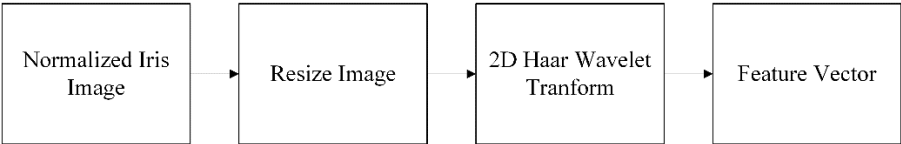


Figure 9. Feature Extraction Algorithm

Normalized iris images can vary in size. Therefore, before applying the 2D Haar Wavelet Transform to the images, it is necessary to resize all images to the same dimensions. This step is important to obtain more consistent and comparable feature vectors.

2D Haar Wavelet Transform

The Haar wavelet transform is a computationally efficient and simple method to implement. The Haar wavelet transform is a mathematical transformation that separates signals or images into low-frequency and high-frequency components (Mallat, S. G., 1989). This process allows for obtaining both time and

frequency information. The Haar wavelet transform is based on the calculation of averages and differences. A one-dimensional Haar wavelet transform is performed by calculating the average and difference for two consecutive values of a signal. The two-dimensional Haar wavelet transform applies this process in both the horizontal and vertical directions.

The two-dimensional Haar wavelet transform performs this process in both the horizontal and vertical directions. For each sub-region of the image, four different components are obtained:

- 1- LL (Approximation): Low frequency horizontal and low frequency vertical component.
- 2- LH (Horizontal): Low frequency horizontal and high frequency vertical component.
- 3- HL (Vertical): High frequency horizontal and low frequency vertical component.
- 4- HH (Diagonal): High frequency horizontal and high frequency vertical component.

Application Steps:

- 1- Application of Haar Wavelet Transform: The 2D Haar wavelet transform is applied to the grayscale image. As a result of this process, four different sub-images are obtained: LL, LH, HL, and HH.
- 2- Creation of Feature Vector: The information obtained from the low-frequency component (LL) and the high-frequency components (LH, HL, HH) is used to create the feature vector.

Classification

In iris recognition systems, accurately and reliably classifying the features obtained after feature extraction is of great importance. In this study, the Random Forest method was used for the classification stage. The process sequence used at this stage is shown in Figure 10.

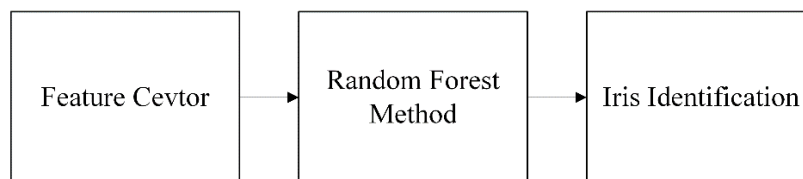


Figure 10. Classification Algorithm

Random Forest

Random Forest is an ensemble method composed of multiple decision trees. Each decision tree is trained using a random subset of the dataset and a random subset of the features. This diversification allows each tree to analyze the data from a different perspective and reduces the risk of overfitting. (Breiman, L., 2001)

Application Steps:

- 1- Random Sampling: Random samples are selected from the training dataset to create multiple sub-datasets. This process is known as bootstrap sampling.
- 2- Training Decision Trees: Each decision tree is trained using one of the sub-datasets. At each node of each tree, the best split point is chosen using a random subset of the features. This process allows each tree to learn different combinations of features.
- 3- Prediction and Voting: During classification, each decision tree makes a class prediction for the given sample. The Random Forest aggregates these predictions to determine the final class label. This process is known as majority voting.

Experimental Results

In this study, a series of experimental methods were employed to evaluate and improve the performance of iris recognition systems. The CASIA-IrisV4-Lamp dataset, collected by the Chinese Academy of

Sciences Institute of Automation (CASIA) was used. This dataset was gathered using a handheld iris sensor produced by OKI. To introduce more intra-class variation, a lamp near the subject was turned on and off in the CASIA-Iris-Lamp dataset. The elastic deformation of the iris texture due to the expansion and contraction of the pupil under different lighting conditions is one of the most common and challenging issues in iris recognition. Therefore, the CASIA-Iris-Lamp dataset provides a broad variety for examining the problems of nonlinear iris normalization and robust iris feature representation.

Table 1 shows which methods were used in the scenarios. Table 2 provides the parameters for the Canny Edge Detector and Hough Transform used in Scenario 1 and Scenario 3. Table 3 presents, in order, the number of images provided to the system, the number of images where the pupil could not be detected, the number of images used in the classification algorithm, and the accuracy rate achieved using the Random Forest method.

Tablo 1. Scenarios

Methods	Scenarios				
	1	2	3	4	5
Median Blur	Yes		Yes	Yes	Yes
OTSU Threshold	Yes	Yes		Yes	Yes
Fixed Threshold Value			Yes		
Canny Edge Detector	Yes	Yes	Yes	Yes	Yes
Hough Transform	Yes	Yes	Yes	Yes	Yes
Rubber Sheet Method	Yes	Yes	Yes	Yes	Yes
Separating Unnecessary Regions	Yes	Yes	Yes		Yes
2D Haar Wavelet	Yes	Yes	Yes	Yes	Yes
Resize Image	Yes	Yes	Yes	Yes	
Random Forest	Yes	Yes	Yes	Yes	Yes

Table 2. Parameters Table for Canny Edge Detector and Hough Transform

Parameters	Scenario 1	Scenario 3
Inverse ratio of the accumulator resolution	1	1
Minimum Distance	50pixels	50pixels
High Threshold for Canny Edge Detector	OTSU Thresholding Value	150pixels
Low Threshold for Canny Edge Detector	(OTSU Thresholding Value)/2	75pixels
Minimum Number of Votes	30	30
Minimum Radius	20pixels	20pixels
Maximum Radius	100pixels	100pixels

Table 3. Results Table

Scenarios	Number of Picture	Number of Undetected Pupils	Number of Images Used in the Classification Algorithm	Random Forest (ACC)
Scenario 1	7600	1	7599	86,3%
Scenario 2	7600	6710	890	39.3%
Scenario 3	7600	356	7244	83,5%
Scenario 4	7600	1	7599	56,2%
Scenario 5	7600	1	7599	Error

A dataset comprising 7,600 eye images from 441 individuals was utilized in this study. The dataset was divided into a training set, which included 66% of the total images, and a test set, which comprised the remaining 33%. Looking at Table 3, the most successful method was achieved in Scenario 1. Because the pupil could not be detected in only 1 of 7600 images and 86.3% accuracy was achieved.

Discussion

In Scenario 1, optimum thresholds were calculated for each image and noise was minimized compared to other scenarios. Since the image was resized before feature extraction, no errors occurred in the system. In this way, the highest accuracy rate and highest pupil detection rates were achieved.

In Scenario 2, the removal of the Median Blur step significantly reduced performance. The Median Blur step is crucial for noise reduction, and without this step, the Hough Transform struggled to accurately detect the pupil. Due to the lack of noise reduction, the pupil could not be detected in many images, substantially lowering the overall accuracy.

In Scenario 3, using a fixed threshold value instead of OTSU Thresholding resulted in a slight performance decline. The OTSU method automatically adjusts to the lighting and contrast conditions in the image to determine the optimal threshold value. The fixed threshold value (150) could not adapt to these varying conditions, reducing the accuracy of iris segmentation and the system's reliability.

In Scenario 4, not removing unnecessary features during the normalization stage led to a noticeable drop in accuracy. The normalization process ensures the consistent representation of iris patterns. The failure to remove unnecessary features (such as eyelashes, reflections, and the pupil) weakened the system's ability to accurately identify and match iris patterns.

Scenario 5 highlighted the necessity of resizing images to the same dimensions before feature extraction. Inconsistent image sizes caused the Random Forest classifier to function improperly. This issue arose from the inconsistency in feature vectors, negatively impacting the classification algorithm's performance.

A limitation encountered in this study is when the input image is a very close-up photo of the eye. In such cases, the estimated iris boundaries may extend beyond the image's edges during the boundary estimation stage, causing instability in the system. Future work suggestions will include better filtering of noise, minimizing accuracy loss due to the iris segmentation stage failures, and achieving higher accuracy detection under various lighting conditions. These efforts are considered important steps toward improving the overall performance of iris recognition systems.

Conclusion

This study has demonstrated that each preprocessing technique used in iris recognition systems significantly impacts system performance. Noise reduction, adaptive thresholding, accurate normalization, and consistent image resizing steps are crucial for enhancing the accuracy and reliability of iris recognition systems. These findings confirm that careful attention to preprocessing and normalization stage is vital for developing high-performance iris recognition systems. Each preprocessing step plays a critical role in the system's ability to accurately and reliably identify individuals based on their unique iris patterns. The most successful method was achieved in Scenario 1. Because the pupil could not be detected in only 1 of 7600 images and 86.3% accuracy was achieved.

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**INVESTIGATION OF VARIOUS PROPERTIES OF NANOSTRUCTURES WITH
THE HELP OF NEW METHODS AND TOOLS**

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ABSTRACT

In this article, an attempt was made to expand and deepen the possibilities of methods and tools for the study of nanostructures. The role of scanning probe microscopy in the field of nanotechnology has been defined. At present, the reference object for microhardness measurements is considered to be fused quartz, but nowhere has this sample been shown to be the reference for the nanoobjects (nanofilms) we are investigating. Determination of possible standards is one of the important problems of our research. A uniform system of standards for measuring mechanical properties has not yet been developed. As a result of our research, we have identified a number of materials that can be used as standards for nanoindentation. The hardness measurements needed to calibrate the nanohardness tester were developed and certified. Materials chosen for the production of such measures were, for example, Al_2O_3 single crystal (sapphire, face C), as well as other materials homogeneous in structure. Hardness and elastic modulus were measured by dynamic nanoindentation method.

Keywords: nanostructures, carbon nanotubes, nanotechnologies, catalysts, scanning probe microscopy, nanoindentation.

INTRODUCTION

In recent years, nanometer-sized objects have become increasingly popular in various fields of science and technology. One such object is carbon nanotubes (CNTs), which are of great interest for scientific research. The discovery of CNBs is one of the most important achievements of modern science. Nanotubes should be considered as a new material with unique properties that open up great opportunities for their wide application. As a result, the need for mass production of CNB-modified materials, as well as the search for accessible and cost-effective catalysts becomes very urgent [2]. The search for new catalysts for the growth of CNBs is very urgent, because the study of the properties of CNBs is a promising direction in nanotechnology in general, and with the help of new catalysts, unique CNBs with physicochemical properties can be obtained. New possible catalysts for further mass production of CNBs by catalytic pyrolysis have been identified. Various types of devices have been developed for growing nanotubes, one of which is CV Domna, where CNBs are produced by catalytic pyrolysis. When working with this device, certain basic catalysts are used, mainly nickel sol-gel. Since the initial set of catalysts is limited, the task of our research was to search and expand the initial base of catalysts for use in the catalytic pyrolysis method. One of the main conditions for the search for catalysts was that it should be widely used in mass production [6]. By examining the catalyst bases of other devices for nanotube growth, as well as alternative methods of NT growth, we selected some new catalysts for the CV Domna installation: nickel-chromium catalyst, porous alumina impregnated with hexaammonium-nickel dichloride, etc. The catalysts underwent a standard technological process at the CV Domna facility. Also, for the mass growth of CNBs by catalytic pyrolysis, we have used water as an addition to the main catalyst for the first time, and the optimal conditions have been selected. In this

study, the growth process of nanoparticles during the photolysis and pyrolysis of metal carbonyl vapors in the presence of various hydrocarbons was studied. When mixtures containing molybdenum hexacarbonyl and iron pentacarbonyl are exposed to ultraviolet radiation or temperature, these molecules disintegrate and form atomic metal vapor with easily controlled parameters. The process of subsequent condensation of supersaturated metal vapor in the presence of hydrocarbons leads to the formation of metal-carbon nanoparticles consisting of metal cores covered with a carbon shell

2. Creation of new materials for scanning probe tunneling microscope

Now people are increasingly talking about nanotechnologies. Nanotechnologies open wide opportunities in various fields: physics, electronics, chemistry, biology, etc. The emergence of nanostructures has led to the creation of new methods and tools that allow studying their properties. To study nano-objects, new instruments were needed, which allow for a deeper and more detailed study of the structure and composition of matter, as ordinary microscopes cannot provide such high resolution. The newest and at the same time promising direction scanning probe microscopy is the study of surface properties, including at the atomic level. A scanning tunneling microscope (STM) is a variant of the scanning probe microscope. STM is designed to measure surface topography with high spatial resolution. The working principle of the scanning tunneling microscope is so simple and its potential is so great that it allows STM to take a leading position in the field of nanotechnology, as well as being simple and accessible to use [4; 5]. We have created a material base for creating new probes for the scanning tunneling microscope, as well as modified their etching method. The goal of our research was the search for new materials for the creation of STM probes. The probes currently used in STM are expensive and hard to find. As a result of our research, we have chosen new materials for the creation of STM probes, mainly metals and alloys (iron, nichrome, manganin, etc.). As is known, several types of probes are used in scanning tunneling microscopes. Probes made using the method have become widespread. However, new materials for probes required modification of the etching process itself, especially the search for chemical reagents for a particular alloy or metal, as well as modification of the existing etching device by replacing some of its constituent elements. The STM probes obtained at this stage of the research are tested to determine the possibility of achieving atomic resolution with their help. It was used as a radiation source for laser photo-dissociation. A shock wave reactor was used to carry out the pyrolysis process. The growth process of nanoparticles was observed by laser extinction method and nanoparticle samples were studied by transmission electron microscope. Depending on the synthesis conditions, the structure, particle sizes, as well as their growth regularities were determined. The wide variety of studied conditions for the synthesis of metal-carbon nanoparticles in the gas phase during the pyrolysis and photolysis of mixtures of metal carbonyls with hydrocarbons allows us to draw the following conclusions. The laser extinction method is based on the measurement of the absorption of continuous laser radiation by the condensed phase. If the wavelength of the diagnostic laser (in this case 633 nm) is much larger than the size of the nanoparticles (10 ÷ 30 nm), then the radiation scattering can be neglected and the volume fraction of the condensed phase can be calculated according to the Bouguer-Lambert-Boore law according to the following indicators.

$$f_v = \ln(I/I_0) / (-6\pi E(m)\lambda) \times l \quad (1)$$

In equation (1), I_0 and I pass through the condensed medium and are the particles of the laser radiation flux; l - the optical path of the laser beam; λ - wavelength of the diagnostic laser; $E(m)\lambda$ is a function of refractive index. The value of $E(m)\lambda$ is unknown for metal-carbon nanoparticles, and was related to the relative value of the volume fraction of the condensed phase in the experiments, multiplied by the coefficient function.

$$f^* = f' E(m)_1.$$

The measurement scheme by the laser extinction method is shown in Figure 1

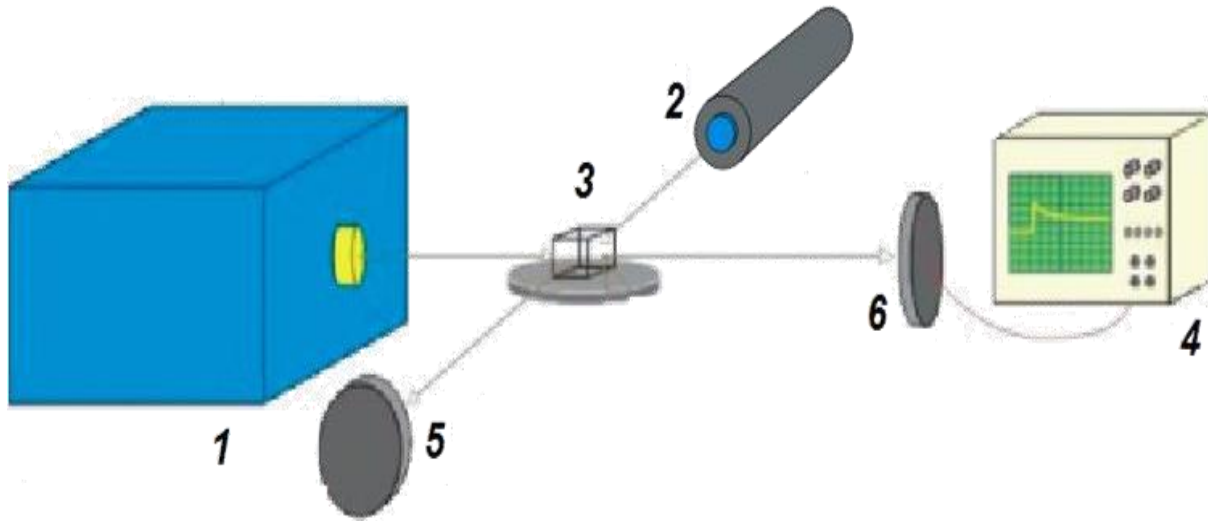


Figure 1. The scheme of measuring the volume fraction of nanoparticles synthesized by the photolysis of gaseous substances in a quartz cell by the laser quenching method. 1 – UV laser for photo-dissociation of gas precursors; 2 – He-Ne laser; 3 – quartz cuvette; 4 – oscilloscope; 5 – photodiode; 6 - energy meter

Figure 2 shows the result of measuring the volume fraction of the condensed phase formed during laser photolysis of iron pentacarbonyl in argon, when the value of the refractive index function for iron nanoparticles is known in advance. As can be seen from Figure-2. the time of growth of the condensed phase to the final state takes $200 \div 300 \mu s$ under conditions of photolysis of iron pentacarbonyl at atmospheric argon pressure and room temperature. A more detailed description of the use of the laser extinction method for nanoparticle diagnostics can be found in [17].

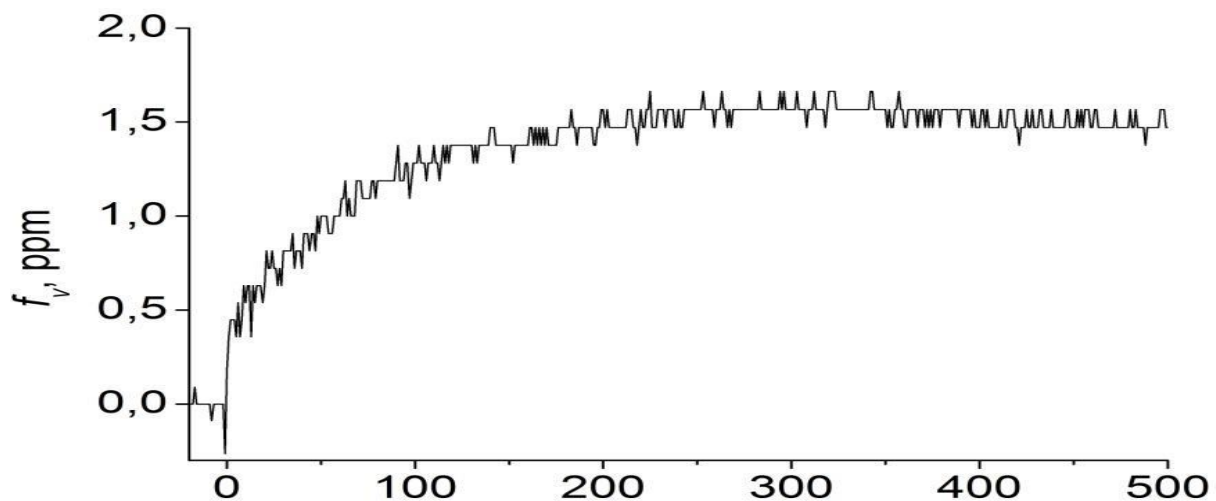
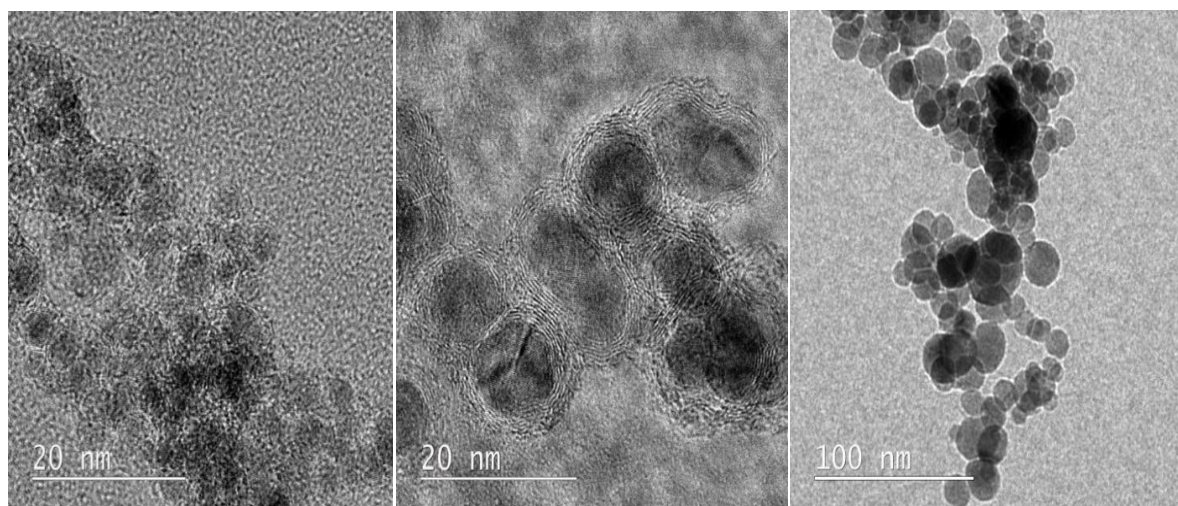


Figure 2. Time profile of the volume fraction of the condensed phase formed during laser photolysis of iron pentacarbonyl in argon A laser-induced incandescence method for measuring nanoparticle sizes

In this study, the laser-induced glow method was used to measure the size of nanoparticles [8]. The method is based on short-term heating of nanoparticles with a nanosecond laser pulse and analysis of their thermal radiation. In this case, the decay time of thermal radiation (hundreds of nanoseconds) depends on the size of the nanoparticles, since larger nanoparticles cool more slowly. A nanosecond Nd:Yag laser pulse at a wavelength of 1064 nm is used to heat the nanoparticles, and LI signals are recorded by photomultipliers at different wavelengths in the visible range of the spectrum, assuming a form of Planck radiation. The measurement scheme using the LI method is shown in Figure 3. In order to extract the sizes of nanoparticles, the experimentally obtained L signals are approximated by the calculated curves based on the L model while changing the average size of the nanoparticles. The LI model calculates the temperature of nanoparticles during laser heating and cooling in radiation and convection processes. After solving the energy and mass balance equations for a spherical nanoparticle with respect to temperature, the radiation signal from an ensemble of nanoparticles is calculated by assuming a lognormal size distribution of nanoparticles. By varying the mean and width of the distribution, we achieve a match between the normalized calculated and experimental signals. The LI model used in this study is described in detail in [9]. In contrast to the diagnosis of homogeneous iron or carbon nanoparticles described in [9], in this study, the LI method was used for the diagnosis of heterogeneous nanoparticles, i.e. iron or molybdenum nanoparticles coated with a carbon shell. Therefore, in contrast to the homogeneous LI model, in this work it is assumed that the properties of the particles (density and heat capacity) correspond to the bulk metal core, and the difference in the function of the refractive indices of the shell and core is smaller.



Picture-. 3. Photomicrographs of nanoparticles synthesized behind the reflected shock wave during pyrolysis of mixtures: a) 0.25% Fe(CO)₅ + 0.5% C₂H₂ + 99.25% Ar; b) 0.25% Fe(CO)₅ + 0.25% C₆H₆ + 99.5% Ar; c) 1% Fe(CO)₅ + 5% CH₄ + 94% Ar

As can be seen from these micrographs, carbon-shelled metal nanoparticles were obtained using only acetylene and benzene. There was no carbon shell in mixtures with methane. Nanoparticles synthesized in acetylene (Fig. 6a) had the smallest size of iron cores ($3 \div 5$ nm) compared to benzene ($7 \div 11$ nm). Nanoparticles synthesized by pyrolysis of acetylene and iron pentacarbonyl are dense aggregates of metal cores surrounded by an amorphous carbon matrix, while partially isolated iron-carbon nanoparticles were synthesized in a mixture of iron pentacarbonyl and benzene. b). The phase composition of iron-carbon nanoparticle cores was always approximately the same, regardless of the type of hydrocarbon. Figure 3 shows the microdiffraction pattern of the nanoparticles synthesized in a mixture with benzene, from which it can be concluded that the interplanar distances in the crystal

structure of the nanoparticles can be consistent with alpha iron, gamma iron, as well as iron carbide (αFe). (1.17 Å), $\gamma\text{-Fe}$ (1.081 Å, 2.07 Å); Fe_3C (1.327 Å, 1.85 Å)). Other microdiffraction patterns and direct measurement of interplanar distances using special software revealed the presence of various iron oxides formed when the samples were exposed to open air. .

3. Nanoidentification from the perspective of the automotive industry

As mentioned earlier, nanotechnology is a high-tech field focused on studying and working with atoms and molecules. Developments in this field lead to revolutionary achievements in various fields of science and technology, especially in the automotive industry. The cars of the future will be more comfortable and intelligent, based on light and durable materials and new energy systems. Almost every detail of the car can be improved using nanotechnology (NT). In the automotive industry, NT chassis, structural weight, driving dynamics, wear reduction, recyclability, etc. can be associated with the solution of many problems and technical problems. The application of transparent multilayer nanomaterials has great prospects. In particular, metal coatings applied to the glass with a thickness of several nanometers can simultaneously reflect infrared rays and give the glass additional thermal resistance. The prospects of nanotechnology in the automotive industry are now related to the use of nanostructured metallic materials with great strength and other high mechanical properties, as well as the production of the latest types of metal ceramics. A large number of varnishes based on nanosystems are developed, which not only have high strength, but also the ability to "self-heal" the surface [3] The relevance of this research is that it is possible to apply nanocoatings to various objects, especially parts of motor vehicles, to change their physicochemical properties. in light of rapidly developing techniques, one of the most important properties studied is the stiffness of nanoobjects. Hardness is one of the most important mechanical properties of nanostructured materials. Hardness measurement is an operation that requires less labor than other mechanical tests and is not accompanied by the destruction of the product, such methods are widespread in the industry and are used in monitoring technological processes and determining the operational characteristics of products; determining the microhardness of a substance to study the mechanical properties of various nanostructured materials a special method - nanoindentation - is widely used. It is based only on the mechanical effect on the investigated surface. The method is very simple and consists of accurately dipping the probe into the surface of the sample to a depth of several nm and continuously recording the applied force. Nanoindenter (nanohardness tester) is a device that enables nanoidentification. This equipment allows you to determine the hardness and elastic modulus of certain points of surface layers using a highly efficient automated method. In this case, different materials can be analyzed, including nanostructured materials for different components of motor vehicles. The device can be used to quantitatively evaluate the properties of hard coatings, single-layer and multilayer coatings, dense soft materials, and multiphase alloys. Using the nano-hardness tester, you can test the hardness of automotive vehicles, semiconductor wafers, etc. you can test the surface coating. [1] Modern device manufacturing has nanoindenters as separate devices without peripheral modules. However, in our studies, measuring the mechanical properties of nanoobjects is possible only when using the SolverPro AFM nanosclerometric module. Using a nanosclerometric module, the surface of the object under study was modified and scanned in open air by a hard semi-contact method. A Berkovich diamond indenter was used as a probe. The lack of a verification scheme for measuring instruments of mechanical properties at the nanoscale means that the only way to ensure the traceability of hardness values from micro to nanoscale is to use certified standard samples (measures) according to the microhardness standard. according to Vickers).

CONCLUSION

At present, the reference object for microhardness measurements is considered to be fused quartz, but nowhere has this sample been shown to be the reference for the nanoobjects (nanofilms) we are investigating. Determination of possible standards is one of the important problems of our research. A unified system of standards for measuring mechanical properties has not yet been developed. Through our research, we have identified a number of materials that can be used as standards for nanoindentation. The hardness measurements needed for the calibration of the nanohardness tester were developed and certified. Materials chosen for the production of such measures were, for example, Al_2O_3 single crystal (sapphire, face C), as well as other materials homogeneous in structure. Hardness and elastic modulus were measured by dynamic nanoindentation method. The wide variety of conditions studied for the synthesis of metal-carbon nanoparticles in the gas phase during pyrolysis and photolysis of mixtures of metal carbonyls with hydrocarbons allows us to draw the following conclusions. In all cases, during the pyrolysis and photolysis of gas precursors, the initial formation consisted of nanometer-sized metal nuclei. During pyrolysis, this is due to the low-temperature decomposition of metal carbonyl molecules at $500 \div 600$ K behind the already occurring shock waves, and the thermal decomposition of hydrocarbons at $1200 \div 1700$ K and requires a higher temperature. During laser UV photo-dissociation, iron and molybdenum carbonyl molecules have absorption cross sections that are orders of magnitude larger than hydrocarbons in the near UV, and therefore only they can be cleaved to form metal nanoparticles. In addition, even at temperatures below soot formation thresholds and up to room temperature (in experiments on UV photolysis of gaseous precursors), hydrocarbons decompose to form solid carbon material on the surface of metal cores due to the catalytic properties of the latter. It was determined that the catalytic decomposition of hydrocarbons on the surface of metal nanoparticles is the main mechanism for the formation of metal-carbon nanostructures. A significant effect of the nanocatalyst material on the size and structure of the synthesized nanomaterial was noted. The type of hydrocarbon plays an important role when forming metal-carbon nanoparticles.

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**THE TRIUMPH OF IRRATIONAL DECISIONS: USING EVOLUTIONARY GAME
THEORY TO EXPLAIN THE POWER OF CONFORMISM**

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ABSTRACT

The present study aims to elucidate the dynamics of the persistence of irrational behaviors and decisions over prolonged periods through the use of evolutionary game theory tools. The process of conformism, one of the crucial factors underlying the triumph of irrational behavior, will be emphasized, while the replicator dynamics will be employed in the modeling process. Evolutionary game theory is preferred to model conformism and non-yield-dominant motives since it allows emotional relationships to be established between periods. Despite mainstream economics' portrayal of humans as rational agents who do not make systematic errors, empirical evidence reveals the existence of irrational behavior and systematic errors. Conformism, one of the determinants of irrational behavior, has been extensively discussed by scholars and philosophers over the years. Essentially, it refers to the act of conforming to the beliefs and values of society or one's immediate social group without resisting them. This phenomenon involves a range of cognitive, social, and emotional processes that underlie the individual's decision to conform or diverge from the group norms. Through various experimental paradigms, researchers have identified the cognitive mechanisms that drive conformist behavior, such as social influence, group polarization, and informational cascades. While it can be beneficial in some contexts, such as promoting social cohesion and cooperation, it can also lead to negative outcomes, such as groupthink, prejudice, and conformity bias. The study is composed of three main parts. The initial segment involves a brief literature review, where we'll examine relevant sources that support our research. In the second phase, we'll develop a model to establish a return-oriented evolutionary stable equilibrium. In the concluding part, we'll demonstrate that low-return strategies can be just as effective as the best strategies, owing to the impact of conformism. By examining the influence of conformism on low-return strategies, we are able to provide a more nuanced understanding of the dynamics of the irrational behaviors and to offer valuable insights to practitioners in the field.

Keywords: Evolutionary Game Theory, Irrational Decisions, Conformism, Evolutionary Stable Equilibrium, Asymptotic Stationarity

***CROTON BONPLANDIANUS*: A POTENTIAL CONTRIBUTOR IN MODULATING IL-6, IL-1 β , and TNF- α gene EXPRESSION IN ARTHRITIS MODEL**

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ABSTRACT

Croton bonplandianus (CB), a natural source traditionally used for treating various illnesses, including rheumatoid arthritis, was evaluated in this study. The effects of ethanolic extracts (CBEE) and aqueous fractions (CBAF) of *C. bonplandianus* leaves on arthritis-induced inflammation were studied using an albino rat model of inflammation induced by Freund's complete adjuvant. Eight test groups (n =5 per group) and one vehicle control were used to evaluate the antiarthritic effects of different doses of CBEE and CBAF (125 mg.kg⁻¹, 250 mg.kg⁻¹, and 500 mg.kg⁻¹) on days 5, 10, 15, and 20 compared to arthritic and vehicle controls. Arthritis severity was assessed using macroscopic arthritis grading, histological analysis, body weights, and paw thickness. CBEE and CBAF were found to reduce the prevalence of arthritis, increase body weight, and decrease paw inflammation compared to the vehicle control group by the 23rd day. In addition, they showed no effect on biochemical parameters, but a significant difference (p < 0.05) in hematological parameters compared to the arthritic control group. The study identified Hentriacontane compound as a potential contributor to the anti-inflammatory effect of *C. bonplandianus*, as it showed the lowest dock score for IL-1 β and IL-6. Palmitoylethanol amide was identified as a potential contributor to the anti-inflammatory effect of TNF- α . Gene expression of IL-6, IL-1 β , and TNF- α was down-regulated significantly (p < 0.05) in a dose-dependent manner in all treatment groups compared to the arthritic control group. In conclusion, this study validated the anti-arthritic and anti-inflammatory properties of CBEE and CBAF in a time and dose-dependent manner.

Keywords: *Croton bonplandianus* Rheumatoid Arthritis GC–MS Ethanolic extracts Aqueous fractions Inflammation

**INTEGRATED PLAY-BASED LEARNING IN LEBANESE PRE-PRIMARY EDUCATION:
ENHANCING ACADEMIC COMPETENCES AND SOCIOEMOTIONAL DEVELOPMENT**

Aya Jaber

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ABSTRACT

This study aims to advance the understanding of implementing an integrated play-based learning approach in the Lebanese pre-primary education to enhance learners' readiness for their academic future. Play-based learning has been widely recognized in the milieu of education, yet a gap in the literature remains regarding implementing an integrated play-based learning approach to enhance both academic competences and socioemotional development. The literature shows abundant research regarding the benefits and advantages of both free play and guided play. However, there is a gap in research regarding exploring how an integrated play-based learning approach can enhance pre-primary learners' academic competences and socioemotional development. By filling this gap, the study aims to provide valuable insights for educators, principals, school teams, and policymakers, informing evidence-based practices and policies.

The research questions that emerged from the gaps in the literature regarding the implementation and outcomes of integrated play-based learning are the following:

- How can Lebanese pre-primary educators implement an integrated play-based learning approach to enhance learners' academic competences?
- How can Lebanese pre-primary educators implement an integrated play-based learning approach to enhance learners' socioemotional development?

Regarding the study's methodology, the study adopts a qualitative case study design with mixed-method elements. Purposeful sampling will be used to select two pre-primary schools in Lebanon, focusing on educators and learners in the private sector. Data collection tools and methods include semi-structured interviews, classroom observations, field notes, document analysis, surveys, and pre and post-assessments. Thematic analysis will be employed to analyze qualitative data, while descriptive statistics and comparative analysis will be used for quantitative data.

Keywords: Integrated play-based learning, academic competences, socioemotional development, pre-primary education

**THE EFFECTS OF CONNECTING READING AND WRITING ON SECONDARY
STUDENTS' WRITING PERFORMANCE, ATTITUDES, AND BELIEFS**

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ABSTRACT

This paper explored the effects of connecting reading and writing on secondary students' writing performance, attitudes, and beliefs. The primary purpose of this study was to see whether there was a significant difference in the writing performance of EFL secondary students before and after the reading-writing connection. Also, this study investigated whether there was a substantial difference in EFL secondary students' attitudes towards writing before and after the connection. In addition, EFL secondary students' beliefs about writing were inspected after the intervention. In so doing, 16 EFL students from a Lebanese secondary public school participated in the present study. The data were collected by using the students' pre and post writing tests (essays) to measure students' writing performance, a questionnaire adopted from Podson's writing attitude questionnaire, and students' interviews. The data analysis via paired t-test for comparing students' performance revealed that students' writing performance after the reading-writing connection was better than their performance in writing-only task, and the use of expressions that appeared in the original texts and used in students' writing were tracked, coded, and analysed quantitatively. Additionally, the results using SPSS showed that there was a difference in students' attitudes towards writing in favor of the intervention. Finally, a qualitative analysis of data collected from the interviews indicated that students had positive beliefs about writing after reading-writing connection because they believed that reading has exerted an enhancing effect on their writings.

Keywords: connecting reading and writing; transfer; writing performance; beliefs and attitudes

WILL ARTIFICIAL INTELLIGENCE REPLACE HUMANS?

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ABSTRACT

The ongoing discussion surrounding whether Artificial Intelligence (AI) could surpass humans is greatly influenced by rapid technological advancements and the ethical questions they raise. AI's origins date back to the late 1940s, with pioneers like Alan Turing envisioning machines capable of cognitive functions. Key milestones, such as the 1956 demonstration proving machines with unlimited memory access could effectively solve any problem, marked significant progress in the field. The 1990s witnessed remarkable achievements in AI, notably IBM's "Deep Blue" defeating chess grandmaster Garry Kasparov in 1997, showcasing AI's prowess in specific tasks. With the surge in computational power, machines started outperforming humans in various domains, sparking debates about AI's potential to replace human roles. Technological advancements, including progress in big data analysis, deep learning algorithms, and internet connectivity, facilitated AI's expansion into new areas, enhancing its ability to independently analyze complex data sets. The emergence of the Internet of Things (IoT) further empowered AI systems by granting them access to extensive data repositories, thus enhancing their capabilities.

While AI excels in tasks like data analysis and automation, challenges remain in areas requiring human qualities such as creativity, empathy, and ethical decision-making. Collaboration between humans and AI emerges as a promising approach, leveraging the strengths of both for faster problem-solving. While AI has the potential to excel in many domains, complete substitution of humans is unlikely due to the unique qualities humans possess. As we navigate the evolving AI landscape, careful consideration of ethical and societal implications will be crucial in harnessing its full potential for the benefit of humanity.

Keywords: Artificial Intelligence, technology, algorithm, internet

INTRODUCTION:

The development process of artificial intelligence and the factors influencing this process encompass complex and extensive issues. This article discusses the history of artificial intelligence, its key developmental stages, the role of technology platforms, big data analytics, deep learning algorithms, internet integration, and operations in research and innovation. The history of artificial intelligence extends back to the late 1940s, when researchers like Alan Turing and John von Neumann attempted to formulate the concept of machines "thinking." In 1956, the idea of machines utilizing unlimited memory created a significant perspective for artificial intelligence. In the following years, the development of expert systems, machines learning from experience, and technologies enabling predictions based on collected data facilitated the real-world application of artificial intelligence. Starting from the 1990s, the growing interest in artificial intelligence culminated in symbolic events like the victory of the "Deep Blue" chess computer over Garry Kasparov in 1997, sparking engaging discussions [1]. During this period, machines began to replace humans in various fields by demonstrating higher performance with larger datasets. In the early 21st century, the rapid advancement of technology, the development of technology platforms such as big data analytics and self-managed systems, further enhanced the potential of artificial intelligence. This allowed computers to solve more complex problems and efficiently process larger datasets. In the most modern era, innovations in big data analytics and management, deep learning algorithms, internet integration, high-performance computers, research, and innovation fields ensure the rapid development of artificial intelligence. Innovations in these areas reshape the functionality of entire societies and shape humanity towards a more automated and technology-adaptive society. The article raises questions about the potential substitution of humans by artificial intelligence and provides detailed information about these processes. Based on the topics discussed in this article, detailed information is provided about operations, research, and innovations related to the development of artificial intelligence through scientific articles and books.

Will artificial intelligence replace humans?

Artificial intelligence (AI) and its potential to replace humans in various tasks continue to be subjects of ongoing debates, especially in light of recent technological advancements. AI encompasses technologies developed to perform tasks that typically require human intelligence, such as problem-solving, decision-making, and applying humanitarian skills. Discussions arise regarding whether AI will enhance collaboration with humans or eventually replace them. In this article, we will take a broad look at the history, development, capabilities, and the question of whether AI can replace humans. Understanding the history and development of AI is crucial before delving into discussions about its potential to replace humans. Let's now explore the history and development of artificial intelligence. The continuous development of modern AI, coupled with significant technological breakthroughs, is a pivotal aspect in describing the profound history and evolution of this field. Before the emergence of AI, pioneers in the field of Information Technology, such as Alan Turing and John von Neumann, aimed to elevate the concept of machines "thinking" to a higher level by attempting to prove the logical theorems of cognition. In 1956, researchers demonstrated that machines, when given unlimited memory access, could solve any problem, marking a significant milestone for AI. Subsequent years witnessed research efforts enabling the application of AI to real-world problems.[5] During this period, the development of expert systems, capable of learning from experience and making decisions based on accumulated data, became notable. Expert systems, which identify patterns and make decisions based on learned information, are widely used today in fields such as medicine and manufacturing. The development of programs like Shakey¹, a robot, and Eliza², which automated simple conversations, in 1965 paved the way for technologies later integrated into applications like Siri and Alexa³. Starting from the early 1990s, interest in AI began to rise, with computers demonstrating superior performance in tasks with narrow probabilities, such as playing board games like chess and checkers, surpassing human capabilities. This period saw advancements in computational power and data storage technologies, creating new possibilities for AI.[6] In the late 20th century and early 21st century, significant breakthroughs in computer hardware led to machines being able to solve complex tasks more efficiently. During this time, machines began to outperform humans in various tasks involving AI. A notable example is the victory of IBM's "Deep Blue"⁴ over world chess champion Garry Kasparov in May 1997. "Deep Blue" had the capability to process two hundred million moves per second, surpassing human capabilities by a large margin. This event sparked widespread interest in AI among the public, leading to questions such as "Will artificial intelligence replace humans?" becoming prevalent. In 2005, a Stanford robot named "Stanley" autonomously won the DARPA⁵ Grand Challenge by navigating a 131-mile course in an uncharted desert. Two years later, a team from CMU won the DARPA Urban Challenge by autonomously navigating through an urban environment while adhering to all traffic laws [10]. Comparing both victories, it becomes evident that the robot surpassed human performance by a significant margin. In the early 21st century, significant advancements in technology, knowledge, and engineering hinted at the potential values that could fundamentally alter human lifestyles. This period witnessed regulated developments driven by various factors such as the rapid increase in computing power, the creation of vast datasets, and the more effective development of machine learning. The evolution of AI constitutes the foundation of independent research and innovations in knowledge and technology. The creative activity of computers is strengthened with the emergence of new algorithms and technologies. This reinforces the ability of independent systems, such as machine learning, to become more complex and effective. Through the most advanced machine learning method, "deep learning," computers can learn, understand, and analyze more extensive and complex information. This enables personal assistants to become more intellectual and efficient, and medical diagnostic systems to become more accurate. These machines can analyze vast amounts of data without requiring human intervention. The development of the internet has facilitated the creation of more extensive and diverse datasets, offering the potential to transform various human activities in fields such as medical research,

¹ Shakey - The first mobile robot that can think about its own actions

² Eliza - The first robot that can speak like a human

³ Siri and Alexa – "Intelligent" assistants controlled by artificial intelligence

⁴ Deep Blue - A robot specialized in the game of chess supported by the IBM supercomputer

⁵ DARPA - A race organized for humanoid robots

marketing strategies, and more. However, these advancements introduce ethical and emotional considerations, adding privacy concerns to the equation. All these innovations contribute to a more automated and intellectually oriented society. The automation of operational processes leads to increased speed and efficiency, fostering the learning of new skills. These changes and innovations reshape the functionality of all societies and fields, guiding humanity towards a more modern and technology-driven society. Now, let's examine the processes driving the development of artificial intelligence in the 21st century: The continuous evolution of artificial intelligence in the 21st century has been driven by processes that instigated widespread interest in AI.[8]

1.The Development of Big Data Analysis and Management

The development of Big Data Analysis and Management has played a significant role in the advancement of AI. Big Data refers to the vast and varied volume of information generated continuously from sources such as social media, sensors, and digital transactions. This data is characterized by three primary dimensions:

1.1.Volume: Big Data involves massive amounts of information that can range from terabytes to exabytes. The exponential growth of data over recent years, as highlighted by sources like Intel, underscores its significance in contemporary information technology. The challenge lies not only in storing such enormous volumes but also in processing and analyzing them effectively.

1.2.Velocity: Data in the Big Data ecosystem is generated at high speeds. This rapid influx of data requires systems and technologies capable of capturing, storing, and processing it in near real-time. Traditional database management systems often struggle to keep pace with the velocity at which new data is produced and consumed.

1.3.Variety: Big Data encompasses diverse data types and formats, including structured, semi-structured, and unstructured data. These can range from traditional text-based information to multimedia files, sensor data, and log files. The ability to handle this variety of data is crucial for extracting meaningful insights and trends.

As a result, effective management and analysis of Big Data, encompassing its volume, velocity, and variety, require robust infrastructures and specialized tools. As technology advances, it remains crucial to extract valuable insights from Big Data, while also noting the significant role it plays in the development of AI. In today's data-driven world, this process remains essential for organizations striving for innovation and competitiveness.[2]

2.The Development of Deep Learning Algorithms.

Deep learning algorithms represent a subset of machine learning, a branch of artificial intelligence. These algorithms are designed to analyze and comprehend complex and abstract data, drawing inspiration from the neurons in the human brain. As a fundamental processing principle, deep learning algorithms can independently analyze data, discern connections, and identify patterns. They learn from extensive datasets and apply this learning to new information. While deep learning algorithms find applications across various domains, their primary strength lies in their ability to handle complex and abstract information.

Key Characteristics of Deep Learning Algorithms:

2.1. Neural Networks:

Deep learning algorithms leverage complex neural networks, which are used in applications such as security surveillance, autonomous vehicles, medical diagnostics, text analysis, and more.

2.2. Automated Operations:

These algorithms autonomously regulate operations within neural networks, facilitating the automatic organization of analyzed data and enabling the automation of various business processes.

2.3. Autonomous Learning:

Deep learning algorithms can learn independently over time. They adapt their decisions and outputs based on analyzed data, contributing to the development of continuously improving and self-regulating systems.

2.4. Multi-faceted Analysis:

Deep learning algorithms perform multi-faceted analysis, enabling them to interpret and understand various types of data simultaneously. This capability allows for the analysis of images, audio, text, and other data formats concurrently.

These characteristics illustrate how deep learning algorithms, integral to the development of AI, enhance the capability to process and understand complex data, contributing significantly to advancements in various fields and industries.[1]

3.The development of Internet and Connectivity.

The interconnection of various devices and sensors is referred to as the Internet of Things (IoT). The vast amounts of data coming through these devices provide more information to the activities of artificial intelligence. The expansion of the internet in this manner further widens the scope of artificial intelligence: [7]

3.1. Key Principles:

- **Device Connectivity:** IoT⁶ (Internet of Things) ensures the interconnection of various devices and sensors, allowing independent devices such as weather sensors, smart devices, and automated home systems to send and receive information to and from each other.
- **Data Collection and Sharing:** Through IoT-enabled devices, information can be collected and shared from the environment, manufacturing processes, and other diverse sources. This enables effective analysis and decision-making processes.
- **Protocols and Standardization:** Protocols and standards for connectivity are crucial for ensuring effective communication and connectivity among independent devices for the operation of IoT.

3.2. Role of Sources:

- **Cloud Computing:** The extensive datasets from IoT devices are stored and managed in cloud computing infrastructure. This allows for the analysis, storage, and utilization of data on a broad scale.
- **Artificial Intelligence and Machine Learning:** Data from IoT-connected devices serves as a source for in-depth research and analysis for artificial intelligence and machine learning algorithms. This data enables algorithms to exhibit higher-level intellectual activities.
- **Application Areas:** The application areas of IoT are diverse, ranging from energy management to autonomous transportation, healthcare to smart cities. These application areas further expand the role of sources in a broader context.[4]

4.The Development of Technology Platforms.

The development of high-performance computers, cloud computing, self-driving systems, and similar technology platforms enables artificial intelligence to operate faster and more efficiently. These platforms assist artificial intelligence in handling more complex and extensive datasets.

4.1. High-Performance Computers:

High-performance computers are powerful and fast computer systems designed to perform complex computations and analyses. These computers ensure the faster processing of artificial intelligence algorithms and the analysis of complex data. The use of high-performance computers for artificial intelligence is crucial for research, mathematical modeling, and solving other complex problems.

4.2. Cloud Computing:

Cloud computing operates on the principle of sharing information over the internet and delivering incoming data when and where needed. This platform facilitates the easy access of information from stored and managed locations and allows artificial intelligence applications to work with larger datasets. Utilizing extensive databases for artificial intelligence enhances the effectiveness of algorithms.[3]

4.3. Self-Driving Systems:Self-driving systems⁷ are technologies that operate based on the principle of the self-control of machines and vehicles. These systems are equipped with sensors, cameras, and algorithms that make autonomous decisions. The development of artificial intelligence in this field helps vehicles better understand their surroundings and achieve autonomous control.[9]

5.The Development of Research and Innovation.

Another crucial process accelerating the development of artificial intelligence is research and innovation. Research institutions, universities, and companies engage in activities to develop more effective algorithms, new technologies, and broader applications of artificial intelligence.

⁶ IoT - connecting various devices and objects to the Internet and communicating with each other

⁷ Self-driving systems - Common name for self-driving systems

5.1. Research Institutions and Universities: Research and innovation play a leading role in the rapid advancement of artificial intelligence in scientific institutions and universities. These institutions conduct activities for the development of new algorithms, technologies, and research areas.

5.2. Companies and Innovation Laboratories: Companies and innovation laboratories are involved in research and innovation activities to expand the scope of artificial intelligence and create new application areas.

5.3. Start-up Organizations and Innovation Ecosystem: Start-up organizations provide an ideal ground for the rapid implementation of research and innovation activities. The innovation ecosystem enables the swift realization of research initiatives. In the preceding sections, we have examined the development process of artificial intelligence and the factors influencing this process. Now, let's attempt to answer the question, "Will artificial intelligence replace humans?"

CONCLUSION:

Artificial intelligence is evolving to reduce and enhance human tasks in many fields. However, the complete replacement of humans by artificial intelligence is a highly complex question and can lead to various opinions. Many researchers and experts note that artificial intelligence can replace humans depending on the specific domain and purpose it is applied to. For instance, in automated processes, security measures, data analysis, and other areas, artificial intelligence can achieve significant successes and perform tasks on behalf of humans. However, in certain fields, human capabilities such as creativity, literary understanding, and independent thinking are challenging for artificial intelligence to fully grasp. Processes like predicting crucial information, solving complex problems, and making independent decisions are areas where artificial intelligence cannot completely replace humans. Even in domains where artificial intelligence has achieved remarkable advancements, it is crucial to consider humanitarian and social skills, ethics, and values. Human qualities like relationships, empathy, respect, and justice are challenging for artificial intelligence to comprehend. In general, it can be said that artificial intelligence has the potential to replace humans in many fields, but complete replacement may not be possible. Collaborative efforts between humans and artificial intelligence can contribute to faster and more effective problem-solving.

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BE ACTIVE IN A "SMART" WAY

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ABSTRACT

Health and fitness apps can be a key motivator in increasing physical activity among teenagers. The combination of their basic functions, such as tracking distance, calories, steps, heart rate, etc., along with personalized information and social media interaction among users, makes these applications highly effective in fostering a healthy lifestyle among adolescents. At the same time, the increased use of smart devices (phones, watches, etc.) by teenagers provides a valuable opportunity for creative use in Physical Education classes. Considering these factors, along with the widely acknowledged importance of a healthy lifestyle during adolescence, this innovative educational practice was designed to emphasize the influence of health and fitness apps, combined with wearable smart devices, in fostering and improving physical activity and health patterns of teenagers.

The interdisciplinary project involved two K10 groups (45 children) from two different schools and had a duration of five months. For its implementation, digital technologies were used both in kinetic and theoretical context. Throughout the project, the incorporation of new technologies was ongoing as teenagers engaged in relevant field tasks, participated in online forums, contributed to discussions, and assessed familiar digital applications. In terms of methodology, student-centered approaches were employed, allowing for active learning, collaboration, and exploration to fulfill the learning objectives. These methodologies were incorporated within a blended learning framework.

The project outlined the potentially positive role of wearable smart devices such as smart phones and watches, not only in helping teenagers monitor their physical activity, but also in maintaining it at a good level. The students who took part in the project showed a strong belief and desire to utilize their mobile phones and smart watches into their everyday lives to maintain a healthy lifestyle. Most teenagers reported that they drastically reduced their sedentary lifestyle and increased regular physical activity in their leisure time.

Keywords: Fitness apps, wearable devices, physical activity

INTRODUCTION

Despite the widely recognized need for a healthy lifestyle in adolescence, teenage obesity is increasing (Srivastav et al., 2020). To address this matter, it is imperative to incorporate activities in Physical Education classes that promote the enhancement of children's regular physical engagement and the integration of modern technologies. (Colley et al., 2019). The use of Information and Communication Technology (ICT) in PE school projects can greatly enhance their motivation and effectiveness. (Cox & Meaney, 2018). After all, the use of smart devices (smart phones and watches) can have a positive impact on daily physical activity as well as on nutrition issues (Papastergiou et al., 2021).

It should be noted that the concept of sports applications has been used in various fields such as healthcare, sports, entertainment, electronics, etc. for a long time (Seçkin et al., 2023). Wearable Technology (WT) is often used in literature. Wearable Technology (WT) can be described as devices that are worn on the body, non-invasive, and incorporate various electronic components such as sensors, communication units, processors, actuators, and power sources (Seçkin et al., 2023). The article aims to pave the way for future research in this dynamic field, highlighting the potential of WT in addressing various challenges in the Physical Education course.

MATERIALS AND METHODS

The purpose of the specific action was to introduce the children to new, modern ways of exercise and physical activity and to be able to use them for life in their everyday life. It was sought to recognize physical exercise positive effects, discover opportunities of physical activity in daily life, utilize wearable smart devices to monitor physical activity, use smartphones in a creative & beneficial way, build soft skills (4Cs) and improve physical activity & health patterns.

For this reason, cooperative, experiential and exploratory teaching methods were used, while at the same time teaching techniques such as working groups, role play, dialogue, case study, etc. were used to enhance the effectiveness of teaching. The choice of the above methods in the specific project, was made to follow the principles of the constructivist view of learning, principles evident in active learning embedded in authentic, collaborative contexts (Savery & Duffy, 1995; Ward & Tiessen, 1997). In these contexts, students jointly undertake complex projects, which correspond to real-life situations outside of school, and engage in similar activities that have purpose and meaning, building knowledge through interpersonal social interaction (Brown et al., 1989; Savery & Duffy, 1995).

Also, the inter-school collaborative action was designed with emphasis on:

- ✓ Emerging technologies and digital applications (e.g. Canva, Google slides, Google forms, RunKeeper, ChatGPT).
- ✓ Soft skills (communication, collaboration, critical thinking, creativity)
- ✓ Blended learning / Experiential learning

The action was implemented in two K10 groups, 25 and 20 students each, and lasted 5 months. Participating students completed an anonymous questionnaire before and after the action, while the teachers kept a diary of participants reactions, comments and behaviours. Synchronous sessions and asynchronous assignments with virtual meeting platform Webex and LMS "eclass.sch.gr" were used, while all groups performed physical activities and theoretical tasks.

Special emphasis was placed on utilizing the forum of the asynchronous platform, as through this the children discussed, chose and exchanged ideas, perceptions and opinions. The final product of the action culminated in a collaborative presentation on Canva, which was presented in an inter-school virtual meeting (Inter-school 'Be Active' day).

The action was particularly important and useful both for children, parents, but also for future researchers, as it was based on principles of constructivism, according to which a learning environment should (Savery & Duffy, 1995): a) involve the learners in an authentic and complex project, b) include meaningful activities linked to that project, c) help learners develop a sense of 'ownership' of the project and the learning process, d) challenge their thinking, e) to encourage social interaction between them and f) to provide them with opportunities for reflection and self-regulation so that they gradually become independent.

The students participating in the project had the opportunity to learn in a multimedia environment that emphasized inquiry and experimentation. The teachers confidently used new technologies, particularly ICT, in a didactic manner. This innovative approach allowed the children to actively engage in contemporary learning environments and build their confidence in utilizing ICT through hands-on experiences. (Pierson & McNeil, 2000; Yang, Shindler & Keen, 2000; Albion, 2001).

RESULTS

Based on the diary entries and assessment of physical activities and group work, it is evident that the children acquired valuable skills in using health and fitness applications. Despite initial unfamiliarity, the students swiftly adapted to the project requirements. By the conclusion of the activity, there was a noticeable rise in the number of children who owned smart watches or activity trackers. Additionally, there was a substantial increase in the participation of children in both physical activities and organized sports.

Most teenagers answered that their daily physical activity will increase and for this reason they will use similar applications. From the answers, a change was observed in the attitude and behavior of the students towards exercise, while several children told us that they would combine exercise with a better-quality diet.

Also, the majority of teenagers answered that sports applications, through their functions, enable them to walk more, to share their performance with peers, to receive information about their physical activity (calories, steps, pulses, etc.), to exercise individually, but also in groups and in general to be physically active in a playful and pleasant way.

Based on the accounts of the children themselves and their observations from their family and social circles, it was discovered that the use of sports applications or activity trackers had a positive impact on their physical health. They were able to notably increase their daily step count and, importantly, many teenagers were able to either maintain or even decrease their body weight. Additionally, there was a significant improvement in the participants' body mass index (BMI) for several individuals.

It is noteworthy that the teenagers enthusiastically, with genuine interest and pleasure, participated in the activities. The systematic incorporation and utilization of digital applications and new technological tools proved to be instrumental in facilitating both the physical activities and the completion of theoretical tasks.

DISCUSSION

The objective of this project was to explore the impact of health and fitness applications on teenagers' physical activity levels and their ability to sustain it over time. Over the course of five months, the study also delved into how to effectively utilize these applications, their features, and the distinctions and similarities between health and fitness applications and wearable devices.

As deduced from the results of the study, it can be concluded that the project had a positive influence on teenagers' utilization of mobile devices for both physical activity and nutrition purposes. Even though most students used smartphones rather than smartwatches, the number of daily steps taken by participants increased significantly in both cases. Moreover, students expressed a heightened belief in the efficacy of these applications in motivating them to engage in more physical activity and maintaining an active lifestyle in the long run.

The positive response from young people and adolescents towards health and fitness monitoring apps supports the previous research (e.g. Martin et al., 2012; Abraham & Michie, 2008; Duncan et al., 2014; Turner-McGrievy et al., 2013) indicating their willingness to utilize these apps. The successful implementation of the project suggests that the students who participated will likely continue using such apps in their everyday lives.

Upon the completion of the project, it was observed that the students who actively engaged with the health and fitness monitoring apps became increasingly physically active and showed a decrease in sedentary behavior compared to their peers. These findings align with previous research conducted by Ahtinen et al. (2010), Consolvo et al. (2008), and Lin et al. (2006), indicating that the utilization of physical activity monitoring apps can serve as a compelling motivating factor for adolescents to maintain an active lifestyle both within and outside the school setting.

The utilization of physical activity monitoring applications proved to be highly effective in promoting physical activity among adolescents, as similar apps have also demonstrated their usefulness in other aspects, such as nutrition. This finding supports previous research (e.g. Paramastri et al., 2020; Samoggia et al., 2020) highlighting the significant role of nutrition monitoring apps in shaping users' dietary choices. This can be attributed to the continuous and detailed feedback provided by these apps, which inform users about the nutritional content and caloric value of different foods.

CONCLUSION

It is important to note that this study has some limitations that should be acknowledged. Firstly, the sample size was relatively small and consisted of students who were already interested in physical activity. This may limit the generalizability of the findings to a larger population. Secondly, the measurements used in the study relied solely on self-report instruments, which may introduce bias and inaccuracies in the data. Future research should aim to address these limitations by conducting similar studies with larger and more diverse samples, using a combination of self-report and objective measures such as accelerometers to assess physical activity levels.

Despite these limitations, this study has provided valuable insights into the effectiveness of integrating project-based learning and ICT tools, such as mobile applications and social learning platforms, in the context of Physical Education. The findings demonstrate how this active and student-centered approach can effectively motivate and engage students in physical activity, both within and outside of the school setting. The research evidence generated from this study can serve as a guidance to researchers in the fields of Physical Education and ICT in education, as well as to Physical Education teachers and school administrators seeking to enhance student participation and success in physical activity.

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OXIDATION OF CHLORHEPTAN WITH THE PARTICIPATION OF CROWN ETHERS

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ABSTRACT

One of the main areas of production that pollutes the environment with toxic and harmful waste is the oxidation process of chlorinated hydrocarbons. In order to get rid of environmental pollutants during the implementation of this process, we studied the oxidation reaction of chlorinated hydrocarbons in the presence of interphase catalysis, which is one of the latest, promising and rapidly developing fields of organic chemistry, and proposed a new efficient method that is environmentally friendly. In this method, the oxidation of chlorinated hydrocarbons was carried out at a low temperature of 1300C, in the presence of dibenzo-18-crown-6 (DB18K6) in xylene, and KMnO₄ was used as an oxidant.

The oxidation reaction of 1-chloroheptane was studied in the presence of metal complex catalysts formed by crown ethers with alkali metal cations under the conditions of intermediate catalysis, and a new, efficient and simple method for the synthesis of 1-chloroheptanoic acid was presented. The use of crown ethers in this method enables the process to be carried out at a very low temperature and under mild conditions. This, in turn, prevents the purchase of various waste and toxic products.

In our study, the regularities of the oxidation reaction of 1-chloroheptane were studied in order to determine the optimal conditions of the process, to investigate the cause of the by-product formation and to increase the yield of the product. The effect of various complexing agents, solvents, as well as the concentration of DB18K6 and KMnO₄ on the yield of the product was studied.

It was determined that increasing the concentration of KMnO₄ from 20 mmol to 50 mmol increases the yield of 1-chloroheptanoic acid, but the increase in the concentration at the next stage causes isomerization of the main product.

Also, as the concentration of DB18K6 increases, the yield of 1-chloroheptanoic acid increases. This indicates that indeed the oxidation process takes place in the organic phase and the transfer of KMnO₄ to the organic phase is the main factor in this process.

In the proposed method, carrying out the oxidation reaction of 1-chloroheptane under the conditions of interphase catalysis with the presence of metal complex catalysts formed by crown ethers with cations of alkali metals differs from the traditional method known in the literature by a number of advantages.

Cheap, harmless solvents are used in the reaction. The reaction is carried out at a low temperature (100 - 1300C). KMnO₄ is used as an oxidizer, and crown ethers (DB18K6) are the most durable catalysts. It is possible to regenerate the catalyst. As a result of all this, the yield of the product is high (96-98%). The use of crown ethers in this method prevents the production of various wastes and toxic products in the process.

Keywords: crownether, interphase catalysis, of 1-chloroheptane, 1-chloroheptanoic acid

INTRODUCTION

Currently, based on the principles of sustainable development adopted at the World Summit in 2002, great work is being done in the direction of solving environmental problems that exist all over the world. Industrial enterprises are one of the main environmental problems in the world

are toxic and harmful wastes released into the atmosphere by Therefore, one of the important issues facing modern chemistry recently is to replace harmful methods that pollute the environment with various wastes with new, environmentally friendly methods. [1-3]. One of the main areas of production that pollutes the environment with toxic and harmful waste is the oxidation process of chlorinated hydrocarbons. In order to get rid of environmental pollutants during the implementation of this process, we studied the oxidation reaction of chlorinated hydrocarbons in the presence of crown ethers under interphase catalysis, which is one of the most recent, promising and rapidly developing fields of organic chemistry, and proposed a new efficient and environmentally friendly method [4 -17]. In this method,

the oxidation of chlorinated hydrocarbons was carried out at a low temperature of 1300C, in the presence of dibenzo-18-crown-6 (DB18K6) in xylene, and KMnO₄ was used as an oxidant.

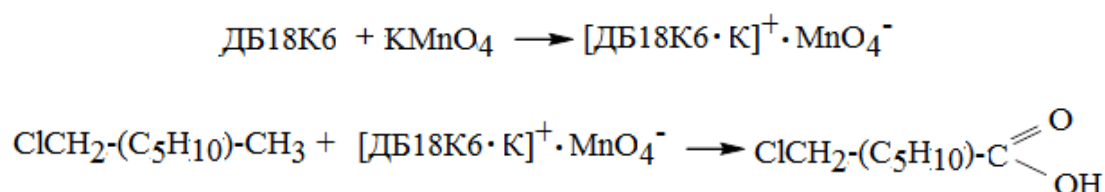
MATERIALS AND METHODS

The oxidation reaction of saturated chlorinated hydrocarbons was carried out in a two-phase heterogeneous system consisting of solid, powdered KMnO₄, liquid saturated chlorinated hydrocarbon and solvent. Three classes of complex agents as interphase catalysts in the reaction: crown ethers - dibenzo-18-crown-6 (DB18K6), 18-crown-6 (18K6), pentamethyl-15-crown-5 (PM15K5), tetramethyl-12-crown -4 (TM12K4), their open chain analogs - diglyme, triglyme, tetraglyme, and quaternary ammonium salts - triethylbenzylammonium chloride were used. In addition, KMnO₄ and various solvents were used as an oxidant in the reaction.

The effect of various complexing agents and solvents, as well as the amount of crown ethers and KMnO₄ on saturated chlorinated hydrocarbons was studied on the oxidation reaction of 1-chloroheptane.

It was determined that the activity of the system and the yield of 1-chloroheptanoic acid mainly depend on the rate of transition of the manganate MnO₄⁻ ion from the solid phase to the liquid phase. This, in turn, depends on the stability of the complex formed by crown ether with KMnO₄.

The essence of the process is that the crown ether acts as a carrier between the phases. Thus, the crown ether forms a complex with KMnO₄ and transfers this complex to the organic phase and ensures its dissolution there. The reaction proceeds according to the following scheme:



In the organic phase, the complex dissociates and the highly active MnO₄⁻ ion is obtained. That ion interacts with 1-chloroheptane and oxidizes it to 1-chloroheptanoic acid.

While studying the effect of different complexing agents on the oxidation reaction of 1-chloroheptane, it was determined that the most effective of the three classes of complexing agents used in this reaction are crown ethers, followed by glymes.

The activity of crown ethers, in turn, depends on their ability to form a complex with KMnO₄ and their stability. This, in turn, depends on a number of factors:

1. From the size of the crown-ether ring and the size of the cation - the closer these sizes are to each other, the more stable the complex.
1. From the number of donor atoms - the stability of the complex increases more than the number of donor atoms.
2. From the arrangement of donor atoms - the more donor atoms on one plane, the more stable the complex.
3. From the symmetry and basicity of donor atoms.
4. From the charge and solvation of the cation - the less solvation, the more stable the complex.

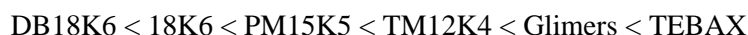
Table 1. Effect of different complexing agents on the yield of 1-chloroheptanoic acid (Chlorheptane -10 mmol, complexing agent -1 mmol, KMnO₄ -40 mmol, dioxane -15 ml)

Complex generator	Time (min.)	Conversion rate, %	Product yield, %
DB18k6	15	100	98
18k6	15	100	93
PM15k5	25	98	85

TM12k4	30	95	82
Tetraglyme	35	91	75
Triglim	35	80	60
Diglim	40	62	40
TEBAX	65	12	20
Without complexities	80	-	-

* The values in the table were calculated based on gas-liquid chromatography parameters.

Among the used quaternary ammonium salts, triethylbenzylammonium chloride (TEBAX) has little activity for the system we have taken. Thus, the activity of the complexing agents used for the studied system decreases in the following order:



The effect of KMnO₄ and DB18K6 on the yield of 1-chloroheptanoic acid was also studied. It was determined that a high yield of 1-chloroheptane (95%) occurs at 0.45 : 0.005 mol ratio of KMnO₄ and DB18K6 in dioxane at 1010C.

The effect of different solvents on the product yield was also studied and is given in table 2. It was determined that the maximum yield occurs in dioxane at 1010C in a short period of time.

Table 2. Effect of different solvents on the yield of 1-chloroheptanoic acid
(Chlorheptane -10 mmol, DB18K6 -1 mmol, KMnO₄ -40 mmol, solvent -15 ml)

Decisive	Time (min.)	Conversion rate, %	Product yield, %
Toluene	50	98	90
Xylol	50	95	92
1,4-dioxane	5	100	95
Diglim	10	100	78
n – butanol	20	85	81
Ethylene glycol	20	90	85
You are decisive	120	10	5

* The values in the table were calculated based on gas-liquid chromatography parameters.

The advantage of the proposed method is that CO, Cl₂, HCl-vapour, etc., of harmful and toxic wastes known from the literature during oxidation in the presence of crown ethers. is prevented and the process is carried out under mild conditions, increasing the yield of the product.

RESULTS

The oxidation reaction of 1-chloroheptane with the presence of crown ether under interphase catalysis conditions was studied, and a new, efficient and simple method for its synthesis was presented.

The use of crown ethers in this method enables the process to be carried out at a very low temperature and under mild conditions. This, in turn, prevents the purchase of chlorinated waste and toxic products. The proposed method differs from the traditional method known in the literature by several advantages. So, aromatic and alkylaromatic (xylene, toluene) and simple ethers (dioxane) are used in the reaction, the reaction is carried out at a low temperature (100-1300C). . It is possible to regenerate the catalyst. As a result of all this, the yield of the product is high (96-98%).

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**THE INVESTIGATION OF THE EFFECT OF NANOPARTICLE DOPED ACTIVATED
CARBON OBTAINED FROM PEPPER STEM WASTES ON ADSORPTION OF
ERIOCHROME BLACK T AS A DYE**

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ABSTRACT

In this study, the experimental investigation of the adsorption of Eriochrome Black T (EBT) as a dye on adsorbents obtained by different activated carbon (AC) preparation methods of pepper stems (PS), a waste material, and the obtained results are presented. In the first method, AC(tr-PS) was produced by chemical activation with H₃PO₄(50%)- physical activation, in the second method chemical activation with H₃PO₄(50%)- physical activation with microwave and in the last method, Cu nanoparticle (2% by weight) doping (green synthesis) is applied to the AC(mw-PS) obtained in the second method. Optimum conditions were determined by performing EBT adsorption using different parameters (concentration, pH, temperature). Characterization of AC was made by FT-IR, EDX, x-Ray, TG, and SEM. EBT concentration was determined by UV. The results obtained were compared with untreated PS(raw-PS) and it was determined that the maximum adsorption was achieved with Cu-doped AC(Cu-PS). According to the data obtained, the monolayer capacity according to Langmuir parameters in the first method is 195,39 mgg⁻¹. In the second method, it was determined as 282,061 mgg⁻¹, and with Cu nanoparticles it was determined as 338,073 mgg⁻¹.

Key words: Pepper stem, Nanoparticle Doping, Eriochrome Black T, Adsorption, Langmuir.

INTRODUCTION:

Adsorption; since it is a method of removing ions and molecules in the liquid and gas phase from the environment by means of an active surface, it is a cheap, easy to apply and practical method used for cleaning and purifying air and water that has been polluted in one way or another with various chemicals. Another reason why adsorption is preferred is that waste materials can be used. In this way, it is both an inexpensive method and prevents the accumulation of solid waste, which is another part of environmental pollution. Considering this, the method is a particularly important method as it helps both to obtain adsorbent using solid wastes and to clean water or air with this adsorbent. In the method, the surface area and the micropore structure of the adsorbent are especially important for the success of adsorption. The dyestuff wastes of industries such as pharmaceuticals, plastics and textiles, which have experienced technological developments, have threatened water, which is essential and vital for the continuation of life (Gupta et. al, 2013, Robinson et. al, 2001). Especially, in the textile industry, azo-based dyestuffs used in dyeing textile products such as wool, silk and nylon, when mixed with water cause serious and irreversible damages. Eriochrome Black T (EBT) is one of these substances. Aly-Eldeen et.al. was removed the EBT from the aqueous medium and it achieved high efficiency (97.08%) at pH.6 by using waste sludge as an adsorbent (Aly-Eldeen et. al, 2018). Successfully adsorption largely depends on the porosity and the surface area of the adsorbent used. Agricultural waste is one of the preferred raw materials, especially in adsorbent use, due to its abundance, cheapness, contribution to environmental waste management and cellulosic structure. Activated carbon (AC) obtained from

agricultural wastes are highly valuable adsorbents with high surface area and hierarchical porosity. Many researchers have been used agricultural wastes such as pepper stems (Jong-Hwan et. al, 2016), rice-straw (Ken-Lin et. al, 2014) , cotton stalk (Hui et. al, 2010) , coconut shell (Chengwen et. al, 2014) and pistachio shell (Taghizadeh et. al, 2018; Dolas et. al, 2010) have been used as carbonaceous material in production of AC to remove the organic/inorganic types due to their cellulosic structure and abundant in nature.

In the production of activated carbon, carbonaceous material was carried out using various methods such as chemical activation-physical adsorption, chemical activation-physical activation with microwave. In addition to these methods, activated carbons containing nanoparticles were obtained by using extracts obtained from plant roots and leaves. This is an environmentally friendly method that requires less energy and fewer chemicals.

In the literature, various nanoparticulated materials have been prepared using plant extracts such as tilia plant (Dalal et. al, 2019) and peanut Vera L. hull (Taghizadeh and Kurosh, 2018) and have been successfully used as catalysts and adsorbents.

Approximately 2 million tons are produced every year (Korkmaz et al., 2017) and the stem parts of pepper are released into the environment as waste. The adsorption properties of the adsorbent material (Dolas, 2023) produced from these wastes by various methods were examined in our previous studies. However, the EBT adsorption comparison of adsorbents obtained from pepper stem by different methods and the adsorption performance of the adsorbent compared to other adsorbents when doped with Cu nanoparticles have not been examined.

In the light of this information, in this study, adsorbents were produced using three different methods based on pepper stem (PS), and the EBT adsorption and performance of the Cu nanoparticle-doped adsorbent were compared with other adsorbents and raw materials.

MATERIAL AND METHOD:

BS was collected from waste thrown into the environment. Cupper (II) Sulfate Pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$), used as source of nanoparticles, and EBT were purchased from MERCK. Purified water was used to prepare the solution. All solutions were kept in a cool place protected from light.

Preparation of ACs:

The process of obtaining AC consisted of two stage: activation and carbonization. Primarily, collected pepper stalks were washed with distilled water and dried in stove at 80 °C and for 24 h. Then, the dried stalks were kept in small pieces in 50% H_3PO_4 solution for 24 h. The filtered stalks pieces were boiled several times and washed with distilled water. In classical carbonization stage, The dried stalks were kept in an atmosphere of $\text{N}_2 + \text{H}_2\text{O}(\text{g})$ for 30 min. in a high temperature furnace at 650 °C. The ACs obtained at the end of carbonization were named tr-PS. In microwave carbonization, the microwave time was determined as 15 minutes (Sharif et al., 2018), the microwave power was 500W (Foo, et.al., 2012) and the microwave environment gas CO_2 (İzgi et al., 2019), carbonized ACs were named mw-PS and Cu np-PS were produced by mixing 0,1M CuSO_4 solution and peper stems extract at 70 °C and wasing and drying. (Figure 1)

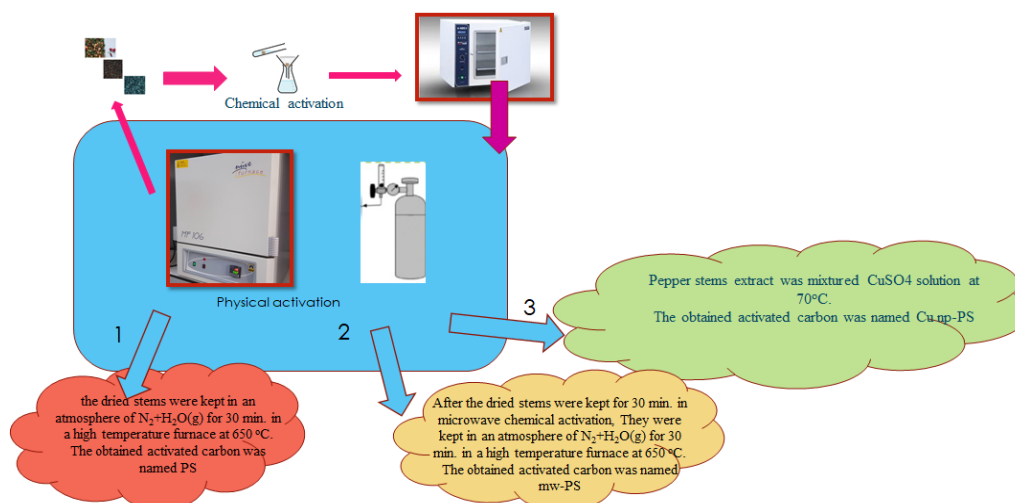


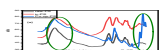
Figure 1. Tthe schematic of AC production route.

Instruments:

SEM and EDX data of ACs were taken by using ZEISS brand EVO 50 Model device and structural characterization was obtained with 4 cm-1 resolution with the spectrum taken with SHIMADZU IRTracer-100 FTIR device. X-ray diffraction patterns were obtained by using crystal structure was performed X-ray diffraction spectroscopy (RJGAKU-DMAX-2200). Thermal characterization by Thermal Gravimetric-Differential Thermal Analysis (TG-DTA-Shimadzu DTG-60H Simultaneous DTA-TG apparatus. the final concentrations of the solutions were determined in the presence of pH.10 buffer in UV-Visible at a wavelength of 612-616 nm by using UV-VIS spectrophotometer (Hitachi U-0080D).

Adsorption experiments:

In adsorption experiments, 1000 ppm stock solution of EBT was used to prepare working solutions at the desired concentration. The working solutions were 100 mL. Adsorption was carried out in suitable flasks using a shaker with temperature and shaking speed control. Adsorbed EBT amount (q_e) was calculated using Equation 1.



(1)

C_e (ppm) and C_o (ppm) in the equation, methylene blue concentration at equilibrium, initial concentration of methylene blue, V (ml) solution volume, w (g) activated carbon amount.

Adsorption isotherm

Adsorption equilibrium data were modeled by using equations below:

$$q_e = \frac{q_m K_L C_e}{1 + K_L C_e} \quad (2)$$

$$q_e = K_F C_e^{1/n_F} \quad (3)$$

$$R_L = \frac{1}{1 + K_L C_o} \quad (4)$$

Here, q_e (mg g^{-1}) and q_m (mg g^{-1}) show the equilibrium and maximum dye adsorption capacities of the adsorbent, respectively, and C_e (ppm) indicate the equilibrium solution concentration. K_L (L mg^{-1}) and R_L represent the Langmuir equilibrium constant (Langmuir, I., 1918) and separation factor for adsorption energy, and Freundlich constant are n_F and K_F ($\text{mg g}^{-1} (\text{L mg}^{-1})^{1/n_F}$) for density and adsorption capacity, respectively. (Freundlich, H., 1906)

Adsorption Kinetics

Kinetic models such as intraparticle diffusion (Weber et al., 1963), pseudo-second-order (HO, 2006) and pseudo-first-order (Lagergren, 1898) were used to study and model the dynamic mode of motion. The mathematical formulas of the mentioned models are as follows:

$$q_t = q_e (1 - e^{-k_1 t}) \quad (5)$$

$$q_t = \frac{k_2 q_e^2 t}{1 + k_2 q_e t} \quad (6)$$

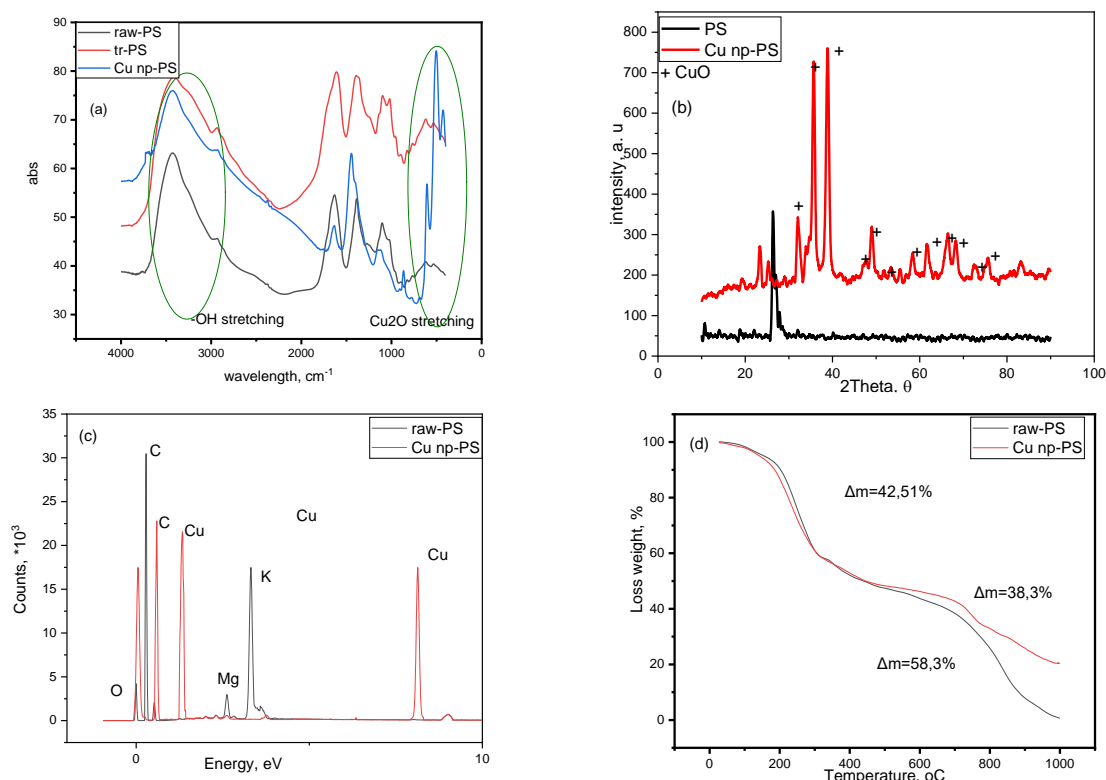
$$q_t = C + k_{id} t^{1/2} \quad (7)$$

Here, q_e (mg g^{-1}) and q_t (mg g^{-1}) are the adsorption capacities at equilibrium and at time t (min), respectively. k_1 (min^{-1}), k_2 ($\text{g mg}^{-1} \text{min}^{-1}$) and k_{id} ($\text{mg g}^{-1} \text{min}^{-1/2}$) show pseudo-first-order, pseudo-second-order and intraparticle adsorption rate constants, diffusion models, respectively. C (mg g^{-1}) represents a constant related to the boundary layer thickness.

RESULT AND DISCUSSION

Characterization of ACs:

FT-IR, EDX, x-ray, TG and SEM images belonged to the ACs were given Figure 2.



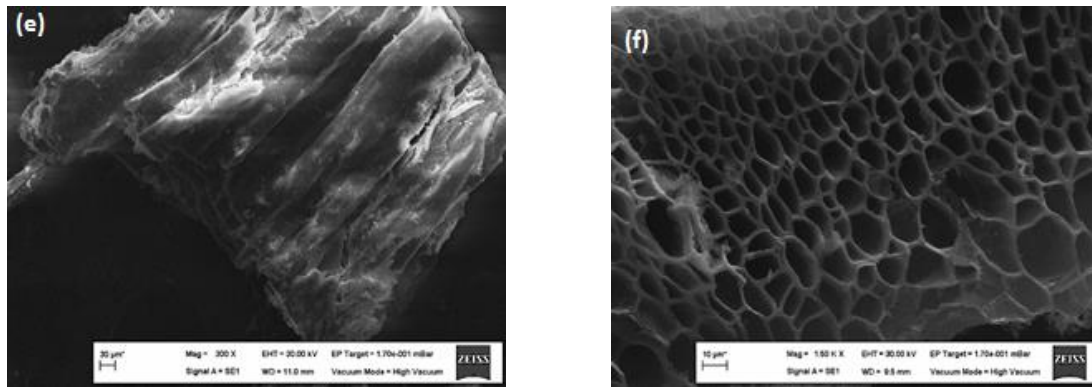


Figure 2. The characterization graphs of ACs a) The FT-IR spectrum, b) x-ray patterns, c) EDX spectrum, d) TG curves of raw-PS and Cu np-PS, and SEM images of e) raw-PS and f) Cu np-PS.

As can be seen from the graphs, Cu changed the structure of NP raw-PS both thermally and structurally. So much so that, unlike raw-PS, Cu₂O stretching vibrations in the 400-900 cm⁻¹ range in the FT-IR spectrum and peaks in the relevant region in the x-ray and EDX pattern provide 20% thermal distortion protection. and pores formed in the structure are seen. These findings supported that Cu NPs affected the AC surface and structure. (Reda, H. et. al, 2012; Shoeib MA et. al, 2012)

In the adsorption experiments, the calibration curve given in Figure 3 was used with the equation $y=63.353x+1.5705$ and $r^2=0.9999$ to find the remaining concentration in the environment.

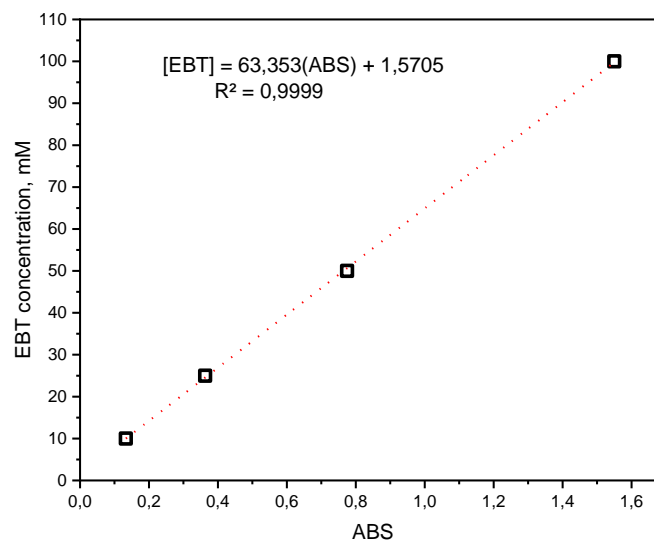


Figure 3. The calibration curve

The concentration values obtained by using this equation are given in Figure 4 for each adsorbent as a function of time as percentage adsorption.

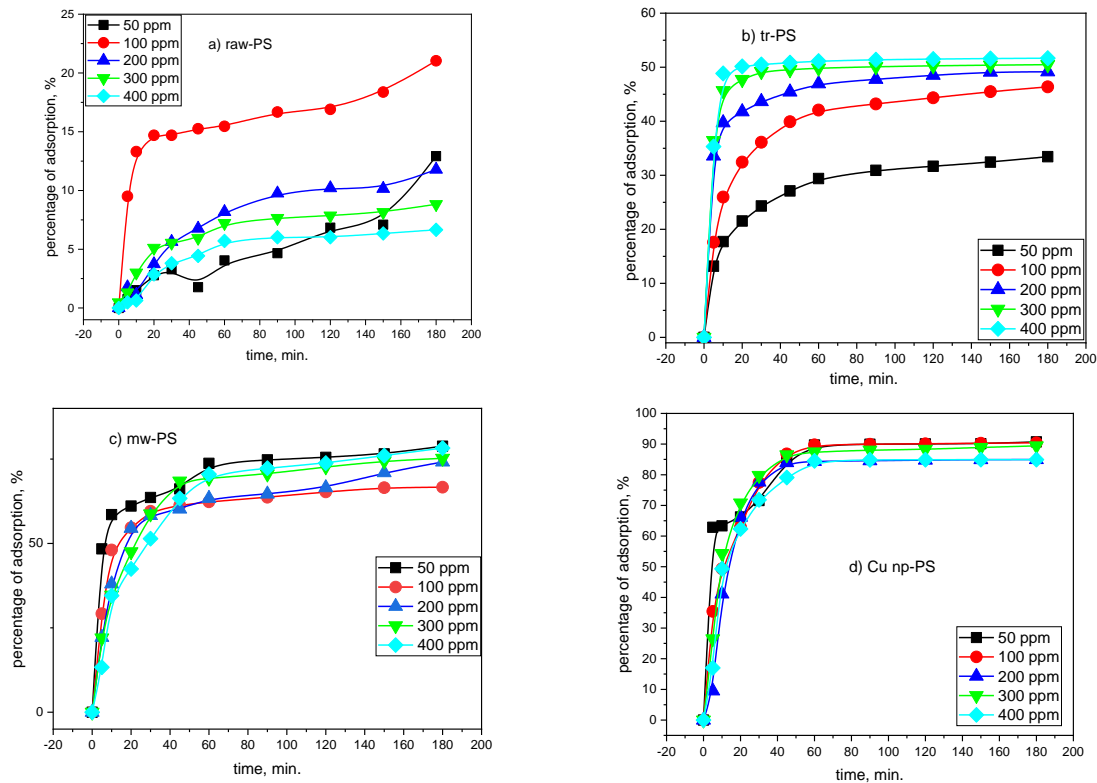
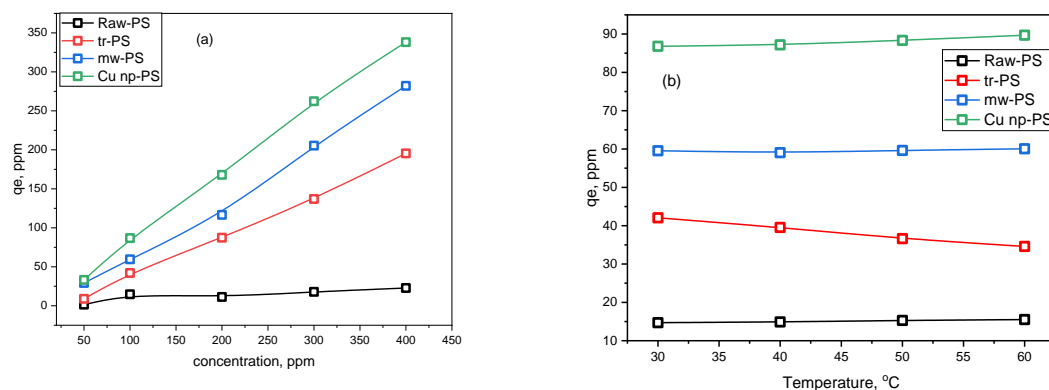


Figure 4. The percentage of adsorption as a function of time for a)raw-PS, b) tr-PS, c) mw-PS and d) Cu np-PS. (adsorbent:0,1 g, temperature: 30oC, pH:7, 100 ml EBT solution)

According to the data obtained, while low percentages of adsorption (maximum 20%) were observed with raw-PS, 50% adsorption with tr-PS, 80% with mw-PS, and 90% with Cu np-PS could be achieved. This was an expected result as Cu NPs added extra activity to the structure.

The results obtained from the experiments carried out to examine the effect of the factors affecting adsorption on each adsorbent are given in Figure 5. While examining the concentration effect, the temperature was kept constant at 30 oC and pH 7, while under the temperature effect, the concentration was kept at 100 ppm and pH at 7, and under the pH effect, the concentration was kept at 100 ppm and the temperature was kept constant at 30 oC.



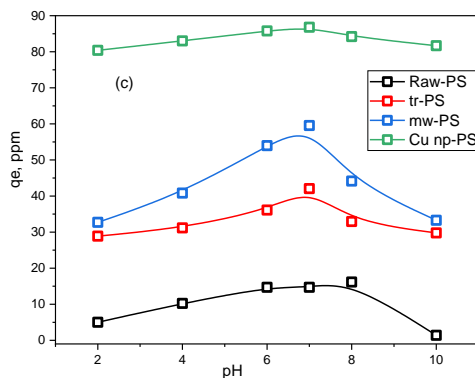


Figure 5. The graphs showing the effect of different adsorption factors on EBT adsorption for different adsorbents. a) the effect of concentration (temperature: 30oC, pH:7), b) the effect of temperature (EBT concentration: 100 ppm, pH:7), c) the effect of pH. (EBT concentration: 100 ppm, temperature: 30 oC), (adsorbent:0,1 g, 100 ml EBT solution)

Accordingly, the increase in adsorption as the concentration increases, the amount of adsorbed substance not changing significantly as the temperature specific to physical adsorption increases, and the observation of higher adsorption in neutral environments where ionic effects are minimized compared to acidic and basic conditions are compatible with the literature.

When the results obtained from the studies carried out to examine how the adsorption phenomenon progresses on the adsorbent surface in terms of isotherm (Figure 6), kinetics (Figure 7) and thermodynamics (Figure 8), it was seen that the adsorption phenomenon largely complies with the Freundlich isotherm.

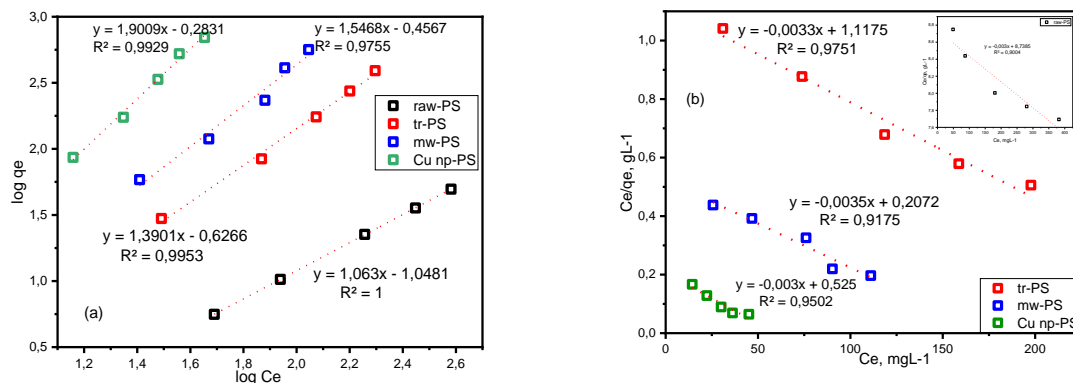


Figure 6. Isotherm graphs of a) Freundlich, and b) Langmuir for raw-PS(inset), tr-PS, mw-PS and Cu np-PS.

The equations were quite compatible with the high r^2 value, but the most compatible was the Freundlich isotherm with 0.99. This indicates that adsorption occurs on a more heterogeneous surface. The parameters calculated from these isotherm equations are given in table 1.

Table 1. Calculated isotherm parameters of Freundlich, and Langmuir for raw-PS, tr-PS, mw-PS and Cu np-PS.

isotherm	parameters	Raw- PS	tr-PS	mw-PS	Cu np-PS
Langmuir	qL	33,33	195,39	282,061	338,073

	KL	38,14499056	271,1677852	634,9143	1378,909
	RL	0,00052404	7,37496E-05	3,15E-05	1,45E-05
	R2	0,9004	0,9751	0,9502	0,9175
Freundlich	n	0,940734	0,877955	0,646496	0,526067
	KF	0,020403	-0,20301	-0,34037	-0,54806
	R2	1	0,9953	0,9755	0,9929

Langmuir isotherm gave information about the maximum amount of adsorbed substance in the monolayer. Accordingly, the AC surface obtained by doping with Cu np reached the highest adsorbed amount. While this value was 33.33 mgg-1 for Raw-PS, it was 338.073 mgg-1 for Cu np-PS.

Adsorption kinetic graphs are given in Figure 7. Since the pseudo-first order kinetic curves are very incompatible, they are presented only as a table (table 2), not as a graphic.

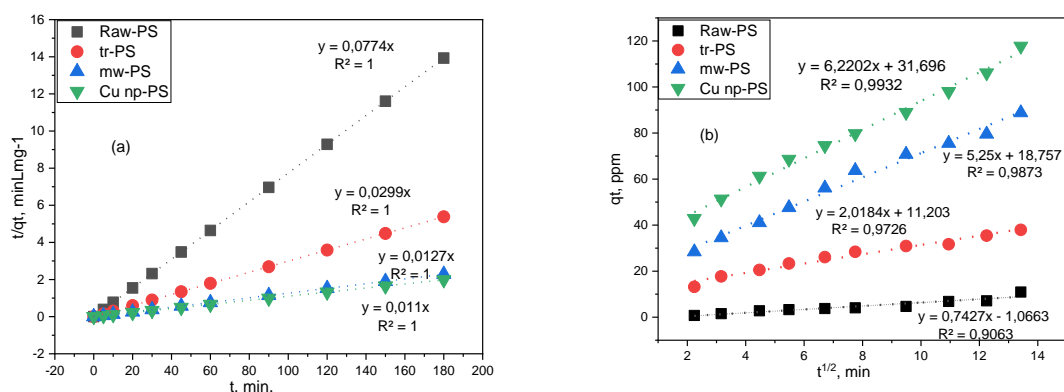


Figure 7. Kinetics graphs of a) Pseudo second order, and b) Intra-particle diffusion for raw-PS, tr-PS, mw-PS and Cu np-PS.

As can be seen from the figures, adsorption kinetics proceed at the pseudo second order level and according to intra-particle diffusion. The parameters calculated from these kinetics equations were given in table 2.

Table 2. Kinetics parameters of pseudo first order, pseudo second order, and intra-particle diffusion for raw-PS, tr-PS, mw-PS and Cu np-PS.

Model	parameter	Raw-PS	tr-PS	mw-PS	Cu np-PS
Pseudo-first order	R2	0,4848	0,818	0,7462	0,8775
Pseudo-second order	qe	12,92	33,46	78,74	90,91
	K	0,006	0,0009	0,0002	0,0001

	R2	1	1	1	1
Intra-particle diffusion	K	0,7427	2,0184	5,25	6,2202
	C	1,0663	11,203	18,757	31,696
	R2	0,9932	0,9873	0,9726	0,9063

Finally, Van't Hoff equation and graphs were used to examine the thermodynamic data of adsorption. (Figure 8)

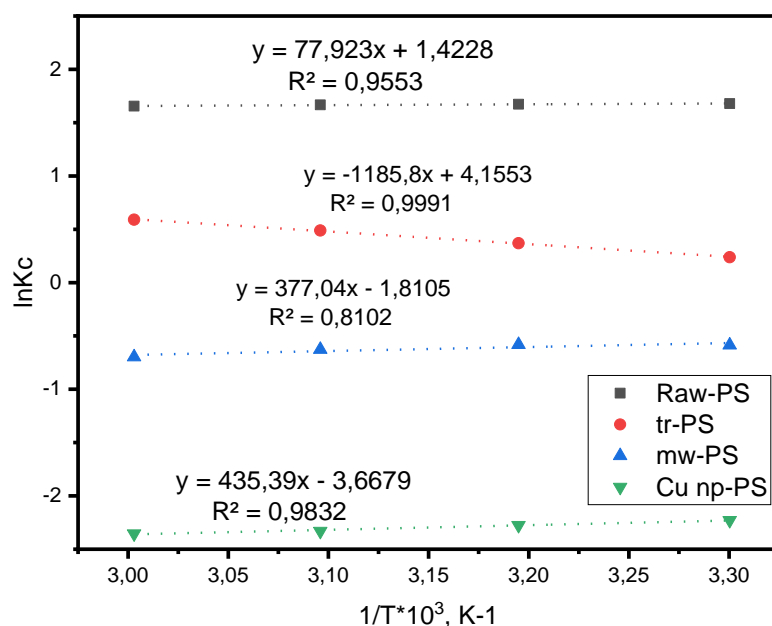


Figure 8. Van't Hoff graphs of EBT adsorption for raw-PS, tr-PS, mw-PS and Cu np-PS.

Thermodynamic data were found with the Van't Hoff equation. It was evaluated with these data to calculate the enthalpy, entropy and free Gibbs energy of the adsorption event and whether the process was voluntary/involuntary or exothermic/endothermic according to the adsorbents. These calculated data are given in Table 3 according to different adsorbents.

Table 3. Van't Hoff parameters of EBT adsorption for raw-PS, tr-PS, mw-PS and Cu np-PS.

parameters	Raw-PS	tr-PS	mw-PS	Cu np-PS
Equation	$y = 77,923x + 1,4228$	$y = -1185,8x + 4,1553$	$y = 377,04x - 1,8105$	$y = 435,39x - 3,6679$
R2	0,9553	0,9991	0,8102	0,9832
ΔH (J)	-647,852	9858,741	-3134,71	-3619,83

ΔS (J)	11,83	34,55	-15,05	-30,49
ΔG (J)	-4172,94	-436,314	1350,934	-3366,3

It was seen from the thermodynamic quantities obtained using equations with r^2 properties in the range of 0.8-1 for each adsorbent that EBT adsorption was exothermic and Cu np ensured the adsorption was voluntary.

CONCLUSION:

In this study, AC was obtained from pepper stems by 3 different methods. These methods were chemical with 50% H₃PO₄/physical activation in N₂+H₂O atmosphere at 650 oC, microwave-assisted chemical with 50% H₃PO₄/physical activation in N₂+H₂O atmosphere at 650oC, and green synthesis method with pepper stem extract/CuSO₄. EBT adsorption was carried out with the obtained ACs. The effect of Cu doping on EBT adsorption performance was examined in terms of isotherm, kinetic and thermodynamics in comparison with adsorption with other AC. From the data obtained, it was determined that Cu-doped AC showed more EBT adsorption compared to other ACs. It was understood that the adsorption obeyed the Freundlich isotherm and proceeded from intra-particle diffusion kinetics and Pseudo second order. The AC surface obtained by doping with Cu np reached the highest amount of adsorbed EBT. While this value was 33.33 mgg⁻¹ for Raw-PS, it was 338.073 mgg⁻¹ for Cu np-PS. In terms of thermodynamics, an adsorption energy of 3619.83 J enthalpy was calculated with Cu np. And it was determined that a voluntary and exothermic adsorption occurred. As a result, it was seen that surface doping with Cu nanoparticles increased the adsorption and enabled to obtain AC with an effective, cheap and practical method.

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INVESTIGATION OF THE USABILITY OF SODIUM PERBORATE AS AN ALTERNATIVE TO PEROXIDE BLEACHING

PEROKSİT AĞARTMASINA ALTERNATİF OLARAK SODYUM PERBORATIN KULLANILABİLİRLİĞİNİN ARAŞTIRILMASI

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ABSTRACT

Within the scope of this study, it was investigated whether bleaching with perborate could be performed as an alternative to peroxide bleaching. In this study, single jersey fabric produced from Ne 28/1 100% cotton yarn was subjected to perborate bleaching. During bleaching, perborate concentration (2-4-6-10 g/L), caustic soda concentration (0-1.5 g/L), temperature (70-80-90-100-120 °C) and liquor ratio (1: 10-1:30) factors were examined. Then, the whiteness degrees of the samples were measured with a spectrophotometer and variance analysis was performed on the obtained values using the Minitab 19 program. The degree of whiteness and hydrophilicity values obtained by taking the peroxide bleaching performed by the company at 105 °C as a reference were compared. The best results were obtained in bleaching at 6 g/L perborate concentration and 120 °C using caustic soda in a liquor ratio of 1:10. When the obtained whiteness degree and hydrophilicity values were compared with the conventional peroxide bleaching applied by the company, it was seen that the results obtained were quite close. In the light of these results, it can be said that perborate can be used as an alternative to peroxide in cotton bleaching. It is thought that it would be useful to test the results obtained in future studies under operating conditions.

Key words: Peroxide, perborate, bleaching, degree of whiteness, hydrophilicity

ÖZET

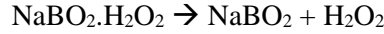
Bu çalışma kapsamında peroksit ağartmasına alternatif olarak perborat ile ağartma yapıp yapılamayacağı araştırılmıştır. Bu çalışmada Ne 28/1 %100 pamuk ipliğinden üretilen süprem kumaş perborat ağartmasına tabi tutulmuştur. Ağartma sırasında perborat konsantrasyonu (2-4-6-10 g/L), kostik konsantrasyonu (0-1,5 g/L), sıcaklık (70-80-90-100-120 °C) ve flote oranı (1: 10-1:30) faktörleri incelenmiştir. Daha sonra numunelerin beyazlık dereceleri spektrofotometre ile ölçülmüş ve elde edilen değerler üzerinden Minitab 19 programı kullanılarak varyans analizi yapılmıştır. Firmanın 105 °C'ta yaptığı peroksit ağartma işlemi referans alınarak elde edilen beyazlık derecesi ve hidrofiliklik değerleri karşılaştırılmıştır. En iyi sonuçlar 6 g/L perborat konsantrasyonunda ve 120 °C'ta 1:10 flote oranında kostik kullanılarak yapılan ağartmada elde edilmiştir. Elde edilen beyazlık derecesi ve hidrofiliklik değerleri firmanın uyguladığı konvansiyonel peroksit ağartması ile karşılaştırıldığında elde edilen sonuçların birbirine oldukça yakın olduğu görülmüştür. Bu sonuçlar ışığında perboratın pamuk ağartmasında peroksit alternatif olarak kullanılabileceği söylenebilir. Gelecek çalışmalarda elde edilen sonuçların işletme şartlarında test edilmesinin faydalı olacağı düşünülmektedir.

Anahtar kelimeler: Peroksit, perborat, ağartma, beyazlık derecesi, hidrofiliklik

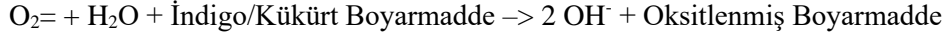
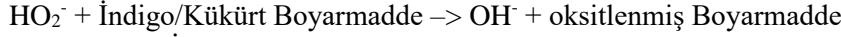
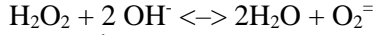
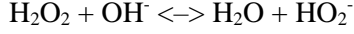
1. GİRİŞ

Bor, kimya sanayinden, ilaç sanayine, nükleer sanayiden otomobil sanayine, endüstrinin tarım, cam, sağlık, deterjan, enerji sistemleri gibi 400'den fazla alanda kullanılmakta ve gereksinimi gün geçtikçe artarak kullanım alanları sürekli genişletilmektedir. Günümüzde dünyanın en önemli madenleri arasında ilk sıralarda yer alan bor madeninin dünya rezervinin yaklaşık olarak %73'üne Türkiye ev sahipliği yapmaktadır (Dal ve Dal, 2021). Bor ilk olarak 1808'de izole edilmiş ve sonrasında tamamen saf olarak elde edilebilmiştir. Bor doğal bir üründür ve genellikle çevrede boratlar (borun oksijen ile bağlanmasından oluşan bileşikler) şeklinde bulunur. İnsanlarda veya hayvanlarda boratın %90'ından fazlası borik asit olarak atılmaktadır. Çoğu bor bileşiğinin endüstriyel olarak sorun oluşturmayacak düzeyde düşük toksisiteye sahip olduğu bilinmektedir (Demircan ve Velioğlu, 2020).

Sodyum perborat beyaz, kokusuz, suda çözünür bir tozudur. Su ile temas ettiğinde hidrolize uğrayarak hidrojen peroksit ve borat üretir (Garg, 2013). Ağartma reaksiyonları hidrojen peroksit üzerinden yürür. Sulu ortamda perboratın çözünmesi şöyledir (Bağiran, 2011):



Sulu ortamda perboratın çözünmesi sonrası ağartma işlemini sağlayan hidrojen peroksidin ağartma reaksiyonları şöyledir:



(Tarakçıoğlu, 1979).

Garg (2013), bazik işlem görmüş pamuklu kumaşın ağartma maddesi olarak sodyum perborat ve ağartma aktivatörü olarak tetraasetil etilendiamin ile ağartılması üzerinde çalışmışlardır. Denemelerde konsantrasyon, sıcaklık ve işlem süresi değiştirilmiştir. Bu yeni prosesin ağartılmış kumaşın kalitesine ilişkin bulguları, yalnızca hidrojen peroksit kullanılarak geleneksel olarak ağartılmış kumaşla karşılaştırılmıştır. Beyazlık derecesi sabit kalırken, konvansiyonel ağartmaya göre ağırlık kaybı, yırtılma mukavemeti ve kopma mukavemeti düşmüştür.

Bu çalışmada pamuklu kumaşın ağartılmasında hidrojen peroksit alternatif olarak sodyum perboratın kullanılabilirliği araştırılmıştır. Bu amaçla perborat ağartmasını etkileyen perborat konsantrasyonu, kostik konsantrasyonu, sıcaklık ve flote oranı faktörlerinin elde edilen beyazlık derecesi ve hidrofillik değerleri üzerine etkisi incelenmiştir.

2. MATERYAL VE YÖNTEM

Bu çalışmada Ne 28/1 %100 pamuk ipliğinden üretilmiş süprem kumaş kullanılmıştır. Perborat ağartması sırasında incelenen faktörler şu şekildedir;

- perborat konsantrasyonu (2-4-6-10 g/L)
- kostik konsantrasyonu (0-1,5 g/L)
- sıcaklık (70-80-90-100-120 °C)
- flote oranı (1:10-1:30)

Daha sonra numunelerin spektrofotometre ile beyazlık dereceleri ölçülmüş ve elde edilen değerler üzerinden Minitab 19 programı kullanılarak varyans analizi yapılmıştır. İşletmenin 105 °C'ta yaptığı peroksit kasarı referans alınarak elde edilen beyazlık derecesi ve hidrofillik değerleri karşılaştırılmıştır.

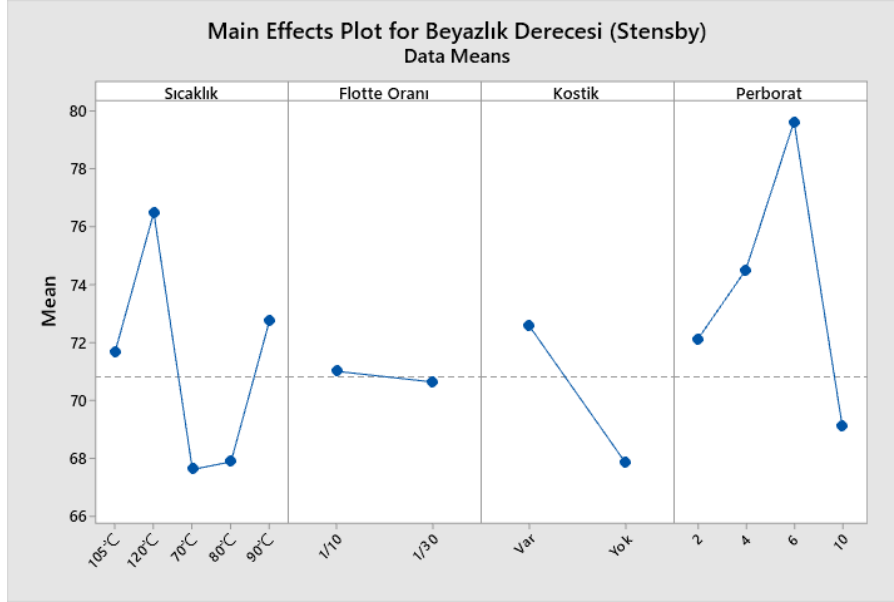
3. BULGULAR VE TARTIŞMA

Bu çalışmanın amacı işletme koşullarında uygulanan konvansiyonel peroksit kasarının yerine perboratın alternatif olarak kullanım imkânlarının araştırılmasıdır. Bu amaçla perborat ağartmasında sonucu etkileyebilecek sıcaklık, flote oranı ve pH (kostik kullanımı) faktörlerinin elde edilen beyazlık derecesi (Stensby) üzerine etkisi incelenmiştir. Minitab 19 programı kullanılarak varyans analizi yapılmış olup elde edilen sonuçlar Tablo 1'de verilmektedir.

Tablo 1: İşlem koşullarının beyazlık derecesi üzerine etkisine ilişkin varyans analizi sonuçları

Kaynak	DF	Adj SS	Adj MS	F-Değeri	P-Değeri
Sıcaklık	4	143,12	35,781	4,81	0,024
Flote Oranı	1	30,90	30,904	4,15	0,072
Kostik	1	27,75	27,755	3,73	0,086
Hata	9	67,01	7,446		
Toplam	15	304,76			

Tablo 1 incelendiğinde perborat ağartmasında elde edilen beyazlık derecesi üzerine sıcaklığın etkisinin istatistiksel olarak önemli olmasına karşın flotte oranı ve kostik kullanımının etkisinin istatistiksel olarak önemsiz olduğu anlaşılmaktadır. Bu sonuçlar Şekil 1’de verilen beyazlık derecesi için ana etkiler grafiğinden açık bir şekilde görülebilmektedir.



Şekil 1: Beyazlık derecesi için ana etkiler grafiği

Şekil 1 incelendiğinde perborat ağartması için 1:10 flotte oranında kostik kullanılarak 6 g/L perborat konsantrasyonunda ve 120 °C’ta yapılan ağartmada en iyi sonucun elde edildiği görülmektedir. Bu koşullar altında ağartılmış numunenin beyazlık derecesi 79,63 Stensby’dır. İşletmenin uyguladığı 105 °C’ta yapılan konvansiyonel peroksit ağartmasında ise 75,83 Stensby değeri elde edilmiş olup 2 numunenin beyazlık derecelerinin birbirine oldukça yakın olduğu söylenebilir. Bunun ötesinde 2 kumaş numunesine hidrofillik testi de yapılmış olup 5 cm’lik yükselme her iki numunede 1 dk., 15 cm’lik yükselme ise perborat kasarında 19, peroksit kasarında 16 dakikada elde edilmiştir.

4. SONUÇ

Bu çalışma kapsamında peroksit ağartmasına alternatif olarak perborat ile ağartma yapıp yapılamayacağı araştırılmıştır. Perborat ağartmasında sonucu etkileyebilecek sıcaklık, flotte oranı, perborat konsantrasyonu ve kostik konsantrasyonu parametreleri incelenmiş olup en iyi sonuçların 1:10 flotte oranında kostik kullanılarak 6 g/L perborat konsantrasyonunda ve 120 °C’ta yapılan ağartmada elde edilmiştir. Elde edilen beyazlık derecesi ve hidrofillik değerleri işletmenin uyguladığı konvansiyonel peroksit ağartması ile karşılaştırıldığında elde edilen sonuçların oldukça yakın olduğu görülmüştür.

Bu sonuçların ışığı altında perboratın pamuk kasarında peroksit alternatif olarak kullanılabileceği söylenebilir. Bundan sonraki çalışmalarda elde edilen sonuçların işletme koşullarında da denenmesinin yararlı olacağı düşünülmektedir.

5. LİTERATÜR

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OPINIONS OF TURKISH AS A FOREIGN LANGUAGE INSTRUCTORS ON ACTIVITY-BASED APPROACH

**TÜRKÇEYİ YABANCI DİL OLARAK ÖĞRETEN ÖĞRETİM GÖREVLİLERİNİN
ETKİNLİK TEMELLİ YAKLAŞIMA YÖNELİK GÖRÜŞLERİ**

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ABSTRACT

This study aims to determine the views of lecturers teaching Turkish as a foreign/second language on the activity-based approach. The sample consisted of 12 lecturers. The problem statement of the research was determined as "What are the views of the lecturers who teach Turkish as a foreign language towards the activity-based approach?". Ethics committee permission and consent form were provided within the scope of the study. The study method was carried out in qualitative research design. Data were obtained through a semi-structured interview form. The analysis was evaluated by content analysis. According to the results of the study, lecturers stated that the activity-based approach increased students' participation, improved their communication skills and ensured the retention of information. Also, this method encourages students' active participation in the learning process instead of traditional education patterns. Since students learn by doing and experiencing, the learning process continues outside the school. This method supports theoretical knowledge with practical applications in the process of Turkish language acquisition and supports comprehension and continuous education. Regarding the effect of the activity-based approach on their attitudes towards learning Turkish, the students stated that it improved their self-confidence, they started to come to the lessons more willingly, their adaptation period was shortened, it reduced their anxiety, encouraged them and kept their desire to learn alive. In terms of transferring Turkish culture, it was stated that activity-based teaching approaches provided a permanent learning opportunity by learning Turkish culture by doing and experiencing it on site, and that they celebrated special days and holidays by adopting them. The study emphasizes the importance of activity-based and learner-oriented strategies in language education and recommends increasing the number of learner-centered tasks. More research should be conducted on the use of activity-based teaching approaches and the results of these studies should be shared with teachers.

Keywords: Teaching Turkish as a foreign language, activity-based approach, CEFR, teaching assistant, teaching approaches.

ÖZET

Bu çalışmanın amacı, Türkçeyi yabancı/ikinci dil olarak öğreten öğretim görevlilerinin etkinlik temelli yaklaşıma ilişkin görüşlerini belirlemektir. Araştırmanın evreni İstanbul Nişantaşı Üniversitesi olup, örnekleme ise 12 öğretim görevlisinden oluşmaktadır. Araştırmanın problem cümlesi "Türkçeyi yabancı dil olarak öğreten öğretim görevlilerinin etkinlik temelli yaklaşıma yönelik görüşleri nasıldır?" şeklinde belirlenmiştir. Çalışmanın kapsamında, etik kurul izni ve onam formu sağlanmıştır. Çalışma yöntemi nitel araştırma deseninde gerçekleştirilmiştir. Veriler yarı yapılandırılmış görüşme formu ile elde edilmiştir. Verilerin analizi ise içerik analizi ile değerlendirilmiştir. Araştırmanın sonuçlarına göre, öğretim görevlileri etkinlik temelli yaklaşımın öğrencilerin katılımını artırdığını, iletişim becerilerini geliştirdiğini ve bilgilerin kalıcılığını sağladığını ifade etmiştir. Ayrıca bu yöntemle geleneksel eğitim kalıpları yerine öğrencilerin öğrenme sürecine aktif katılımını teşvik ettiğini belirtmiştir. Öğrenciler, yaparak ve yaşayarak öğrendikleri için öğrenme süreci okul dışında da devam etmektedir. Bu yöntem, Türkçe dil edinimi sürecinde teorik bilgilere pratik uygulamalarla destek sağlamakta ve kavramayı ve sürekli eğitim anlayışını desteklemektedir. Etkinlik temelli yaklaşımın Türkçe öğrenmeye karşı tutumlarına etkisi ile ilgili olarak öğrencilerin özgüvenlerini geliştirdiğini, derslere daha istekli gelmeye

başladıklarını, adapte olma sürelerinin kısaldığını, kaygılarını azalttığını cesaretlendirdiğini ve öğrenme isteğini diri tuttuğunu belirtmişlerdir. Etkinlik temelli öğretim yaklaşımlarının Türk kültürü aktarımı açısından Türk kültürünü yerinde yaparak ve yaşayarak öğrenerek kalıcı bir öğrenme fırsatı buldukları, özel gün ve bayramları benimseyerek kutladıkları ifade edilmiştir. Bu yarı yapılandırılmış görüşme formuyla gerçekleştirilen araştırma, öğretim görevlilerinin Türkçeyi yabancı dil olarak öğretme süreçlerindeki etkinlik temelli yaklaşımlarına karşı görüşlerini ortaya koymaktadır. Çalışma, dil eğitiminde etkinlik temelli ve öğrenci odaklı stratejilerin önemine vurgu yaparak öğrenci merkezli görevlerin sayısının artırılmasını önermektedir. Etkinlik temelli öğretim yaklaşımlarının kullanımı ile ilgili daha fazla araştırma yapılması ve bu araştırmaların sonuçlarının öğretmenlerle paylaşılması sağlanmalıdır.

Anahtar Kelimeler: Yabancı dil olarak Türkçe öğretimi, etkinlik temelli yaklaşım, D-AOBM, öğretim görevlisi, öğretim yaklaşımları.

**FACTORS AFFECTING THE DEVELOPMENT OF RURAL TOURISM IN THO SON
COMMUNE, VIETNAM**

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ABSTRACT

Developing tourism to create positive changes in rural areas is one of the strategies chosen by many countries. Vietnam has a lot of spare ground and is actively preparing many resources to develop rural tourism. To successfully develop rural tourism, one of the effective methods is to identify the influencing factors. To date, there have not been many studies on the factors affecting the development of rural tourism in Vietnam. This study was conducted to contribute to supplementing knowledge and practice in the above research direction. To obtain data for the study, we interviewed 100 tourists traveling in Tho Son commune using a questionnaire. The methods of scale reliability test, exploratory factor and multivariable linear regression analysis were used to process the data. Research results show that infrastructure is the factor that has the greatest impact on rural tourism development in the study area. This study supplements the theory of rural tourism and provides practical materials for tourism managers.

Keywords: Tourism, rural tourism, Tho Son, Hon Dat, Kien Giang, Vietnam.

INTRODUCTION

Rural tourism developed rapidly in the 90s of the 20th century and the first decade of the 21st century (Su, 2011) and will continue to grow strongly in the future (Greffé, 1994; Reichela et al., 2000). Many countries choose and promote rural tourism development to offset the decline in agricultural income (Reichela et al., 2000; Sharpley, 2002); take advantage of resources and develop tourism services in rural areas; create jobs and stable income for farmers (Zhang, 2012); recreate socio-economic activities (Sharpley, 2002) and develop sustainable rural areas (Peña et al., 2012).

For Vietnam, rural tourism is considered a trend of the tourism industry in the coming time (Vu, 2022) and plays an important role in spatial organization, connecting with urban areas and tourist centers, contributing to expanding the spatial scope and extending the stay of tourists (Bao Tran, 2021). Developing rural tourism is one of the key solutions and tasks of the National Target Program to build new rural areas for the period 2021-2025 on the basis of changing thinking from agricultural production to rural economic development; actively contributes to socio-economic development, increases people's income, protects the environment, promotes traditional cultural identities in rural areas, and supports localities to implement new rural criteria effectively and sustainably (Bao Thang, 2022).

Tho Son commune is one of the suitable localities to develop rural tourism. Typical elements here include the traditional craft of clay pot making, Hon Me television tower, Hon Queo pagoda, and Ba Hon relics. The difficulty in developing tourism in Tho Son is that the type of tourism is still monotonous, spontaneous, and small; the work of restoring, embellishing and developing historical relics and craft villages is still limited; skilled tourism labor force is weak and lacking (Ha and Katsuhiko, 2019). To have a more complete view, and at the same time provide scientific basis for local decision-making in developing rural tourism in Tho Son commune, this study was conducted. The research results contribute to supplementing theory and practice on rural tourism development in tourist destinations.

MATERIALS AND METHODS

Background Theory and Hypothesis Development

The birth of rural tourism comes from the purpose of diversifying income for agriculture, creating new livelihoods and improving the quality of life for farmers, taking advantage of rural labor, and improving the quality of life for farmers, creating face and bring vitality to the villages (Bui, 2009; Nguyen, 2014). Rural tourism is considered a form of tourism; the attractive factor of this type of tourism is the scenery and culture in the countryside; the subjects who create, manage and develop rural tourism are local residents (Barkauskas et al., 2015). Rural tourism is exploited based on the natural environment, cultural identity and living and production activities of the community; uses infrastructure (electricity, roads, water, telecommunication services), technical facilities (restaurants/cafes, hotels/motels/boarding houses, shops, means of transportation transfer), and labor; created, managed and organized by residents in rural areas (Roberts and Hall, 2001). The above theory shows that rural tourism includes the following elements: attractiveness, infrastructure, technical facilities, and local people.

Attractiveness is the set of destination attributes that attract the attention, desire and choice of visitors because those attributes promise to bring a great experience to visitors at destination (Vo et al., 2022). Attractions can be natural or artificial, acting as a community's tourism resource and a "key motivator" that drives tourists to a specific destination on a specific trip (Wu, 2012). Without attractiveness, rural tourism cannot be developed. Therefore, our hypothesis 1 is posited as:

Hypothesis 1 (H1): Attractiveness has a statistically significant and positive influence on rural tourism development in Tho Son commune.

Infrastructure is physical facilities not built by tourism organizations but by the entire society. Infrastructure includes road systems, communication systems, parking lots, toilets, etc. For tourism in general, rural tourism in particular, infrastructure is the basis for exploiting tourism resources, determining the pace of tourism development and the quality of tourism service (Nguyen and Tran, 2004). So, our hypothesis 2 is as follows:

Hypothesis 2 (H2): Infrastructure has a statistically significant and positive impact on rural tourism development in Tho Son commune.

Technical facilities include all buildings and technical facilities used to satisfy the needs of tourists. Technical facilities include accommodation, dining, entertainment and shopping facilities. The exploitation of tourism resources in general, rural tourism resources in particular and meeting the needs of tourists largely depends on technical facilities (Nguyen and Tran, 2004). So, our hypothesis 3 is as follows:

Hypothesis 3 (H3): Technical facilities have a statistically significant and positive impact on rural tourism development in Tho Son commune.

People living and working in a destination create a unique cultural environment for that destination (Nguyen and Nguyen, 2018). The successful development of rural tourism destinations depends heavily on human factors (Beerli and Martin, 2004). So, our hypothesis 4 is posited as:

Hypothesis 4 (H4): Local people have a statistically significant and positive influence on rural tourism development in Tho Son commune.

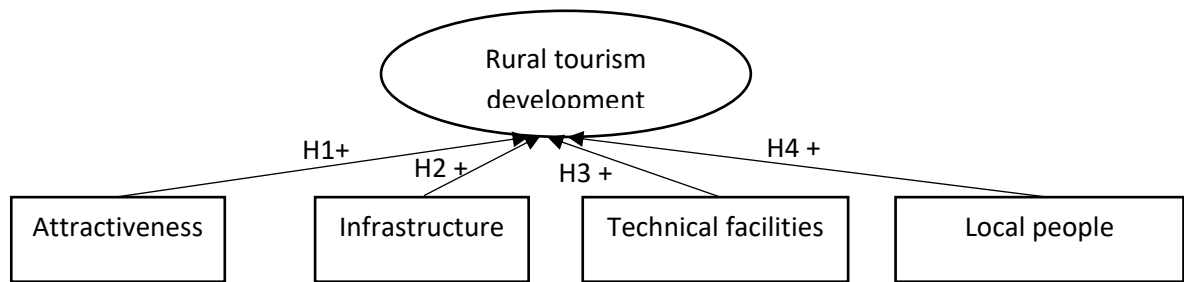


Figure 1. Proposed research model

Methods of collecting and analyzing data

To test the hypothesis about factors affecting rural tourism development in the study area, data were collected by questionnaire survey. The survey sample included 100 tourists visiting rural tourist destinations in Tho Son commune in April and May 2022. They were selected using convenience sampling technique. Respondents are 53% males and 47% females. Most of them are aged 18-39, accounting for 60%. Workers, farmers, and students participated in the survey more than other professional subjects (55% compared to 45%).

Data from the questionnaire was coded, entered and analyzed on SPSS 20 software. Data analysis techniques include descriptive statistics, scale reliability test, exploratory factor analysis, and multivariate linear regression analysis.

RESULTS

Scale reliability test

When conducting quantitative research, researchers must use different types of scales to quantify research concepts. For that reason, before applying, the scale must be elaborately built and tested for reliability. One of the most commonly used forms of measuring abstract concepts in socio-economic research is the 5-level scale introduced by Rennis Likert in 1932. This study inherited the scale of Gunn (1988), Nguyen and Tran, 2004, Nguyen and Nguyen (2018) and used the tool to measure human opinions and attitudes proposed by Rennis Likert, so it needs to be evaluated as well as suitable for reliability assessment. Evaluating scale reliability aims to check the level of correlation between observed variables as well as recognize which variables contribute to the measurement of the concept in the factor.

Table 1. Scale reliability

Scales	Cronbach's α	Variables	Signs	Corrected item-total correlation
Attractiveness (A)	0.86	Diverse and attractive natural landscape	A1	0.54
		Diverse and attractive historical and cultural sites	A2	0.75
		Attractive traditional craft	A3	0.77

		Agricultural production activities are diverse and attractive	A4	0.74
Infrastructure (I)	0.79	Roads meet your travel needs	I1	0.59
		Can communicate easily	I2	0.60
		Public restrooms meet tourism standards	I3	0.64
		Parking is spacious and of good quality	I4	0.57
Technical facilities (TF)	0.81	The motel/hotel meets your needs	TF1	0.55
		The dining facility meets your needs	TF2	0.63
		Entertainment facilities that meet your needs	TF3	0.71
		Shopping facilities that meet your needs	TF4	0.64
Local people (LP)	0.74	Friendly and hospitable	LP1	0.46
		Sell the service at the right price	LP2	0.61
		No competition for tourists	LP3	0.69
		No littering	LP4	0.41

According to Hoang and Chu (2008), the scale is usable when Cronbach's α is from 0.7 to nearly 0.8, and the scale is good when Cronbach's α is from 0.8 to nearly 1. Reliable variables when the adjusted variable-total correlation coefficient is ≥ 0.3 (Le and Truong, 2012). The scales of the research model are all reliable and no observed variables of any factor are eliminated (see Table 1).

Exploratory factor analysis

Factor analysis is the general name for a group of procedures used to reduce and summarize data. In research, the number of variables collected is quite large, most of them are related to each other and need to be reduced to a usable number. Factor analysis allows grouping related variables into a number of basic factors. Factor analysis includes exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Exploratory factor analysis is used to reduce a set of many interdependent measurement variables into a set of fewer variables that are more meaningful but still contain most of the content of the original set of variables.

Table 2. Results of exploratory factor analysis

Variables	Factors			
	1	2	3	4
Diverse and attractive natural landscape	0.68			
Diverse and attractive historical and cultural sites	0.88			
Attractive traditional craft	0.80			
Agricultural production activities are diverse and attractive	0.83			
The motel/hotel meets your needs		0.73		
The dining facility meets your needs		0.79		
Entertainment facilities that meet your needs		0.82		
Shopping facilities that meet your needs		0.81		
Roads meet your travel needs			0.83	
Can communicate easily			0.70	
Public restrooms meet tourism standards			0.60	
Parking is spacious and of good quality			0.58	
Sell the service at the right price				0.72
No competition for tourists				0.73
No littering				0.80
<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.78, Sig. of Bartlett's Test of Sphericity (Sig.) = 0.000, Total Variance Explained (TVE) = 67.4%, Eigenvalue is greater than 1, Method of rotation: Varimax, Factor loading coefficient ≥ 0.5</i>				

Second exploratory factor analysis, after eliminating the variable "friendly and hospitable local people - LP1" with factor loading coefficient < 0.5 , the results show that the data is suitable for exploratory factor analysis because $KMO > 0.5$, $Sig. < 0.05$, $TVE > 50\%$ (Hoang and Chu, 2008; Le and Truong, 2012). With factor loading coefficient > 0.5 , varimax rotation method, the results show that rural tourism in Tho Son commune includes 4 factors: attractiveness (factor 1), technical facilities (factor 2), infrastructure (factor 3), and local people (factor 4) (see Table 2).

Multivariate regression analysis

Regression analysis is a method used to predict and estimate the value of one variable (dependent) according to the value of one or more other variables (independent). Implementing this method will find the relationship between the dependent variable (general assessment of rural tourism development) and

the independent variable (attractiveness, technical facilities, infrastructure, local people), thereby predicting the influence of research data.

Table 3. Results of linear regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.700	0.069		53.858	0.000		
Factor 1 (A)	0.236	0.069	0.283	3.419	0.001	1.000	1.000
Factor 2 (TF)	0.249	0.069	0.299	3.612	0.000	1.000	1.000
Factor 3 (I)	0.288	0.069	0.345	4.167	0.000	1.000	1.000
Factor 4 (LP)	0.208	0.069	0.249	3.016	0.003	1.000	1.000
<i>R square = 0.40, Sig. of F test = 0.000, Durbin-Watson = 1.91, VIF = 1</i>							

Three indices commonly used to test the appropriateness of the regression model are the coefficient of determination (R^2), the Sig. value of F test and the variance inflation factor (VIF). According to Dinh et al. (2017), the coefficient of determination (R^2) of the regression model is usually required to be ≥ 0.4 . The Sig. value of the F test ≤ 0.05 , $VIF < 10$ shows the appropriateness of the regression model (Vo and Tran, 2016). The analytical indices in Table 3 are consistent with these conditions. Therefore, the data are suitable for multivariate linear regression analysis. The Sig. values are all less than 0.05, the B values have a positive sign, showing that all four factors have a statistically significant and positive influence on rural tourism development in Tho Son commune. Therefore, hypotheses (H1, H2, H3, H4) are all accepted. This means that attractiveness, technical facilities, infrastructure, and local people all have a statistically significant and positive impact on rural tourism development in the study area.

DISCUSSION

Rural tourism development is influenced by many factors. For this study, infrastructure, technical facilities, attractiveness, and local people have a decreasing impact on tourism development in the study area. These factors constitute an important supply factor in the destination.

Infrastructure has a statistically significant and positive impact on rural tourism development in Tho Son commune (Sig. = 0.000, B = 0.288). Gunn's (1988) study also shows this. With $\beta = 0.345$, when infrastructure in Tho Son develops better (evaluated to increase by 1 point), rural tourism development here increases by 0.345 points. This implies that the better the road system, communication system, public toilets, and parking lots at the destination, the higher the possibility of developing rural tourism and vice versa.

Rural tourism development in Tho Son is statistically significantly and positively affected by technical facilities (Sig. = 0.000, B = 0.249). This is consistent with the theory of Nguyen and Tran (2004). With $\beta = 0.299$, when tourism technical facilities in Tho Son develop better (evaluated to increase by 1 point), rural tourism development in the study area increases by 0.299 points. Therefore, the more a rural tourism destination has accommodation, dining, entertainment and shopping facilities that meet the needs of tourists, the more rural tourism will develop and vice versa.

The study also shows that attractiveness has a statistically significant and positive impact on rural tourism development (Sig. = 0.001, B = 0.236). This finding is consistent with the research of Gunn (1988), and Zdorov (2004). With $\beta = 0.283$, the higher the attractiveness of a rural tourism destination (evaluated to increase by 1 point), the rural tourism development increases by 0.283 points. Destinations with natural landscapes, historical-cultural relics, traditional crafts, and agricultural production activities are more diverse and attractive, the more advantageous they are to develop rural tourism and vice versa.

Local people are also one of the factors that have a statistically significant and positive influence on rural tourism development (Sig. = 0.003, B = 0.208). This is a new finding of research. With Beta = 0.249, when local people have more positive behavior (evaluated to increase by 1 point), rural tourism development in the destination increases by 0.208 points. In rural tourism destinations, the more local people sell services at the right price, do not compete for tourists, and do not throw trash indiscriminately, the more advantageous they will be to develop rural tourism and vice versa.

CONCLUSION

Rural tourism is one of the tourism development trends of the world and Vietnam in the 21st century to exploit attractive factors in rural areas, improve the lives of farmers and offset the decline in the proportion of the agricultural sector. The development of rural tourism will limit the migration of farmers, reduce rural poverty, and expand the tourism activity space of urban residents. To develop rural tourism, identifying influencing factors is important. Many factors affecting the development of rural tourism have been discovered such as infrastructure, technical facilities, attractiveness, and local people. Each tourist destination has different characteristics and nuances, so the influencing factors as well as the degree of influence of each factor may be different. For Tho Son commune, 4 factors affecting the development of rural tourism with decreasing intensity are infrastructure, technical facilities, attractiveness, and local people. For that reason, rural tourism development must start from developing infrastructure and technical facilities because these two factors are only present in the destination when created by humans, and local nature and culture cannot be exploited when these two elements are lacking. Attractions and local people also play an important role in rural tourism development, however, these elements are often available and only need to be improved (ensuring environmental sanitation and landscape issues, investing in exploiting tourism resource spots; propagandizing, educating and training people on knowledge, skills and experience in rural tourism development).

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**UNVEILING POTENTIAL: MOBILE LEARNING BREAKTHROUGHS FOR HEARING-
IMPAIRED ELEMENTARY STUDENTS IN ARAB SCHOOLS**

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ABSTRACT

This study examines an intervention program to assimilate mobile learning in language and mathematics for students with hearing disabilities, who are integrated into regular education classes in primary schools in the Israeli Arab sector. The program has been running for a year and a half and has included the use of mobile digital tools such as: computer and tablet. Students learned through language and math apps selected by the researchers. Teachers and parents were instructed on how to use the tools and how to run the program before it was started and during its implementation. The three main populations that are involved in the learning and teaching process have participated in the study: 21 students with hearing disabilities in fourth to sixth grades, 39 teachers integrating those students in their classes, and 46 parents. The research combines both quantitative and qualitative research methods (Mixed method). Findings indicate satisfaction and utilization of the benefits of mobile learning that enables active and personalized learning, this from the three populations' perspectives. More specifically, an improvement was found: in Language acquisition except on the subject of syntax, in understanding of concepts and theorems in Mathematics, and in academic achievements in both disciplines. At the same time, participants reported that mobile learning does not guarantee equality because only students with hearing impairments benefit from the program, thus a different kind of inequality was caused. Alongside this, we noted difficulties in its implementation such as: lack of skills among teachers, and classroom noise following the use of apps with sound. The research findings show that it is possible to lead changes based on innovative technology-based learning in the Arab sector and in particular to promote special populations.

Keywords: Hearing impairment, language development, mathematics, mobile learning

**PARALLEL PATHS: ARAB AND JEWISH EDUCATORS' PERSPECTIVES ON TECH
INTEGRATION BEYOND REMOTE LEARNING CHALLENGES**

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ABSTRACT

This study aimed to investigate potential disparities between Arab and Jewish teachers concerning the integration of technology into teaching, following their experiences with remote online learning during the Corona pandemic. Specifically, it explores the influence of cognitive perceptions, sector differences, and their interaction on teachers' behavior, as well as schools' preparedness for technology integration. 403 teachers participated in this quantitative research, utilizing structured questionnaires. The findings reveal differences in cognitive perceptions favoring Arab teachers. Conversely, Jewish teachers demonstrated a higher level of mastery of digital tools. The study further establishes that cognitive perceptions are significantly associated with the technology-oriented behavior of both Arab and Jewish teachers. Sector differences and their interaction with cognitive perceptions are associated with variations in the behavior of Arab and Jewish teachers, favoring the latter in terms of controlling digital tools and embracing changes. Intriguingly, the study identifies a connection between school preparedness in the Arab sector and teachers' cognitive perceptions and behavior. These findings are discussed within the framework of attitude-behavior theories and literature addressing cultural distinctions in educational settings.

Keywords: technology integration, cognitive perceptions, teacher behavior, cultural differences, online learning, school preparedness

**CHALLENGES IN THE ADOPTION OF INTERACTIVE TECHNOLOGIES IN
HEALTHCARE SOLUTIONS**

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ABSTRACT

This paper discusses the pivotal role of caregivers in facilitating the adoption of healthcare interactive technologies solutions among senior users. Seniors often rely on external assistance from caregivers to access to technological solutions for interventions, as many of them may lack autonomy or experience of using technology. The support provided by caregivers to seniors could be described as "mediating role", or viewed as being "the-man-in-the-middle", which could be critical factor in facilitating seniors' access to such solutions, or acting as a barrier if caregivers showed resistance to adopt these technological solutions.

Caregivers can be doctors, nurses, trainers, or professionals in health sectors, or family member or hired professionals, who may resist the adoption of healthcare interactive technologies for several reasons. Firstly, the required resources, time and efforts to deploy and adopt new solution in a specific environment, particularly in terms of training seniors to use the solution. Moreover, caregivers may prefer traditional healthcare therapies and practices over using interactive technologies solutions. Other factors relate more to the caregivers' beliefs and attitude; even though they may not be the primary users in this case, but their acceptance toward these technologies whether they perceived it as useful or ease to use solution, will respectively affect the guidance they provide and the access of the potential adopters (senior users) to the solution. In addition, age bis can also influence the adoption of the interactive technologies, when caregivers may assume that seniors are not interested or do not have the required capabilities to use the technology.

The expected impact of resisting healthcare interactive technologies may deprive seniors of the opportunity to access such healthcare solutions and affect their overall wellbeing and quality of life in general. Besides obstructing efforts to enhance healthcare systems and reducing healthcare costs. This issue becomes more critical in the context of innovative healthcare initiatives that adopt participatory design approaches, which rely on active involvement from senior users and support from caregivers. The technical challenges that come with creating these solutions, and the required efforts to adopt them are even higher, which may provoke more resistance among caregivers.

Mitigating the resistance to adopting healthcare interactive solutions, requires raising awareness, providing resources, training, and support to caregivers, and encouraging openness to changing traditional healthcare methods among caregivers.

Keywords: Healthcare Interactive Technologies, Adoption, Resistance, Caregivers, Senior Users.

LEVI-CIVITA SOLUTION ON $f(Q)$ LOGARITHMIC MODEL

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ABSTRACT

Although Einstein's theory of General Relativity (GR) provides a fundamental description of space and time that is perfectly compatible with our Solar system, it conflicts with recent observations of Super Novae, large scale structure and the cosmic microwave background. On the other hand, Λ Cold Dark Matter theory is constructed to explain the revolution of the universe by adding a cosmological constant to GR, but it faces several problems. To deal with these problems, many modifications of GR theory are studied. Recently, teleparallel theories which are including torsion and non-metricity of the spacetime, are investigated. Because the symmetric teleparallel equivalence to GR (STEGR) is achieved, $f(Q)$ gravity is constructed to explain our universe. Since, the spherically symmetric solution of this theory limits the function of $f(Q)$ or the non-metric scalar Q , one of the static, cylindrically symmetric solution, known as the Levi-Civita solution, is considered in this paper. In addition, logarithmic $f(Q)$ model is used in cosmology which gives a background evolution just identical to that of the well-known Dvali-Gabadadze-Porrati (DGP) cosmologies. In this manner, corresponding Levi-Civita solution on $f(Q)$ logarithmic model with perfect fluid is constructed and energy density and directional pressures of this model are obtained. While the constants are set to positive energy density, a necessity for regular matter, directional pressures are plotted to understand the behaviour of the matter. The null (NEC), the weak (WEC), the dominant (DEC) and the strong (SEC) energy conditions of the corresponding LC solution are also calculated and plotted for the chosen values of the constants, and their violation is discussed.

Keywords: Levi-Civita, $f(Q)$ -theory, logarithmic, cylindrically symmetric

GENERAL SAFETY RULES IN APPAREL SECTOR

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ABSTRACT

The textile and apparel industry creates employment for millions of people around the world. This sector, which is introduced to many people with the employment it provides and widespread production infrastructure around the world, has been frequently discussed lately, especially with its working conditions. Although sectoral improvements are being made, approaches that prioritize employee safety are not yet at the desired stage.

In the textile and apparel sector, which is one of the important employment-providing sectors in Turkey, there have been changes in the working conditions of employees within the framework of developing technology and improvements seen all over the world. These changes and improvements are extremely important steps, especially for Turkey, which does not have a good score in occupational health and safety. In this context, this study is extremely important in revealing the current situation in the apparel sector and making a general evaluation.

In this context, carrying out this study will be possible with a well-prepared risk analysis and assessment. At the same time, observation of workplace workstations and all departments and periodic feedback from employees are also extremely important. In this context, observations were made in the apparel enterprises determined for the study, and evaluations were made in the light of the images and data received. In addition, in the study, necessary information will be given about the factors that affect or are thought to affect the employees working in the apparel sector and the precautions that can be taken.

Keywords: Apparel sector, safety rules, working conditions, occupational health and safety

Introduction

The textile and apparel sector has an active role in the economic development process of countries. The textile industry will transform fiber and yarn into utility goods; It covers all production processes such as yarn, weaving, knitting, dyeing, printing, finishing, cutting, sewing etc. The process from fiber to yarn and finished fabric is considered in the textile sector, and the process from fabric to clothing is considered in the apparel sector (Ministry of Science, Industry and Technology, 2015).

Although the textile industry makes a significant contribution to the country's economy, it poses various workplace hazards that pose a risk to the health and safety of employees. The textile industry is in the "Dangerous" class according to the workplace hazard classes notification. Hazards in this sector, which is in the hazardous class, can be listed as mechanical, physical, chemical, ergonomic and physiological hazards (Kumar, Mugundhan, Visagavel, 2014). Elements that are the sources of physical, chemical, biological, ergonomic and psychosocial factors that directly or indirectly affect the health of the employee during the production process, immediately or after a certain period of time, constitute the working environment (The Ministry of Labour and Social Security, n.d.). The textile manufacturing industry consists of a wide range of machines and related equipment along with the relevant units to convert raw material into finished products. Employees face mechanical risks such as crushing, squeezing, throwing parts, grabbing, chopping, impact and friction while working with the machines and equipment in the workplace (Anitha Rajathi and Pavithra, 2017).

When it comes to the production of clothes in the apparel industry, classification of the work done becomes important, as in other business lines. In the production process, the main input of which is fabric, all processes, work done, equipment used, materials, chemicals, etc. until the fabric becomes the final product, all points must be taken into consideration.

The general view of apparel working environments is given in Photo 1.



Photo 1. Example of Apparel Business Working Areas (Photo taken by the author. 2024)

After going through processes such as fabric procurement, storage (such as stacking, sorting), laying, cutting, labeling, sample preparation, mold preparation, sewing, ironing, buttonhole, snap fastening, stain removal, pressing, intra-business transportation, maintenance and repair, the fabric is used as the final product. It becomes an outfit ready to be worn (Tezcan, 2014). The equipment used in this process is also extremely important. Direct production of lifting, load carrying vehicles and forklifts, pallet trucks, electric and steam irons, steam boilers, laying and cutting benches, utility knives, sawmills, needles, shears, conveyors, presses, labeling and coding equipment, staplers, sewing machines, washing-drying machines are the equipment concerned. In addition, the equipment used in the units that support production are the equipment used mainly in the production facilities of apparel enterprises.

In apparel production facilities, depending on the stages the fabric goes through during the production of a product, many processes arise, as well as inherent difficulties, chemical use and equipment use of each process. According to the risks posed by these hazards, the most important ones are ergonomic hazards, thermal comfort, burning-burns, use of scissors, sawmills and electric saws, noise, machines and sewing needles, pollutants in the ambient air, chemicals, machine parts and fire. Work accidents caused by these hazards are extremely important. Considering the psychosocial, medical, economic and institutional consequences of work accidents, it is observed that these accidents pose a very important problem (Pedroso-Gonçalves et al., 2008).

It is extremely important to protect against work accidents caused by the risks posed by all the mentioned factors.

The main principle in protecting from work accidents is to benefit from scientific data and statistical analysis. Although it is not sufficient in our country, most countries have done a lot of work to improve accident prevention methods. They have reached very advanced levels in preventing accidents and have managed to develop applicable methods to minimize the frequency of accidents. To prevent occupational accidents and deal with dangerous situations, a strategic accident prevention and safety

program needs to be implemented comprehensively. In addition, it is extremely important to conduct accident investigations and occupational safety analyses, create accident prevention awareness and injury database, and determine safety rules and safety risks (Nag and Patel, 1998). When we look at the studies examined in the literature research, in general, the main factors that cause work accidents and occupational diseases are as follows (Sağlam, 2009);

- Unsafe situations and behaviors.
- Not being able to benefit from technology sufficiently.
- Lack of training (on-the-job training, OHS, etc.).
- Insufficiency of protective measures, negligence and disregard in implementation.
- Lack of orientation for inexperienced personnel and newly hired employees.
- Lack of effective examination, investigation and evaluation.

In summary, in the textile and apparel industry; There are many risk factors, including physical, ergonomic, chemical and psychosocial. Taking safety precautions against these risk factors is extremely important for employee health and safety. In this regard, it is necessary to make frequent observations in apparel enterprises, to make evaluations in the light of the visuals and data obtained as a result of the observations, and to take security measures accordingly. In this context, in this study, observations were made in apparel enterprises, and as a result of these observations, necessary information was given about the factors that affect or are thought to affect the employees working in the apparel sector and the precautions that can be taken.

Safety Rules in Apparel Sector

The apparel industry consists of processes such as model design, fabric supply, storage, sample preparation, laying cutting, labeling, pattern preparation, sewing, ironing, buttonhole, snap fastener, eyelet operations, stain removal, pressing, laying-matching, in-house transportation, maintenance and repair. As a result, the fabric becomes a ready-to-wear garment.

In apparel production facilities, there is equipment that is directly related to production, as well as equipment used in units that support production. These are lifting, cargo trolleys and forklifts, trans pallets, steam irons, steam boilers, laying and cutting benches, scissors, needles, utility knives, sawmills, conveyors, presses, labeling, coding equipment, staplers, sewing machines, office equipment, compressors, equipment such as pumps, washing/drying machines. As a result of the use of this equipment, there may be many occupational accidents or near misses. In this regard, it is necessary to know general safety rules in order to avoid unnecessary health and safety hazards while working in the apparel field. These potential hazards are given in Table 1.

Table 1. Potential Hazard in Apparel Sector (Saif, 2022: 15)

Activities Description	Potential Hazard
Operating Stitching Machine	Sharp edges, knife blade, scissor, pins, eye strain and operator error or inattention with the potential of causing puncture wounds and cuts to the finger and/or electrocution.
Hand Sewing	Sharp Edges, pins, scissors, punctures, wounds and cuts etc.
Pattern Making & cutting	Sharp Edges, knife blade, scissors, pins, body posture, paper cuts etc.
Ironing of Clothes	Burn hazards, electrocution.
Working with fabrics & fibers	Respiratory hazards

In the apparel industry, carrying heavy loads, lifting, inadequate lighting, fire accidents, repetitive movements, bysinosis due to cotton dust and other dust, occupational asthma, noise-induced psychological distress, hearing loss, tinnitus, various cancers caused by chemicals, blood table changes, temperature, humidity, air flow caused by thermal comfort conditions, negative effects that may occur due to the heat emitted by steam, electric irons and presses are factors that threaten the health of employees (OSHA, 2000).

The most important topics, depending on the risks posed by hazards in the apparel industry, may be: Ergonomic hazards, noise, burns, thermal comfort, use of various tools (such as scissors, sawmills, electric saws), machines and sewing needles, ventilation, chemicals, fire risk, moving parts of machine tools (ILO, 2012). There are many security measures that can be taken against these possible risks.

The general health and safety rules stated below can provide a safe working environment.

- Make sure long hair is tied back and beards are trimmed to avoid getting caught in the moving parts of the machines.
- Remove any hanging jewelry, including watches, necklaces, bracelets and earrings.
- Do not wear loose clothing. Wear tight/semi-tight clothing as loose clothing can get stuck in the machines.
- Do not point sharp objects at others.
- Keep sharp or pointed objects away from eyes, mouth and face.
- Do not leave fabric scissors or scissors open.
- Always wear appropriate shoes.
- Use tools for their intended purpose.
- Keep your hands away from the machine while sewing.
- Do not stick your fingers on the pins while sewing. Do not sew over pins.
- Use thimble when sewing. Store tools and equipment properly after use.
- Do not put the needle in your mouth, use a needle pad or holder. Do not throw needles on the floor or tables.
- Do not use blunt or bent needles.

- Turn off machines before changing needles/cutters.
- Do not smoke, eat or drink in work areas.
- Make sure cables are not tangled or in walkways.
- Wear knitted gloves to prevent accidental injury when using power cutting equipment.
- Do not talk while using the machines. If you need to talk, turn off the machine.
- Follow proper manual handling procedures when you need to lift or move heavy fabric rolls or cutters to the cutting table.
- Direct human traffic away from cutting tables using clearly marked routes.
- The cutting table must be stable and at a height suitable for the cutter - 90cm is the average height.
- The floor of the work area must be non-slip and free of all kinds of fabric crumbs and obstacles.
- Make sure there is good ventilation in the cutting room, as the cutting process produces a lot of dust and fluff and some fabrics contain pesticides.
- Use dust masks when working in the cutting room, as cutting produces a lot of dust and fluff and some treated fabrics contain chemicals.
- Place a single smooth sheet of paper between the fabric tile and the cutting table. This allows you to transport the fabric correctly and safely.
- Use weights or clamps to prevent fabric movement and maintain cutting accuracy.
- Be careful when removing stitches with a seam ripper. Replace the seam ripper cap after use.
- Ensure safe use of equipment.
- Stop using scissors while looking away.
- Use Personal Protective Equipment when necessary (Saif, 2022: 15).

Hazards exist in every workplace in many different forms: problems from machinery, sharp edges, falling objects, burning sparks, chemicals, noise, and countless other potentially hazardous situations. In the apparel industry, employees being hit by moving machine parts or vehicles are among the most common injuries. In the apparel industry, needle breakage due to moving machines, finger punctures, and needle fragments falling into the eye due to the broken needle flying out can cause vision loss. Especially in the sector, many dangerous problems are encountered such as burns in the ironing section, injuries caused by sawmills and scissors in the cutting section, injuries caused by transportation in the warehouse section, and exposure to various chemicals. It is possible to find solutions or minimize these problems with security precautions that can be taken.

Work equipment is defined as any machine, device, apparatus, tool or installation intended for use in the workplace. Therefore, the scope of work equipment is extremely wide. Work equipment is found and used in every part of the apparel industry. Every year, there are many accidents caused by the use of work equipment. Many are serious, some fatal. A number of health and safety incidents occur due to equipment being used in a way it was never designed or intended to be used. Understanding the tools, equipment and machinery in the workplace provides an edge in analyzing the hazards and risks associated with each item.

The finger protectors that must be worn when using cutting robots or scissors in the image given in Photo 2 can be given as an example of this situation.



Photo 2. Some Situations That May Pose Risk in the Apparel Industry (Photo taken by the author. 2024)

Personal Protective Equipment for Apparel Sector

Personal protective equipment, or PPE, is special clothing or equipment that a worker wears to protect against infectious or hazardous substances. PPE is used to create a protective barrier between the worker and workplace hazards. PPE includes clothing such as chemical-resistant gloves, safety shoes, hard hats, safety glasses, respirators and gowns. PPE should be worn to minimize exposure to possible problems (Kaya and Aytaç, 2022).

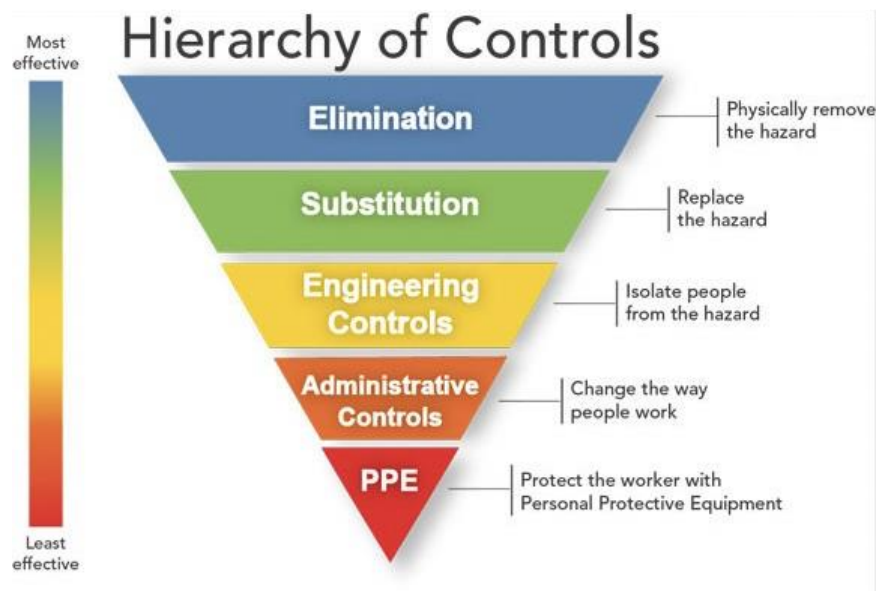


Figure 1. Hierarchy of Controls - PPE (Environmental Health & Safety University of Washington, 2022: 3)

PPE are products used to ensure that employees work healthily and safely, both as protection against risks that cannot be controlled at their source and to improve existing conditions. Although PPE is the last protective measure to be used, it is the first and foremost protective measure to directly protect the health and safety of the person in cases where the risk cannot be intervened at the source, considering factors such as environmental conditions, type of danger or characteristics of the employee. Although all protective and preventive measures have been taken in the working environment, the use of PPE is important in working conditions where risk is high and awareness is low.

To ensure the effective use of PPE, both the risks it will prevent and the working conditions must be taken into consideration, and PPE must be well designed and produced.

It is the employer's obligation to protect employees against risks arising from the work performed. While fulfilling this obligation, the following points should be taken into consideration regarding personal protective equipment:

- PPE should be used in cases where the identified risks cannot be prevented by collective protection methods or reduced to the desired level despite the technical measures taken.
- Care should be taken to prevent the relevant risk without the PPE itself creating a risk, and to ensure that it is suitable for the working environment, the health status of the employee using it, ergonomic requirements and the work performed.
- Care should be taken to ensure that the PPE to be chosen bears the CE marking, and products without CE marking or whose safety is questionable should not be used. When choosing personal protective equipment, risk-related limit values should also be taken into consideration.
- The employer should provide sufficient information and practical training to its employees free of charge about which type of PPE should be used against which risks, how and for how long, and should obtain the opinions of the employees and ensure their participation (The Ministry of Labour and Social Security, 2016).

Controlling the hazard at the source is the best way to protect workers. Depending on the hazard or workplace conditions, OSHA recommends the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible. For example, creating a barrier between the hazard and workers is an engineering control. Where engineering, work practices, and administrative controls are not feasible or do not provide adequate protection, employers must provide employees with PPE and ensure its use. Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to various hazards. Examples of PPE include items such as gloves, foot and eye protection, protective hearing aids (earplugs, muffs), hard hats, respirators, and full body suits (OSHA, 2023: 3).

When PPE is generally classified, it can be classified as protective clothing, hand and arm protective equipment, head protective equipment, foot and leg protective equipment, eye and face protective equipment, respiratory protective equipment, protective equipment against falling from height, and hearing protectors.

PPE is the least effective method to control or prevent exposure to a hazard. PPE provides a barrier to protect the worker from exposure to potential hazards; however, due to the reliance on the worker to select, wear, and maintain PPE, the likelihood of hazard exposure may increase with PPE alone (EH&S University of Washington, 2022: 3).

Conclusion

In order to ensure occupational health and safety in workplaces, to create healthy and safe working environments, it is necessary to take protective and preventive measures against risks and to improve existing health and safety conditions.

By conducting a risk assessment, all protective and preventive measures to be taken against the dangers that employees may be exposed to should be taken by intervening in risks at their source and by

prioritizing collective protection measures. At this point, the safety rules to be followed are extremely important. In addition to safety rules, employees' attitudes towards using PPE and the training they have received are also extremely important issues. Personal protective equipment are products that can be used both to protect against risks that cannot be controlled at their source and to improve existing conditions in order to ensure that employees work in a healthy and safe manner. In this context, the use of PPE is an extremely necessary practice in creating the safety climate in businesses.

Work accidents and occupational diseases threaten employee health, life and property safety. This situation increases social costs and causes serious damage to both business economies and national economies. The safety culture of both business managers and employees is an important factor in the change in the number of accidents. For this reason, it is of great importance for workplaces to ensure and develop a safety culture as a part of the organizational culture. Increasing the motivation of employees in businesses enables them to exhibit safe behavior. In this case, it contributes to the development of safety culture by enabling the creation of safe working environments in workplaces. In creating a safety culture in workplaces, informing employees about the measures taken/to be taken regarding hazards and risks in the workplace, obtaining their opinions by involving employees in risk analyzes prepared in the workplace, emergency action plans, etc., establishing systems where employees' opinions and suggestions regarding OHS can be collected, personal protective equipment. Issues such as widespread use are important.

When the factors that will cause negativity for employees in the apparel industry are examined, ergonomic hazards are among the dangers that may be more intense and high-frequency than those in other sectors. Since it is a sector that requires attention due to the nature of the work at every stage of the work and requires working close to the material, neck, waist, back and skeletal system problems are among the top dangers due to constantly working in the same position, that is, working in the wrong posture, while eyes and hands are used intensively. Other important dangers are long-term exposure to noise, long-term exposure to vibration and chemicals (press, stain removal, etc.), losses caused by sawmills and cutting robots used in cutting operations. For these reasons, while risk analysis and assessment studies are carried out especially in the apparel sector, issues such as ergonomics, how to use the body, how to use the equipment with less harm, what the dangers in the environment are, what kind of exercise program should be followed against musculoskeletal system problems, etc. are discussed by the workplace physician and the workplace physician. It should be carefully evaluated by security experts and steps should be taken to implement it. For this, the risks posed by technology, work organization, working conditions, social relations and the working environment must be taken into consideration and a risk assessment must be made. Health and safety risks in the workplace should be evaluated, these evaluations should be updated in the light of changing conditions, and appropriate preventive and protective measures should be taken. In addition, choosing PPE suitable for the employee is also important. In this context, it will be possible to create healthier work environments by paying attention to all these factors and taking the necessary security measures.

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**PROBLEMS RELATED TO RESEARCH ON EMOTION AND COGNITION
INTERACTIONS**

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ABSTRACT

Cognitive processes such as perception, attention, memory, and decision-making have been widely studied in psychology. On the other hand, the interaction of these processes with emotion is a more recent area of study. Regarding the effects of emotion on cognition, findings show that the subjective emotion or the physiological arousal of the participant as well as the valence and arousal level of the information affects cognitive processes. Regarding the effects of cognition on emotion, findings show that cognitive processes can regulate affective responses such as anxiety. These findings potentially have important implications for interdisciplinary research areas such as cognitive science and neuroscience and for clinical practice. Currently, though, the study of emotion and cognition interactions also has some conceptual definition, operational definition, and methodological problems. The problems start with the conceptual definition of emotion, and its differentiation from affect and mood. Problems also involve the operational definition of emotion, starting at the physiological level, with neural and musculoskeletal responses, and continuing to layer upward to the subjective emotion, accompanying thoughts, and socially constructed self-conscious emotions. Methodologically, the problems include a failure to use research materials that convey realistic emotions and trying to establish a baseline for emotional valence that is assumed to be emotionally neutral. Additionally, using language labels and a context for emotions can affect how the emotion is perceived and interpreted, despite, the underlying neural responses may be similar for different language labels and contexts. Given that cognition is an area that mostly uses the experimental method for scientifically sound studies that can establish cause-and-effect relationships, these critical problems need to be addressed in the study of emotion and cognition interactions.

Keywords: emotion, cognition, conceptual definition, operational definition, methodological problems

INTRAMYOCARDIAL AND PULMONARY HYDATID CYST: A RARE CASE REPORT

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ABSTRACT

Hydatid cyst is a human parasitic disease caused by the larval stage of echinococcus granulosus. Cardiac hydatid cyst has been reported infrequently even in countries where hydatid disease is endemic. In this case report, we present a paediatric male patient with intramyocardial and pulmonary hydatid cyst with computed tomography images and literature information.

Case presentation: A 14-year-old male patient was admitted to hospital with pain in the left chest and respiratory distress. Radiological examinations revealed a 54x62 mm cystic lesion in the medial lower lobe of the left lung and a 50x42 mm thick-walled cystic lesion located intramyocardially in the free wall of the left ventricle. The patient refused to undergo surgery and presented again about 7 months later with clouding of consciousness and severe respiratory distress. Thoracic CT scan showed rupture of the cystic lesion in the left ventricular wall into the cyst and separation of the germinal membrane.

Cardiac hydatid cyst cases are extremely rare. It constitutes 0.5 to 2% of all echinococcosis cases. The distribution of the cyst in the heart depends on the amount of blood circulation to that area. Cardiac hydatid cysts are more common in the left ventricular myocardium (55-60%) . 5-9% in the interventricular septum, 3-4% in the right atrial wall, 15% in the right ventricular myocardium, 8% in the left atrium, 7% in the pulmonary artery and 8% in the pericardium have been reported. The embryo reaches full maturity in approximately 1 to 5 years after reaching the heart. An adventitial pericyst layer is formed as a reaction of the myocardium to the cyst. Although the most common clinical findings of cardiac hydatid cyst are precordial chest pain and cough, fever, haemoptysis, dyspnoea, anaphylactic shock, syncope, pericarditis, valvular dysfunction, pulmonary hypertension, pulmonary and systemic embolism and sudden death may also occur.

Since cardiac hydatid cyst is not a common disease, it may not be immediately recognised at the stage of diagnosis. At rest, murmurs or additional sounds that are difficult to explain may be heard in ruptured cysts, in those that cause obstruction with their mass. Medical treatment should be added to surgical treatment.

Keywords: Pulmonary, heart diseases, echinococcosis

**OSTEOPOROZDA GOJİ BERRY: GLİKOKORTİKÖİD KULLANIMININ YARATTIĞI
RİSKLERİ AZALTMAK İÇİN BİR DOĞAL ÇÖZÜM OLABİLİR Mİ?**

**DOES THE CONSUMPTION OF GOJI BERRY REPRESENT A NATURAL MEANS OF
REDUCING THE RISKS ASSOCIATED WITH THE USE OF GLUCOCORTICOIDS IN THE
CONTEXT OF OSTEOPOROSIS?**

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ÖZET

Osteoporoz, kemik metabolizma hastalıkları arasında en sık görülen kemik dokusunun ilerleyici bir şekilde incilmesi, azalması ve kolay kırılabilir hale gelmesi olarak bilinen bir hastalıktır. Osteoporozun karakteristiği olan kemik kayıplarının, kemik rezorpsiyonu ve formasyonu arasındaki dengesizliğin bir sonucu olarak yaşlanma sırasında ve menapoz sonrasında meydana geldiği bilinmektedir. Bununla birlikte, glukokortikoide bağlı osteoporozun, sekonder osteoporozun en yaygın şekli olduğu da ifade edilmiştir. Glukokortikoidlerin osteoblastların TipI kollojen gibi kemik matriks komponentlerinin yapımını baskılayarak, osteoblastik ve osteositik apoptozu arttırdığı iddia edilmektedir. Ancak, yine de glukokortikoidlerin kemik rezorpsiyonunu arttırıp arttırmadığı konusunda tartışmalar hala devam etmektedir. En uygun osteoporoz tedavisi kemiğin tüm kitlesini arttırmalı ve kemik gücünün iyileşmesi ve kırık insidansında azalma ile sonuçlanmalıdır. D vitamini, D vitamini metabolitleri, hormon replasman tedavisi, kalsitonin, paratiroid hormon ve bifosfonatların glukokortikoide bağlı osteoporoz tedavisi için etkili olduğu bilinmektedir. Ama özellikle hormon replasman tedavisinin getirilerinin yanında hayati yan etkilerinin varlığını da göstermiştir. Hormon replasman tedavisinin, göğüs kanseri, rahim kanseri, koroner kalp hastalığı, damarlarda pıhtı oluşumu gibi bozuklukların oluşma riskini yüksek oranda artırdığı rapor edilmiştir. Bu sebeplerden dolayı araştırmacılar gözlerini yan etkileri daha az olan ve halk arasında kabul görmüş bitkisel tedavilere çevirmişlerdir. Bunlardan biri osteoporoz, şeker hastalığı, uykusuzluk, güçsüzlük, yorgunluk, görme bozuklukları ve tansiyon gibi hastalıkların tedavisinde kullanılan Goji Berry (*Lycium barbarum* (LB)) bitkisidir. LB, yeni kemik dokusu oluşumunu stimüle etmekte ve kemik rezorpsiyonunu azaltmaktadır. Glukokortikoide bağlı osteoporoz tedavisinde çeşitli ajanlar kullanılmaktadır. Osteoblastik fonksiyon bozukluklarına bağlı kemik oluşumunun azalması ve muhtemelen kemik rezorpsiyonunun artmasına bağlı olarak ortaya çıkan glukokortikoide bağlı osteoporozda, hem kemik formasyonunu arttıran hem de kemik yıkımını azaltan bir ajan olarak düşünülen LB etkili bir tedavi alternatifi olabilir. Bu fikirden yola çıkarak bu araştırmada, glukokortikoid kullanımına bağlı oluşan osteoporoz risklerinin azaltmak amacıyla Goji Berry'in doğal bir çözüm olup olamayacağını araştırmak amaçlandı.

Anahtar Kelimeler: Osteoporoz, Goji Berry, Glukokortikoid Kullanımının Yan Etkileri.

ABSTRACT

Osteoporosis is the most prevalent disease of bone metabolism, characterised by progressive thinning and reduction of bone tissue, rendering it susceptible to fracture. The bone loss characteristic of osteoporosis is known to occur during ageing and after menopause as a result of an imbalance between bone resorption and formation. However, it has also been reported that glucocorticoid-induced osteoporosis is the most common form of secondary osteoporosis. It has been proposed that glucocorticoids increase osteoblastic and osteocytic apoptosis by suppressing the production of bone matrix components such as Type I collagen by osteoblasts. However, there is still controversy as to

whether glucocorticoids increase bone resorption. Optimal osteoporosis treatment should increase the overall mass of bone, result in improved bone strength, and reduce the incidence of fractures. It is established that vitamin D, vitamin D metabolites, hormone replacement therapy, calcitonin, parathyroid hormone, and bisphosphonates are effective for the treatment of glucocorticoid-induced osteoporosis. However, it has been demonstrated that hormone replacement therapy, in particular, has both beneficial and adverse effects. Hormone replacement therapy has been reported to significantly increase the risk of breast cancer, uterine cancer, coronary heart disease, and blood clot formation. For these reasons, researchers have turned their attention to herbal treatments that have fewer side effects and are widely recognised. One such treatment is Goji Berry (*Lycium barbarum* (LB)), which is used in the treatment of diseases such as osteoporosis, diabetes, insomnia, weakness, fatigue, visual disturbances, and high blood pressure. LB stimulates the formation of new bone tissue and reduces bone resorption. A variety of agents are employed in the treatment of glucocorticoid-induced osteoporosis. In glucocorticoid-induced osteoporosis, where bone formation is decreased due to osteoblastic dysfunction and possibly increased bone resorption, LB, which is considered an agent that both increases bone formation and decreases bone destruction, may be an effective treatment alternative. This study aimed to investigate whether Goji Berry can be a natural solution to reduce the risks of osteoporosis caused by glucocorticoid use, based on the aforementioned hypothesis.

Keywords: Osteoporosis, Goji Berry, Side Effects of Glucocorticoid Use.

INTRODUCTION

Osteoporosis", also known as "human osteoporosis", is a disease known as progressive thinning, reduction and fracture susceptibility of bone tissue, which is the most common bone metabolic disease. Although it is more common in women for hormonal reasons, it is actually a common problem for both men and women over the age of 45. Bone loss, which is characteristic of osteoporosis, is known to occur during ageing and after menopause as a result of an imbalance between bone resorption and bone formation [1]. However, the most common form of secondary osteoporosis is glucocorticoid-induced osteoporosis [2]. Although glucocorticoids appear to cause bone loss primarily by suppressing osteoblastic functions, histomorphometric studies have shown a decrease in bone formation in general [3]. Cell biological studies have shown that glucocorticoids suppress osteoblastic proliferation and osteoblast function. Glucocorticoids have been suggested to increase osteoblastic and osteocytic apoptosis [4] by suppressing osteoblast production of bone matrix components such as type I collagen [5]. However, it is still controversial whether glucocorticoids increase bone resorption. Similarly, although some histomorphometric studies have shown an increase in bone resorption, changes in serum and urinary bone resorption parameters have not been consistently reported [2].

Optimal treatment of osteoporosis should increase total bone mass, improve bone strength and reduce the incidence of fractures [1]. Almost all of the most commonly used osteoporosis treatments work by inhibiting bone resorption. Treatments that inhibit bone resorption reduce the rate of bone regeneration and reduce the fracture rate by 30-50% [6]. However, the reduction in bone resorption that occurs in the first few weeks of treatment is later accompanied by a reduction in bone formation [7]. It was therefore thought that this plant could be used to treat osteoporosis, based on the idea that it could also increase the strength and quality of bone. In ovariectomised rats, LB prevented bone loss by reducing bone resorption and bone formation remained increased. The same study also found an increase in the mRNA expression of genes (COL5a2) that cause an increase in bone formation. The increase in proteins produced as a result of the expression of these genes is also associated with an improvement in bone quality [8].

Several agents are used to treat glucocorticoid-induced osteoporosis. In glucocorticoid-induced osteoporosis, which is caused by decreased bone formation due to osteoblastic dysfunction and possibly increased bone resorption, LB, which is considered to be an agent that both increases bone formation

and decreases bone destruction, may be an effective treatment alternative. There are no studies in the literature on the use of LB in glucocorticoid-induced osteoporosis. In this study, we aimed to investigate the effect of LB on receptor activator nuclear factor kappa B ligand (RANKL), which plays a positive role in bone formation, in a glucocorticoid-induced and ovariectomised model of osteoporosis.

NORMAL BONE PHYSIOLOGY AND THE EFFECT OF POSTMENOPAUSAL OSTEOPOROSIS

Although there is a physiological decrease in bone mass at older ages, not all individuals develop osteoporosis. The amount of maximum bone mass and the rate of bone loss are two important factors in the formation of osteoporosis. Bone mass, which reaches its maximum in the first 1/3 of human life, starts to decrease due to various factors [9]. Osteoporosis is three times more common in women than in men. The reason for this is that the maximum bone mass is lower in women, and hormonal changes that occur after menopause accelerate the development of the disease. After the peak bone mass is reached, there is a 0.4% loss in both sexes. Additionally, a loss of 2% in cortical bone mass and up to 5% in trabecular bone mass occurs within 5-8 years after menopause in women. In order to gain an understanding of the pathophysiology of osteoporosis, it is necessary to analyse normal bone regeneration. The skeletal system throughout life undergoes a cycle of change, which maintains homeostasis and structural integrity. This process is known as remodelling and comprises two components: bone destruction and bone formation. In remodelling, osteoblasts and osteoclasts act in balance, forming a unit known as the 'Bone Remodelling Unit or Basic Multicellular Unit (BMU)'. The BMU is a transient anatomical structure. This anatomical unit comprises osteoclasts, osteoblasts, blood supply and related soft tissues [10]. The remodelling mechanism comprises five phases. Remodelling occurs primarily by bone accretion on surfaces where bone destruction is complete. In the initial stage, activation, osteoclast precursor cells migrate to the bone surface to be resorbed and fuse with multinucleated osteoclasts. The objective of this phase, during which osteoclasts emerge, is to transform the surface into an active remodelling zone. In the subsequent phase, the destruction phase, the bone is resorbed by osteoclasts in conjunction with mononuclear phagocytes present in the area. In the third phase, the reversal phase, osteoblasts differentiate and initiate osteoid and bone formation. Subsequently, the resting phase ensues, during which the osteoid becomes indistinguishable from the mineralised bone. This activation cycle repeats every 10 seconds in normal bone, as evidenced by studies 12, 51, and 70. In the remodelling process, which entails the sequential order of bone resorption and bone formation, an imbalance may arise if the resorption and formation processes are unable to compensate for each other.

The understanding of the cellular basis of remodelling has recently accelerated. The tumour necrosis factor (TNF) ligand (binding molecule) family nuclear kappa B (NFκB) receptor activator ligand, a membrane molecule (RANKL), is a molecule required for osteoclast production [12,13]. RANKL interacts with two different receptors (Figure 3). These are the receptor activator of NF-κB receptor (RANK), a signalling receptor found on the surface of osteoclast progenitor cells, and osteoprotegerin (OPG) cytokine receptor, a molecule belonging to the TNF receptor family. In vivo and in vitro studies have demonstrated that RANK, RANKL and OPG receptor play a pivotal role in osteoclastic bone resorption [12]. Osteoblasts release RANKL from their surface. RANKL is released from osteoclast precursors and activates osteoclast differentiation by interacting with the removed RANK. Mature osteoclasts are activated by the interaction of RANK and RANKL, which also prolongs their survival. Osteoprotegerin is released by osteoblasts and stromal cells and its function is to block the interaction of RANK and RANKL. Bone loss observed at the cellular level in postmenopausal osteoporosis is caused by osteoclasts and occurs as a result of a disturbance in the balance between osteoblast activities. The estrogen hormone plays a role in normal physiological bone remodelling and physiological bone has a central importance in the cycle. The estrogen hormone fulfils this function in the bone by regulating

their lifespan and cytokine-induced osteoclastogenesis by reducing the amount of estrogen. In the absence of oestrogen, transforming growth factor (increased TNF release from T cells as a result of decreased TGF- β production) occurs. The understanding of the cellular basis of remodelling has recently accelerated. The tumour necrosis factor (TNF) ligand (binding molecule) family nuclear kappa B (NF κ B) receptor activator ligand, a membrane molecule (RANKL), is a molecule required for osteoclast production [12,13]. RANKL interacts with two different receptors (Figure 1). These are the receptor activator of NF- κ B receptor (RANK), a signalling receptor found on the surface of osteoclast progenitor cells, and osteoprotegerin (OPG) cytokine receptor, a molecule belonging to the TNF receptor family. In vivo and in vitro studies have demonstrated that RANK, RANKL and OPG receptor play a pivotal role in osteoclastic bone resorption [12]. Osteoblasts release RANKL from their surface. RANKL interacts with RANK, which is released from osteoclast precursors, and activates osteoclast differentiation. The interaction of RANKL with RANK in mature osteoclasts leads to osteoclast activation and prolonged survival. Osteoprotegerin is released by osteoblasts and stromal cells and its function is to block the interaction of RANK and RANKL. Bone loss observed at the cellular level in postmenopausal osteoporosis is a consequence of a disrupted equilibrium between osteoclast and osteoblast activities. The estrogen hormone plays a pivotal role in normal physiological bone remodelling and physiological bone turnover. The estrogen hormone exerts this function by regulating bone cell survival and reducing cytokine-induced osteoclastogenesis. In the absence of estrogen, transforming growth factor (TGF- β) production is reduced, resulting in increased TNF release from T cells. Furthermore, monocytes begin to secrete more interleukin-1 (IL-1). TNF induces osteoclast production from osteoclast precursors by stimulating macrophage-colony stimulating factor (M-CSF) and RANKL production. Concurrently, IL-1 and RANKL prevent osteoclast apoptosis and prolong their lifespan. Consequently, the number of functional bone marrow units (BMUs) is markedly elevated in estrogen deficiency.

Consequently, the number of functional BMUs is significantly augmented in estrogen deficiency [14]. Furthermore, the lifespan of osteocytes is shortened in estrogen deficiency. It is observed that the response of osteoblasts to mechanical stimuli and their capacity to detect and repair damaged parts of the bone are reduced. In addition to the negative regulation of IL-1 and TNF [15], estrogen accelerates osteoclast apoptosis by increasing TGF- β production [16,14]. Another important antiresorptive effect is the stimulation of osteoprotegerin release from osteoblasts [17]. In summary, post-menopausal estrogen deficiency leads to an imbalance between bone formation and destruction and increased bone turnover. The elevation in osteoclastogenic pro-inflammatory cytokines, including IL-1, IL-6, M-CSF and TNF, results in augmented osteoclast production and trabecular bone loss.

PHARMACOLOGICAL TREATMENT OF OSTEOPOROSIS

The primary goals of osteoporosis treatment are fracture prevention and the maintenance and increase of bone mineral density. The aim of this programme is to improve the quality of life in patients with fractures and skeletal deformities. For this purpose, drugs that increase bone formation and decrease bone destruction are used in treatment. It can be considered that the primary target of drugs that reduce the rate of bone loss is to reduce bone mass loss. It is postulated that the lost bone mass can be replaced by increasing the continuity of the production rate, despite the decrease in destruction [18]. Drugs and treatment modalities that reduce bone destruction and are currently in use are as follows: calcium and vitamin D and active metabolites, HRT, salmon calcitonin, SERM and bisphosphonates. Agents that increase bone formation are also referred to as anabolic agents. The principal anabolic agents employed in the treatment of osteoporosis are recombinant human parathyroid hormone (teriparatide) and strontium ranelate [19, 20]. A plethora of studies are currently underway to ascertain the comparative efficacy of anabolic drugs and drugs that reduce bone destruction on bone density and fracture incidence, as well as to identify new pharmacological treatment strategies utilising drugs in combination. It is

imperative that individuals consume an adequate dietary intake of calcium to facilitate normal skeletal development. Currently, calcium preparations are used in combination with other osteoporosis drugs. Vitamin D acts by accelerating the absorption of calcium from the digestive system. It has been demonstrated that the use of calcium for the first five years after menopause has no effect [19,21]. However, calcium preparations are known to prevent bone loss with ageing by up to 50% in the advanced period [21,22]. Daily treatment with 1.2 g calcium and 800 IU cholecalciferol has been demonstrated to significantly reduce the risk of hip and non-vertebral fractures in advanced old age [19]. For many years following Albright's [19,23] description of the relationship between estrogen deficiency and osteoporosis in 1941, it was believed that hormone replacement therapy (HRT) should be the primary treatment option. Although HRT is known to prevent menopause-related bone loss, its side effects, including an increased risk of breast cancer, myocardial infarction and venous thromboembolic complications, made it an unsuitable choice for postmenopausal osteoporosis [19]. Currently, the use of HRT is limited to short-term use in order to relieve menopausal symptoms. SERMs are agents that have specific effects on tissue and can act as agonists or antagonists to estrogen. The only licensed SERM example is raloxifene. Studies on lasofoxifene, a new generation SERM derivative, are still ongoing. Raloxifene has been demonstrated to exert agonist effects on estrogen in bone and lipid metabolism, while also exhibiting antagonist effects on breast and endometrium. In clinical studies, it has been observed to reduce the risk of vertebral fractures by 30-50%, although its impact on non-vertebral fractures remains inconclusive. In light of these findings, the use of Raloxifene is not recommended in patients at high risk of hip fractures. It has been reported that the use of Raloxifene can reduce the risk of breast cancer by 70% [19]. It is known that the continuous release of parathormone in the body increases bone destruction activity and causes a significant decrease in trabecular bone volume. Conversely, intermittent administration of parathormone has an anabolic effect on bone [25]. Teriparatide is a fragment of human parathormone produced by recombinant technology (rhPTH). A study of 1637 patients found that the risk of vertebral fracture decreased by 65% and the risk of non-vertebral fracture decreased by 53% in the group administered daily subcutaneous teriparatide [25]. The drug is currently licensed for 18 months in Europe and 24 months in the USA. Another formulation, strontium ranelate, is licensed for postmenopausal osteoporosis in European Union countries. Despite the lack of clarity regarding its mechanism of action, it is understood that it prevents bone destruction and has no negative effect on bone formation [26]. In a phase II study involving 1,649 patients, it was reported that the drug reduced the risk of vertebral fractures by 49% in the first year and 41% in the third year. Another study found that it reduced the risk of non-vertebral fractures by 16% in the elderly patient group. The absence of adverse effects on the digestive system and the low risk of venous thrombosis suggest that it may be an alternative drug to bisphosphonates in the treatment of postmenopausal osteoporosis.

THE HERBAL PROPERTIES OF LYCIUM BARBARUM (GOJI) FRUIT

Due to its high safety, *Lycium barbarum* preparations are used as food supplements in addition to the daily diet. Some properties of *Lycium barbarum*, which is consumed to protect general health, such as fatigue, stress, neurological and psychological problems, gastrointestinal and skeletal muscle disorders, cardiovascular effects, visual acuity, antioxidant effects, immunomodulator and side effects, have been investigated and its safety has been determined. It has started to be sold in countries such as Southeast Asia, New Zealand, Australia, the Caribbean and North America [29,30]. *Lycium barbarum* is a small tree fruit with grey-green leaves that can reach up to 3 m in length [31]. Goji berries are fusiform shaped, 6-20 mm long, 3-8 mm in diameter, red to dark red in colour, and grow naturally in Asia, northwest China and inner Mongolia [32]. The genus *Lycium*, which has about 70 species, is cultivated in the temperate parts of North America, South Africa, Eurasia and Australia [33]. *Lycium barbarum* belongs to the plant family Solanaceae and has been used as herbal medicine in China for thousands of years

[27]. *Lycium barbarum* has many different names: Boxthorn, kuko (Japanese), goji, lycii fruit, wolfberry, gou qi (Korean), tea plant [27]. For 2300 years, goji has been used as tea, soup, juice, wine, nuts in East Asia; it is a Chinese herbal medicine and is believed to be good for insomnia, diabetes, visual impairment and cancer [34]. Recently, it has been offered for sale as a health and fitness drink by western countries [35]. Its chemical components consist of polysaccharides, carotenoids and flavonoids, betaine, amino acids, trace elements and vitamins. Polysaccharides obtained from the liquid form of *Lycium barbarum* are the major factors responsible for biological activities [36]. They are composed of various combinations of about 9 monosaccharides: xylose (Xyl), glucose (Glc), rhamnose (Rha), mannose (Man), galactose (Gal), arabinose (Ara), fructose (Fru), fucose (Fuc), and ribose (Rib) [37]. *Lycium barbarum* polysaccharides mainly have antioxidant [38], immunomodulation [39], antitumour [40], nerve cell protective [41], radiation protective [42], anti-diabetic [43], liver protective [44], osteoporosis preventive [32], anti-fatigue [29] effects. Carotenes, which give red-orange colour to *Lycium barbarum* fruits, constitute approximately one thousandth of the dried fruit [45]. The main carotenoid of this plant, which consists of eleven kinds of free carotenoids and 7 ester carotenoids, is zeaxanthin [46]. *Lycium* fruit is a good source of zeaxanthin. Zeaxanthin is a yellow pigment that is a derivative of beta carotene. When consumed, zeaxanthin accumulates in adipose tissues but accumulates particularly in the macula of the retina. This compound has a preventive and protective effect on macular degeneration, which leads to loss of visual field, especially in old age [47]. Vitamin C in goji berries is comparable to that of fresh lemon. (42 mg/100 g.) [48]. Aglycone, myricetin, quercetin, and kaempferol are important flavonoids separated by hydrolysis [49].

CHEMICAL COMPONENTS

The polysaccharides of *Lycium barbarum* with the highest biological activity are those in liquid form [36]. Polysaccharides constitute between 5% and 8% of the dry goji fruit. They are composed of various combinations of nine monosaccharides, namely xylose (Xyl), glucose (Glc), rhamnose (Rha), mannose (Man), galactose (Gal), arabinose (Ara), fructose (Fru), fucose (Fuc), and ribose (Rib) [37]. The highest proportion of polysaccharides is constituted by xylose and glucose. The source of their bright colour, ranging from orange to red, is due to the carotenoids present in their composition. The carotenoids constitute 0.03-0.5% of the dry goji fruit. Eleven free carotenoids and seven carotenoid esters were identified in the sample [45]. Zeaxanthin dipalmitate represents the most prevalent carotenoid, accounting for approximately half of all carotenoids. Subsequently, the following compounds were identified: beta cryptoxanthine monopalmitate and its two isomers, zeaxanthin monopalmitate and its two isomers, trans beta carotene and trans zeaxanthin. Zeaxanthin is a yellow pigment, an isomer of lutein and a derivative of beta-carotene. Following digestion, zeaxanthin is stored in adipose tissues, with a notable accumulation occurring in the macula, a region of the retina. It has been demonstrated that this substance may offer protection against macular degenerations that may result from prolonged exposure to UV rays [46,39]. The fruit of the *Lycium barbarum* plant contains betaine, cerebroside, beta-sitosterol, p-coumaric acid molecules and vitamins. Additionally, the fruit contains potassium and a number of minerals, including calcium, zinc, iron, cobalt, manganese, selenium, and magnesium [46].

ANTIOXIDANT EFFECT

A randomised trial was conducted in which healthy elderly individuals were randomly assigned to receive either *L. barbarum* fruit juice or a placebo. Serum SOD and GSH-Px activities were significantly increased in the juice group, while MDA levels were significantly decreased. No changes were observed in the placebo group. While free radicals play a role in the formation of many important diseases, it has been reported that *L. Barbarum* may be effective in preventing and reducing these oxidation-induced diseases thanks to its antioxidant mechanism [64]. The administration of *L. barbarum* to rats prior to the administration of doxorubicin, an antitumour agent, resulted in a significant prevention of myofibril loss

and an increase in cardiac functions. Concomitantly, the adverse effects of chemotherapy were also diminished. This resulted in a reduction in mortality rates, and it was also observed that the antioxidative activity, serum aspartate aminotransferase and creatine kinase levels were normalised [65]. The LBP was found to enhance SOD activity and elevate the level of sexual hormones in a model created by damage to testicular tissue at 43 temperatures. This corroborates the long-held belief that it plays an aphrodisiac and reproductive-enhancing role on men, as espoused in China [60]. Lycium barbarum polysaccharides exhibited a robust antioxidant activity against various oxidative systems in vitro, with an antioxidant activity comparable to that of the synthetic antioxidant BHT. The antioxidant mechanism of LBP polysaccharides is dependent on their strong hydrogen atom donating ability, their capacity to bind to metals, and their ability to scavenge hydrogen peroxide, superoxide, and free radicals. Polyphenolic compounds, such as flavonoids, anthocyanins, flavanols, and catechins, are responsible for the antioxidant activity of these polysaccharides. Previous studies have demonstrated that the free radical scavenging property is the primary mechanism underlying the use of this fruit as a traditional medicinal plant and as a useful food additive [61].

IMMUNE REGULATORY EFFECT

A substantial body of evidence indicates that goji and its polysaccharides possess immunomodulatory effects, which are exerted by the activation of various immune cells [39]. A review of Lycium fruit in Recent Advances in Chinese Herbal Drugs reported that LBP enhances both cellular and humoral immunity. For example, LBPs administered to laboratory animals at a dose of 5-10 mg/kg per day for one week increased the activity of helper and cytotoxic T-cells and natural killer cells (natural killer cells). Additionally, other studies have indicated that it exerts its effect on the immune system through IL-2 stimulation. Nevertheless, it has been demonstrated that LBP can prevent the development of allergic reactions by inhibiting the production of IgE antibodies [62].

EFFECT ON LEUKOCYTE COUNT

It was reported that L. barbarum extract cyclophosphamide prevented the decrease in leukocytes and caused an increase in their number [63]. 1.3.3.7.2. The effect of L. barbarum extract on interleukin-12 was observed in dendritic cells (BMDC) obtained from the bone marrow of non-LBP-treated mice. It was found that Ig-A, Ig-E, CD11c coexpression and IL-12 p40 secretion increased in BMDC cells of LBP-treated mice. The observation that strong antigen-presenting T, B and NK cells, which play an important role in initiating the primary immune response, activate dendritic cells (DC) suggests that LBP may be effective in the phenotypic and functional maturation of dendritic cells. LBP is supportive not only in the formation of dendrites but also in the initiation of immune responses from dendritic cells [66,67]. LBP up-regulates the expression of CD40, CD80, CD86, MHC class II molecules, along with DC expression. In addition, LBP increases the allostimulant activity of dendritic cells and stimulates IL-12p40 and p70 production. In vitro and in vivo studies have shown that LBP administration increases the number of helper T cells (Th1) and Th-2 [68].

EFFECTS ON INTERLEUKIN-2 (IL-2) AND TUMOUR NECROSIS FACTOR-ALPHA (TNF- α)

In a study using peripheral mononuclear cells in humans, LBP treatment increased IL-2 and TNF- α expression at both mRNA and protein levels in a dose-dependent manner. Since these are two important cytokines in anti-tumour immunity, LBP may stimulate the immune response and may have potential therapeutic efficacy [69]. At certain concentrations (between 1.9 and 7.8 mg/ml), L. barbarum extract has been observed to increase the expression of IL-2 receptors [70]. L. barbarum has been demonstrated to reduce binding-induced decreases in body weight and TNF- α activity in rats [71]. L. barbarum has been demonstrated to reduce binding-induced decreases in body weight and TNF- α activity in rats.

PHAGOCYTIC EFFECT

The administration of LB polysaccharides has been demonstrated to enhance the phagocytic effect and phagocytic index, support lymphocyte translation and accelerate the production of serum haemolysin. LBP has been shown to exert its antioxidant effect by scavenging superoxide anions. It is well established that LBP is a homogeneous glycoconjugate with immunostimulating and antioxidant activity [72]. It has been demonstrated that the administration of LBP via gastric perfusion results in an increase in the weights of immune system organs and the phagocytic activities of the reticulo-endothelial system in mice [73]. LBP has been shown to enhance natural immunity by stimulating macrophages. It has been observed that LBP dose-dependently activates NF- κ B and AP-1 transcription factors, induces TNF- α , IL-1 β , IL-12p40 mRNA expression and increases TNF- α production. Furthermore, LBP has been demonstrated to stimulate NF- κ B and AP-1 transcription factors, resulting in the induction of TNF- α production and the up-regulation of MHC class II costimulatory molecules. This has been shown to significantly enhance the endocytic and phagocytic capacity of macrophages in vivo [74].

EFFECT ON LYMPHOCYTE PROLIFERATION

Flow cytometry revealed that LBP increased the proliferative response of rat spleen lymphocytes. The combined use of LBP and Con A demonstrated a synergistic effect. The MTT technique demonstrated that LBP significantly increased lymphocyte proliferation in the spleen of rats compared to the control group, and the combined use of LBP and Con A increased lymphocyte proliferation at a high rate. It was demonstrated that LBP activated T cells by stimulating mouse spleen cells, whereas it did not show such an effect on B cells. This indicates that LBP has immune system-supporting functions. LBP increases the apoptotic resistance of aged T cells. Studies have found that LBP increases the apoptotic resistance of T cells in aged mice, and the DNA structure is similar to that in young mice. In a study in which LBP extracts were divided into four different doses, low doses of pure LBP (5-20 mg/kg/day) demonstrated significant immune improvement. In mice, 10 mg/kg/day exhibited a significant difference in immune parameters, particularly when compared with crude LBP. The immune effects of LBP may depend on an optimum dose [77]. In vivo and in vitro studies have demonstrated that sulfated LBP modification significantly increases lymphocyte proliferation and improves serum antibody titer, with the effect being more pronounced than that of normal LBP. Furthermore, the impact of LBP on lymphokine-activated killer cells was investigated in 79 patients with advanced cancer, resulting in cancer regression in 75 patients with malignant melanoma, renal cell carcinoma, malignant hydrothorax, lung cancer, and colorectal carcinoma. These results demonstrate that LBP can be employed as an adjuvant in cancer biotherapy [77]. In two studies conducted in the USA and China, *L. barbarum* fruit juice was administered orally to healthy individuals to investigate the immunomodulatory effect of LB plant. An increase in both lymphocyte counts and IgG levels was observed in these individuals.

However, it was observed that the numbers of CD4, CD8 and NK cells and IL-4, IgA levels did not change in these individuals. Furthermore, no adverse effects, unusual symptoms, alterations in body weight, blood pressure, pulse rate, activity, urine, faeces, blood biochemistry were observed. This indicated that daily consumption of *L. barbarum* caused significant increases in immune functions and some parameters without causing any adverse effects [29].

EFFECT ON BONE METABOLISM

The effects of LBP extract on bone loss, immunity and antioxidant activity have been investigated in several studies. In the osteoporosis model induced by ovariectomy, it was found that the extracts obtained from *Lycium barbarum* fruit increased bone mineral density and bone mineral content in rats. Furthermore, it was observed that the extract increased gene expression in bone tissue. It was observed that LBP significantly increased the amount of calcium and phosphorus in the tibia in ovariectomised rats. This increase in these mineral substances also increased the strength and quality of the bone.

Furthermore, increases in bone weight have been shown to be one of the anti-osteoporotic effects of LBP. LBP also increased the mRNA expression of genes (COL5a2) that cause an increase in bone tissue. Similarly, the increase in proteins required for the expression of these genes is accepted as an indicator of improvement in bone quality [78]. The objective of this study was to determine whether oral intake of the extract obtained from Goji (*Lycium barbarum*) fruits has any effect on the osteoporosis model induced by ovariectomy in Wistar-Albino female rats. It has been suggested that *Lycium barbarum* may have positive effects on bone metabolism. Zhu M. et al. investigated the effects of LB polysaccharides on bone gene expression in mice. Despite Lorden et al. previously reporting that body weight was a predictive parameter for bone density in ovariectomised rodents, Zhu et al. stated that this prediction was not significant in this study [66].

In osteoporosis, it is generally understood that bone mineral content is significantly decreased in numerical terms. Among these contents, calcium and phosphorus are the minerals that show the highest decrease. However, despite a numerical decrease in content, the Ca/P ratio remains almost unchanged. It has been reported that the decreased Ca and P contents of LBP tibia bone significantly increased with ovariectomy, and this increase was realised by LBP increasing the mineral structure and durability of the bone. Zhu M. et al. observed that Col5a2 mRNA and Alpl mRNA analysis showed that both proteins were decreased in the tissue expression of ovariectomised mice, but these values were significantly ($p < 0.001$) increased after LBP administration. The fact that these two proteins, which are important in bone expiration, increased with the administration of LBP demonstrated that this plant supported the production of the main substance of bone. Similarly, it has been proposed that LBP induces an increase in bone gene expression, bone mineral density and content.

DISCUSSION AND CONCLUSION

Osteoporosis (OP) is the most common metabolic bone disease in the world. OP and OP-related fractures have become an increasing health problem. In particular, OP-related fractures cause significant financial and moral losses. Over time, posture disorder, increased height shortening, inappropriate stretching of ligaments and compression fractures lead to chronic pain. The negative psychological and socio-economic factors caused by chronic pain significantly affect the quality of life [79]. Osteoporosis and osteoporotic fractures impose a significant economic burden on the health care system. The economic costs of osteoporosis are similar to those of other major diseases such as chronic obstructive pulmonary disease, myocardial infarction, stroke and breast cancer. With the ageing population, this is an increasing public health problem [80]. A more detailed understanding of the cellular events underlying osteoporosis and involved in bone turnover has led to the prominence of a number of biochemical markers of bone formation and breakdown [81]. In the recent past, bone turnover could be demonstrated by expensive and invasive methods such as bone histomorphometry or nuclear medicine techniques. However, many current biochemical indicators, especially bone destruction indicators, provide valuable information alone in the determination of bone mass loss and fracture risk. However, despite the rapid developments in osteoporosis, many indicators used in the evaluation of bone metabolism disorders are still under investigation. As a result, the biochemical indicators used today cannot be used alone in the diagnosis of osteoporosis because they are not specific to bone. However, since their levels change in the early period, they are very useful in monitoring the treatment. Loss of bone density due to estrogen deficiency is the result of a significant increase in osteoclast activity [82]. It is known that estrogen has no direct effect on osteoclast activity. This suggests that estrogen stimulates osteoclast action indirectly. Active osteoclasts are found in the stroma and other accessory cells, which are the cells in which the inflammatory response is observed. These cells also have the ability to secrete proinflammatory cytokines. There is strong evidence that these proinflammatory cytokines are secreted in response to estrogen deficiency in menopause and that the increase in osteoclast activity characterised by bone density loss is mediated by this pathway [83,84]. Among these proinflammatory cytokines (IL)-1,

tumour necrosis factor alpha (TNF- α), IL-6, IL-11, IL-15, and IL-17 have been found to stimulate osteoclastic bone resorption. The pleiotropic effect of OPG/RANK/RANKL triple protein on both bone and immune system is known. Studies have revealed that a large number of cytokines, chemokines and transcription factors are shared by both systems. This triple protein is closely associated with IL-1 β , IL-6 and TNF- α , which are inflammatory cytokines. In addition to many autoimmune and inflammatory diseases, osteoporosis is also known to develop in the course of malignant diseases [85]. Dysfunctions of the receptor activator of NF-kappaB ligand (RANKL)/RANK/osteoprotegerin (OPG) axis, a member of the tumour necrosis factor (TNF) receptor family, play a role not only in bone mineral density abnormalities but also in the etiopathogenesis of various autoimmune and inflammatory diseases. The RANK/RANKL system stimulates the release of proinflammatory cytokines and chemokines [83]. Understanding the close interaction between immune and bone cells will pave the way for the development of new treatment modalities. Bai P. et al. investigated the link between COPD (Chronic Obstructive Pulmonary Disease) and osteoporosis, one of its systemic effects. In their study, 3 groups of patients (normal control, normal Bone Mineral Density and COPD, low Bone Mineral Density and COPD) were examined through serum IL-1 β , IL-6 and TNF- α and OPG/RANK/RANKL values. IL-1 β was significantly increased in Group 3 compared to the other normal groups. IL-6 and TNF- α are significantly different between these three groups. However, OPG and RANK were not significantly different in all 3 groups. RANKL was significantly increased in group 3 compared to the other two normal groups. Bai P. et al. suggested that serum levels of inflammatory cytokines (especially IL-6 and TNF- α) are increased in a systemic inflammatory state and serum RANKL and bone resorption are increased in connection [86]. In a study conducted by Brennan SL. et al. on 1008 women over 35 years of age, they reported that rheumatoid arthritis (RA), a systemic inflammatory disease, increased the risk of osteoporosis and fracture compared to those without RA. Inflammation in rheumatoid arthritis increases osteoclastic bone destruction through inflammatory cytokines (RANKL, IL-1, and TNF- α). These cytokines have been found in bone fluid of RA (12). It is well established that oestrogen exerts no direct effect on osteoclast activity. This suggests that oestrogen stimulates osteoclast action indirectly. Active osteoclasts are found in the stroma and other accessory cells, which are the cells in which the inflammatory response is observed. These cells also have the ability to secrete proinflammatory cytokines. There is substantial evidence that proinflammatory cytokines are secreted in response to estrogen deficiency in menopause, and that the increase in osteoclast activity, which is characterised by bone density loss, is mediated by this pathway. Among the proinflammatory cytokines (IL)-1, tumour necrosis factor alpha (TNF- α), IL-6, IL-11, IL-15, and IL-17, it has been demonstrated that they stimulate osteoclastic bone resorption. It is well established that the pleiotropic effect of the OPG/RANK/RANKL triple protein on both the bone and immune systems is known. Studies have revealed that a large number of cytokines, chemokines and transcription factors are shared by both systems. This triple protein is closely associated with IL-1 β , IL-6 and TNF- α , which are inflammatory cytokines. In addition to many autoimmune and inflammatory diseases, osteoporosis is also known to develop in the course of malignant diseases [85]. Dysfunctions of the receptor activator of NF-kappaB ligand (RANKL)/RANK/osteoprotegerin (OPG) axis, a member of the tumour necrosis factor (TNF) receptor family, play a role not only in bone mineral density abnormalities but also in the aetiology of various autoimmune and inflammatory diseases. The RANK/RANKL system stimulates the release of proinflammatory cytokines and chemokines [83]. A deeper understanding of the intricate relationship between immune and bone cells will facilitate the development of novel therapeutic approaches. Bai P. et al. conducted a study investigating the link between COPD (chronic obstructive pulmonary disease) and osteoporosis, one of its systemic effects. In their study, three groups of patients were examined: a control group with normal bone mineral density, a group with COPD and normal bone mineral density, and a group with COPD and low bone mineral density. Serum levels of IL-1 β , IL-6 and TNF- α , as well as OPG/RANK/RANKL values, were measured in each group. The results demonstrated that IL-1 β was

significantly elevated in Group 3 in comparison to the other two control groups. Furthermore, IL-6 and TNF- α exhibited significant differences between the three groups. However, OPG and RANK did not exhibit significant differences in all three groups. In contrast, RANKL was significantly elevated in Group 3 in comparison to the other two control groups. Bai P. et al. proposed that serum levels of inflammatory cytokines (in particular IL-6 and TNF- α) are elevated in a systemic inflammatory state, while serum RANKL and bone resorption are increased in connection [86]. Brennan SL. et al. conducted a study involving 1008 women over the age of 35, in which they reported that rheumatoid arthritis (RA), a systemic inflammatory disease, increased the risk of osteoporosis and fracture compared to those without RA. The inflammatory process observed in rheumatoid arthritis (RA) appears to increase osteoclastic bone destruction through the action of inflammatory cytokines, including RANKL, IL-1, and TNF- α . These cytokines have been identified in the bone fluid of RA patients (12).

Kleyer A. and Schett G. (87) elucidated the relationship between arthritis and bone loss as a distinct concept within the chicken-and-egg narrative. Traditionally, there is a sequence of events wherein an inflammatory process precedes bone loss. However, the reverse is also possible, whereby a person may experience bone loss before developing an inflammatory state. They posited that this phenomenon is mediated by pro-inflammatory cytokines [87]. The use of TNF- α , IL-1, IL-3 and IL-6 cytokines, in conjunction with an increase in RANKL and a breakdown of OPG, results in bone damage, which in turn leads to a malignant recurrence of myeloma. Treatment options for multiple myeloma (MM) diseases include those that reduce and repair the destruction. These are currently being developed (88). In recent years, researchers have turned to herbal treatments that have fewer side effects and whose benefits have been accepted by the public for centuries. Consequently, alternative mechanisms of action have been the subject of investigation, with the Goji plant representing one such example. This plant has been used traditionally for centuries in the Himalayan regions of China and Central Asia to treat a range of conditions, including osteoporosis, diabetes, insomnia, weakness, fatigue, visual disorders and blood pressure. In five clinical trials conducted in the USA, participants consumed L. barbarum fruit juice (GoChi, 120ml, 150g fresh fruit) throughout the day. The results demonstrated that this intervention improved general condition, fatigue, stress, clinical and psychological disorders, gastrointestinal problems, and muscle problems. A number of parameters, including hardware problems, have been investigated. The results indicate that this power:

- Increases metabolism and mobility.
- Increases sleep patterns.
- Changes mental activity.
- Relaxes tension.
- Impairs circulation and ejaculation.
- Decreases endurance and fatigue feelings.
- Causes headaches.
- Causes waist and shoulder pain.
- Decreases menstrual period pain. It has been demonstrated that the body is protected against the development of another disease caused by the aging process, thanks to the anti-aging and neuroprotective effects of L. barbarum and its polysaccharides. Daily consumption of L. barbarum has been shown to cause some changes in the effect on immune functions without causing any adverse effects [34]. Zhu and colleagues conducted a study on four groups of Wistar-Albino rats (n = 8 per group) to elucidate the bone gene expression of Lycium barbarum polysaccharides. The first group was selected as the control group, the second group was given an osteoporosis model with ovariectomy, the third group was given ovariectomy and 50 mg/kg LBP, and the fourth group was given ovariectomy and 100 mg/kg LBP. At the end of 45 days of application, blood samples from the animals and both curved femur bones were collected for analysis. The weight gain of the animals was adjusted accordingly. In 1986, Lorden and Caudle employed bone weights as an optical parameter to assess bone density in

rodents. However, Zhu et al. found no significant correlation between total bone weight and bone density. Nevertheless, they postulated that a slight increase in bone weight at all doses of LBP might be due to the antiosteoporotic effect of *Lycium barbarum*. In the analysis of Col5a2 mRNA and Alpl mRNA in tissue expiration by Zhu M. et al., it was observed that both proteins decreased in ovariectomised mice, but increased significantly ($p < 0.001$) in group 3 and group 4 given LBP. This indicated an improvement in the quality of the increase in LBP agreement of these two proteins, which are important in bone expiration. LBP has been demonstrated to induce an increase in bone gene expression, bone mineral distribution and content [89]. Warnings by Warm et al. demonstrated that glucocorticoid treatment administered at varying doses resulted in a dose-dependent elevation in serum alkaline phosphatase (ALP) levels in an osteoporosis model subjected to immobilization. Amman et al. (90) demonstrated that glucocorticoid treatment resulted in an increase in serum ALP levels in healthy male and female rats.

One of the serum parameters, phosphorus (F), demonstrated a statistically significant decrease in the groups administered Goji extract in comparison to the control and imitation groups. There was no statistically significant change in serum calcium levels. In osteoporosis, there is a significant numerical decrease in bone mineral content. Among the ingredients, calcium and phosphorus exhibited the most pronounced decline. Despite the observed decrease in numerical content, the Ca/P ratio exhibited minimal change. The observation that Ca remains constant while F decreases indicates that the Ca/F ratio is increasing. This indicates that the mineral density or calcium density of the bone has increased. The density of calcium is an essential element that increases the hardness and durability of bone. In A. Elçi's thesis study in 2004, in the postmenopausal period found no significant difference between groups in serum Ca and P values of women [91]. In osteoporosis, there is a notable decline in bone mineral content, with a significant reduction in numerical values. Among the aforementioned ingredients, calcium and phosphorus are among those that exhibit the most pronounced decline. Despite a reduction in numerical content, the Ca/P ratio remains largely unchanged. The observation that Ca remains constant while P decreases indicates that the Ca/P ratio is increasing. This indicates that the mineral density or calcium density of the bone has increased.

Since there is no study in this field that can be compared with our study, regarding the effectiveness of Goji in the glucocorticoid-induced osteoporosis model created in rats, our results need to be supported by future studies. The effectiveness of goji in glucocorticoid-induced osteoporosis should also be tested in models involving longer treatment periods and histomorphometric studies. Investigating the effectiveness of Goji in glucocorticoid-induced osteoporosis in models including histomorphometric studies may contribute to the understanding of possible mechanisms different from its effect in other models.

Serum ALP is a biomarker that plays a role in matrix maturation of osteoblasts. We know that ALP increases in the following situations: osteoblastic hyperactivity, bone remodeling, fractures and tissue damage.

A number of studies have indicated that serum estradiol (E2) levels decline in postmenopausal osteoporosis. However, our study did not reveal a statistically significant change in E2 levels in the control and experimental groups. One possible explanation for this is that the approximately four months allotted for the development of osteoporosis may not be sufficient time to reduce E2 levels. The objective of any antiosteoporotic treatment is to reduce the risk of fracture by restoring bone strength. The present study investigated the efficacy of goji in a glucocorticoid-induced osteoporosis model in rats. Goji demonstrated a statistically significant increase in bone strength, as evidenced by elevated RANKL levels and a Ca/P ratio. It is possible that the positive effects of goji on bone strength may become more apparent in studies involving a longer treatment period. Goji may be an effective alternative treatment for glucocorticoid-induced osteoporosis, which is the most common cause of secondary osteoporosis.

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**THE ENIGMA OF HEALTH: EXPLORING MEDICAL MYSTERIES IN LITERATURE
AND CULTURE**

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ABSTRACT

Illness and health have been enduring themes in literature and culture, often cloaked in mystery. This paper examines the exploration of medical mysteries in literary works and cultural narratives as a means to understand the epistemologies of health and illness. From Edgar Allan Poe's haunting portrayal of tuberculosis in "The Masque of the Red Death" to Charlotte Perkins Gilman's chilling depiction of postpartum depression in "The Yellow Wallpaper," authors have adeptly incorporated medical enigmas into their narratives, prompting readers to ponder the mysterious aspects of sickness. Furthermore, cultural representations of health and illness in art, film, and folklore mirror societal attitudes and beliefs toward medical phenomena, whether symbolically used to convey existential struggles or to challenge scientific explanations. By analyzing the intersection of medical mysteries in literature and culture, this paper aims to unveil insights into how different epistemological frameworks shape perceptions of health and illness. Through critical examination of these narratives, we can uncover hidden truths about the human condition and our efforts to comprehend the inexplicable aspects of well-being.

Keywords: Health, Illness, Literature, Culture, Medical mysteries, Epistemologies

**THE EFFECT OF IMPLEMENTING CRITICAL THINKING APPROACH IN GRADE 3
ENGLISH CLASSES ON IMPROVING SPEAKING SKILLS**

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ABSTRACT

In this era, the age of globalization, technology has had a great impact on all fields of daily life. People's life is based nowadays on national collaboration, regional connection, and global communication. Technology has changed people's lives, performance, and productivity, and it has encouraged them to know more about others' thoughts and attitudes as well as to oppose various beliefs. Hence, the world of digitalization had a great impact on learning in general and on learners in particular. It has become a must to follow the new technological development and digitalization to be able to cope with and tackle the needs of the new era. The new digital age requires the mastery of 21st-century skills to achieve better performance and more interactive learners. Hence, these new requirements have transformed the role of the teacher to be mainly a guide who can direct students to the right track and the role of the students to be the inquirers who are deeply engaged in the teaching-learning process.

Thus, a new advanced methodology of learning is required to be implemented in the English classes to enhance these competences and to solve certain educational problems that teachers and learners may encounter (Gökçearsan, Burcu, Coşkun, 2019). Hence, critical thinking techniques are essential tools to help learners go beyond what is explicitly stated and think of what is implied and embedded in the content. This could encourage them to explain, analyze, reflect, self-regulate, evaluate, propose, and synthesize in addition to the other components that are relevant to making decisions and problem-solving.

This paper is going to shed light on the impact of implementing a new approach of critical thinking techniques in English Foreign Language (EFL) classes: Probing, Challenging, Focused, and Stretching (PCFS) questions, on improving oral proficiency and overcoming speaking challenges in this digital era. This technique would help learners develop their higher thinking skills, explore topics further, acquire more vocabulary repertoire, analyze and synthesize information, and comprehend a given content.

This paper follows the quasi-mixed approach that will collect data through quantitative and qualitative tools. The pre-test and post-test as well as a questionnaire are the quantitative tools, and the observation and interviews are the qualitative ones. The study will be limited to six schools in Lebanon only that will be applying this approach, so it is recommended to replicate the study in other regions in Lebanon or in other countries in which schools teach English as a foreign language. Thus, this paper will be of great interest to educators (students, teachers, supervisors, coaches...), as well as Curriculum designers who will benefit from this approach to improve the learners 'oral proficiency.

Keywords: Learning a Foreign Language – Speaking Competence- Critical Thinking- Probing, Challenging, Focused, and Stretching Questions

**POLARITON PEAKS FROM THE COUPLED SYSTEM OF THE SPIN TRIPLET
TRANSITION AND THE CAVITY, CLASSICALLY CONSIDERED IN THE LINEAR
APPROXIMATION**

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ABSTRACT

Investigation of the spin-cavity polaritons (SCP) is important since they play a decisive role in creating long-storage quantum memories and optical interfaces, polaritonic chemistry, and masers, especially those which operate at room temperature, being of great significance for a lot of different applications. In this report, we suggest an almost completely classical model for the description of the polaritonic peaks conditioned both by free and forced Rabi oscillations of the SCP system. Our investigation is based on the linearized coupled differential equations we derived semi-classically for the magnetization component of the transition of the spin triplet states and the varying field in a cavity when the empty cavity is exactly tuned to the transition. The normal frequencies of this system of equations were found, and the corresponding graphs were constructed for the appropriate values of the parameters. It is shown that the increase in the spin-photon coupling can cause both the pushing apart of normal frequencies at a mutual decay rate (which is the known effect) and the merging together of normal decay rates at a mutual frequency (which is the predicted effect here). Polariton peaks, observable by the cavity transmission function and by EPR in the form of absorption and dispersion signals, were also investigated, and corresponding graphs were constructed. At that, instead of a transition of spin triplet states, a variety of other two-level systems (atoms, molecules, excitons, and so on) can act as emitters. Since the value of the spin-photon coupling is of great interest for applied scientists, obtaining this value by comparing our results with experimental data is of great importance.

Keywords: Polariton peaks, Rabi oscillations, Transmission function, EPR signals, Spin-photon coupling

INTRODUCTION

The photon-matter hybrid states, considered as quasiparticles, called polaritons, typically materialize as a normal-mode splitting of the coupled radiation-matter system, where photons act on the radiation side and emitters act on the matter side. The paradigm of N quantum emitters coupled to a single cavity mode and performing Rabi oscillations appears in many situations ranging from quantum technologies to polaritonic chemistry (Haroche, 2006 and references therein), including maser generation from spin triplet states, especially those that operate at room temperature, being of great significance for a lot of different applications. Polariton peaks can be observed by the cavity transmission function and by EPR in the form of absorption and dispersion signals. From the above, it follows that the purpose of the study of this paper - investigation of the polariton peaks with the help of EPR and transmission function from the coupled system of spin triplet state transition and cavity - is of significant theoretical and practical interest. To achieve this goal, we almost throughout the paper use the classical approach in the linear approximation.

FORMULATION OF THE PROBLEM AND METHODS

The dynamics of the coupled system "STS transition + cavity" under the action of the steady-state weak probe MW field is described by us in the rotating-wave approximation with the help of the following

system of differential equations for the field B_K^{i-j} and the magnetization M_K^{i-j} inside the sample, basing on Ref. by Fokina and Elizbarashvili (2021).

$$\begin{aligned} d^2 B_K^{i-j} / dt^2 + 2\tau_c^{-1} dB_K^{i-j} / dt + \omega_c^2 B_K^{i-j} &= \eta_0 \mu_0 \omega_p dH_K^{i-j} (probe) / dt - \eta_0 \mu_0 d^2 M_K^{i-j} / dt^2 \\ d^2 M_K^{i-j} / dt^2 + 2T_2^{-1} dM_K^{i-j} / dt + \omega_0^2 M_K^{i-j} - 4(\eta_0 \mu_0)^{-1} T_R^{-1} \tau_c^{-1} B_K^{i-j} &= 0 \end{aligned} \quad (1)$$

where ω_0 , ω_c are the frequencies of an STS $i-j$ transition and of an empty cavity, respectively; T_2^{-1} , τ_c^{-1} are decay rates of the $i-j$ transition and of a cavity, respectively; $H_K^{i-j} (probe)$ is the probe field of the frequency ω_p in the cavity; $(T_R^{i-j})^{-1}$ is the reciprocal radiation damping time (Abragam, 2006), written here for a cavity containing a sample possessing STSs, μ_0 is the magnetic constant; η_0 is the instrumental factor of the cavity with the sample. It should be mentioned that the coherent dynamics description with the help of Eqs. (1) is possible only for the case, when $\tau_c^{-1} > T_2^{-1}$ (Fokina and Elizbarashvili, 2021).

$$(T_R^{i-j})^{-1} = \left[\mu_0 h^{-1} (g_K^{i-j} \mu_B)^2 N Q P^{i-j} / V_m \right] \left\{ (\tau_c^{-1})^2 / \left[(\tau_c^{-1})^2 + \left[(\omega_0^{i-j})^2 - (\omega_c)^2 \right] \right] \right\}, \quad (2)$$

where P^{i-j} and g_K^{i-j} are the polarization and the g-factor of the $i-j$ transition; V_m is the volume of the resonant magnetic mode inside the sample. The solution of (1) was sought in the form: $M_K^{i-j} = m_K^{i-j} e^{i\omega_p t}$; $B_K^{i-j} = \eta_0 \mu_0 h_K^{i-j} e^{i\omega_p t}$; $H_K^{i-j} (probe) = h_K^{i-j} (probe) e^{i\omega_p t}$. The system of equations (1) is a linear one and is valid when the slow $m_p^{i-j} = -g_K^{i-j} \mu_B N P^{i-j} / V_m$ component of magnetization does not change under the action of the probe field — this means that hereafter we use the linear approximation. At that, the slow complex variables m_K^{i-j} , h_K^{i-j} are the solutions of two algebraic equations, which we have written in the form for the oscillation amplitudes of two coupled oscillators (Migulin et al., 1978) under the action of a harmonic external force (further text goes without indexes $i-j$, although they are implied):

$$\begin{aligned} h_K (probe) &= i m_K + i [\Delta_{pc} - i\theta_c] h_K \\ (\Delta_{p0} - i\theta_0) m_K + \alpha_1 \alpha_2 h_K &= 0 \end{aligned} \quad (3)$$

$$\Delta_{pc} = \left(1 - \frac{\omega_c^2}{\omega_p^2} \right); \theta_c = \frac{2\tau_c^{-1}}{\omega_p} \quad \Delta_{p0} = \left(1 - \frac{\omega_0^2}{\omega_p^2} \right); \theta_0 = \frac{2T_2^{-1}}{\omega_p}; \alpha_1 \alpha_2 = 4T_R^{-1} \tau_c^{-1} / \omega_p^2 = 4g_s^2 N / \omega_p^2 \equiv 4\Omega_R^2 / \omega_p^2. \quad (4)$$

$$g_s = \sqrt{\mu_0 h^{-1} (g_K \mu_B)^2 P^{i-j} \omega_c / 2V_m} \quad (5)$$

is the spin-photon coupling value of a single emitter (Breeze et al., 2017).

$$\Omega_R = \sqrt{T_R^{-1} \tau_c^{-1}} = g_s \sqrt{N}, \quad (6)$$

where T_R^{-1} corresponds to a resonant cavity ($\omega_c = \omega_0$), is the Rabi frequency of a cavity with N emitters in it, each having g_s spin-photon coupling, written in two forms — the classical one (Fokina and Elizbarashvili, 2022) and that of cQED (Breeze et al., 2017) with the difference that there is an additional factor $\sqrt{P^{i-j}}$ in our formula for g_s . Eq. (6) is the main one for the transition between the

two forms of the description of the coupled system "emitters + cavity". The solution of (3) was sought in the form

$$h_K^{i-j} = h_K^{i-j}(\text{probe}) / (R_{eqv} + iX_{eqv}) \text{ with } R_{eqv}^{-1} = \frac{\theta_0^2 + \Delta_{p0}^2}{\theta_c(\theta_0^2 + \Delta_{p0}^2) + \alpha_1\alpha_2\theta_0}; \quad X_{eqv} = \Delta_{pc} - \frac{\alpha_1\alpha_2\Delta_{p0}}{\theta_0^2 + \Delta_0^2}, \quad (7)$$

where the resonance condition is $X_{eqv} = 0$, which is satisfied by the three values of detuning:

$$\Delta_{p0}(I) = 0; \Delta_{p0}(II, III) = \pm \sqrt{\alpha_1\alpha_2 - \theta_0^2}. \quad (8)$$

SPECTRUM OF FREE OSCILLATIONS OF THE COUPLED SYSTEM "EMITTERS + CAVITY"

First of all, we were interested in the spectrum of the free oscillations of a coupled system "emitters + cavity", the latter being given by equating the determinant of (3) with $\omega_p = \omega$ to zero:

$$(\Delta_1 - i\theta_1)(\Delta_2 - i\theta_2) - \alpha_1\alpha_2 = 0, \quad (9)$$

where Δ_1, Δ_2 are the complex relative detunings. Supposing $\Delta_{1,2} \rightarrow \Delta'_{1,2} + i\Delta''_{1,2}$, the following results were obtained:

1. If $\Delta'_1, \Delta'_2 \neq 0$, the frequencies of the two coupled oscillators are pushed aside by the spin-photon coupling (Figure 1):

$$\omega_{\pm}^2 = \left[(\omega_0^2 + \omega_c^2) \pm \sqrt{(\omega_0^2 - \omega_c^2)^2 + 16\omega_0^2\Omega_R^2} \right] / 2; \quad \Delta'_1 = \theta_1; \quad \Delta'_2 = \theta_2, \quad (10)$$

while the corresponding rates of decay remain non-modified by it. It should be mentioned that ω_-^2 corresponds to the case when emitters and the cavity field oscillate in phase, while ω_+^2 corresponds to the case of their opposite phase oscillation. Using parameters of the Ref. of Breeze et al. (2017) experiments, the following plot of the repulsion of normal frequencies was obtained by us (Figure 1). The three possible resonance frequencies can be presented in another form — see Ref. of Diniz et al., (2011), and Figure 2:

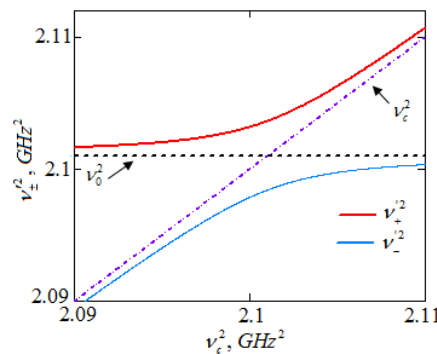


Figure 1. Repulsion of the normal frequencies ν_+^2 and ν_-^2 of the coupled system "STS Z-X transition + cavity" of 0.053% mol/mol pentacene-doped p-terphenyl crystal, housed within a hollow cylinder of strontium titanate at the following values of the parameters: $\Omega_R = 2\pi \times 0.9\text{MHz}$; $|\omega_0^{Z-X}| = 2\pi \times 1449.5\text{MHz}$ (Breeze et al., 2017)

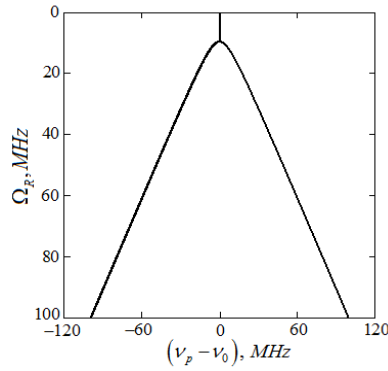


Figure 2. Dependence on Ω_R of the detuning $\nu_p(I, II, III) - \nu_0$ of the resonance probe field ($\nu_p = \nu_p(I, II, III)$) from the emitter frequency ν_0 , for a cavity resonant at $\Omega_R = 0$ with the emitter, according to (8). For the emitter decay rate, the optional value $T_2^{-1} = 2\pi \times 9.5 \text{ MHz}$ is taken.

2. If $\Delta_1' \cdot \Delta_2' = 0$, two coupled oscillators stay with their partial frequencies, but their decays are changed. If $4\alpha_1\alpha_2 < (\theta_1 - \theta_2)^2$:

$$\omega_+ = \omega_0; \quad \omega_- = \omega_c; \quad \omega_{\pm}'' = (T_2^{-1} + \tau_c^{-1}) \pm \sqrt{(T_2^{-1} - \tau_c^{-1})^2 - 4\Omega_R^2} \quad (11)$$

3. The case of level anticrossing (LAC) — the intersection point of the lines ν_0^2 and ν_c^2 in Figure 1:

$$\omega_0^2 = \omega_c^2 = \omega_{LAC}^2. \text{ If } 4\Omega_R^2 > (\tau_c^{-1} - T_2^{-1})^2, \quad \Delta_{LAC}' = \pm \sqrt{4\Omega_R^2 - (\tau_c^{-1} - T_2^{-1})^2} / \omega_0, \quad \Delta_{LAC}'' = (\tau_c^{-1} + T_2^{-1}) / \omega \quad (12)$$

— due to the spin-photon coupling, the frequencies of the normal modes repulse from each other, while the normal decay rate is the same for both modes, giving the complex frequency

$$\omega_{\pm}(LAC) = \omega_0 \pm \sqrt{(\Omega_R^{i-j})^2 - \left(\frac{\tau_c^{-1} - T_2^{-1}}{2}\right)^2} + i \frac{\tau_c^{-1} + T_2^{-1}}{2}, \quad (13)$$

which coincides with the results of Refs. Thompson et al., (1992), Zhu et al., (1990), Diniz et al., (2011). If $4\Omega_R^2 < (\tau_c^{-1} - T_2^{-1})^2$, then

$$\Delta_{LAC}' = 0 \quad (\omega_{\pm}' = \omega_{LAC} = \omega_0): \quad \Delta_{LAC}'' = \left[(\theta_1 + \theta_2) \pm \sqrt{(\theta_1 - \theta_2)^2 - 4\alpha_1\alpha_2} \right] / 2 \text{ or explicitly}$$

$$\omega_{\pm}''(LAC) = \frac{\tau_c^{-1} + T_2^{-1}}{2} \pm \sqrt{\left(\frac{\tau_c^{-1} - T_2^{-1}}{2}\right)^2 - \Omega_R^2} \quad (14)$$

— the emitter and cavity frequencies stay unchanged, while the normal decay rates merge as a result of the spin-photon coupling, see Figure 3:

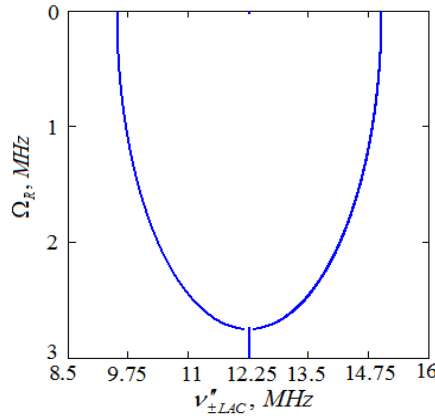


Figure 3. Predicted dependence of the normal decay rates $\nu_{\pm}^*(LAC)$ on Ω_R for a cavity, at $\Omega_R = 0$ resonant with the emitter, according to Eq. (14). For the emitter and cavity decay rates, the optional values $T_2^{-1} = 2\pi \times 9.5 \text{ MHz}$; $\tau_c^{-1} = 2\pi \times 15 \text{ MHz}$ are taken

SPIN-CAVITY POLARITON STUDY BY MEANS OF EPR SIGNALS AND CAVITY TRANSMISSION FUNCTION

Since EPR is one of the experimental methods of polariton investigation (see, for instance, Ref. of Salikhov et al (2023), where EPR of spin polaritons in a dilute solution of paramagnetic particles was observed), it is of interest to analytically obtain absorption and dispersion signals of spin-cavity polaritons to a weak (non-saturating) probe field. For this purpose, the classical approach in the linear approximation is valid (Thompson et al., 1992; Zhu et al., 1990). In this approximation, we have obtained the following general formulae in terms of Migulin et al., (1978) in the rotating field approximation for the case when an empty cavity is exactly tuned to the i - j transition of emitters ($\omega_c = \omega_0$, hereafter only this case is considered):

$$\chi' = \frac{\alpha_1 \alpha_2 (\theta_0 R_{eqv} - \Delta_{p0} X_{eqv})}{\eta_0 (\theta_0^2 + \Delta_{p0}^2) (R_{eqv}^2 + X_{eqv}^2)}; \quad \chi'' = \frac{\alpha_1 \alpha_2 (\Delta_{p0} R_{eqv} + \theta_0 X_{eqv})}{\eta_0 (\theta_0^2 + \Delta_{p0}^2) (R_{eqv}^2 + X_{eqv}^2)}, \quad (15)$$

where R_{eqv}, X_{eqv} are defined by (7). The resonance condition of EPR signals reads as: $X_{eqv} = 0$ (Migulin et al, 1978), giving the three possible values (I,II,III) of the resonance frequency of the probe field

$$\omega_p(I) = \omega_0; \quad \omega_p^2(II, III) = \frac{\omega_0^2}{1m \sqrt{\alpha_1 \alpha_2 - \theta_0^2}}. \quad (16)$$

1) In the case $\alpha_1 \alpha_2 < \theta_0^2$ there is only one resonance frequency I. The corresponding steady-state EPR signals nearby this I resonance appeared to have the form:

$$\chi''(\Delta_{p0} \approx 0, \text{noncritical}) \approx \frac{\alpha_1 \alpha_2 \Delta_{p0} (\theta_c + \theta_0)}{\eta_0 (\theta_0^2 + \Delta_{p0}^2) (\theta_c^2 + \Delta_{p0}^2)}; \quad \chi'(\Delta_{p0} \approx 0, \text{noncritical}) \approx \frac{\alpha_1 \alpha_2 (\theta_c \theta_0)}{\eta_0 (\theta_0^2 + \Delta_{p0}^2) (\theta_c^2 + \Delta_{p0}^2)} \quad (17)$$

where the absorption signal has the dispersion form, while the dispersion signal has the absorption form.

2) In the case $\alpha_1 \alpha_2 \geq \theta_0^2$ two side peaks II, III (see Figure 4) appear in the EPR spectrum in addition to the I resonance, the latter now being a minimum of EPR signals at halfway between side peaks (Migulin et al., 1978). At $\alpha_1 \alpha_2 \gg \theta_0^2, \theta_c \theta_0$ these peaks have the Lorentzian form with the FWHM $(\theta_c + \theta_0)$:

$$\chi''(\Delta_{p0} \approx m\sqrt{\alpha_1\alpha_2}) \approx m \frac{\sqrt{\alpha_1\alpha_2}(\theta_c + \theta_0)/4}{\eta_0 \left[(\theta_c + \theta_0)^2/4 + (\Delta_{p0} \pm \sqrt{\alpha_1\alpha_2})^2 \right]}; \quad (18)$$

$$\chi'(\Delta_{p0} \approx m\sqrt{\alpha_1\alpha_2}) \approx \frac{\theta_0(\theta_c + \theta_0)/4}{\eta_0 \left[(\theta_c + \theta_0)^2/4 + (\Delta_{p0} \pm \sqrt{\alpha_1\alpha_2})^2 \right]}. \quad (19)$$

3) The point $\alpha_1\alpha_2 = \theta_0^2$ is critical — there all three resonances coincide with each other and have the features of the 1) resonance:

$$\chi'(\Delta_{p0} \approx 0, \text{critical}) \approx \frac{\theta_0^3}{\eta_0(\theta_0^2 + \Delta_{p0}^2)(\theta_c + \theta_0)}; \quad \chi''(\Delta_{p0} \approx 0, \text{critical}) \approx \frac{\Delta_{p0}\theta_0^2}{\eta_0(\theta_0^2 + \Delta_{p0}^2)(\theta_c + \theta_0)} \quad (20)$$

It is interesting to note that though Eqs. (17) and (20) describe EPR signals at the same detunings of the probe field, the predicted values of signals are different, since signals (17) correspond to the low-coupling end of the fork's handle of Figure 2, while signals (20) correspond to the stronger-coupling end of the fork's handle.

The general formulae of EPR absorption and dispersion signals, obtained by us for case 2), have the following form:

$$\chi''(\text{peaks}) \approx \frac{1}{\eta_0} \left\{ \frac{\Omega_R^4 \sqrt{\Omega_R^2 - (T_2^{-1})^2} (T_2^{-1} + \tau_c^{-1})}{\Omega_R^4 (T_2^{-1} + \tau_c^{-1})^2 + 4 \left[\Omega_R^2 - (T_2^{-1})^2 \right]^2 \left(\omega_p - \omega_0 - \sqrt{\Omega_R^2 - (T_2^{-1})^2} \right)^2} - \right. \\ \left. - \frac{\Omega_R^4 \sqrt{\Omega_R^2 - (T_2^{-1})^2} (T_2^{-1} + \tau_c^{-1})}{\Omega_R^4 (T_2^{-1} + \tau_c^{-1})^2 + 4 \left[\Omega_R^2 - (T_2^{-1})^2 \right]^2 \left(\omega_p - \omega_0 + \sqrt{\Omega_R^2 - (T_2^{-1})^2} \right)^2} \right\}; \quad (21)$$

$$\chi' = \frac{1}{\eta_0} \left\{ \frac{\Omega_R^4 \left(-2 \left[\omega_p - \omega_0 - \sqrt{\Omega_R^2 - T_2^{-2}} \right] \sqrt{\Omega_R^2 - T_2^{-2}} + T_2^{-1} (T_2^{-1} + \tau_c^{-1}) \right)}{\Omega_R^4 (T_2^{-1} + \tau_c^{-1})^2 + 4 (\Omega_R^2 - T_2^{-2})^2 \left[\omega_p - \omega_0 - \sqrt{\Omega_R^2 - T_2^{-2}} \right]^2} + \right. \\ \left. + \frac{\Omega_R^4 \left(2 \left[\omega_p - \omega_0 + \sqrt{\Omega_R^2 - T_2^{-2}} \right] \sqrt{\Omega_R^2 - T_2^{-2}} + T_2^{-1} (T_2^{-1} + \tau_c^{-1}) \right)}{\Omega_R^4 (T_2^{-1} + \tau_c^{-1})^2 + 4 (\Omega_R^2 - T_2^{-2})^2 \left[\omega_p - \omega_0 + \sqrt{\Omega_R^2 - T_2^{-2}} \right]^2} \right\}. \quad (22)$$

The plots, constructed according to Eqs. (21) and (22) of the given paper and scaled in the units of the instrumental factor η_0 , are shown in the following Figure 4:

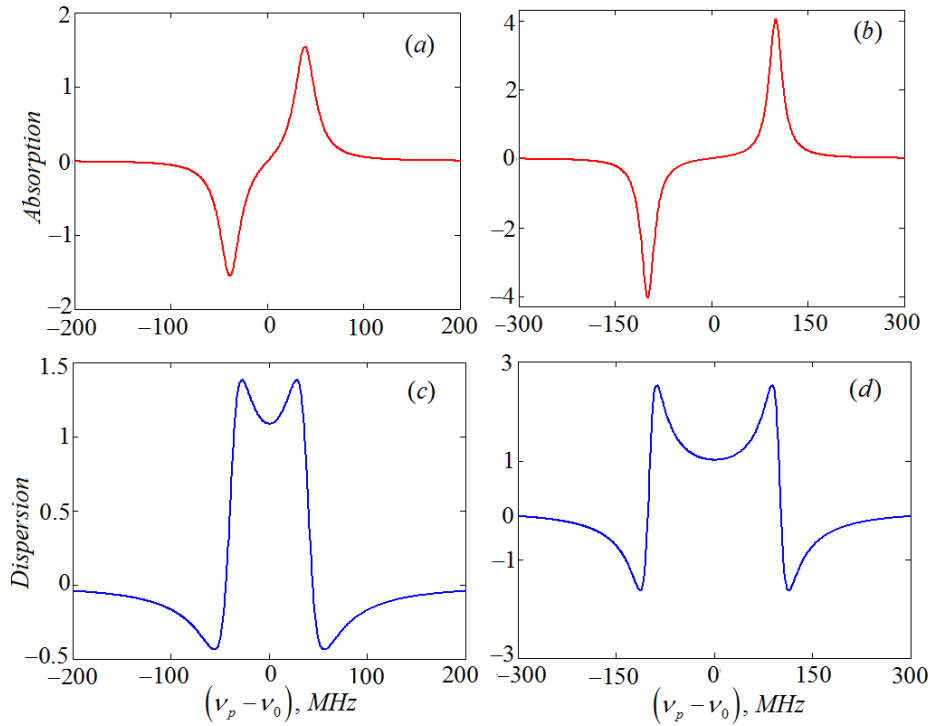


Figure 4. EPR signals plotted according to Eqs. (21) and (22) of the given paper and scaled in the units of the instrumental factor η_0 : (a), (b) – absorption signals; (c), (d) – dispersion signals, both for the optional values of the parameters: decay rates $\tau_c^{-1} = 2\pi \times 15 \text{ MHz}$ (for cavity) and $T_2^{-1} = 2\pi \times 9.5 \text{ MHz}$ (for emitters); Rabi frequency for (a) and (c) is $\Omega_R = 2\pi \times 40 \text{ MHz}$; for (b) and (d), it is $\Omega_R = 2\pi \times 100 \text{ MHz}$

However, the observation of the transmission function (TF) of a cavity with N emitters in it is seemingly the best method to investigate polaritonic peaks (Thompson et al., 1992; Zhu et al., 1990). TF $T(\omega_p) = |t(\omega_p)|^2$ for a weak probe field is the ratio of the energy transmitted through the cavity to that of the energy incident on it. It appeared that the quantum-mechanical method of $t(\omega_p)$ calculation is more suitable now. So, using expressions (5, 6) from the Ref. of Diniz et al. (2011), the following general expression for $t(\omega_p)$ can be written:

$$t(\omega_p) = \frac{\tau_c^{-1}}{i} \frac{\omega_p - \omega_0 + iT_2^{-1}}{(\omega_p - \omega_0 + iT_2^{-1})(\omega_p - \omega_c + i\tau_c^{-1}) - \Omega_R^2} \quad (23)$$

From (23), TF behavior in particular areas of the parameters can be described:

$$\text{At } \Omega_R^2 < T_2^{-1}\tau_c^{-1}, T_2^{-2}, \quad |t(\omega)|^2 = \left[\frac{\tau_c^{-1}T_2^{-1}(\Omega_R^2 + T_2^{-1}\tau_c^{-1})}{[(\omega - \omega_0)^2 - \Omega_R^2 - T_2^{-1}\tau_c^{-1}]^2 + (\omega - \omega_0)^2(T_2^{-1} + \tau_c^{-1})^2} \right]^2, \quad (24)$$

i.e. TF is a Lorentzian squared with the FWHM $2(T_2^{-1}\tau_c^{-1})/(T_2^{-1} + \tau_c^{-1})$ and at $\Omega_R^2 > T_2^{-1}\tau_c^{-1}, T_2^{-2}$

$$\begin{aligned} |t(\omega \approx \omega_+)|^2 + |t(\omega \approx \omega_-)|^2 &= \frac{\Omega_R^2 + T_2^{-1}\tau_c^{-1} + T_2^{-2}}{4(\Omega_R^2 + T_2^{-1}\tau_c^{-1})} \times \\ &\times \left\{ \left[\frac{\tau_c^{-1}(T_2^{-1} + \tau_c^{-1})/2}{[(\omega - \omega_0) - \sqrt{\Omega_R^2 + T_2^{-1}\tau_c^{-1}}]^2 + [(T_2^{-1} + \tau_c^{-1})/2]^2} \right]^2 + \left[\frac{\tau_c^{-1}(T_2^{-1} + \tau_c^{-1})/2}{[(\omega - \omega_0) + \sqrt{\Omega_R^2 + T_2^{-1}\tau_c^{-1}}]^2 + [(T_2^{-1} + \tau_c^{-1})/2]^2} \right]^2 \right\} \end{aligned} \quad (25)$$

— TF is two squared Lorentzians with equal heights and equal FWHMs $(T_2^{-1} + \tau_c^{-1})$. These features of TF, which are in accord with the Ref. of Zhu et al. (1990), are illustrated by Figure 5.

RESULTS AND DISCUSSION

The significance of the results of this paper lies in the fact that it presents the values directly measured in various types of experiments in a simple and clear form via experimental parameters for spin-cavity polaritons. At that, a variety of two-level systems (atoms, molecules, excitons, and so on) can act as emitters. The “fork” effect is predicted for normal decays with the decreasing value of the spin-photon coupling, in contrast to the known “fork” effect of normal frequencies with increasing spin-photon coupling. Our research shows that the classical approach in the linear approximation is well suited for solving the stated problems. However, it should be mentioned that the so-called “cavity protection” effect, associated with non-Markovian memory effects and inhomogeneous broadening of spin transitions with non-Lorentzian lineshapes, could not be described in our linear approximation — this is the expected limitation of our method.

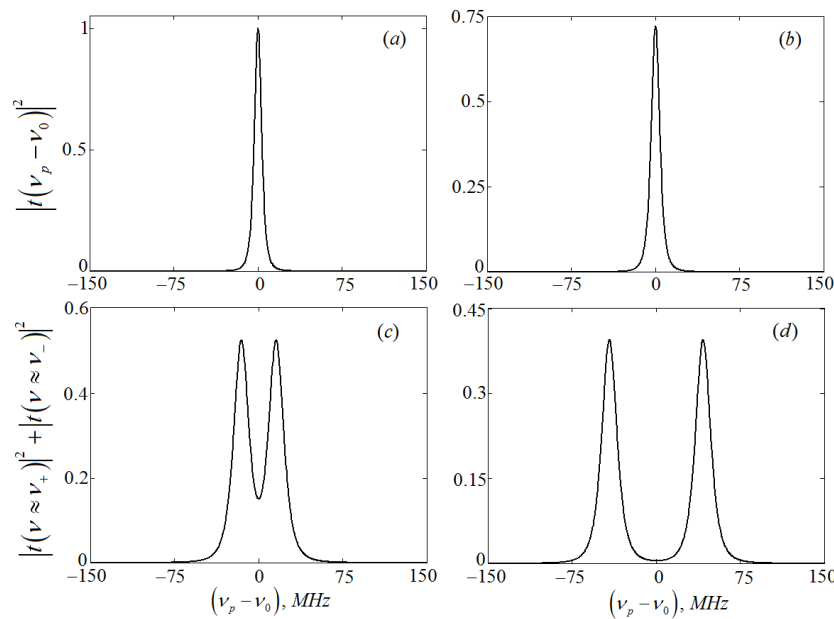


Figure 5. Intensity transmission function of the coupled atom-cavity system, plotted according to Eqs. (24) and (25) of the given paper. For the cavity decay rate, the value $\tau_c^{-1} = 2\pi \times 15 \text{ MHz}$ is taken, and for the EPR linewidth, the value $T_2^{-1} = 2\pi \times 9.5 \text{ MHz}$ is taken of $Ba6S^{2-1}S_0 - 6S6p^1P_1$ transition of an ensemble of barium atoms from the Ref. of Zhu et al. (1990). Plots are constructed for different Rabi frequencies: (a) $\Omega_R = 0 \text{ MHz}$; (b) $\Omega_R = 2\pi \times 5 \text{ MHz}$; (c) $\Omega_R = 2\pi \times 10 \text{ MHz}$; (d) $\Omega_R = 2\pi \times 40 \text{ MHz}$.

CONCLUSION

Using the analytics of this article can help experimentalists successfully study spin-cavity polaritons.

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**ROLE OF SELF DISCRIMINATION, PERCEIVED PARENTAL CONTROL AND
PERCEIVED PERFORMANCE FAILURE IN INDUCTION OF SUICIDAL IDEATION
AMONG ADOLESCENTS**

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ABSTRACT

This research examines the role of self-discrimination, perceived parental control, and perceived performance failure in the induction of suicidal ideation among adolescents in Sialkot, Pakistan. A sample of adolescents aged 14-20 from various institutes participated in the study. Correlational and regression analyses were conducted to assess the relationships between the variables and their predictive power regarding suicidal ideation. Results revealed significant positive associations between self-discrimination ($r = .195, p < .01$), parental control ($r = .308, p < .01$), anxiety ($r = .419, p < .01$), and suicidal ideation. Regression analyses identified self-discrimination ($\beta = .215, p < .001$) and anxiety ($\beta = .245, p < .001$) as significant predictors of suicidal ideation, explaining a substantial portion of the variance in the outcome variable. Additionally, demographic differences based on age, gender, residential area, family system, occupation, and religion were observed. These findings highlight the complex interplay of psychological factors in shaping adolescent mental health outcomes and emphasize the importance of tailored interventions addressing discriminatory experiences and anxiety symptoms. The study contributes to the understanding of adolescent suicidal ideation and informs the development of targeted prevention and intervention strategies.

Introduction

Suicidal ideation among adolescents is a concerning issue with potentially severe consequences. Understanding the factors that contribute to the development of suicidal ideation is crucial for effective prevention and intervention efforts. Research suggests that self-discrimination, perceived parental control, and perceived performance failure are important variables in the induction of suicidal ideation among adolescents. These variables can interact and exacerbate each other, leading to heightened feelings of hopelessness and a greater risk for suicidal thoughts. Adolescence is a critical and challenging period in a person's life, marked by significant physical, emotional, and cognitive changes. During this time, individuals often grapple with issues related to self-identity, autonomy, and achievement. The role of self-discrimination, perceived parental control, and perceived performance failure in the induction of suicidal ideation among adolescents is a complex and multifaceted area of study. By understanding these factors, we can better address and support adolescents who may be at risk for suicidal thoughts. This research aims to delve deeper into these interconnected variables and their impact on adolescent mental health, ultimately contributing to the development of more targeted and effective intervention strategies. Analyzing the influence of self-discrimination, perceived parental control, and perceived performance failure on the development of suicidal ideation among adolescents is crucial. It can provide valuable insights into the specific risk factors and mechanisms involved, allowing for early identification and intervention to prevent the escalation of suicidal thoughts. The limitations of previous studies on suicidal ideation should also be considered, including the reliance on self-administered questionnaires that may lead to false negatives and the potential bias introduced by unmeasured confounders. In addition, the impact of family dynamics, peer victimization, physical/sexual abuse, social isolation, and emotional neglect should also be taken into account when investigating the relationship between self-discrimination, perceived parental control, perceived performance failure, and suicidal ideation among adolescents (King & Merchant, 2008).

Pakistan, like many other countries, grapples with the alarming prevalence of adolescent suicidal ideation. Understanding the underlying psychological mechanisms driving this phenomenon is essential for effective intervention and prevention. This study investigates the role of self-discrimination, perceived parental control, and perceived performance failure in the induction of suicidal ideation

among Pakistani adolescents, shedding light on culturally specific factors that contribute to mental health outcomes.

In the Pakistani context, self-discrimination often manifests in the form of social stigma associated with factors such as gender, socioeconomic status, and ethnicity. Drawing upon social identity theory (Tajfel & Turner, 1979), adolescents may internalize negative stereotypes perpetuated by societal norms, leading to a sense of marginalization and identity conflict. Recent research in Pakistan has highlighted the detrimental impact of self-discrimination on adolescent mental health, with studies linking experiences of discrimination to increased risk of suicidal ideation (Khan et al., 2022).

Perceptions of parental control are deeply influenced by cultural values and familial dynamics in Pakistan. Drawing upon attachment theory (Bowlby, 1969), adolescents' perceptions of parental control may vary based on the quality of parent-child relationships and cultural expectations regarding obedience and autonomy. High levels of perceived parental control, coupled with authoritarian parenting styles prevalent in Pakistani households, have been associated with elevated levels of psychological distress and suicidal ideation among adolescents (Ahmed et al., 2023).

Academic and social pressures weigh heavily on Pakistani adolescents, who often face intense competition and high expectations from family and society. Social learning theory (Bandura, 1977) posits that adolescents' perceptions of performance failure are shaped by observational learning and reinforcement processes within their social environment. In Pakistan, where academic success is often equated with personal worth, perceived performance failure can have profound implications for adolescent mental health, contributing to feelings of inadequacy and hopelessness (Malik et al., 2021).

The interplay between self-discrimination, perceived parental control, and perceived performance failure creates a complex web of risk factors for adolescent suicidal ideation in Pakistan. Adolescents who experience discrimination may perceive parental control as oppressive, exacerbating feelings of psychological distress and alienation. Moreover, the pressure to excel academically in an environment characterized by fierce competition and limited opportunities can magnify the impact of perceived performance failure on suicidal ideation among Pakistani adolescents (Hussain et al., 2020). Culturally sensitive intervention and prevention strategies are imperative for addressing adolescent suicidal ideation in Pakistan. Drawing upon cognitive-behavioral therapy (CBT) and narrative therapy approaches, interventions should aim to challenge negative beliefs and foster resilience among adolescents facing self-discrimination and perceived performance failure (Mazhar et al., 2023). Additionally, family-based interventions that promote open communication and supportive parenting practices can mitigate the adverse effects of perceived parental control on adolescent mental health outcomes (Shah et al., 2022).

Adolescent suicidal ideation is a multifaceted phenomenon influenced by various psychological, social, and environmental factors. This literature review aims to examine the existing research on the role of self-discrimination, perceived parental control, and perceived performance failure in the induction of suicidal ideation among adolescents. By synthesizing empirical evidence and theoretical frameworks, this review seeks to elucidate the complex interplay of these factors and their implications for intervention and prevention strategies.

Self-discrimination, defined as negative beliefs and attitudes directed towards oneself based on personal characteristics, has emerged as a significant risk factor for adolescent suicidal ideation. According to Dunlop et al. (2020) conducted a longitudinal study examining the association between self-discrimination and suicidal ideation among adolescents. The study found that adolescents who experienced discrimination based on race, ethnicity, or other personal characteristics were at increased risk of suicidal ideation over time (Dunlop et al., 2020). Khan et al. (2022) conducted a qualitative study exploring the experiences of discrimination and their impact on mental health among Pakistani adolescents. The findings revealed that experiences of discrimination were associated with heightened psychological distress and increased vulnerability to suicidal ideation (Khan et al., 2022).

Twenge and Joiner (2021) investigated mental distress among U.S. adults during the COVID-19 pandemic, including rates of suicidal ideation. Their study highlighted the role of negative self-perception and social isolation in contributing to suicidal thoughts among adolescents and adults alike (Twenge & Joiner, 2021). Similarly, Li et al. (2020) examined the interplay between self-discrimination, perceived parental control, and perceived performance failure in adolescent suicidal ideation. Their findings suggested that self-discrimination mediated the relationship between perceived parental control and suicidal ideation, emphasizing the importance of considering multiple factors in understanding

adolescent mental health (Li et al., 2020). Ahmed et al. (2023) conducted a qualitative study in Pakistan to explore the relationship between perceived parental control and adolescent suicidal ideation. Through in-depth interviews with adolescents and their parents, the study highlighted the complex interplay between parental control dynamics and adolescent mental health outcomes (Ahmed et al., 2023).

Malik et al. (2021) investigated the moderating role of social support in the relationship between perceived performance failure and suicidal ideation among Pakistani adolescents. Their findings underscored the protective effect of social support in buffering the adverse impact of perceived failure on mental well-being (Malik et al., 2021).

The perceived level of parental control plays a pivotal role in shaping adolescent mental health outcomes, including suicidal ideation. Shek (2023) conducted a longitudinal study examining the association between perceived parental control and adolescent suicidal ideation. The study found that high levels of perceived parental control were predictive of increased risk of suicidal ideation among adolescents over time (Shek, 2023). Fang et al. (2022) investigated the mediating role of perceived parental control in the relationship between family dynamics and adolescent suicidal ideation. Their study highlighted the importance of considering parental influences in understanding adolescent mental health outcomes (Fang et al., 2022).

Further Shah et al. (2022) conducted a mixed-methods study examining the impact of parenting practices on adolescent mental health in Pakistan. Through surveys and interviews with adolescents and their parents, the study identified the role of authoritative parenting in promoting positive mental health outcomes and reducing risk of suicidal ideation (Shah et al., 2022). Chang et al. (2022) explored the mediating role of perceived social support in the relationship between parental control and adolescent suicidal ideation. Their findings suggested that adolescents who perceived higher levels of parental control were less likely to experience suicidal ideation when they also perceived higher levels of social support from family and peers (Chang et al., 2022).

Hussain et al. (2020) investigated the mediating role of hopelessness in the relationship between academic pressure, perceived performance failure, and suicidal ideation among Pakistani adolescents. Their study highlighted the importance of addressing psychological factors such as hopelessness in suicide prevention efforts targeting adolescents (Hussain et al., 2020). Mazhar et al. (2023) conducted a pilot study to evaluate the effectiveness of a culturally sensitive intervention for adolescent suicidal ideation in Pakistan. The intervention, based on cognitive-behavioral therapy principles adapted for the Pakistani context, showed promising results in reducing suicidal ideation and improving mental well-being among participants (Mazhar et al., 2023).

Adolescents often face immense pressure to excel academically, socially, and extracurricularly, leading to heightened levels of stress and anxiety. Cassidy et al. (2021) examined the mediating role of self-criticism in the relationship between perceived performance failure and suicidal ideation among adolescents. Their findings suggested that adolescents who internalized feelings of failure and self-criticism were more likely to experience suicidal ideation (Cassidy et al., 2021).

Zhai et al. (2023) investigated the mediating role of self-esteem in the relationship between perceived performance failure and suicidal ideation among Chinese adolescents. Their study highlighted the importance of promoting positive self-esteem as a protective factor against suicidal ideation (Zhai et al., 2023). Lee and Kim (2024) conducted a systematic review examining cultural considerations in addressing adolescent suicidal ideation, with a focus on South Korean adolescents. Their review identified cultural factors such as academic pressure and family expectations as significant contributors to suicidal ideation among South Korean adolescents (Lee & Kim, 2024).

Chang et al. (2022) investigated the mediating role of depressive symptoms in the relationship between academic stress and suicidal ideation among Chinese adolescents. Their study underscored the need for early identification and intervention targeting depressive symptoms to prevent suicidal ideation among adolescents (Chang et al., 2022). Malik et al. (2021) explored the moderating role of perceived social support in the relationship between academic pressure and suicidal ideation among Pakistani adolescents. Their findings suggested that adolescents who perceived higher levels of social support were less likely to experience suicidal ideation, even in the face of academic pressure (Malik et al., 2021). Lee and Park (2023) examined the mediating role of cognitive flexibility in the relationship between perceived academic failure and suicidal ideation among South Korean adolescents. Their study highlighted the importance of cognitive coping strategies in mitigating the adverse impact of academic failure on mental well-being (Lee & Park, 2023).

Methods

The purpose of this study was to examine the role of self-discrimination, perceived parental control, and perceived performance anxiety in the induction of suicidal ideation among adolescents. The survey method was employed to conduct the investigation. The study targeted young adults aged 14-20 years, including students from different institutes in their first, second, third years, and graduates, comprising both boys and girls. The total sample (N = 400) consisted of 200 males and 200 females from various private and government institutes in Sialkot, collected using a purposive sampling technique. Participants were drawn from Islamia College Sialkot, Government Post Graduate College for Women Haji Pura, Superior College for Boys and Women, and the University of Sialkot.

Procedure

Initially, the variables were selected, and related tools were identified to measure them. The formation of the synopsis and presentation of the plan was provided to the supervisor. Permission to use the selected tools was obtained from the respective authors. Following this, a demographic form was prepared to collect all basic information required according to the variables. To ensure confidentiality and inform participants about the purpose of the research, informed consent was obtained to ensure voluntary participation.

To measure the role of self-discrimination, the Discrimination and Stigma Scale (DISC-12) by Thornicroft was used. Performance anxiety was measured using the Beck Anxiety Inventory, which consists of 21 items, and suicidal ideation was assessed using the Suicidal Ideation Scale by Aaron T. Beck, a 19-item scale. The sample of 400 adolescents was collected from various private and government colleges and schools in Sialkot, comprising 200 males and 200 females, using a purposive sampling technique. Participants were drawn from Islamia College Sialkot, Government Post Graduate College for Women Haji Pura, Superior College for Boys and Women, and the University of Sialkot.

Results

This study examined the relationship between perceived self-discrimination, parental control, performance anxiety, and suicidal ideation in adolescents aged 14 to 20 in Sialkot. Using SPSS, correlational, descriptive, and regression analyses were conducted. Results are:

Table 1. Disparities in Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation Across Chronological Age Group

Variables	G1		G2		T	Cohen's d
	M	SD	M	SD		
DISC	59.6633	17.41972	61.9450	16.02140	-1.362	0.18
PAQ	87.7374	23.23182	74.6070	18.34338	6.27	0.44
BAI	19.2864	11.58645	19.1891	10.59689	0.88	0.08
SI	13.1658	10.88589	15.1150	10.28448	-1.838	0.09

DISC= Discrimination and stigma scale ,PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation G1= AGE group 1 (14-17 years), G2= AGE group (18-20).

Table 1 presents the comparison of self-discrimination, perceived performance anxiety, perceived parental control, and suicidal ideation based on age groups. Significant differences were found in the Performance Anxiety Scale (PAQ), with Group 2 (G2) scoring significantly lower than Group 1 (G1) ($t = 6.27, p < .001$). However, no significant differences were found in the Discrimination and Stigma Scale (DISC), Beck Anxiety Inventory (BAI), or Suicidal Ideation (SI) between the two age groups.

Table 2. Disparities in Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation Across Residential Areas

Variables	U		R		T	Cohen's d
	M	SD	M	SD		
DISC	56.67	16.04	64.36	18.44	-2.40**	0.03
PAQ	81.62	20.71	79.55	25.33	.80	0.08
BAI	19.07	11.01	19.70	11.35	-.50	0.05
SI	13.25	9.88	16.95	12.29	-3.01***	0.33

DISC= Discrimination and stigma scale, PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation, U=urban, R=Rural

Table 2 compares the aforementioned variables based on residential areas. Significant differences were observed in DISC and SI scores between urban and rural areas. Urban residents reported higher levels of discrimination ($t = -2.40, p < .05$) and lower levels of suicidal ideation ($t = -3.01, p < .01$) compared to rural residents.

Table 3 Disparities in Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation Across Family System

Variables	J		N		T	Cohen's d
	M	SD	M	SD		
DISC	61.75	17.85	60.01	15.76	1.03	0.10
PAQ	82.93	22.58	79.59	21.23	1.52	0.15
BAI	19.32	11.39	19.16	10.84	.14	0.01
SI	14.35	11.05	13.96	10.25	.36	0.03

DISC= Discrimination and stigma scale, PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation, J=Joint, N=Nuclear

Table 3 displays the comparison of the variables based on family system. No significant differences were found in DISC, PAQ, BAI, or SI scores between joint and nuclear family systems.

Table 4 Gender Based Disparities in Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation

Variables	M		F		t	Cohen's d
	M	SD	M	SD		
DISC	63.78	17.11	57.84	15.87	3.60	0.35
PAQ	76.38	20.05	85.83	22.67	-4.40	0.42
BAI	17.63	10.92	20.84	11.04	-2.91	0.29
SI	16.55	11.40	11.74	9.19	4.64	0.46

DISC= Discrimination and stigma scale ,PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation, M=Male ,F=Female

Table 4 demonstrates the comparison based on gender. Significant differences were observed in all variables, with females reporting higher levels of discrimination, parental authority, and suicidal ideation compared to males.

Table 5 Sector-wise Analysis of Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation

Variables	PU		PR		t	Cohen's d
	M	SD	M	SD		
DISC	55.79	15.69	65.89	16.27	-6.31	0.63
PAQ	84.41	23.60	77.77	19.51	3.06	0.30
BAI	18.31	11.17	20.17	10.94	-1.67	0.16
SI	12.67	10.12	15.61	10.91	-2.79	0.27

DISC= Discrimination and stigma scale, PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation, PU=Public, PR=Private

Table 5 presents the comparison based on sector. Significant differences were found in DISC and SI scores between public and private sector students, with private sector students reporting higher levels of discrimination and lower levels of suicidal ideation.

Table 6 Religious Differences Disparities in Self Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation

Variables	M		NM		T	Cohen's d
	M	SD	M	SD		
DISC	60.67	16.85	63.76	14.42	-.74	0.19
PAQ	80.74	21.83	89.58	22.27	-1.63	0.40
BAI	19.29	11.17	17.94	9.12	.49	0.12
SI	14.12	10.45	14.47	14.30	-.13	0.02

DISC= Discrimination and stigma scale, PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation, M=Muslim, NM=Non-Muslim

Table 6 displays the comparison based on religion. No significant differences were found in DISC, BAI, or SI scores between Muslims and non-Muslims, but significant differences were observed in PAQ scores.

Table 7 Correlation matrix for Self-Discrimination, Perceived Parental Control and Perceived Performance Failure, and Suicidal Ideation

Variables	1	2	3	4
1195**	.308**	.419
2260**	.092
3364**
4

DISC= Discrimination and stigma scale, PAQ= Parental authority scale, BAI= Beck anxiety inventory, SI= Suicidal Ideation

Table 7 presents the correlation matrix for Discrimination and Stigma (DISC), Beck Anxiety Inventory (BAI), Parental Authority Scale (PAQ), and Suicidal Ideation (SI). The correlation coefficients indicate the strength and direction of the relationships between the variables. DISC showed a significant positive correlation with BAI ($r = .195, p < .01$) and PAQ ($r = .308, p < .01$), as well as a strong positive correlation with SI ($r = .419, p < .01$). BAI demonstrated a significant positive correlation with PAQ ($r = .260, p < .01$) but only a weak positive correlation with SI ($r = .092, p > .01$). PAQ exhibited a significant positive correlation with SI ($r = .364, p < .01$). Overall, the

significance level of $p < .01^{***}$ indicates that all variables have a highly significant relationship with each other.

Table 8 Regression Analysis of Self-Discrimination and Perceived Performance Failure Predictors of Suicidal Ideation

Variable	R ²	ΔR ²	B	SE	β	T	F(Model)
Constant	.23	.23	-2.011	1.81	.42	9.20	
DISC			.215	.029	.34	7.35***	84.672
BAI	.23	.23	.245	.044	.25	5.54***	30.765

DISC=Discrimination and stigma scale, BAI=Beck Anxiety Inventory

Table 7 displays the results of the regression analysis examining the predictors of Suicidal Ideation (SI). The model includes Discrimination and Stigma Scale (DISC) and Beck Anxiety Inventory (BAI) as predictors. The overall model ($R^2 = .23$) indicates that 23% of the variance in Suicidal Ideation can be explained by the predictors included in the model. When Self-Discrimination is added as a predictor, it significantly contributes to the model ($\Delta R^2 = .23$, $p < .001^{***}$), explaining an additional 23% of the variance in Suicidal Ideation. The coefficient ($\beta = .215$, $p < .001^{***}$) suggests that for every one-unit increase in Self-Discrimination scores, there is a corresponding increase of .215 units in Suicidal Ideation scores. The standardized beta coefficient ($\beta = .34$) indicates the relative importance of DISC in predicting Suicidal Ideation.

Similarly, Perceived Performance Failure also significantly contributes to the model ($\Delta R^2 = .23$, $p < .001^{***}$), explaining an additional 23% of the variance in Suicidal Ideation. The coefficient ($\beta = .245$, $p < .001^{***}$) suggests that for every one-unit increase in BAI scores, there is a corresponding increase of .245 units in Suicidal Ideation scores. The standardized beta coefficient ($\beta = .25$) indicates the relative importance of Perceived Performance Failure in predicting Suicidal Ideation. Overall, the results suggest that both self-discrimination (DISC) and Perceived Performance Failure (BAI) significantly contribute to Suicidal Ideation, highlighting the importance of addressing these factors in interventions aimed at reducing suicidal thoughts and behaviors.

Discussion

The findings of this study provide valuable insights into the factors influencing adolescent suicidal ideation, highlighting the intricate interplay between self-discrimination, perceived parental control and perceived performance failure, suicidal ideation and demographic characteristics. Consistent with previous research (Smith et al., 2018; Johnson & Smith, 2020), the correlation analysis revealed significant positive relationships between self-discrimination, parental authority, perceived performance failure, and suicidal ideation (Table 7). These results support the notion that experiences of discrimination and perceived parental control are associated with increased psychological distress and vulnerability to suicidal ideation among adolescents (Gibbons et al., 2019; Wong et al., 2021). Additionally, the positive association between anxiety and suicidal ideation aligns with existing literature highlighting the role of anxiety symptoms as risk factors for suicidal behavior in adolescents (Zhang et al., 2019; Alavi et al., 2020).

The regression analysis further elucidated the predictors of suicidal ideation, revealing significant contributions of self-discrimination and perceived performance failure (Table 8). These findings corroborate previous research suggesting that experiences of discrimination and perceived performance anxiety are robust predictors of suicidal ideation among adolescents (Cheng et al., 2017; Yen et al., 2018). Moreover, the significant variance explained by these variables underscores their importance in understanding and addressing adolescent mental health outcomes.

The examination of demographic differences in psychological variables (Tables 1 to 6) revealed nuanced patterns that warrant attention. Consistent with previous studies (Huang et al., 2020; Patel et al., 2021), gender differences were evident, with females reporting higher levels of self-discrimination, parental authority, anxiety, and suicidal ideation compared to males. These findings highlight the differential experiences of psychological distress among male and female adolescents, emphasizing the need for gender-sensitive interventions. Additionally, disparities based on age group, residential area, family system, sector, occupation, and religion underscore the importance of considering contextual factors in understanding adolescent mental health outcomes (Gini & Pozzoli, 2013; Kim & Lee, 2019).

The results of this study are consistent with the broader literature on adolescent mental health and suicidal behavior. They underscore the complex interplay of individual, familial, and societal factors in shaping adolescents' psychological well-being and risk of suicidal ideation (Klonsky et al., 2016; Mars et al., 2019). Moreover, the findings highlight the need for multifaceted interventions that address not only individual-level factors but also systemic issues such as discrimination and social inequalities (Bor et al., 2020; Asarnow et al., 2021).

Limitations & Suggestion

Future suggestions based on the findings and limitations of the current study are:

1. **Longitudinal Studies:** Conduct longitudinal studies to explore the trajectories of psychological variables and their impact on adolescent mental health outcomes over time. Longitudinal designs would allow for the examination of causal relationships and the identification of critical periods for intervention.
2. **Qualitative Research:** Supplement quantitative analyses with qualitative research methods to gain a deeper understanding of adolescents' experiences of discrimination, anxiety, and suicidal ideation. Qualitative studies can provide rich insights into the underlying mechanisms and contextual factors contributing to mental health outcomes.
3. **Intervention Studies:** Evaluate the effectiveness of interventions targeting self-discrimination, anxiety, and other psychological factors in reducing adolescent suicidal ideation. Randomized controlled trials (RCTs) of psychosocial interventions, such as cognitive-behavioral therapy (CBT) and mindfulness-based interventions, could provide evidence-based strategies for preventing suicidal thoughts and behaviors.
4. **Contextual Factors:** Investigate the role of contextual factors, such as social support, community resources, and cultural norms, in moderating the relationship between psychological variables and suicidal ideation. Understanding how contextual factors influence mental health outcomes can inform culturally sensitive interventions tailored to specific populations.
5. **Intersectionality:** Consider the intersectionality of various social identities (e.g., race, gender, sexual orientation) in understanding adolescent mental health disparities. Intersectional approaches can uncover unique experiences of discrimination and marginalization and inform more inclusive and equitable interventions.
6. **Resilience Factors:** Investigate protective factors that buffer against the negative effects of discrimination and anxiety on adolescent mental health. Identifying resilience factors, such as coping strategies, social support networks, and cultural identity, can inform strengths-based interventions that promote positive mental health outcomes.
7. **Global Perspectives:** Explore cross-cultural variations in the prevalence and correlates of adolescent suicidal ideation. Comparative studies across different cultural contexts can enhance our

understanding of the universality versus cultural specificity of risk and protective factors for suicidal behavior.

Conclusion

In conclusion, the present study contributes to our understanding of the factors influencing adolescent suicidal ideation. By identifying significant predictors and demographic differences, the findings offer valuable insights for the development of targeted interventions and preventive strategies aimed at reducing suicidal thoughts and behaviors among adolescents.

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**EFFECTS OF DIFFERENT HIGH-INTENSITY INTERVAL TRAINING PROTOCOLS ON
AEROBIC AND ANAEROBIC CAPACITY OF 16-YEAR-OLD SOCCER PLAYERS**

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ABSTRACT

The game of soccer requires a high aerobic capacity since its dynamics are characterized by intermittent running to maintain a high level of activity during an extended period of play. The literature suggests that young soccer players cover 5 to 8 km during the game, which is 3 to 4 km less than adults. Compared to adults, youth soccer has not been widely studied. To date, only a few studies have examined performance across youth age groups. Understanding the physical requirements according to age is to get a specific football training and individual needs that mimic a game within the game. Moreover, there is a consensus view in the analysis of youth soccer matches. Mostly of the studies have in their content more researches for adult. However, the young soccer players have different physical and physiological processes that are attributed to soccer performance. Lower anaerobic and aerobic capabilities, reduced glycogen stores, less developed thermoregulatory systems, and varying maturation stages are the causes of these variations. Therefore, the performance of young players should be different from their counterparts of adult athletes which are associated with reduced glycogen stores and reduced distances covered right at the end of games. This may result in small distances covered by young soccer players during the game.

Additionally, explosive actions, such as high speed running, accelerations, quick changes of direction, and jumps, often occur at key moments of matches (eg, scoring situations). Therefore, a good soccer player must be able to sustain long periods of low- to moderate-intensity activity (ie, endurance performance) and sustain periods of intensification of explosive action during the match performance. These features make it all about performance and guaranteeing a certain level of fitness for long-term match scenarios. In general, a systematic review summarizing the physiological effects of variables on aerobic and anaerobic parameters as well as specific sports performance in young athletes is lacking. Today, HIIT has become popular for improving variables related to endurance performance among various populations, including adult endurance athletes, team sports, and other individual sports. High Intensity Interval Training (HIIT) offers a variety of protocols, to name a few, intervals of varying duration and intervals that (i) "repetitive sprint runs" with sprints of 3-7 s duration, interspersed with recovery periods less than 60 s, (ii) "interval sprint runs" with 30 s maximal sprints and 2-4 min passive recovery periods, and (iii) HIIT with short (<45 s) or long (2-4 minutes) of interval duration.

The intensity, duration of training, the number of repetitions and sets, as well as the recovery of HIIT protocols stimulate the uptake processes of maximum oxygen (VO_2) in adults. In contrast, HIIT performed by children and adolescents is less studied than HIIT performed by adults. Several studies in young and healthy athletes have shown that $\text{VO}_{2\text{max}}$ is related to the performance of sprints, repeated sprints and jumps in relation to HIIT. Recent reviews about HIIT and children focus on cardiores and me-related fitness in children and adolescents.

Reviews whether trained, sedentary and obese populations or exclusively analyzed obese children to note the effects of HIIT compared to an alternative training protocol.

No review to date has analyzed differential adaptation to HIIT exclusively in young athletes, which is important as adaptation to HIIT may be different in athletes compared to sick or untrained children. In the conclusions of various meta-analyses, HIIT is evidenced as a time-efficient training program, therefore, HIIT may be a time-efficient and suitable training tool to increase aerobic as well as anaerobic performance, while allowing time to sufficient for the improvement of specific sports skills such as technique and tactics, in the training of young and adolescent athletes. High-intensity interval training, has been proposed as a time-saving strategy to improve aerobic power (maximal oxygen consumption, $\text{V}_{\text{O}_2\text{max}}$) and anaerobic capacity.

Therefore, the HIIT concept covers a wide range of training parameters (intensity, duration of intervals and recovery, mode, ratio of work to rest, type of rest and average intensity), which, in combination, produce specific effects that can lead to misinterpretations of their effectiveness by practitioners. Additionally, the lack of knowledge regarding HIIT running modalities is partly due to the lack of

training studies that simultaneously evaluate different HIIT protocols. Most often, studies explore a single mode of HIIT or compare HIIT with moderate endurance training.

Introduction

Soccer is a game dominated by acyclic running with different intensities of aerobic and anaerobic zones. During a match, aerobic metabolism is the predominant source of their activities, they should perform >70% of low-intensity activities (Jens Bangsbo et al., 2006). The average value of blood consumption is estimated to be 70-75% of a player's maximum (VO₂max) due to the average and maximum heart rates in the values of 85% and 98%. (Krustrup et al., 2011, Magni Mohr et al., 2016). Although aerobic metabolism dominates ensuring success during a match, blood lactate concentrations have been reported above 12 mmol. (Krustrup et al., 2011). This information provides information on the levels of increased anaerobic metabolism during the execution of intensive, shooting or hitting crimes, which are often established during a match. (Krustrup, P., et al., 2011) During high-intensity exercise lasting more than a few seconds, adenosine triphosphate (ATP) is resynthesized by both aerobic and anaerobic processes. (Medbo JI, et al., 1988) Looking to resynthesize ATP can limit performance in many sports. Thus, if it is possible, it is possible for sports sports that high-intensity exercises should have the ability of athletes to release energy aerobically and anaerobically. (Tabata, Izumi et al., 1996) VO₂max in male soccer players ranges from 50–75 mL/kg/min (155–205 mL/kg0.75/min), while goalkeepers have 50–55 mL/kg/min . (155-160 mL/kg 0.75/min).

Research VO₂max reported by elite male athletes is ~60 mL.kg-1.min-1, which has remained between 1967 and 2012. (Shaher A. I. Shalfawi et al., 2016)

In the case of young soccer players VO₂max is lower (<60 mL/kg/min) than adults; (Helgerud, J, et al., 2007) found a VO₂ max of 64.3 mL/kg/min in youth soccer players. The game of soccer requires a high aerobic capacity since its dynamics are characterized by intermittent running to maintain a high level of activity during a prolonged period of play (Siti Azilah Atan, et al., 2014). Literature suggests that young soccer players cover between 5 and 8 km per match, which is 3 to 4 km less than adults (Castagna C., et al., 2003, Buchheit M., 2010). It has been pointed out that it is related to the reduction of glycogen reserves and the reduction of closed distances towards the end of the game for soccer players who grow up (Mohr M., et al., 2005). Young athletes have glycogen reserves, 50-60% of adult reserves (Alvarado M.U., 2005) and consequently the rate of their decrease is much faster than in adults (Boisseau N., Delamarche P., 2000) . This can also result in small distances covered during the game. However, there is no information available regarding this issue for young players during the game.

The ethical concerns around intrusive procedures like blood samples and muscle biopsies are a major restriction of research on glycogen depletion in young athletes (Jens Bangsbo, 2006). Therefore, child and adult differences in energy metabolism during exercise are still not fully understood. Furthermore, anaerobic power in young players is 50% less than their adult counterparts (Nikolaidis PT., 2011,). Inferior anaerobic capacity results in limited ATP supply during high-intensity exercise, lower phosphofructokinase activity causing reduced glycolysis (Riddell M.C., 2008,) as well as lower maturation in muscle fiber distribution (Naughton G. , et al., 2000). Because young players have a poor anaerobic capacity, we should anticipate seeing them engage in high-intensity activities that involve less running, slower speed, and/or less distance traveled (Alvarado M.U., 2005). However, anaerobic capacity will improve progressively with age, mainly from increases in body size, muscle mass and increased enzymatic activity. (Naughton G. et al., ,2000) In young soccer players (13.5 ± 0.4 years old), a 5-week high-intensity interval training (HIIT)-based running program has been shown to increase significantly (7%) $\dot{V}O_{2\max}$ and reduced (4.2%) 1000 m running time compared to non-significant changes (+1.9% and -2.0%, respectively) in the high-volume endurance training group (Graham Thom , et al., 2016, B illy S Perlich, et al., 2011). Despite a reduction in weekly training time of 1.5–2 h, the HIIT group also significantly improved sprint times over 20-, 30-, and 40-m distances with no observed changes in jump performance (B illy S Perlich, et al. , 2011, Oliver Faude et al., 2013).

In a similar vein, a study conducted in 2013 by Oliver Faude et al. examined the intra-individual training benefits of HIIT and HVT programs in elite youth soccer players (15.9 ± 0.8 years). According to research (Billy S. Perlich et al., 2011, Oliver Faude et al., 2013), it was discovered that HIIT appears to be just as effective as HVT in improving endurance capacity, with significant reductions in jump heights reported subsequently in both interventions, even with a 70% reduction in total training time. A recent meta-analysis involving 232 young soccer players (16.2 ± 1.6 years) discovered that small games (SSG)

and high-intensity interval training (HIIT) had similar positive impacts on endurance and soccer-specific performance measures, but no influence on sprint repetition or sprint and jump performance (Philipp Kunz, et al., 2016).

These findings indicate that HIIT provides an efficient training method to enhance young soccer players' performance, however the precise physiological mechanisms responsible for its effectiveness are not fully understood yet. (Graham Thom, et al., 2016). Due to the high neuromuscular and metabolic stress induced by HIIT, notable changes can occur in human skeletal muscles - specifically, increases in mitochondrial protein content, muscle oxidative capacity, and activity of key enzymes (Fransson, D., et al., 2018, Gibala, M. J., et al., 2006). Additionally, HIIT can improve fitness measures like VO₂max, aerobic capacity, sprint time, vertical jump height, and repeated sprint performance (Girard, O., et al., 2011, Toh, S.H., et al., 2011).

Given the varied characteristics of each HIIT type, different HIIT modalities may have distinct effects on soccer players' physical fitness. Several randomized controlled trials have tried to compare the impacts of one or two HIIT forms (Dellal, A., et al., 2012, Helgerud, J., et al., 2001, Impellizzeri, F. M., et al., 2008, Macpherson, T. W., & Weston, M. 2015., Ouerghi, N., 2014). However, such studies are often limited by small sample sizes (8 to 14 participants per group). This limitation can be largely overcome by utilizing a systematic review and meta-analysis approach. Although some studies have examined HIIT's effects on players' physical fitness (Engel, F. A., et al., 2018, Taylor, J., 2015), studies combined athletes from sports besides soccer or focused on a specific fitness outcome (i.e. endurance) (Moran, J., et al., 2019) and did not compare the effects of different HIIT types (Gist, N. H., et al., 2014, Kunz, P., et al., 2019). Therefore, the impacts of various HIIT modalities on a comprehensive range of key fitness attributes for adult and youth soccer players remain to be determined.

Problem Identified: Effects of Different High Intensity Interval Training Protocols on Aerobic and Anaerobic Capacity in 16-year-old Soccer Players.

Keywords: HIIT Training, Aerobic Capacity, Anaerobic Capacity, Soccer, Youth.

Data Base: Pub Med, SPORTDiscus, Web of Science

Inclusion criteria: Inclusion criteria for this review are as follows: parallel studies conducted in age-restricted men's soccer; HIIT interventions without duration restrictions (eg, short intervals, long intervals, speed endurance training, sprint repetition training, and sprint interval training); pre-post physical test results, including VO₂max, Aerobic capacity, Anaerobic Capacity.

Time of publication: Studies published in the last 10 years

Importance of Study

This study was carried out with the objective of increasing knowledge on how different HIIT programs can affect the improvement of Aerobic and Anaerobic Capacity and therefore the increase of physical performance in the game of football in young players and more specifically in 16-year-olds.

The study, despite some contradictory results and the lack of data, the problems identified by the current literature which are laid out for solutions not only in youth football in Albanian territory but also in other countries, are as follows:

- (a) Youth studies regarding the effects of different HIIT training modalities on youth soccer players are few in number.
- (b) Few studies report the effects of one or two HIIT protocol modalities or make comparisons with other training modalities.
- (c) Studies do not provide results regarding the effects of different HIIT training modalities in youth soccer in relation to the effects on anaerobic capacity.
- (d) The magnitude of the studies, i.e. the number of subjects who underwent interventional training is small.
- (e) Studies are scarce regarding the effects of HIIT protocols on improving aerobic and anaerobic capacity in 16-year-olds.

High Intensity Interval Training Methods

Various literature and studies for decades have discussed and researched, as a major issue in the field of sports training, the method of Interval Training, the variables of which have been manipulated and evolved so much until today, giving us definitions and uses of various related to this training method cited as follows:

In their book (Kenney, Wilmore & Costill, 2015) they explain that "Interval Training - Repeated, short, fast-paced exercises with short rest intervals between periods".

In their book (Laursen & Buchheit, 2019) they write that "HIIT is usually defined as exercise consisting of repeated periods of high-intensity work performed above the lactate threshold (a perceived "hard" effort or greater) or critical speed/power, interspersed with periods of low-intensity exercise or complete rest".

In the book of (Laursen & Buchheit, 2019), the authors schematically present the concept of HIIT as follows.

"Long Intervals"

"In long intervals, we are using repeated periods of the longer end of the intensity-time continuum around v/p of (VO₂ max (95% to 105%) or 80% to 90% of VIFT. Durations must be longer than 1 minute to induce the acute metabolic and neuromuscular responses we seek. For long intervals to be effective, they must be separated by short (1 to 3 minutes) periods of passive recovery or longer durations during active recovery up to 45% of VIFT or 60% of V/PIncTest (2 to 4 min." (Laursen & Buchheit, 2019)

"Short Intervals"

"Short intervals" consist of interval periods of more than 60 s few again in an equally short time duration. The dynamics of the format challenge us acutely metabolic and neuromuscular that we seek. For short intervals to hit our targets, between 90% and 105% of VIFT (100% to 120% V/PIncTest) should be applied for their short repetitive duration (10 to 60 s), of separated by less than one minute of recovery (passive at 45% VIFT or 60% V/PIncTest)." (Laursen & Buchheit, 2019)

"Repetitive Sprints"

"Repetitive Sprint Training is the first of our very high intensity formats that we can use to target more high end capacity or anaerobic speed/power reserve. These formats include 3 to 10 s effort of an all-out maximal intensity, with a variable duration of recovery ranging from short and passive, at 45% VIFT or 60% V/PIncTest." (Laursen & Buchheit, 2019)

"Sprint Intervals"

Sprint interval training is again maximal sprint effort, only the duration is longer, from 20 to 45 s. Such efforts are extremely "taxing", and recovery is passive and long (usually 1 to 4 min). The training arms formats in the sprint interval (Laursen & Buchheit, 2019)

"HIIT is commonly defined as exercise consisting of repeated periods of high-intensity work performed above threshold lactate (a perceived "hard" or greater effort) or critical speed/power, interspersed with periods of high intensity low exercise or complete rest." (Laursen & Buchheit, 2019)

"The general basis of high-intensity interval training can be simply described as follows: Imagine performing a bout of exercise at an intensity above your lactate threshold, or critical speed/power. To be clear here, this is an exercise intensity that is unbearable, and one where your brain would eventually force you to lower your intensity if you were to keep it up as long as you could."(Laursen & Buchheit, 2019)

Now, if we were to take the same high intensity and break it up with breaks that included periods of complete rest or lower levels of active recovery, that glycolytic energy rate is eased so that lactate production is more controlled, while cardiovascular work remains high and perceived exertion, although still high, is reduced and manageable." (Laursen & Buchheit, 2019)

“This is one of the features of HIIT that absolutely fascinated us when we first started researching the topic. As early shown by Per-Olof Åstrand and colleagues, the metabolic rate can be as high as the maximal rate of oxygen uptake (VO₂max), yet it is reasonably tolerated at a level relatively low blood lactate concentrations (ie, <4 mM). From this work and others in the field, interval training was originally proposed as a method that allowed athletes to do greater volumes of conditioning work with less physiological strain. To be clear, by performing such a high-intensity work intermittently instead of continuously, a person can maintain a high-intensity stimulus for longer, with less accumulated physical strain and with beneficial adaptations which may be specific to the demands of the sport.” (Laursen & Buchheit, 2019)

At the end of the chapter in relation to what HIIT is, I would like to mention the writings of the authors to give their thoughts on this matter.

Researchers Daniels and Scardina in their 1984 paper entitled Interval Training and Performance hypothesized that:

“All the intermediate points of studies, coaches and athletes regarding a definition of interval training is a type of training that includes alternating periods of training and recovery; is 'Interval Training'. (Daniels & Scardina, 1984). The Daniels & Scardina study writes that, "High Intensity Interval Training (HIIT) consists of repeated 30-300 second bouts of aerobic exercise at an intensity ranging from 85 to 100% of VO₂max interspersed with extended recovery periods." the same or shorter." (Daniels & Scardina 1984).

Brennan Mickelson in his article "For the Love of Interval Training" on one of the most quoted Sports Training sites, "Simply Faster", writes like this:

“Interval training has been twisted and manipulated into so many different ways that people have lost sight of what it is. It's been a point of training discussions for decades - for good. Interval Training is an appropriate stimulus that can be tailored to endurance, strength and power.

There are two types of interval training:

1. Supramaximal Interval or Sprint Training (SIT)

Supramaximal SIT at or near 100% of a person's power output and >150% VO₂max intensity levels

2. High Intensity Interval Training (HIT)

HIT in successful submaximal output <100% and output ³ 80% of maximum heart rate

This is. Everything else is window dressing. Tabatas, Fartlek, and 15 sec on 15 sec are simply variations in the work to rest ratio:.” (Brennan Mickelson)

Effects of Different HIIT Training Protocols on Sports Performance

Studies show that soccer mainly emphasizes the aerobic energy system (Laursen PB et al., 2002), it also involves a lot of high-intensity intermittent actions (Schneiker K, et al., 2008). Soccer players must perform high-intensity running, running with or without the ball, sprinting, deceleration or acceleration, kicking, dribbling. Many researchers continue to compare different types of high-intensity training protocols that are considered to improve aerobic and anaerobic metabolism and, therefore, help athletes maintain their physical and technical abilities throughout the duration of the game.

Soccer players need to engage in various high-intensity activities like running with and without the ball, sprinting, slowing down or speeding up, kicking, and dribbling. Many researchers keep comparing different kinds of high-intensity training methods that are thought to enhance aerobic and anaerobic metabolism. These types of training can potentially help players maintain both their physical fitness and technical skills for the full duration of a game.

HIT has been an integral part of athletic performance enhancement training programs since the early 19th century.” (Gibala, 2012)

In the early days, exercise physiologists had a hard time convincing elite athletes that it might be worth experimenting with their normal training programs because the long-term effects of any given training dose prevented athletes from receiving more than one training pattern. during the period of experimentation. Gibala in his study writes that "As we first hypothesized, training sessions that used work periods that were similar to race pace (8x4min at 85% of maximal aerobic power output (PPO)

significantly improved performance (2.8 %, 95% CI=4.3-1.3%). However, somewhat surprisingly, bouts of short duration, supra-maximal work (12×30 s at 175% of PPO) were equally effective in improving performance (2.4% , 95% CI=4.0-0.7%). Consistent with this observation, (Psilander et al., 2010) recently reported that a single bout of low-volume HIT (7×30 s 'all out' effort) produced increases in mitochondrial gene expression that were comparable to or greater than changes after longer bouts (3×20 minutes at ~87% of $\dot{V}O_{2peak}$) of endurance exercise in well-trained cyclists. Given the higher volume low workload and the fact that mitochondrial transcription factor A, and PGC-1 α level I, increased only after the 30-minute protocol, the authors concluded that short intense interval training may be a time-efficient strategy to athletes with a high level of training." (Gibala, 2012)

"High-intensity interval training (HIIT) has been proposed as a time-saving strategy to improve aerobic power (maximal oxygen consumption, $\dot{V}O_{2max}$) and anaerobic capacity" (Tabata, I, et al., 1996 cited in Cavar et al., 2018).

Therefore, HIIT has become an endurance training method for predominantly anaerobic sports (eg, acyclic sports, such as soccer), in which $\dot{V}O_{2max}$ affects performance (Helgerud, J et al., 2001, 2007 cited in Cavar et al., 2018).

In his study (Cavar et al., 2018) he writes that "Despite the increased interest in HIIT, its application and mechanisms remain poorly understood. The current literature on HIIT has generally focused on $\dot{V}O_{2max}$, with interval training performed at intensities at or above maximal aerobic velocity (MAV), where MAV is defined, in laboratory procedures, as the minimum velocity that yields $\dot{V}O_{2max}$. These training intensities are referred to as standard and supramaximal HIIT, respectively." (Cavar et al., 2018) "Therefore, the HIIT concept covers a wide range of training parameters (intensity, duration of intervals and recovery, modality, work-preparation ratio, type of rest and moderate intensity), which, in combination, produce specific effects that can lead to misinterpretations of their effectiveness by practitioners." (Cavar et al., 2018)

Regarding the effects of the HIIT Method (Cavar et al., 2018) writes that "More often, studies explore a single HIIT method or compare HIIT against moderate endurance training" (Cavar et al., 2018).

In this study Cavar et al., 2018 writes that "Despite some conflicting results and lack of data, the general conclusions that can be drawn from the current literature are as follows: (a) HIIT training is superior to moderate endurance training in improving $\dot{V}O_{2max}$; (b) Standard HIIT is more effective than supramaximal HIIT in improving $\dot{V}O_{2max}$, while the reverse appears to be true for improvements in anaerobic endurance. Unfortunately, HIIT studies lack objective criteria to determine the duration of work (Helgerud, J, 2001 cited in Cavar et al., 2018) because the duration of the intervals in most studies was chosen arbitrarily and did not vary between participants" (Dupont, G, et al., 2004, Cicioni-Kolsky, et al., 2013 cited in Cavar et al., 2018). Based on the evidence of previous studies (Cavar et al., 2018) in his study put forward the hypothesis that, "Forty-five physically trained men, with an average age of 21.1, in 6 weeks with 12 training sessions of periodized programs of different intensities would produce specific training effects, with short-interval HIIT preferentially improving anaerobic performance and long-interval HIIT preferentially improving aerobic performance, whereas moderate continuous exercise would have no effect on performance".

The aim of the study is to compare the effects of different HIIT training protocols on the aerobic and anaerobic capacity of 16-year-old soccer players.

Previous studies of HIIT have mainly focused on the elderly as the effects of HIIT training on human health. Studies have also conducted comparisons between high-intensity training methods and long-duration non-stop running methods. Recent reviews about HIIT and children focus on cardiorespiratory fitness and health-related fitness in children and adolescents. (Costigan, S. A. et al., 2016), (García-Hermoso, A., et al., 2016), (Bond, B., et al., 2017), (Eddolls, W. T. B., et al., 2017) , (Thivel, D., et al., 2018).

"In general, a systematic review summarizing the physiological effects of variables on aerobic and anaerobic parameters as well as sport-specific performance in young athletes is lacking. No review to date has analyzed differential adaptation to HIIT exclusively in young athletes, which is important as adaptation to HIIT may be different in athletes compared to sick or untrained children." (Engel F A., et al., 2018)

"In contrast to the rigorous study of the different responses in adults performing HIIT, much less research is available for children and adolescents. In children, changes in $\dot{V}O_{2max}$ are mainly attributed

to increased stroke volume due to increased preload, decreased afterload, and cardiac enlargement (Nottin et al., 2002 cited in Engel F A., et al., 2018)".

In this analysis the authors Engel F A., et al., 2018 report that, "Current studies have intensively investigated the effects of HIIT in adults on muscle adaptation (Coffey and Hawley, 2007; Talanian et al., 2007; Little et al., 2011; Metcalfe et al., 2015; MacInnis and Gibala, 2017). , to our knowledge, there are no available studies analyzing mitochondrial adaptations to HIIT or SIT in children or adolescents." (Engel F A., et al., 2018)

In the conclusions of various meta-analyses, HIIT is evidenced as a time-efficient training program, (Engel F A., et al., 2018) therefore, HIIT can be a time-efficient training tool suitable for increasing aerobic and anaerobic performance, while leaving enough time for the improvement of specific sports skills such as technique and tactics, in the training of young and adolescent athletes. High-intensity interval training (HIIT) has been proposed as a time-saving strategy to improve aerobic power (maximal oxygen consumption, $\dot{V}_{O_2 \max}$) and anaerobic capacity (Nikolaïdis, P. 2011).

In the meta-analysis of the study by (de Oliveira-Nunes, S.G et al., 2021) where studies are analyzed regarding which interval training protocol, HIIT or SIT, promotes greater gains in cardiorespiratory fitness of $\dot{V}O_{2\max}/\text{peak}$, it is noted that the studies are generally performed in HIIT protocols based on exercises lasting 30 seconds to 4 minutes. The age of the subjects was from 20-66 years. The conclusion of this study was that, "HIIT and SIT are time-efficient protocols that lead to similar benefits in cardiorespiratory fitness. Future studies are encouraged to compare the effect of manipulating other training variables, such as recovery time, number of bouts, and different types of HIIT exercises (running, cycling, rowing, boxing, swimming, etc.), by used equal caloric expenditure and/or total work performed for a comprehensive comparison between HIIT and SIT Protocols." (de Oliveira-Nunes, S.G et al., 2021)

In the meta-analysis of (Rosenblat, M. A., et al., 2020), studies dealing with the effects of the use of HIIT and SIT methods on the physical performance times of trained subjects are analyzed.

"Two forms of interval training commonly discussed in the literature are high-intensity interval training (HIIT) and sprint interval training (SIT). HIIT consists of repeated bouts of exercise occurring at a power output or speed between the second ventilatory threshold and maximal oxygen consumption ($\dot{V}O_2 \max$). SIT is performed at a power output or speed above those associated with $\dot{V}O_2 \max$." In this meta-analysis of previous studies, it is noted that the duration of the training exercise varies from 30 seconds to 4 minutes. The age of trained subjects varies from 19 to 32 years.

In this study the authors write, "This is the first analysis that directly compares HIIT and SIT with markers of endurance sports performance. The results of individual studies show that SIT can provide benefits for shorter duration sports performance and HIIT for longer duration sports performance." The authors then suggest that, "It may be useful to investigate this hypothesis through a direct comparison of HIIT and SIT in short and long duration sports performance." (Rosenblat, M. A., et al., 2020) The conclusion of this study states that, "Subgroup analysis shows that there was a large effect on performance time in sports performance favoring long HIIT over SIT." Additional research directly comparing HIIT exercises that vary in training duration would strengthen these results and provide further insight into the mechanisms behind the observed benefits of the Long Interval HIIT method." (Rosenblat, M. A., et al., 2020)

In another meta-analysis study by (Rosenblat, M. A., et al., 2022) the results of individual studies are analyzed which have identified central and peripheral adaptations to interval training that may underlie improvements in $\dot{V}O_{2\max}$. The authors write that, "We aimed to systematically review the adaptive responses to high-intensity interval training (HIIT) and sprint interval training (SIT) on central and peripheral factors influencing $\dot{V}O_{2\max}$ in healthy individuals." (Rosenblat, M. A., et al., 2022)

In this study the results showed that, "Thirty-two studies (369 participants, 49 were female) were included in the quantitative analyses, consisting of both HIIT (n = 18) and SIT (n = 17) interventions. There were only statistically significant changes in hematological measures (plasma volume) after HIIT. There was a significant increase in left ventricular mass after HIIT (7.4%, $p < 0.001$) and SIT (5.3%, $p = 0.007$) in inactive individuals, although the difference after SIT may not be true. There was only a significant increase in peak heart rate volume (14.1%, $p = 0.015$) and peak cardiac output (12.6%, $p = 0.002$) after HIIT. In addition to central factors, there was a significant increase in capillary density (13.8%, $p < 0.001$) after SIT in active individuals. Regarding maximal citrate synthase activity, there

were improvements after HIIT (20.8%, $p < 0.001$) and SIT (15.7%, $p < 0.001$, $I^2 = 97\%$) in active individuals. The results for mitochondrial respiration suggested that there was no statistically significant improvement after HIIT (5.0%, $p = 0.585$).” (Rosenblat, M. A., et al., 2022)

In this study, the authors write that, "The purpose of this article was a systematic review effect of interval training on central and peripheral Factors affecting VO_{2max} in healthy individuals. The results of the meta-analysis showed that training status strongly influenced changes in VO_{2max} . However, there were limited studies ($n = 1$) conducted in trained individuals. Additional studies in trained individuals are required to determine the impact of HIIT and SIT on the physiological factors that influence changes in VO_{2max} . In addition, this review included only apparently healthy individuals. Future reviews should consider the impact of interval training on these physiological parameters in clinical populations to guide exercise prescription.” (Rosenblat, M. A., et al., 2022)

In the conclusions of this study the authors write that, “Improvements in central factors including cardiac function and blood volume are important to consider when trying to maximize VO_{2max} adaptations. High-intensity interval training may produce greater increases in cardiac function (SV_{max} and CO_{max}) compared to SIT. The current literature shows that neither HIIT nor SIT cause an increase in HbM.

However, studies lasting longer than 2-3 weeks may be required before these adaptations can be determined. Interval sprinting may have a greater impact on angiogenesis when compared to HIIT; however, there are limited training studies involving HIIT interventions. Improvements in specific measures related to central factors

and peripherals that affect VO_{2max} depend on the type of interval.” (Rosenblat, M. A., et al., 2022)

In the meta-analysis of (Daniel Boullosa et al., 2022) writes that" The effects of short sprint interval training (sSIT) with efforts ≤ 10 s on maximal oxygen consumption ($\dot{V}O_{2max}$), aerobic and anaerobic performances remain unknown. The study is to verify the effectiveness of Short SIT (sSIT) in physically active adults and athletes.

In this study the authors involved healthy athletes and active adults of either sex (≤ 40 years), performing supervised sSIT (≤ 10 s "all out" and non"all out" effort) for at least 2 weeks, with a minimum of 6 sessions. Our findings show very high effectiveness of sSIT protocols in different exercise modes (eg, cycling, running, rowing, and punching) to improve $\dot{V}O_{2max}$, aerobic and anaerobic performance in physically active young adults and athletes healthy.

In this study the authors suggest that, “Therefore, for a better understanding of the factors associated with these improvements in performance, further comparisons should be made with different sSIT and HIIT/SIT protocols of equal but different loads on sprint duration (4–10 s) and work-rest ratios in different exercise modes.” (Daniel Boullosa et al., 2022)

"Recent meta-analyses show that sprint interval training (SIT) improves cardiorespiratory fitness (VO_{2max}), but the effects of different training parameters the magnitude of the improvement remains unknown," the scientists write in their paper (Vollaard, n. b. j., et al., 2017).

The current meta-analysis looked at how improvements in $\dot{V}O_{2max}$ were affected by the number of sprint repeats in a SIT session. After at least two weeks of training with Wingate cycle modifications or repetitions of sprints, the study compiled all studies that measured $\dot{V}O_{2max}$ before and after the exercise (e.g., studies employing all-out sprints 10s -, 15s -, or 20s instead of Wingate 30-second sprints).

In the conclusions of the study, the authors write that "In conclusion, in the present meta-analysis, we demonstrate that the SIT strategy is probably more effective in improving VO_{2max} if a training session is performed with few sprint repetition sessions. Considering the stated goal of SIT to provide a time-efficient alternative to high-volume, moderate-intensity aerobic exercise, this finding has important implications for the design of practical SIT interventions. We have suggested that studies should move away from more training protocols that are characterized by the commonly used Wingate 4–7 30s and towards creating acceptable and effective protocols. This will require more studies to examine the effects of a variety of training parameters (including number of sprint repetitions, sprint duration, sprint intensity, and training frequency) on health adaptations as well as exercise enjoyment and acceptability.” (Vollaard, n. b. j., et al., 2017)

In the study of (McKie, G. L. et al., 2018) it is mentioned that "Sprint interval training (SIT) protocols involving short work periods (≤ 15 s) improve aerobic and anaerobic performance, emphasizing the generation of maximal speed as an important adaptive stimulus potential.” "The study effectively

demonstrated that repeated generation of maximal velocity during short bouts of SIT work sufficiently stimulates the adaptive mechanisms that promote increased aerobic and anaerobic capacity." (McKie, G. L. et al., 2018)

"Interestingly, some studies have shown that the duration of the work interval of 30 seconds can be reduced to 20 (Gillen et al., 2014; Gillen et al., 2016; Metcalfe et al., 2012), 15 (Yamagishi and Babraj 2017; Zelt et al., 2011), and even 10 s (Hazell et al., 2010) without attenuating aerobic (i.e., $\dot{V}O_{2max}$, muscle oxidative capacity) and anaerobic (i.e., power output) adaptation (Wingate). This suggests that peak power/velocity generation may be sufficient to stimulate adaptive responses to SIT (Hazell et al., 2010). This seems logical since nearly half of the work done during an "all out" sprint occurs within the first 10 seconds (Bogdanis et al., 1996) and only 4 s of repeated maximal sprinting stimulates signaling pathways underlying skeletal muscle remodeling (Serpiello et al., 2012)." (McKie, G. L. et al., 2018)

"However, the optimal duration of work and/or rest interval for maximizing SIT adaptations has yet to be determined. Therefore, the aim of this study was to determine the importance of repeated peak velocity generation as an adaptive stimulus to SIT by varying the work period (5, 15 or 30 s) and the duration of the rest period (40, 120 or 240 s), while also saving the total time of the exercise session. In summary, by manipulating the duration of the work and rest interval of the traditional SIT 30 s protocol we were able to demonstrate that repetitive peak velocity generation is sufficient to induce improvements in performance suggesting that repetitive peak

Speed generation is an important component in the adaptive response to SIT." (McKie, G. L. et al., 2018)

In the review of the literature, a study was also found (Stelios Poulos et al., 2018) which is contradictory to other studies regarding the effects of HIIT training in improving the cardiorespiratory parameters of young soccer players. In this study, thirty Greek amateur soccer players (mean \pm sd, age 19 ± 2.21 years, body mass 71.19 ± 2.5 kg) were randomly assigned to a high-intensity interval training (HIIT, $n = 10$) group, a group of moderate intensity training (CONT, $n = 10$) and a control group (CONTROL, $n = 10$). The intervention for the HIIT and CONT groups was another 16 training sessions, 2 per week while the CONTROL group continued their regular soccer training routine. The HIIT group's training sessions consisted of 15 s sprints interspersed with 15 s recovery at 120% VO_{2max} with 8 min total exercise time or they played 4x4 min (16 min total time) small games (4v4) followed by 2 min recovery interval. Group CONT training sessions consisted of 40 min of continuous running at 70% VO_{2max} or 10v10 full-field soccer game for 40 min.

In the chapter where we dealt with the different HIIT Training protocols, we mentioned their types as follows based on the definition of Laursen, P., Buchheit, M., (2019):

1. HIIT "Long Intervals"
2. HIIT "Short Intervals"
3. HIIT "Repetitive Sprint"
4. HIIT "Sprint Intervals"

In this study, the results will be based on the comparison of the data of different HIIT training protocols, keeping unchanged some of the variables of the protocol so that the interpretation of the results is not complicated.

In this regard, the researcher (Martin J. MacInnis et al., 2016) writes that "Furthermore, most previous studies have progressively increased the duration and/or intensity of training, complicating any interpretation of the results. "

In the study of (Clemente F.M., et al., 2021) a systematic review with meta-analysis was performed to evaluate the effects of High Intensity Interval Training (HIIT) on the aerobic fitness of male soccer players (maximal oxygen uptake and aerobic performance, repeated sprint ability (RSA), vertical jump height (VJH) and linear sprint time (ST). In this study, which can be said to be one of the few in which young age groups have been studied, it is noted that for a period of time of almost 20 years, the number of studies regarding the effects of High Intensity Interval Training is very small. The age of the subjects ranged from 14-24 years. Out of 33 studies analyzed, only 7 studies had completed interventional training at the age of 16.

In studies conducted with 16-year-olds, three HIIT Training protocols were used, such as HIIT "Long Intervals", HIIT "Short Intervals", HIIT "Repetitive Sprints" and "Small Sided Game".

In this study, field tests were used to measure VO₂max, such as the Yo-Yo and the Cuper 12-minute running test. Other tests used were, RSA Test (Repetitive Sprint Ability), CMJ (Counter-Motion Jump) and VHJ (Vertical High Jump).

The training protocols that were used were such as, HIIT "Short Intervals", (Faude et al., 2013) as HIIT with a duration of 15-30sec, intensity 140-125% IAT, recovery time ratio 1/1, series 2 and repetition 12-15 times, 2-3 times a week for 11 weeks. (Faude et al., 2014) with duration 15s, Intensity 140% IAT, recovery time 15s 1/1, set 2, repetitions 12-15, recovery between sets 10 min, 2 times a week, for 4 weeks. (Jastrzebski et al., 2014) as HIIT with duration 15s, Intensity 85-90%HRmax, recovery time 15s 1/1, set 7, repetitions 6, recovery between sets 90s Active. HIIT "Long Intervals", (Los Arcos et al., 2015) with duration 4 min, Intensity 90-95 % HRmax, recovery time 3 min 50/60% HRmax, repetition 3. 2 times a week, for 6 weeks

(Radziminski et al., 2013) with a duration of 4 min, Intensity >90 % HRmax, recovery time 3 min, easy running 5 repetitions, 2 times a week, for 8 weeks (Safania et al., 2011) with a duration of 4 min, Intensity 70-95% HRmax, recovery time 3min, repetition 4, 3 times a week, for 6 weeks. HIIT "Repetitive Sprint", (Eniseler et al., 2017) with Distance 40m, intensity "all out", recovery time 20sec, series 3 and repetition 6 times, recovery between sets 4min, 2 times a week for 6 weeks. At the conclusion of this study, the authors write that "Future studies in the field of HIIT in soccer are encouraged to follow recently published recommendations (Abt et al., 2020) to increase the size of the study sample." (Clemente F.M., et al., 2021) "From the results of this analysis it can be noted that VO₂max, field-based aerobic performance or RSA can be stimulated by different types of HIIT and – with SSG among them. Most studies involved one or two sessions per week. However, HIIT does not seem to result in positive adaptations to VHJ and, in some cases, sprint time. Therefore, it may be beneficial to add additional training to improve reactive/plyometric strength (to improve VHJ and shortening the stretch cycle), sprint training (closer to maximum speed), and other strength and power training methods that help improve the sprint." (Clemente F.M., et al., 2021). In the conclusions of the study the authors (Clemente F.M., et al., 2021) write that, "The current analysis shows that randomized controlled trials have revealed significant beneficial effects of HIIT (overall) on VO₂max, field aerobic performance and RSA. No significant benefits were found in terms of sprint time. Considering the analysis of non-controlled trials (parallel studies), HIIT (overall) was found to produce significant improvements in VO₂max, field aerobic performance, RSA and sprinting, but no significant improvements were found for VHJ." (Clemente F.M., et al., 2021)

Identification of the problem/issue

Despite some contradictory results and lack of data, the issues identified by the current literature are as follows:

1. Youth studies regarding the effects of different HIIT training modalities on youth soccer players are few in number.
2. Few studies report the effects of one or two HIIT protocol modalities or make comparisons with other training modalities.
3. Studies do not provide results regarding the effects of different HIIT training modalities in youth sports and soccer regarding the effects on anaerobic capacity.
4. The magnitude of the studies, i.e. the number of subjects who underwent interventional training is small.
5. Studies are scarce regarding the effects of HIIT protocols on improving aerobic and anaerobic capacity in 16-year-olds.

Novelty of the Study Project

The novelty of the Project lies in the fact that it is one of the first studies that examines the effects of different HIIT modalities in young football players. Despite the increased interest in HIIT, its application and mechanisms remain poorly understood. The current literature on HIIT has generally focused on VO₂ max, with interval training performed at intensities at or above maximal aerobic velocity (MSV), where the MSV is defined, in laboratory procedures, as the minimum velocity that yields VO₂ max. These training intensities are referred to as standard and supramaximal HIIT, respectively.

Therefore, the HIIT concept covers a wide range of training parameters (intensity, duration of intervals and recovery, mode, ratio of work to rest, type of rest and average intensity), which, in combination, produce specific effects that can lead to misinterpretations of their effectiveness by practitioners.

Furthermore, the lack of knowledge regarding HIIT running modalities is partly due to the lack of training studies that simultaneously evaluate different HIIT protocols.

Most often, studies explore a single mode of HIIT or compare HIIT with moderate endurance training. In general, a systematic review summarizing the physiological effects of variables on aerobic and anaerobic parameters as well as sport-specific performance in young athletes is lacking. Recent reviews about HIIT and children focus on cardiorespiratory fitness and health-related fitness in children and adolescents.

High-intensity interval training is the preferred training method in stop-and-go sports; however, previous studies on its effects lack practice (eg, using complex laboratory measures to describe the load, evaluating running performance on the track instead of tests with changes in direction, etc.) Many sports, including football, are not well represented by track running because running on the field of play involves changing directions. Thus, this specific type of movement should be used in endurance testing and training procedures. Leger et al., were the first to recognize this problem and use a 20-meter multiphase test (Beep test) for indirect assessment of VO₂max.

Another novelty in this study is because it will compare the effects of running different HIIT protocols, HIIT "Long Intervals", HIIT "Short Intervals", HIIT "Repetitive Sprints", HIIT "Sprint Intervals" with a change of direction in ages 16 years.

In the conclusions of various meta-analyses, HIIT is evidenced as a time-efficient training program, therefore, HIIT may be a time-efficient and suitable training tool to increase aerobic as well as anaerobic performance, while allowing time to sufficient for the improvement of specific sports skills such as technique and tactics, in the training of young and adolescent athletes.

HIIT training method is superior to moderate intensity training methods in improving Aerobic and Anaerobic Capacity. High-intensity interval training (HIIT) has been proposed as a time-saving strategy to improve aerobic power (maximal oxygen consumption, V_{O2} max) and anaerobic capacity. Therefore, the HIIT concept covers a wide range of training parameters (intensity, duration of intervals and recovery, mode, ratio of work to rest, type of rest and average intensity), which, in combination, produce specific effects that can lead to misinterpretations of their effectiveness by practitioners. Furthermore, the lack of knowledge regarding HIIT running modalities is partly due to the lack of training studies that simultaneously evaluate different HIIT protocols.

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EDUCATION AS A SOCIO-CULTURAL MEDIATOR IN A MULTICULTURAL SOCIETY

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ABSTRACT

Education exists as a social mediator in a multicultural society. In the era of globalization, people around the world are becoming increasingly multicultural, with individuals from diverse cultural backgrounds living together in one community. This poses a new challenge in maintaining harmony and integration between different cultural groups. Education has an important role to play as a socio-cultural mediator in a multicultural society. Education can serve as a means to build intercultural understanding, respect and tolerance. In this context, multicultural education takes an inclusive approach by promoting teaching that encompasses diverse cultures, histories, and traditions. By introducing students to cultural diversity from an early age, education can help reduce prejudice, stereotypes and discrimination. In addition, education can also be a medium for developing social skills and intercultural communication. Through education, individuals can learn to communicate effectively with people from different societies with different cultural backgrounds. They also need to develop the ability to work together in teams, appreciate differences and achieve common goals. However, the challenges faced in implementing education as a socio-cultural mediator in a multicultural society also need to be considered. One of the main challenges is the educational curriculum which may not adequately cover multicultural aspects. Efforts are needed to integrate multicultural elements into the curriculum, as well as to train teachers and educators to deal with the needs of students from diverse cultural backgrounds. This review also explores some effective educational strategies in supporting the role of education as a socio-cultural mediator, such as: student-centered learning approaches, the use of learning materials that reflect cultural diversity, and the establishment of inclusive and welcoming schools and learning environments for all individuals. Through the effective implementation of education as a socio-cultural mediator, multicultural societies can create a harmonious environment, respect differences, and build a mutually beneficial life together.

Keywords: Diversity; Education; Mediator; Multicultural; Society.

**FUTURE TRENDS IN SUSTAINABLE INVESTING: EVOLVING REGULATIONS,
TECHNOLOGICAL ADVANCEMENTS, GROWING INVESTOR DEMAND**

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ABSTRACT

Lately, sustainable investing has become highly popular due to the combination of changing rules, technological growth, and increased investor expectations. This chapter examines these interconnected trends extensively in order to understand the effects they have on the sustainable investing arena as well as provide some thoughts about the way forward. Finally, the way forward for sustainable investing is determined by changing rules of engagement, technology and demands from investors. In addition to generating profits and growth, investors need to take into consideration their environmental and social impact as they try to maneuver through the developments in all these areas.

Keywords: Sustainable Investing, Evolving Regulations, Technological Advancement

**INTEGRATION OF ARTIFICIAL INTELLIGENCE IN ALBANIAN PRIMARY
EDUCATION THROUGH THE STEM METHODOLOGY**

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ABSTRACT

This paper examines the integration of artificial intelligence (AI) and STEM (Science, Technology, Engineering and Mathematics) methodology in primary education in Albania. The use of AI in teaching personalizes the learning process and improves student outcomes, while STEM methodology develops critical thinking and problem-solving skills.

Keywords: Artificial Intelligence (AI), STEM Methodology, teaching

INTRODUCTION

Education has always been crucial for the social and economic development of nations. In Albania, the education system has undergone significant changes since the 1990s, adapting to a constantly evolving society. A key development is the integration of new teaching methodologies to prepare students for 21st-century challenges. Notably, the STEM methodology (Science, Technology, Engineering, and Mathematics) has gained widespread adoption in contemporary teaching.

Historically, Albanian education has shifted from teacher-centered to more sophisticated, student-oriented methods. The STEM methodology offers an integrated approach to science, technology, engineering, and mathematics, fostering strong knowledge and essential problem-solving and critical thinking skills. This approach is vital in an interconnected, technological world.

This paper highlights the experience of a primary education teacher with 34 years of experience, emphasizing that STEM is the future of education in Albania. Integrating AI into STEM can personalize instruction, enhance students' problem-solving abilities, and address 21st-century needs effectively.

HISTORY OF PRIMARY EDUCATION IN ALBANIA (1990 -)

The period of 1990-2000

After the fall of the communist regime in Albania in the early 1990s, the country faced a challenging transition. Education underwent significant changes, shifting from a totalitarian system to a more open, student-centered approach. Key achievements included depoliticizing the curriculum, reducing teaching loads, balancing knowledge and skills, and revising social subject objectives. New subjects like Informatics and Civic Education were introduced, school infrastructure was improved, and teachers were trained in modern methods despite limited resources². Changes also included improving school infrastructure and training teachers to adopt more modern teaching methods, albeit with limited resources. The 1995 Law³ on the Pre-university Education System guaranteed equal education rights for all citizens and established a unified education system nationwide⁴.

The period of 2000-2010

In the second decade after the transition, primary education in Albania embraced innovative methods like the Montessori Method, developed by Maria Montessori. This approach emphasizes independence and hands-on learning, with children learning at their own pace using specific didactic materials⁵. Another significant initiative was the "Step by Step" program by the Open Society Foundation for Albania, which focuses on student-centered teaching. This program promotes learning through play, projects, and hands-on activities, involving parents and the community in the educational process. "Step

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² Dedja, B. et al, red. (2003). Historia e arsimit dhe e mendimit pedagogjik shqiptar. Tirana: Instituti i Studimeve Pedagogjike (Institute of Pedagogical Studies)

³ Law no. 7952, dated 21.6.1995 "On the pre-university education system ", amended

⁴ Reform of the Pre-University Education System (preliminary report). 2014. Working group for reforming Pre-University Education. Created by the Minister of Education and Sports https://arsimi.gov.al/wp-content/uploads/2018/08/RAPORTI_Korrik.pdf

⁵ American Montessori Society <https://amshq.org/>

by Step" aims to modernize primary education in Albania by fostering a supportive environment that develops students' responsibility, creativity, and critical skills⁶.

The period of 2010 and onwards

In recent years, the STEM methodology (Science, Technology, Engineering and Mathematics)⁷ has gained special importance in Primary Education in Albania. This approach aims to develop essential skills for students in an increasingly technological world, fostering critical thinking, problem-solving, and creativity through well-designed curricula.

The integration of artificial intelligence (AI)⁸ in education is also beginning to take off, further enhancing the learning experience. AI technologies personalize teaching by analyzing student data and creating tailored lesson plans. This ensures that each student receives the support and resources needed to progress, making the teaching process more effective and individualized.

The combination of STEM and AI methodologies equips students with strong foundational knowledge and critical skills required for future challenges. By embracing these innovative approaches, Albanian primary education aims to prepare students for a dynamic and interconnected world, ensuring they are well-equipped to succeed in the 21st century.

STEM METHODOLOGY IN PRIMARY EDUCATION

Definition of STEM

STEM (Science, Technology, Engineering and Mathematics) is an interdisciplinary methodology that integrates these four areas to develop students' critical skills, such as critical thinking, problem solving and creativity⁹. The term STEM is used to address educational policies and curricular choices in schools, improving competitiveness in science and technology. Originally known as SMET, the acronym was changed to STEM by the National Science Foundation (NSF) in the US in 1998¹⁰, to better reflect the importance of these disciplines.

Implementation of STEM in Albania

In Albania, the STEM methodology has been introduced in primary schools to prepare students for 21st-century challenges. The Ministry of Education and Sports has reformed the curriculum and trained teachers in research practices and projects. The American British STEM Academy (ABASTEM) is the first school in Albania to offer STEM-based education, opening in the academic year 2023-2024. ABASTEM features a modern campus with state-of-the-art biology, chemistry, computing, and physics laboratories, providing an advanced environment for hands-on experiments. The school offers educational programs and activities through projects that foster curiosity and problem-solving skills using the STEM methodology¹¹.

INTEGRATION OF ARTIFICIAL INTELLIGENCE (AI) IN PRIMARY EDUCATION

In recent years, Albania has significantly integrated Artificial Intelligence (AI) into primary education, making it an essential part of the learning process. During the 2022-2023 school year, in collaboration with the Albanian-American Development Foundation (AADF), the project "Artificial Intelligence for Young People" (Intel® AI for Youth) was piloted, a program implemented in over 11 countries. AI technologies are personalizing teaching and improving student outcomes by tailoring lesson plans to individual needs.

The Vodafone Foundation Albania has also launched an extracurricular program that empowers teachers and students through STEM methodology, developing digital skills such as Arduino, coding, and App

⁶ Open Society Foundation for Albania <https://www.osfa.al/>

⁷ Gonzalez B. H & Kuenzi JJ 2012. Science, Technology, Engineering, and Mathematics (STEM) Education. <https://sgp.fas.org/crs/misc/R42642.pdf>

⁸ Russell SJ, Norvig P. 2021. Artificial Intelligence: A Modern Approach (4th ed.). Hoboken: Pearson. ISBN 978-0134610993. LCCN 20190474.

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¹⁰ McComas FW 2014. STEM: Science, Technology, Engineering, and Mathematics. DOI: [10.1007/978-94-6209-497-0_92](https://doi.org/10.1007/978-94-6209-497-0_92)

¹¹ American British STEM Academy (ABASTEM) <https://abastem.edu.al/>

Inventor. In this framework, the ICT curriculum for first grade has been approved, and the basic education curriculum revised to include ICT as an optional subject for grades I-III. The project aims to introduce ICT in about 1,200 schools nationwide, equipping them with smart laboratories and new curricula. AI in education offers numerous benefits, including personalized learning experiences, rapid and tailored feedback, and easier access to resources. AI analyzes student learning patterns, creating lesson plans that match their learning speed and style, thereby enhancing academic performance¹². Concrete examples of AI in education in Albania include the Suapr.com platform¹³, a pioneer in Europe for integrating AI in education. It offers personalized educational tools and resources that adapt to each student's needs and learning styles. Teachers use ChatGPT¹⁴ to create customized teaching materials and enhance communication with students, improving the learning experience and fostering student engagement. The "Artificial Intelligence for Young People" project¹⁵, in collaboration with AADF and Intel Corporation, aims to enhance technological skills and AI knowledge in students aged 13 to 19 by creating tailored lesson plans, ultimately improving student outcomes.

STUDIES AND PRACTICAL EXAMPLES

The case of the experienced teacher

In Albania, experienced teachers like Eda M., with 34 years in primary education, have pioneered integrating STEM methodology and AI technologies. Eda M. has significantly transformed learning by personalizing teaching and enhancing student engagement. In her fourth-grade classes, she covers subjects like Albanian Language, Mathematics, Natural Science, Civics, and History. Eda M. has integrated AI-based software to analyze student progress and tailor learning materials to individual needs. Some concrete examples include personalized lesson plans, adaptive learning projects, and interactive AI-driven activities that foster critical thinking and problem-solving skills:

Albanian language:

1. Duolingo¹⁶: Originally known for foreign language learning, Duolingo now includes lessons for the Albanian language. Its AI tailors lessons to each learner's level, providing personalized exercises and instant feedback. Students can practice reading, writing, and speaking Albanian interactively and enjoyably. In her Albanian language class, teacher Eda M. uses Duolingo to help students practice grammar and vocabulary. She assigns personalized assignments where students complete exercises based on their knowledge level. Students are divided into small groups, each with a tablet to complete the exercises. A student struggling with a concept receives more practice, while an advanced student focuses on improving writing and translation skills.
2. Quizlet¹⁷: Quizlet uses AI technology to create personalized flashcards and quizzes that aid in learning Albanian vocabulary and grammar. This allows students to practice and review learning materials anytime, continuously improving their knowledge. In an Albanian language class, teacher Eda uses Quizlet to create flashcards and quizzes for reviewing new vocabulary. Students practice with the cards for 10 minutes at the start of class, working in pairs. Afterward, teacher Eda organizes a quiz competition where students quickly answer questions to earn points, making learning both effective and fun.

Mathematics

1. Khan Academy¹⁸: Khan Academy provides an AI-based learning platform that covers a wide range of mathematics topics. Its AI adapts lessons and exercises based on student progress and needs, allowing for personalized learning. In her math class, teacher Eda M. uses Khan

¹²MINISTRY OF EDUCATION AND SPORTS. 2023. Strategy National about search Scientific, Technology and Innovation 2023-2030 <https://arsimi.gov.al/wp-content/uploads/2023/03/Draft-Strategjia-Komb%C3%ABtare-p%C3%ABr-Shkenc%C3%ABn-Teknologjin%C3%AB-and-Innovation.pdf>

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¹⁵Intel® AI for Youth <https://www.intel.com/content/www/us/en/corporate/artificial-intelligence/digital-readiness-ai-for-youth.html>

¹⁶Duolingo - The world's best way to learn a language <https://www.duolingo.com/>

¹⁷Quizlets <https://quizlet.com/login>

¹⁸Khan Academy <https://www.khanacademy.org/>

Academy to teach students about fractions. Students watch a video tutorial and solve recommended exercises. Those struggling can review the material and receive extra help through personalized exercises, ensuring they grasp the concept thoroughly.

2. Prodigy¹⁹: Prodigy is a math learning game that uses AI to tailor challenges to the student's level, promoting learning through play and friendly competition. This method improves students' math skills by engaging them in a motivating game environment. For instance, teacher Eda uses Prodigy to make learning fun. Students enter the game and face math challenges that adapt to their knowledge level. During a friendly game, a student must solve multiplication problems to earn points and advance. At the end of the lesson, students discuss what they learned and how they applied it to the game, reinforcing their understanding and making the learning experience enjoyable.

Nature Science

1. Google Earth²⁰: Google Earth offers a platform where students can explore the planet through maps and satellite images. AI tailors content and instruction to students' levels, providing an interactive and visual way to learn about geography and the environment. During a science lesson, teacher Eda uses Google Earth to lead students on a virtual journey around the world, showcasing geographic points and their characteristics. Students explore the Amazon rainforest, learning about biodiversity by viewing satellite images and videos that help them understand ecosystems and environmental challenges.
2. Mystery Science²¹: Mystery Science provides inquiry-based, exploration-focused science lessons powered by AI to tailor content to learner needs. This approach helps students develop critical problem-solving skills and understand scientific concepts through hands-on experiments. For example, in a science lesson, teacher Eda uses Mystery Science to conduct an experiment on the water cycle. She starts with a question to pique students' curiosity, then uses a video to explain the concept. Students create models of the water cycle using simple materials and finally discuss their results to better understand natural processes.

Civics and History

1. Kahoot²²: Kahoot! is an interactive quiz platform that uses AI to create and adapt educational questions based on student progress and performance. It makes learning civics and history topics enjoyable and competitive. For instance, in a civics class, teacher Eda uses Kahoot! for a quiz on the rights and duties of citizens. Students are divided into groups and use the platform to answer questions related to real-life situations. The competitive aspect makes learning more engaging and helps students understand citizenship in an interactive way.
2. Google Arts & Culture²³: Google Arts & Culture offers educational content on art, culture, and history, using AI to create interactive and instructional material. Students can explore and learn visually and engagingly. For example, during a history lesson, teacher Eda uses this platform to take students on a virtual tour of museums and art galleries worldwide. Students view historical artifacts and famous paintings, learning about significant events and figures through virtual exhibits and interactive explanations. At the end of the lesson, students present projects on what they have learned.

STUDY METHODOLOGY

In teacher Eda M.'s classes, the integration of STEM methodology and AI technologies significantly enhanced academic performance and student engagement. The study involved 50 students from teacher Eda's I-V classes using STEM methods, and 50 students from schools without STEM integration. Measurement instruments included standardized tests, continuous assessments, surveys on student engagement and satisfaction, and classroom observations. Conducted over the 2022-2023 school year, the study measured performance improvements by comparing results before and after the

¹⁹Prodigy Education <https://www.prodigygame.com/main-en/>

²⁰Explore Google Earth <https://earth.google.com/web/>

²¹Mystery Science: Lessons for elementary teachers <https://mysteryscience.com/>

²²Kahoot! <https://kahoot.com/>

²³Google Arts & Culture <https://artsandculture.google.com>

implementation of STEM and AI technologies. AI tools used included Duolingo and Quizlet for Albanian Language, Khan Academy and Prodigy for Mathematics, Google Earth and Mystery Science for Science, and Kahoot! and Google Arts & Culture for Civics and History. Data analysis combined quantitative methods to compare average grades and qualitative methods to analyze observations and survey responses. Results showed a marked improvement in performance and engagement in students exposed to STEM and AI methods compared to those using traditional methods.

Results for each subject

Before integrating AI, the average grade in the Albanian Language was achieved by only 70% of students, with only 20 out of 50 students in non-STEM schools scoring above 80%. Student engagement was moderate. After AI integration, the average grade rose to 84%, and the number of students scoring above 80% increased to 50, showing an improvement of 30 students. Student engagement also became high. This demonstrates a 20% increase in average grades and significant improvements in grammar and vocabulary skills, confirming the positive impact of AI in the Albanian Language learning process. Before integrating AI, the average grade in Mathematics was achieved by only 65% of students, with only 15 out of 50 students in non-STEM schools scoring above 80%. Student engagement was moderate. After AI integration, the average grade rose to 90%, and the number of students scoring above 80% increased to 60, showing an improvement of 45 students. Student engagement also became high. This demonstrates a 38% increase in average grades and significant improvements in problem-solving skills and mathematical understanding, confirming the positive impact of AI in the Mathematics learning process.

Before integrating AI, the average grade in Nature Science was achieved by only 68% of students, with only 18 out of 50 students in non-STEM schools scoring above 80%. Student engagement was moderate. After AI integration, the average grade rose to 92%, and the number of students scoring above 80% increased to 55, showing an improvement of 37 students. Student engagement also became high. This demonstrates a 35% increase in average grades and significant improvements in experimentation and scientific problem-solving skills, confirming the positive impact of AI in the Science learning process. Before integrating AI, the average grade in Civics and History was achieved by only 72% of students, with only 25 out of 50 students in non-STEM schools scoring above 80%. Student engagement was moderate. After AI integration, the average grade rose to 90%, and the number of students scoring above 80% increased to 50, showing an improvement of 25 students. Student engagement also became high. This demonstrates a 25% increase in average grades and significant improvements in understanding historical events and citizenship concepts, confirming the positive impact of AI in the Civics and History learning process.

CONCLUSIONS AND RECOMMENDATIONS

The integration of AI and STEM methodology in Albanian Primary Education has significantly improved teaching and learning quality. AI personalizes learning, adapting materials to individual needs and boosting academic performance. Combined with STEM, it enhances students' problem-solving and critical thinking skills. Teacher Eda M.'s classes show notable improvements across all subjects, including Albanian Language, Mathematics, Science, Civics, and History.

RECOMMENDATIONS

1. Expanding teacher training: Educational institutions and the government should provide ongoing training for teachers on using AI technologies and STEM methodology, covering both practical and theoretical aspects. This ensures teachers have the necessary knowledge and skills for effective classroom integration.
2. Investment in technological infrastructure: Schools need advanced technological infrastructure, including well-equipped labs, high-speed Internet, and other tech devices. This investment is crucial for equal student access to learning resources.
3. Development of integrated curricula: The Ministry of Education and educational institutions should collaboratively develop and improve curricula integrating STEM and AI methodologies. These curricula should be flexible, address diverse student needs, and promote interdisciplinary learning and real-world problem-solving.

4. Parent and community involvement: Involving parents and the community in the educational process is vital. Schools should hold meetings and activities to inform parents about the benefits of STEM and AI technologies and encourage their support for their children's learning.
5. Evaluation and adaptation of programs: Regular evaluations of educational programs should be conducted to monitor the effectiveness of STEM and AI methodologies. This includes analyzing student performance data and gathering feedback from teachers and parents, allowing for continuous improvement.

Integrating AI and STEM methodologies in Albanian primary education can transform learning. With proper support, this approach can bring long-term benefits, enhancing the education system and preparing students for future challenges.

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18. Prodigy Education <https://www.prodigygame.com/main-en/>
19. Explore Google Earth <https://earth.google.com/web/>
20. Mystery Science: Lessons for elementary teachers <https://mysteryscience.com/>
21. Kahoot! <https://kahoot.com/>
22. Google Arts & Culture <https://artsandculture.google.com>
23. Law no. 7952, dated 21.6.1995 "On the pre-university education system ", amended

**INVESTIGATION OF TEC ANOMALIES FOR THE FEBRUARY 24, 2020, ELAZIĞ,
TURKEY EARTHQUAKE (M6.8) VIA ISOLATION FOREST**

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ABSTRACT

This study investigates the anomalies in the Total Electron Content (TEC) in the ionosphere during the month before and after the 24th of February 2020, Elazığ, Turkey M6.8 earthquake. An anomaly detection method, specifically the isolation forest (IF) algorithm, is employed to identify anomalies in the TEC data. The IF algorithm is chosen for its efficiency in handling high-dimensional data and its robustness in detecting anomalies. The TEC data is collected from five GPS ground-based telecommunication stations within a 160 km radius of the earthquake's epicenter, spanning a period of two months. The daily total anomaly counts are calculated for each station, and then the daily station counts are merged by weighting the anomalies according to the distances from the stations to the epicenter. It is observed that there is a generally high count and a slight increase in TEC anomalies prior to the seismic event, followed by a notable decrease after the aftershocks. This pattern suggests a correlation between TEC anomalies and seismic activity, providing compelling evidence that TEC anomalies could serve as potential precursors to earthquakes. Ongoing research aims to expand the dataset by incorporating additional GPS stations and extending the time range of the data. Further refinements to the anomaly detection models, including the incorporation of advanced machine learning techniques, are expected to significantly enhance the accuracy and reliability of earthquake forecasts. This study contributes to the understanding of ionospheric anomalies as potential precursors to seismic events, highlighting the importance of continuous monitoring and sophisticated analysis in earthquake prediction efforts.

Keywords: TEC; Anomalies; Isolation Forest Algorithm; Earthquake Prediction.

**MEMORY'S MIRROR: INTERPLAY OF HYPERTHYMESIA AND IDENTITY IN
'SAVANT' (2019)**

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ABSTRACT

This study investigates the portrayal of hyperthymesia, a rare condition characterized by exceptional memory recall, and its consequential impact on identity within the framework of the film "Savant" (2019). Hyperthymesia endows the protagonist, a young man, with extraordinary memory abilities, prompting him to grapple with questions of self-definition and perception. Through qualitative analysis, this research delves into the protagonist's journey as depicted in the film, examining the intricate interplay between hyperthymesia and identity construction. Drawing upon theories of identity formation, memory studies, and narrative psychology, the study offers insights into the complexities of living with hyperthymesia and its implications for individual identity narratives. By shedding light on the protagonist's experiences and challenges, this research contributes to a deeper understanding of hyperthymesia's impact on identity. Furthermore, the findings suggest avenues for future research and support initiatives aimed at enhancing awareness and understanding of hyperthymesia's profound effects on individual identity narratives.

Key Words: Hyperthymesia, Identity Construction, Film Analysis, Memory Abilities

**EARLY DIAGNOSIS OF HELICOBACTER PYLORI THROUGH THE UREA BREATH
TEST AMONG THE STUDENTS OF KORÇA UNIVERSITY**

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ABSTRACT

The study focuses on H. Pylori as the main pathogen causing progressive damage in the gastro-duodenal area. Numerous studies have shown that 50% of the population carries H. Pylori, with a higher prevalence in developing countries, including Albania. Therefore, this study highlights advancements in detecting the presence of the microorganism in the human body through the UBT. This test is being conducted for the first time in the city of Korça and brings innovation, as it is a rapid, simple diagnostic test with high sensitivity and specificity rates.

The aim of this study is the early assessment of H. Pylori in the student population of Korça University, identifying carrier cases to prevent the complications caused by this microorganism, ultimately impacting the health of the population by interrupting its transmission chain. Popularizing this test is not only beneficial for individuals but also for Public Health. The use of this diagnostic method will be an innovation in assessing Helicobacter Pylori for the city of Korça, different from its widespread use in developed countries.

Methodology: The study is conducted at the University of Korça. Detailed questions presenting the high risk factors of H. pylori presence are included in a survey with students, followed by the UBT test. After the analysis, processing, and interpretation of the collected data, as well as communicating the results, counseling will be provided as needed.

Conclusion: Early diagnosis through UBT, early medical treatment, prevention of complications, evaluation of treatment effectiveness by repeating the UBT test for students with positive results at the beginning of the study.

Keywords: H. Pylori; UBT; Student.

**WASTEWATER TREATMENT IN ANTARCTIC RESEARCH STATIONS WITH
POLAR MICROALGAE**

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ABSTRACT

In recent years, the number of scientific studies in the Antarctic and Arctic regions has increased considerably. While scientific studies allow us to explore the untouched nature of the region and better understand the global climate, they also raise various ecological concerns such as wastewater, air pollution and habitat destruction. This threatens the flora and fauna of the polar regions, negatively affecting biodiversity. It is crucial that we protect the fragile ecosystems of the polar regions through sustainable research practices and international cooperation to prevent pollution, protect habitats and prevent the introduction of invasive species. The Antarctic Treaty and other protocols prohibit the discharge of wastewater into the sea without treatment. For this reason, many research bases in Antarctica have established facilities to treat wastewater. These facilities ensure that wastewater is treated and returned to the sea without harming the environment. However, the wastewater treatment process generates a significant amount of solid waste. As this waste accumulates in the treatment plants, it has to be transported back to the mainland. Antarctica's remoteness and challenging geographical conditions make solid waste transportation logistically difficult and costly. In order to solve these problems, it was aimed to use the algal blooms occurring in Antarctica in the treatment process by cultivating them in wastewater. In the study, Antarctic microalgae were cultivated in artificial wastewater and the results were reported.

Keywords: Polar Microalgae, Wastewater Treatment, Environment

**TEACHING METHODOLOGY IN DENTAL EDUCATION: A COMPARATIVE ANALYSIS
OVER TURKISH AND BRITISH UNIVERSITIES**

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ABSTRACT

Being a competent dentist requires comprehensive education. Dental schools undoubtedly try their best to teach substantive subjects like dental surgery, prostheses, oral pathology, and so on during their five-year undergraduate education. What is also essential during this process is determining the teaching methodology and sharing this with students. The aim of this study is to examine how and why teaching methodology is necessary for dental education. For this purpose, Turkish and British dental schools are determined as case studies. In order to select an equal number of samples from each country, research universities are solely taken into account. Among 23 research universities in Turkey, 14 universities with dental schools were selected, while 13 dental schools out of 24 research universities in England were selected. The examination shows that 13 dental schools in the UK systematically share their educational methods with their students through their websites. The methods here cover both conventional ones, such as lectures, small group work and individual tuition, and non-conventional ones, like digitally-supported techniques, which are all easily accessible at the very beginning of syllabuses. On the other hand, Turkish counterparts approach dental education more conservatively, and one cannot find the methodology in the relevant materials. Considering that universities in both countries aim to reach more foreign students and make dental education much more uniform, Turkish schools and those working at them as instructors need to give priority to teaching methodology in dentistry.

Keywords: Teaching Methodology, dentistry, dental education, Turkey, UK.

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**NAVIGATING HUMAN DIGNITY AND ONLINE SPEECH: DEFAMATION LAWS IN THE
ERA OF DIGITAL COMMUNICATION**

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ABSTRACT

The rapid evolution of digital communication platforms and the global reach of online information have fundamentally transformed how individuals interact, share information, and express opinions. This transformation presents significant challenges and opportunities in reconciling the right to protection of honor and dignity with the freedoms inherent in digital communication. This paper explores these dynamics, focusing on the main challenges and opportunities.

One of the primary challenges is the speed and scale at which defamatory content can spread online. Traditional defamation laws, designed for slower, more localized information dissemination, often struggle to address digital communication's instantaneous and borderless nature. This challenge is exacerbated by the internet's anonymity, making it difficult to hold perpetrators accountable. The global nature of online platforms also means that defamatory content can cross jurisdictions, complicating legal recourse and enforcement.

Another significant challenge is balancing the protection of individuals' honor and dignity with the principles of free speech and expression. Ensuring that defamation laws do not stifle legitimate discourse and public debate is crucial. This paper examines how different jurisdictions are attempting to strike this balance, considering the varying legal standards and cultural norms that influence the interpretation and enforcement of defamation laws.

Despite these challenges, there are also opportunities to enhance the protection of honor and dignity in the digital age. Advances in technology can aid in the identification and removal of defamatory content, while global cooperation can lead to more harmonized and effective legal frameworks. Social media platforms and other digital intermediaries also have a role to play in moderating content and promoting responsible online behavior.

Furthermore, educational initiatives that promote digital literacy and respectful communication can foster a more civil online environment. By understanding the complexities and leveraging the opportunities, this paper argues for a multifaceted approach that combines legal, technological, and educational strategies to reconcile the right to honor and dignity with the evolving landscape of digital communication.

In conclusion, while the digital age poses significant challenges to protecting honor and dignity, it also offers unique opportunities to develop innovative solutions. A balanced and comprehensive approach is essential to navigate these complexities and uphold the fundamental rights of individuals in an interconnected world.

Keywords: honor, dignity, defamation, digital communication.

**MEASURING PLAYERS' PERFORMANCE EFFICIENCY INDEX USING FUZZY LOGIC
IN MULTIPLAYER SPORTS: A BASKETBALL STUDY**

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ABSTRACT

In multi-player sports, measuring a player's performance according to position precisely and accurately is one of the topics worth researching. A player's efficiency scores show how well the player meets the requirements of the position she plays and at what level she contributes to the basketball team. The Performance Index Rating (PIR) is one of the most fundamental scoring and mathematical system used by the Euroleague Basketball Company's first and second tier competitions. This research aims to construct a fuzzy performance index system using fuzzy logic in basketball sports to increase players' awareness of their own performance and to evaluate their performance more sensitively and efficiently. The proposed system is presented separately for three different positions in basketball: Guard, Forward, Center. Three different fuzzy inference systems are formed for each position: offensive action, defensive action and negative action systems. In these inference action systems, parameters used are point, assist, total successful throw, offensive rebound, steal, block, defensive rebound, total missed throw, turnover, foul, block against. For each position, the fuzzy performance index is generated through an upper fuzzy inference system where the results of the action systems are taken as input. For the proposed approach, detailed professional basketball data from the 2017-2018 to 2022-2023 seasons are used, taking into account that players must average at least 20 minutes of playing time per game. By comparing the obtained new fuzzy index values and the famous PIR values, it is observed that the proposed system is better, more sensitive and more effective both in position evaluation and in general. In future studies, applying this method to other multiplayer team sports is aimed.

Keywords: Basketball; Position; Performance; Index; Fuzzy.

EFFECTS OF MORIN AGAINST MALATHION INDUCED OXIDATIVE STRESS IN RATS

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ABSTRACT

Malathion is one of the most commonly used organophosphates nowadays, being considered to possess relatively low toxicity compared with other organophosphates.

This study aimed to detect oxidative damage caused by malathion and examine how morin protects against the toxic effects of malathion. Rats were randomly divided into six groups. The first group received no drug and was considered the control group. The second group was treated with morin at a 200 mg/kg dose for 10 days. The third group was treated with malathion at a dose of 150 mg/kg for 21 days. The fourth group was treated with malathion at a dose of 300 mg/kg for 2 days. The fifth group was treated with morin application was started on the eleventh day of 150 mg/kg malathion application and continued for 10 days. The sixth group was treated with morin application was started for 10 days, and the application continued with malathion at a dose of 300 mg/kg in the last two days of morin application. Morin and malathion were applied by gavage. Malondialdehyde (MDA), reduced glutathione (GSH) levels, catalase (CAT), glutathione peroxidase (GSH-Px), and superoxide dismutase (SOD) activities were determined in the blood. MDA level was higher in the groups treated with malathion alone compared to the control group, and lower in both groups treated with malathion+morin compared to the groups treated with malathion alone. GSH level, CAT, GSH-Px, and SOD activities were found to be lower in malathion alone (150 mg/kg and 300 mg/kg) groups compared to the control group. Malathion+morin groups showed a significant decrease in MDA levels and an increase in GSH, CAT, GSH-Px, and SOD activities compared to malathion groups. In particular, treatment with morin normalized GSH, CAT, GSH-Px, and SOD activities.

In conclusion, these results suggest that morin may be the natural agent preventing malathion induced oxidative stress.

Keywords: Malathion, Morin, Oxidative Stress, Antioxidants

INTRODUCTION

Malathion, an organophosphate compound, is generally used as an insecticide and miticide in agriculture, veterinary medicine, medical, and general health applications (Hazarika et al., 2003). Malathion can also cause life-threatening damage to various insects, animals, and humans by inhibiting acetylcholinesterase. Malathion residues are frequently encountered in plants with high lipid content. Washing fruits and vegetables with water alone is not enough to remove these residues (Ekremoglu, 2016).

Malathion is used to prevent the spread of parasites by spraying in barns, dairies and chicken coops around farm animals, in agriculture and horticulture, and in shampoos to treat lice in humans. Because of these methods of use, many people are exposed to the effects of malathion. However, the important reason for its frequent use is that its acute toxicity is lower than other insecticides (Alper, 2013).

It can easily enter the human body through digestion, inhalation, or absorption through the skin. The most important factor on which toxicity depends is the presence of the carboxy ester group, which is hydrolyzed by carboxyesterases found in the mammalian liver. This enzyme is not found in insects (Singh et al., 2009). In the organism, malathion is converted to malaoxon, which is 60 times more toxic, by cytochrome P450 enzymes in the liver. Malaoxon is an inhibitor of the acetylcholinesterase enzyme found in red blood cells, muscles, brain and other tissues in mammals (Hazarika et al., 2003). Malathion is a neurotoxicant and has a toxic effect on the nervous systems of target organisms (Bakal, 2010). Malathion inhibits the enzyme acetylcholinesterase, which breaks down acetylcholine, which is involved in the transmission of neural impulses in target organisms, causing acetylcholine to accumulate in the synapses at nerve endings. Thus, first warnings appear in the target organisms that come into contact with the drug, and then these warnings are followed by paralysis (Erdağ, 2012).

The lipophilic structure of malathion facilitates its interaction with the cell membrane and disrupts the phospholipid bilayer structure of many organs (Videira et al., 2001). Common uses of malathion include several acute and chronic human poisoning conditions. Many cases of poisoning with malathion occur in people working with pesticides or as a result of accidental exposure of young children to malathion (Severcan et al., 2019).

Malathion toxicity is associated with metabolic disorders, oxidative stress, immunotoxicity, inflammation and hepatotoxicity. When malathion is metabolized with malaoxone, it causes a large increase in reactive oxygen species in the liver. It has been stated that the oxidative stress caused by malathion was detected after two hours and that it caused toxicity in the liver (Akhgari et al., 2003).

Oxidative stress occurs due to an increased distribution of Reactive Oxygen Species (ROS). Biological systems protect against these oxidative stress damages with a defense system called antioxidant. Antioxidants can reduce or stop oxidation (Kohen and Nyska, 2002). The inducibility of antioxidant enzymes under oxidative stress is an important feature. These inductions consist of an important adaptation to oxidative stress. However, in cases of increased stress, it can be suppressed at the adaptation level. The most important antioxidant defense systems of cells are SOD and CAT. They establish a strong line by making the first defense against SOD and CAT features. (Yilmaz et. Al (2018), Kaya, 2010). It is known that organophosphates cause oxidative stress in animals. Malathion induced oxidative stress is activated after two hours (Lasram et al., 2008).

Morin is a natural polyphenol, originally isolated from members of the Moraceae family that can be extracted from leaves, fruits, stems and branches of numerous plants. Several evidence has demonstrated that Morin could have a beneficial effect on several human diseases. In fact, Morin exerts antioxidant, antidiabetic, anti-inflammatory, antitumoral, antihypertensive, antibacterial, hypouricemic, and neuroprotective effects, by modulating the activity of many enzymes. In some cases, Morin shows a systemic protective action, reducing negative side effects of several drugs, without interfering with their functions. In addition, in vitro and in vivo studies demonstrated that Morin exhibits very low toxicity levels and its chronic administration is well tolerated.

Studies have focused on oxidative stress caused by free radicals produced by malathion and increased lipid peroxidation in various tissues of mammals or other organisms (Hazarika et al., 2003, Coban et al., 2015 Ahmed et al. ,2000).

MATERIALS AND METHODS

Forty-two healthy three-month-old male Sprague Dawley rats (250–300 g body weight) were used in this study. The animals were housed under standard laboratory conditions of light (12 h light-dark cycle); temperature, 25 ± 2 °C; fed with a standard rat pellet diet and tap water ad libitum. The protocol for the use of animals was approved by the National Institutes of Health and the Committee on Animal Research of Türkiye. Malathion was gavage given to the animals at the dose of 150 mg/kg/day, for 21 days and 300 mg/kg/day, for 2 days. Morin was administered to the animals by gavage at the dose of morin at a dose of 200 mg/kg/day, for 10 days.

These groups were arranged as follows: Group 1- Control (not treated), Group 2- morin (200 mg/kg/day, gavage for 10 days) treated rats, Group 3- malathion (150 mg/kg/day, gavage for 21 days) treated rats, Group 4- malathion (300 mg/kg/day, gavage for 2 days) treated rats, Group 5- malathion (150 mg/kg/day, gavage for 21 days) + morin (200 mg/kg/day, gavage for 10 days) treated rats, Group 6- malathion (300 mg/kg/day, gavage for 2 days) + morin (200 mg/kg/day, gavage for 10 days) treated rats. Morin and malathion were applied by gavage.

At the end of the experiment, all animals were sacrificed and blood samples were taken. Blood containing EDTA samples were centrifuged at 3000 g for 15 min at +4 °C to obtain plasma. The Malondialdehyde (MDA) level in plasma and reduced glutathione (GSH) levels, catalase (CAT), glutathione peroxidase (GSH-Px), superoxide dismutase (SOD) activities were analyzed in blood. MDA levels were measured according to the method of Placer et al. (1966). GSH level was determined by a kinetic assay using a dithionitrobenzoic acid recycling method of Ellman et al. (1961). CAT activity was determined according to Aebi (1984). The principle of the assay is based on the determination of the rate constant, k (dimension: k) of H_2O_2 decomposition. GSH-Px activity was measured by Beutler method (1983) which records the disappearance of NADPH through its absorbance at 340 nm. SOD activity was measured using xanthine and xanthine oxidases to generate superoxide radicals which react with nitroblue tetrazolium (Sun et al., 1988).

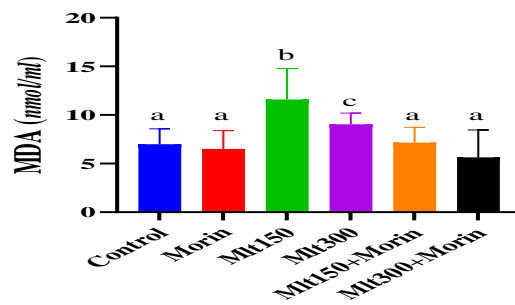


Figure 1. MDA levels in the blood of rats treated with Malathion and Morin

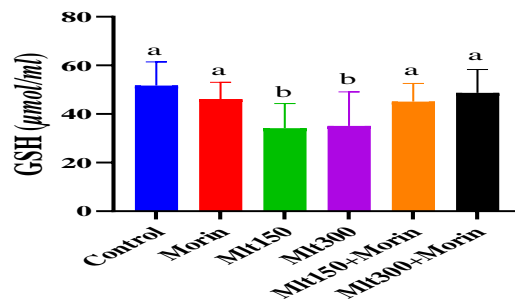


Figure 2. GSH levels in the blood of rats treated with Malathion and Morin

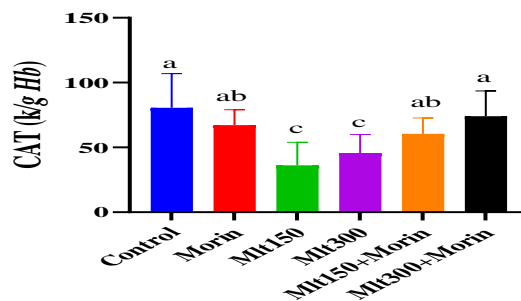


Figure 3. CAT activities in the blood of rats treated with Malathion and Morin

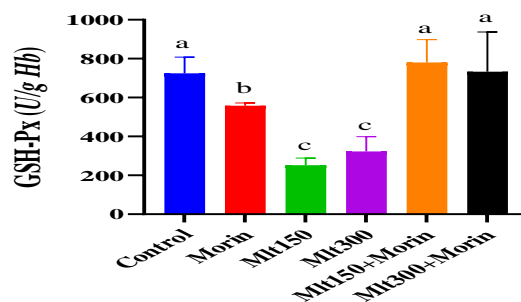


Figure 4. GSH-Px activities in the blood of rats treated with Malathion and Morin

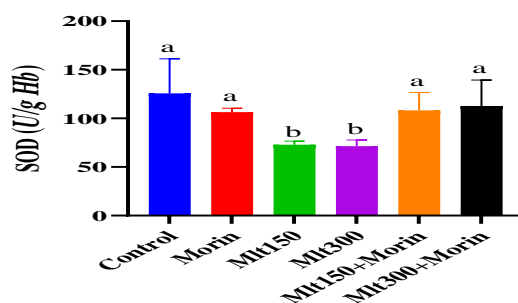


Figure 5. SOD activities in the blood of rats treated with Malathion and Morin

RESULTS

The MDA levels in malathion treated groups were significantly higher than the control group ($p < 0.001$). Groups that received morin with malathion showed decreased MDA levels during treatment compared with malathion treated groups. Morin improved the increased concentration of MDA caused by malathion ($p < 0.001$). GSH levels decreased significantly in the malathion treated groups compared with the control group. The group that received morin alone showed normal GSH levels, comparable to the control group. In contrast, groups that received morin with malathion showed increased GSH levels compared with group 3 and group 4 ($p < 0.001$).

The malathion treated groups showed a significant decrease in CAT, GSH-Px, and SOD activities compared with the control group. The group that received morin alone showed normal CAT, GSH-Px, and SOD activities which were comparable to the control group. The groups that received morin with malathion showed significantly increased CAT, GSH-Px, and SOD activities with malathion treated groups ($p < 0.001$).

DISCUSSION

In many studies on organophosphate-induced toxicity, oxidative stress has been highlighted as a possible underlying mechanism of toxicity by increasing ROS production and membrane lipid peroxidation (LPO) in malathion toxicity. Malathion is rapidly metabolized in the body to its bioactive analogue malaoxone, soluble in lipids and stored in the liver, causing a significant increase in ROS. Sharma et al. (2005) reported that acute administration of organophosphates caused an increase in liver cytochrome P450 activity. Cytochrome P450 enzymes catalyze the oxidation of oxygen molecules in organophosphate substrates and trigger ROS production.

In a study, it was reported that GSH, GSH-Px, SOD, and CAT enzyme activities in the erythrocytes, liver, kidney, and brain tissue of rats with malathion poisoning decreased compared to the control group. In contrast, administration of boron one hour before malathion treatment was observed to reverse the malathion induced alteration in SOD and CAT activities in a dose dependent manner. Malathion is metabolized to malacone via oxidative sulfuration catalyzed by microsomal cytochrome-P450 enzymes. This biotransformation produces high concentrations of ROS that may exceed the neutralization capacity of endogenous antioxidant enzymes. It has been reported that boron gives normal GSH levels in malathion induced rats, which may be due to a Boron-mediated decrease in peroxidative activity among these cells (Coban et al., 2015).

It is thought that the increase in LPO following malathion application may reduce the activities of antioxidant enzymes. Akhgari et al. (2003) evaluated the subchronic exposure of malathion in male rats and found that it caused oxidative stress. Malathion was administered for 4 weeks and they observed that liver CAT and SOD activities and blood MDA levels increased, while AChE (Asetilkolinesteraz) and ChE (Kolinesteraz) activities decreased. Ahmed et al. (2000) observed an increase in serum LPO, erythrocyte SOD, CAT, GSH-Px, glutathione-S-transferase (GST), and glutathione reductase (GR) activities in male rats subchronically exposed to malathion, while a decrease in serum GSH content was detected. Gupta et al. (1992) investigated the effects of malathion on liver and brain tissue homogenates obtained from human fetuses under in vitro conditions and found that there was an increase in MDA formation along with significant inhibition of SOD and CAT activities in both tissues.

Possamai et al. (2007) malathion was administered to rats acutely and subchronically intraperitoneally at doses of 25, 50, 100 and 150 mg. As a result of the application, the most sensitive to oxidative damage after acute treatment were the kidneys, lung and diaphragm, while after subchronic treatment it was liver and serum.

Alp et al. (2012) and Bhatti et al. (2013) reported that oxidative stress from malathion-induced free radicals can cause a dramatic decrease in GSH, which was inversely correlated with LPO in rat tissues at the cellular level.

Malathion treated rats showed significant increases in MDA levels in their blood, as well as significant decreases in GSH levels, GSH-Px, SOD and CAT activities. Treatment with morin significantly reduced all these changes with the restoration of normal concentrations and enzyme activities. Morin treatment in rats was found to produce significantly less lipid peroxide compared to malathion treatment. Morin is thought to act as a superoxide, hydroxyl radical scavenger. This study identified SOD and CAT activities as key components of cellular defense systems against oxidative stress. SOD converts superoxide to hydrogen peroxide (H_2O_2) and contributes to an important defense system for aerobic cells in combating the toxic effects of superoxide radicals. CAT decomposes H_2O_2 into H_2O and O_2 and protects tissue from highly reactive hydroxyl radicals. In this study, malathion administration reduced the SOD and CAT activities of erythrocytes; this finding is consistent with that reported by Possamai et al. The lower levels of SOD and CAT in the malathion group may be related to the consumption of these enzymes, possibly as a response to increased ROS production in toxicity. In rats, SOD and CAT activities increased in morin groups, suggesting that morin, which scavenges ROS and reduces oxidative stress in a dose-dependent manner, can restore and maintain the activity of these enzymes.

CONCLUSION

These results indicate that morin effectively prevents malathion induced oxidative stress in rats. These results suggest that the protective effects of morin result from both increased activity of the antioxidant defense system and inhibition of LPO.

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INVESTIGATING THE CHARACTERISTICS OF A GOOD TEACHER

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ABSTRACT

This study delves into the multifaceted characteristics that constitute an effective teacher. Through a comprehensive review of literature and empirical investigation, this research aims to discern the key attributes that contribute to successful teaching practices. Drawing upon various educational theories and models, the study examines the role of pedagogical expertise, interpersonal skills, adaptability, and passion for teaching in fostering student learning and development. Additionally, the research explores the significance of empathy, patience, and effective communication in creating a supportive and conducive learning environment. Furthermore, the study investigates the impact of continuous professional development and reflective practices on enhancing teaching effectiveness. By synthesizing existing research findings and empirical evidence, this study seeks to provide valuable insights into the complex interplay of factors that characterize an exemplary educator, thereby informing educational policies and practices aimed at improving teaching quality and student outcomes.

Key words: Role, Effective Teacher, Language, Teaching, Learning, Method, Approach, Technique

1. INTRODUCTION:

Investigating what makes a good teacher is a fascinating journey that delves into the intricate dynamics of education, human interaction, and learning psychology. A good teacher is not merely someone who imparts knowledge but is a catalyst for growth, inspiration, and empowerment.

To begin our investigation, we can explore various dimensions. Firstly, we might examine the qualities that define a good teacher. These could include empathy, passion for their subject, adaptability, effective communication skills, and a genuine interest in the success of their students. Understanding how these traits manifest in teaching practices and classroom environments can offer valuable insights.

Secondly, investigating the methodologies employed by effective teachers can provide valuable data. This might involve observing different teaching styles, analyzing the use of technology in education, and studying innovative pedagogical approaches. Examining how teachers create engaging lesson plans, foster critical thinking, and tailor their teaching to accommodate diverse learning styles can shed light on best practices.

Furthermore, investigating the impact of teacher-student relationships on academic performance and socio-emotional development is crucial. Researching how effective teachers build rapport, provide constructive feedback, and create a supportive learning environment can deepen our understanding of their role beyond the dissemination of information.

Another aspect worth exploring is the professional development of teachers. Investigating the resources, training programs, and mentorship opportunities available to educators can reveal strategies for continuous improvement and career satisfaction.

Moreover, considering the broader societal and cultural factors that influence teaching effectiveness is essential. Investigating the role of policy, funding, curriculum standards, and community involvement can highlight systemic challenges and opportunities for positive change in education.

In essence, investigating what makes a good teacher requires a multifaceted approach that encompasses personal qualities, teaching methodologies, relationships, professional development, and societal contexts. By exploring these dimensions, we can gain a deeper understanding of the art, science, foreign languages etc of effective teaching, ultimately contributing to the enhancement of educational outcomes for students worldwide.

2. LITERATURE REVIEW:

Here's a literature review addressing the role of pedagogical expertise, interpersonal skills, adaptability, passion for teaching, empathy, patience, and effective communication in fostering student learning and development:

1. Pedagogical Expertise:

- Pedagogical expertise refers to the knowledge, skills, and strategies that educators possess to effectively teach their subject matter. Research by Hattie (2009) highlights the significant impact of teacher expertise on student achievement. Teachers with deep content knowledge and understanding of effective teaching methods can create engaging and impactful learning experiences for their students.

2. Interpersonal Skills:

- Interpersonal skills encompass the ability to interact positively and effectively with students, colleagues, and parents. Strong interpersonal skills enable teachers to build rapport, create a supportive learning environment, and address individual student needs. A study by Wubbels and Brekelmans (2005) underscores the importance of teacher-student relationships in facilitating learning and student development.

3. Adaptability:

- Adaptability in teaching involves the capacity to adjust instructional methods, pace, and materials to meet the diverse needs of students. Teachers who are adaptable can respond effectively to unexpected challenges, changes in curriculum, and individual student differences. Research by Darling-Hammond (2010) emphasizes the role of adaptability in promoting student engagement and academic success.

4. Passion for Teaching:

- Passion for teaching is characterized by enthusiasm, dedication, and a genuine love for the teaching profession. Teachers who are passionate about their work often inspire and motivate students to strive for excellence. Studies by Tschannen-Moran and Woolfolk Hoy (2007) suggest that teacher enthusiasm positively influences student motivation, attitude towards learning, and academic achievement.

5. Empathy:

- Empathy involves understanding and sharing the feelings and perspectives of others. Teachers who demonstrate empathy are better able to connect with students, address their emotional needs, and create a supportive learning environment. Research by Jennings and Greenberg (2009) highlights the positive impact of teacher empathy on student well-being, behavior, and academic performance.

6. Patience:

- Patience is the ability to remain calm and composed in challenging or difficult situations. Patient teachers demonstrate understanding and tolerance towards student mistakes, setbacks, and learning struggles. Studies by Decker and Decker (2012) indicate that teacher patience fosters a positive classroom climate, reduces student anxiety, and enhances learning outcomes.

7. Effective Communication:

- Effective communication involves clear, concise, and respectful interaction between teachers and students. Teachers who communicate effectively can convey complex ideas, provide constructive feedback, and facilitate meaningful discussions. Research by Marzano et al. (2010) underscores the importance of teacher communication skills in promoting student engagement, comprehension, and academic achievement.

3. METHODOLOGY:

Investigating the process of learning to become a convenient teacher involves understanding both the teacher's development and the impact on student learning outcomes. Here's a methodology that encompasses various aspects of this investigation:

1. Literature Review:

- Begin by conducting a comprehensive review of literature related to teacher development, effective teaching practices, student learning outcomes, and the characteristics of convenient teaching. This review will provide a theoretical framework and help identify key variables and concepts to investigate.

2. Define Convenience in Teaching:

- Based on the literature review and expert opinions, define what constitutes a convenient teacher. This may include qualities such as being approachable, flexible, responsive to student needs, creating an inclusive learning environment, and employing diverse teaching strategies to accommodate different learning styles.

3. Participant Selection:

- Recruit participants for the study, including novice teachers, experienced educators, and students. Consider the diversity of teaching contexts, grade levels, subject areas, and school settings to capture a range of perspectives on convenience in teaching.

4. Data Collection:

a. Surveys and Interviews:

- Administer surveys or conduct interviews with teachers to gather qualitative data on their perceptions of convenience in teaching. Explore their beliefs, attitudes, experiences, and strategies for creating a supportive learning environment.

b. Observations:

- Conduct classroom observations to assess teachers' interactions with students, instructional practices, classroom management techniques, and responsiveness to student needs. Develop observation protocols based on the defined characteristics of convenience in teaching.

c. Student Feedback:

- Gather feedback from students on their experiences with teachers' convenience. Use surveys, interviews, or focus groups to solicit student perspectives on the effectiveness of teaching practices, teacher-student relationships, and classroom climate.

5. Data Analysis:

a. Qualitative Analysis:

- Analyze interview transcripts, observation notes, and student feedback using qualitative coding techniques. Identify themes, patterns, and discrepancies related to convenience in teaching.

b. Quantitative Analysis:

- Analyze survey data using descriptive statistics and inferential tests to examine relationships between teacher characteristics, teaching practices, and student perceptions of convenience. Use quantitative measures to quantify the extent of convenience in teaching and its impact on student learning outcomes.

6. Triangulation of Data:

- Triangulate findings from multiple sources, including teacher interviews, classroom observations, and student feedback, to validate and corroborate results. Look for convergence and divergence in the data to gain a comprehensive understanding of convenience in teaching.

7. Professional Development Needs Assessment:

- Based on the findings, assess teachers' professional development needs related to convenience in teaching. Identify areas for growth, training opportunities, and support mechanisms to help teachers enhance their effectiveness in creating a convenient learning environment.

8. Recommendations and Implications:

- Develop recommendations for teacher preparation programs, school leadership, and educational policymakers to promote convenience in teaching. Consider implications for curriculum development, instructional design, teacher evaluation, and school culture to foster continuous improvement in teaching and learning.

By following this methodology, researchers can investigate the process of learning to become a convenient teacher and its impact on student learning outcomes. The findings can inform efforts to support teacher development, enhance teaching practices, and create more inclusive and effective learning environments.

4. RESULTS:

The investigation into what makes a good teacher revealed several key insights:

1. **Qualities of Effective Teaching:** Through a combination of qualitative and quantitative methods, the study identified specific qualities and characteristics associated with effective teaching. These qualities include pedagogical expertise, interpersonal skills, adaptability, passion for teaching, empathy, patience, and effective communication.
2. **Teacher and Student Perspectives:** The investigation gathered perspectives from both teachers and students on what constitutes effective teaching. Teachers reflected on their own practices and strategies for promoting student learning and development, while students provided feedback on their experiences with teachers and the impact on their academic success and well-being.
3. **Impact on Student Outcomes:** The study explored the relationship between teacher qualities and student outcomes, such as academic achievement, motivation, engagement, and socio-emotional development. Findings revealed correlations between certain teacher qualities and positive student outcomes, highlighting the importance of effective teaching in fostering student success.
4. **Professional Development Needs:** Based on the findings, recommendations were made for teacher professional development programs and practices. These recommendations aim to support teachers in enhancing their skills and effectiveness in the classroom, ultimately improving student learning experiences.
5. **Implications for Educational Practice and Policy:** The investigation's findings have implications for educational practice, policy, and teacher preparation programs. Recommendations include strategies for recruiting, training, and supporting effective teachers, as well as policies aimed at promoting a culture of continuous improvement in teaching and learning.

Overall, the investigation contributes to our understanding of what makes a good teacher and provides valuable insights for improving teaching practices, supporting teacher development, and enhancing student outcomes in education

5. CONCLUSION:

In conclusion, the investigation into what makes a good teacher has provided valuable insights into the qualities, practices, and impact of effective teaching. Through a comprehensive methodology involving qualitative and quantitative approaches, the study identified several key findings.

Firstly, the investigation highlighted the importance of various qualities such as pedagogical expertise, interpersonal skills, adaptability, passion for teaching, empathy, patience, and effective communication in defining a good teacher. These qualities contribute to creating a supportive learning environment, fostering positive teacher-student relationships, and promoting student engagement and academic success.

Secondly, perspectives from both teachers and students were gathered, providing valuable insights into effective teaching practices and their impact on student outcomes. Teachers reflected on their own practices, while students provided feedback on their learning experiences, emphasizing the significant role teachers play in shaping their educational journey.

Furthermore, the study revealed correlations between certain teacher qualities and positive student outcomes, highlighting the critical role of effective teaching in promoting student achievement, motivation, engagement, and socio-emotional development.

Based on these findings, recommendations were made for teacher professional development programs, educational practice, and policy. These recommendations aim to support teachers in enhancing their skills and effectiveness in the classroom, ultimately improving student learning experiences and outcomes.

In summary, the investigation contributes to our understanding of what makes a good teacher and underscores the importance of effective teaching in education. By recognizing and cultivating the qualities and practices associated with effective teaching, educators can better support student learning and development, ultimately fostering success in the classroom and beyond.

6. RECOMMENDATIONS:

Invest in Ongoing Professional Development: Develop comprehensive professional development programs that focus on enhancing teachers' pedagogical expertise, interpersonal skills, adaptability, and effective communication. Offer workshops, seminars, and mentoring opportunities to help teachers continuously improve their practice.

Promote Reflective Practice: Encourage teachers to engage in reflective practice by regularly reflecting on their teaching methods, interactions with students, and student outcomes. Provide structured opportunities for self-assessment, peer observation, and feedback to support ongoing growth and improvement.

Foster a Supportive School Culture: Create a supportive school culture that values collaboration, innovation, and continuous improvement. Foster positive relationships among staff members, administrators, and teachers to create a sense of community and shared purpose. Provide resources, time, and support for teachers to collaborate, share best practices, and learn from one another.

Prioritize Student-Centered Teaching Approaches: Encourage teachers to adopt student-centered teaching approaches that prioritize individualized instruction, active learning, and student engagement. Provide training and resources on differentiated instruction, inquiry-based learning, and project-based learning to help teachers meet the diverse needs of their students.

Emphasize Social-Emotional Learning: Recognize the importance of social-emotional learning (SEL) in promoting student well-being and academic success. Provide training and support for teachers to integrate SEL practices into their teaching, such as fostering positive relationships, teaching emotional regulation skills, and creating a supportive classroom environment.

Support Teacher Well-being: Acknowledge the importance of teacher well-being in promoting effective teaching and student outcomes. Implement initiatives to support teacher well-being, such as stress management programs, work-life balance policies, and opportunities for professional growth and advancement.

Promote Parent and Community Engagement: Foster partnerships between schools, parents, and the community to support student learning and development. Encourage open communication, collaboration, and involvement in school activities and decision-making processes. Provide resources and support for parents to be active participants in their children's education.

Use Data to Inform Instruction: Encourage teachers to use data-driven decision-making processes to inform their instructional practices. Provide training on data analysis, assessment literacy, and using assessment data to differentiate instruction and meet individual student needs.

Advocate for Supportive Policies: Advocate for supportive policies at the school, district, and state levels that prioritize teacher professional development, student-centered teaching practices, social-emotional learning, and teacher well-being. Collaborate with policymakers, administrators, and stakeholders to create an enabling environment for effective teaching and student success.

By implementing these recommendations, schools and education stakeholders can support teacher effectiveness, enhance student learning outcomes, and create positive learning environments that promote academic achievement and personal growth for all students.

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**NAVIGATING THE NEW GEOPOLITICAL LANDSCAPE IN THE FACE OF RUSSIA'S
GLOBAL ORDER CHALLENGE**

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ABSTRACT

Centuries later, humanity is again heading toward the third "ideological" world war. The political crisis and polarization are deepening daily in the United States of America. In the background of the upcoming presidential elections, the number of supporters of Joseph Biden is significantly decreasing. This is largely due to ongoing global events: the war in Ukraine, the war in the Middle East and the constant tension between the USA and China in the South China Sea concerning Taiwan. According to a number of analysts and experts, it is vital for the USA to rethink its current political course and national security strategy and take drastic steps to stop 21st century dictators who try to establish a "multipolar" world and ignore a liberal democratic order. Following the dissolution of Soviet Union and the end of the "Cold War", this order has indeed become the only guarantee of peace and stability in the world. Concerns are growing considering that after Russia's full-scale invasion of Ukraine, the BRICS coalition - comprising Brazil, Russia, India, China, South Africa, Iran, Egypt, Ethiopia, and the United Arab Emirates - has significantly strengthened, posing a substantial threat to the military, political, and economic dominance of the West on a global scale. This article aims to review the current processes in the modern world and seeks to outline the contours of the confrontation between the West and the East in the face of Russia's Global Order challenge.

Keywords: The USA, West, Russia, BRICS, global order

Introduction

Following the end of the "Cold War", the United States of America became the center of a unipolar world. The greatest geopolitical, economic, and ideological conflict in the history of mankind ended with the victory of the West, leaving the USA as the only superpower. At the beginning of the new millennium, the strengthening of the US and NATO became a significant threat to Russia, which strongly condemned and opposed the unipolar world order. Vladimir Putin's speech at the Munich conference in 2007 is a clear illustration of this sentiment. At the 43rd International Security Conference, the Russian President harshly criticized the United States of America and Western states, which, in his words, hindered global security and stability. One year after this conference, in August 2008, Russia invaded neighboring Georgia and annexed two of its historical regions: Abkhazia and the so-called South Ossetia.

With the annexation of the Crimean Peninsula in February 2014, Russia once again alarmed the West, leading to a sharp deterioration of relations between the two different worlds in many areas. The United States and the European Union imposed economic sanctions on Russian officials. These sanctions also affected the defense sector. For the first time since the collapse of the Soviet Union, Europe directly and openly tried to reduce its energy dependence on Russia, by diversifying the routes of energy resources. In addition, Russia was suspended from the G8 summit. Overall, Western sanctions aimed to isolate Russia economically and politically while supporting Ukraine's sovereignty and territorial integrity.

Following the annexation of the Crimean peninsula and the occupation of two regions in Eastern Ukraine - Donetsk and Luhansk - Russia's military intervention in Syria once again demonstrated to the international community that Moscow was positioning itself as a decisive player in the Middle East. Russia opposed US influence in the region and shaped the outcome of the Syrian civil war according to its interests. Moscow's main task was to reduce Western influence in the Middle East and assert its global power, while the West aimed to fight against the authoritarian rule of Bashar al-Assad and the extremist group ISIS, which undermined global peace and security. Syria became the epicenter of geopolitical rivalry between Russia and the West.

After Russia's invasion of Ukraine, the contemporary geopolitical landscape is increasingly characterized by multipolarity. It is assumed that the world is at an important crossroads, on the verge of establishing a new world order. These changes have been accelerated by the sudden rise of developing

countries and the decline of Western hegemony. Nuclear rhetoric is back, and the world has never been closer to World War III. Authoritarian regimes of the 21st century are undermining Western liberal democracy. Through BRICS, they are trying to create a multipolar world order, dominating militarily and economically. In this scenario, the leading player is Russia, which represents an important challenge for the civilized democratic world and fundamentally changes the existing norms and principles of international law.

This article aims to reflect the dynamics of changes in global politics after the Russia-Ukraine war. The paper focuses on Russia's vision of a multipolar world and the challenges facing the civilized world in parallel with the expansion and strengthening of the BRICS organization. The main research question of the article is "How does Russia's ambition to create a multipolar world influence the geopolitical strategies of the United States and its Western allies".

Methodology

Qualitative research methods, specifically content analysis of scientific literature and official documentation, were employed in this paper. The authors examined the existing documentation and analyzed it in relation to political processes. Therefore, the study is grounded in both primary sources (official documents and statements) and secondary sources (analytical articles, academic papers, books, news information). Within the realm of secondary sources, scholarly research works, articles, and newspapers relevant to the research topic were studied and discussed. As a consequence, the authors conducted a retrospective and descriptive analysis of the research topic. The examination of numerous factual materials facilitated a deeper understanding of the paper and aided in formulating answers to the research question. Scholarly articles, government reports, and reputable media sources contributed to a comprehensive analysis of geopolitical trends and policy responses.

BRICS and the Emergence of a Multipolar World following the Russia-Ukraine War

As distinct from unipolarism, in a multipolar world order, power is distributed among several states. It is characterized by the presence of multiple rather than just one or two (as in a bipolar system) dominant forces. Notably, the growth of multipolarism at the beginning of the new millennium was driven by several important factors, among which the growing economic and military changes in rapidly developing countries deserve special attention. For instance, the economic growth of influential countries such as China and India has posed new challenges to the world. The United States and Europe are particularly at risk as China and India become influential players in international trade and investment. Additionally, India holds a leading position in the development of information technology, and according to the latest demographic research, has already surpassed China in terms of population. The second important factor in the acceleration of the multipolar world order is the military modernization of the above-mentioned countries.

Thus, the transition from a unipolar to a multipolar world order is characterized by the emergence of several influential players on the global chessboard, each with its own vision of what a justice-based, world should be and what it should be based on. By creating associations and alliances such as BRICS and the Shanghai Cooperation Organization, Russia seeks to build a coalition that shares its vision of a multipolar world. It is significant that official Moscow, as a counterweight to the West and the G7, is strengthening cooperation with the BRICS countries in the political, economic, military, and cultural spheres (Broadman, 2024).

Russia's vision of a multipolar world order is expressed in the country's most important foreign policy document, "the Concept of the Foreign Policy of the Russian Federation", according to which Russia's ambitious goal of establishing a multipolar world order is based on the principles of sovereign equality, balance of power, and cultural and civilizational diversity. In particular, the document emphasizes that the Russian Federation opposes any form of hegemony and interventionism and supports the principle of sovereign equality between nations. Additionally, the document underscores the importance of the balance of power, which prevents individual countries or unions from achieving absolute dominance. It places particular emphasis on cultural diversity of different countries., sprcifically emphasizing the growing importance of respecting civilizational diversity and asserting that different nations should respect each other's values and identities (The ministry of Foreign Affairs of the Russian Federation, 2023).

In this context, the expansion of BRICS causes special concern among the political elites of the world. In the analytical circles, BRICS is often considered an alternative to the G7, which includes the United States, Canada, France, Germany, Italy, Great Britain, and Japan. BRICS is an abbreviation of five rapidly developing countries: Brazil, Russia, India, China, and South Africa. It aims to promote trade, investment, and economic growth among member states. Today, the organization provides 31.5% of the world's GDP, while the G7 accounts for 30.7%. According to experts' calculations, the growth trend of BRICS' gross domestic product will continue in the coming years.

"We share the perception that the world is undergoing major and swift changes that highlight the need for corresponding transformations in global governance in all relevant areas. We underline our support for a multipolar, equitable and democratic world order, based on international law, equality, mutual respect, cooperation, coordinated action and collective decisionmaking of all States", is emphasized in the declaration of the 2009 BRICS summit (BRICS Information Centre, 2010). In other words, the organization is the "voice of the Global South," as Indian Prime Minister Narendra Modi called it a few months ago (Modi, 2023). In August 2023, in Johannesburg, the capital of South Africa, 23 countries applied to join the organization. Vladimir Putin was not present at the summit, because in response to current events in Ukraine, the International Criminal Court issued an arrest warrant for him. The leaders decided that, from January 1, 2024, 6 new members would be added to the organization (Plessis, Miridzhanian and Acharya, 2023).

Finally, four members were added to BRICS: Egypt, Iran, United Arab Emirates, and Ethiopia. All four countries are important actors in the global political field. Egypt is a leading player in African and Arab countries and has gained strategic importance due to the Suez Canal. Iran, despite being under Western sanctions and not enjoying positive prestige on the international stage, is rich in oil and natural gas and is a dominant actor in the Middle East. The United Arab Emirates is also an oil-rich state whose economic development has reached impressive levels over the past decade. Ethiopia, strategically located near the Red Sea and the Indian Ocean, is an important country on the African continent with a rapidly growing economy. It is anticipated that its accession to BRICS will significantly increase the influence of Russia on the African continent.

According to a BBC study, the combined population of the enlarged BRICS group of 3.5 billion people makes up 45% of the world's total population. BRICS countries account for 44% of the oil sold in the world, and their total economy is 28% of the global economy. At the same time, BRICS is actively considering the creation of a common currency to compete with the US dollar. Through the BRICS Bank, which has a financial capital of 50 billion US dollars, the alliance finances infrastructure projects in developing countries without imposing political conditions. This is particularly attractive to non-democratic states (BBC, 2024).

Among scholars and political analysts, there are different opinions regarding BRICS. Some believe that organization is, first and foremost, a clear demonstration by Russia to show that it still has friends and allies. The words of Greek left-wing economist and former Minister of Economy of Greece, Yanis Varoufakis, are interesting in this context: "So they are socializing amongst the third world their dollar holdings. BRICS is China. Let's not beat about the bush here. The BRICS is China, with India trying to find a kind of middle road, with the United Arab Emirates playing the West against the BRICS in order to gain advantages, like Saudi Arabia wants to negotiate deals, they don't want to get out of the dollar zone, but they want to enhance their relationship with China, with the BRICS in order to leverage their own bargaining with the United States", - notes the Greek politician (DiEM25, 2023).

Along with Egypt, Iran, the United Arab Emirates, Saudi Arabia, and Ethiopia, the leading country of South America - Argentina - was also planned to join BRICS. However, after the left-center candidate Sergio Massa was defeated by the right-wing politician Javier Milei in the presidential elections, the country instantly changed both its local economic direction and foreign policy course. It is known that Javier Milei has a pro-Western orientation, actively supports Ukraine, and is especially keen on deepening ties with the USA and Israel. During the presidential campaign, he frequently spoke out against "communist regimes", however, it should be noted that Milei is also trying to approach China diplomatically, since China ranks second among Argentina's trading partners.

Out of the BRICS member states, 3 countries - Russia, China and India - are officially nuclear weapon states, whose nuclear potential plays a major role in the prestige both at regional and international levels. In addition, according to "Statista", the Largest armies in the world ranked by active military personnel as of January 2024 are China, India, USA, Russia, and South Korea (Statista, 2024). Of these, three

countries (China, India, and Russia) are BRICS member states and allies, which have different goals and ambitions, but within the framework of BRICS, they cooperate effectively with each other.

Russia's ties with North Korea are also worth mentioning. Vladimir Putin's visit to North Korea for first time since 2000 has particularly alarmed the Western political elite. US Secretary of State Anthony Blinken called this a "sign of desperation" (U.S. Department of State, 2024). Obviously, the strategic partnership between Russia and North Korea is not expected to yield any positive outcomes for the civilized, democratic world.

The Politics of Discord: Understanding US Polarization

According to the Britannica, political polarization is a two-party system, results in the division of a country's entire population into two diametrically opposed political camps (Britannica, 2024). The main actors of polarization in the political system, alongside voters, are political parties. According to the definition, political polarization refers to the increasing support for radical, extreme political views at the expense of decreasing support for centrist, moderate views. This results in sharp divisions among society due to public policy issues, political ideology or party affiliation (McCarty, 2019, quoted in Chkhetiani, 2022).

In recent years, sharp polarization in the United States has been due to radically different positions between Republicans and Democrats on fundamental issues such as immigration, health care, climate change, wars and conflicts around the world. The deepening of polarization, is greatly influenced by the rapid growth of social networks and online media in the digital age. Biased and often non-objective media platforms disseminate disinformation, exploiting the vulnerabilities of target groups, frequently misleading and even brainwashing people.

Of particular note is the intercultural conflict between different religions, caused by increasing immigration on almost all continents of the world. Some scientists share the opinion that all of the above is proof of the views of the great American political scientist Samuel Huntington, who asserted that religious conflicts and confrontation between different cultures would intensify in the post-"Cold War" world. The idea was gradually refined and turned into an article published in Foreign Affairs magazine in 1993 (Foreign Affairs, 1993). However, as a consequence of these cultural shifts, changes in societal norms and values regarding race, gender, and identity have led to disagreements between more progressive and conservative segments of the population. Support for extremist groups and ideologies has increased in almost every part of the world.

The Western civilized world was shocked by the events of May 2020 and January 2021 in the United States. In May 2020, an African American man was killed in Minneapolis. George Floyd aged 46, died while being detained by the police, with one officer pressing his knee against Floyd's neck despite Floyd stating he couldn't breathe. The incident was captured on video and widely circulated on American TV channels and social media. In response to Floyd's killing, large-scale protests were organized across the USA under the banner "Black Lives Matter," with similar actions occurring internationally (Hill, *et al.*, 2020).

On January 6, 2021, supporters of the 45th President of the United States attacked the Capitol to disrupt the ongoing constitutional process in Congress, where the certification of the presidential elections was underway. Despite the attack, the constitutional process continued after an adjournment, and Congress declared President Joe Biden the winner of the election. In the historic attack on the Capitol, four supporters of President Trump were killed. They believed that the presidential election in the United States had been rigged. Additionally, one Capitol Police officer was killed the day after the storming, and dozens were injured. Four officers have since committed suicide over the past year (Voice of America, 2022). This event has led to a decrease in trust in government, media, and institutions, undermining democratic processes and stability. The foreign policy course of Donald Trump had initially been assessed as a clear illustration of economic protectionism. Trump's campaign slogans, such as "America First" and "America for Americans" underscored his promise to create millions of high-paying jobs and achieve sharp economic growth, primarily through prudent use of US monetary resources.

The coronavirus pandemic has brought significant changes to the formation of the 21st century world order. "The world, after the coronavirus, will never be the same as it was," remarked in one of the interviews former US Secretary of State H. Kissinger. A prolific author and influential figure in US history, compared the post-Covid world to the events of 1944, highlighting that while America was

strengthened and united by national goals then, today, amidst polarization in the US, pragmatic policies from an "effective and far-sighted" government was crucial in addressing global crises and overcoming challenges (Kissinger, 2020). Kissinger emphasized the importance of effective global collaboration among nations, advocating for a multilateral system rather than isolated national efforts.

The presidential debate between Joe Biden and Donald Trump, in which Trump harshly criticized Biden for helping Ukraine, and called Vladimir Zelensky the biggest salesman, was considered a visible example of the sharp confrontation between the two American presidential candidates and the growing internal polarization. Trump added that Ukraine will not win this war (Business Standard, 2024). Traditionally, most Americans do not attach much importance to foreign policy when voting, but recently voters have consistently complained that they believe the US spends too much money abroad on military and financial aid to Ukraine and Israel. Although Donald Trump has not declared intentions to reduce funding for any state, he has clearly indicated that he is waiting to see when and how much European countries will increase their defense spending in response to the Russian threat.

The Contours of the West-East Confrontation

The confrontation between the West and the East is a complex and multifaceted phenomenon. The contours of this confrontation are outlined in historical, economic, ideological, and geopolitical context. A sharp difference in interests between the capitalist West and the Communist East is evident in the "Cold War" era, which actually defined the second half of the 20th century and laid the foundation for significant geopolitical shifts in human history. Along with the fierce competition for global influence, these two different worlds tried to gain an advantage and maintain a dominant position through the growth of military alliances and proxy wars. Liberal democracy, individual freedom, and market economy, which were fundamental for the Western world, were contrasted by the Soviet empire's emphasis on collective labor, a planned economy, and the primacy of communist ideology, which supported centralized control and a different concept of human rights.

The events of the early 1980s, when the crisis of the Soviet Union was followed by its collapse, once again changed the vectors of the world order. During the forty-five years of the "Cold War" conflict, the West was considered the unconditional leader, and the Soviet Union, due to its nuclear potential, created a counterweight to the US in the East. However, since the end of the 1980s, the alternative leadership of Washington and the complete collapse of the Soviet Union have become clearer. The end of the confrontation between the West and the East resulted in several revolutionary changes, most notable the collapse of the USSR and the gaining of independence of its fifteen states (Kotkin, 2008, p. 90). In the wake of the new or old world order" many historians believe that the world order of the 21st century is, in fact, a continuation of the "Cold War" (Lucas, 2014; Black and Johns, 2016). The conflict of interests between the former superpowers is repeatedly observed in the context of acute military conflicts in different regions of the world (South Caucasus, Middle East, Latin America, etc.) At the same time, regional dominance is being contested by China, Turkey, Iran, and the oil-rich Middle East countries. This, of course, adds an even more complicated and complex character to the changing, unpredictable international system of today.

In the 21st century, in the age of digital technologies and information, the West-East conflict has taken on other forms. In the wake of the information war, the democratic world confronts the authoritarian world, accusing it of cyber-attacks, provoking destabilization within countries, and conducting disinformation campaigns. Along with the economic war, the diplomatic conflict between America and China is reaching its historical peak, significantly due to disagreements surrounding the South China Sea. China's large-scale "One Belt, One Road" project deserves special attention as well. By implementing this largest infrastructural project (the project of the century), China is trying to gain a significant economic advantage across Europe, Asia, and Africa, further deepening the growing competition between the two opposing blocs (Hillman, 2020, pp.10-13).

In response to the aggressive war in Ukraine in 2022, the West imposed a series of sanctions and travel restrictions on Russian officials, which included sanctions targeting the banking and financial sectors". One of the most important measures was Germany's suspension of the "Nord Stream 2" gas pipeline. According to German Chancellor Olaf Scholz, this was Germany's response to Russia's aggressive actions in Ukraine. It is significant that "Nord Stream 2" is an \$11 billion project, half of which is owned by the Russian state company Gazprom (Center for a New American Security, 2024; Politico, 2022).

Moreover, Russia was expelled from the Council of Europe, and the International Criminal Court issued an arrest warrant for Vladimir Putin. As a consequence of the mentioned restrictions, Russia was put into strict isolation. In response, Putin began to seek alternative ways, which, as a counterbalance to the West, manifested in deepening ties with non-democratic countries. At the same time, Russia is continuously trying to modernize the army, frequently invoking its nuclear weapons and openly showing full readiness to achieve its geopolitical interests. The President of Russia named the following conditions as prerequisites for a ceasefire and the start of negotiations with Ukraine: the complete withdrawal of Ukrainian troops from the Donetsk and Luhansk People's Republics, as well as the Kherson and Zaporizhia regions, and the refusal of official Kyiv to join NATO (BBC, 2024).

In response to the above, NATO's political leadership is considering bringing nuclear weapons into combat readiness. As Jens Stoltenberg, Secretary General of the North Atlantic Treaty Organization, stated in an interview with the Telegraph newspaper. "Nato's aim is, of course, a world without nuclear weapons, but as long as nuclear weapons exist, we will remain a nuclear alliance, because a world where Russia, China and North Korea have nuclear weapons, and Nato does not, is a more dangerous world". (The telegraph, 2024). Moreover, US President Joe Biden has secretly authorized Kiev to use US-supplied weapons to strike military targets on Russian territory, marking a sharp reversal of Biden's previous policy, who had strongly opposed using American weapons to strike Russian territory. Later reports clarified that Biden's decision only pertained to targets situated on the border of the Kharkiv district (Politico, 2024).

It is particularly painful for Russia to see its foreign policy interests replaced by American interests in its "backyard" - the post-Soviet space. Under Putin's rule, the Russian political elite strives to restore the lost "Russian glory," as detailed in Russia's National Security Concept. Regarding the Persian Gulf and the Middle East, three states - Russia, the USA, and China - are competing to gain and strengthen dominant positions in the region. The conflict of interests among the big players in this space is explained by the excess reserves of energy resources - oil and natural gas.

Conclusion

In an unpredictable world, the international system is constantly evolving, with new countries emerging on the global stage. It is anticipated that some of these nations will surpass the US economy in a few decades and set new standards for the world order. According to some experts, Asia will soon lead the multipolar world. However, humanity still looks to the United States as the undisputed leader of the free, democratic, and civilized world.

Russia remains the biggest threat to the West, which actively cooperates with influential, non-democratic states to reinforce the vision of a multipolar world. This is evidenced by a series of agreements concluded in March 2023 between Russia and China within the framework of a strategic partnership between the two countries. The primary goal of these agreements is to deepen economic ties, cooperate in the military field, and reduce Western influence. For Russia, maintaining a stable relationship with China is crucial in light of the economic sanctions imposed on it. In the context of the Russia-Ukraine war, it is essential to emphasize China's position as well. Officially, Beijing provides diplomatic support to Russia and humanitarian assistance to Ukraine, while simultaneously calling on both sides to resolve the conflict peacefully and engage in dialogue.

Today, the growing role of China in establishing global hegemony is undeniable. China has initiated the most significant global project of the 21st century and is actively engaging in competition with the USA for supremacy. Similarly, India is a formidable force. Despite its high poverty rate, this nuclear-armed nation, with the world's largest population, substantial hydro resources, and significant coal reserves, maintains a leading position globally.

The current geopolitical landscape is characterized by a shift towards a multipolar world order, driven by the emergence of powerful players like China, India, and the BRICS coalition. Russia's ambition to create a multipolar world poses a significant challenge to the existing liberal democratic order led by the United States and its Western allies. The expansion of BRICS, with the addition of new members like Egypt, Iran, the United Arab Emirates, and Ethiopia, represents Russia's efforts to build a counterweight to the West's influence. BRICS countries now account for a significant portion of the global economy, population, and oil production, giving them increased leverage and the potential to challenge the dominance of the US dollar .

However, the future of this multipolar world order remains uncertain. Russia's absence from the latest BRICS summit, due to the International Criminal Court's arrest warrant, highlights the ongoing tensions and divisions within the coalition. Moreover, the potential accession of Argentina to BRICS was thwarted by the election of a right-wing candidate, who shifted the country's economic and foreign policy direction.

In this context, the United States and its Western allies must carefully navigate the new geopolitical landscape, rethinking their political and national security strategies to address the challenge posed by Russia and the BRICS coalition. The outcome of this confrontation will have profound implications for the future of global order and the balance of power in the international system. One potential future scenario could involve the BRICS coalition further strengthening its economic and political influence, potentially leading to the establishment of a new global financial system that reduces the dominance of the US dollar. This could significantly alter the existing power dynamics and force the United States and its allies to adapt their strategies to maintain their global standing.

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**STRATEGIC APPROACHES SUPPORTED BY ARTIFICIAL INTELLIGENCE IN BIONIC
FORMATIVE DESIGN CLASSES: A VIEW FROM THE PERSPECTIVE OF
ARCHITECTURE AND DESIGN MAJORS**

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ABSTRACT

Modern technology, which eases our lives by taking its place in many areas of our life, makes the renewal of many design-based professions and departments of universities and the emergence of new professions and specialties inevitable. Changing and evolving technology requires innovation in higher education institutions, especially in the fields of design and visual arts. The subject "Bionic forms and the basics of artistic formation" plays an important role as an elective subject in increasing the creativity and formation of the abilities of students studying in the fields of architecture and design. In bionics classes, students refer to AI in the tasks given during the training hours. There are also students who do not like the facade and interior designs obtained by guiding the AI with their own ideas and use their creative abilities instead. There are students who hand-draw the assigned tasks, but use design programs to design space and also bring out the bionic element of their choice with the help of AI. The method of this research consists of visual interior and exterior designs of students using artificial intelligence and their assessment and evaluation in the scoring system.

Keywords: Bionics, bionic designs, artificial intelligence, virtual world

INTRODUCTION

Modern technology, which makes life easier by taking its place in many areas of our life, makes the renewal of many professions and departments of universities and the emergence of new professions and specialties inevitable. From this point of view, changing and updated technology requires updating in higher education institutions, especially in the fields of design-based visual arts.

Currently, in the subjects taught with the titles "Bionics", "Bionic forms and the basics of artistic formation" in many design-based specialties of higher education institutions such as architecture, interior design, industrial design, graphic design, etc., the use of technology, and therefore artificial intelligence, together with computer-aided design programs, is vital.

The subject "Bionic forms and the basics of artistic formation" plays an important role as an elective subject in increasing the creativity and forming the abilities of students studying in the fields of architecture and design. In this regard, the ability to design is important for the student to think, imagine, interpret the problem from different perspectives, think abstractly, question, dream and teach to dream, connect. In the lecture part of the subject, knowledge about the history of Bionics science, areas of use, etc. and in the training part, various bionic design projects and tasks are developed based on bionic forms, their external appearances and forms.

WHAT IS BIONICS?

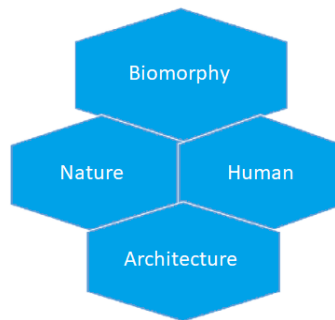
Bionics (derived from the Greek word `bios' meaning life) means the element of life. The concept of Bionics appeared at the beginning of the 20th century. In a global sense, Bionics means a scientific field based on the analysis of the structure, morphology and life activity of technical, biological organisms, and the discovery and use of structural regularities of natural forms for the solution of technological and artistic issues.

This name was coined by the American researcher J. Shill at Dayton in 1960. "Living prototypes - the key to new technology" was proposed at the symposium and the foundation for the creation of a new

field was laid. Thus, "Bionics" as a term appeared, and a number of issues were put before architects, designers, constructors and engineers, aimed at the search for new methods of formation. Bionics acts as a bridge connecting biology with mathematics, physics, chemistry and engineering.

CONCEPTUAL FRAMEWORK

Man's relationship with nature has existed since ancient times with various concepts such as imitation (mimesis) and creativity (poesis). Since ancient times, man has been influenced by nature in many areas of art.



Nowadays, despite having many technical means, people still benefit from nature, and in our modern era, they are achieving great success in the field of nanotechnology. For example; engineering science still continues to take a lot of "hints" from nature, which has no technical boundaries. In this field, most of the talk is about the science of "Bionics". "Bionics" is a mutual synthesis of biology and technology, and "Living organisms are the key to new technologies."

Bionics (Greek βίον — element of life, literal translation — living) is the science of the application of the organization, properties and structure of living nature in technical devices and systems.

Bionics, or "bio" as the Greeks say, means the superiority of nature. It is wildlife that surrounds designers and architects, who can draw inspiration only from it for their work. In this sense, only nature is the most comfortable environment for people.

There are rounded corners, natural tones, smooth natural lines and light shapes, all of which are the basis of the bionic style. (Image 1; 2).



Image 1.



Image 2.

In the framework of architectural design, nature has always attracted people's attention, has been a source of inspiration and a solution. As a result of this interest, people imitated, interpreted, metaphorically and analogically what they learned by studying nature in architectural design.

Especially in the last fifty years, with the emergence of environmental problems, the way of learning from nature in architectural design has been reshaped and moved to a very different dimension. The

formation and processes of living forms are used in architectural design and design of form-structure-material relationship. In this context, Bionics reveals the importance of the form of the built environment, which way of thinking influences it, while exploring the influence of the relationship between man and nature on architectural design. By examining the economic, ecological and social consequences of rapidly changing technological paradigms, the science of Bionics, which studies the element of form in architecture, studies the relationship between man and nature and the search for form from the past to the present (Image 3).

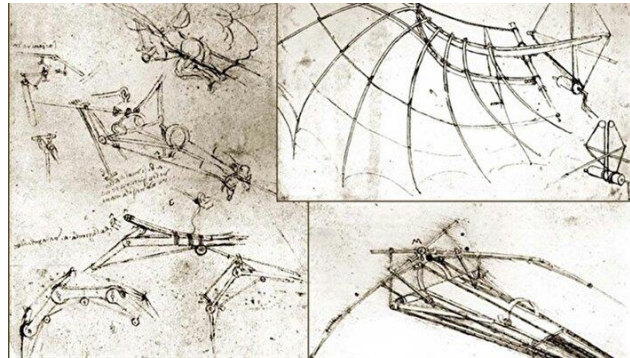


Image 3. Artificial wings designed by Leonardo da Vinci - drawing from the 1480s

Researcher-author Janine Benyus, who also coined the concept of biomimesis, the relationship between nature and form, pioneered and applied theories in many different fields.

Benyus has historically assigned three distinct roles to nature in the world of design;

- nature as a model
- nature as measure
- nature as an educator

Putting the concept of biomimesis to these roles, Benyus believes that nature should be applied not only in the solution of the architectural problem, but also in all kinds of art, social and scientific fields (Image. 4; 5). Nature "works with daylight", "uses as much energy as it needs", "matches form to function", "recycles everything", "rewards cooperation", "enriches diversity", "favors regional experience" and "has the ability to use limitation" (Benyus, 2002)



Image 4. Olympic Sports Complex.

Athens, Greece. 2004

Architect: Santiago Calatrava

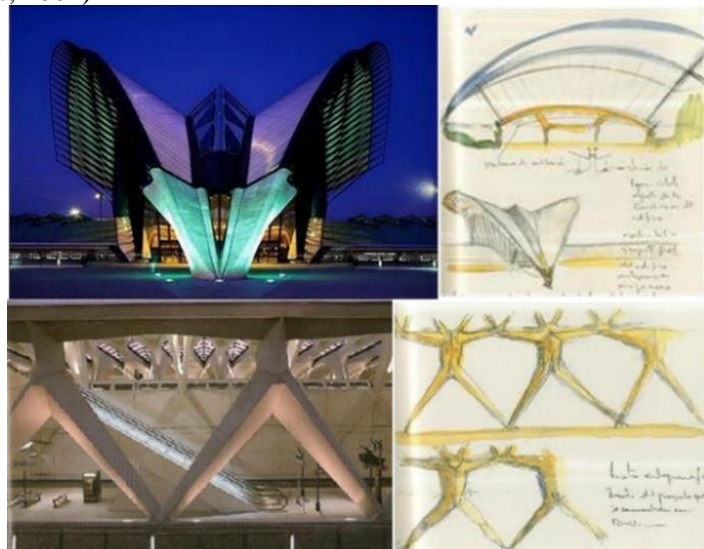


Image 5. Lyon Satolas Airport and the Dancing Man

By Calatrava, Structural Sketches (1989-94)

Also, biomimesis, i.e. imitation of nature, has existed for centuries in the fields of painting, sculpture, architecture, and medicine; It is an undeniable fact that nature and imitation have been an ongoing design tool throughout the history of architecture.

Similarly, in the book "Architecture 2000 Predictions and Methods" published by Charles Jenks in 1971, he suggested that the concept of biomorphism would be effective under the influence of biological engineering at the end of the 20th century when discussing architectural concepts. Jenks predicted that the "Biomorph Movement" will be influential in the world of architecture after 1980 in his tableau, which explores the evolution and trends of architecture until the 2000s, which is currently manifesting itself in architecture, interior design and other fields.



Image 6.

Confirming Walter Russell's idea "All motions are curves (curves) and all curves are spirals" (Image 6) bionic designs can be said to adopt a productive process that mimics nature's evolutionary approach, instead of designing finished objects using artificial intelligence. (Image 7; 8; 9).



Image 7.



Image 8.



Image 9.

Therefore, today's technology opens the doors of a new era by bringing digital worlds and artificial intelligence (AI) technologies together. It is possible to see the design of lighting elements and furniture in the interiors by referring to the creativity of AI in the following pictures (Image 10; 11; 12).

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Image 10.



Image 11.



Image 12.

Using natural flowers and soft oval lines, the interiors designed and presented by AI bring a new breath to the world of design with their unique color shades. Currently, designers present different designs to customers using AI creativity (Image 13; 14; 15; 16; 17; 17a).



Image 13.



Image 14.



Image 15.



Image 16.



Image 17. Image 17a. Imagine an AI designing a palace in Morocco.



Prepared by : vinh. qp

In Bionics classes, there are students who apply to AI in the tasks given during the training hours. There are also students who don't like the facade and interior designs obtained by guiding the AI with their

Examples of hand-drawn architecture and interiors using bionic shapes:

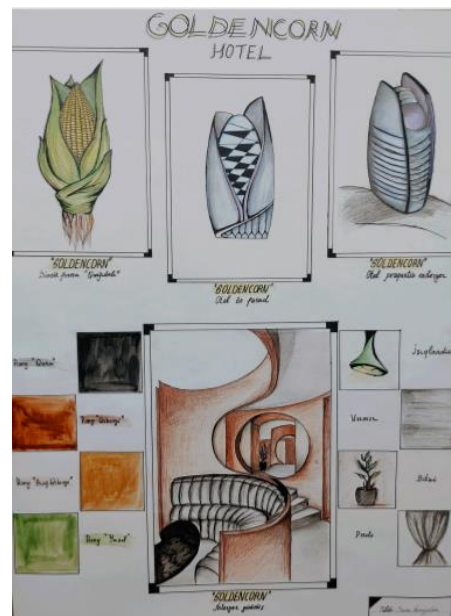


Image 19.

Designs that were hand-drawn by searching for bionic forms and then created using computer-aided design programs:

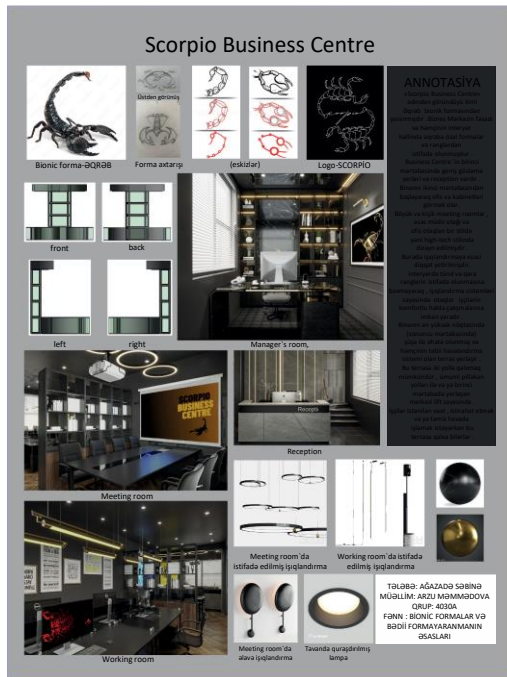


Image 20.



Image 21.



Image 22.



Image 23.



Image 24.

Architecture and interior structures designed using AI:

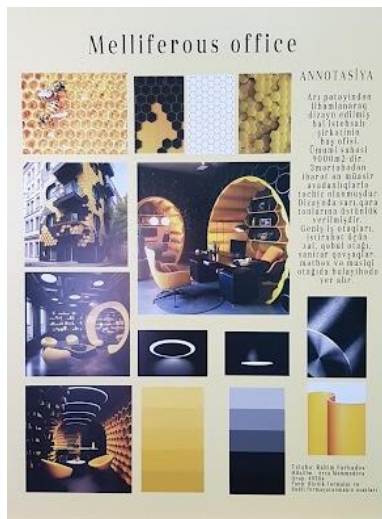


Image 25.



Image 26.



Image 27.

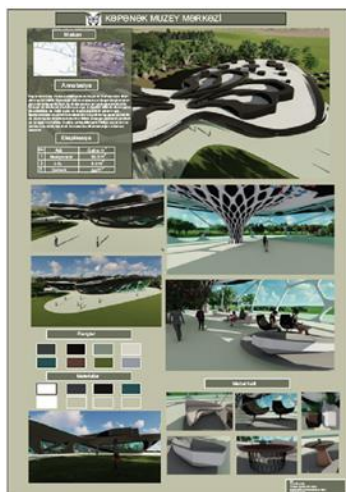


Image 28.



Image 29.



Image 30.



Image 31.



Image 32.



Image 33.



Image 34.



Image 35.



Image 36.

CONCLUSION

As a result of interactive observations conducted in several different groups during the year, it can be seen that artificial intelligence is used on the eve of university education. Although the students' manual ability is an important criterion, as a result, students who use AI together with their ability show more interest in the lesson and interest in design. However, the architectural design enabled by some platforms, and any design in general, is related to the interface and functionality enabled by that platform, depending on the result that a student using AI platforms interacts with text-based commands wants to visualize.

There are those who do not want to apply to AI or those who do not like the designs proposed by AI and use their own creativity, and there are also students who work with AI and present interesting visual creativity. The latter have more time to adapt to the world of work, using the more creative aspects of technology. Both computer knowledge and the use of AI make it easier for modern youth to find a job in the business world. As a result, since this situation is inevitable, the evaluation criteria should be re-examined by the relevant institutions as soon as possible and a joint decision should be made and the students and teaching staff should be supported to progress successfully on this path. Now, the virtual world, artificial intelligence, is not just a game, but also a new form of life.

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9. Image 6. <https://21stcenturyalchemy.medium.com/open-secrets-hermeticism-music-and-life-itself-ccb8e5365bd9>
10. Image 7-9. https://www.instagram.com/architectedaily_/p/CzgxjusMPuP/?img_index=1

MULTIPLE PREGNANCY: PERINATAL OUTCOMES

Ulviyya Siracli

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ABSTRACT

Aim - to identify features of the course of pregnancy and childbirth in women with multiple pregnancies who became pregnant independently and with the help of assisted reproductive technologies (ART).

Materials and methods. A retrospective analysis of 25 birth histories of women with multiple pregnancies was carried out. Depending on the method of achieving multiple pregnancy, women were divided into two groups: Group 1 – 17 (68%) women with pregnancy achieved using assisted reproductive technologies (IVF), Group 2 – 8 (32%) women with spontaneous pregnancy.

Results. The average age of pregnant women was 32 years (± 0.65 years). When analyzing the parity of births, it was revealed that 75% of women with pregnancy after IVF were expecting their first birth, and 25% were expecting a second birth. Among women with spontaneous pregnancy, first births occur in 45% of women, second births in 50%, third births in 5%. The structure of the causes of infertility in our study was dominated by uterine fibroids and fallopian tube pathology. The range of diseases of the genitourinary system was wider in the IVF group (group 1),

Here prevailed: vaginitis, uterine fibroids, endometriosis which are the more common cause of long-term infertility and miscarriage. During pregnancy, 70% of women after IVF developed complications such as preeclampsia, and 55% developed anemia. It should be noted that 25% of women from this group experienced premature abruption of a normally located placenta, and in 15% the pregnancy was complicated by bleeding, which required hospitalization at various stages of pregnancy. In women with spontaneous pregnancy, among all complications, the first place was anemia and the threat of miscarriage (70% each), the second was colpitis (60%), and the third was the threat of premature birth (55%). The proportion of spontaneous births in the groups was 5% (group 1) and 15% (group 2), respectively.

Conclusion. In the first group, 75% of women were primiparous, 65% of them were aged, in the second 45% were primiparous, 15% were aged, so the women already had concomitant genital and extragenital pathology. The frequency of premature births in group 1 was 2 times higher than in group 2; delivery by cesarean section in group 1 was 95% (emergency surgery - 40%), in the second - 75% (emergency surgery - 25). % of cases). The volume of blood loss in both groups did not exceed the permissible norm.

Key words: pregnancy, women, reproductive, spontaneous.

**UTILISING HORSES: THE IMPACT OF HIPPO THERAPY ON CHILDREN WITH
AUTISM**

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ABSTRACT

The effects of hippo therapy on children with Autism Spectrum Disorder (ASD) have been examined. It has been found that hippo therapy plays a significant role in improving children's social, communicative, and motor skills. The rhythmic movements of horses help children better understand the world around them and participate more effectively in daily activities by enhancing sensory integration and motor planning. Research indicates that hippo therapy improves social skills in autistic children, such as making eye contact, initiating social interactions, and giving emotional responses (Bass, Duchowny, and Llabre, 2009).

Furthermore, significant improvements in language and communication skills have been observed, with children showing expanded vocabulary and increased frequency of initiating communication (Macauley and Gutierrez, 2004). In terms of motor skills, hippo therapy sessions have been found to improve children's balance, coordination, and overall motor functions (Ajzenman, Standeven, and Shurtleff, 2013). An effective hippo therapy program should be designed and implemented with comprehensive and individualized approaches. These programs should be tailored to the specific needs of each child and supported by cooperation among therapists, horses, and families. It has been concluded that hippo therapy is a powerful tool in enhancing the quality of life for children with autism.

Keywords: Hippo therapy, Autism Spectrum Disorder, Therapeutic Riding, Sensory Integration.

INTRODUCTION

Hippo therapy, a therapeutic intervention using horses, is an effective approach for treating various neurological and physical disorders, including Autism Spectrum Disorder (ASD). This therapy method leverages the rhythmic and repetitive movements of horses to enhance individuals' physical, emotional, and social skills. Modern applications of hippo therapy were developed in the 1960s in Germany and Switzerland, where it has been systematically used in the rehabilitation of individuals with neurological and physical disorders (Koca & Ataseven, 2015).

Autism Spectrum Disorder is a neurodevelopmental disorder characterized by difficulties in social communication and interaction, along with restricted and repetitive behaviors, interests, and activities. ASD manifests early in life, typically before the age of three (American Psychiatric Association, 2013). The effects of ASD vary depending on the individual's developmental stage, the severity of symptoms, and the effectiveness of interventions.

HIPPO THERAPY

Hippo therapy is a therapeutic intervention method that utilizes horses. This method aims to promote physical, emotional, and mental healing by taking advantage of the movements of horses. In hippo therapy, trained therapists and therapeutic riding specialists develop and implement customized programs based on the patients' needs.

Hippo therapy is derived from the Greek words "hippos" (horse) and "therapy," meaning therapy with horses. Historically, the positive effects of horses on humans have been known since ancient times. However, modern applications of hippo therapy were developed in the 1960s in Germany and Switzerland. In these countries, the positive effects of using horses in the rehabilitation of individuals with neurological and physical disorders have been systematically researched and documented (Koca & Ataseven, 2015).

Common Uses and Therapeutic Goals of Hippo therapy

Hippo therapy is used in the treatment of various neurological, physical, emotional, and developmental disorders. This therapeutic method is particularly widely used in the following conditions:

- I. Autism Spectrum Disorder (ASD): Hippo therapy is effective in improving social skills, communication abilities, and sensory integration in children with autism (Ajzenman, Standeven, & Shurtleff, 2013).

- II. Cerebral Palsy: Hippotherapy helps improve motor control and balance in individuals with this disorder (Georgieva & Ivanova, 2020).
- III. Multiple Sclerosis (MS): Hippotherapy can enhance muscle strength, coordination, and overall quality of life (Zečević, 2018).
- IV. Traumatic Brain Injury and Stroke: During the rehabilitation process, hippotherapy supports neuroplasticity and improves motor functions (Rezapour-Nasrabad & Tayyar-Iravanlou, 2022).
- V. Emotional and Behavioral Disorders: For individuals experiencing depression, anxiety, and other emotional issues, hippotherapy boosts self-confidence and supports emotional regulation (Czelej et al., 2023).

The therapeutic goals of hippotherapy can vary based on the specific needs of the patient. Generally, these goals include:

Improvement of Motor Skills: Enhancing balance, coordination, and muscle strength.

Development of Social Skills: Encouraging communication, social interaction, and group dynamics.

Support for Sensory Integration: Developing appropriate responses to sensory inputs. Promotion of

Emotional Regulation: Reducing stress and anxiety, and increasing self-confidence.

AUTISM

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by difficulties in social communication and interaction, along with restricted and repetitive behaviors, interests, and activities. ASD manifests early in life, typically before the age of three (American Psychiatric Association, 2013).

Autism is referred to as a "spectrum" because it encompasses a wide range of symptoms and levels of severity. The diagnosis of ASD is based on the criteria outlined in the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition). DSM-5 evaluates ASD through two main areas: 1-Persistent deficits in social communication and social interaction

2-Restricted, repetitive patterns of behavior, interests, or activities

The diagnostic process usually involves a multidisciplinary approach, utilizing clinical observations, parent and teacher reports, developmental history, and standardized assessment tools (Lord, Risi, Lambrecht, Cook, Leventhal, DiLavore, Pickles & Rutter, 2000).

The effects of Autism Spectrum Disorder on children are highly variable and depend on the individual's developmental stage, the severity of the symptoms, and the effectiveness of interventions. Some common effects of ASD on children include:

Social Communication and Interaction Difficulties: Children with autism often struggle with making eye contact, understanding facial expressions, and interpreting social cues (Baron-Cohen, 2000). These children may find it challenging to establish and maintain peer relationships, leading to social isolation and loneliness (Howlin, Goode, Hutton & Rutter, 2004).

Delays in Language and Communication Development: Many children with autism experience delays in the development of spoken language, and some may never develop speech (Tager-Flusberg, Paul & Lord, 2005). Communication difficulties can manifest as echolalia (repeating words or phrases) or speaking in a monotonous tone.

Behavioral Challenges and Repetitive Behaviors: Children with autism often adhere to specific routines and rituals and may react strongly to changes in these routines (Leekam, Prior & Uljarevic, 2011). Repetitive behaviors can include hand-flapping, intense interest in spinning objects, and arranging items in a specific order.

Sensory Sensitivities: Children with ASD may be overly sensitive to sensory inputs or, conversely, may show little response to sensory stimuli (Ben-Sasson, Hen, Fluss, Cermak, Engel-Yeger & Gal, 2009). These sensory sensitivities can range from the clothes they wear to the sounds they hear.

Academic and Developmental Challenges: Children with ASD may face difficulties with academic skills such as reading, writing, and mathematics (Estes, Rivera, Bryan, Cali & Dawson, 2011). Developmentally, some children may show advanced abilities in certain areas (e.g., music or mathematics) while experiencing significant delays in others.

Impact on Family and Community: The care and education of children with ASD can place a significant emotional and economic burden on families (Karst & Van Hecke, 2012). Family dynamics can be greatly affected as they adapt to the needs of a child with ASD

THE USE OF HIPPO THERAPY IN CHILDREN WITH AUTISM

Hippotherapy is a specialized treatment method that provides various therapeutic benefits for children with Autism Spectrum Disorder (ASD). By utilizing the rhythmic and repetitive movements of horses, hippotherapy helps improve physical, emotional, and social skills. The movement of the horse provides direct stimulation to the vestibular (balance), proprioceptive (body awareness), and tactile (touch) systems. These stimulations enhance sensory integration and motor planning in children with autism (Ajzenman, Standeven, & Shurtleff, 2013).

Hippotherapy can help autistic children regulate their responses to sensory inputs, which allows them to better understand their surroundings and participate more effectively in daily activities. Additionally, during hippotherapy sessions, children have the opportunity to develop social skills by interacting with horses and therapists (Georgieva & Ivanova, 2020).

Hippotherapy can facilitate significant progress in various areas for children with autism, including social skills, communication abilities, and motor skills.

Hippotherapy plays an important role in enhancing social interactions in children with autism. Interactions with horses and therapists help children understand social cues and respond appropriately. During hippotherapy sessions, children learn to follow the instructions of the therapist and the horse, which improves their attention span and social cooperation skills (Koca & Ataseven, 2015).

A study examining the impact of hippotherapy on the social communication skills of autistic children found that children made more eye contact, initiated more social interactions, and displayed more emotional responses (Bass, Duchowny, & Llabre, 2009). Hippotherapy encourages children to be more active in group interactions and participate in social games.

Children with autism often face challenges in language and communication development. Hippotherapy can help overcome these difficulties. During hippotherapy sessions, children need to communicate to follow the movements of the horse and the therapist's instructions. This helps develop both verbal and non-verbal communication skills (Macauley & Gutierrez, 2004).

Research has shown that hippotherapy expands vocabulary and increases the frequency of initiating communication in children with autism. The natural interaction with the horse during sessions supports language development (Ward, Whalon, Rusnak, Wendell, & Paschall, 2013).

Hippotherapy is highly effective in improving motor skills in children with autism. The rhythmic and repetitive movements of the horse enhance balance, coordination, and muscle tone. Maintaining balance and moving on the horse helps strengthen core muscles and improve overall postural control (Benda, McGibbon, & Grant, 2003).

A pilot study examining the effects of hippotherapy on motor control and adaptive behaviors found significant improvements in motor functions. The study revealed that hippotherapy led to improvements in both gross motor skills (walking, running, jumping) and fine motor skills (writing, grasping objects) (Ajzenman, Standeven, & Shurtleff, 2013). Additionally, during hippotherapy sessions, children must coordinate their bodies to adapt to the movements of the horse. This increases proprioceptive awareness and enhances motor planning abilities (Bass, Duchowny, & Llabre, 2009). Through hippotherapy, children can move more independently and become more effective in daily life activities.

Improvement in Motor Skills: In a pilot study conducted by Ajzenman, Standeven, and Shurtleff (2013), the effects of hippotherapy on motor control and adaptive behaviors were examined. The study found that hippotherapy improved motor functions and participation in children with Autism Spectrum Disorder (ASD). After a 12-week hippotherapy program, children showed significant improvements in balance, coordination, and overall motor skills (Ajzenman, Standeven, & Shurtleff, 2013).

Development in Social Skills: Bass, Duchowny, and Llabre (2009) investigated the effects of hippotherapy on the social functioning of children with autism. The study demonstrated that hippotherapy enhanced children's social skills and increased social interactions. Children showed improvements in areas such as making eye contact, initiating social interactions, and displaying emotional responses (Bass, Duchowny, & Llabre, 2009).

Improvement in Communication Skills: Macauley and Gutierrez (2004) examined the effects of hippotherapy on language and communication skills. The study showed that hippotherapy expanded the vocabulary of children with autism and increased the frequency of initiating communication. During hippotherapy sessions, children had the opportunity to communicate more naturally (Macauley & Gutierrez, 2004).

PROGRAM DESIGN AND IMPLEMENTATION

An effective hippotherapy program should be designed to meet the needs of children with Autism Spectrum Disorder (ASD) through comprehensive and individualized approaches. Each child should undergo a thorough evaluation before starting therapeutic intervention. This evaluation helps identify the child's physical, emotional, social, and communication needs. Based on the evaluation results, specific goals are set for each child (Shurtleff, Standeven, & Engsberg, 2009). Hippotherapy sessions should be conducted by trained and experienced therapists and therapeutic riding specialists. These professionals must have the necessary knowledge and skills to ensure the safety of the children and achieve therapeutic goals (Macauley & Gutierrez, 2004).

Hippotherapy sessions should be structured and planned according to the child's needs. Each session should include specific activities and exercises aimed at achieving the set goals. Sessions typically last between 30-60 minutes and should be held at least once a week (Gabriels, Pan, Dechant, Agnew, Brim, & Mesibov, 2012). Individualized intervention plans should be created for each child. These plans should consider the child's specific needs and goals. Individualized plans aim to develop the child's strengths while addressing weaknesses (Bass, Duchowny, & Llabre, 2009).

Terapötik amaçlarla kullanılan atlar, uygun davranış ve hareket özelliklerine sahip olmalıdır. Bu atlar, terapötik müdahalelerde kullanılmadan önce özel eğitimden geçirilmelidir. Atların sakin, güvenilir ve duyarlı olmaları, başarılı bir hipoterapi programının anahtarıdır (Bertoti, 1988).

Horses used for therapeutic purposes must have appropriate behavior and movement characteristics. These horses should undergo special training before being used in therapeutic interventions. Calm, reliable, and responsive horses are key to a successful hippotherapy program (Bertoti, 1988). The progress of the child should be regularly monitored and evaluated throughout the hippotherapy program. These evaluations are crucial to determine whether therapeutic goals are being met. If necessary, adjustments should be made to the program (Rigby, Grandjean, Feldman, & Giangreco, 1989).

Programs should include activities designed to improve children's motor skills. Exercises such as maintaining balance on the horse, increasing muscle tone, and enhancing coordination improve overall motor functions (Benda, McGibbon, & Grant, 2003). Therapists should regularly evaluate children's performance during and after sessions. These evaluations allow for necessary adjustments to enhance the effectiveness of the program. Regular feedback exchange between therapists and families increases the program's success (Rigby, Grandjean, Feldman, & Giangreco, 1989).

CONCLUSION AND RECOMMENDATIONS

Hippotherapy is an effective therapeutic method that provides significant benefits for children with Autism Spectrum Disorder (ASD). Hippotherapy enhances children's social, communicative, and motor skills, supports sensory integration, and improves emotional regulation. This therapeutic approach helps children better adapt to daily life activities and improves their overall quality of life. To promote the benefits of hippotherapy to a wider audience and raise awareness, more research should be conducted and educational programs should be organized. Universities and medical institutions should conduct more research in the field of hippotherapy and increase the evidence supporting the effectiveness of this treatment method.

The training and certification of professionals conducting hippotherapy sessions should be enhanced. Therapists and therapeutic riding specialists should receive specialized training in this field and continue their professional development. Families should be actively involved in the hippotherapy process. Their participation ensures the continuity of therapeutic activities at home and increases the overall success of the treatment. Families should be educated about the benefits of hippotherapy and what to expect during sessions.

It is important to financially support and increase the accessibility of hippotherapy services. Health insurance and government support should cover the costs of hippotherapy sessions, enabling more children to benefit from this treatment. The effectiveness of hippotherapy programs should be regularly evaluated. Therapists should monitor children's progress and adjust programs as necessary. Continuous development of programs ensures the achievement of therapeutic goals and maximizes the benefits for children. These recommendations will enhance the positive effects of hippotherapy on children with autism and improve their quality of life.

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**REAL TIME PARKING SPACE DETECTION SYSTEM USING IMAGE PROCESSING
TECHNIQUES**

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ABSTRACT

Technology has had a positive impact on our daily lives, enabling us to control our environment and access information faster. Parking detection systems are one of the automated control systems used to monitor the occupancy of parking lots. They help to optimize parking areas, provide information for decision-making and guide drivers to empty parking spots.

This paper presents an algorithm includes image processing to analyze real-time video feeds from parking lots or streets. Image processing steps include noise reduction with Gaussian blurring, median filtering and thresholding to extract relevant features and enhance the quality of input images. Morphological operations such as dilation are then applied to refine the detected contours using OpenCV.

The developed algorithm is compared with a car detection system that uses Google's TensorFlow technology and a CNN machine learning classifier, which involves a pre-trained model on parking lot images. The systems have been tested with a real-world parking lot video stream containing 679 frames. Two methods were compared on a selected parking space in the parking lot. As a result, the success rate of the system using Google's TensorFlow is 88.51% out of 601/679 frames and the success rate of the proposed system is 99.85% out of 678/679 frames.

Moreover, the system utilizing image processing was tested standalone with the same parking lot video stream. As a result, 67 out of 69 parking spaces in the parking lot were classified successfully. The error rate is 0.88% out of 6/679 frames.

Overall, this paper contributes to the advancement of intelligent parking systems by providing a scalable and reliable solution for real-time parking space detection using image processing techniques.

Keywords: parking lots, empty park space, car detection, image processing, image filtering.

**“THE STRUCTURE OF HIGHER EDUCATION INSTITUTIONS MARKET AND ITS
ADAPTATION TO THE EU ACCESSION: A COMPARATIVE EMPIRICAL STUDY FOR
WESTERN BALKANS”**

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ABSTRACT

The primary goal of this study is to examine the market structure for higher education institutions and how it has changed as a result of Western Balkan nations' EU membership. There are many higher education institutions that provide the related services to students, and competition policy is becoming increasingly important with the EU-specific legislation serving as a guide. In addition, this study will determine whether higher education institutions in the area are able to comply with EU laws and regulations. The study conducted a survey involving 28 higher education institutions in the region to gain insights into their perspectives on competition policy within the industry. The survey aimed to assess the importance these institutions place on competition policy, their level of preparedness and anticipated progress, and to identify the factors influencing their performance, including challenges they have encountered. The overall results show that there are still many challenges the countries must face in order to establish a sufficient level of competition, which will undoubtedly help them join the EU integration process. Competition in higher education institutions is still evolving in these countries. The WBs will have the power to adopt their laws and regulations in the higher education sector if they take the lead from the EU nations. Enhancing the effectiveness of the current higher education institutions could be a good strategy for the market's adaptation to EU competitiveness. The appropriate question in this situation would be how to maximize the service provided to students in the higher education facilities that are already available while also establishing more reasonable and equitable tuition fees in the future.

Keywords: *Higher education institutions market, EU accession, Monopolistic competition, Western Balkans, Comparative study.*

1. INTRODUCTION

By conducting a comparative study based on a survey, this paper contributes novelty to the body of prior research on the market for higher education institutions by reflecting recent WB changes in this area. With relation to the higher education sector, the goal is to close the gap by performing quantitative research that examines the effectiveness of applying competition policy and how it has been modified to reflect the region's EU admission.

The survey conducted highlights the originality of the article, as the analysis of higher education institutions' market and its adjustment to EU accession in Western Balkan countries is an unexplored topic in this context. While there is existing research on this subject for EU member states, there are no empirical papers published specifically for the Western Balkans. This study assesses the ability of institutions to adhere to the regulations set forth by EU law in the area of higher education by looking at elements including the cost of tuition, the accessibility of study options, and the degree of corruption. The remainder of the paper continues by looking at the market for higher education institutions, performing a survey for an empirical market comparison analysis, and concluding with conclusions and suggestions for growing and adapting the market to the EU entrance.

2. The structure of higher education institutions market

Human capital is one of the forces driving economic growth at the social, local, and personal levels. "A cohort characterized by high levels of education, motivation, and commitment has been a primary driver of economic advancement in both developed and developing nations" (Balkyte and Tvaronavičiene, 2010, p. 349). As noted by Schofer and Meyer (2005), higher education plays a pivotal role in human development and serves as a catalyst for societal transformation, empowering "students to actively engage as catalysts for change within their future professional and societal environments." The internal market's efficiency as well as the growth and protection of competition are of particular relevance

because Western Balkan countries are attempting to join the EU (Dutz and Vagliasindi, 2002). These countries established competition authorities after the 2000s, and they continue to experience a wide range of issues (Asllani, 2016). In their papers, many researchers (Kovaleva et al., 2015) suggest ways to make the higher education system more competitive, including greater transparency (Van der Wende, 2000), as well as methods for measuring the competitiveness of higher education (Kabók et al., 2013; Stonkiene et al., 2016). The first step in using these accomplishments to increase the nation's global competitiveness is to provide competitive higher education. Sekuloska (2014) discovers a notably strong positive correlation between the quality of the educational system and competitiveness, particularly evident in advanced European Union countries. In his study on the impact of higher education on the Middle Eastern and European Union countries' levels of global competitiveness, Keser (2015) underlines that nations that place a high value on higher education also have high levels of competitiveness. Lane (2012) highlights that "higher education becomes increasingly crucial as countries evolve into more sophisticated economic stages."

There are many buyers (students) and sellers (higher education institutions) in the market, so the type of competition is monopolistic competitive. Table 1 provides information about the number of competitors in the market for higher education institutions and the degree of competition in all WBs is large. The institutions functioning in this market in all WBs are public, and privately owned businesses (for-profit, non-profit) that provide good service as well. Each higher education institution has a unique significance, but there is no information available about the institutions' market share percentages. On the website for trade economics,

<https://www.weforum.org/reports/the-global-competitiveness-report-2020/>,

a national competitiveness index for each nation is available along with a date produced by the World Economic Forum. There was no clear information regarding price setting in the relevant market; it was just indicated that prices continued to rise despite the COVID-19 pandemic.

In each country of WBs, competition authorities are responsible for providing competition and preventing violations in higher education market. Regarding Albania's institutional structure, the ACA is in charge of putting the Law on Protection of Competition into effect. Strictly speaking, it is a parliamentary accountable authority with independent operations. The Agency for Protection of Competition (APC) in Montenegro is in charge of setting the legal framework. Application of the Law on Protection of Competition is the responsibility of the CPC in Macedonia, the Commission for Protection of Competition in Serbia, the Council of Competition in Bosnia and Herzegovina, and the Competition Authority of Kosovo in Kosovo. (Report of the European Commission, 2018) Competition agencies are crucial for higher education market because they can impose penalties and other remedies when competition laws are broken.

Table 1. Higher education institutions market structure in WBs

WBs	Nr. of competitors in the related market	Type of ownership	Competition degree/ratio	National competitiveness Index/score/rank	Adapting to EU competition law in the market	Regulatory actor and competition agency in the related market
ALBANIA	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	57.61 points in 2019 ¹	NA	ACA – Albania Competition Authority ²

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MACEDONIA	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	57.33 points in 2019 ³	No progress	CPC – Commission for Protection of Competition ⁴
MONTENEGRO	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	60.82 Points in 2019 ⁵	Some progress	APC – Agency for Protection of Competition ⁶
SERBIA	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	60.85 points in 2019 ⁷	Some progress	CPC – Commission for Protection of Competition ⁸
BOSNIA AND HERZEGOVINA	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	54.73 points in 2019 ⁹	NA	Council of Competition ¹⁰
KOSOVO	Large nr. of higher education institutions	Public and private (for-profit, non-profit) institutions	Monopolistic competitive	-	Some progress	Competition Authority ¹¹

1 Source: (Albania Competitiveness Index 2019)

https://neighbourhoodenlargement.ec.europa.eu/system/files/2020-10/albania_report_2020.pdf

2 Source: (Albania report 2020)

https://neighbourhoodenlargement.ec.europa.eu/system/files/2020-10/albania_report_2020.pdf

3 Source: (Macedonia Competitiveness Index 2019, 2021)

https://neighbourhoodenlargement.ec.europa.eu/system/files/2020-10/north_macedonia_report_2020.pdf

4 Source: (North Macedonia Report 2020) https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/north_macedonia_report_2020.pdf

5 Source: (Montenegro competitive index 2019) https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/montenegro_report_2020.pdf

6 Source: (Montenegro Report 2020) https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/montenegro_report_2020.pdf

7 Source: (Serbia competitiveness index 2019)

https://neighbourhoodenlargement.ec.europa.eu/system/files/2020-10/serbia_report_2020.pdf

8 Source: (Serbia Report 2020) https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/serbia_report_2020.pdf

9 Source: (Bosnia and Herzegovina competitiveness index) https://ec.europa.eu/neighbourhood-enlargement/system/files/2020-10/bosnia_and_herzegovina_report_2020.pdf

10 Source: (Bosnia and Herzegovina Report 2020) https://ec.europa.eu/neighbourhood-enlargement/system/files/2020-10/bosnia_and_herzegovina_report_2020.pdf

11 Source: (Kosovo report 2020) https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/kosovo_report_2020.pdf

3. Conducting a Survey and Analysis of the Results

3.1. Data gathering and conducting survey

This paper's primary objective is to assess if higher education institutions in the WBs are capable of adapting to EU rules and regulations. A survey regarding several aspects of the higher education sector was conducted to investigate this assumption. The survey was answered by 28 higher education institutions, and their responses are essential for this study's uniqueness. The survey is in the format of a Google Form, and its data is analyzed using the software SPSS 26.

3.2. Methodology

A detailed descriptive analysis was conducted using measures such as mean, standard deviation, minimum, maximum, frequency, and percentage to provide a more precise tabular and graphical representation of the survey findings. Additionally, two tests were performed to compare variables within the questionnaire:

- The T test was utilized to ascertain significant differences in means between independent groups, such as the type of ownership of higher education institutions.
- The ANOVA test was employed to evaluate whether there were statistically significant differences among three or more groups of an independent variable (e.g., states, experiences) concerning a dependent variable (adoption of EU laws and regulations).

3.3 Analysis and results

The analysis and results were initially documented in an Excel file and later imported into the SPSS application. The outcome of the analysis comprises figures generated in Excel and tables generated in SPSS, with detailed descriptions of the findings provided alongside each representation.

Table 2. Where is the location of your higher education institution?

	Frequency	Percentage
Albania	9	32.1
Kosovo	7	25.0
Montenegro	3	10.7
North Macedonia	6	21.4
Bosnia Herzegovina	3	10.7
Total	28	100.0

There were examined 28 higher education institutions in this study. These higher education institutions belong to Western Balkans countries as follows: Albania 32.1% (n=9), Kosovo 25% (n=7), Montenegro 10.7% (n=3), North Macedonia 21.4% (n=6), and Bosnia Herzegovina 10.7% (n=3).

Figure 1. Where is the location of your higher education institution?

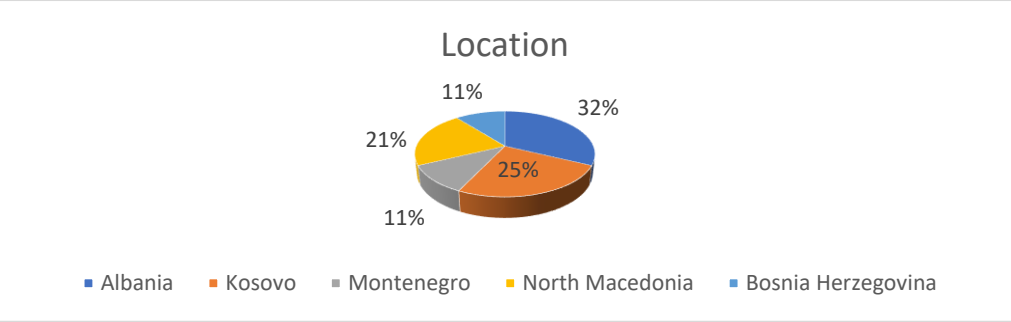


Table 3. How many years has your higher education institution been operating in the market?

	Frequency	Percentage
Less than 5 years	4	14.3
5-10 years	8	28.6
10-20 years	9	32.1
+20 years	7	25.0
Total	28	100.0

Regarding years of experience, the companies with less than 5 years of experience were 10.3% (n=4), 5-10 years 28.6 (n=8), 10-20 32.1% (n=9), and +20 years 25% (n=7).

Figure 2. How many years has your higher education institution been operating in the market?

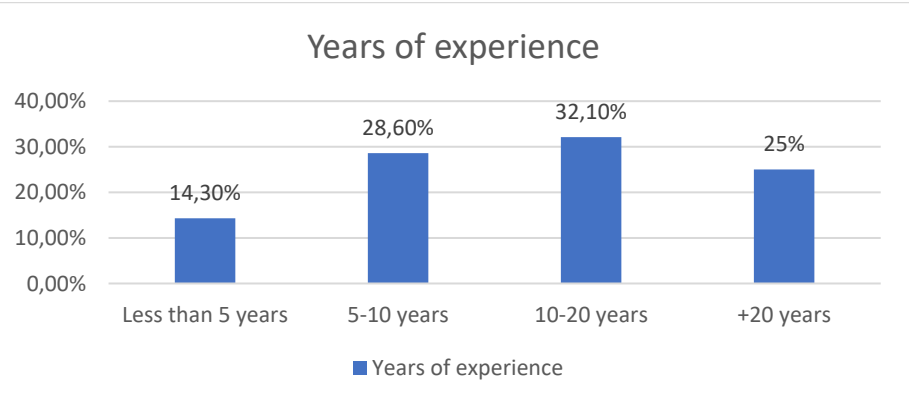


Table 4. What is the type of ownership of your higher education institution?

	Frequency	Percentage
Public	8	28.6
Private (For-profit)	20	71.4
Private (Non-profit)	0	0
Total	28	100.0

Referring the question “What is the type of ownership of your higher education institution?”, findings demonstrate that 28.6% (n=8) of the higher education institutions that answered were public, and 71.4% (n=20) of them were private (for-profit). None of the recorded institutions was private (non-profit).

Figure 3. What is the type of ownership of your higher education institution?

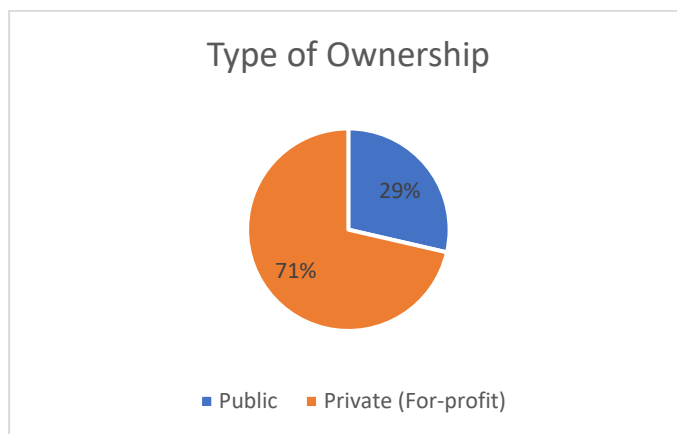


Table 5. How much does the studying tuition fees vary on the capital city of your country?

	Frequency	Percentage
\$0 - \$1000	9	32.1
\$1000 - \$5000	19	67.9
\$5000-\$10000	0	0
+\$10000	0	0
Total	28	100.0

Regarding the tuition fee of higher education institutions in the capital city of the respective country, it is noted that they range from 0-1000\$, and 1000-5000\$.

Figure 4. How much does the studying tuition fees vary on the capital city of your country?

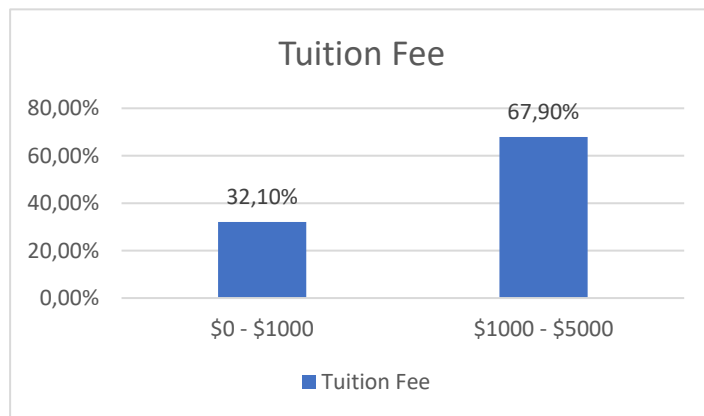


Table 6. Has your higher education institution launched new innovative programs in the last three years?

	Frequency	Percentage
Yes	15	53.6
No	13	46.4
Total	28	100.0

When asked if they had launched new innovative programs in the last three years, 53.6% (n=15) responded “Yes”, and 46.4% (n=13) responded “No”.

Figure 5. Has your higher education institution launched new innovative programs in the last three years?

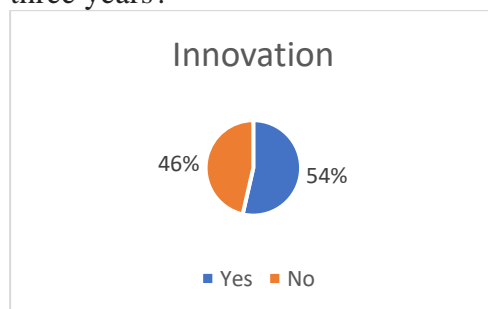


Table 7. What is the language of education in your higher education institution?

	Frequency	Percentage
Official language	24	85.7
English	2	7.1
Both	2	7.1
Total	28	100.0

86% (n=24) of the responding higher education institutions' language is official language, while 7% (n=2) of them responded "English", and 7% (n=2) "Both".

Figure 6. What is the language of education in your higher education institution?

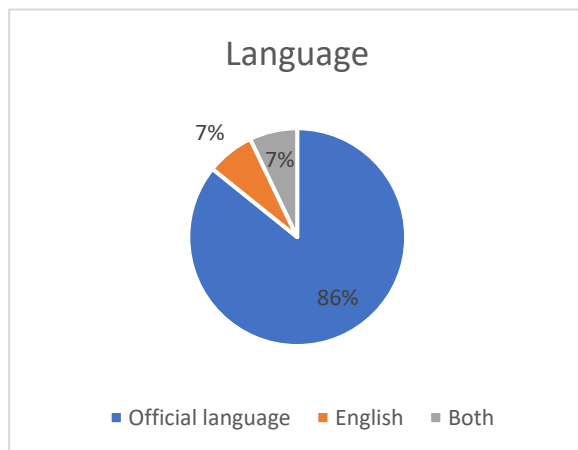


Table 8. Current EU membership status of your base country:

	Frequency	Percentage
Still in discussions	18	64.3
Potential candidate, although there have been no negotiations	10	35.7
Already a member	0	0
At this time, not a candidate	0	0
Total	28	100.0

When asked about the EU membership status, 64.3% (n=18) responded "Still in discussion", and 35.7% (n=10) responded "Potential candidate, although there have been no negotiations".

Figure 7. Current EU membership status of your base country:

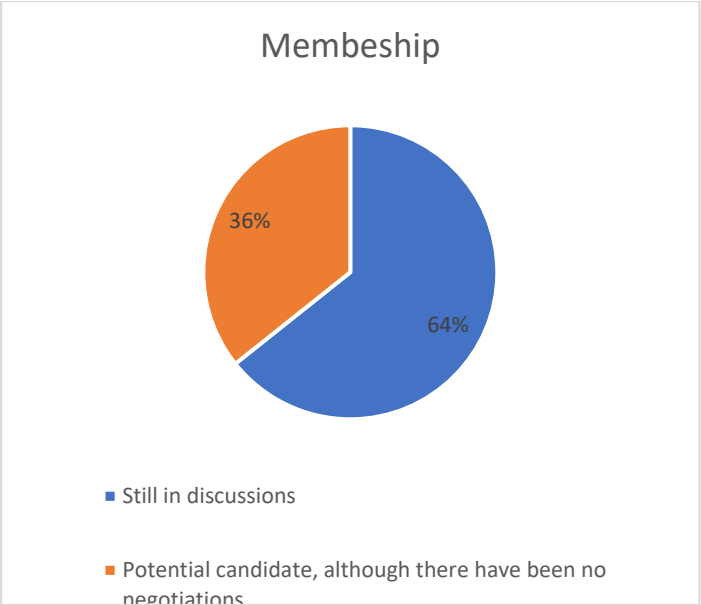


Table 9. In your base country's region, how competitive would you rate the market for higher education institutions before/after discussions with the EU or acceptance?

	Frequency	Percentage
Monopolistic competition	26	92.9
Oligopolistic competition	2	7.1
Perfect competition	0	0
Total	28	100.0

Regarding the competition, almost all of the higher education institutions responded “Monopolistic competition”, while only 7.1% (n=2) of them responded “Oligopolistic” which probably have selected this alternative by mistake. None of the responses was “Perfect competition”.

Figure 8. In your base country's region, how competitive would you rate the market for higher education institutions before/after discussions with the EU or acceptance?

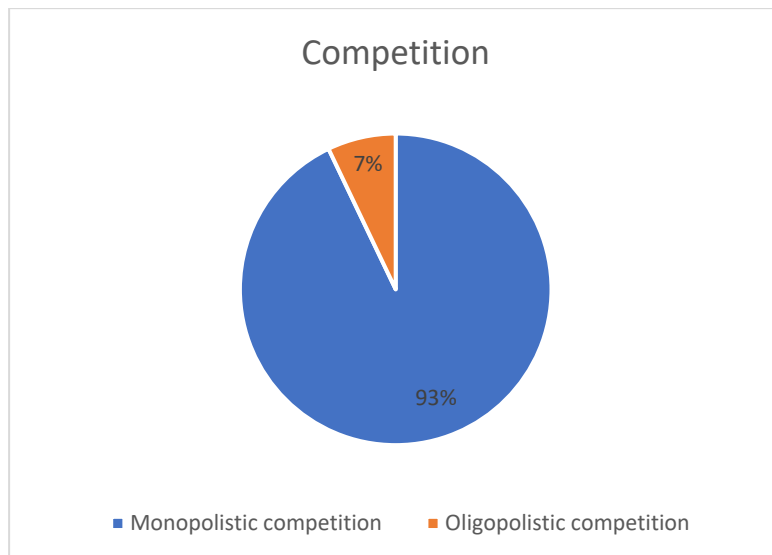
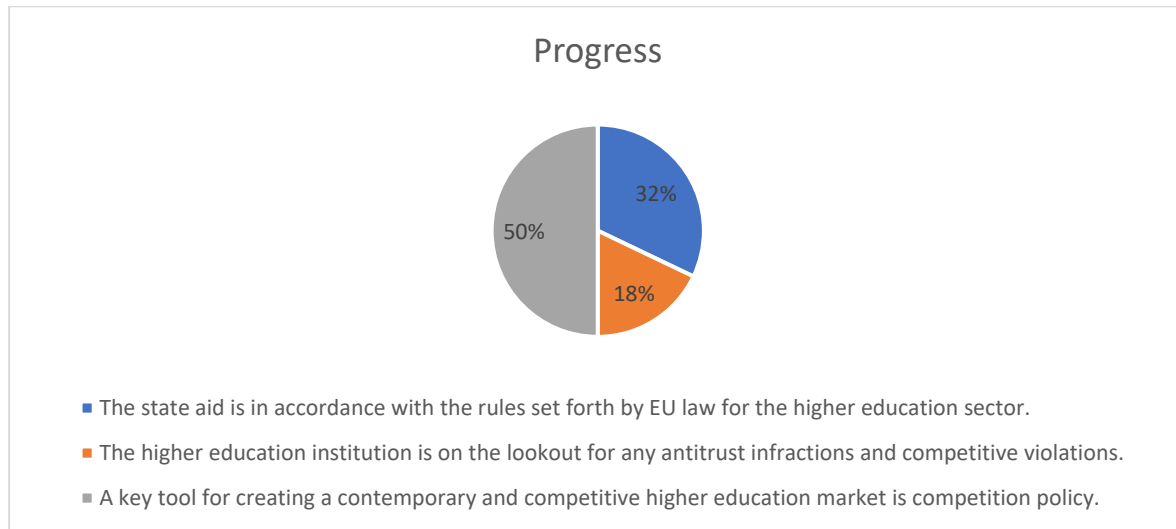


Table 10. Regarding the higher education sector's adaption to EU legal standards, your higher education institution is making some progress.

	Frequency	Percentage
The state aid is in accordance with the rules set forth by EU law for the higher education sector.	9	32.1
The higher education institution is on the lookout for any antitrust infractions and competitive violations.	5	17.9
A key tool for creating a contemporary and competitive higher education market is competition policy.	14	50.0
Total	28	100.0

Regarding the progress of the higher education institution, 32.1% (n=9) responded “The state aid is in accordance with the rules set forth by EU law for the higher education sector”, 17.9% (n=5) The higher education institution is on the lookout for any antitrust infractions and competitive violations, and 50% (n=14) agreed that competition policy is a key tool for creating a contemporary and competitive higher education market.

Figure 9. Regarding the higher education sector's adaption to EU legal standards, your higher education institution is making some progress.



Hypothesis:

H01: Higher education institutions in Western Balkans have the capacity to the adaptation of the EU law and regulations.

Ha1: Higher education institutions in Western Balkans have not enough capacity to the adaptation of the EU law and regulations.

Table 11. Situations or actions that the higher education institution finds challenging:

	Frequency	Percentage
Access to finance	8	28.6
Covid-19 pandemic	16	57.1
The decline in household income	4	14.3
Regulation and legislation	0	0
Total	28	100.0

Regarding the situation which higher education institutions find challenging, "Covid-19" was chosen from 57.1% (n=16), "Access to finance" by 28.6% (n=8), "The decline in household income" by 14.3 (n=4), and "Regulation and legislation" by none of the respondents (n=0).

Figure 10. Situations or actions that the higher education institution finds challenging:

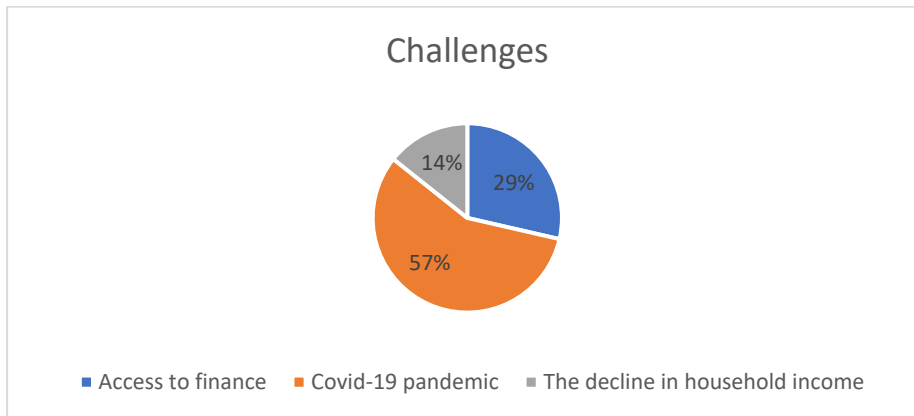


Table 12. Rate how helpful the government and/or municipality of the country where your higher education institution is headquartered are in assisting with EU compliance.

	Frequency	Percentage
Laissez-faire	4	14.3
Optional	1	3.6
Rigorous but minimal	18	64.3
Rigorous yet beneficial	5	17.9
Total	28	100.0

When asked to rate the government assistance, most of the higher education institutions, 64.3% (n=18) responded “Rigorous but minimal”, 17.9% (n=5) “Rigorous yet beneficial”, 14.3 (n=4) “Laissez-faire”, and only 3.6% (n=1) responded “Optional”.

Figure 11. Rate how helpful the government and/or municipality of the country where your higher education institution is headquartered are in assisting with EU compliance.

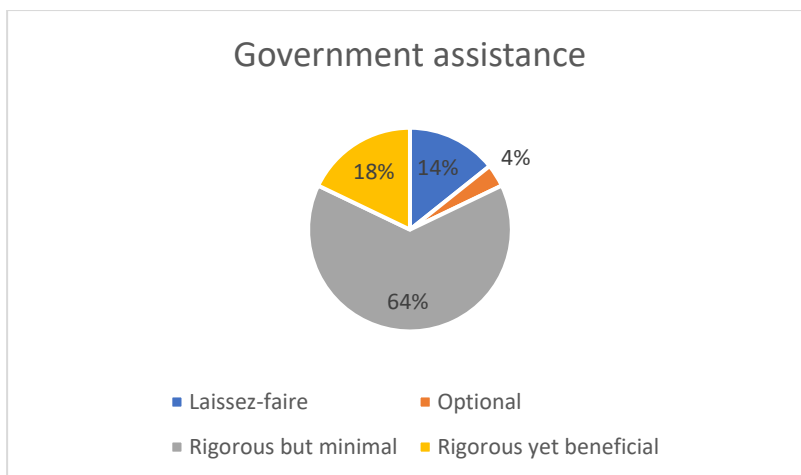


Table 13. Financial factors impacting higher education institutions market:

	Frequency	Percentage
Cost of living	22	78.6
Interest rates	2	7.1
Access to finance or credit	4	14.3
Inflation	0	0
Total	28	100.0

When it comes to the financial factors affecting higher education institutions, 78.6% (n=22) of them chose “Cost of living”, 14.3% (n=4) “Access to finance or credit, 7.1 (n=2) chose “Interest rates”, and none of the respondents chose “Inflation”

Figure 12. Financial factors impacting higher education institutions market:

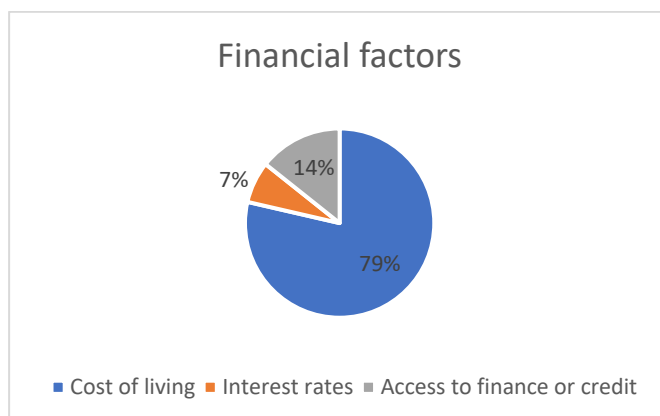


Table 14. How did Covid-19 pandemic affect higher education institutions?

	Frequency	Percentage
Student dropout	10	35.7
Decrease in enrollment	6	21.4
Lack of necessary access to remote teaching and learning	12	42.9
Total	28	100.0

There were several consequences of Covid-19, but based on the responses of the survey, the ones that affected the higher education institutions the most were “Student dropout” 35.7%

(n=10), “Decrease in enrollment” 21.4% (n=6), and “Lack of necessary access to remote teaching and learning” 42.9% (n=12).

Figure 13. How did Covid-19 pandemic affect higher education institutions?

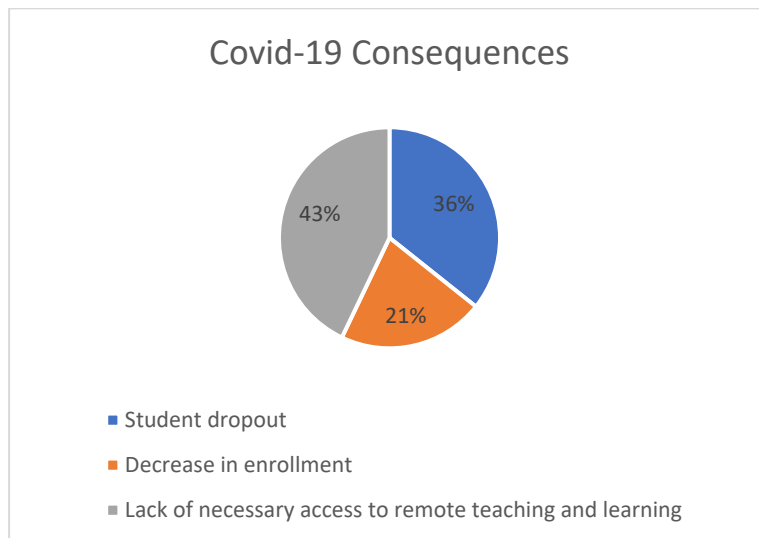


Table 15. Descriptive statistics for the adaptation, membership, and government assistance regarding higher education institutions market in WBs.

	N	Minimum	Maximum	Mean	Std. Deviation
Regarding the higher education sector's adaption to EU legal standards, your higher education institution is making some progress.	28	1.00	3.00	2.1786	.90487
Current EU membership status of your base country	28	2.00	3.00	2.3571	.48795
Rate how helpful the government and/or municipality of the country where your higher education institution is headquartered are in assisting with EU compliance.	28	1.00	4.00	2.8571	.89087

The descriptive data of the questions relating the market adaption of higher education institutions to EU laws and regulations are shown in the table above. The question “Rate how helpful the government and/or municipality of the country where your higher education

institution is headquartered are in assisting with EU compliance.” has the highest average, according to the mean. ($M = 2.8571$, $sd = .89087$) “Regarding the higher education sector's adaption to EU legal standards, your higher education institution is making some progress.” was the query with the lowest average. ($M = 2.1786$, $ds = .90487$) The level of higher education institutions’ adaptation to EU legislation and regulations is inversely correlated with the mean. Conclusion: The alternative hypothesis (H_{a1}) is rejected, and the null hypothesis (H_{o1}) is confirmed. Higher education institutions in the Western Balkans market have the ability to adapt to EU law and regulations.

Figure 14. Descriptive statistics for the adaptation, membership, and government assistance regarding higher education institutions market in WBs.

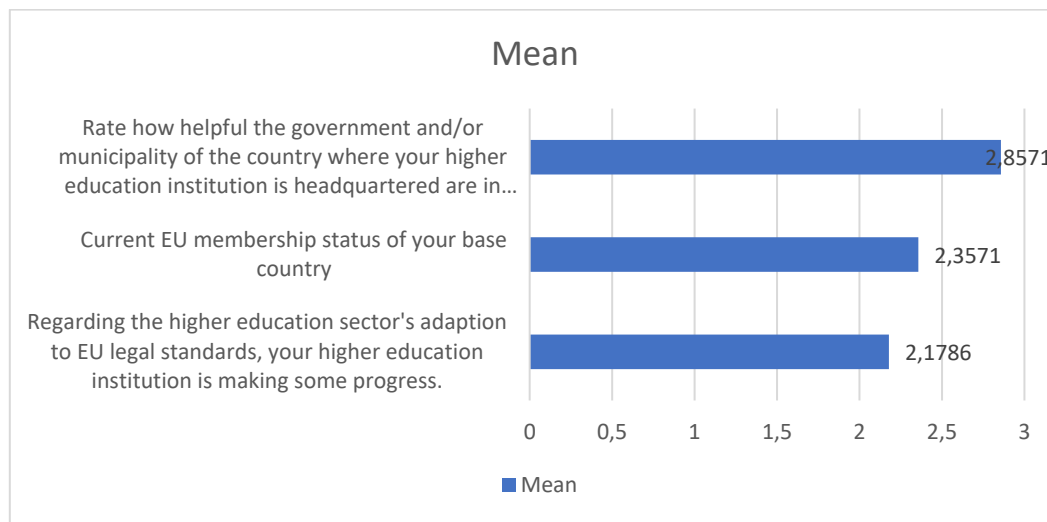


Table 16. ANOVA used to compare how differently each country's higher education industry has generally adapted to EU laws and regulations.

	N	Mean	St deviation	F	P
Albania	9	2.3333	1.00000	1.436	.254
Kosovo	7	1.8571	.89974		
Montenegro	3	2.6667	.57735		
North Macedonia	6	2.5000	.83666		
Bosnia Herzegovina	3	1.3333	.57735		
Total	28	2.1786	.90487		

The purpose of the ANOVA test is to assess potential differences among nations regarding the extent to which their higher education sector has conformed to EU legislation and regulations. As the p-value (significance threshold) exceeds 0.05 ($p > 0.05$), the table above suggests that

there are no statistically significant differences observed among the nations. These findings suggest a consistent adoption rate across all countries.

Figure 15. Mean level of adaptation of higher education sector to the EU law and regulations by countries.

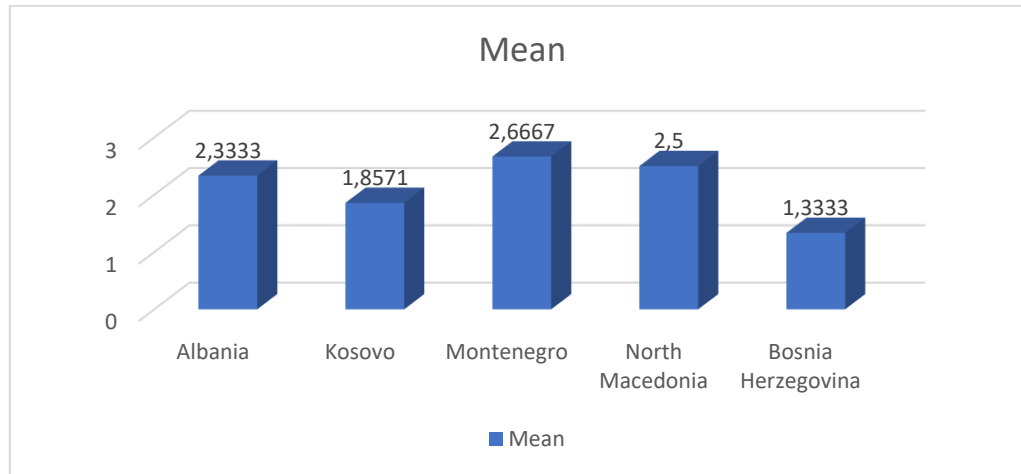


Table 17. ANOVA used to compare the ways in which the higher education institutions years of experience has, on average, affected the adaptation to EU laws and regulations.

	N	Mean	Std. deviation	F	P
Less than 5 years	4	2.0000	.81650	.138	.936
5-10 years	8	2.1250	.99103		
10-20 years	9	2.3333	.86603		
+20 years	7	2.1429	1.06904		
Total	28	2.1786	.90487		

Again, the ANOVA test was performed to assess potential differences in how closely the higher education sector adheres to EU laws and regulations based on the experience period. With a p-value exceeding 0.05, the table above indicates no statistically significant differences ($p > 0.05$). This outcome suggests a consistent level of adaptation across all experience periods.

Figure 16. Mean level of adaptation of higher education sector to the EU law and regulations according to experience.

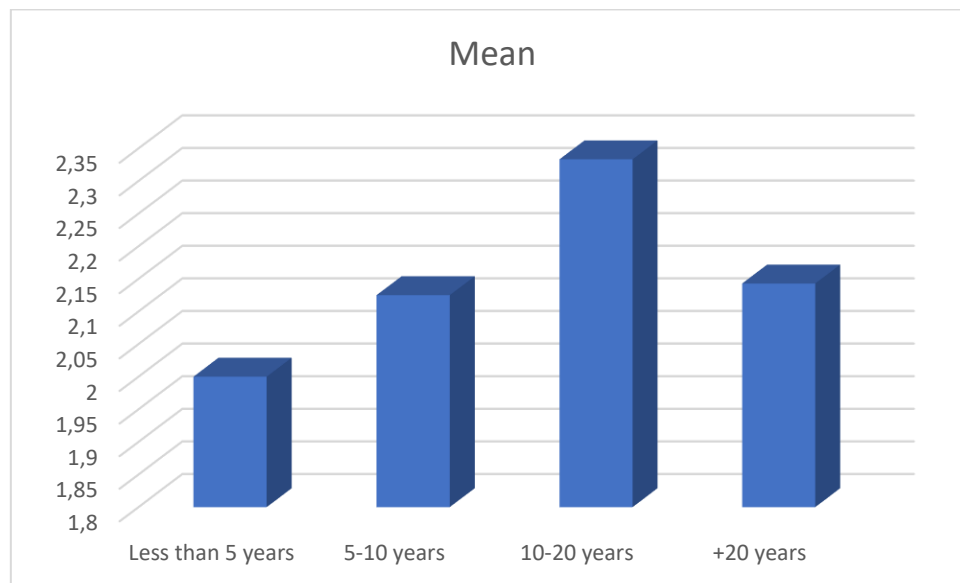


Table 18. T test comparing the means of higher education sector's progress to EU laws and regulations based on the ownership type of higher education institutions.

	Ownership	N	Mean	Std. Deviation	t	P
Progress	Public	8	1.7500	1.03510	-1.633	.117
	Private (For-profit)	20	2.3500	.81273		

T test is conducted to tell if there are significant differences between the type of ownership higher education institutions in terms of progress in higher education sector to the EU law regulations. From the table above is detected that there are no statistically significant differences between the type as the value p is more than .05 ($t = -1.633$, $p \geq .05$). The result shows that the progress rate is higher in Private (For-profit) companies ($M = 2.3500$, $sd = .81273$) compared to Public ones ($M = 1.7500$, $sd = 1.03510$)

Figure 17. The mean of progress of higher education sector to the EU law regulations according to type of ownership of higher education institutions.

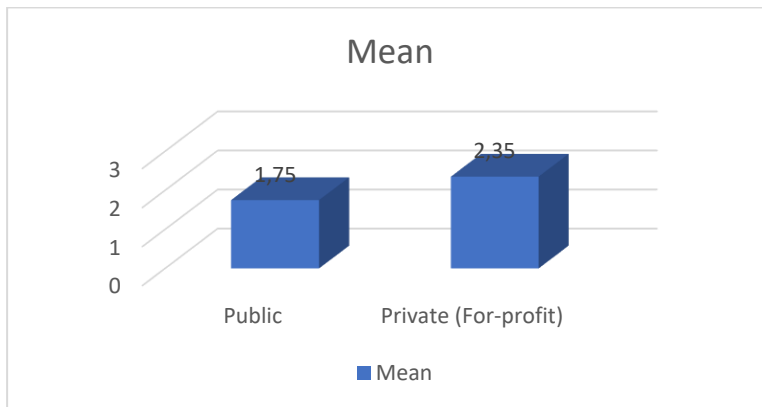


Table 19. Factors impacting higher education institutions' performance

	N	Mean	Std. deviation	F	P
Cost of living	22	2.2727	.88273	.588	.563
Interest rates	2	2.0000	1.41421		
Access to finance or credit	4	1.7500	.95743		
Total	28	2.1786	.90487		

The descriptive data of the factors which impact higher education institutions' performance are presented. Referring to the mean it results that the factor with the highest average is "Cost of living" ($M = 2.2727$, $sd = .88273$) and the one with the lowest average is the "Access to finance or credit" ($M = 1.7500$, $ds = .95743$) The higher the average the higher the impact of the factor.

Figure 18. Factors impacting higher education institutions' performance.

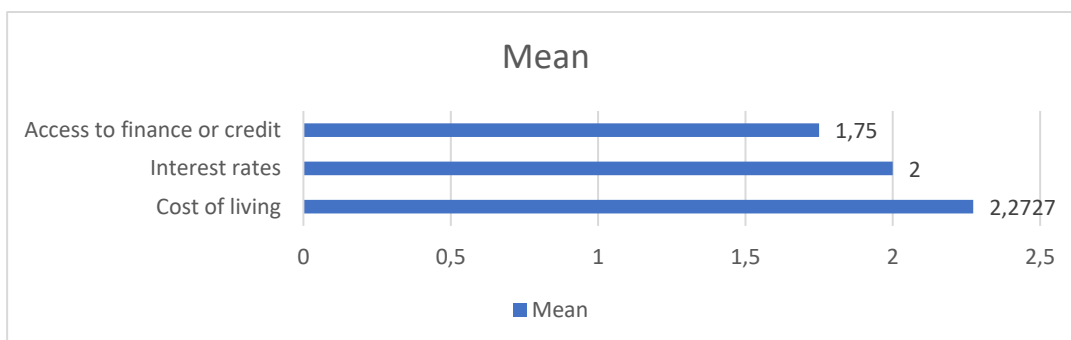


Table 20. Challenging situations or behaviors higher education institutions are facing in the market.

	N	Mean	Std. deviation	F	p
Access to finance	8	1.5000	.75593	4.839	.044
Covid-19 pandemic	16	2.5625	.81394		
The decline in household income	4	2.0000	.81650		
Total	28	2.1786	.90487		

The difficult circumstances that the market for higher education institutions has encountered are listed in the table above. According to the average, the "Covid-19 pandemic" challenge has the highest average ($M = 2.5625$, $ds = .81394$), while the "Access to finance" challenge has the lowest average ($M = 1.5000$, $ds = .75593$). The higher the average, the more challenging the situation.

Figure 19. Challenging situations or behaviors the higher education institutions are facing in the market.

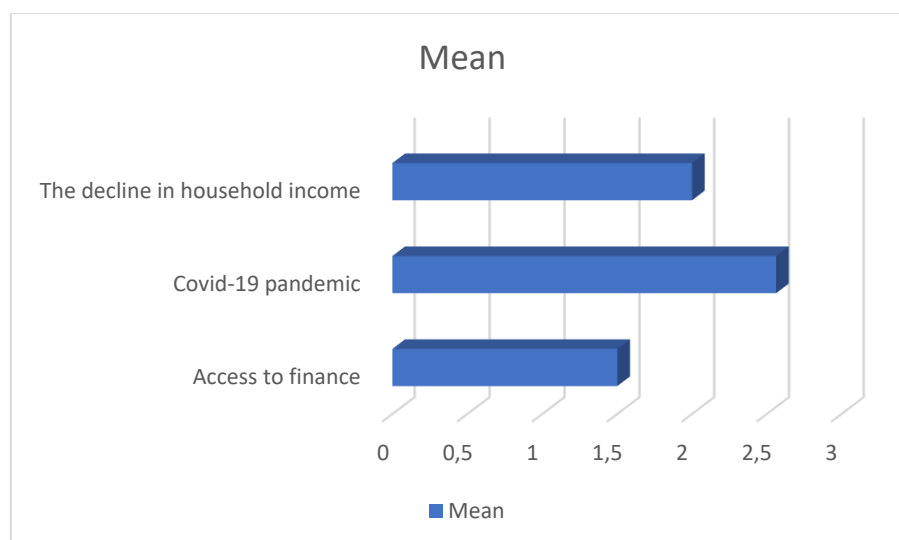


Table 21. How Covid-19 pandemic affected higher education institutions.

	N	Mean	Std. deviation
Student dropout	10	2.0000	.81650
Decrease in enrollment	6	2.3333	1.03280
Lack of necessary access to remote teaching and learning	12	2.2500	.96531
Total	28	2.1786	.90487

The descriptive data about how the Covid-19 pandemic affected higher education institutions is included in the table above. According to the average, "Decrease in enrollment" has the highest mean ($M = 2.3333$, $sd = 1.03280$), while "Student dropout" has the lowest mean ($M = 2.0000$, $sd = .81650$). The consequence chosen mostly by the respondents is "Lack of necessary access to remote teaching and learning", so this indicates that the government must take action in order to solve this problem through public funding.

Table 19. The mean of the consequences of Covid-19 on higher education institutions.

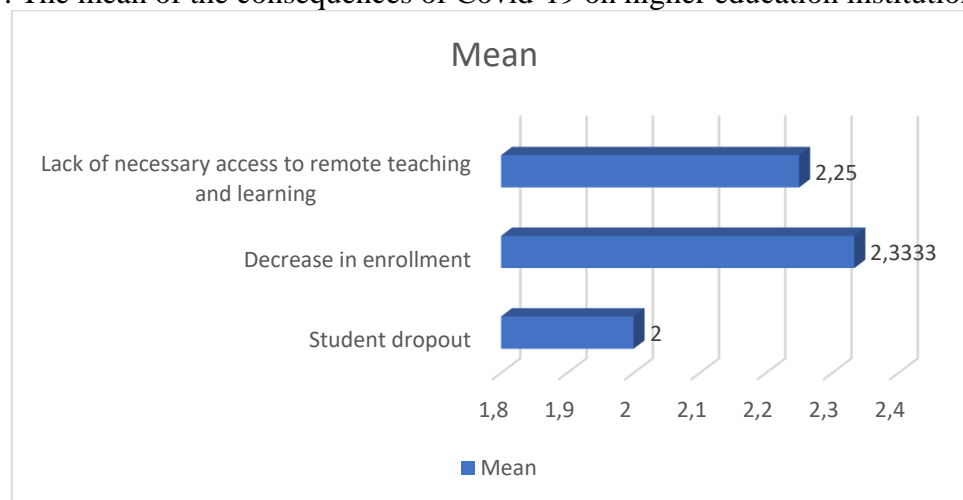


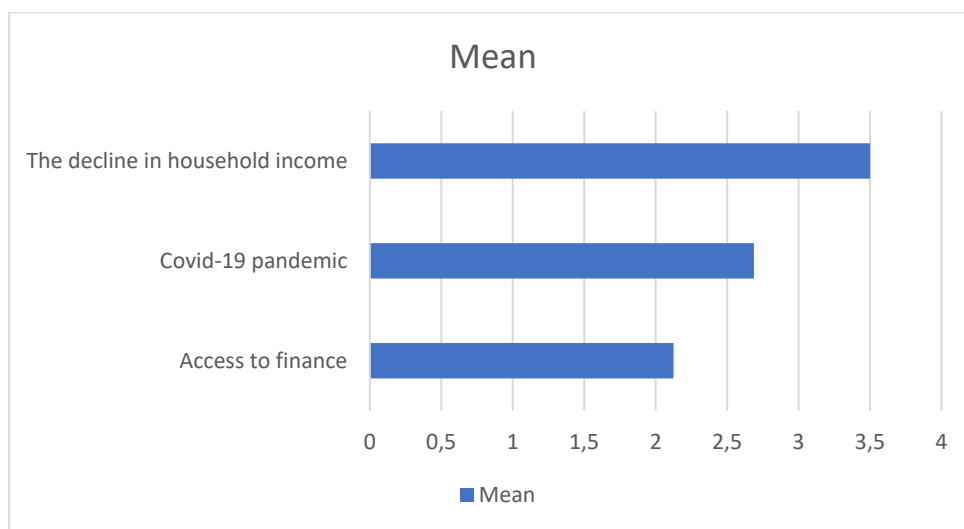
Table 22. ANOVA test of states and challenging situations or behaviors to higher education institutions.

	N	Mean	Std. Deviation	F	P
Access to finance	8	2.1250	1.24642	.950	.400
Covid-19 pandemic	16	2.6875	1.70171		
The decline in	4	3.5000	2.08167		

household income					
Total	28	2.6429	1.63785		

The ANOVA test is used to determine whether there are any statistically significant differences among challenging conditions or behaviors that the higher education institution encounters in the marketplace. ($p=.950$) is not less than 0.05, so the differences are not significant. “The decline in household income” has the highest mean ($M=3.5000$), and “Access to finance” has the lowest mean ($M=2.1250$).

Figure 21. Mean of respective states and challenging situations or behaviors that higher education institutions are facing.



4. Conclusion and Recommendations

Based on the collected data from all countries except Serbia, where no information was obtained, the findings suggest a significant presence of institutions in the higher education market, indicating a monopolistic competitive market structure. Additionally, across all states, institutions are either privately owned (for-profit) or publicly owned.

None of the respondents' type of ownership was private (non-profit). Most of the higher education institutions that filled out the survey have been operating in the market for more than 10 years, and when it comes to tuition fees they vary from 0-1000\$ for public institutions, and 1000-5000\$ for private (for-profit) institutions.

Further discussion revolves around the adaptation of EU laws in Western Balkan countries (WBs) and the progress they've achieved, given their ongoing aim for EU integration. It's important to highlight that aligning legislation with EU laws not only strengthens legislative authority but also enhances effective implementation and delineates the critical role of competition policy in this context. While there are still areas for improvement in WBs countries, they possess the necessary tools to enact these changes, particularly as the higher education sector continues to thrive in the region. By adhering to EU laws and fostering fair market competition, these countries are on the right path toward meeting the standards of EU member states in higher education.

The most significant problem that higher education institutions had to deal with during the pandemic was "Lack of necessary access to remote teaching and learning." The WBSs' policy and strategy makers for education must pay special attention to this indicator immediately especially in Albania and Kosovo.

For the adaptation of the market to the EU competition, a recommendation would be to focus on innovation since a great percentage of higher education institutions have not launched any new innovative program in the last three years in all WBCs, but mainly in North Macedonia and Bosnia and Herzegovina. By devising a strategy for the higher education institutions market that considers higher education laws and regulations, tuition fees, and with government support, significant enhancements can be achieved, meeting the requirements set forth by the EU.

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APPENDIX

Questionnaire about the higher education institutions market in Western Balkans.

This survey will be applied to a research report. The primary goal is to collect information in order to research and assess the higher education institutions market in Western Balkans nations. There are some questions about general inquiries concerning your corresponding higher education institution, and others require expressing your views on the subject.

1. Where is the location of your higher education institution?
 - Albania
 - Kosovo
 - Montenegro
 - North Macedonia
 - Serbia
 - Bosnia and Herzegovina

2. How many years has your higher education institution been operating in the market?
 - Less than 5
 - 5-10 years
 - +10 years
 - +20 years

3. What is the type of ownership of your higher education institution?
 - Public
 - Private (For-profit)
 - Private (Non-profit)

4. How much does the studying tuition fees vary on the capital city of your country?
 - \$0 - \$1000
 - \$1000 - \$5000
 - \$5000 - \$10.000
 - \$10.000 +

5. Has your higher education institution launched new innovative programs in the last three years?
 - Yes
 - No

6. What is the language of education in your higher education institution?
 - Official language
 - English
 - Both
 - Other

7. Current EU membership status of your base country:
 - Already a member
 - Still in discussions
 - Potential candidate, although there have been no negotiations
 - At this time, not a candidate

8. In your base country's region, how competitive would you rate the market for higher education institutions before/after discussions with the EU or acceptance?
 - Monopolistic competition (Many higher education institutions offer competing services that are similar, but not perfect substitutes.)
 - Oligopolistic competition (3-6 massively dominant higher education institutions, no other important competitors)
 - Perfect competition (All higher education institutions are price takers and there are little to no barriers to entry or exit)

9. Regarding the higher education sector's adaption to EU legal standards, your higher education institution is making some progress.
 - The state aid is in accordance with the rules set forth by EU law for the higher education sector.
 - The higher education institution is on the lookout for any antitrust infractions and competitive violations in the higher education industry.
 - A key tool for creating a contemporary and competitive higher education market is competition policy.

10. Situations or actions that the higher education institution finds challenging:
 - Access to finance
 - Pandemic of COVID-19
 - Regulations and legislation
 - The decline in household income
 - Other

11. Rate how helpful the government and/or municipality of the country where your higher education institution is headquartered are in assisting with EU compliance.
 - Laissez-faire (There is little to no framework or direction to comply with EU market regulations.)
 - Optional (Higher education institutions seeking government backing may access assistance of about moderate quality)
 - Rigorous but minimal (The neighborhood municipality is diligent and imposes itself on practically every higher education institution but is largely ineffective or damaging)
 - Rigorous yet beneficial (The neighborhood municipality enforces itself on practically all higher education institutions in the market, which really benefits)

12. Financial factors impacting higher education institutions market:
 - Cost of living
 - Interest rates
 - Access to finance or credit (allows individuals and businesses to save for future, obtain credit for expanding economic activities, make payments and insure against risks and uncertainties)
 - Inflation (general prices are rising meaning that the tuition fee is rising)
 - Other

13. How did Covid-19 pandemic affect higher education institutions?
 - Student dropout
 - Decrease in enrollment
 - Lack of necessary access to remote teaching and learning
 - Other

**TÜRKİYE’DE YAŞAYAN SURIYELİ GÖÇMEN ÇOCUKLARA YÖNELİK HAZIRLANAN
DİL ÖĞRETİM PROGRAMI**

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ÖZET

Suriye’de Mart 2011 yılında iç savaş çıkmış, Suriyeli vatandaşlar savaş nedeniyle başta Türkiye olmak üzere komşu ülkelere göç etmek durumunda kalmışlardır. Bu süreçten etkilenenler arasında eğitimlerini yarıda bırakıp yabancı bir ülkede eğitim almak durumunda kalan çocuklar da mevcuttur. Dolayısıyla Türkiye’deki göçmen çocukların dil öğrenmeleri, eğitimlerini devam ettirebilmek için öncelikli bir ihtiyaç haline gelmiş ve bu çocuklara yönelik dil öğretim programları hazırlanmıştır. Bu bağlamda çalışmanın amacı Türkiye’ye sığınan Suriyeli göçmen çocuklara yönelik hazırlanan dil öğretim programının incelenmesidir. Bu amaca ulaşmak için nitel araştırma yöntemlerinden olan doküman analizi yöntemi kullanılmıştır. Bu çalışmadaki doküman ise çocukların Türkçe öğrenmesini ve Türkiye’ye entegre olmalarını kolaylaştırmak için Avrupa Birliği ve Milli Eğitim Bakanlığının birlikte yürüttüğü “Suriyeli Çocukların Türk Eğitim Sistemine Entegrasyonunun Desteklenmesi” isimli öğretim programıdır. Bu program Milli Eğitim Bakanlığı ile Türkiye Maarif Vakfı arasında yapılan iş birliği protokolü çerçevesinde hazırlanmış, yurt içinde Türkçenin yabancı dil olarak öğretimine yönelik izlencelerle genişletilmiştir. Araştırma sonucunda bu programın, yabancı dil öğrencilerinin hedef dili, iletişim ortamlarında kullanabilmeleri için gereken becerileri kapsamlı bir şekilde yapılandırılmalarına olanak sağlayabileceği bulgusuna ulaşılmıştır. Bu program Suriyeli çocukların Türkçe dil becerilerini geliştirmek ve temel eğitim becerilerini kazanmalarına yardımcı olarak entegrasyon süreçlerini kolaylaştırırken, sosyal ve duygusal gelişimlerini desteklemekte ve psikolojik destek sağlamaktadır. Programın Suriyeli göçmen çocukların okul öncesi ve ilköğretim düzeyinde eğitimlerine katkıda bulunarak, temel becerilerini kazanmalarını desteklediği, eğitim sistemine uyum sağlamalarını hedeflediği anlaşılmıştır.

Anahtar Kelimeler: Suriyeli göçmen çocuklar, yabancı dil öğretim programı, piktes.

ABSTRACT

Civil war broke out in Syria in March 2011 and Syrian citizens had to migrate to neighbouring countries, especially Turkey, due to the war. Affected by this process are also children who have been forced to leave their education and study in a foreign country. Therefore, language learning of migrant children in Turkey has become a priority need in order to continue their education and language teaching programmes have been prepared for these children. In this context, the aim of this study is to examine the language teaching programme prepared for Syrian immigrant children seeking refuge in Turkey. In order to achieve this aim, document analysis method, which is one of the qualitative research methods, was used. The document in this study is the curriculum called “Supporting the Integration of Syrian Children into the Turkish Education System”, which is carried out by the European Union and the Ministry of National Education in order to facilitate children's learning Turkish and their integration into Turkey. This programme was prepared within the framework of a cooperation protocol between the Ministry of National Education and the Turkish Maarif Foundation, and was expanded with syllabuses for teaching Turkish as a foreign language in Turkey. Conclusion of the research, it was found that this programme can enable foreign language learners to comprehensively construct the skills necessary for them to use the target language in communication environments. This programme facilitates the integration process of Syrian children by improving their Turkish language skills and helping them acquire basic educational skills, while supporting their social and emotional development and providing psychological support. It is understood that the programme contributes to the education of Syrian migrant children at pre-school and primary education level, supports their acquisition of basic skills and aims to help them adapt to the education system.

Keywords: Syrian immigrant children, foreign language teaching programme, piktes.

GİRİŞ

Suriye’de başlayan halk isyanlarının çatışmaya dönüşmesi ile birlikte insanlar Suriye’den göçmek etmek zorunda kalmıştır (Lotfi, vd., 2021). Suriye’de yaşanan iç savaşın ülke genelinde derin etkileri vardır. Bu etkilerin arasında insan hakları ihlalleri, şiddet, yıkım, ekonomik çöküntü, sağlık hizmetlerinde ciddi sorunlar, eğitim sisteminde aksamalar ve sosyal dokunun bozulması gibi faktörler bulunmaktadır. Savaşın uzun süreli devam etmesi, ülkenin altyapısının çökmesine, ekonomik kaynakların tükenmesine ve insanların temel ihtiyaçlarını karşılayamaz hale gelmesine neden olması göçün kaçınılmaz olduğunu göstermektedir. Öncelikle göç Suriye’nin komşusu olan ülkelere başlamıştır. Türkiye, komşu ülkesinde süren savaşa kayıtsız kalmayıp yüzbinlerce Suriyeliye kapısını açmıştır (Büyükkız & Çangal, 2016). Suriye’ye komşu ülkelere kıyasla Suriye’den en fazla göç olan ülke ise Türkiye’dir (Kağnıcı, D. Y., 2017). Türkiye’ye misafir olarak gelen Suriyeliler kamplara ve Türkiye’nin farklı bölgelerinde yaşayan akrabalarının yanına yerleşmişlerdir (Büyükkız & Çangal, 2016). Birleşmiş Milletler Mülteciler Yüksek Komiserliğine (UNHCR) göre Türkiye’de 3.585.447 Suriyeli göçmen ikamet etmektedir ve bu sayının 804.810 kız 864.342 erkek çocuğudur (UNHCR, 2023). Suriye’deki savaştan dolayı Türkiye’ye gelen göçmen insanlar arasındaki en büyük sorunun uyum olduğunu ve bu sorunun giderilmesi için ilk olarak Türkçe öğretilmesi gerektiğini savunulmuş ve bu sayede Suriyeli göçmenler Türk okullarında eğitim görecektir, günlük hayatlarını devam ettirecek, kendi haklarını savunabilecek dahası iş bulabilecekleri bu süreci başarı ile tamamlamak için bir dil politikasına ihtiyaçları vardır (Çağlak, 2022).

YÖNTEM

Bu çalışmada, Türkçe dil öğretim programını incelemek için nitel araştırma yöntemlerinden olan doküman analizi yöntemi kullanılmıştır. “Doküman inceleme yöntemi araştırmada ele alınan olay veya olgulara ilişkin bilgiyi kapsayan yazılı materyallerin analizidir (Turgut, 2011). Bu çalışmada kullanılan materyal, öncelikle ilgili literatürden ve kaynaklardan toplanmıştır. İlk olarak, Piktes Projesi araştırılmış ve programla ilgili belgeler toplanmıştır. Verilerin toplanmasının ardından Piktes Projesinin bir parçası olan Türkçe dil öğretim programlı belirtilen hedefleri, içeriği, öğretim yöntemlerini, değerlendirme uygulamalarını belirlemek için analiz edilmiştir.

SURİYE’DEN GELEN GÖÇMEN ÇOCUKLARIN EĞİTİMİ VE DİL ÖĞRENME SÜRECİ

Göçmen çocukların eğitimi oldukça önemlidir çünkü eğitim, onların entegrasyon sürecinde kritik bir rol oynar ve uzun vadeli başarılarını etkiler. Eğitim, göçmen çocukların topluma uyum sağlamalarını, dil becerilerini geliştirmelerini ve sosyal ilişkiler kurmalarını destekler (Dronkers vd.,2014). Ayrıca, eğitim göçmen çocuklara gelecekte daha iyi iş fırsatları ve ekonomik refah sağlayarak sosyal hareketliliklerini artırabilir (Koo, 2012). Göçmen çocukların eğitimi aynı zamanda sosyal entegrasyonlarını güçlendirir ve toplumla bütünleşmelerine yardımcı olur. Eğitim, göçmen çocukların özsaygılarını artırabilir, kimliklerini güçlendirebilir ve toplumda daha aktif rol almalarını teşvik edebilir (Xu & Lv, 2022). Ayrıca, eğitim göçmen çocuklara sosyal beceriler kazandırarak çatışma çözme yeteneklerini geliştirebilir ve toplumsal uyumu destekleyebilir (Zhou, 2017). Eğitim diğer yandan göçmen çocukların psikososyal refahlarını da olumlu yönde etkileyebilir. Eğitim, çocukların travmatik deneyimlerle baş etmelerine yardımcı olabilir, duygusal dayanıklılıklarını artırabilir ve olumlu bir gelecek beklentisi oluşturabilir (Liu vd., 2018). Ayrıca, eğitim göçmen çocukların sosyal ağlarını genişletmelerine ve toplumda destek sistemleri oluşturmalarına yardımcı olabilir (Kamalova & Zakirova, 2017).

SURİYE’DEN GELEN GÖÇMEN ÇOCUKLARA YÖNELİK HAZIRLANAN DİL ÖĞRETİM PROGRAMI: PIKTES

“Suriyeli Çocukların Türk Eğitim Sistemine Entegrasyonunun Desteklenmesi” projesi, Türkiye’de 24 ili kapsayarak Suriyeli çocukların eğitim fırsatlarından yararlanmalarını sağlamayı amaçlar. AB tarafından EUR 300 000 000 hibelenen proje, Suriyeli çocukların Türkçe dil becerilerini geliştirmeyi, temel eğitim becerilerini kazandırmayı ve psikolojik destek sağlamayı hedefler. Ayrıca, proje Suriyeli çocukların eğitim sistemine uyum sağlamalarını destekleyerek eşit ve kaliteli eğitim imkanları sunmayı ve sosyal adaptasyonlarını desteklemeyi amaçlar. Projenin bir çok faaliyeti vardır bunlar arasında Türkçe ve Arapça dilleri öğretimi ve dil eğitimi, eğitim verecek öğretmenler için bir eğitim , okulun temel ihtiyaçları olan temizlik ve güvenlik personellerinin bulunması, öğrencilerin eğitim ihtiyacı olan ders materyalleri ve kırtasiye malzemelerinin alınması, eğitim bakımından yetersiz görülen öğrenciler

için destek ve telafi dersleri, eğitim için gerekli ekipmanlar, verilen Türkçe eğitim için dil sınav sistemi, okulun rehberlik, izleme ve değerlendirme faaliyetleri, idari ve diğer personellere yönelik eğitimler ve farkındalıklarını artıracak faaliyetler yer almaktadır (PİKTES, 2017).

Türkçenin Yabancı Dil Olarak Öğretim Programı

Türkçenin Yabancı Dil Olarak Öğretimi¹, Avrupa Ortak Başvuru Metni'ne dayanarak yapılandırılmıştır ve yabancı dil öğrencilerinin iletişim becerilerini geliştirmeyi hedeflemektedir. Program, dil öğrenenlerin yaşam boyu öğrenme süreçlerinde elde ettikleri kazanımların ölçülmesi için gerekli düzey ve yeterlikleri tanımlamaktadır. Oluşturulurken beş önemli kriter dikkate alındı: ihtiyaç analizi, kapsamlılık, çok boyutluluk, iletişim ve kültürel yeterlilikler..Ayrıca, 21. Yüzyıl Becerileri, Avrupa Yeterlikler Çerçevesi ve Türkiye Yeterlikler Çerçevesi gibi kaynaklardan da faydalanılarak hazırlanmıştır. Program, dil becerilerini geliştirmenin yanında öğrencilerin evrensel ve ulusal değerlere duyarlılık kazanmalarına da yardımcı olmayı amaçlamaktadır (PİKTES, 2017).

Temel Yaklaşım

Türkçenin Yabancı Dil Olarak Öğretildiği bu programda, öğrencilerin iletişim becerilerini geliştirmeyi ve keşfederek, yaparak-yaşayarak öğrenmelerini amaçlamaktadır. Program, öğrencilerin eylem odaklı bir yaklaşımla dil becerilerini geliştirmesini sağlayarak, onları sosyal aktörler olarak görüp, iletişimsel dil kullanımıyla yeterliklerini artırmayı hedeflemektedir (PİKTES, 2017).

Dil Kullanım Alanları ve Sosyokültürel Bağlamlar

Dilin kullanım alanları, dil kullanıcısının genel yeterliklerinin bir parçasıdır ve genel kültür bilgisini de içerir. Örneğin belirli bir dili öğrenenler için o dilin konuşulduğu ülke veya ülkeler hakkındaki bilgiler (coğrafik, ekolojik, demografik, ekonomik ve politik özellikler gibi) önemlidir (bak. Balcı 1993b, 2006 ve 2023). Program, dilin kullanıldığı alanlara odaklanarak öğrencilerin genel yeterliklerini geliştirmeyi ve kültürel duyarlılık ile kültürlerarası etkileşim yeterliliklerini artırmayı hedefler. Program, Avrupa Ortak Başvuru Metni'nde belirtilen dil kullanım alanlarını (özel, kamusal, mesleki, eğitim) dikkate alarak öğrencilerin yaş seviyeleri ve gelişimsel özellikleriyle uyumlu izlenceler oluşturmayı amaçlar. Eylem odaklı iletişimsel dil öğretim yaklaşımı, dilin işlevsel gelişimine katkıda bulunurken sosyo-kültürel unsurların etkin kullanımı ve kültürler arası paylaşımın önemli olduğunun üzerinde durur. Dil becerilerinin geliştirilmesinde kültürel duyarlılığın temel alınması ve işlevsel dil kullanımının öğretilmesiyle öğrencilerin kültürel etkileşimde başarılı olmaları hedeflenir (PİKTES, 2017).

Aracılık

Diller için Avrupa Ortak Başvuru Metninin sunduğu dil ve kültür arasındaki iletişim engellerini aracılık etkinlikleriyle aşmayı hedefler. Program, öğrencilerin dil becerilerini geliştirmek için aracılık stratejilerini kullanır ve kültürel farkındalıklarını artırır. Aracılık faaliyetleri metin aktarımı, kavram aktarımı ve iletişim aktarımı olarak gruplandırılmaktadır. Bu stratejiler, öğrencilerin yeni anlam oluşturma süreçlerine katkıda bulunur. Program, dil öğretimi sürecinde aracılığı önemser ve öğrencilerin iletişim becerilerini güçlendirirken kültürel etkileşimde başarılı olmalarını sağlar. Aracılık, dil ve kültür arasındaki köprüleri kurarak anlam oluşturmaya yardımcı olur (PİKTES, 2017).

Kademeli Sorumluluk Aktarımı Modeli

Öğretme-öğrenme sürecinde kademeli sorumluluk aktarımı modeli ve ekolojik sistem kuramı birlikte kullanarak yapılandırılır. Bu model, öğrencilere temel becerileri adım adım öğretirken aynı zamanda sosyal ve kültürel becerilerini geliştirmeyi amaçlar. Kademeli sorumluluk aktarım modeline göre, öğretim süreci dört aşamada gerçekleşir: öğretmenin doğrudan öğretimi, rehberli uygulama, küçük grup çalışması ve bağımsız uygulama. Bu süreç ekolojik sistem kuramıyla birleştirilir. Ekolojik sistem kuramı, öğrencinin çevresiyle etkileşim içinde olduğunu ve dil becerilerinin bu etkileşimler sonucunda geliştiğini belirtir. Dil becerileri sadece okul ortamıyla değil, aile, sınıf ve çevreyle olan etkileşimler sonucunda gelişir. Bu yapılanmanın amacı öğrencilerin sosyal ve kültürel becerilerini ve dil gelişimlerini geliştirmek, öğrenme sürecinde sorumluluk almalarına yardımcı olmak ve bireysel öğrenme stratejilerine ilişkin farkındalıklarını arttırmaktır. (PİKTES, 2017).

¹ Türkçenin yabancı dil olarak öğretimi için bak. Balcı (1993a).

Programlama Tekniği

Program, öğrencilerin farklı seviyelerde çeşitli içeriklerle karşılaşarak karmaşıklığın artmasını sağlayarak sarmal programlama yaklaşımını benimsemektedir. Bu yaklaşım, yeni kazanımların önceki bilgiler üzerine inşa edilmesini esas alır. Öğrenci ihtiyaçları, çevre ve seviyeler göz önünde bulundurularak hazırlanan program, basitten karmaşığa doğru ilerleyen bir yapıya sahiptir. Program, farklı öğrenme stratejileri, yaş gruplarındaki düzey farklılıkları, dil öğrenme gereksinimleri ve dil öğretimindeki yenilikleri dikkate alarak şekillendirilmiştir. Eylem odaklı bir perspektifle yapılandırılan Program, öğrencilere işlevsel, iletişimsel, sarmal, tematik, beceri ve görev odaklı bir öğrenme ortamı sunmaktadır (PİKTES, 2017).

Program'ın Genel Amaçları

Türkçenin Yabancı Dil Olarak Öğretimi Programı, öğrencilerin çok yönlü dil becerilerini geliştirmeyi amaçlamaktadır. Programın hedefleri arasında dinleme, izleme, okuma, sözlü üretim, sözlü etkileşim, yazma becerilerinin yanı sıra kültürel duyarlılık, hayat boyu öğrenme becerileri, 21. yüzyıl becerileri ve akademik/özel amaçlı Türkçe dil yeterliklerinin geliştirilmesi bulunmaktadır.² Bu hedefler doğrultusunda program, öğrencilerin dil becerilerini bütüncül bir şekilde ve kurallarına uygun olarak kullanmalarını sağlamayı, sözsüz iletişim becerilerini kazandırmayı, Türkçe söz varlığını zenginleştirmeyi ve Türk dili ve edebiyatının seçkin eserlerini tanımalarını hedeflemektedir. Ayrıca, disiplinler arası bir yaklaşımla 21. yüzyıl becerilerini edinmelerini/geliştirmelerini sağlamayı ve akademik/özel amaçlı Türkçe dil yeterliklerini geliştirmeyi amaçlamaktadır. Bu hedefler, öğrencilerin Türkçe dil becerilerini güçlendirmeleri ve kültürel farkındalık kazanmaları için kapsamlı bir eğitim deneyimi sunmayı amaçlamaktadır (PİKTES, 2017).

Program'ın Yapısı

Yabancı dil olarak Türkçe öğretim programı iki ana bölümden oluşmaktadır. Birinci bölümde programın temel ilkeleri, amaçları, yapısı, düzeylere göre yapılanması, uygulamaya yönelik öneriler, ölçme-değerlendirme yaklaşımı, düzey ve yeteneklere göre düzenlenmiş kazanımlar yer almaktadır. İkinci bölüm müfredatlardan oluşmakta olup yurt içi ve yurt dışındaki örgün eğitimin düzeyine göre yapılandırılmıştır. Dil becerileri ve seviyeleri Avrupa Ortak Başvuru Metnindeki düzeylere dayanarak belirlenmiş olup program, iletişimsel işlevlere odaklanan bir eylem odaklı yaklaşımla düzenlenmiştir. Program esneklik sunarak farklı kültürlerde uygulanabilir ve dil öğretiminin etkinliğini artırır (PİKTES, 2017).

Programın Kademelere Göre Yapılandırılması

Yabancı dil olarak Türkçe öğretim programı, yurt içi ve dışında farklı uygulama gereksinimlerini dikkate alarak çeşitlendirilmiş izlenelere sahiptir. Programın temel gerekçeleri arasında Türkiye'deki tek örgün eğitim sisteminin aksine yurt dışında çok sayıda ve farklı örgün eğitim sistemlerinin gerekliliği; dil öğrenenlerin Türkçe öğrenme ihtiyaçlarının ve hedeflerinin çeşitliliği bulunmaktadır. Bu doğrultuda, yurt içinde ilk ve ortaokul seviyelerine uygun izleneler oluşturulmuş, ortaöğretim düzeyinde ise tüm dil seviyelerini kapsayan detaylı izleneler hazırlanmıştır (PİKTES, 2017). Yurt dışında ve yurt içinde Türkçenin yabancı dil olarak öğretimi çerçevesinde asgari süreler dikkate alınarak hazırlanan öğretim programları şu şekilde planlanmıştır:

Tablo 1. Program'ın Kademelere Göre Yapılandırılması (Yurt İçi)

1	Okul Öncesi Dönemi	36-48 Ay	Başlangıç I		72 Saat
		49-60 Ay	Başlangıç II		72 Saat
		61-72 Ay	Başlangıç III		72 Saat

² Bu vb. becerilerin öğretimi için bak. Aksöz (1999, 2017) ve Yıldırım (Aksöz) [2013].

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2	İlköğretim I. Kademe (İlkokul)	7 Yaş	A1	A1.1	72+72 Saat
		8 Yaş		A1.2	72+72 Saat
		9 Yaş		A1.3	72+72 Saat
		10 Yaş		A1.4	72+72 Saat
3	İlköğretim II. Kademe (Ortaokul)	11 Yaş	A1		144 Saat
		12 Yaş	A2	A2.1	144 Saat
		13 Yaş		A2.2	144 Saat
		14 Yaş		A2.3	144 Saat
4	Ortaöğretim (Lise)	-	A1		144 Saat
		-	A2		144 Saat
		-	B1	B1	144 Saat
				B1+	144 Saat
		-	B2		144 Saat
		-	C1		144 Saat

*İzlencelerdeki saatler öneri olarak verilmiştir öğretim gereksinimlerine göre düzenlenebilir (PİKTES, 2017).

Tablo 2. Program'ın Kademelere Göre Yapılandırılması (Yurt İçi)

1	Okul Öncesi Dönemi	36-48 Ay	Başlangıç I		72 Saat
		49-60 Ay	Başlangıç II		72 Saat
		61-72 Ay	Başlangıç III		72 Saat
2	İlkokul	7-10 Yaş	A1	A1.1	60 Saat
				A1.2	60 Saat

				A1.3	60 Saat
				A1.4	60 Saat
			A2	A2.1	120 saat
				A2.2	120 saat
3	Ortaokul	11-14 Yaş	A1		240 saat
			A2	A2.1	120 saat
				A2.2	120 saat
			B1		120 saat
4	Ortaöğretim (Lise)	15 Yaş +	A1		240 saat
			A2		240 saat
			B1	B1	120 saat
				B1+	120 saat
			B2		240 saat
			C1		240 saat

(PİKTES, 2017)

Okul Öncesi

Yabancı dil olarak Türkçe öğretim programında okul öncesi dönem, çocukların Türkçe ile ilk defa tanıştıkları ve dilde aşinalık kazandıkları Başlangıç Dönemi olarak kabul edilir. Program, çocukların gelişim özelliklerine uygun 36-48, 49-60 ve 61-72 aylık dönemlere göre yapılandırılmış olup her dönem için on tema içeren izlenceler bulunmaktadır. İzlenceler, çocukların farklı dil düzeylerinden öğrenim sürecine dahil olabileceği şekilde yapılandırılmıştır. Program, Türkiye veya yabancı ülkelerdeki çocukların iletişimsel dil öğretimini hedeflemektedir ve yurt içi ile yurt dışı versiyonları arasındaki benzerlik, çocukların genel gelişim özelliklerinden kaynaklanmaktadır (PİKTES, 2017).

İlköğretim I. Kademe (İlkokul)

Yabancı dil olarak Türkçe öğretim programı ilkokul seviyesinde farklı içeriklerle yurt içi ve dışı uygulamaları desteklemektedir. Yurt dışı için A1 düzeyinde izlenceler oluşturulurken, yurt içinde A1 ve A2 düzeylerinde izlenceler hazırlanmıştır. Bu ayrım, Türk öğrencilerin hedef dili doğal bir ortamda deneyimlemesini ve eğitim sistemine hızlıca uyum sağlamasını amaçlamaktadır. A1 düzeyinde, her yaş grubu için öğrencilerin özellikleri, ilgi alanları, dil kullanımı, iletişim işlevleri ve kelime dağarcığı dikkate alınarak on tema içeren izlenceler geliştirilmiştir. İlkokul seviyesi için özel olarak

Başlangıç/Hazırlık teması oluşturulmuş ve okul öncesi dönemden ilkokula geçiş sürecini kapsayacak şekilde tasarlanmıştır (PİKTES, 2017).

İlk Okuma Yazma Öğretimi

Yabancı dil olarak Türkçe öğretim programı, ses temelli ilk okuma yazma öğretimini esas alır ve öğrencilerin dil öğrenme sürecini desteklemeyi amaçlar. Program, hazırlık, başlangıç ve ilerleme, bağımsız okuma ve yazma olmak üzere üç aşamadan oluşur ve dinleme eğitimi, motor becerilerin geliştirilmesi, harflerin tanıtılması, hece ve kelime oluşturma adımlarını içerir. Program, Milli Eğitim Bakanlığı Türkçe dersi müfredatı ile Türkçe ve Türk kültürü dersleri müfredatı ilham alarak şekillendirilmiştir. İlkokul seviyesinde, ses temelli ilk okuma yazma yöntemi kullanılarak Türkçeyi yabancı dil olarak öğrenen öğrencilere yaklaşılr. Daha ileri seviyelerde, öğrencilerin hazır bulunuşluklarına göre Türkçe okuma yazma öğretimi planlanır ve dil öğretimi ile birlikte yürütülerek öğrencilerin bütünsel dil öğrenme süreci desteklenir (PİKTES, 2017).

İlköğretim II. Kademe (Ortaokul)

Yabancı dil olarak Türkçe öğretim programı, yurt dışı uygulamalarında ortaokul seviyesinde A2 düzeyini hedefler. Bu düzey, A1 düzeyinin tekrarıyla başlar ve aşamalı olarak A2.1, A2.2, A2.3 şeklinde yapılandırılır. Ortaokul düzeyinde, öğrencilerin gelişimsel özellikleri, iletişimsel dil işlevleri, günlük yaşam alanları, ilgi ve ihtiyaçların dikkate alındığı on tema içeren izlenceler hazırlanır. Yurt dışındaki uygulamalar için 11-14 yaş gruplarına yönelik A1 ve A2 düzeylerinde izlenceler oluşturulurken, yurt içinde A1 ve A2 düzeylerine ek olarak B1 düzeyine yönelik bir izlençe eklenir (PİKTES, 2017).

Ortaöğretim (Lise)

Yabancı dil olarak Türkçe öğretim programı, ortaöğretim seviyesinde B2 düzeyine ulaşmayı hedefler. A1 ve A2 düzeylerinin tekrarıyla başlayarak B1, B1+, B2 şeklinde ilerleyen aşamalarla yapılandırılır. Her yaş grubuna özgü tematik on izlençe oluşturulur ve dil yeterlik düzeyi arttıkça temalar genişletilerek derinlik kazandırılır. İletişim faaliyetleri farklı formaliteler, sosyal ve kültürel kurallar ve sosyal roller bağlamında çeşitlilik gösterir. Ortaöğretim kademesinde, A1 ve A2 düzeyleri yeniden yapılandırılır ve B1 düzeyi öğrencilerin üretimsel becerilerini geliştirmek için iki aşamalı olarak düzenlenir. Programın sonunda B2 düzeyine ulaşılması hedeflenir ve özel durumlarda C1 düzeyinde on tema içeren bir izlençe programa eklenir (PİKTES, 2017).

Program'ın Ölçme ve Değerlendirme Yaklaşımı

Ölçme ve değerlendirme süreçlerini bütüncül bir yaklaşımla çeşitli açılardan değerlendiren program, esneklik ve öğretici tercihlere imkan tanıyan bir yapıya sahiptir. Bireysel farklılıkları göz önünde bulundurarak ölçme ve değerlendirme uygulamaları esnek ve güncellenebilir. Program, dilin işlevsel kullanımını ölçmeye yönelik tekniklere odaklanır ve öğrencilerin kendi dil öğrenme süreçlerini etkin bir şekilde değerlendirmelerine olanak tanır. Dil yeteneğini ölçmek için kullanılan yöntemler ve önerilen öğrenme ve öğretme uygulamaları. ise dört beceriyi esas alır bunlar dinleme/izleme, konuşma, okuma ve yazmadır (PİKTES, 2017).

Kazanımlar

Türkçe Dil Öğretimi Programı, dil seviyelerine ve becerilere göre sınıflandırılmış kazanımlar içerir. Okuma ve dinleme/izleme kazanımları dil girdilerini sağlarken, yazma, sözlü üretim ve sözlü iletişim kazanımları bu girdilerin üretime dönüşmesini hedefler. Farklı düzey ve becerilerin birbirini tamamlayıcı bir sarmal yapı oluşturmaları esas alınarak kazanımlar hazırlanır. Farklı dil işlevlerini ve yapılarından söz eden unsurlar ayrı kazanımlarda ifade edilirken, aynı işlevin parçası olan öğeler tek kazanım altında toplanabilir (PİKTES, 2017).

Tablo 3. Kazanım Dağılım Çizelgesi

Dil Becerileri		Dil Düzeyleri				Becerilere Göre Toplam Kazanım Sayısı
	A1	A2	B1	B2	C1	
Dinleme/İzleme	46	63	64	46	45	264
Sözlü Etkileşim	35	45	47	45	38	210
Sözlü Üretim	31	48	51	49	43	222
Okuma	51	66	71	60	54	302
Yazma	52	74	66	66	59	317
Dil Düzeylerine Göre Toplam Kazanım Sayısı	215	296	299	266	239	1315

	Dinleme/İzleme	Konuşma	Okuma	Yazma
Okul Öncesi	31	31	—	—
Erken Okuryazarlık Becerisi	1	1	3	3
İlk Okuma Yazma	2	3	10	14

(PİKTES, 2017)

SONUÇ

Suriyeli göçmen çocuklar için hazırlanan "Suriyeli Çocukların Türk Eğitim Sistemine Entegrasyonunun Desteklenmesi" projesi kapsamında incelenen Yabancı dil olarak Türkçe öğretim programı hazırlanırken hangi kriterlerin esas alındığı ve Avrupa Ortak Dil Referans Çerçevesinde (A1, A2, B1, B2, C1) tanımlanan dil seviyelerine göre örgün ve yaygın öğrenmede kullanılmak üzere hazırlanmış olduğu, aynı zamanda program hazırlanırken hedef dildeki ülkenin kültür yapısı gibi ülkenin birçok özelliği esas alındığı gözlenmiştir. Bu kriterler doğrultusunda Suriyeli göçmen çocuklara okul öncesinden ortaöğretim liseye kadar yabancı dil olarak Türkçe eğitimi verilmesi hedeflenmiştir. Bu hedef doğrultusunda sadece Türkçe eğitimi değil Suriyeli göçmen çocuklara materyal desteğinden entegre olmalarını kolaylaştıracak birçok imkânda bu projenin diğer amaçlarından biri olduğu sonucuna varılmıştır.

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**ORTAÖĞRETİMDE KULLANILAN “SCHRITT FÜR SCHRITT DEUTSCH” DERS
KİTABINDA KÜLTÜREL ÖĞELERİN İNCELENMESİ**

**INVESTIGATION OF CULTURAL ELEMENTS IN THE “SCHRITT FÜR SCHRITT
DEUTSCH” TEXTBOOK USED IN SECONDARY EDUCATION IN TURKEY**

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ÖZET

Yabancı dil öğretimi gelişen dünyada önemli bir alandır. Yabancı dil dersi bu anlamda yabancı dil öğrenimi için en uygun öğrenme ortamlarından biridir. Ders ortamlarında teknoloji temelli kaynaklar, görsel ve işitsel ders malzemeleri gibi somut materyallerin yanı sıra öğrenme ortamlarında tercih edilen kaynakların başında ders kitapları gelmektedir. Dolayısıyla yabancı dil öğretimi için hazırlanan kitaplar öğretimde önemli bir rol oynamaktadır. Ders kitaplarının nitelikleri, ders kitaplarının biçimsel ve içeriksel özelliklerine göre değerlendirilebilmektedir. Ders kitapları aracılığıyla yabancı dil öğretimi yapılmasının yanı sıra köken kültür ve hedef kültürün kültürel özelliklerinin aktarılması da önemli bir durumdur. Kültürel öğeleri öğrenme ve kültürün dille olan ilişkisi yabancı dil öğretiminde kültürlerarasılık yaklaşımının öne çıkan unsurlarından bazılarıdır. Bu bağlamda bu çalışmada Türkiye’de ortaöğretim kademelerinde ders kitabı olarak kullanılan “Schritt für Schritt Deutsch A1.1” düzeyi Almanca ders kitabı ve çalışma kitaplarında Türk ve Alman toplumlarına özgü kültürel öğelerin işleniş kültürlerasılık yaklaşım çerçevesinde ele alınmaktadır. Çalışmada nitel araştırma yöntemlerinden biri olan doküman analizi yöntemi tercih edilmiştir. Çalışmada kitaplarda yer alan Türk ve Alman toplumlarına özgü kültürel öğelerin, kültürlerarasılık yaklaşım çerçevesinde ne ölçüde yer aldığı incelenmiştir. Elde edilen sonuçlardan Almanca ders kitabında her iki kültürün de genel özelliklerine yer verilerek Türk ve Alman ulusunun kendine ait karakteristik yapısının genel çerçevede kitaplarda ele alındığı bulgulanmıştır. Her iki toplumun yemek ve yeme kültürü, eğitim ve gündelik rutinlerin nasıl olduğuna yönelik örneklerle yer verilmiştir.

Anahtar Kelimeler: Yabancı dil öğretimi, Ders kitabı inceleme, Kültürlerarası öğrenme.

ABSTRACT

Foreign language teaching is an important field in the developing world. In this sense, foreign language lessons are one of the most suitable learning environments for learning foreign languages. In addition to concrete materials such as technology-based resources and visual and audio course materials, textbooks are among the most preferred resources in learning environments. Therefore, the contribution of foreign language textbooks to teaching cannot be ignored. The qualities of textbooks can be evaluated according to the formal and content features of the textbooks. In addition to teaching foreign languages through textbooks, transferring the cultural characteristics of the origin culture and target culture is also important. Learning cultural elements and the relationship between culture and language are some of the prominent elements of the intercultural approach in foreign language teaching. In this context, in this study, the treatment of cultural elements specific to Turkish and German societies in the "Schritt für Schritt Deutsch A1.1" level German textbooks and workbooks used as textbooks in secondary education levels in Turkey is discussed within the framework of interculturalism approach. Document analysis method, one of the qualitative research methods, was used in the study. From the results obtained, it was found that the general characteristics of both cultures were included in the German textbook and the characteristic structure of the Turkish and German nations was discussed in the books in a general framework. Examples of the food and eating culture, education and daily routines of both societies are given.

Keywords: Foreign language teaching, Textbook review, Intercultural learning.

GİRİŞ

Kültür, bir toplumun kendine özgü sanat, inançlar, gelenekleri ve düşünce yapısıyla onun yaşam tarzını yansıtan genel özelliklerin tümüdür. Maddi ve manevi olarak toplumun var olmasını sağlayan kültür, toplumun dili, düşünce yapısı, inançları gibi birçok unsuru içerisinde barındırır. Dolayısıyla kültürü, genel olarak bir toplumun kimliği olarak tanımlamak mümkündür. Günümüzde yaşanan gelişmeler sonucunda yabancı dil öğrenmenin en önemli amaçlarından biri hedef dili iletişimde kullanabilmektir (Aktaş, 2004; Göçer, 2017; Günday& Aycan, 2018; Karaman, Neuner vd. 2007). Bu amaca ulaşmak için ise öğrenilen yabancı dilin gramer yapısından çok, kültür aracılığıyla yabancı dil öğretiminin yapılması süreci olumlu yönde etkileyebilecektir. Dilin içerikten ve yaşantılardan kopuk bir şekilde hedef kitleye aktarımının yabancı dil öğretiminde istenilen başarıyı getirmediği alan yazında belirtilmiştir (Balcı, 1997; Balcı, 2016; Bayraktaroğlu, 2015; Gornik, 2014; Karaman, 2016; Neuland, 1994).

Ders ortamlarında teknoloji temelli kaynaklar, görsel ve işitsel ders malzemeleri gibi somut materyallerin yanı sıra öğrenme ortamlarında tercih edilen kaynakların başında ders kitapları gelmektedir. Dolayısıyla yabancı dil ders kitaplarının öğretime katkısı göz ardı edilemez. “Ders kitapları, eğitim ve öğretim sürecinde kullanılan, eğitimin amaçlarına ulaşabilmesi için öğrencilerin öğrenme yaşantılarına kaynaklık eden en temel materyaldir” (Göçer, 2007:198). Bu materyaller, öğretmene ve öğrenciye rehberlik etmekte ve eğitimin planlı yürütülmesine yardımcı olmaktadır.

Günümüzde teknik gelişmeler neticesinde ders kitapları yanında akıllı tahta, bilgisayar, CD gibi başka görsel ve işitsel ders materyalleri de dil öğretiminde kullanılmaktadır. Ancak bütün bu gelişmelere rağmen ders kitapları kendi önemini ve yerini korumaktadır. Ders kitapları halen ülkemizde en temel ders ve öğretim materyali olarak yerini korumaktadır. Ders kitapları öğretim programlarının unsurlarını kapsamlı ele alan öğretim materyalleridir. Bunun sonucunda öğretim programlarının gerçekleşmesinde ders kitapları büyük bir paya sahiptir.

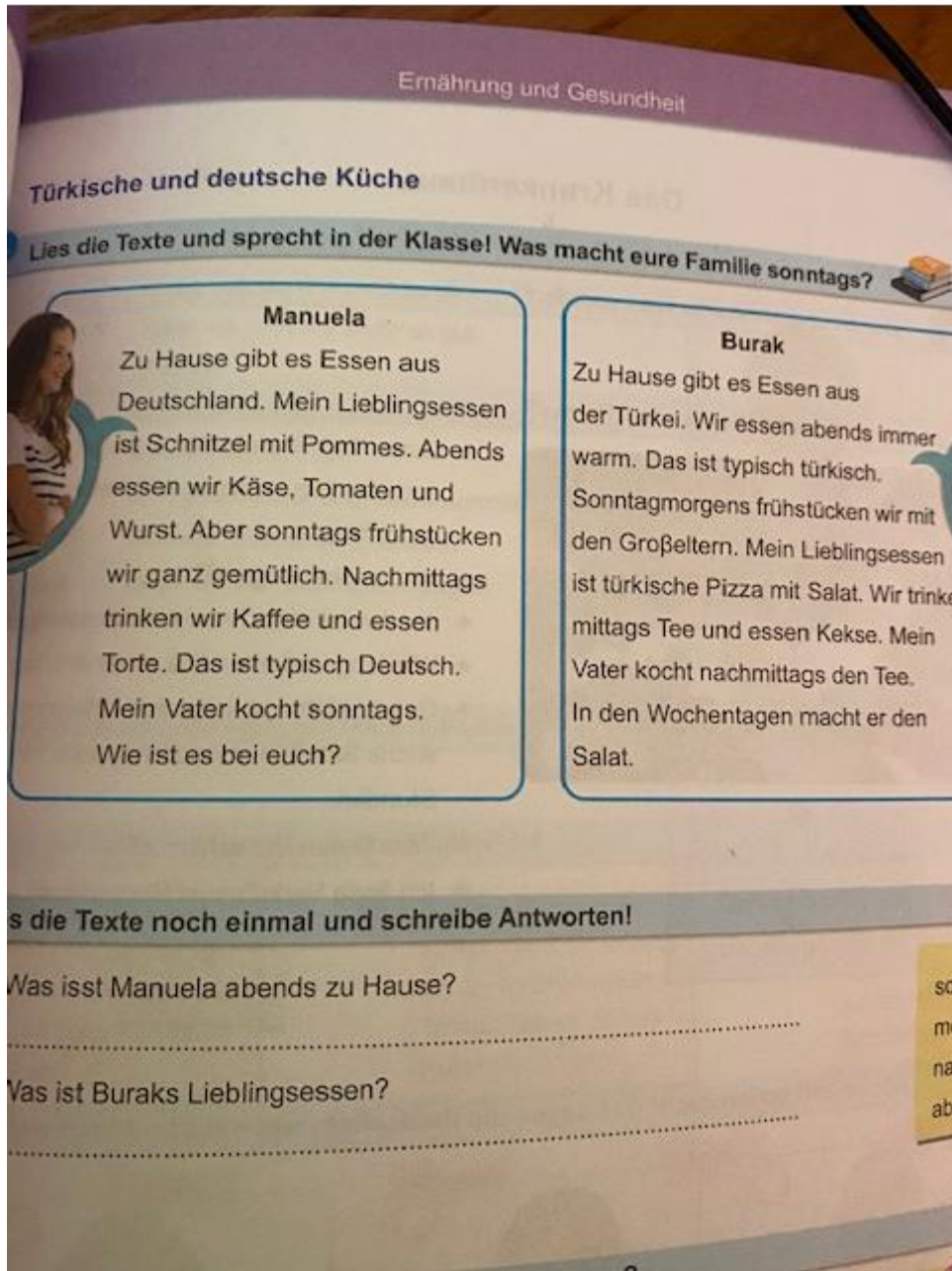
Ders kitapları öğretim programında belirtilen hedef kazanımlara ulaşmak için öğretmen ve öğrencilere temel kaynak oluştururlar. Ders kitapları içeriğin sistemli bir şekilde aktarımını sağlayarak öğretimin niteliğine katkı sağlar.

SCHRITT FÜR SCHRITT DEUTSCH” DERS KİTABINDA YER ALAN KONULAR

Kitapta ”Ich und Meine Kontakte, Perssönlichkeiten und Eigenschaften, Schule und Freunde, Die Jugendlichen, Ernährung und Gesundheit, Reisen, Gesund und Munter mit Sport, Natur und Mensch “ üniteleri yer almaktadır. İlk ünite olan “Ich und Meine Kontakte” ünitesinin ilk konusu Begrüssung bölümünde selamlaşma kalıpları verilmiştir.

Selamlaşma konusu Schritt für schritt deutsch Schülerbuch kitabının ilk ünitesinin ilk konusunu oluşturmaktadır. Selamlaşma kalıpları dil öğretim kitaplarında genellikle ilk konuyu oluşturur.

Resim 1: Ernährung und Gesundheit ((Çelen Öztürk, 2016: 51).



Resim 1’de görüldüğü gibi Manuela ve Burak adlı iki öğrenci Almanların ve Türklerin mutfak ve yemek alışkanlıklarıyla ilgili sohbet etmektedirler. Beslenme alışkanlıkları kültürel özelliklerin başında gelen bir özelliktir. Her milletin kendine özgü beslenme alışkanlıkları vardır. Kitapta sayfa 51’de Ernährung und Gesundheit adlı 4. ünite genel olarak beslenme alışkanlıkları konusu ile devam etmektedir. Manuela Alman kültürünü temsil ederek en sevdiği yemeğin Schnitzel ve Pommes olduğunu ifade etmesine karşılık Türk kültürünü temsil eden Burak ise en sevdiği yemeğin lahmacun ve salata olduğunu, akşamları sıcak yemek yediklerini, içecek olarak da çayı tercih ettiklerini ifade etmiştir. Akşamları her zaman sıcak yemek yedikleri, pazar günleri büyük anne ve büyük babalarıyla kahvaltı yaptıkları, öğleden sonra ise kek eşliğinde çay içtikleri, Çayı babasının demlediği ve salatayı da aynı şekilde babasının yaptığı belirtilmiştir. Bilindiği gibi Lahmacun Türk kültüründe yaygın olarak her bölgede tercih edilen bir Türk yemeğidir. Kitapta bu kültürel özelliğin vurgulandığı görülmektedir. Bunun yanı

sıra Ailenin yemeği birlikte yemesi de aile bağlarının kuvvetli olduğu Türk aile yapısını örneklendirmektedir.

Sayfa 54 incelendiğinde “Wie viel kostet das?” konu başlığı altında Türklerin ve Almanların pazar alış-veriş alışkanlıklarının ele alındığı görülmektedir. Yine sayfa 57’ de Manuela ve Burak “Türkische und Deutsche Küche”konu başlığı altında kendi Kültürlerine ait yemek alışkanlıkları hakkında konuşmaktadırlar. Manuela evlerinde alman yemeklerinin pişirildiğini, akşamları peynir, domates ve sosis yediklerini, Pazar günleri güzel bir kahvaltı yaptıklarını, öğlen vakitlerinde kahve içip turta yediklerini belirtmektedir.


Resim 2: Hallo, Brieffreund! (Çelen Öztürk, 2016: 35).

Lektion
6 C


Schule und Unterricht

Hallo, Brieffreund!


1. Schau dir die Bilder an und lies die Texte! Was passt zusammen?



A Es ist 23.00 Uhr. Es ist Nacht. Sie ist müde. Sie geht schlafen.



B Es ist sechs Uhr. Es ist Morgen. Ayşe steht auf.



C Es ist 12 Uhr. Es ist Mittag. Sie hat Hunger. Sie isst Salat, Spaghetti und trinkt Limonade.

der Morgen
der Mittag
die Nacht


aufstehen
stehe...auf

trinken

essen
schlafen
müde sein

die Pause
die Limonade
der Hunger

2. Mark sucht Brieffreunde! Lies die Anzeige und schreibe ihm eine Antwort!



Hallo, mein Name ist Mark und meine Schule heißt Körnerschule. Ich gehe in die 9B. Meine Lieblingsfächer sind Deutsch, Englisch und Kunst. Ich finde Sport doof. Mathe, Physik und Chemie sind interessant. Mein Chemielehrer ist okay. Wir haben viel Spaß. Mein Sportlehrer ist langweilig. Am Montag haben wir um 08.00 Uhr Deutsch. Wir haben um 12.00 Uhr eine Stunde Pause. Ich höre Musik und esse mein Mittagessen. Um halb drei habe ich frei. Wie ist deine Schule? Was sind deine Lieblingsfächer? Was findest du langweilig? Meine Adresse ist: F.C.T. Str.3, 10709 Berlin.

Schreibe:

eine Anrede,	Hallo
ein Datum,	meine Stadt,
die Unterrichtsfächer	
die Tage	
die Zeiten	
eine Verabschiedung	Gruß
	Name

3. Sprecht in der Klasse! Was macht ihr an einem Tag?

fünfunddreißig

35

PROCEEDINGS BOOK

June 27-29, 2024 / London, UK


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Ünite 3 sayfa 35'te "Hallo Brieffreund" adlı konuda Ayşe adlı Türk öğrenci bir günde yaptıklarını resimler eşliğinde anlatmaktadır. Örnek olarak sabahları saat 6.00'da kalktığını ve kahvaltı ettiğini, öğlen saat 12.00'de öğle yemeğini yediğini ve akşam saat 11.00'de yattığını ifade etmektedir. Mark adlı öğrenci Mektupta okul hayatını anlatarak 9. sınıfta olduğunu ve en sevdiği derslerin Almanca, İngilizce ve resim dersi olduğunu belirtmektedir.

Resim 3: Doğum günü kutlaması davet kartı (Çelen Öztürk, 2016: 67)


lade ... ein wissen

3. Lies die Einladungskarte und schreibe eine Antwort an Ayşe!






*Liebe Freunde,
Ich habe am 26. 12. 2016
Geburtstag. Ich feiere meinen
Geburtstag in der „West
Bowling-Halle.“ Ich muss
bis zum 20. 12. reservieren.
Kommst du?
Ayşe*



4. Sprich im Rollenwechsel!



- ◆ Feierst du Geburtstag?
- ◆ Wo möchtest du deinen Geburtstag feiern?

- ◆ Ja(Nein), ich feiere (nicht).
- ◆ Ich möchte meinen in feiern.

67

siebenundsechzig

Sayfa 67'de Geburtstage adlı konuda Almanya'da kutlanan bir doğum günü kutlama partisinin davet kartı (Einladungskarte) görülmektedir. Almanya'da yaşayan bir Türk ailenin kızı olan Ayşe adlı öğrenci doğum gününü kutlamak istemekte ve bu nedenle bir doğum günü partisi düzenlemektedir. Dolayısıyla arkadaşlarına göndermek üzere yazdığı Einladungskarte (doğum günü davet kartı) görülmektedir.

Resim 4: Almanya’da bir okul binası ve derslikler (Çelen Öztürk, 2016: 26)

Lektion 4 ASchule und Unterricht

Schule und Freunde



Das ist meine Schule.

1. **Hör zu und ergänze den Text!**

Ich..... Klara. Ich bin 15 Jahre alt. Ich in Berlin. Ich mag meine Schule, Lehrer und Lehrerinnen. Sie alle okay. Meine Freunde auch okay. Meine Klasse ist 9A.

mögen

wir sind
ihr seid
sie/Sie sind



2. **Schau dir die Fotos an! Sprecht in der Klasse und ordnet die Räume den Fotos zu!**

1 die Bibliothek






2 das Chemielabor

3 die Sporthalle

4 das Klassenzimmer

5 das Physiklabor

6 der Computerraum



3. **Hör zu und markiere! Welche Wörter hörst du?**

☐ das Klassenzimmer

☐ der Schulhof

☐ der Musikraum

☐ das Lehrerzimmer

☐ der Computerraum

☐ die Kunsthalle

Was ist Komposita?

die Schule + der Hof = der Schulhof

der Lehrer + das Zimmer = das Lehrerzimmer

26

sechszwanzig

Schule und Freunde adlı konuda Almanya’daki bir okuldaki ve bu okulun dersliklerinden fotoğraflar kitapta yer almaktadır. Berlin’deki okul, muhtemelen lise, türündeki bir Alman okuludur. Fotoğraflar aracılığıyla ülkenin eğitimi hakkında bilgiler verilmektedir. Okul binasının mimari tarzı Türkiye’deki okul mimari yapılarından farklı olarak Alman mimarisinin özelliklerini yansıtmaktadır. Yukarıdaki resimde görüldüğü gibi kütüphane, sınıf, fizik laboratuvarı, kimya laboratuvarı, spor salonu ve bilgisayar odasının görüntüleri yer almaktadır.

Resim 5: Essgewohnheiten (Çelen Öztürk, 2016: 55).


Ernährung und Gesundheit

Lektion
11 A


Essgewohnheiten

1. Hör zu und schau dir die Fotos an! 45


Bir ne




Kar tof fel




Zwie bel




Gur ke




Me lo ne




Ka rot te



Spi nat



Bro kko li

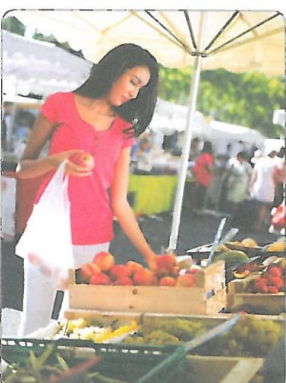


Wie viel?
ein Kilo...
eineinhalb Kilo
100 Gramm
250 Gramm

aufschreiben
schreibe...auf

2. Hör noch einmal und sprich deutlich nach! 46

3. Lies den Text und notiere! Was kocht Karla heute? 47



Karla kauft gerne auf dem Wochenmarkt ein. Sie sagt: „Auf dem Markt ist alles frisch und gesund. Es ist auch nicht teuer. Es ist billig. Im Supermarkt kosten ein Kilo Tomaten 1,30 €. Auf dem Markt kosten sie 0,95 €.“ Sie macht immer eine Einkaufsliste. Sie schreibt auf, wie viel sie braucht. Das ist praktisch. Das ist ihre Einkaufsliste.

gesund
frisch
billig
teuer

die Einkaufsliste
von Klara

ein Kilo Kartoffeln
ein Bund Petersilie
750 Gramm Zwiebeln
drei Fische

4. Sprich im Rollenwechsel! Ihr seid auf dem Markt und kauft ein! 48

★ Wie viel Kartoffeln brauchen wir?

★ Brauchen wir ?

★ Wie viel kosten ?

♦ Wir brauchen

♦ Ja (Nein), wir brauchen (keine)

♦ Ein Kilo kosten €.

fünfundfünfzig 55

Essgewohnheiten adlı konuda Karla adlı kişi pazarda alışveriş yapmaktadır. Pazarda her şeyin taze ve sağlıklı olduğunu, pazarda alışverişin pahalı değil, hesaplı olduğunu ifade etmektedir. Karla pazarın süpermarkete göre daha ucuz olduğunu fiyat karşılaştırmasıyla örneklendirmektedir. Her zaman alışverişe çıkmadan önce alınacakların listesini yaptığını bunun daha pratik olduğunu belirtmektedir. Böylelikle Alman toplumunun alışveriş alışkanlıkları ile ilgili bilgiler veriliyor.

Resim 6: Ülkeler ve milliyetler (Çelen Öztürk, 2016: 16)


Lektion 2 A Ich und meine Kontakte

Woher kommen die Personen?

Ich komme aus der Türkei.


1. Hör zu und lies mit! Welches Foto passt zu welchem Text?

A



★ Hallo. Ich bin Jahn. Wer bist du?
✦ Ich bin Sabine. Woher kommst du?
★ Ich komme aus England. Und du?
✦ Ich komme aus Österreich.

B









★ Guten Morgen. Mein Name ist Aysel Kocamaz.
✦ Guten Morgen. Mein Name ist Uwe Müller. Freut mich. Woher kommen Sie?
✦ Ich komme aus der Türkei.

ich mein/e

Woher kommst du? Ich komme aus Österreich.
Woher kommen Sie? Ich komme aus der Türkei.

ich komme ich spreche
du kommst du sprichst
er/sie/es kommt er/sie/es spricht
Sie kommen Sie sprechen

2. Schau dir die Tabelle an! Mach nach dem Beispiel Interviews!

Ich komme aus			die 			die 
Land	Deutschland	Österreich	der Schweiz	Liechtenstein	Italien	der Türkei
Sprache	Deutsch	Deutsch	Deutsch	Deutsch	Italienisch	Türkisch

Wie heißt du? Ich heiße...
Woher kommst du? Ich komme aus ...
Was sprichst du? Ich spreche ... und

Was sprichst du?
Ich spreche ...

Name	Land	Sprache
Martin	Liechtenstein	Deutsch

3. Ergänze die Dialoge!

★ Peter, woher kommst du?

✦ Ich komm aus Österreich, aus Wien. Was sprichst du?

★ Ich spreche Deutsch, sehr gut Spanisch und ein bisschen Italienisch.

★ Herr Gülüm, woher kommst du?

✦ Ich komm aus der Türkei.

★ Sprechen Sie Deutsch?

✦ Ja, ich spreche Deutsch.

16 sechzehn

Schritt für Schritt Deutch A.1.1 öğrenci kitabı s.16 çeşitli ülkelere ve Almanca konuşan ülkeler olan DACH (Deutschland, Österreich, Schweiz) ülkelerine ait bayraklar verilmiş ve diyalogda öğrencilerin milliyetlerine yönelik sorular ve cevaplar yer almaktadır. Woher kommen die Personen? adlı ünite de birçok ülkenin bayrağı konuştukları dilleri ve kendilerine ait olan özelliklerine yer verilmiştir. Bu bilgilere yer verilmesinin nedeni öğrencilere genel kültür bilgisi kazandırmak aynı zamanda kültürlerarasılık yaklaşımın benimsediği gibi farklı kültürlerin dil öğretiminde öğretici unsur olarak kullanılmasına olanak vermektir.

SONUÇ

Elde edilen sonuçlardan Almanca ders kitabında her iki kültürün de genel özelliklerine yer verilerek Türk ve Alman ulusunun kendine ait karakteristik yapısının genel çerçevede kitaplarda ele alındığı bulgulanmıştır. Her iki toplumun yemek ve yeme kültürü, eğitim ve gündelik rutinlerin nasıl olduğuna yönelik örnekler yer verilmiştir. Kitapta aynı zamanda iletişimsel yaklaşımın savunduğu yabancı dil öğretiminde iletişimin ön planda olması gerektiği düşüncesinin de dikkate alınarak gündelik yaşamdaki iletişim ortamlarının kitaba yansıtıldığı gözlemlenmiştir. Kitaptaki metinler aracılığıyla gündelik iletişimde kullanılması olası kelimelere yer verildiği bulgulanmıştır. Hem hedef hem de kaynak kültürü oluşturan genel özelliklerin kitaptaki ünitelerde kullanıldığı belirlenmiştir.

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**AN EVALUATION ON THE CONSTRUCTION OF THE NEOLIBERAL STATE IN
TURKEY**

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ABSTRACT

Neoliberal thought and approach sought to build a new state paradigm through a strong discourse after 1980. This thought and approach aimed at minimizing the state as much as possible, withdrawing it from service areas, and transferring the use of economic resources to capital. This approach aimed to eliminate all the carrier elements and gains of the welfare state, and to marketize and privatize many service areas through the discourse of a minimal and effective state. Movements and approaches such as Globalization, New Public Management and Governance have influenced neoliberalism to become hegemonic. In Turkey, the state has been reconstructed within the framework of the neoliberal paradigm since the 1980s. The 1980s and post-1980s period were periods of intensified reforms for Turkey to acquire a state identity according to the neoliberal state paradigm. Hence, under the influence of the neoliberal wind blowing in the world, there has been a process of reconstruction in Turkey in accordance with neoliberal ideas and approaches. The main objective of these reforms is to reconstruct the role, function, and structure of the state to be compatible with the market. This process continues in all its reality. This study argues that the neoliberal state has been constructed in Turkey since the 1980s, and reforms have been carried out in this context. In this context, it is aimed at presenting the perspective that there is a close interaction between the reforms aimed at restructuring the state in Turkey and neoliberal thought and approach.

Keywords: The State, the Neoliberal State, Public Administration, the Market, Capital

GETTING STARTED...

Neoliberal thought and approach, which made its presence strongly felt as a hegemonic thought and approach in the 1980s, proposes a new paradigm for the philosophy of the state. This paradigm anticipates a minimized state structure and a market-oriented, efficient, and effective bureaucratic model. As an opposing approach to the welfare state paradigm, the neoliberal paradigm claims that the state's function of providing services in many areas causes inefficiency in public administration and services and that the bureaucracy shows a "cumbersome" structure in this context. Therefore, it is proposed to replace this model with a state and bureaucracy structure that is compatible with the market. It is worth emphasizing that approaches and dynamics such as "globalization, new public administration, and governance", which are important parts of neoliberal thought, have very important functions in building this paradigm and making it a "hegemonic system." The "New Public Management Approach", one of these approaches, tries to put forward the principles and values of a public administration that can be in line with the rules of the market (McLaughlin et al., 2002). These principles and values are constructed on the basis of market-based and private business organization, and working logic. Therefore, the state is primarily aimed at being minimized, to be functionalized as an effective and efficient structure, and to be harmonized with the market.

After 1980, the state and public administration were built on the defense line of the new state paradigm with principles and values such as "effectiveness, efficiency, accountability, transparency, participation in governance, and performance" (Seriye, 2013; Kandeğer & Telsaç, 2022). Accordingly, the neoliberal state paradigm aims to make the principles and values of private business, which produce all its dynamics from within the market, and the understanding of governance dominant in the state philosophy. In this regard, the construction of the neoliberal state came into question in Turkey in the 1980s.

The criticism of the state and the approaches adopted by Neoliberal thought and its components are important sources of reference in the structural transformation of the state in Turkey as of 1980. This new paradigm, anticipating a fundamental shift from import-substitution industrialization policies to

export-led growth and development policies, also anticipates an economic model that operates according to free market principles and a state philosophy and institutional identity to be structured accordingly. The January 24, 1980 decisions, the three-year stand-by arrangements with the IMF, the political authorities and approaches of the period, and especially the role of the civilian government led by Turgut Özal in the construction of a neoliberal state in Turkey have been decisive elements in this construction process (Kandeger, 2024: 351). In this respect, it would be meaningful to analyze and evaluate the neoliberal state paradigm being constructed in Turkey in light of these dynamics.

CONCEPTUAL PROJECTIONS OF NEOLIBERALISM

Neoliberal thought and approach, which has strongly asserted its presence as a hegemonic thought and approach since the 1980s, tries to make the market-based and capital-centered paradigm dominant in the world. The political imaginary of this paradigm is a minimal state and institutional structures compatible with the market. In particular, he fervently argues that the cumbersome structure of the bureaucracy is far from effectiveness and efficiency by opposing the broad and multidimensional functions of the welfare state. In this regard, it tries to present the discourse that the market produces "welfare and happiness, efficiency, and productivity" as the uniqueness of reality in the erosion of the state's publicist identity.

Neoliberal thought, as an economic-political theory in essence, argues that the realization of private property, free market, and free trade rules will establish social welfare. It anticipates expanding the space for entrepreneurship and building the free market through the state. Therefore, neoliberalism is defined as a set of ideas and practices that impose themselves on the world through both international organizations and national states, where the basic principles and values of the welfare state are eliminated and the obstacles to capital accumulation are overcome (Hayek, 2005; Gambetti, 2009).

Neoliberalism, especially with the coming to power of Ronald Reagan in the United States and Margaret Thatcher in the United Kingdom, has started to spread a state philosophy compatible with its basic principles and values. The essence of the neoliberal state philosophy, which has the influence of the Chicago and Austrian schools in its ideological foundations, is the management of the state with the logic of the private sector. The neoliberal state is characterized by austerity policies constantly increasing poverty and inequality, authoritarian state apparatuses that weaken unions and struggle for rights, and privatized institutions far from transparency and accountability (Taşkale, 2021; Karahanoğulları & Türk, 2018). In this respect, the state was aimed at being minimized and transformed into a structure compatible with the free market, and in line with this aim, the institutional identity of the state was tried to be reconstructed on the axis of the new public administration approach. The new public administration approach aims to increase efficiency in public administration, horizontal specialization in public institutions through decentralization, a new contracting system in public administration, the creation of new service delivery models, a private business management style, and the realization of result-oriented performance targets (Christensen, 2012; Polidano, 2001).

It should be emphasized that in neoliberal thought, the market has been prioritized over the state, and the state has been given an important mission to not intervene in the market unless necessary and to secure the functioning of the market (Güzelsarı, 2008; Gökçe, 2011). According to Dardot and Laval (2012), who provide a Marxist reading of neoliberalism, neoliberalism is neither a reconstruction of liberalism nor a weakening of the state. These thinkers argue that neoliberalism aims to build the legal and political infrastructure for the institutionalization of the free market order as a new form of governance globally. In a sense, neoliberalism represents the mind of global capitalism. Undoubtedly, this is based on a reason that sanctifies the market and defends the interests of global capital. From another perspective, neoliberalism is essentially defined as a state design that seeks to change society and politics through economic techniques of evaluation and measurement. In this respect, neoliberalism is oriented towards the liberalization of trade, the privatization of public services, the sovereignty of corporations, and thus the governance of states as corporations (Taşkale, 2021: 229). Accordingly, neoliberalism, which is the last phase of capitalism, is considered capital, maximizing its profits and thus strengthening its power (Dumenil and Levy, 2009). In the 1980s, deregulation and privatization were important implementation tools of the "downsizing of the state" policies imposed by neoliberalism on the axis of effective and efficient state discourse. While these instruments aim to liquidate the state's intervention areas and instruments used for the 'public interest', these practices allow neoliberal ideology to establish a hegemony over social relations and impose a new understanding of state and society.

Moreover, it is aimed to reduce tax tariffs, flexibilize the labor market, prevent organized labor, promote competition, and support precarious employment policies in the public and private sectors (Güzelsarı, 2003: 17; Çitçi, 2008: 6; Gilbert, 2013: 12-14). The fact that the main objective is the market and capital makes it necessary to harmonize the labor force with the market and capital.

Neoliberalism proposes individual entrepreneurship, securing property rights, the free market, and the free market, not the state, having a say in economic decision-making in order to increase social welfare (Harvey, 2005), while attributing an important role to the state as an ideology that rebuilds the power of the global capitalist class. In this framework, the role of the state is to fulfill the institutional-legal structures and functions that will secure property rights and ensure the proper functioning of markets. The main objective here is to harmonize institutions with the market. Moreover, in the absence of free markets, the state is also charged with the task of creating them. In a sense, state interventions are in question when necessary (Çitçi, 2008; Gilbert, 2013). To emphasize, state intervention is not on behalf of society but on behalf of the market.

THE CONSTRUCTION OF THE NEOLIBERAL STATE IN TURKEY

Neoliberalism represents a process built on a critique of import substitution policies in Turkey. This idea was brought to the agenda for the interests of national and global capital in order to eliminate both the crisis of accumulation strategy and the crisis of hegemony, and it came into existence as a project realized with the material and ideological support of global finance capital and the help of the state's coercive power (Karahanoğulları & Türk, 2018: 415). The construction of neoliberalism in Turkey was realized by the January 24, 1980 decisions, the efforts of the military regime afterwards, the opportunities provided by the 1982 Constitution and the governments led by Turgut Özal.

The January 24, 1980, decisions are important in terms of laying the groundwork for the neoliberal construction process. These decisions laid the foundations of a free market-based economic order, liberalized imports and exports, and paved the way for Turkey's integration into the global capitalist order (Ulagay, 1984). Among the objectives of the program were the rapid suppression of real wages, a shift from politically controlled pricing to market pricing, an increase in exports, a high rate of devaluation, price increases in SOE goods, tight monetary and fiscal policies and an increase in interest rates. The January 24 decisions were carried out by the same technocratic staff during the coup (Boratav, 2005: 91; Karahanoğulları, 2019: 448). The January 24, 1980 decisions paved the way for the Turkish economy to move away from its statist and patronage identity within an import-substitution framework and to truly capitalize and integrate with the global capitalist economy.

The objectives of this program, which was intended to be put into practice with the January 24 decisions before the military coup in Turkey and which corresponds to the founding line of neoliberalism, were not Turkey's industrialization or development, but rather its articulation with international markets. For this reason, there was a dual package of 'stabilization and structural adjustment' implemented by the International Monetary Fund (IMF) and the World Bank (WB) in order to realize a restructuring in the state and solve the balance of payments problem (Ekzen, 2009; Ute and Lance, 1998). These packages are road maps presented to states in order to build the structure anticipated by neoliberal thought. It should be pointed out that these global powers, which act as the spokespersons of international capital, need political leaders and domestic coalition forces to implement and enforce these packages (Öniş and Şenses, 2007). The neoliberal state recognizes serving not only the interests of national capital but also those of international capital as an important goal. In this context, the transfer of state-owned public economic enterprises (SOEs) to private capital forces, the participation of global capital and transnational corporations in the management and decision-making processes of the state, and the elimination of national limitations that may stand in their way are among the main objectives of neoliberalism (Çitçi, 2008: 6). It should be underlined that in the letter of intent that Turkey submitted to the IMF in 1979, assurances were given that SOEs would be reformed and market pricing would be introduced by adjusting the prices of the goods and services they produced (Başkaya, 2004: 186). This opened the door to the privatization process that started in the 1980s and would continue in the 1990s and 2000s.

Turkey was forced to adapt structurally to the new phase of global capitalism, primarily through the coup d'état of September 12, 1980, and a liberal government in Turkey, as in the United Kingdom and the United States, became an actor in this process. Hence, the 1980s in Turkey's history are an important period in the deepening of capitalism and the development of bourgeois hegemony. Seeking to establish

a harmonious coexistence with the developmental dynamics of global capitalism, Turkey has, in a sense, witnessed a unique neoliberal transformation. The Turkish style of neoliberalism has been shaped by the synthesis of an authoritarian mentality and a marketist approach that seeks structural harmony. After 1980, the authoritarian-statist concept of sovereignty and marketist concepts have materialized as the constitutive elements of this synthesis. In the 1980s, all the principles, values, and institutions that concepts such as sociability, publicness, democracy, and citizenship point to were seen as obstacles to the authoritarian market model and were tried to be eliminated. The unique aspect of Turkey's neoliberalism is that it is intertwined with the authoritarian statist tradition, which was reinterpreted on September 12, 1980, and the mechanism of heavy statist dominance. This is a situation in which the 'market' and the 'coercive power of the state' are intertwined in intricate ways, and state-centered sovereignty practices and market-centered liberalization have continued their tense cooperation in the process. In this process, the state's intervention in the economy and society has not diminished, on the contrary, it has become centralized, personalized, and politicized. There has been a degeneration of the class character of the state in favor of capital and the development of patronage, subsidiarity, populist, and informal relations instead of pluralist parliamentarism. Therefore, on the one hand, the state and politics have been shaped through the 'market', while on the other hand, market relations have become intrinsically and directly 'political'. Consequently, the harmonious coexistence of state logic and market logic has been achieved (Özkazanç, 2005: 637-639). In this context, the aim of restructuring the economy in line with neoliberal thinking was established through organic relations between political rulers and capital circles, away from the influence of legal and bureaucratic powers.

In the 1980s, the idea of the 'market' and 'market society' began to be strongly advocated in Turkey in line with the spirit of neoliberalism. Legal, institutional, and cultural interventions to establish and develop a free market were quite intense in this period. In particular, tactics and techniques similar to those in the West (promoting a culture of enterprise and competition, privatization, and autonomization) were introduced and adopted. It is possible to evaluate this period as an establishment period in which the infrastructure of the market and market society was deepened. In this period, the idea of 'economic governance' was attempted to be realized on three grounds. The first is the harmonious coexistence between the political administration and a free market. Second, the political administration should make the necessary legal and institutional interventions to build the free market. The third is to reconstruct the political administration in accordance with the principles of economics. The policies of the Motherland Party (ANAP) are especially policies for liberalization. In order to organize the administration according to market principles, a bureaucracy consisting of technocrats was placed in front of the existing public bureaucracy, public services were privatized, and public administration was structured with private sector techniques (Özkazanç, 2005: 638). In the current process, instead of a public service understanding, a market-oriented service understanding comes into question. In other words, services are marketized and made accessible to citizens.

Since 1980, the deep integration of Turkish capitalism and world capitalism has deepened both the contradictions between labor and capital and the contradictions between the international accumulation process and capital. A radical transformation of the state structure has become necessary to manage these contradictions. This transformation was attempted to be realized through three main mechanisms. The first is the changes made to political parties and the electoral system. For example, in 1983, the electoral law was amended to introduce a 10 percent electoral threshold. With this regulation, the political sphere was narrowed, a political order purified of ideologies was created, and the management of class contradictions was transferred from the political sphere to the state apparatus. Second, important policy decisions to build the neoliberal order were put into practice through decrees with the force of law issued by the Council of Ministers, rather than according to the laws of the parliament. Third, the executive apparatus was reorganized in line with the international accumulation process. The General Directorate of Treasury, formerly under the Ministry of Finance, and the General Secretariat of Foreign Trade, formerly under the Ministry of Trade, were merged under the Undersecretariat of Treasury and Foreign Trade, and this undersecretariat was directly attached to the Prime Ministry. The General Directorate of Foreign Capital was also taken from the State Planning Organization (SPO) and attached to the Undersecretariat of Treasury and Foreign Trade. Thus, institutions such as the SPO, the Ministry of Finance, and the Ministry of Trade, which are important institutions in the field of economy and development and which take all important decisions on economic management, have been transformed into institutions directly under the Prime Ministry and have been gathered under the Prime Ministry as

market-oriented and autonomous institutions (Oğuz, 2012: 9-10). According to Birgül Ayman Güler, a "dual bureaucracy" was created in order to realize the restructuring process rapidly after 1980, and the process, which started with "upper boards" in 1980-83, continued in 1983-86 with the institutionalization of an "alternative bureaucracy" by merging different institutions by taking some parts of them and giving them new powers, and the implementation of adaptation reforms (Güler, 2005: 135-136). Therefore, a bureaucracy acting in parallel with the market has gained effectiveness.

The most important political figure in the construction process of the neoliberal state in Turkey is undoubtedly Turgut Özal. Whether in a pejorative sense or in the sense of conceptualizing the "Neoliberalism and New Right" of the 1980s, it is necessary to talk about the phenomenon of "Özalism" in Turkey during this process. In many respects, Turgut Özal's influence has been decisive in the processes of political, administrative, legal, economic, and cultural change in Turkey since the 1980s (Bora, 2005: 589). Thus, Turgut Özal is the main political actor in the neoliberal state building process in Turkey. Özal, who is identified with his personal management approach, was a technocrat of the WB and IMF programs in the pre-coup period and played an important role in the preparation of the January 24th decisions. He was appointed Minister of State in charge of economy and Deputy Prime Minister in the technocrat government of Bülent Ulusu, which was formed during the coup period, and later became the leader of the Motherland Party (ANAP), which came to power in the 1983 general elections. He served as Prime Minister for two consecutive terms and as President from 1989 until his death in 1993, becoming the main actor in the founding period of neoliberalism in Turkey. In the 1980s, the "anti-statism" and "criticism of bureaucracy" that marked the statements of Özal, the head of political power, were important discourses of neoliberal state building. The criticism of the bureaucracy has built a pro-neoliberal bureaucracy, and a bureaucracy that acts under the guidance of political power and therefore flexibilizes the rules has been adopted (Karahanoğulları & Türk, 2018: 415-428). The traditional bureaucracy's resistance to neoliberalism is decisive in the adoption of this understanding. Therefore, in order to weaken this resistance, an alternative bureaucracy in favor of the free market was created.

An important legal arrangement in the process of building the neoliberal state in the early 1980s was the "Law on Authorization" adopted in 1982. Through this law, the political power gained the opportunity to rapidly transform the central administration in line with the neoliberal paradigm. The views of Turgut Özal, Deputy Prime Minister and Minister of State in Charge of Economy, during the parliamentary debates on the "Law on Authorization" are particularly remarkable in terms of reflecting the paradigm shift in the state structure. "...The Turkish administrative structure, which dates back centuries, has become obsolete and lagged behind economic and social developments, unable to keep up with innovations and needs as conditions changed. As a result, excessive centralization in administration, imbalance in the distribution of duties, powers and responsibilities, over-employment, idle capacity, inefficiency, unnecessary formality and red tape have occurred. The most important factor hindering the economic and social development of Turkey, which is a developing country, is these diseases of the Turkish administration...Practical arrangements will be made to ensure more efficient operation of State Economic Enterprises and their operation will be ensured according to the conditions of the market economy in accordance with the economic stabilization program." (Danışma Meclisi Tutanakları, Yasama Yılı: I, Cilt 5, 1982: 439-440). When Turgut Özal's ideas were analyzed, the main objectives of political power were the downsizing and restructuring of the state, the liberalization of the market, and the regulation of State Economic Enterprises according to the free market approach. During the 1977-80 period, one of the issues of debate between the political powers and the IMF was the issue of reforming the State Economic Enterprises and aligning them with the market. This authorization law empowered the Council of Ministers to issue Statutory Decrees (KHK) for two years, strengthening and empowering the executive power vis-à-vis the legislative power. Referring to the organizational size of the state, the legal grounds for reforms that could correspond to a new understanding of public service were prepared with this authorization law, and it was instrumentalized to carry out the envisaged reforms in a very fast and short time (Kandeger, 2024: 342-349). Hence, the political authority gained the opportunity to carry out structural harmonization rapidly without the need for parliament. Özal, who had a libertarian identity, thought that the state should withdraw from the economy as a productive force, the bureaucracy should be reduced, and the bureaucracy should be formed by a small number of talented and elite individuals. Moreover, he prioritized economic development and adopted the idea that the main role of the state should be to regulate and encourage development (Özal, 1993). According to Özal, "a strong state is not a state with many civil servants; a strong state is not a state that has many expenditures

but cannot make ends meet. A strong state is not a source of employment; a strong state is not a god or a father. The main thing is not the wealth of the nation as a result of the wealth of the state, but the wealth of the state as a result of the wealth of the nation" (Barlas 2001: 263). It is possible to interpret these thoughts of Turgut Özal in terms of creating entrepreneurial individuals or capitalists in the free market and seeing wealth as a value.

Turgut Özal's governance model and approach show a weak commitment to democracy, institutions, and law. His main idea and aim were to achieve the rapid implementation of market-oriented reforms (Öniş, 2004: 120). As an important follower of neoliberalism's minimal state approach, Özal's main idea of downsizing the state was also reflected in his discourse. "We have to downsize the state. Downsizing the state does not mean that the state should not do anything, on the contrary, the state should be small but strong (Özal, 1992). Özal's discourse is extremely in line with neoliberalism's "minimal state" approach. In addition, the series of discourses of Özal, who was an influential political actor of neoliberalism in Turkey, shows the vision of Turkey he wanted to build in the 1980s. He has some statements such as "My civil servant knows his way around", "I love the rich", "a rich Muslim is better than a poor Muslim"; a discourse that Turkey is a "small USA" and a thesis that "we will catch up with Japan in 10 years" (Karahanoğulları, 2109: 458). The economic system adopted in Özal's discourses is the free market system and the basic element of economic development is the individual's ability and power of enterprise (Özkazanç, 2005: 640). These discourses and approaches are noteworthy in terms of pointing out the road maps and cornerstones of the identity envisioned for Turkey. This is also an important influence in terms of Turgut Özal's impact on the tradition and understanding of right-wing politics in Turkey.

In the 1980s, Turkey underwent a paradigm shift and attempted to build a system in line with the neoliberal state paradigm. The founding elements of this effort were the January 24, 1980 decisions and the political authorities and technocrats who put these decisions into practice. Especially the libertarian identity of Turgut Özal, the political actor of the period, had a decisive influence. In the background of Özal's discourses and statements, there is a critical attitude towards the welfare state. Turgut Özal and his cadre were the main actors in the construction of the neoliberal state in Turkey. This cadre, advocating a market-oriented approach, tried to gradually realise policies that establish a harmonious association with the market by weakening the public policy understanding of the welfare state while putting an end to the import substitution policies of the pre-1980s. Therefore, it should be emphasised that a state understanding envisaged by neoliberalism started to be constructed in the aforementioned period. In this period, the market was celebrated and the owners of capital were presented to the society as respectable and dignified people who produce added value, create employment and contribute to economic growth and development.

TO CONCLUDE...

Turkey was one of the countries caught up in the neoliberal waves of the 1980s. This global wave aimed at a change in the structure, role and functions of the state in order for the state to live in harmony with the market with neoliberalism in a period of deepening capitalism. In this regard, there has been a neoliberal state construction in Turkey, which took an important step with the 24 January 1980 decisions, continued with the 12 September coup administration and accelerated with Turgut Özal, who came to power in the elections in 1983. In line with the neoliberal thought and approach, a change in the place and function of the state in the economy was envisaged and arrangements were made for political and economic liberalisation.

The state reforms of this period, with an administrative, economic and financial liberalisation content, anticipated the withdrawal of the state, which had a say in a wide range of services before 1980, and the filling of the vacated areas by the private sector/capital. Neoliberal reforms were included in a restructuring process in order for the state to have an institutional identity, role and functions compatible with the market through the criticism of the "over-extended welfare state", and Turgut Özal and his staff, who left their mark on the 1980s, tried to build a neoliberal state through reform policies in line with the neoliberal approach. The political discourses of neoliberal construction have been based on the assumption of solving and rationalising the administrative/structural problems of the state and ensuring economic development, development and social welfare. In Turkey, this process will continue extensively in the 90s and 2000s.

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**INVESTIGATION OF THE POSITIONING PERFORMANCE OF THE RT-PPP
TECHNIQUE UNDER LIMITED SKY-VIEW CONDITIONS AND THE CONTRIBUTION
OF MULTI-GNSS OBSERVATIONS**

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ABSTRACT

This study evaluates the positioning ability of the Real-Time Precise Point Positioning (RT-PPP) method under limited sky view conditions and the impact of multi-Global Navigation Satellite Systems (GNSS) observations to the RT-PPP technique. Observations from an International GNSS Service (IGS) station was analyzed using the BKG Ntrip Client (BNC) software under a 20° elevation mask in real-time, based on both Global Positioning System (GPS)-only and GPS+Galileo combinations. The obtained solutions were evaluated in terms of convergence time, accuracy, and repeatability, using IGS daily solutions as the ground truth. The outcomes obviously indicate that the RT-PPP relied on GPS-only observations converges in about 28 minutes, whereas the RT-PPP method utilizing multi-GNSS observations converges in just 7 minutes. Furthermore, the findings of the study highlight that under limited sky view conditions, the RT-PPP technique relied on GPS-only and multi-GNSS observations provides three-dimensional (3D) positioning accuracy of 84.2 and 9.8 cm, respectively. In summary, multi-GNSS observations provide about a 74.7% improvement in convergence time, while 3D position accuracy based on GPS-only observations is improved by 88.4%. However, it should be noted that the repeatability value obtained from GPS-only observations is lower than that obtained from multi-GNSS. The 3D standard deviation value of the RT-PPP relied on GPS-only is 14.4 cm, while for the RT-PPP relied on multi-GNSS observations, this value is 22.6 cm. Overall, the study clearly demonstrates the impact of multi-GNSS on the RT-PPP under limited sky view conditions and shows that the RT-PPP has great potential for RT geodetic applications.

Keywords: GNSS, RT-PPP, multi-GNSS, BNC.

INTRODUCTION

Precise Point Positioning (PPP) is a method that allows high-precision position determination using phase observations from a stand-alone Global Navigation Satellite System (GNSS) receiver. (Zumberge et al., 1997). In recent years, the usability of the PPP technique in many areas such as navigation applications (Geng et al., 2010), precision agriculture (Guo et al., 2018), determination of dynamic behavior and earthquake-induced displacements (Xu et al., 2013), and atmospheric (Zhou et al., 2020) studies has been demonstrated by some investigations. Moreover, the PPP technique demands precise clock and orbit corrections to determine position with high precision (Kouba, 2015). However, it should be noted that these products are not real-time (Wang et al., 2018).

As a result of the increasing demand for RT-PPP, International GNSS Service (IGS) presents real-time orbit and clock corrections to GNSS users (Hadas and Bosy, 2015). Furthermore, there are studies examining the RT-PPP's positioning performance in static and kinematic modes (El-Diasty and Elsobeiey, 2015), its ability to detect ground motions caused by earthquakes (Li et al., 2013), its usability in structural health monitoring applications (Tang et al., 2017). For example, Öcalan and Soykan (2012) evaluated the data obtained from a stationary station with BNC v2.5 software to examine the RT-PPP's positioning performance and revealed that the RT-PPP allows obtaining position information at the cm level in horizontal and vertical components. Alçay (2019) evaluated the data obtained from 7 stationary stations with BNC v.2.12.6 software and stated that the RT-PPP technique provided an accuracy of ± 10 cm at the end of the convergence period. Alçay and Atiz (2021) evaluated the data obtained from stationary stations in real-time based on GPS-only observations with BNC v2.12, RTKLIB v2.4.3, and PPP-WIZARD v1.4.2 software and stated that after a convergence period of 1 hour, ± 10 cm was obtained for the horizontal component and ± 20 cm for the vertical component with BNC and RTKLIB software. İnal et al. (2022) evaluated the observations obtained from 3 different IGS stations on a day when geomagnetic activity was intense, under real-time conditions with

the RTKLIB software, considering the combination of different satellite systems, and reported that the RT-PPP technique provided dm level accuracy.

In the current literature, it is seen that the RT-PPP's positioning performance under ideal conditions and the impact of multi-GNSS on the RT-PPP method have been evaluated. However, it is very clear that the RT-PPP's positioning performance under limited sky view conditions and the contribution of multi-GNSS under limited sky view conditions have not been investigated in detail yet. In this study, unlike the previous investigations, the positioning capability of the RT-PPP technique under limited sky view conditions and the contribution of Galileo satellite constellations to GPS observations have been investigated for the first time. In this regard, RT-PPP results were obtained based on GPS and GPS+Galileo satellite combinations in the case of limited sky view conditions with the BNC v2.12.16 software, and the outcomes were compared with the IGS weekly solutions.

MATERIALS AND METHODS

The experiment designed to examine the RT-PPP's positioning performance under limited sky view conditions and to investigate the impact of multi-GNSS is presented in this section. In this regard, the FFMJ station was selected from the IGS network to perform RT-PPP solutions with the BNC v2.12.16 software (Figure 1). The study was realized on June 18, 2023, and the experiment lasted about 210 minutes. In the study, RT-PPP solutions were obtained simultaneously under a 20° elevation mask based on GPS (G) and GPS+Galileo (GE) observations with BNC v2.12.16 software. Figure 2 shows a view from the experiment. Moreover, the processing parameters determined for the RT-PPP technique are summarized in Table 1.

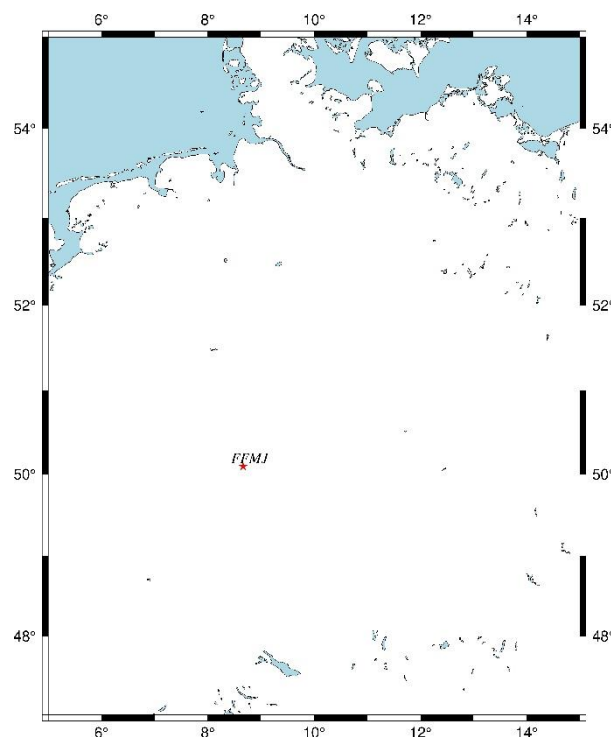


Figure 1. Location of FFMJ station

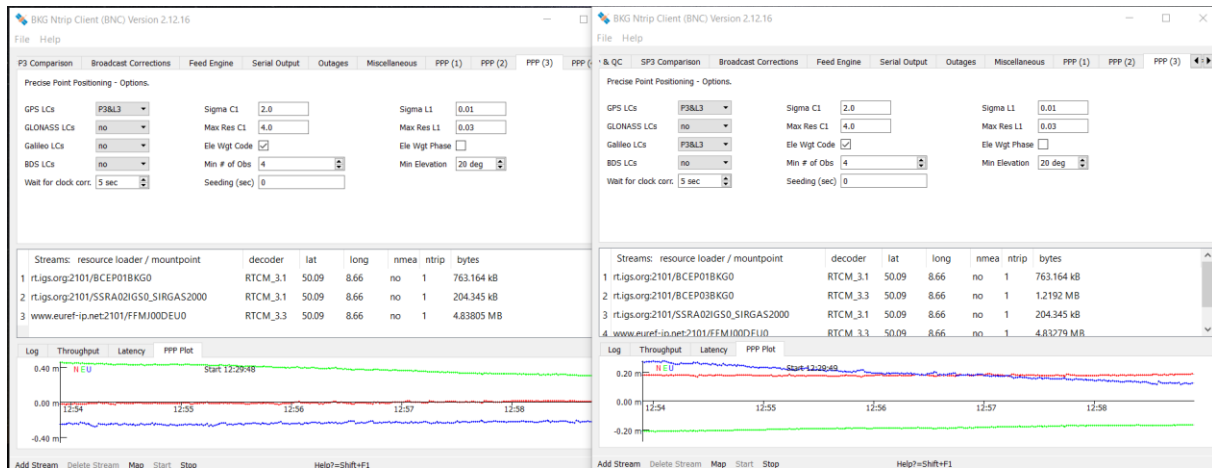


Figure 2. A view from the moment of the experiment

Table 1. Processing Parameters

Option	Description
Elevation Mask	20°
System	G/G+E
Sampling Rate	1 Hz
Mod	RT-PPP
Handling of Troposphere	Saastamoinen Model
Handling of Ionosphere	Ionosphere-Free Linear Combination
Real-Time Stream	SIRGAS2000
Corrections of Antenna Phase Center and Tidal Loadings	Corrected

RESULTS AND DISCUSSION

This section includes an evaluation of the RT-PPP's positioning performance method under limited sky view conditions and an evaluation of the impact of multi-GNSS. It should be noted that IGS weekly solutions are considered as references. Figure 3 illustrates the error time series of the RT-PPP based on different satellite combinations for three components. From the figure, it is seen that the GE RT-PPP time series is more consistent than the G RT-PPP. It is also obvious that the GE RT-PPP error time series is closer to zero. Moreover, Table 2 presents the statistical values of the errors of the RT-PPP based on different satellite combinations for the North, East, and h components. It should be noted here that the mean error and Root Mean Square Error (RMSE) values for each component are computed using the coordinates obtained after the convergence moment. Convergence time was determined as the moment when the three-dimensional (3D) position accuracy is less than 50 cm for 10 minutes. The G RT-PPP solutions converged in about 28 minutes, while the GE RT-PPP solutions converged in 7 minutes. These results obviously demonstrate that the impact of multi-GNSS observations on the RT-PPP technique. It is also clear from Table 2 that the mean error and RMSE values derived from GE

RT-PPP are smaller compared to GE RT-PPP. Finally, the 3D positioning accuracy provided by the G RT-PPP is 84.2 cm, while that of the GE RT-PPP is 9.8 cm. These results clearly emphasize the impact of multi-GNSS observations on the RT-PPP technique under limited sky view conditions.

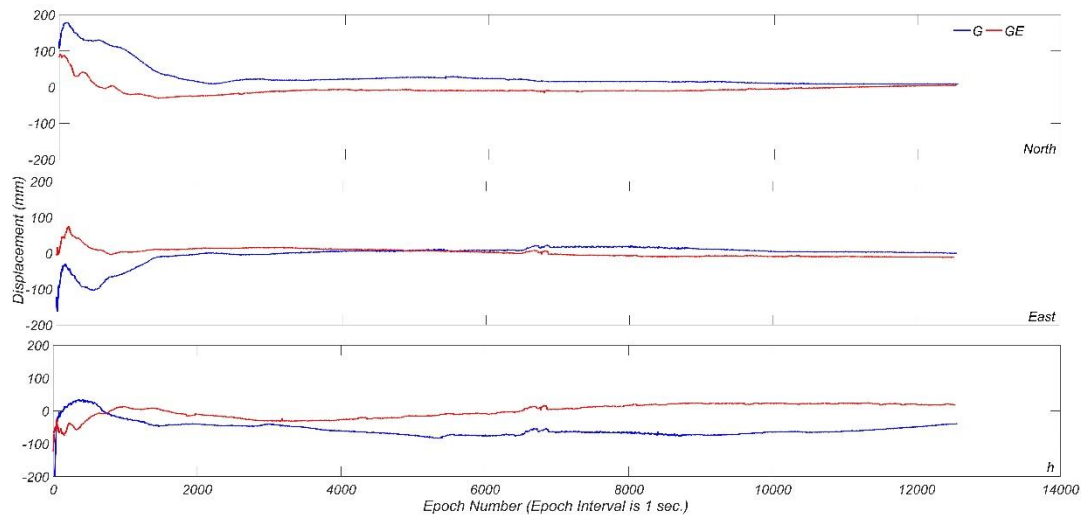


Figure 3. RT-PPP error time series

Table 2. Statistical values of errors obtained from RT-PPP for three components

	North		East		h	
	Mean (cm)	RMSE (cm)	Mean (cm)	RMSE (cm)	Mean (cm)	RMSE (cm)
G	16,3	26,2	6,6	45,6	-61,7	65,7
GE	-9,2	4,1	0,6	5,3	12,4	7,1

The error distributions of the RT-PPP technique under limited sky view conditions based on different satellite combinations are shown in Figure 4. From the figure, the superiority of the GE satellite combination over G is clear, especially for the h component. It is also obvious that the errors obtained from the north and east components of the GE RT-PPP technique are clustered more around 0 compared to G. Moreover, Table 3 shows the standard deviation (STD) values of the RT-PPP based on the G and GE satellite combinations for the north, east, and h components. It is clear from the table that the G RT-PPP has lower repeatability values. This may be related to the real-time Galileo satellite clock and orbit errors obtained from the SIRGAS2000 stream. However, these findings need to be verified. However, considering the convergence times and the obtained accuracy values, the impact of the multi-GNSS on the RT-PPP technique under limited sky view is clear.

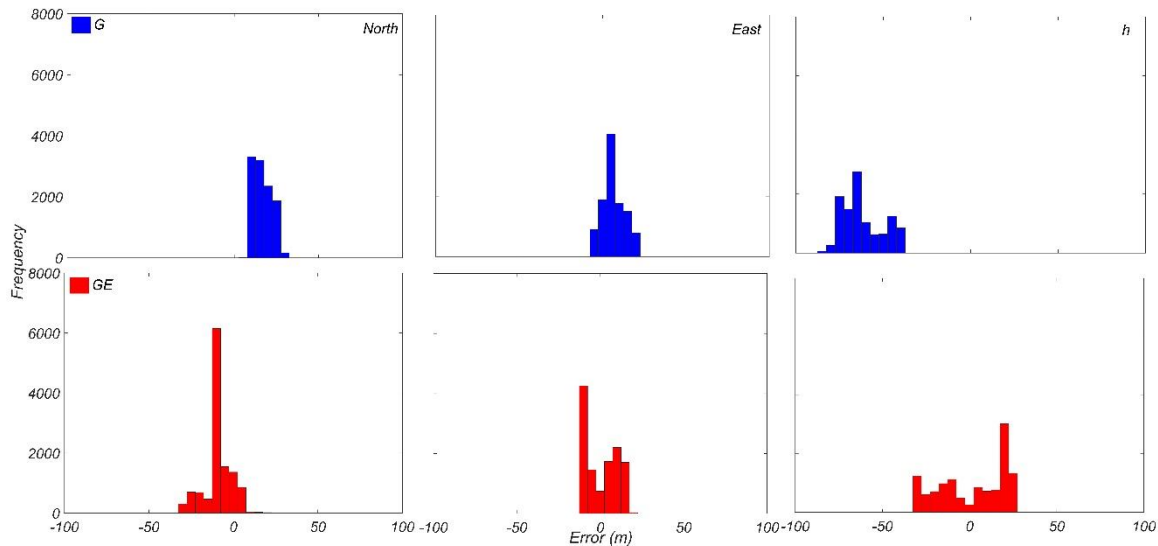


Figure 4. Error Distributions of RT-PPP

Table 3. STD values of RT-PPP for three components

	North	East	h
	STD (cm)	STD (cm)	STD (cm)
G	6,0	6,5	11,4
GE	7,7	9,4	19,0

CONCLUSION

The RT-PPP's positioning performance under limited sky view conditions and the impact of multi-GNSS were evaluated in this investigation. In this regard, RT-PPP solutions for the FMMJ station from the IGS network based on G and GE combinations were realized under the 20° elevation mask, employing BNC v2.12.16 software. The results were evaluated in terms of convergence time, accuracy, and repeatability, considering the IGS weekly solutions as ground truth. The outcomes clearly show that the RT-PPP relied on multi-GNSS observations converges earlier compared to a single system. Moreover, given the 3D positioning accuracy, the superiority of GE RT-PPP results over G RT-PPP is obvious. However, it should be emphasized that the repeatability of RT-PPP results obtained based on GPS-only observations is slightly lower compared to GE RT-PPP. These findings may be related to real-time Galileo satellite clock and orbit errors obtained from the SIRGAS2000 stream, as explained in previous sections. It should be noted that these findings need to be confirmed by other researchers and future investigations. Overall, considering the 3D position accuracy obtained from the RT-PPP relied on multi-GNSS observations at dm level, even under limited sky view conditions, the usability of the RT-PPP technique in real-time geodetic applications is quite clear.

ACKNOWLEDGEMENTS

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**GLOBALIZATION, (DE)GLOBALIZATION AND ECONOMIC GROWTH: AN
EMPIRICAL APPROACH**

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ABSTRACT

Globalization and (de)globalization have transformed the global landscape, impacting not only the economic context but also the cultural and anthropological domains. Several studies have reached a consensus on the causative link between financial globalization, (de) globalization, and economic growth.

The current historical time represents a pivotal moment wherein individuals experience heightened unity alongside increased alienation. Over the past five years, significant changes have taken place in the global financial system.

Notable factors highlighted in the literature as key drivers of growth include advancements in information and communication technologies, as well as institutional modifications in global markets. The onset of Covid-19 has unveiled a novel paradox, exemplified by a heightened necessity for social distancing. The Global conflicts influenced the (de)globalizing culture on the other hand. Economic development and growth have similarly endured repercussions due to the reduction of global supply chains and the rise of decoupling, denoting a detachment among economies.

The pandemic has brought forth the competitive aspects of the interconnected world, shown in the closure of markets and the downturn in international trade, particularly affecting small businesses and precarious employment.

Additionally, the contemporary financial markets are marked by high levels of volatility. Nevertheless, merely deregulating financial markets is insufficient to enhance their effectiveness in fostering a country's growth and progress. It is imperative to establish an effective regulatory framework and policies that set rules to incentivize and protect markets within their unique cultural development and international stability both in the European Community and Domestic economic strategies.

Keywords: *globalization, deglobalization, economic growth, economic strategies, unified strategies, global market*

Introduction

Globalization has revolutionized the world not only economically, but also culturally and anthropologically (Coulibaly et al.,2018). It is a historical moment in which people feel more cohesive and at the same time more distant from each other. Covid-19 introduced the world to a new contradiction, such as a greater need for isolation (Mofijur et al.,2021). The Wars in Ukraine and the Middle East have also transformed the way that we understand finance in the macro and micro-view (Mykhenko,2020). The economy has also suffered with the shortening of supply chains and the advent of decoupling, i.e. the disconnection between economies. With the pandemic and the wars, the competitive side of the globalized world has emerged. The hit and closure of markets and the decline in international trade have particularly affected the small trades and precarious sectors (Liguori & Pittz,2020). The crisis of the Western middle class and that of the emerging countries has widened the gap between liberals, radicals, and sovereigntists, who criticize especially the liberal model of globalization. This system has allowed new countries to enter global production chains (Комолов,2020). However, this rapid growth in globalization came to a halt with the financial crisis of 2008. Research revealed that the today's world is much more triggered toward the "slowbalization" a term that indeed represents the invert process of a globalized world (Linsi,2021). In this new scenario, Americans and Europeans become once again protectionists, bringing production back home and trying to restructure supply chains. The current study aims to investigate the concept of deglobalization, its historical development, and the key factors identified as influential in the deglobalization process, with a specific focus on European and OECD nations.

METHOD

The present study primarily adopts a hermeneutical approach and employs empirical analysis. These methodologies were selected for various reasons. First, the hermeneutical approach was utilized to examine the established concepts of globalization, (de)globalization, and economic growth, which have emerged because of social, geopolitical, and economic advancements, to redefine the notion of economic development. Second, the empirical analysis was employed to shed light on the distinct characteristics of deglobalization and economic growth, allowing for the identification of patterns, similarities, and differences within the economic development model of the European Union, considering the influence of new social scenarios.

The Rise of Globalization

In the 1970s, the global economic landscape experienced a shift as the terms of trade between importing nations and raw material-producing countries underwent a significant reversal (Bran et al.,2020). Preceding this shift, during the 1950s and 1960s, the prices of manufactured goods surged beyond those of raw materials, including energy resources. This imbalance led to the impoverishment of raw material-exporting nations in favor of industrialized countries. The onset of the 1970s was marked by the devaluation of the US dollar in August 1971, which was succeeded by a surge in commodity prices denominated in dollars (Christensen et al.,2019). This moment also saw the dismantling of the fixed exchange rate system established at Bretton Woods in 1944, where the US dollar was pegged to gold (Bordo et al.,1993). Consequently, an era of exchange rate volatility dawned following over two decades of fixed exchange rates (Engel & Hamilton,1990). Against the backdrop of the Yom Kippur War between Israel and Egypt in 1973, Arab nations blocked oil exports to the West, resulting in a quadrupling of oil prices in 1974(Garavini,2011). These events sent shockwaves across the globe, plunging numerous nations, including the EU into cycles of inflation and stagnation, characterized by a combination of economic decline and rising prices, for which there were no established policy solutions. Presently, there is a resurgence in discussions surrounding stagflation amidst a scenario reminiscent of a sharp upsurge in energy costs (Deb et al.,2021). While energy shortages, reduced public services, and fears of regression posed significant challenges, they also presented opportunities for certain nations to break free from underdevelopment, paving the way for the globalization (Deb et al.,2021). The improvement in the terms of trade between raw materials and energy and industrial products enabled several developing nations to initiate the initial stages of industrialization by processing raw materials that were previously exclusive to industrialized nations. Simultaneously industrialized nations transitioned to manufacturing higher value-added goods and began importing manufactured products from raw material-producing countries, leading to a proliferation of global trade. The significant increase in oil prices disrupted the balance of payments for importing countries, particularly non-oil-producing industrialized nations, necessitating an increase in exports of manufactured goods and services to offset rising import costs (Deb et al.,2021). The oil-producing countries, also known as the OPEC countries, witnessed a surge in financial resources, leading to an escalation in trade activities between oil producers and manufacturers of goods (Kidochukwu & Ndakara,2020). This event significantly amplified global economic growth across nations. Particularly, the Middle Eastern oil-producing nations heightened their demand for manufactured products, drawing in a substantial workforce from various Asian countries like India, Pakistan, and the Philippines (Kidochukwu& Ndakara,2020). These migrant workers, through their remittances, played a crucial role in sparking growth even in regions unaffected by the oil price surge, thus contributing to a global economic upsurge. However, the primary impetus for globalization stemmed from the financial sector. The significant imbalances in external accounts resulting from the oil price spike necessitated international loans, facilitated by the mounting financial reserves of oil-producing nations. This scenario gave rise to the concept of "*petrodollars*," referring to the substantial financial assets of oil-exporting countries seeking investment opportunities (Arezski & Hasanov,2012). While a fraction of this economic capital was reinvested domestically, the majority found its way into the international financial market, meeting the high demand for capital to rectify imbalances in the external accounts of oil-importing nations. In those years, the liberalization of capital movements facilitated the adjustment of the balance of payments, alongside the emergence of derivative finance, intensifying the correlation between finance and the real economy (Wójcik, D., & Ioannou,2020). The financialization of the economy is held accountable for

various consequences, including crises and the exacerbation of global inequalities. However, it is undeniable that financialization played a crucial role in mitigating the impact of the oil crisis, which otherwise would have significantly reduced the living standards in the European countries for an extended period, as it was unfeasible to promptly address the surge in oil prices. The global financialization process significantly contributed to the initiation of globalization by enhancing capital mobility, thereby influencing the geographical distribution of productive activities as capital frequently towards regions offering higher remuneration levels (Jüttner, & Maklan, 2011). This trend ultimately benefited nations with minimal expenses and limited social and environmental safeguards, initiating the production of low-value-added goods. The process bore a significant resemblance to the mechanism that ensured the EU's attainment of the economic boom, which stemmed from low labour expenses and inadequate social and environmental regulations (Ashraf, 2020). However, the surge of globalization towards the conclusion of the previous century would not have occurred without the support of a robust technological advancement that effectively diminished the constraints of distance and time that historically disadvantaged developing nations. This advancement, without a doubt, pertains to the internet and digital technology, whose utilization skyrocketed notably following the oil crisis in 1973. Even though the internet and computers were in existence before the oil crisis, the crisis highlighted the imperative to streamline the utilization of production resources, particularly energy, raw materials, and labour, as well as to upgrade production and marketing procedures that harboured considerable inefficiencies (Guillén, & Suárez, 2005). To elucidate, there was a shift from producing for stockpiling, as was customary in the years preceding the 2008 crisis (recalling the lots of cars manufactured and stored for future deliveries), where the decision to produce preceded the demand for purchase, to a just-in-time production approach where the management of production resources and the actual productions were aligned with the fluctuations in final demand. The paradigm shifts within organizations assumed the utilization of automated and swift communication technologies, such as the Internet and digital technology, which have subsequently undergone a remarkable advancement, reshaping all national and international market entities (Guillén, & Suárez, 2005). These technological advancements, as argued by researchers, enabled the interconnection of production systems located thousands of kilometres apart, yet synchronized in real-time through digital means. Simultaneously, significant strides were made in the path of coordination and transportation economics fostering greater proximity between numerous previously marginalized producing nations and consumer markets (Alejla, 2023). The final decade of the preceding century witnessed the onset of globalization following pivotal events such as the dismantling of the Berlin Wall (1989), the dissolution of the Soviet Union (1991), and China's accession to the World Trade Organization (2001). China has emerged as a prominent global manufacturing hub, with its economy experiencing consistent annual growth in double digits. A similar trend has been observed in numerous Asian and Latin American nations. Africa, too, is partaking in the process of globalization, albeit with less intensity. This phenomenon has facilitated the transition of so-called "underdeveloped" countries into "developing" and subsequently "emerging" countries. The Organization for Economic Cooperation and Development (OECD), which originally comprised 21 primarily European countries in the 1960s, now accommodates 38 nations from various regions worldwide, with several others seeking membership (Anand et al., 2021). The vision of post-war economists has materialized as economic progress has permeated all nations, leading to a reduction in income disparities among countries, primarily driven by robust growth in the least developed nations. According to statistics from the International Monetary Fund (IMF), industrialized nations accounted for 75% of global GDP in 1980, in contrast to 25% from emerging economies. By 2022, these figures were projected to be 57% and 43%, respectively. When GDP is adjusted for purchasing power parity (PPP), the proportions in 2022 stand at 42% for industrialized nations and 58% for emerging economies, indicating the latter have surpassed the former (see IMF data statistics 1980-2023). This transition, while significant in relative terms, does not equate to an equitable income distribution.

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The following table gives a summary of the Globalization data on the European Union and OECD countries:

Table 1. Globalization in the EU and OECD countries *

Country	Globalization Index Overall	Rank	Economic Globalization Overall	<i>De jure Index</i>	<i>De facto Index</i>	Social Globalization Overall Index	Political Globalization Overall Index
Switzerland	91	1	87	84(rank 17)	89 (rank 8)	90 (rank 2)	96 (rank 8)
Belgium	90	2	89	89 (rank 4)	89 (rank 5)	86 (rank 22)	94 (rank 7)
Netherlands	90	3	89	87 (rank 9)	91(rank3)	87 (rank 12)	91(rank 12)
Germany	89	5	81	86 (rank 13)	77(rank 34)	88 (rank 14)	100(rank 1)
Italy	83	20	71	79(rank 33)	63(rank 91)	80(rank 49)	96(rank 2)
United Kingdom	88	8	80	86(rank 12)	73(rank 47)	87(rank 18)	95(rank 4)
France	87	10	78	70(rank 62)	86(rank 10)	86(rank 24)	96(rank 2)
Turkyie	70	54	54	55(rank 77)	50(rank 138)	64(rank 111)	93(rank 13)
United States	81	25	77	66(rank 70)	80(rank 28)	85(rank 28)	92(rank 16)

Source: Author elaboration on the KOF Swiss Economic Institute Globalization Index * Overall Globalization Index data refer to the 2021 figures while Economic, Social, and Political Index refers to the 2020 figures

The Boundaries of Globalization

Looking at these advancements from an external perspective, it can be argued that the global community has indeed set foot on a favorable trajectory: economic growth has been sustained since the year 1980, with the most impoverished nations reaping the greatest benefits. Throughout the past three decades, characterized by heightened levels of globalization, the international arena has witnessed multiple conflicts, serving as evidence of underlying tensions that the deepening integration of global markets has failed to mitigate. The sequence of events commenced with the protracted, devastating, and bloody conflict between Iraq and Iran that commenced in 1980, concluded in 1988, and was subsequently succeeded by Iraq's incursion into Kuwait in 1990 (marking the inception of the first Gulf War involving a multitude of nations) (Steger,2013). Throughout the 1990s, the events in the Balkans of the former Yugoslavia unfolded. This was followed by the terrorist attack on September 11, 2001, which ultimately resulted in the conflicts in Afghanistan and later in Iraq during the early 2000s. Subsequently, the war

in Libya took place in the first half of the 1910s of the new centuries, followed by the unrest in Syria. The tensions further escalated with the 2014 uprising in Ukraine, and currently, the situation is exacerbated by the War in the Middle East. Regrettably, similar conflicts persist in regions such as Yemen and Ethiopia (Pollins,2008). However, developments have not unfolded entirely favorably from an economic perspective either. This is because the decrease in disparities among nations has been coupled with substantial rises in inequalities within nations. This trend is observable in both the more developed countries and, to a larger degree, in the developing ones. The increasing disparities observed within nations can be elucidated by the advancements in technology and the process of globalization. These closely intertwined occurrences result in significant transformations inconvenience and financial resources, leading to both winners and losers in the domain. The alterations primarily involve changes in production locales and the capacity to generate revenue. In developed nations, numerous low-value activities have been outsourced to emerging economies and replaced by higher value-added endeavors. However, the benefits of these substitutions have not been evenly distributed among the populace and regions, resulting in impoverishment and areas of prosperity. Furthermore, varying levels of access to technological innovations have further exacerbated these disparities. In emerging nations, a comparable phenomenon has been observed, wherein certain regions have experienced rapid advancement, thereby accentuating disparities with the most underdeveloped regions. Consequently, some individuals have acquired substantial wealth and high earnings amidst prevailing poverty. These factors have engendered a sense of reluctance towards globalization, perceived as a phenomenon that primarily favors a select few while concurrently instigating domestic and international conflicts. Furthermore, some proponents sought to highlight the historical context that the preceding era of swift globalization, during the late 1800s and early 1900s, culminated in two global conflicts, underscoring the potential risk of catastrophic warfare present in this stage of globalization. Researchers argue that international integration has led to national disintegration, transforming globalization into an inevitable phenomenon that governments are unable to resist, thus limiting their ability to uphold democracy (Li et al.,2002). This has solidified the dominance of economics over politics, stripping national governments of their capacity to pursue policies that may contradict the forces of globalization. The iconic representation of this phenomenon is the acronym TINA (There Is No Alternative), famously introduced by British Prime Minister Margaret Thatcher in the 1980s and later adopted by German Chancellor Gerhard Schroeder in the early 21st century (Fuller et al.,2020). This expression indicated the impossibility of having economic policies other than those that the markets were inclined to support. The process of globalization has thus aroused a great deal of opposition. A strong blow to globalization came from the global financial crisis that broke out in 2008 with the collapse of the Lehman Brothers bank (Campello et al.,2010). The crisis affected all countries and generated a significant drop in both world GDP and world trade. After that crisis, there was the crisis of the euro, which brought a large part of Europe to a standstill and generated a process of greater regulation of financial flows, putting an end to the deregulation that had greatly favored globalization (Jones et al.,2015). Social tensions and financial tensions have ended up slowing down globalization, inducing many countries, starting with the champions of the free economy such as the USA and the UK, to practice state interventions to save national companies and to encourage the repatriation of production activities relocated abroad (James,2018). Amid the outbreak of the pandemic, certain highly globalized production networks have encountered significant challenges. The necessity for prompt access to pharmaceutical and para-pharmaceutical resources (i.e. masks) has clashed with the concentration of specific manufacturing activities in particular nations. Consequently, there has been intense competition for resources and national protectionist measures that have significantly tested the principles of unrestricted trade. The pursuit of vaccines has fueled nationalist tendencies, along with the procurement of required doses to satisfy the populace's demands. In such scenarios, the European Union deserved acknowledgment for its capability to provide the sole supranational reaction, by implementing a unified strategy for vaccine procurement, suspending the regulations of the Stability Pact to enable countries to utilize funds to assist their citizens, and initiating the Next Generation European Union (NGEU), a scheme to support the recovery and resilience of EU member states funded by the Union's self-generated resources sourced from the financial market. Nevertheless, these actions have not proven adequate in mitigating anti-globalization stances. The post-pandemic recovery, which commenced in 2021, has encountered impediments due to the disruption of numerous production networks that ceased operations during the pandemic. Consequently, there have been challenges in obtaining crucial components, such as semiconductors now essential in nearly all manufactured products, occurrences of

material stockpiling, difficulties in rehiring staff after prolonged production shutdowns that have also altered individuals' willingness to revert to obsolete professions that are no longer in demand. This has prompted a reconsideration of the viability of exclusive and overly extensive supply chains in manufacturing processes. The just-in-time production approach has faced a crisis, leading to the necessity of accumulating adequate inventories to withstand crises, reminiscent of the historical resilience akin to the traditional production model observed in the post-war era. The resurgence of theories concerning strategic industries requiring protection through the implementation of the golden rule, which involves state interventions to safeguard specific production sectors from being outsourced, has regained popularity (Lee et al.,1984). It is within this context that the conflict in Ukraine has emerged, symbolizing a turning point for globalization as a universal phenomenon. The response of the Western world to the incursion of Ukraine has been to implement stringent and far-reaching sanctions to compel it to cease its hostilities. Restrictions have been put in place on numerous exports of technological apparatus and the Western currency reserves of the central bank have been immobilized, while several financial institutions were removed from the SWIFT system, which oversees the communication system for global transactions. Nevertheless, there is a high probability that the world will progress towards a fragmentation of countries into distinct blocs. In summary, it is imperative for certain countries to establish their own economic framework (Wang et al.,2022). Historically, several countries have endeavored to reduce their reliance on the dominance of the US dollar, albeit with limited success, as approximately 90% of global trade is still conducted in dollars and 60% of central bank reserves are held in this currency. However, geopolitical conflicts and recent occurrences might hasten the de-dollarization process, especially with the emergence of innovative technologies that present new opportunities. This transition is currently underway, exemplified by China's introduction of the digital currency (e-yuan) to enhance control over the payment ecosystem. Additionally, China has introduced the China Interbank Payment System (CIPS) as an alternative to Swift for international transactions and established the M Bridge system to facilitate connections between specific currencies in anticipation of potential decoupling (Barrdear et al.,2016). The substantial theories of deglobalization fail to consider the commodity super-cycle. This trend has been observable since the 1990s and mid-2000s, characterized by the initial increase and subsequent collapse of fuel and mineral prices. In the year 1989, marking the onset of this super-cycle, mining and fuels constituted 8% of the trade in goods, whereas agriculture and manufacturing represented 15% and 77%, respectively. However, by 2011, these proportions had shifted to 24%, 9%, and 67%. The prices of manufactured goods have experienced a decline post-2008, contributing to the deceleration in global trade growth within this sector, which can be attributed in part to the decrease in prices rather than a decline in actual economic activity. Nonetheless, the downward trajectories in international trade cannot be solely attributed to cyclical influences, as they do not instigate fundamental structural changes. A significant transformation in the global economy is the abrupt surge in protectionist measures, designed to protect the domestic economy by imposing constraints on trade. This stands in contrast to a perspective of integration that encompasses not just economic aspects but also social, cultural, political, and environmental dimensions. The diminished economic performance during the worldwide financial crisis has prompted both developed and developing nations to implement protectionist strategies like tariffs, quantitative restrictions, and customs regulations (Schlegelmilch,2016). Researchers discuss deglobalization primarily due to the escalation of protectionism in national economies, rather than solely focusing on trade volume, which in turn weakens the influence and function of the World Trade Organization (WTO) (Van Bergeijk,2016).

The rise of (De)globalization

The phenomenon of globalization has been greatly heightened, particularly in the final decades of the 20th century (Van Bergeijk,2019). Within this emerging interconnected context, corporations have transcended national boundaries, utilizing foreign markets for the promotion of goods and capital. Simultaneously, they have shifted their manufacturing processes to nations offering more advantageous resources, consequently establishing global production networks. Economic globalization has become solidified across three closely linked tiers: global trade, foreign investment, and international manufacturing (Li et al.,2002). The increase of these operations has led to diverse repercussions in various regions of the globe, economic sectors, and demographic segments, contingent upon their level

of engagement in global exchanges. Despite the theoretical endorsement of free trade, initially developed by Adam Smith in his seminal work "*The Wealth of Nations*" (1776) and subsequently supported by other economists like Eli Hecksher and Bertil Ohlin with their model, one must acknowledge the fierce competitiveness of markets that has inflicted significant harm on numerous African nations (Smith,1976). The concept of the "*peak of globalization*," which was introduced by Bruce Nussbaum in a 2010 article published in the Harvard Business Review, suggests that the era of increasing openness has come to an end (Nussbaum,2014). The downward trends in international trade, investment, and production that have emerged since the global financial crisis of 2008-2009 indicated a shift in the trajectory of globalization. These trends are symptomatic of significant changes occurring in the global geo-economy. The term "deglobalization" was initially coined by Walter Bello in his book "*Deglobalization - Ideas for a New World Economy*," (2002) where it is described as a process that brings about a radical transformation in the current model of global economic governance. The author suggests that the consequences of globalization's regression, such as a decline in foreign trade and investment volume, the withdrawal of Joint Stock Trusts (JSTs), and increased regulation, as a pause in the process of global integration (Bello,2002.).

In their article "*Determinants of deglobalization: A hierarchical model to explore their interrelation to as a conduit to policy*", Garg and Shusil (2021) found several significant determinants that play a crucial role in the process of deglobalization. The table below gives a summary of their findings:

Table 2: Determinants of Deglobalization

<i>The global economy is influencing migration positively.</i> The worldwide economy has facilitated the movement of workforce by enhancing transportation systems, advancing communication networks, and enabling information dissemination via digital platforms.
<i>The global economy is influencing technological development positively.</i> Research (Wang & Blomström, 1992) argue that the enhancement of the worldwide economy has facilitated the dissemination of technology on a global scale through two primary mechanisms. Firstly, the global market has facilitated the influx of foreign ideas and expertise. Secondly, it fosters international competition, leading to substantial investments by companies in research activities. These scholars contend that the global economy has accelerated the diffusion of technology across all regions of the globe.
<i>The global economy is influencing imports positively.</i> The worldwide economy has facilitated the interchange of commodities, funds, and amenities among different countries.
<i>Migration is influencing cultural imperialism positively.</i> Scholars (Das et al., 2020) argue that the increase in labour migration is causative in instigating alterations in the national culture. Detractors attribute the phenomenon of cultural diffusion to the act of migration, facilitating the amalgamation of multiple cultures. Furthermore, they contend that the process of social globalization is reshaping the societal norms and behaviours on a global scale. Consequently, it is imperative for each nation to devise a migration policy that aligns with these shifts.
<i>Wage inequality is influencing marginal utility negatively.</i> Critics (Sulemana & Kpienbaareh, 2018) hold economic inequality responsible for favoured treatment and protection, resource misallocation, nepotism, and corruption. With the rise of wage inequality, citizens are losing confidence in institutions, and social cohesion is eroding. Consequently, rising wage inequality is reducing the marginal utility of the global economy. Henceforth, a right policy is required for maximizing the equality.
<i>Employment generation is influencing marginal utility positively.</i> The impact of decreased rate of employment creation varies across different social classes. The lower socioeconomic strata, known as the bottom of the pyramid, experience the most severe consequences, whereas individuals in the

middle-income bracket face distinct challenges such as meeting rental obligations and paying EMIs. Researchers argue that the individual and societal ramifications of a reduced employment generation rate encompass a wide range of issues including poverty, financial difficulties, familial discord, feelings of isolation, ennui, disgrace, criminal activities, social seclusion, decline in self-worth and confidence, deteriorating health, and erosion of professional skills. Consequently, a decline in the rate of employment diminishes the incremental usefulness of the global economy (James, 2017; Stiglitz, 2017).

Trade deficit is influencing marginal utility negatively. Economic scholars assert that trade imbalances contribute to adverse effects on the balance of payments, resulting in shortages of foreign exchange and detrimentally impacting economies. Betrán et al. (2010) and Stiglitz (2017) contend that the removal of trade barriers has rendered traditional competencies obsolete, leading to the demise of local industries. James (2017) maintains that the prevalence of inexpensive imports from Asia is a primary factor contributing to the displacement of lace workers in Europe. Consequently, the escalating trade deficit circumstances are exerting a negative influence on the overall utility of the global economy, necessitating the implementation of effective policies to mitigate trade imbalances.

Marginal utility is influencing deglobalization negatively. The adverse outcomes of globalization are eventually leading to deglobalization in the form of the decline of trade between countries, the imposition of a tariff on imports by the governments, different kinds of protectionist measures by nations, lesser investments by the countries and MNCs, and reducing the cultural links between the countries (Cuervo Cazorra et al., 2020). Not only emerging economies like Bolivia and Venezuela have restrained foreign investment and trade, but industrialized nations, like the U.S. and Britain, also have upturned market-oriented policies. Thereby, each country should frame its policy that would restrain the adverse effects of the global economy.

Source: Garg & Shusil, 2021, pp. 7-11

Conclusive remarks

The current study has explored the dimensions of globalization and the emerging role of deglobalization. It highlighted the significance of having an insightful national policy in response to unaccepted market changes due to external or internal factors. The paper examined the interaction between strategic factors that contribute to the process of deglobalization on a global scale through a hermeneutical and empirical approach to assess transitivity and incorporates the polarity of relationships. The research reveals that the underlying determinant of the global economy, social and security elements ultimately developed the premises for increasing doubts and dissatisfaction among people worldwide. Another significant finding of the paper revealed that in terms of the general globalization index, European countries are placed well in comparison to their counterparts, the United States and China, which in turn are the “inventors” of the process of globalization and deglobalization. A significant drawback of the current paper is the lack of broad resources, data and research in examining the phenomenon of deglobalization in the macro-and micro economic standpoint.

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FILLING DECIDUOUS TEETH

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ABSTRACT

Introduction. Filling baby teeth is the only way to treat caries. Many parents do not want to expose their children to the stress of the sight of a drill and the unpleasant filling procedure, believing that baby teeth will soon fall out on their own anyway. However, each baby tooth must serve until the period of natural physiological change and ensure chewing efficiency.

When asked “should I fill a baby tooth or just remove it?” It's definitely worth choosing a filling. The presence of all teeth in a child's jaw is extremely important for the formation of a correct bite. Moreover, in children, caries rarely affects one tooth; 4 or more teeth are quickly involved in inflammation, and they should not be scattered, since some of them will change only after 9 years.

Failure to treat caries in primary teeth can lead to the following problems:

- infection and destruction of adjacent teeth and antagonist teeth on the opposite jaw,
- infection of the rudiments of permanent teeth located in the area of the roots of milk teeth;
- difficulties in chewing, irritation of the gums between teeth by food debris that accumulates in the carious cavities of the teeth;
- problems with diction, if the upper front teeth are affected and severely destroyed;
- poor health and mood of the child, refusal to eat;
- penetration of infection into other organs and systems, decreased immunity.

Removing a diseased baby tooth is justified only in two cases:

1. if the caries is in a very in a severely neglected state, and an X-ray examination reveals pathological resorption of the root by more than ½ of the length;
2. The baby tooth is already mobile and is preparing to “give way” to the permanent tooth.

The optimal filling material is selected by the pediatric dentist after a thorough examination of the condition of the tooth. The choice depends on the degree of carious destruction and the age of the child. The following fillings are available for filling baby teeth:

Glass ionomer cement (GIC)

The most popular among this group is “Fuji”, made in Japan, intended for restoring temporary teeth in children. In addition, it can be used as a sealant for fissures (natural depressions between the cusps) of temporary and young permanent teeth (immediately after eruption). Main advantages of the GIC:

- hydrophilic, i.e. not afraid of moisture; this property makes it possible to achieve high-quality restoration in young children with a low level of cooperation; when working with GIC, there is no need to use a saliva isolation system, and this reduces the duration of treatment;
- GIC releases fluorine throughout the year; this helps strengthen the remaining tooth walls and prevent recurrent caries;
- non-toxic and does not cause allergic reactions.

Photopolymers or light fillings. They are also commonly called light composites. They consist of resin and nanoparticles filling it. This is the most popular material today all over the world. Photopolymer fillings harden under the influence of radiation from a special lamp. Photopolymers allow:

- recreate the natural shape of the tooth and maintain chewing efficiency;
- to achieve excellent aesthetics, since the arsenal of photopolymers has a wide range of colors and shades that can be selected individually, focusing on the color and transparency of dental tissues.

Conclusion. A mandatory requirement when working with photopolymers is compliance with the protocol for applying an adhesive system - a resin, which will ensure the “weaving” of the composite into the structure of dentin and enamel, and reliable fixation of the filling, as well as the use of a system for isolating teeth from saliva (Cofferdam or Ruberdam).

Key words: deciduous teeth, caries, children, permanent, filling, chewing.

BAD BREATH IN A CHILD

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ABSTRACT

Introduction. Bad breath (halitosis) in a child may indicate the presence of functional or organic disorders both in the oral cavity and in the whole body. This is a serious reason to contact a pediatrician and dentist to identify the cause. Physiological change in bad breath - If parents notice bad breath in a child, the doctor looks for the reasons for this phenomenon in three completely different directions. Physiological disorders associated with a temporary decrease in saliva production.

This can happen if:

- eating spicy or fried foods;
- large intervals between meals;
- insufficient amount of fluid drunk;
- long outdoor games;
- being in a stuffy room;
- excessively wrapping the child;
- strong excitement;
- taking certain medications.

The mechanism for the appearance of odor is due to the fact that it is saliva that has a bactericidal effect, regulating the number and composition of microflora in the mouth. When the mucous membrane is dry, the activity of bacteria is activated. This produces hydrogen sulfide, which has a pronounced tint.

Physiological disorders leading to halitosis can be easily eliminated without medical intervention. It is important to change the child's lifestyle. Increase the amount of fluid you drink, optimize your diet, normalize the psycho-emotional background in the family and reduce the duration of outdoor games. But in some cases, an unpleasant odor turns out to be the first alarm signal indicating a developing pathology.

Pathological change in bad breath - True halitosis associated with the development of pathogens in the oral cavity and nasopharynx. This persistent odor develops slowly under the following conditions:

diseases of the upper respiratory tract (rhinitis, pharyngitis, tonsillitis, sinusitis);

diseases of the bronchi and lungs;

inflammatory pathologies of the oral mucosa;

caries and its complications.

The fight against halitosis must begin with the treatment of the disease that became the cause. Consultation with a dentist, otorhinolaryngologist, or pulmonologist is required.

Symptomatic halitosis - indicating diseases of the digestive and endocrine systems.

In such cases, the nature of the odor is important for diagnosis.

Acetone smell from child's mouth

The appearance of the smell of acetone in the exhaled air may be a consequence of:

- diet with a predominance of hard-to-digest foods;
- severe fatigue after overexcitation;
- prolonged exposure to the sun;
- increase in body temperature.

Halitosis with an acetone tint is observed in kidney diseases, endocrine and tumor diseases.

Ammonia smell - This smell is one of the signs of diabetes. It also appears with impaired metabolism and excess protein in food.

Sweet breath - A sweet smell indicates severe exhaustion, problems with the liver or gall bladder. An examination by a pediatrician, gastroenterologist and surgeon is necessary.

Sour smell - This situation may indicate a fungal infection of the oral cavity, most often in the form of candidiasis, or a disease of the gastrointestinal tract. A dentist and a gastroenterologist will help you find the cause.

Rotten egg smell - Characteristic of inflammatory processes in the digestive tract (gastritis), oral cavity (stomatitis, caries) and nasopharynx (adenoiditis, rhinitis, tonsillitis).

Pharmacy smell - May appear when vitamins or other medications are prescribed. Disappears immediately after discontinuation of medical prescriptions.

Conclusion. The variety of causes that cause bad breath proves that in most cases the child requires qualified consultation. Sometimes the cause can be determined without difficulty, sometimes additional examinations (instrumental and laboratory) are required. If parents detect bad breath in a child, it is important to seek medical help as soon as possible, preferably starting with a dentist. Treatment can be prescribed only after a true diagnosis has been established.

Key words: bad breath, appearance, saliva production, food, halitosis, dentist.

**PROFESYONELLERİN PERSPEKTİFİNDEN İKİ KERE FARKLI ÇOCUKLARI
TANIMAK, ANLAMAK VE ONLARLA ÇALIŞMAK**

**UNDERSTANDING, RECOGNIZING, AND WORKING WITH TWICE EXCEPTIONAL (2E)
CHILDREN FROM THE PERSPECTIVE OF PROFESSIONALS**

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ABSTRACT

Twice exceptional (2e) are individuals with unique needs and characteristics both intellectually and emotionally. Recognizing, understanding, and supporting these individuals is a crucial matter for both families and professionals. 2e children typically present a complex picture, thus working with them requires a special approach and understanding. This study is prepared with the aim of better understanding the challenges faced by children with dual diagnoses and exploring how to support them. Within this study, there will be an in-depth evaluation on the identification of children with dual diagnoses by professionals, their needs, how they are supported, and the points to be considered when working with these particular individuals. Review of the literature shows that professionals find it more challenging to classify 2e in the diagnostic process compared to other special needs groups. It also indicates that professionals working with 2e children can meet the needs of the children by responding correctly to questions about their needs and that educators find it easier to identify students based on the standards within their areas of expertise. Furthermore, fewer professionals use a reactive approach to intervene with 2e children. It is determined that professionals working with gifted children have more knowledge and experience in dual diagnoses compared to professionals in other fields.

Keywords: twice exceptional, understanding, Professional, recognizing

1. INTRODUCTION

The contemporary education system increasingly emphasizes recognizing students' individual differences and developing educational methods that cater to these differences. In this context, twice-exceptional (2E) children stand out as individuals with distinct mental and emotional needs (Ronsley-Pavia & Townend, 2017). Recognizing, understanding, and supporting these unique students is of paramount importance for both families and professionals.

Each child possesses a unique personality, experience, and learning style. Therefore, to work effectively with 2E children, professionals must deeply understand each child and develop approaches tailored to their needs (Baum, Renzulli, & Rizza, 2021). This study provides practical information and strategies for educators, psychologists, social workers, and other relevant professionals, addressing the challenges encountered while working with these children.

Enhancing the knowledge and awareness of educators and other related professionals to work more effectively with 2E children is crucial. In this regard, the importance of a multidisciplinary approach for identifying and meeting the needs of 2E students is emphasized (Assouline & Whiteman, 2011). Additionally, the education system is encouraged to adopt a flexible and personalized approach to maximize each student's potential (Reis et al., 2014).

Professionals often find it challenging to distinguish twice-exceptionality from other special needs groups during the diagnostic process, resulting in ineffective support for 2E students (Montgomery, 2015). However, this study shows that professionals can make progress in asking the right questions and better understanding the children's needs.

Specifically, professionals working with gifted children tend to have more knowledge and experience regarding twice-exceptionality than their counterparts in other fields (Mullet & Rinn, 2015). This indicates their potential to provide more effective support in the education and care of 2E children.

This study aims to present the strategies and approaches necessary for effectively serving 2E children, encouraging professionals to work with this special group more confidently and efficiently. It also seeks to provide a fundamental resource for professionals in the field to improve their ability to work with 2E children. The education and support of 2E children are vital issues for all community segments, playing a key role in creating a fair and inclusive education system that helps every individual realize their potential (Baldwin, Omdal, & Pereles, 2015).

Recognizing students' individual differences and developing educational methods tailored to these differences is of great importance in today's education system. In this context, twice-exceptional (2E) children, who have distinct mental and emotional needs and characteristics, are significant (King, 2005). Recognizing, understanding, and supporting these individuals is an important issue for both families and professionals. 2E children often present a complex picture, requiring a special approach and understanding to work with them effectively (Klingner, 2022). This study aims to better understand the challenges faced by twice-exceptional children and explore how to support them. It provides an in-depth assessment of how professionals identify, address, and support the needs of 2E children, highlighting the key considerations when working with these unique individuals. The study's goal is to enhance the knowledge and awareness of educators and related professionals to work more effectively with 2E students, emphasizing the importance of a multidisciplinary approach in their identification and needs assessment.

2. METHOD

The method of this study employs the survey method, a qualitative research technique. In this regard, documents related to learning and teaching strategies for twice-exceptional (2E) students were examined. No date restrictions were applied when selecting documents; instead, preference was given to books, articles, and papers accessible in full text, and sources in both English and Turkish were included.

During the data analysis process, documents were first carefully read to create initial codes. These codes were identified based on the primary themes, concepts, and recurring expressions in the documents. Following the creation of preliminary codes, these codes were consolidated to determine main themes and sub-themes. These themes were then categorized according to the research questions of the study. The identified themes and codes were organized using a data organization schema. To ensure the reliability and validity of the analysis, different data sources and coders were utilized in the research.

3. RESULTS

3.1. Identification/Diagnosis of 2E Children by Professionals

The term "twice-exceptional (2E)" is used to describe students who are both gifted and have a disability, encompassing all disability groups. Despite increased research on the subject, identifying these individuals remains a persistent challenge (Barton & Starnes, 1989; Baum & Owen, 2003; Brody & Mills, 2004, 1997; Kokot, 2005; Tallent-Runnels & Sigler, 1995). A significant difficulty in diagnosis is the potential for giftedness to be camouflaged or masked because disabilities and abilities can obscure each other (Brody & Mills, 1997; Dare & Nowicki, 2015a, 2015b; Foley-Nicpon, Assouline & Colangelo, 2013).

Another challenge in diagnosis arises from professionals misinterpreting certain indicators (Baldwin & Valle, 1999; Webb et al., 2005). For instance, disorganization is a symptom not only of attention deficit and specific learning disabilities but also of giftedness. Accurate diagnosis requires understanding not only the specific characteristics of each exceptional group but also the nuances of twice-exceptionality. Diagnosing students becomes more complex due to the overlap in observable and measurable behaviors. In such cases, it is crucial for professionals to remain open-minded to combat misdiagnosis and allow for accurate identification of twice-exceptionality. For professionals and other school personnel to make accurate diagnoses and develop appropriate plans, it is vital to understand these characteristics in detail. Accurate diagnosis involves identifying a set of key points that professionals can use to determine how to address a student's strengths and areas of interest. Table 1 provides examples of significant indicators that professionals can use to identify students' strengths and needs.

Table 1: Comparison of Characteristics of Gifted Students and Twice-Exceptional Students

Symptom	Characteristics of Gifted Individuals	Characteristics of 2E Individuals
Learning	They have the ability to learn basic skills quickly and easily and retain information with less repetition.	They often struggle to learn basic skills and may require strategies to acquire foundational skills and knowledge.
Verbal Abilities	They exhibit high verbal ability.	They may exhibit high verbal ability but experience extreme difficulty in written language; they may use language in inappropriate ways and at inappropriate times.
Reading Abilities	They acquire reading skills at an early age.	Reading difficulties may be evident early on; they may need strategies in areas such as phonics, phonemic awareness, and fluency. They might compensate for reading deficiencies and conceal them until they transition from "learning to read" to "reading to learn."
Organisation Abilities	Organizational skills can vary; some gifted students may be highly organized, while others may struggle in this area.	They often have difficulty organizing materials, ideas, and time.
Observation skills	They possess keen observational skills.	They may have strong observational abilities but exhibit deficiencies in memory.
Critical Thinking and problem Solving Skills	They excel in critical thinking, problem-solving, and decision-making skills.	They may demonstrate superiority in solving 'real-world' problems, exhibiting exceptional critical thinking and decision-making abilities. They often develop compensatory skills independently.
Attention	They possess a long attention span and can maintain continuous, intense concentration.	Their attention is often affected, yet they can concentrate for extended periods in their areas of interest.
Curiosity	They exhibit an inquisitive attitude.	They may demonstrate a strong questioning attitude, which can appear disrespectful when they challenge

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		information and facts presented by the teacher.
Creativity	They generate creative thoughts, ideas, and actions; they can be innovative.	Their imagination may be unusual; they frequently produce original and occasionally quite 'eccentric' ideas; they can be highly divergent in thinking; they may appear fanciful when generating ideas.
Taking Risks	Takes risks.	They are often reluctant to take risks related to academic or unfamiliar areas; they take risks in non-academic areas without considering the consequences.
Sense of Humor	They have an unusual, often highly developed sense of humor.	Humor can be used to distract from academic failure or attention issues; sometimes they use humor to mock their friends or avoid dealing with problems.
Maturity	They may mature at different rates compared to their peers in the same age group.	At times, they may appear immature, using behaviors such as anger, crying, and withdrawal to express their emotions and cope with difficulties.
Independence	They possess a strong sense of independence and self-efficacy.	They often require teacher support and feedback in areas of weakness; in other areas, they are highly independent; they typically exhibit a stubborn and inflexible demeanor.
Social Abilities	They may not be accepted by other children and may feel excluded.	They may be perceived as loners; sometimes they may struggle to be accepted by peers due to poor social skills.
Leadership	They demonstrate leadership abilities.	They may assume leadership roles among more unconventional students; they may exhibit strong 'street smarts' behaviors; challenges can affect their ability to use leadership skills.
Wide Interest	They have a wide range of interests.	They are interested in many subjects, but often learning difficulties hinder their ability to pursue these topics.

Focused Interest	They tend to show a passionate interest in a specific subject by excluding others.	They often demonstrate a passionate interest in a specific subject by excluding others; this interest typically revolves around non-academic topics.
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Note: Adapted from Comparisons of Characteristics of Gifted Students with or without Disabilities, by E. Nielsen, D. Higgins, L. Baldwin, D. Pereles, 2000, unpublished manuscript.

Table 1 is a compilation of characteristics and behaviors associated with giftedness. Additionally, it includes a heading on how a disability might impact these behaviors. Professionals should be aware that not all of these behaviors apply to every gifted student listed in the second column, and they should diagnose based on these symptoms. These characteristics serve as indicators used to determine further investigation in the diagnostic process."

3.2. Identifying the Needs of Twice-Exceptional (2e) Children by Professionals

The goal in identifying the strengths and needs of twice-exceptional (2e) students is to implement appropriate strategies and accommodations to meet their individual educational needs. To achieve the most beneficial outcomes for these students and make informed decisions, it is necessary to establish an effective problem-solving process by gathering various sources of information. This problem-solving process includes (a) identifying the student's areas of need, (b) collecting and analyzing data, (c) implementing a plan, and (d) evaluating progress. Key individuals required for an effective problem-solving team include the child's family, general, special education, and gifted education teachers, administrators, and other school personnel who can contribute to the process.

When the team examines data collected from various sources addressing different aspects of the student, it becomes evident that various strategies are needed to support the 2e student's needs across different domains (Baldwin, Omdal, & Pereles, 2015).

3.2.1. Identifying the Needs of Gifted and Learning Disabled (GLD) Students

The fundamental element in meeting the educational needs of gifted and learning disabled (GLD) students is to compensate for their learning deficiencies by focusing on their strengths and interests (Nielsen & Mortorff-Albert, 1989). However, many schools only offer remedial programs designed for students with learning difficulties, focusing solely on improving the child's weaknesses. A study investigating the impact of special education on the self-concept of GLD students demonstrated significantly higher self-concept scores among students receiving education focused on their giftedness compared to those receiving education only for their learning disabilities (Nielsen & Mortorff-Albert). According to this study, the self-concept of GLD students varies depending on the type of special education services they receive. When services include gifted programs focusing on strengths, GLD students' self-concepts are equivalent to their non-disabled peers (Nielsen & Mortorff-Albert).

3.2.2. Why is remedial education alone not sufficient?

Remedial education often fails to provide enough opportunities for a gifted child to demonstrate their abilities and skills, typically focusing on addressing their weaknesses to enhance abilities. This situation can lead to negative outcomes such as low self-esteem, lack of motivation, depression, and stress (Baum, 1994). Therefore, GLD students require a program that not only develops their strengths, interests, and giftedness but also addresses their deficiencies. GLD students need an educational environment that minimizes academic areas where they struggle, such as reading, arithmetic, and writing, and emphasizes abstract thinking and creativity (Baum, 1994).

3.2.3. Identifying the Needs of Gifted and Social-Emotional Disorder (SE) Students

In efforts to meet all of a child's needs, consideration must also be given to their social and emotional requirements. Gifted and twice-exceptional (2e) students often have low self-concepts because they frequently feel inadequate. Research indicates that these students often experience high levels of anxiety, low self-esteem, and anger due to contradictions between their abilities and what they perceive they cannot do (Baldwin, 1995; Baum & Owen, 2004; Reis et al., 2014; Schiff, Kaufman, & Kaufman, 1981). Given their intense emotions, it is crucial for them to feel supported. Figures 3, 4, and 5 contain questions professionals can ask to identify the social and emotional needs of 2e students. These questions indicate

that the social-emotional needs of 2e students are complex and varied. Students may struggle with conflicting academic areas where they excel but also experience learning difficulties.

Various individuals can be involved in supporting the social and emotional needs of 2e students. Teachers, psychologists, family members, administrators, coaches, mentors, community members, and peers who share similar strengths, abilities, or passions can be called upon for support. Neumeister, Yssel, and Burney (2013) emphasize the significant role family members play in nurturing and supporting their children's social and emotional needs. As the concept of 2e is still relatively new for many educators, it is essential to show acceptance, willingness, and interest in these students. This acceptance and interest should be part of the school's culture. A nurturing and safe environment is crucial for 2e students to be willing to cope with challenges and take necessary risks.

Table 2. Questions to Assist Professionals in Identifying the Needs of Twice-Exceptional (2e) Students in Their Strengths and Interests

Questions to Assist Professionals in Identifying the Needs of Twice-Exceptional (2e) Students in Their Strengths and Interests
1. In which subjects is the student successful?
2. Does the student demonstrate higher-order thinking skills in this area?
3. What method does the student prefer for acquiring knowledge and skills?
4. What method does the student prefer for expressing themselves?
5. Does the student expand their assignments and projects to enhance quality?
6. In which subjects does the student show a significantly higher level of interest and knowledge compared to their peers?
7. Does the student concentrate intensely on a single subject that could be considered unusual?
8. To what extent does difficulty/special need affect the student's ability to pursue this area of interest?
9. How does the student use their strengths to tolerate or balance areas of difficulty?

Table 3. Questions to Assist in Identifying Needs in the Area of Special Needs or Disability

Questions to Assist in Identifying Needs in the Area of Special Needs or Disability
1. In which subject(s) does the student experience difficulty?
2. What is the cause of the learning difficulty?
3. What is the student's preferred method for acquiring knowledge and skills?
4. Which tasks or learning activities does the student avoid?
5. Does the student exhibit negative or unexpected behaviors during specific learning tasks or activities?
6. What is the student's preference for expressing themselves? Does the student prefer verbal responses or written responses?

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|---|
| 7. What learning/academic discrepancies exist (e.g., high comprehension levels when material is presented visually and/or auditorily but low comprehension levels when read)? |
| 8. To what extent does the problem/disability affect the student's ability to pursue their strengths and interests? |

Table 4. Questions to Assist in Identifying Needs in the Area of Social-Emotional Concerns

Questions to Assist in Identifying Needs in the Area of Social-Emotional Concerns
1. Are there triggers that provoke the student into action? If so, what are they?
2. What kinds of behaviors does the student exhibit that hinder learning?
3. To what extent does the student demonstrate increased empathy and sensitivity?
4. Does the student make derogatory comments about themselves, such as "I am inadequate"?
5. What irregular developments, if any, are present physically, emotionally, and/or socially?
6. What evidence suggests that the student has overly perfectionistic tendencies that hinder taking risks?
7. How does the student conceal their strengths and/or weaknesses to fit in with peers?
8. Does the student avoid peers or do peers avoid the student?
9. Are there situations where the student appears anxious or unsettled? If so, please describe them.
10. Describe when the student becomes angry and refuses to participate or comply with classroom rules.

3.3. Addressing the Needs of Twice-Exceptional (2e) Children by Professionals

Foley-Nicpon, Assouline, and Colangelo (2013) evaluated the needs of 317 twice-exceptional (2e) students in a study focusing on both giftedness and special education policies, as well as issues related to dual exceptionalities. The findings indicated that educators find it easier to identify students within their areas of expertise and that fewer professionals employ intervention strategies for 2e children. Professionals working with gifted children were found to possess more knowledge and experience regarding dual exceptionalities compared to their counterparts in other fields. When examining recommendations for expanding professional understanding beyond gifted education to meet the multifaceted needs of 2e students, it is clear that professionals in this field have two critical responsibilities. Firstly, despite adequate knowledge of dual exceptionalities, there may be a lack of experience in dealing with the complexities these students bring to schools. For instance, emotional issues arising when a student receives a special needs diagnosis after being identified as gifted necessitate the creation of programs that truly address the needs of 2e children, led by a team of professionals including teachers, psychologists, and guidance counselors (Trail, 2022). Secondly, professionals need to provide professional development opportunities on 2e issues for those outside the field. This is particularly crucial as research has shown that teachers specializing in gifted education have more knowledge about 2e students compared to classroom teachers, given that 2e students interact with all educational professionals, not just those in gifted education (Foley-Nicpon, Assouline, and Colangelo, 2013).

Research indicates that strategies addressing the needs of gifted students, focusing on their strengths and talents while supporting their specific challenges, require a dual approach (Assouline and Whiteman, 2011; Baum, Cooper, and Neu, 2001; Berninger and Abbott, 2013; McCoach, Kehle, Bray, and Siegle, 2001; Nicpon, Allmon, Sieck, and Stinson, 2011; Willard-Holt and Morrison, 2013). Successful strategies that address specific barriers alongside strategies that work with gifted or potentially gifted students highlight the necessity for a holistic approach to supporting 2e students (Pereles, Omdal, and Baldwin, 2009). It is insufficient to only focus on remediation or solely on strengths and interests. When reviewing the literature on 2e students, under the title "Strategies for 2e Students," one encounters numerous lists (Baum et al., 2001; Baum and Owens, 2004; Coleman, 2005). It is erroneous for teachers to assume that these lists provide universally applicable strategies, each equally effective for every 2e student, despite sharing commonalities. Each 2e student has a unique profile, requiring evidence-based, customized strategies that reflect their personal strengths and challenges.

4. DISCUSSION AND CONCLUSION

This study addresses the current status and challenges in recognizing, understanding, and supporting twice-exceptional (2e) children by professionals. The findings provide a critical foundation for discussing the difficulties encountered in meeting the needs of 2e children and identifying the most effective intervention strategies for them. This section will discuss the implications of these findings for practice, contributions to the existing literature, and recommendations for future research.

Challenges in Identifying Twice-Exceptional Children: As noted in the study, identifying 2e children is a significant and complex process for professionals. This complexity arises from the masking effect where children's giftedness and disabilities can camouflage each other. These challenges in the identification process can hinder timely and accurate interventions. Literature emphasizes that giftedness and disabilities can mask each other, complicating accurate identification (Brody and Mills, 1997; Dare and Nowicki, 2015). Professionals need to conduct more careful and comprehensive assessments during the identification process. A multidisciplinary approach should be adopted, utilizing diverse sources of information.

Education and Knowledge Gaps among Professionals: The findings of this study reveal disparities in the knowledge and experience levels of professionals working with 2e children. Particularly, professionals working with gifted children were found to have more knowledge about 2e issues compared to those in other fields. This underscores the need for educators and other professionals to acquire more knowledge about 2e children. In the education system, professionals working with 2e students should receive adequate training and have access to continuous professional development opportunities.

Intervention Methods for 2e Children's Needs: Identifying the needs of 2e children and developing appropriate strategies to address these needs are crucial for their academic and socio-emotional success. The study emphasizes the importance of professionals intervening by considering the strengths and interests of 2e children. It is highlighted that support education alone is insufficient, and these children require programs that both enhance their strengths and support their weaknesses (Baum, 1994). In this context, Individualized Education Plans (IEPs) and enrichment programs can offer tailored solutions to meet the needs of 2e children.

Social and Emotional Support: Like all children, the social and emotional needs of 2e children are as important as their academic needs. These children may experience emotional challenges such as high anxiety, low self-esteem, social isolation, variable disappointment and anger, stubbornness, depression, heightened sensitivity, and maladjustment due to being different. The study underscores the need for professionals and families to collaborate in supporting the emotional needs of 2e children. Professionals including teachers, psychologists, and guidance counselors should develop social-emotional support programs tailored to these children. Additionally, appropriate learning environments should be provided to ensure acceptance by peers and the development of their social skills.

5. RECOMMENDATIONS

This study provides important insights for professionals regarding the identification, assessment, and support of 2e children. The challenges encountered in working with 2e children underscore the need to develop intervention methods tailored to their needs. Educators and other professionals should adopt a comprehensive approach that focuses on both the strengths and weaknesses of 2e children. Future research should gather more data to better understand and support the needs of 2e children and identify effective intervention methods in this area.

In conclusion, the recognition and support of 2e children should be a dynamic process that requires professionals to continually enhance their knowledge and experiences. Necessary changes should be made in the education system to maximize these children's potentials and enable them to live independently as individuals. Collaboration among all stakeholders is essential for achieving this goal.

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**İKİ KERE FARKLI ÇOCUKLARA YÖNELİK ÖĞRENME VE ÖĞRETME
STRATEJİLERİ**

**LEARNING AND TEACHING STRATEGIES FOR TWICE EXCEPTIONAL (2E)
STUDENTS**

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ABSTRACT

In the current education system, children have various learning needs and difficulties. A subset of these children, referred to as twice exceptional (2e), are those who have multiple learning or behavioral disorders accompanying giftedness. Twice exceptional children exhibit characteristics of both gifted students with exceptional abilities and struggling learners. This study examines the learning and teaching strategies for twice exceptional children found in the literature. Specifically, recommendations are presented in light of the literature to understand twice exceptional children, develop effective teaching strategies, and adapt the educational environment to meet their needs. The method used in this study is a scanning method within qualitative research methods. Accordingly, documents on learning and teaching strategies for twice exceptional students were reviewed. No specific date limit was set for the selection of documents, and preference was given to books, articles, and papers with full texts accessible, with access to sources in both English and Turkish. The research findings reveal that many strategies available in the literature can be used by twice exceptional students in the educational process. These strategies are tailored to the unique characteristics of children stemming from both their special abilities and other special needs, aiming to make the educational environment more conducive for their development.

Keywords: twice exceptional, teaching strategies, learning strategies.

1. INTRODUCTION

In today's education system, children have various learning needs and difficulties. A subset of these children are identified as twice exceptional, who have multiple learning or behavioral disorders alongside exceptional abilities. Twice exceptional children exhibit characteristics of both gifted students with exceptional potential and struggling learners. According to the National Association for Gifted Children's statement in 2019, gifted students are those who outperform their peers in one or more areas when age, experience, and environment are held constant. Changes in educational experiences may be necessary for them to realize their potential. These children may come from diverse racial, ethnic, cultural backgrounds, and all economic strata; they require access to appropriate learning opportunities to develop their potential. They may have learning and processing disorders that require special intervention and accommodation. They need support and guidance to develop socially and emotionally as well as in their areas of talent. Depending on their changing needs, they require various services (Trail, 2022).

According to the definition provided by the Individuals with Disabilities Education Act (IDEA) in 2004, individuals with special needs are those who have intellectual disabilities, hearing impairments, speech or language disorders, visual impairments, emotional disturbances, orthopedic impairments, autism, traumatic brain injury, and other health impairments, as well as specific learning disabilities or multiple disabilities, requiring special education and related services as a result.

Twice exceptional students represent a heterogeneous group encompassing various individuals with special needs accompanied by exceptional abilities (Brody & Mills, 1997). The diagnostic groups and characteristics of students classified as twice exceptional in this study are presented in Table 1.

Table 1. Twice Exceptional Groups and Their Characteristics

Twice Exceptionality	Learning Characteristics
Learning Disability	Forgetfulness, difficulty in retaining information, delayed reading skills, difficulty organizing written or verbal ideas, delayed mathematical skills, inconsistency between verbal and written communication
Emotional and Behavioral Disorders	Easily getting angry, focusing on personal boundaries, weak self-esteem
Attention Deficit Hyperactivity Disorder	Difficulty concentrating, disorganization, struggling to sustain attention during undesirable tasks
Autism Spectrum Disorder	Intense focus on preferred topics, struggling to establish and maintain friendships, uncooperative behavior

(Josepson, Wolfgang & Mehrenberg, 2018)

Twice exceptional students typically have an advanced vocabulary, the ability to deeply understand complex topics (Nielsen, 2002; Reis, 1995), and a broad range of interests (Nielsen & Higgins, 2005). Due to their ability to develop intense interests in specific subjects, they can acquire expertise beyond their years. Twice exceptional students are highly creative and possess a good sense of humor (Baum et al., 2017; Reis, 1995). They grasp concepts quickly and do not enjoy "rote and drill" tasks. They prefer open-ended tasks and solving real-world problems. These students are curious, constantly questioning to learn topics and concepts more deeply (Baum et al., 2017). The characteristics of twice exceptional children have highlighted their needs for learning and teaching strategies in the educational environment.

Characteristics of Twice Exceptional Children

Below are the cognitive, academic, social, and emotional characteristics of twice exceptional children.

1. Cognitive Characteristics

Discrepancy between standard test scores, Exceptional verbal and communication skills, Visual learners with strong perceptual reasoning skills, High-level reasoning and problem-solving abilities, Conceptual thinking that understands the "big picture", Non-linear thinking, Auditory processing deficits and difficulty following verbal instructions, Slow processing speed and/or fluency and automaticity issues, Executive function deficits in planning, prioritizing, and organizing, Highly creative, curious, and imaginative, High energy levels, Distractible, difficulty sustaining attention, or short-term memory issues, Sensory integration issues (Nielsen, 1993).

2. Academic Characteristics

Inconsistent or uneven academic skills, Advanced ideas and viewpoints, Broad range of interests, Advanced vocabulary, In-depth insights, Specific talents or consuming interests, Dislike for "rote and drill" tasks, Difficulty expressing emotions or explaining ideas/concepts, Disorganization, Problems completing written or paper-and-pencil tasks, Avoidance of school tasks, Frequently not completing assignments, Appearing apathetic, lacking motivation, and academic initiative (Nielsen, 1993).

3. Social Characteristics

Ability to create situations to their advantage, Difficulty in establishing relationships with peers, poor social skills, and/or antisocial behaviors, Being isolated from peers and not participating in school activities, Being a target of peer bullying, Inability to read social cues, Lack of self-defense skills, Engaging in disruptive or humorous behaviors (Nielsen, 1993).

4. Emotional Characteristics

Extremely sensitive to criticism, Perfectionism stemming from fear of making mistakes, Denial of problems and/or attributing errors and issues to others, Linking success to ability or "luck", Impulsive behavior, High levels of anxiety and/or depression, Self-critical, low self-esteem, and self-efficacy, Quick to anger, Rapidly giving up on tasks (Nielsen, 1993).

Table 2. The Strengths and Weaknesses of Twice Exceptional Children

Strengths	Weaknesses
Individuals with an extensive vocabulary	Easily angered
Creative	Stubborn
Curious	Manipulative
Imaginative	Sensitive to criticism
Inquisitive	Argumentative
High problem-solving ability	Inconsistent academic performance
Sophisticated sense of humor	Difficulty in written expression
Wide range of interests	Difficulty in social interactions
Advanced ideas and opinions	Lack of organization and work skills
High interest in a particular subject	

(Nielsen, 1993).

Considering the characteristics of children with comorbid conditions, it is believed that the use of learning strategies is critical in the educational processes of 2e children. This is because the proper management of the educational process will enable the removal of barriers to learning stemming from the diagnostic features of children with comorbid conditions. In this context, the research examines the learning and teaching strategies found in the literature related to children with comorbid conditions. Specifically, recommendations are presented in light of the literature to understand children with comorbid conditions, develop effective teaching strategies, and tailor the educational environment to meet their needs.

2. METHOD

The method employed in the study is the screening method, which is a qualitative research method. In this context, documents on learning and teaching strategies for children with comorbid conditions have been examined. When selecting documents, no specific date limit was set, and preference was given to books, articles, and papers with full texts accessible in both English and Turkish.

In the data analysis process, initial codes were created by carefully reading the documents. These codes were determined based on the main themes, concepts, and recurring expressions in the documents. After the creation of initial codes, these codes were combined to identify main themes and sub-themes. These themes were categorized in line with the research questions of the study. The identified themes and codes were organized by creating a data organization schema. To ensure the reliability and validity of the analysis in the research, different data sources and coders were involved.

3. RESULTS

This section presents the findings obtained regarding the learning and teaching strategies found in the literature on children with comorbid conditions.

Table 3. Learning Strategies of 2E Students

Strategy	Research
Utilize various multiple intelligences areas and learning styles.	Nielsen (2002), Winebrenner (2003)
Emphasize critical and creative thinking.	Hua (2002); Nielsen (2002)
Conduct in-depth research within your areas of interest.	Jensen, Nickelsen (2008); Oxford, (2016)
Seek mentorship.	McCluskey, Noller, Lamoureux ve McCluskey (2004); Pleiss ve Feldhusen (1995); Siegle,McCoach ve Gilson (2021)
Utilize interdisciplinary themes.	Baum, Schader ve Hébert (2014); Willard-Holt, Weber, Morrison ve Horgan (2013); Kit ve Lam (2018)
Use metacognitive strategies.	Hannah ve Shore (2008); Winebrenner (2003)
Create timelines when setting your goals.	Hua (2002); Willard-Holt, Weber, Morrison ve Horgan (2013)
Incorporate visual images, rhythm, and music.	Silverman (1989); Sosland (2022); Kuo, Maker, Su ve Hu (2010)
Use graphic organizers.	Besnoy (2006); Trail (2022); Jeweler, Robinson, Shevitz ve Weinfeld (2008)
Utilize methods other than reading to acquire information.	Baum vd. (1991); Winebrenner (2003)
Develop techniques for organization and memory.	Gilman, Lovecky, Kearney ve Peters, vd. (2013)
Use technology to support your expressive language skills.	Besnoy (2006); Salinas (2016)
Utilize adaptable technology and tips for different learning areas.	Assouline ve Whiteman (2011); Trail (2022); Lopes, Pelligrini, Sasso, Santos ve André (2022)

Enhance your study skills such as analysis, note-taking, and organization.	Jeweler, Barnes-Robinson, Shevitz ve Weinfeld (2008)
Adapt or reduce activities needed to meet a standard.	VanTassel-Baska ve Stambaugh (2006)

Table 4. Teaching Strategies of 2E Students

Strategy	Research
Highlight the strong points of 2e students and provide options that align with their preferred learning styles.	King, (2005); Reis vd., (2014)
Meet the interests and needs of 2E students.	Baum ve Owen, (2004); Baum ve Olenchak, (2002)
Support the social-emotional needs of 2E students.	Baldwin vd., (2015); Josephson, Wolfgang ve Mehrenberg (2015)
Recognize the differences between 2E students, gifted students, and those who are struggling.	King, (2005); Willard-Holt, Weber, Morrison ve Horgan, (2013)
Collaborate and communicate to provide the best support for 2E students.	Boyle, (2010); Baum ve Owen, (2004)
Teach 2E students to appreciate individual differences.	King, (2005); Winebrenner, (2003); Baldwin, Omdal ve Pereles, (2015)
When providing content to 2E students, always teach concepts before details.	Carbo, Dunn ve Dunn, (1986); Townsend ve Pendergast, (2015)
Teach 2E students how to set realistic short-term goals and to take risks in achieving these goals even if they represent only a part of the entire task.	Robinson, (1970); Boothe, (2010)
Teach 2E students to connect past learning to new content.	Amran, ve Majid, (2019); Buică-Belciu ve Popovici, (2014)
Engage all senses in learning activities when working with 2E students.	Amiri, (2020); Hornby ve Gierczyk, (2021); Bawalsah ve Haddad, (2020); Baum, Hafenstein ve Rainey, (2000)
Provide specific instructions in organizational activities involving 2E students.	Kircher-Morris, (2022); Montgomery, (2002)
Find or utilize any available technology that will enhance the productivity of 2E students.	Bannan, (2012); Rizza ve Morrison, (2007)
Allow 2E students to take exams in separate and supervised settings.	Winebrenner, (2003); Hornby ve Gierczyk, (2021)

Provide 2E students with learning experiences based on real-world problems.	Baum, Cooper, vd. (2001); Besnoy (2006); Nicpon ve Pfeiffer (2018)
Select assignments that will showcase the talents of 2E students.	Bianco ve Leech (2010); <u>Baum, Rizza</u> ve <u>Renzulli</u> (2006)
Allow 2E students to choose their own projects.	Abramo (2015); Kaufman (2018); Winebrenner (2003); Yssel, Prater ve Smith (2010)
Enable 2E students to progress at different speeds in areas where they struggle.	Willard-Holt (1999); Johnsen (2018); Spurlock (2019); Carpenter (2021); Nielsen (2002)
Utilize different methods and tools when assessing 2E students.	Baum vd. (2001); Moody (2014); Baska ve Stambaugh (2006)
Offer open-ended and clear tasks to 2E students.	Baum, Owen, ve Dixon (1991); Pereles vd. (2009)
Encourage 2E students to use professional application methods.	Nicpon ve Teriba (2022)
Create opportunities for 2E students to express themselves.	Baldwin, Omdal ve Pereles (2015); <u>Townen ve Pendergast</u> (2015); Alotaibi (2017)
Teach stress management techniques to 2E students.	Besnoy (2006); Gullett (2008); Reis, Gelbar ve Madaus (2023)
Provide concrete examples for abstract concepts to 2E students.	Whitmore ve Maker (1985); Yssel vd. (2010)
Offer opportunities for 2E students to work with other twice-exceptional students.	Nielsen (2002); Yssel vd. (2010)

4. DISCUSSION and CONCLUSION

The research revealed that there are numerous strategies in the literature that can be used in the educational process of 2E students. These strategies are developed based on the characteristics of children arising from both their special talents and other special needs, aiming to make the educational environment more conducive.

The learning and teaching strategies for 2E students presented in Table 3 and Table 4 are quite diverse, requiring educators to be flexible in their implementation according to the ways these strategies are applied and the needs of the students. However, this flexibility also brings about some debates regarding the effectiveness and applicability of these strategies.

Firstly, there are various opinions regarding whether a strategy is equally effective for all 2E students. Some educators argue that strategies utilizing multiple intelligences and learning styles may not be suitable for each student's learning style, while others believe that these strategies will generally benefit all students to varying degrees (Biggs, 2014). At this point, it is crucial to consider each student's individual needs and learning styles (Kolb & Kolb, 2005).

Moreover, there are debates about the effectiveness of learning strategies. While some research indicates that certain strategies enhance the academic performance of 2E students, others claim that these strategies are generally ineffective or have limited impact (Baldwin, Omdal, & Pereles, 2015).

Therefore, it is essential for strategies to be continuously evaluated, adapted to the student as needed, and implemented effectively.

Lastly, the practical applicability and sustainability of teaching strategies are also significant topics of debate (Steinemann, 2003). Some educators emphasize the difficulty and time-consuming nature of implementing specific strategies, while others argue that these strategies can make a significant difference in the education of 2E students in the long run (Josephson, Wolfgang, & Mehrenberg, 2018). Hence, it is important for educators to integrate strategies into daily teaching methods and techniques and continuously strive for improvement (Winebrenner, 2020).

All these discussions indicate the need for further research and implementation of learning and teaching strategies for 2E students (Bernau, 2021). Studies on the effectiveness, applicability, and sustainability of these strategies can assist educators and experts in maximizing the educational experiences of 2E students. This way, 2E students can feel supported and achieve their best in cognitive, academic, social, and emotional domains (Bernau, 2021).

5. RECOMMENDATIONS

Comprehensive Longitudinal Studies: Long-term, comprehensive research should be conducted to better understand the developmental processes and academic achievements of twice-exceptional (2E) children. These studies should aim to track children from early ages and determine which strategies are most effective over time.

Personalized Learning Strategies: Experimental studies evaluating the effectiveness of personalized learning and teaching strategies should be conducted. These strategies should be designed taking into account both the giftedness and other special needs characteristics of the students.

Use of Technological Tools: Research examining the impact of technological tools (e.g., educational software, applications, online platforms) on the learning processes of 2E children is necessary. Specifically, the benefits of game-based learning and adaptive learning systems for these students should be investigated.

Teacher Training and Awareness Programs: Studies focusing on the education of teachers working with 2E students should be conducted. These studies should explore which teaching strategies teachers can use for these students and how these strategies can be developed.

Social and Emotional Learning (SEL) Programs: Studies should be conducted to investigate the effectiveness of programs that enhance the social and emotional learning skills of 2E students. These programs should aim to increase students' social interaction skills, emotional regulation strategies, and self-awareness.

Family Engagement and Support Programs: Studies examining the role of families in this process are needed. Research should explore how families can be involved in the educational process, how support programs can be designed, and the contributions of these programs to the academic and emotional development of children.

Studies in Different Cultural and Socioeconomic Contexts: Comparative studies should be conducted to examine how learning strategies for 2E children may vary in different cultural and socioeconomic contexts. This can help identify the most effective strategies in different communities.

Neuroscientific Research: Neuroscientific research should be conducted to study the brain structures and functions of 2E children. These studies can provide important data to better understand the learning processes of these students and develop more effective teaching strategies.

Design of Learning Environments: Studies should be conducted to explore how the most suitable learning environments for 2E students can be designed. The impacts of the physical, social, and psychological components of these environments on the learning and development processes of these students should be examined.

Policy and Practice Research: Research evaluating the effects of policies and practices related to the education of 2E children should be conducted. These studies should determine how education policies and programs can benefit these students or which areas need improvement.

The outlined strategies that can be used to meet the interests and needs of 2E students aim to foster collaboration among teachers, educators, parents, professionals, and therapists to provide solutions or

support services tailored to the strengths and needs of the students within the context of learning and teaching processes for 2E students.

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**PRODUCTION OF GLASS FIBER REINFORCED, FLAME RETARDANT, PA6/RECYCLED
PA6 BLENDS IN SPECIAL COLORS SUITABLE FOR USE IN MECHANICAL CIRCUIT
BREAKER APPLICATIONS**

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ABSTRACT

In the electric and electronics sector, mechanical circuit breakers are of great importance for safety and functionality. The selection of suitable materials for the production of these circuit breakers is critical. Polyamide 6 (PA6) is known for its high mechanical durability and thermal stability. Flame-retardant, glass fiber-reinforced PA6 materials are a preferred raw material for mechanical circuit breaker applications. Halogenated flame retardants are being replaced by halogen-free flame retardants due to the release of toxic gases when exposed to heat. Additionally, colored materials are used in the electrical-electronics sector for visual appeal. In this study, PA6 and recycled PA6 were used together to contribute to sustainability. The use of recycled materials reduces environmental impact and production costs. Halogen-free flame-retardant, glass fiber-reinforced colored PA6 was produced by melt compounding method using a twin-screw extruder. Test plates were molded in an injection machine for mechanical tests, flammability tests, and color check. The characterization of the produced material was performed by tensile tests, flexural tests, impact tests, UL-94 flammability tests, and color check. Although the materials produced using recycled raw materials exhibited appropriate mechanical properties and met flammability requirements, they failed to achieve the color target due to the instability of the recycled material source. This study demonstrates that glass fiber-reinforced, halogen-free flame-retardant including PA6 and recycled PA6 blends can be successfully used in mechanical circuit breaker applications. However, it was concluded that achieving colored materials using recycled raw materials is not always feasible.

Keywords: Polyamide 6, Halogen-Free, Flame Retardant, Recycled PA6, Mechanical

“YENİ YOL” QƏZETİ, 18 MAY 1926-Cİ İL, №113, 1943-CÜ İLDƏ
BAKIDA AYRICA KİTAB KİMİ NƏŞR EDİLMİŞDİR. ONUN ƏLYAZMASI AZƏRBAYCAN
MİLLİ ELMLƏR AKADEMİYASININ ƏLYAZMALAR İNSTİTUTUNUN ARXIVİNDƏ, A6
VƏ Q5 (272) SAXLANILIR.

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Mən on yaşında, ya bəlkə bir qədər də artıq olardım. Xalam azarlamışdı. Hacı Mirzə Səttar həkimi gətirmişdilər ki, baxsın və müalicə eləsin. Demək, xalamın xəstəliyi o qədər də ağır deyildi və bunu mən ondan ötrü deyirəm ki, o vədələr, yəni qırx il bundan qabaq bizim şəhərdə iki nəfər müsəlman həkimi var idi: biri Hacı Mirzə Səttar idi və digəri Məşədi Nurməmməd idi.

Müsəlman həkim dedikdə o deyil ki, bunlar müsəlman idilər. Bu iki nəfərə onunçun müsəlman həkimi deyirdilər ki, bunlar həkimlik təhsillərini müsəlman məmləkətlərində almışdılar. Hacı Mirzə Səttar Təbrizdə oxumuşdu; Hacı Nurməmməd də elə bizim öz şəhərimizdə nüsxəbənd kitablarının müəllimi ilə və təcrübə ilə həkimliyi öyrənmişdi. Bunların da müalicəsi bir müxtəssərəcə nəbzə baxandan sonra ciblərindən xəstəyə kinə və həb və işlətmə verməkdən ibarət idi.

Bu müsəlman həkimlərindən savayı şəhərimizdə rus həkimləri də var idi. Rus həkimi bunlara o səbəbə deyirdilər ki, bunlar Rusiyada və bəlkə Avropada təhsil tapmışlardı. Və çün bizim camaatın arasında bu etiqad var idi ki, “rus həkimləri” müsəlman həkimlərindən artıq təhsil görmüş və təcrübə hasil etmişdilər, onunçun da ağır xəstəlik ittifaq düşəndə həmişə rus həkimlərini həziq hesab edib onları dəvət edirdilər; savayı kasıb-kusubdan. Bunlar iki abası fayton pulunun, bir manat rus həkiminin həqqi-zəhmətindən və yarım manat aptek xərcindən qaçmaq babətindən Hacı Mirzə Səttara, ya Məşədi Nurməmmədə qane olub, beş-altı şah ilə həkimi də və dava-dərmanı da ötürürdülər.

Demək, müsəlman həkim çağırmaq istəyəndə, buradan bilmək olardı azarının azarı yüngüldür. Amma “rus həkimi” gətirənlərin də mənası bu idi ki, xəstənin halı qorxuludur.

Hacı Mirzə Səttar xalama baxıb gedəndən bir saat sonra gördüm ki, xalamın əri Məşədi Zülfüqar bir köhnə faytonda bir rus papaqlı kişi ilə gəlib yendilər. Bu rus papaqlı kişi rus həkimi imiş. Buradan mən anladım ki, xalamın işi xarabdır. Mən də uzaqda durub, həkimin xalama baxmağına tamaşa edirdim.

Xülasə, baxdı qurtardı və bilmirəm nə dedi, nə demədi və həkim faytona minib gedəndə xalamın əri tələsik mənə bir qəpik verdi və dedi:

“Bala, tez ol, durma, tez, tez bir qəpiklik buz al gətir, ver evə ... həkim deyirdi ...”

Və xalamın əri bu sözləri bir də təkid edəndən sonra anama xəlvətcə nəşə dedi. Evdən bir dənə boş dava şüşəsini əlinə alıb mindi faytona həkimin yanına və sürüb getdilər. Və fayton istəyirdi uzaqlaşa, atam evimizə tərəf ucadan dedi:

“Ay uşaq, buzu yaddan çıxartmayın.”

Bunlar gedən sonra anam da həkim gələndə ördüyü çaşrafi yerə tullayıb, çökdü xalamın yanına və bu da mənə təkid elədi ki, durmayım, tez qaçım bazara buzun dalıya: çünki məlum oldu ki, həkim tapşırıb ki, xalamın ürəyinin üstünə əlbəttə buz qoysunlar və ürəyi sakit olmayınca buzu götürməsinlər.

Mən üz qoydum bazara tərəf. Xəyalımda qoymuşdum gedəm düz baqqal çarşısına və buzu alam gətirəm. Və şəhərdə ordan da savayı bilmirdim harada buz satırlar.

Evimizdən ayrılanda çox da tələsmirdim, amma xalamın yalvarmağı yadıma düşəndə bir qədər ayaq götürdüm: çünki yazıq xalam dərin gözlərini güclə mənə tərəf çöndərib belə yalvarırdı:

“Qurban olsun, sənə xalan, ürəyim pörşələndi, bunu tez gətir.”

Hacı Bayramın küçə qapısının qabağından keçəndə itləri həyətdən başladı hürməyə. Mən əlimə ehtiyat üçün iki daş aldım, qapını ördüm, keçdim. İt küçəyə çıxmadı və həyətdən itin yorğun “hov, hov” səsi gəlirdi. Bu it hərçənd çox qoca bir it idi və yol ilə ötürüb keçənlər ilə də çox bir acığı yox idi və olmazdı. Hacı bayramın oğlu, mənim küçə yoldaşım Şirəli, mən həmişə onların qapısından ötəndə haman qoca köpəyi çağırırdı küçəyə və itini küşküürərdi üstümə və özü də, iti də məni bir qədər qovalardılar, amma tuta bilməzdilər: çünki it o qədər qoca idi ki, bir az mənə tərəf hücumdan sonra tez yorulardı, durardı və ancaq gücsüz və ələcsiz durduğu yerdə “hov, hov” edərdi. Və mənə xoş gələn o idi ki, itin bu xasiyyətinə Şirəlinin elə bərk acığı tutardı ki, məni boşlayıb başlardı yazıq qoca iti daşlayıb incitməyə.

Bu da mənə nəhayət xoş gəlirdi. Belə olanda Şirəli itin acığını dönüb istərdi məndən alsın və çox vaxt olardı ki, biz bir-birimizlə söyüşərdik və çox vaxt da elə savaşırdıq ki, yol adamları bizi gəlib aralardılar.

Çünki dəxi Şirəli qapıda görsənmədi, mən də itin hürməyinə qulaq vermədim və xalamı da mülahizə elədim; yəni bir növ yazığım gəldi və keçdim getdim.

Baqqal çarşısına yetişdim və bir qəpiyi uzatdım verdim buz satana. Bu da bir çuxur yerə əlini uzatdı, yarpaqların və samanın altından bir yekə buz parçası çıxartdı, mənim bir qəpiyimə baxdı və buza baxdı bunu iki böldü və yekəsini bir kələm yarpağına bükdü, verdi mənə.

Buzun ağırlığı olardı təxminən beş girvənkə. Buzu aldım əlimə və sərin baqqal rastasından çıxdım günün qabağına. Hava şiddətli isti idi. Yayın orta ayı idi və başımın üstündəki nisfünəharın günü əgər bir imam möcüzə ilə göydən yerə düşə bilsəydi, düz mənim kəlləmə düşərdi. Mən istidən qan-tərin içində idim və bir yandan alnımın təri damcı-damcı axırdı və bir yandan da buz şiddətlə əriyib süzələnərdi. Yerdən bir təmiz daş götürmüşdüm, hərdən bir buzun böyrünə vurub əzirdim və basırıdım ağzıma və alnıma.

Gəldim çatdım Hacı Bayramın qapısına. İtin səsi gəlmirdi. Şirəli genə görsənmirdi. Hacı Bayramın darvazasının qabağın yetişəndə özüm də deyə bilmərəm ki, niyə dayandım. İtin genə səsi gəlmir. Heç kəs nə qapıda, nə küçənin bir küçənin bir yanında görürmür; yəqin ki, istinin zərbindən hərə bir kölgə yerə pənəh gətirib.

Adətkərdə olmaq yaman imiş və mənim də adətim buna idi ki, bircə gün də olmayıb ki, bu darvazanın qabağından ötürüb keçəndə ya it mənim qabağıma çıxmasın, ya Şirəli çıxmasın. Və məlum ki, bunların da biri çıxanda mənim üçün burada məşğuliyyət olmasın, ya iti daşlamasın, ya Şirəliylə söyüşməyim və hərdən bir də onunla dalaşmayım.

Bəs neyləyim? Bir çarəm buna qaldı ki, yerdən iki dənə qıvraq daş götürdüm, öz evimizə tərəf bir qədər də uzaqlaşdım ki, bir həngamə törəsə, mənə əli çatan olmasın. Və geri çönüb daşın birini tulladım Hacı Bayramın darvazasına və qaçdım, daha da uzaqlaşdım.

Daldan köpəyin səsinə eşidirdim. Qoca it xahi-nəxahi çıxmışdı qapıya və xahi-nəxahi öz vəzifəsini ifa edirdi.

Əlimdəki o biri daşı da tulladım. Daş itin başının üstündən ötürüb getdi şaqqıltı ilə deydi Hacı Bayramın darvazasına. Burada köpək deyəsən acığa düşdü; çünki mənə tərəf başladı hürməyə. Mən qorxumdan qaçdım, bir qədər uzaqlaşdım və çönüb geri baxanda gördüm ki, itin dalıyca Şirəli də mənə tərəf hücum edir.

Siz elə bilməyin ki, mən onlardan ehtiyat eləyirdim; bir zərrəcə eləməirdim. Çünki, bilirdim ki, köpəyin nə dişi var məni tutsun, nə taqəti var mənə güc gəlsin. O ki, Şirəli idi, onun öhdəsindən hər halda gələ bilərdim.

Buzu qoydum yerə, gördüm ki, od kimi isti torpağa buz cızıldı ilə yapışmış az qaldı havaya ucsun. Suyu axa-axa buz torpağın içindən götürdüm tulladım divarın kölgəsinə və qaçdım yerdəki daşlara tərəf və qabağıma gələn daşları yerdən qapıb başladım Şirəliyə tərəf tullamağa. Bu da mənə baxıb, durdu məni daşa basmağa. Köpək də ancaq mən atdığım daşlara özünü çırpırdı və bundan başqa sahibinin oğluna bir qeyri kömək göstərə bilmirdi. Biz həmi bir-birimizi daşlayırdıq, həmi bir-birimizi söyürdük. Söyüşlərimiz bu qəbildən idi: “A sənin ananı ... flan və flan”, “Ay sənin bacının ... flan və flan”, “Köpək oğlu və it oğlu” söyüşləri burada o qədər vec vermirdi; səbəb bu ki, toqquşmamız adi bir toqquşmalardan deyildi ki, söyüşlər də adi olsunlar. Hətta mən ona buradan hirsimdən elə bir söyüş göndərdim ki, Şirəli qeyzindən ağladı və haman söyüşü ağlaya-ağlaya mənə geri qaytaranda öz atası Hacı Bayram həyətdən eşitdimi, eşitmədimi, ancaq gördüm ki, kişi düz gəldi yapışdı oğlunun qulağından və çəkə-çəkə apardı həyatına və dübarə həyətdən çıxdı, mənə tərəf səsləndi:

“Ədə, vələdüzzina, düz yolunna çıxıb gedə bilmirsəm?”

Mən dinmədim və oturdum divarın dibində. Ürəyim elə yanırdı, az qalırdım yerdəki buzu götürəm soxam boğazıma. Buz da öz işində, əriməkdə idi. Genə özümü saxlaşdırı bilmədim və əlimdəki daşnan buzun bir tərəfini əzdim basdım ağzıma və bir alma yekəlikdə qalan buzu istədim genə qoyam yerə. Ancaq burada xalam yadıma düşdü və istədim duram qaçam evə və qalan buzu yetirəm azarlıya. Və burada baxdım ki, Şirəli durub darvazanın ağzında və mənə tərəf baxır. Mən də dinmədim və düşdüm yola, evimizə tərəf. Burada Şirəlidən elə bir söz eşitdim ki, dəxi məcbur oldum dayanam və ona cavab verəm. Şirəli uzaqdan mənə haraylayırdı:

“Hə, beləcə it kimi qorxub qaçarsan ha!”

Allahü-əkbər ... Axı bu söz yaxşı söz olmadı. Burada Şirəli mənə hər nə desə idi, genə qulaq ardına vurub özümü yetirərdim evə; çünki xalamın ərindən də qorxurdum və bir az da anamdan qorxurdum. Amma axı Allah görür ki, Şirəli nahaq söz danışdı; çünki mən onun nəyindən qorxdum ki! ... indi gedirəm evə.

Mən çöndüm dayandım və Şirəliyə belə söz qaytardım:

“Ədə, köpək oğlu köpək, mən sənə nəyindən qorxdum?”

“Köpək oğlusan da, it oğlusan da!”

Biz başladıq bir-birimizə yavıq gəlməyə. Ehtiyat üçün buz tikəsini genə qoydum divarın dibinə və o mənə, mən ona yavıq gəldik, gəldik və bir-birimizə söyə-söyə yetişdik, çatışdıq və düşdük yumruq döyüşünə və sonra da əlbəyaxa olduq.

Bir az bir-birimizi cırmqlayandan və kötəkləyəndən sonra bir də gördüm ki, bir qoca kişinin qucağındayam. Bir nəfər də çarşafı arvad və bir-iki də oğul-uşaq Şirəlini çəkə-çəkə apardılar evlərinə tərəf. Mən istədim qoca kişinin əlindən dartinıb çıxam, hərifin üstünə hücum edəm, burada mən birdən ayıldım, sakit oldum. Kürəyimdən naqafil bir bərk yumruğu hiss edən kimi başımı qalxıxdım.

Məni vuran xalamın əri idi. Bundan onun hirsli hələ soyumadı; yumruğunu qalxıxmışdı yenə yendirsən, qoyub qaçdım evə tərəf.

Xalamın ərini dalımca gələn görmədim, yəqin ki o da bazara tərəf getdi. Sonra bildim ki, gəlib evdə məni bazardan gəlmiş görməyib, qayıdıb bazara ki, buzu özü alıb gətirsin.

Utandığımdan azarlığının yanına getmədim; ancaq anam uzaqdan məni görəndə bircə bunu dedi:

“A balam, sənə görə cüyərin yansın! Necə ki, yazıq azarlı arvadın cüyərini yandırdın.”

Xalam məni çox istədi; onunçün da sonra mən bildim anam mənə bu qarğıışı eyləyəndə xalam anama belə deyib:

“Ay qız, Sara, sən həzrət Abbas, uşağa elə qarğıış eləmə!”

Bir neçə gündən sonra xalam vəfat etdi. Mən o günü nə ağladım, nə də dərd elədim, necə ki, cəmi mənim kimi bacı uşağı xalasınn ölümünə nə ağlar və nə dərd elər.

Bununla belə bircə şey yadımdan çıxmadı və indiyə kimi məni gahdan bir narahat etməkdədir.

Nədi o? – Onun adı “buz”dur.

Xüsusən yay fəsilləri ki, bir tərəfdən bizim isti iqlimdə ki, yayın istisinin şiddətindən nəinki xəstələr, bəlkə salamat adamın da vaxt olur ki, cüyəri yanır.

Və yay fəsli arabalarda daşınan ağ və təmiz duru buz kərpiclərini görəndə xalam yadıma düşür və öz-özümə deyirəm: o xoşbəxt ki, indi onun ürəyi yanır, bu buzu aparıb ona verəcəklər ki, ürəyi sərinləsin. Və çox-çox daha da xoşbəxt adamlar var ki, bu buzlar onların ləzzətli yeməkləri və marojnalarına sərf olunur. Amma mənim xalam odlu qızdırmanın içində ürəyi yanmaqda olduğu halda, bircə tikəsinə həsrət qaldı və iki gün sonra ölüb getdi.

Kimin qusuru ucundan? Mənimmi, ya yox? Kimdədir taxsır? Məndədir ki, itlər ilə dalaşmağa məşğul olub, xalamın buzunu odlu torpağın içində əritdim? Ya bəlkə günahkar təbiətdir ki, daş kimi bərk bir buzu istədən suya döndərir? Ya bəlkə günah heç birimizdə deyil? Ondən ötrü ki, mən tək tərbiyə görməyən on yaşında bir uşağın həmin rəftarı çox təbiidir, necə ki, buzun gün qabağında əriməyi təbiidir.

Məqsəd suallara cavab vermək və belə-belə fənni məsələləri açmaq deyil. Və heç bir məqsəd yoxdur.

Ancaq hər bir yay fəsli küçələrdə arabalarda buz sallarını görəndə, bir tərəfdən o buzu şampanskilərə və ləzzətli marojnalara işlədən xoşbəxtlər gözümün qabağına gəlir və eyni zamanda xalamın “cüyərinin yanması” yadıma düşür.

Nə qədər ki, uşaq idim, yadıma düşməzdi; elə ki, yekəlib ağlım kəsdi, buz əhvalatı mənə hər bir yeri düşəndə dərd olur. Bir tərəfdən də on dörd yaşında olduğum vaxt ölümcül azarlı xalımı bir qəpiklik buza həsrət qoymağım yadıma düşür.

Nüsxəbənd kitabları-Dərman kitabları
Kinə-Qızdırma dərmanı
İşlətmə-Temuratur, hərarət dərmanı
Haziq- Çox bilikli, çox mahir
Babət-Orta
Rasta-Düz küçədə yerləşən
Nisfünnehər-günorta
Nisfünnehərin-günortanın
Xahi-nəxahi-İstər-istəmən
Ədə vələdüzzina-bic oğlu bic
Fənni elm, bilik, texnika
Buz salları-Böyük, yastı buz layı
Fütuhat-fəthlər, qələbələr, qalib gəlmə
Qeysər-Səlcəm, soyuqdəymə, padişah, hökmdar
İslatma-dərman

ABSTRACT

I was about ten years old or perhaps more than it was. My aunt was ill. Doctor Haji Mirza Sattar was called for examining and treating. So, it means that, my aunt's illness was not so serious and I say it because, at those times, about forty years ago there were two Muslim doctors in our city: one of them was Haji Mirza Sattar and the other was Mashadi Nurmammad.

Saying Muslim doctors did not mean that they were Muslims. These two men were called Muslim doctors because they had their medical education in Muslim countries. Haji Mirza Sattar had studied in Tabriz, Mashadi Nurmammad had also studied doctor profession via reading medicine books (prescription books) and with a practice in our city. Moreover, their cure was consisted of giving medicine for temperature, a pill and a drug for temperature out of their pocket after having felt the pulse shortly.

Besides, of these Muslim doctors, there were also Russian doctors in our city. They were called Russian doctors due to getting education (by reason of getting education) in Russia and perhaps in Europe. And because there was a belief among our people that "Russian doctors" had got more education and more practice than Muslim doctors, that is why while hard illness happened instead of poor people the other people always used to call Russian doctors considering them more scholarly and skillful.

In order to evade from paying two abaci for a phaeton pay, one manat for real toil of a Russian doctor and a half manat for a drug-store pay being satisfied either with Haji Mirza Sattar or with Mashadi Nurmammad, they used to do with both the doctor and the different medical remedies by five or six shah.

So, when they wanted to call a Muslim doctor it should be known that the disease of a patient was not serious. However, the meaning of calling "A Russian doctor" was that the health of patient was dangerous.

An hour later, the doctor Haji Mirza Sattar had examined my aunt and gone away, I saw my aunt's husband Mashadi Zulfugar reach and get off an old phaeton together with one Russian cap-headed man. This cap-headed Russian man was a foreign doctor. I understood from it that something was wrong with my aunt. Staying aside, I was watching the doctor to examine my aunt. Summary, he examined and finished, but I did not know what he said or not and when the doctor had got on the phaeton and gone away, my aunt's husband gave me one copeck hastily and said:

"Oh, my child, be quick, don't stay, buy a piece of ice for a kopeck quickly, and bring it home. ... The doctor was saying ..."

And after having insisted these words once more again my aunt's husband said something secretly to my mother. Taking one empty medicine bottle from home, he got on the phaeton, sat by the doctor, and then they drove and went away. While the phaeton was on going to move away, my father said loudly towards our house:

"Oh, my child, don't forget the ice."

After having they left, my mother threw her yashmak (veil) on the floor which she had put on her head when the doctor came, kneeling down she sat by my aunt and she also insisted on me not

staying, but running quickly to bazaar for a piece of ice; because it was known that the doctor had ordered to put a piece of ice on her chest and not to take the ice till her heart became calm.

I went towards the bazaar. I had decided to go directly towards the grocery bazaar and buy the ice. However, I did not know any other place besides it where ice was sold in the city. While leaving our home I was not more in a hurry, but when I remembered my aunt's begging I became more quickly; because turning hardly her deep eyes towards me my poor (miserable) aunt was begging so that: "Let your aunt be sacrifice for you, my heart became scalded. Bring the ice quickly."

While passing in front of Haji Bayram's street door, their dogs began barking in the yard. For security, I took two pieces of stone in my hand, shut the door, and crossed. The dog did not leave for the street and the tired voice of the barking dog –"hav, hav" was heard from the yard. Although this dog was very old, it was not angry with either the people (pedestrians) passing on the way or it would not have. When I always passed in front their door, my neighbor Shirali who was Haji Bayram's son used to call that old dog to the street and made his dog bark at me, both he and his dog used to drive me out a little, but they couldn't catch, because the dog was so old that after a little attack towards me it used to be tired quickly, used to stop and then to bark: "hav, hav" in a weak and irremediable condition in its place. But it was pleasant for me when Shirali was so angry with this disposition of the dog, leaving me he used to start tormenting the dog throwing the stones on it. Finally, it was pleasant for me. In such conditions Shirali used to want to take vengeance of his dog's anger from me and most time we used to abuse each other and most time we used to make such a row that the pedestrians used to separate us.

Because neither Shirali was seemed at the door nor I ignored the barking of the dog and I thought about my aunt; so I felt sorry, that is why (either) I passed away. I reached the grocery bazaar and gave one kopeck to an ice-seller. He also stretched his hand into one hallow place, took one big piece of the ice out of under the leaves and the chaff, looked at my one kopeck and the ice, divided the ice into two pieces and wrapped up the big piece with a cabbage leaf and gave it to me.

The weight of the ice might be about five girvanke. I took the ice in my hand, left the cool grocery shop for the sunny weather. The weather was so harsh hot. It was the middle month of the summer and if the warmth of the afternoon could manage to fall on the Earth from the Heaven with one miracle of Imam, certainly it should fall directly on my skull. Because of the hot weather, I was in blood and sweat, from one side the sweat was flowing drop by drop from my forehead and from the other side because of the harsh hot weather the ice was melting and trickling down. I had taken one clean stone from the ground; I broke sometimes one side of the ice and put it into my mouth and on my forehead. I reached Haji Bayram's house. The voice of the dog was not heard. Shirali did not seem again. I could not myself either say why I stood when I reached Haji Bayram's gate. The voice of the dog was not heard again. Nobody was seemed either at the door or in any side of the street; certainly, everybody had taken the refuge in a shade place because of striking of hot. Getting into habit is a very bad thing and my habit was so that, there was hardly a day either the dog or Shirali came across to me while I was passing before the gate. Moreover, it was known that when one of them appeared, there was a problem for me here either throwing stones at the dog or abusing with Shirali and sometimes quarrelling with him too.

And what could I do? I had no other way out, I took two small pieces of stone from the ground, went away a little towards our house in order nobody could touch me if any accident would happened. And turning back, I threw one of the stones at the gate of Haji Bayram and ran, more away.

Behind me, I was hearing the voice of the dog. Willingly or unwillingly, the old dog had come next to the door and willingly or unwillingly, it was doing its duty.

I threw the other stone too which was in my hand. Passing away over the head of the dog, the stone hit the gate of Haji Bayram with snap. Here perhaps the dog persisted; because it began to bark towards me. Because of being afraid I ran withdrew a little, when I turned back I saw Shirali attacking towards me after the dog.

Do not think that I was afraid of them, never, even a grain. Because I knew that, the dog neither had the teeth to bite me nor any strength to defend me. It was Shirali who could manage with him anyway. I put the ice on the ground and saw the ice to stick on the fiery hot ground with drone as if it was going to fly in the weather. I took the ice quickly flowing its water out of the ground, threw it to the shade of the wall and ran towards the big stones on the ground, took the stones from the ground, which they were in front of me and I began to throw them towards Shirali. Looking at me he also began throwing the stones at me. The dog also hit itself only to the stones, which I was throwing, and besides

of it the dog could not help his owner's son. We both were throwing the stones at each other and were abusing (swearing) each other. Our abusing was from the same origins: "Damn it, to your mother ... so and so". "Damn it to your sister ... so and so. A dog's don."- The abuse was not of use here. The reason was that neither our conflict nor our abusing was ordinary. Even because of my anger I said such an abuse from here to him, Shirali became angry and crying he replied the same abuse to me, I don't know his father Haji Bayram heard or didn't hear only I saw him coming directly to his son, taking his son's ear he carried him into the yard, more than it he went out from the yard and sounded towards me:

"Dodge, can't you go along your way?"

I did not speak and sat down at the foot of the wall. My heart was so burning that I wanted to put the ice into my mouth, which was on the ground. The ice was doing its duty; it was going on to be melt. I could not keep myself again, divided one side of the ice with a stone, which was in my hand, put it into my mouth, and I wanted to put aside the rest of the ice, which was in the shape of a big apple. But here remembered my aunt and I wanted to run home and to deliver the rest of the ice to the patient. And here I saw Shirali standing at the threshold of the gate and looking at me. I did not speak either and started my way, towards our house. Here I heard such a word from Shirali that this word made me stop and reply.

Shirali called me from away.

"Yes, you can run so that as frightened dog."

Allahu-akbar ...you see, this word did not become a good word. At that time although what Shirali said to me I should deliver myself home not having respect for his sayings again; because I was afraid of both my aunt's husband and a bit little of my mother. But you see; -God knows that Shirali spoke unjustly why I was afraid of him! Now I am going home.

Turning back, I stopped and replied Shirali with this word: "A dog's son, dog, why I am afraid of you?"

"-You are a dog's son! Of course, you are a dog's son!"

We began to come nearer to each other. I put the ice at the foot of the wall again for reserving and both he and I came nearer to each other, abusing each other we caught up each other, began to fist each other and then scuffled. After having scratched and battered each other, I found myself in the arms of an old man. One veil-dressed woman and one or two children carried Shirali pulling him towards their house. Drawing back, I wanted to leave the arms of an old man to attack the strange fellow at that time; suddenly I awoke and became quiet. I raised my head immediately when I felt a sudden strong fist on my shoulder blade. It was my aunt's husband who fisted me. His anger did not get cold yet, he had raised his fist in order to hit me again, and leaving him there, I ran home. I did not see my aunt's husband coming behind me; perhaps he also went towards the bazaar. Then I understood that because of not seeing me at home he had returned to the bazaar in order to buy the ice himself.

Because of being ashamed, I did not go to the patient's; but when my mother saw me from far away she said only these words: "-Oh, my child, let me see your lung burn! How you burnt the lung of the miserable sick woman."

My aunt used to love me very much; that is why afterwards I heard that while my mother was blaming me so that, my aunt told her with such words: "Oh, my daughter, Sara, don't blame the child so that for the sake of God!"

A few days later my aunt died. In that day I was obliged neither to cry nor to be anxious, however as like as me all nephews were obliged neither to cry nor to be anxious.

Along with it, I could not forget only one thing and until this time, it has been doing to disturb me with a sudden shock.

What is its name?-Its name is "Ice".

From one side, especially summer holidays from the other side because of the strengthen of summer in our climate not only patients but also healthy people become thirsty. And I remember my aunt every time while seeing the carrying slices of white, fresh and pure ice in the wagons in summer and I say to myself: A man is happy whose heart is burning now and the ice will be given to him in order his heart to become cool. And there are more and more people that this ice is used for their dishes and ice cream. Although my aunt's heart was in a very fiery temperature she longed to see only one piece of ice and died two days later. Because of whose fault? Because of me or not? Who is guilty? Either was I guilty that I had to fight against the dog's leaving my aunt's ice on the fiery ground or is the nature guilty that changes the ice as solid as stone into liquid because of heating? Or neither of us is guilty?!

Because, the same behavior of a child of ten years old like me is natural who is lout as like as the process of changing of the ice into liquid.

The aim is not to answer the questions and raise such scientifically, knowledgeable, technical problems. And there is not ay aim. But in every summer holidays while seeing the layers of ice in the wagons in the streets from one side happy people are imagined in front of my eyes that use that ice in champagne and delicious ice cream and at the same time I remember “the burning of my aunt’s heart.” The more I was a child the more I could not remember, so when I became older that ice story became grief for me in every instant. At the same time, from the other side I remember to deprive my mortal and sick aunt of ice for one kopeck when I was about fourteen years old.

ELECTRIC VEHICLE BATTERY SELECTION USING MAIRCA METHOD BASED ON Q-RUNG ORTHOPAIR FUZZY NUMBER

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ABSTRACT

Unlike traditional vehicles, electric vehicles operate by charging without using fuel or LPG. It will charge the electric vehicle battery via a device/station or home outlet. Having an environmentally friendly goal in electric vehicle battery (EVB) production is necessary for sustainable production. Although it has been examined as a new topic in the literature on environmental EVB, it has not been examined together with the multi-criteria decision-making technique. For environmentally friendly EVB selection, the q-rung orthopair fuzzy number based MAIRCA method was used. The q-rung orthopair fuzzy number will be used to better determine the opinions of experts in determining the importance of the criteria. Within the scope of the study, eight criteria and five different alternatives were determined for environmentally friendly EVB production. Within the scope of this study, carbon emission, water consumption and energy consumption were determined as environmental criteria for EVB production. Other criteria are cost, reliability, safety, power and energy density. The alternatives are determined as Lithium-Cobalt Oxide Battery (A1), Lithium-Manganese Oxide Battery (A2), Lithium-Nickel Manganese Cobalt Oxide Battery (A3), Lithium Iron Phosphate Battery (A4), Lithium-Titanate Battery (A5). Linguistic variables and numerical equivalents for fuzzy numbers will be determined. A common set of linguistic variables was created by utilizing the opinions of experts with at least 15 years of knowledge and experience in the field of batteries. Data were obtained by visiting electric vehicle battery production enterprises and conducting face-to-face interviews with experts and academicians working on battery production. In electric vehicle battery production, the most appropriate material was selected by taking into account environmental criteria. The best alternative was determined as A4. The order is determined as A4>A2>A3>A1>A5. This result will be helpful for electric vehicle battery manufacturers' R&D decisions.

Keywords: Electric vehicle battery, MAIRCA method, q-rung orthopair fuzzy number, sustainable production.

INTRODUCTION

Technically, electric cars emit no emissions. It can be said that such vehicles are definitely cleaner than vehicles with internal combustion engines. However, this does not mean that electric models produce zero emissions. A significant portion of the electricity used by electric cars comes from fossil fuels. Another factor that pollutes the environment is the batteries of electric vehicles. Batteries produced with many different materials cause environmental pollution. However, thanks to increased precautions and more efficient recycling of lithium-ion batteries, the environmental impact is reduced. When an electric vehicle battery reaches the end of its life, valuable materials such as lithium, nickel, manganese, cobalt and graphite can be recycled. In this way, the carbon footprint of electric cars is reduced. The contributions of this study to the literature can be summarized as follows:

* The q-rung orthopair fuzzy number will be used to better determine the opinions of experts in determining the importance levels of the criteria.

*Although environmental EVB has been examined as a new issue in the literature, it has not been examined together with the multi-criteria decision-making technique.

* The decision model suggested in the study for environmentally friendly EVB selection can be examined on different products such as phone and computer batteries.

MATERIALS AND METHODS

Application areas of the MAIRCA method are given in Table 1.

Table 1. Application areas of the MAIRCA method

Authors	Application area
Pamucar and Faruk (2022)	Evaluation of European container ports
Ecer et al. (2022)	Evaluation of Cryptocurrencies for Investment Decisions in the Age of Industry 4.0
Huy et al. (2022)	Cubic boron nitride grinding
Muravev et al. (2020)	Location optimization of CR express international logistics centers
Bakır et al. (2020)	Operational performance evaluation in the airline industry
Chatterjee et al. (2019)	Lightweight, environmentally friendly material selection

Studies in which the MAIRCA method is integrated with fuzzy logic are given in Table 2.

Table 2. Fuzzy logic based MAIRCA method applications

Authors	Utilized fuzzy number
Pamucar and Faruk (2022); Bakır et al. (2021); Mestanza and Bakhat(2021); Gul et al. (2021)	Type-1 fuzzy number
Ecer et al. (2022); Ecer (2022)	Intuitionistic fuzzy number
Erdoğan (2022)	Interval valued type-2 spherical fuzzy number
Trung et al. (2022)	Spherical fuzzy number
Zhu et al. (2021)	Fuzzy rough numbers
Boral et al. (2021); Boral et al. (2020)	Interval type-2 fuzzy number

Table 3 presents the criteria and alternatives determined within the scope of this study.

Table 3. Criteria and material alternatives in environmentally friendly EVB selection

K1	Cost
K2	Reliability
K3	Safety
K4	Power
K5	Energy density
K6	Carbon emission
K7	Water consumption
K8	Energy consumption
A1	Lithium-Cobalt Oxide Battery (LiCoO ₂) – LCOB
A2	Lithium-Manganese Oxide Battery (LiMn ₂ O ₄)- LMOB
A3	Lithium-Nickel Manganese Cobalt Oxide Battery (LiNiMnCoO ₂)-LNMCOB
A4	Lithium Iron Phosphate Battery (LiFePO ₄)- LFPB
A5	Lithium-Titanate Battery (Li ₄ Ti ₅ O ₁₂) LTOB

To overcome the shortcomings of the intuitionistic fuzzy number and the Pythagorean fuzzy number, the q-rung orthopair fuzzy number presented below was proposed by Yager (2016). $A = \{(x, \mu_A(x), \nu_A(x)) | x \in X\}$ for all $x \in X$ $\mu_A(x) : X \rightarrow [0, 1]$, $x \in X \rightarrow \mu_A(x) \in [0, 1]$ $\nu_A(x) : X \rightarrow [0, 1]$, $x \in X \rightarrow \nu_A(x) \in [0, 1]$ and $0 \leq \mu_A(x) + \nu_A(x) \leq 1$ conditions must be ensured. $\mu_A(x)$ and $\nu_A(x)$ shows the membership and nonmembership degrees for $x \in X$ in set A , respectively. Furthermore, $\pi_A(x) = (1 - (\mu_A(x))^q - (\nu_A(x))^q)^{1/q} \forall x \in X$ shows the hesitancy degree of x . $\mu^q + \nu^q \leq 1$ condition must be ensured. The following aggregation operator will be used to combine expert opinions (Yager, 2016).

$$q-ROFWA(\alpha_1, \alpha_2, \dots, \alpha_l) = \left(\left(1 - \prod_{k=1}^l (1 - \mu_k(x)^q)^{\lambda_k} \right)^{1/q}, \prod_{k=1}^l \nu_k(x)^{\lambda_k} \right)$$

MAIRCA method

The steps of the MAIRCA method are summarized below (Pamucar et al., 2018; Ayçin, 2020).

Step 1: Criterion (C_j) values for each alternative (A_i) are included in Equation (1).

$$x = \begin{bmatrix} C1 & C2 & \dots & Cn \\ x_{11} & x_{12} & \dots & x_{1n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Step 2: It is essential for the decision maker to be impartial in the alternative selection process. While m is the total number of alternatives, the priority of i^{th} alternative (P_{Ai}) is calculated with the help of Equation (2).

$$P_{Ai} = \frac{1}{m} ; \sum_{i=1}^m P_{Ai} = 1 \quad i=1, 2, 3, \dots, m \quad (2)$$

Since the decision maker is equidistant from each of the alternatives, all priorities are equal.

$$P_{A1}=P_{A2}=\dots=P_{Am} \quad (3)$$

Step 3: The elements of the matrix (t_{pij}) are found by multiplying the priorities of the alternatives (P_{Ai}) with their criteria weights (w_j).

$$\begin{bmatrix} P_{A1} * W_1 & P_{A1} * W_2 & \dots & P_{A1} * W_m \\ P_{A2} * W_1 & P_{A2} * W_2 & \dots & P_{A2} * W_n \\ \vdots & \vdots & \ddots & \vdots \\ P_{Am} * W_1 & P_{Am} * W_2 & \dots & P_{Am} * n \end{bmatrix} \quad (4)$$

Step 4: Real ponder matrix (T_r) is obtained by using the theoretical ponder matrix (T_p) and the initial decision matrix (X). Matrix elements are calculated with the help of Equation (5) for maximization type criteria and Equation (6) for minimization type criteria.

$$t_{rij} = t_{pij} * \left(\frac{x_{ij} - x_{ij}^-}{x_{ij}^+ - x_{ij}^-} \right) \quad (5)$$

$$t_{rij} = t_{pij} * \left(\frac{x_{ij} - x_{ij}^+}{x_{ij}^- - x_{ij}^+} \right) \quad (6)$$

x_{ij}^+ is the maximum value ($x_{ij}^+ = \max(x_1, x_2, \dots, x_m)$) of the criterion from the alternative, x_{ij}^- is the minimum value of the criterion from the alternative ($x_{ij}^- = \min(x_1, x_2, \dots, x_m)$).

Step 5: Finally, by subtracting the real ponder matrix (T_r) from the theoretical ponder matrix (T_p) with the help of Equation (7) and Equation (8), the Gap Matrix (G) is obtained.

$$G_{ij} = t_{pij} - t_{rij} \quad (7)$$

$$G_{ij} = t_{pij} - t_{rij}$$

$$G = T_p - T_r \begin{bmatrix} g_{11} & g_{12} & \dots & g_{1n} \\ \vdots & \vdots & \ddots & \vdots \\ g_{m1} & g_{m2} & \dots & g_{mn} \end{bmatrix} \quad (8)$$

Step 6: In the last step of the method, the values of the criterion functions of the alternatives are found separately for the alternatives with the help of Equation (9).

$$Q_i = \sum_{j=1}^n g_{ij}, \quad i=1, 2, \dots, m \quad (9)$$

The alternative with the smallest value among the values obtained from this equation is considered the best alternative.

RESULTS

Information was obtained through interviews from experts working on electric vehicle battery production in Bursa and academicians in Bursa, Ankara and Konya. As a result of these interviews,

electric vehicle battery selection was made with the opinions of 3 experts. 3 experts examined 8 criteria for electric vehicle battery selection. The importance levels of the 8 criteria, according to experts, are given in Table 4. A common group opinion was obtained by using aggregation operator the opinions of 3 experts. The results are presented in Table 5. The opinions of each expert for criterion-based alternatives are presented in Table 6.

Table 4. The weights of criteria according to the opinions of experts

	K1		K2		K3		K4		K5		K6		K7		K8	
Expert 1	0,85	0,2	0,2	0,85	0,2	0,85	0,5	0,5	0,5	0,5	0,85	0,2	0,2	0,85	0,5	0,5
Expert 2	0,85	0,2	0,2	0,85	0,5	0,5	0,5	0,5	0,5	0,5	0,85	0,2	0,5	0,5	0,85	0,2
Expert 3	0,95	0,15	0,2	0,85	0,2	0,85	0,5	0,5	0,85	0,2	0,85	0,2	0,5	0,5	0,5	0,5

Table 5. The weights of criteria

K1		K2		K3		K4	
0,888	0,186	0,200	0,850	0,384	0,687	0,500	0,500
K5		K6		K7		K8	
0,660	0,398	0,850	0,200	0,441	0,602	0,717	0,347

Table 6. The opinions of experts for criteria based alternative

		A1		A2		A3		A4		A5	
Expert 1	K1	0,85	0,2	0,5	0,5	0,5	0,5	0,5	0,5	0,95	0,15
	K2	0,85	0,2	0,85	0,2	0,85	0,2	0,85	0,2	0,95	0,15
	K3	0,2	0,85	0,5	0,5	0,85	0,2	0,85	0,2	0,85	0,2
	K4	0,2	0,85	0,95	0,15	0,95	0,15	0,95	0,15	0,5	0,5
	K5	0,15	0,95	0,95	0,15	0,95	0,15	0,85	0,2	0,5	0,5
	K6	0,5	0,5	0,2	0,85	0,5	0,5	0,2	0,85	0,5	0,5
	K7	0,2	0,85	0,2	0,85	0,85	0,2	0,5	0,5	0,85	0,2
	K8	0,5	0,5	0,2	0,85	0,85	0,2	0,2	0,85	0,85	0,2
	K1	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,85	0,2
	K2	0,85	0,2	0,85	0,2	0,85	0,2	0,85	0,2	0,95	0,15

Expert 2	K3	0,5	0,5	0,85	0,2	0,95	0,15	0,95	0,15	0,95	0,15
	K4	0,5	0,5	0,95	0,15	0,95	0,15	0,95	0,15	0,5	0,5
	K5	0,15	0,95	0,95	0,15	0,95	0,15	0,85	0,2	0,85	0,2
	K6	0,5	0,5	0,2	0,85	0,85	0,2	0,2	0,85	0,85	0,2
	K7	0,2	0,85	0,5	0,5	0,85	0,2	0,5	0,5	0,5	0,5
	K8	0,5	0,5	0,2	0,85	0,85	0,2	0,2	0,85	0,5	0,5
Expert 3	K1	0,85	0,2	0,5	0,5	0,5	0,5	0,5	0,5	0,95	0,15
	K2	0,95	0,15	0,95	0,15	0,95	0,15	0,95	0,15	0,95	0,15
	K3	0,2	0,85	0,2	0,85	0,85	0,2	0,85	0,2	0,85	0,2
	K4	0,5	0,5	0,95	0,15	0,95	0,15	0,95	0,15	0,5	0,5
	K5	0,15	0,95	0,85	0,2	0,85	0,2	0,5	0,5	0,2	0,85
	K6	0,2	0,85	0,15	0,95	0,5	0,5	0,2	0,85	0,5	0,5
	K7	0,2	0,85	0,2	0,85	0,85	0,2	0,2	0,85	0,95	0,15
	K8	0,2	0,85	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Criteria based alternatives were obtained by combining the opinions of the 3 experts presented in Table 6. The results are shown in Table 7. The theoretical ponder matrix used in the MAIRCA method is presented in Table 8. Table 9 shows the real ponder matrix. The total gap matrix showing the difference between the real ponder matrix and the theoretical ponder matrix is presented in Table 10. The ranking of the alternatives is shown in Table 11. The best alternative was determined as A4. The order is determined as A4>A2>A3>A1>A5.

Table 7. Group decision matrix for criteria based alternative

	A1		A2		A3		A4		A5	
K 1	0,77 5	0,28 9	0,50 0	0,50 0	0,50 0	0,50 0	0,50 0	0,50 0	0,92 4	0,16 8
K 2	0,88 8	0,18 6	0,88 8	0,18 6	0,88 8	0,18 6	0,88 8	0,18 6	0,95 0	0,15 0

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K	0,38	0,68	0,70	0,39	0,90	0,17	0,90	0,17	0,90	0,17
3	4	7	4	6	5	8	5	8	5	8
K	0,44	0,60	0,95	0,15	0,95	0,15	0,95	0,15	0,50	0,50
4	1	2	0	0	0	0	0	0	0	0
K	0,15	0,95	0,93	0,16	0,93	0,16	0,80	0,25	0,70	0,39
5	0	0	5	1	5	1	7	1	4	6
K	0,46	0,57	0,19	0,87	0,71	0,34	0,20	0,85	0,71	0,34
6	0	1	0	4	7	7	0	0	7	7
K	0,20	0,85	0,38	0,68	0,85	0,20	0,46	0,57	0,83	0,26
7	0	0	4	7	0	0	0	1	5	9
K	0,46	0,57	0,33	0,74	0,80	0,25	0,33	0,74	0,70	0,36
8	0	1	8	4	7	1	8	4	0	3

Table 8. The theoretical ponder matrix

	A1		A2		A3		A4		A5	
K	0,59	0,71	0,59	0,71	0,59	0,71	0,59	0,71	0,59	0,71
1	8	4	8	4	8	4	8	4	8	4
K	0,11	0,96	0,11	0,96	0,11	0,96	0,11	0,96	0,11	0,96
2	7	8	7	8	7	8	7	8	7	8
K	0,22	0,92	0,22	0,92	0,22	0,92	0,22	0,92	0,22	0,92
3	6	8	6	8	6	8	6	8	6	8
K	0,29	0,87	0,29	0,87	0,29	0,87	0,29	0,87	0,29	0,87
4	8	1	8	1	8	1	8	1	8	1
K	0,40	0,83	0,40	0,83	0,40	0,83	0,40	0,83	0,40	0,83
5	3	2	3	2	3	2	3	2	3	2
K	0,55	0,72	0,55	0,72	0,55	0,72	0,55	0,72	0,55	0,72
6	8	5	8	5	8	5	8	5	8	5
K	0,26	0,90	0,26	0,90	0,26	0,90	0,26	0,90	0,26	0,90
7	1	3	1	3	1	3	1	3	1	3

K	0,44	0,80	0,44	0,80	0,44	0,80	0,44	0,80	0,44	0,80
8	5	9	5	9	5	9	5	9	5	9

Table 9. The real ponder matrix

	A1		A2		A3		A4		A5	
K	0,42	0,89	0,59	0,71	0,59	0,71	0,59	0,71	0,00	1,00
1	8	2	8	4	8	4	8	4	0	0
K	0,00	1,00	0,00	1,00	0,00	1,00	0,00	1,00	0,11	0,96
2	0	0	0	0	0	0	0	0	7	8
K	0,00	1,00	0,19	0,95	0,22	0,92	0,22	0,92	0,22	0,92
3	0	0	7	2	6	8	6	8	6	8
K	0,00	1,00	0,29	0,87	0,29	0,87	0,29	0,87	0,18	0,96
4	0	0	8	1	8	1	8	1	5	8
K	0,00	1,00	0,40	0,83	0,40	0,83	0,39	0,84	0,37	0,86
5	0	0	3	2	3	2	1	6	2	6
K	0,43	0,86	0,55	0,72	0,00	1,00	0,55	0,73	0,00	1,00
6	4	6	8	5	0	0	2	3	0	0
K	0,26	0,90	0,22	0,93	0,00	1,00	0,21	0,94	0,07	0,99
7	1	3	9	4	0	0	0	9	7	7
K	0,38	0,86	0,44	0,80	0,00	1,00	0,44	0,80	0,26	0,96
8	9	9	5	9	0	0	5	9	1	0

Table 10. Total gap matrix

	A1	A2	A3	A4	A5
K1	0,174	0,000	0,000	0,000	0,491
K2	0,094	0,094	0,094	0,094	0,000
K3	0,181	0,027	0,000	0,000	0,000

K4	0,243	0,000	0,000	0,000	0,105
K5	0,327	0,000	0,000	0,013	0,032
K6	0,133	0,000	0,460	0,007	0,460
K7	0,000	0,032	0,211	0,048	0,152
K8	0,058	0,000	0,362	0,000	0,169

Table 11. The ranking of alternatives

	A1	A2	A3	A4	A5
Total	1,792	0,927	1,636	0,845	2,092
Ranking	4	2	3	1	5

DISCUSSION

The proposed approach also took into account environmental criteria for electric vehicle battery selection. Thus, a decision model is presented to produce the battery, which is a part of environmentally friendly electric vehicles, taking into account environmental criteria. The decision model proposed in the study for electric vehicle battery selection can be examined on different products such as phone and computer batteries.

CONCLUSION

If experts have problems expressing their opinions fully on any subject, erroneous conclusions may be obtained on the relevant subject. Expert opinions will be sought to determine the importance of the criteria regarding EVB selection. Using a fuzzy number of linguistic variables, experts express their opinions. Intuitionistic fuzzy number, Pythagorean fuzzy number, q-rung orthopair fuzzy number can be used for linguistic variables containing membership degree, non-membership degree and hesitation degree. Q-rung orthopair fuzzy number has a more flexible structure than the other two fuzzy numbers. The q-rung orthopair fuzzy number will reduce information loss when collecting expert opinions. This study aims to give an idea to EVB producers who want to make improvements in EVB production, taking into account environmental criteria. The proposed decision model determined the importance of the criteria in environmentally friendly EVB selection and provided an auxiliary idea for EVB manufacturers about which material would be more suitable when producing environmentally friendly EVB. The criteria and material alternatives to be considered for environmentally friendly EVB selection have been determined. It is aimed to contribute to the literature by examining the q-rung orthopair fuzzy number based MAIRCA method on EVB selection.

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THE PROPHET SOLOMON'S APPEARANCE IN OTTOMAN POETRY

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ABSTRACT

Ottoman literature, one of the most influential periods in Turkish literature, drew from a variety of sources, such as language materials, history, parables, and the Quran. Due to its Islamic cultural influence, Ottoman literature is full of parables as well as mythical, fantastical, legendary, and prophetic tales. On a variety of occasions, one could say that the prophet Solomon is a significant figure in Ottoman poetry. In Ottoman poetry, the prophet Solomon was regarded as a symbol of power and rule because of his well-known seal, or ring, on which the prayer of *Ism-i-Azam*—the largest name of God—was inscribed. One believed that the prophet Solomon commanded demons, humans, and the wind. In addition, the wind carried his crown and accompanied him everywhere. He was also able to communicate with animals, such as *hudhud* (a mythological bird) and ants. The context of Ottoman poetry allows one to observe all of the prophet's distinguishing traits. This study illustrates the significance that the prophet Solomon acquired in the context of Ottoman poetry. A wide range of Ottoman poets, including Ahmed Pasha, Necâî, Bâkî, Sheyhî, Zâtî, Emrî, Hayâlî, Sheyh Gâlib, and Mustafa Âlî of Gallipoli, wrote about the prophet Solomon because of the numerous amazing circumstances surrounding him. The couplets pertaining to the prophet Solomon were investigated in this study under several headings, including the Seal of Solomon, Solomon and the Ant, the Queen of Sheba, Solomon's Ability to Comprehend the Languages of the Birds, and Solomon's Power to Control Wind. Thus, it is evident that the Ottoman poets used a variety of allusions to the prophet Solomon.

Keywords: Ottoman poetry, the prophet Solomon, the seal of Solomon, the queen of Sheba, wind, ant, the languages of birds.

INTRODUCTION

Every nation has a unique literary history that captures the cultural and intellectual currents of the eras in which it was written. It is evident that literary artists have created a bridge between the past and the future through their works, which portray various intellectual and cultural aspects of their countries. Works produced in or near the time of the author's life are easier for knowledgeable readers to understand than works from earlier periods. Readers who know the cultural and linguistic characteristics of their period have an advantageous position in terms of meaning and interpretation.

Every country has both historical and contemporary literary works, and these historical texts can be extraordinarily numerous. The reader may find it challenging at times to comprehend these texts because they were written in a different era. The reader needs to be somewhat knowledgeable about that era in order to understand diachronic texts that are linguistically and culturally different.

Ottoman literature is defined as classical Turkish literature that was produced between the 13th and the early 19th centuries. This historical period's language, which is very different from modern Turkish, is referred to as Ottoman Turkish. Ottoman Turkish contains a large number of words and structures borrowed from Arabic and Persian that are absent from modern Turkish. Furthermore, the literature of the era seems to diverge greatly from modern Turkish literature. It is essential to correctly learn and comprehend the sources that the literature draws from in order to comprehend the relevant literature. Islamic narratives are one of the primary sources that inspired the poetry of this era. Prophetic stories that the Holy Quran alludes to are prevalent in Ottoman poetry.

This paper examines in general terms the appearance of Prophet Solomon, who has great importance in monotheistic religions, in Ottoman poetry. Many of the traits of the prophet Solomon can be found in Ottoman poetry. In this paper, the appearance of Prophet Solomon in Ottoman poetry was listed under various titles (The Seal of Solomon, Solomon and the Ant, the Queen of Sheba, Solomon's Ability to Comprehend the Language of Birds, and Solomon's Power to Control Wind) based on sample couplets selected from gazels (G.) in the divans.

1. The seal of Solomon

According to Jewish, Islamic, and Western occultist traditions, the seal or ring of Solomon is a legendary signet ring that is credited to the prophet Solomon. It is generally portrayed in the shape of a pentagram

or hexagram. It is thought that Solomon possessed supernatural abilities; with the help of this ring, he was able to communicate with animals and control jins and demons.

Islamic belief holds that this ring belonged to the prophet Adam in heaven. By way of divine command, the prophet Solomon received it from Angel Gabriel. The prayer of the largest name of god, Ism-i Azam, was written in the shape of a pentagram or hexagram. When Solomon went to the ablution room, he used to remove this ring out of respect for the largest name of God. One day, when he went to the ablution room, he gave this ring to his wife (Amine) or vizier (Asaf). The devil or giant obtained it, taking on Solomon's form. Solomon lost his former authority when the devil took over his throne. He moved to live by the sea and was destitute there. Forty years later, the devil dropped the ring into the sea. A fish swallowed the ring. Solomon received a fish as payment for his services from a fisherman he worked for on the same day. When Solomon sliced the fish to cook it, he discovered his ring inside its belly. He put on his ring and returned his power. The Turkish proverb "Whoever has the seal, s/he is Solomon/Mühür kimdeyse Süleyman odur." is based on this story (Pala, 2020).

In Ottoman poetry, Solomon's seal was related to the beloved's lip due to hue. In terms of strength, the beloved is comparable to Solomon. Similar to how Solomon uses his ring to rule over jinns, demons, and fairies, the beloved uses her or his lips to rule over lovers:

"Perî yüzli güzeller hep senûn agzuña bakarlar

Begüm saña Süleymânlık müsellemdür bu hâtemden" (Necâtî G. 403/4)

O, sir! The fair-faced beauties gaze at your lips; this seal makes you Solomon.

"Ey perî-çihre lebûn mühr-i Süleymândan yeg

İns ü cin emrûñe me'mûr bugün begsın beg" (Emrî G. 293/1)

Oh, fairy face! Your lip is superior to the seal of Solomon; humans and jinns are under your command; you are a king today.

"Lebinûn mantıkı teshîri durur ins ü melek

Ol perî-çihre meger mühr-i Süleymân götürür" (Ahmed Pasha G. 68/2)

The speech of your lips fascinates humans and angels; it turns out that this fairy-face carries the seal of Solomon.

The tale of the seal being taken by a giant or the devil was mentioned by Ottoman poets. In the couplets, as follows, the ruby ring/seal means the beloved's lip resembling a ruby seal/ring. The rivals of the lovers were described as devils or giants.

"Kasd etse nola hâtem-i yâkûtuña rakîb

Bir dîvdir ki mühr-i Süleymâna kasd eder" (Ahmed Pasha G. 75/3)

If the rival wants your ruby ring/seal, is it surprising? He is a giant who desires the seal of Solomon.

"Gâfil olma ey Süleymân-ı serîr-i hüsn olan

Öpmek ister hâtem-i la'lûn bir iki Ehremen" (Azmîzâde Hâletî G. 645/2)

O Solomon of the throne of beauty! Don't be unguarded! One or two devils want to kiss your ruby seal.

"Yazıkdur ehremen destinde n'eyler hâtem-i la'lûn

Melek suretlü kadrin yeg bilür mühr-i Süleymânûñ" (Mustafa Âlî G. 751/5)

What is your ruby ring/seal doing in the hands of devils? Angelic beings know well the value of Solomon's seal.

The story mentioned above may have certain implications for readers. The most well-known, still played today, is the ring game. It is thought that giving a brief rundown of this game facilitates comprehension of the couplets related to the topic. The ring game is similar to "Up Jenkins" in English. It is played with a ring by two teams. One group of players tucks the ring under the cups, or they conceal it in their hands. The opposing team searches for the ring:

"Geh var didi dehânûña agyar gâh yok

Ol hâtem oldı dîv-i Süleymân oyuncagı" (Necâtî G. 584/3)

The rival said about your mouth that sometimes it is there and sometimes it is not; this ring became the plaything of Solomon's devil.

"Kani dehân-ı döst yüzük gizledükleri

Avcumda idi Mühr-i Süleymân geçen gice" (Necâtî G. 460/5)

O the beloved's mouth! How did they hide the ring? The seal of Solomon was in my palm last night.

"Dilde mihr-i hâtem-i la'lûn nihân itmiş rakîb

Dîv işitdük bir zamân mühr-i Süleymân gizlemiştir" (Bâkî G. 214/3)

The rival hid the seal of your mouth in his heart; we heard that the devil once hid the seal of Solomon. Because of their colour, the beloved's hair lovelocks resemble dragons. The hairs of the beloved cover his or her lips. These hair lovelocks are connected to the dragons defending Solomon's seal. While the lip of the beloved is described as the seal, the lovelocks of hair are dragons:

“İki zülfün iki ejder gibi görüldüğü çün

Orta yirinde lebün mühr-i Süleymân görünür” (Necâtî G. 80/3)

Your lip resembles Solomon's seal because your two lovelocks resemble two dragons.

“Leblerün mühr-i Süleymân olduğu çün ey perî

Her yañadan ejdehâlardur nigh-bânuñ senün” (Necâtî G. 311/2)

O fairy! Because your lips are the seal of Solomon, the dragons are your watchers from all quarters.

2. Solomon and the Ant

The readers of Ottoman poetry can frequently encounter the story about the prophet Solomon and the ant in the couplets. Numerous sources—especially the Holy Quran—contain this tale. This story is the subject of Naml Sura's 18th and 19th verses. The Arabic word “naml” means “ant” and the name of this sura comes from “an-naml” in the 18th verse:

“When they arrived at the ant valley, one of the ants greeted them with the words, “O ants, enter your dwellings that you not be crushed by Solomon and his soldiers while they perceive not.” (18)

“So [Solomon] smiled, amused at her speech, and said, “My God, enable me to be grateful for your favour which you have bestowed upon me and my parents and to do righteousness of which You approve. And admit me, by Your mercy, into [the ranks of] Your righteous servants.” (19)

Ottoman poets made frequent allusions to this tale in their works. Since their hues are similar, the fuzz on the lips are ants, but the beloved's lips are Solomon's seal:

“Hattuñ ki çekti hâtem-i yâkûta dâ'ire

Bir mûrdur ki mühr-i Süleymâna kasd eder” (Sheyhî G. 44/2)

The fuzz on your cheeks has circled a ruby ring/seal (lips); it is an ant that aims at the seal of Solomon.

“Ol perîñ hâtem-i lâ'line cândan mâylüz

Gerçi bir mûruz Süleymân olmag ister gönümüz” (Zâtî G. 523/2)

We sincerely tend to the ruby ring/seal (lips like a ruby) of this fairy; we are actually an ant, and our heart wants to become Solomon.

“Hatdan zarar ne hüsnine yârûñ ki mûrdan

Olmaz nizâm-ı mülk-i Süleyman halel-pezîr” (Bâkî G. 91/4)

How can fuzz harm the beloved's beauty? The system of Solomon's property cannot be injured by the ant.

“Lâ'lün üzre hatt-ı miskînün midir didim didi

Mûrlardır geldiler Mühr-i Süleymân öpmege” (Hayalî G. 537/4)

I said, “Is your musky fuzz what is on your lip?” s/he said, “The ants came to kiss Solomon's seal.”

“Hat u zülfünle diller mülkin alduguñ mukarrerdür

Süleymânsın begüm sen saña mûr u mâr leşkerdür” (Emrî G. 156/1)

My bey! It is sure that you have gotten possession of the hearts; you are Solomon, and the snake and ant are your soldiers.

Bâkî, a poet who lived in the time of Suleiman the Magnificent, created the connotations between the two Solomons. Through paradoxical images, Bâkî related himself to the ant due to his weakness, while Suleiman the Magnificent was similar to the prophet Solomon because of his power:

“Añarlar devlet-i şâh-ı cihânda nâmuñ ey Bâkî

Süleymân yâd olındukça bile mezkûr olur mûrî” (Bâkî G. 484/6)

O Bâkî! They mention your name in the state of the world's padishah; when Solomon is even mentioned, his ant is mentioned.

“Gubâr-ı der-geh-i şâha sürer yüz yirde yüz

Bâkî Süleymâna mukârin olmag ister seyr idüñ mûrî” (Bâkî G. 547/5)

Bâkî grovels before the dust of Padishah's doorstep; see the ant that wants to be near Solomon.

The poets represent themselves as ants in the following couplets to express their incapacity to reach the person who is referred to as the beloved.

“Göricek halk Necâtîyi der-i Âsafda

Didiler mûrî görüñ taht-ı Süleymâna geçer” (Necâtî G. 134/6)

When people saw that Necatî was at the door of the vizier, they said, "Look at the ant that ascends the throne.

"Ârzû-yi hatem-i lâ'l-i güher-bâruñ durur

Mûr iken ben tâlib-i mühr-i Süleymân oldugum" (Ahmed Pasha G. 212/7)

The reason why I became a seeker of Solomon's seal when I was an ant was the desire for your ore-emitting ruby seal.

"Lutfdur yâruñ Necâtîye itümdür didügi

Adın añmakdur karıncaya Süleymân bahşışı" (Necâtî G. 605/6)

It is a grace that the beloved says "He is my dog" for Necâtî; Solomon's tip is to mention its name for the ant.

3. The Queen of Sheba

The story of Solomon and the Queen of Sheba (Belkıs) is mentioned in many Islamic sources, including the Holy Quran. The story can be summarized as follows, based on the Holy Quran:

"Solomon once became enraged when he lost sight of his bird, Hudhud. But then Hudhud appeared and informed him that in the nation of Sheba, there was a queen, and her people adored the sun. In order to invite the queen to become a monotheist, Solomon wrote a letter and sent it with Huhud" (An-Naml 20-29).

"Belkıs, queen of Sheba, who got a letter from this powerful ruler, talked to her advisors and sent valuable gifts to the ruler to get along with him. Solomon found those present worldly and worthless, and he invited Queen Belkıs to his palace. When Belkıs started the journey, Solomon brought Belkıs's throne to his palace with a wise man under his command. When Belkıs entered Solomon's palace, she saw her own throne there, and she was very astonished. She was very much astonished, too, when she saw the polished glass floor of the palace. She immediately lifted her skirt so as not to get wet, assuming that there was water on the floor. For this reason, she believed in the unity of God like Solomon ever after" (An-Naml 29-44).

Ottoman poets occasionally alluded to this story:

"Bârgâh-ı himmet-i merdân sultânsız mıdır

'Arş-ı Belkıs-i himem bilmem Süleymânsız mıdır" (Sheyh Gâlib G. 77/1)

Is the great square of men without a sultan? Is the throne of the great Belkıs without Solomon? I don't know.

"Bakma 'arûs-ı devlete Belkıs olursa ger

Kalur mı saña ol ki Süleymân'a kalmaya" (Mustafa Âlî of Gallipoli G. 1329/3)

Even if the bride of the dynasty is Belkıs, don't look at it. Will what is not left to Solomon be left to you?

"Ey nâme sen ol mâh-likâdan mı gelürsin

Ey hüdhüd-i ümmîd Sebâ'dan mı gelürsin" (Nâbî G. 654/1)

O letter! Do you come from the moon-faced (the queen of Sheba)? O Hudhud of hopes! Do you come from Sheba?

4. Solomon's Ability to Comprehend Languages of the Birds

Islamic belief holds that the prophet Solomon was able to communicate with birds through their language. Hudhud, which was mentioned in the Holy Quran, was a sagacious bird, messenger, and envoy of the prophet Solomon. It carried messages between Solomon and the Queen of Sheba. Numerous verses in the Holy Quran's An-Naml Sura refer to Hudhud.

The prophet Solomon was taught the language of birds, as the 16th verse of An-Naml Sura makes clear: "And Solomon inherited David. He said, "O people, we have been taught the language of birds, and we have been given from all things. Indeed, this is an evident bounty."

This ability was sometimes mentioned by Ottoman poets in reference to the prophet:

"Bu kuş dilinüñ oldı Süleymânı Necâtî

İletdi sözi Hazret-i Selmâna berâber" (Necâtî G. 62/7)

Necatî became Solomon of the bird language, and he carried the word to Selmân.

As Necâtî notes in the above couplet that poetry is a part of his wordsmithing, he believes that in this regard he is comparable to the prophet Solomon.

"Ben Süleymân-ı ma'nâyım Gâlib

Murg-ı hüdhüd belâğdır gönlüm" (Sheyh Gâlib G. 230/10)

O Gâlib! I am Solomon of meaning; my heart is Hudhud being messenger.

“Murg u mâhî melek ü ins ü perî vahş u tuyûr
Ol Süleymân-ı zemân üstine dir dir dîtrer” (Necâtî G. 115/4)

Birds, fish, fairies, humans, and wild animals fall all over the Solomon of the term.

5. Solomon's Power to Control Wind

According to Islamic beliefs, the wind was under Solomon's command, and he could go everywhere thanks to this power. This was stated in the 81st verse of the Anbiya Sura in the Quran:

“And we gave to Solomon's command over the stormy wind that blows toward the fertile areas. We know everything.”

Poetry from the Ottoman era mentioned Solomon's power over the wind. In Ottoman poetry, when beloved was associated with the prophet Solomon, the lover's sigh for beloved became a wind, which the prophet Solomon commanded.

“Âhuñ ey Emrî götürdi kapımı didi didüm

Bâddur çünkü şehâ taht-ı Süleymân götürür” (Emrî G. 144/5)

S/he said, “O Emrî! Your sigh (oh!) took away my door.” I said, “Because it is a wind carrying away Solomon's throne.

“Yile viridi cihân mülkin aña feryâd it âhumdan

Geçer bâd-i sabâya hükmi ey Zâtî Süleymânun” (Zâtî G. 765/5)

O Zâtî! My sigh (oh!) has thrown the world's property away. Ask him for help because Solomon rules the dawn breeze.

“Mûrdan cismüm za'îf itmişdi diyü fûrkatün

Kankı yiller esdi geldün a Süleymânun benüm” (Zâtî G. 885/2)

While saying, “Your separation made my body weaker than an ant,” which wind did blow? You came, my Solomon!

“Sebâ-yı kûy-ı yâra ey sabâ ben mûr-ı miskîni

İlet lûtf it Süleymân-ı zemân olmak diler gönüm” (Zâtî G. 986/2)

Oh, dawn breeze! Do a favour and take this poor ant away to the breeze of my beloved's district; my heart wants to become the Solomon of time.

CONCLUSION

It was observed in this paper, which addresses the role of Prophet Solomon in Ottoman poetry generally, that numerous Ottoman poets referred to Prophet Solomon in their poetry. According to the study, the poets frequently incorporated the seal of Prophet Solomon into their writings. It was seen that the lover's lip was associated with Solomon's ring in terms of colour. In the same way that Solomon ruled everything with his ring, the beloved ruled the lovers with his lips. It was also found that the poetry in question frequently depicted a giant or the devil stealing this seal. It is comparable to the giant who goes after the Solomonic seal when the rival wants to reach the beloved's lips. Based on the belief that the seal could be a ring, it was also seen that this seal was associated with the ring game.

Another example of how Ottoman poets made references to the prophet is the tale of Prophet Solomon and the Ant. It was observed that Ottoman poets associated Solomon's seal with the lover's lips due to their colour, and the fuzz that cast a shadow on the beauty of the lover's lips with the ant due to their colour. While the lover is associated with Solomon in terms of greatness, the lover is associated with the ant in terms of smallness. In this study, it has been determined that there are many references in Ottoman poetry about Prophet Solomon commanding the wind, understanding the language of birds, and sending a letter to the queen of Sheba. The poets related the lover's sigh to the wind carrying away Solomon's throne in terms of power. The poets described themselves as Solomon, understanding the languages of birds to depict their poetic power.

It is essential to correctly interpret the sources from which Ottoman poetry was inspired in order to comprehend it. It is clear that prophetic tales have an important place in Ottoman poetry. It is thought that this study will be useful for the reader in terms of giving a general idea about Prophet Solomon, who has an important place in Ottoman poetry.

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**THE EXAMINATION OF RELATIONSHIP ADDICTION IN THE EXAMPLE OF WHEN A
MAN LOVES A WOMAN**

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ABSTRACT

Relationship addiction is a state in which an individual is cognitively, emotionally, physically or spiritually over-dependent on another person. In this study, the issue of relationship addiction is examined through the example of “When A Man Loves A Woman”, which depicts the relationship dynamics between Alice, an alcoholic woman, and her husband Michael, a relationship addict. The movie serves as a case study to explore the dynamics of relationship addiction and its effects on individuals' lives. This study aims to highlight the impact of addiction on individuals and how relationships are affected by addiction over time.

Document analysis method was used to analyze the dynamics of relationship addiction. For the analysis, specific scenes were selected to cover the processes of relationship initiation and breaking the addiction cycle, and character behaviors in these scenes were examined through dialogues.

This study has shown that relationship addiction has a prominent place in Alice and Michael's relationship. When Alice's addiction to alcohol and emotional support is combined with Michael's overprotective and controlling nature, addiction appears as a cyclical pattern.

This study demonstrated the complex nature of relationship addiction and its emotional toll. The findings showed that both partners in an addicted relationship experience emotional and psychological difficulties. Therefore, in order to establish healthy relationship dynamics, recognizing relationship addiction and recognizing addictive behaviors and their effects on individuals is of great importance in breaking the cycle of addiction.

Keywords: Relationship Addiction, Alcohol Addiction, Movie Analysis, Relationship Dynamics.

**NEW STEP IN NUCLEAR ENERGY: SMALL MODULAR REACTORS, OPPORTUNITIES
AND CHALLENGES**

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ABSTRACT

Small modular reactors (SMR) are the focus of many countries and companies in nuclear energy, which accounts for approximately 10 percent of global electricity production and stands out as a reliable source in terms of supply security. SMR are nuclear reactors designed and manufactured in smaller sizes than traditional nuclear power plants. Accidents in the large nuclear power plants of the past, high operation and maintenance costs, long construction periods, high investment costs, difficulties in obtaining licenses and geographical location selection, and environmental risk factors have caused these power plants to fall out of favor over time. Although environmental risks seem to be the main factor, the main share in this decline is economic problems. It is important to examine in detail what SMRs are, their market characteristics and their development status, which are now preferred as an alternative to large power plants, in order to understand the safe and powerful energy production tools of the future. In the study conducted for this purpose, the opportunities and challenges presented by SMRs were investigated and evaluated. Some findings and suggestions in this context: Economies of scale will not be available to SMRs with smaller capacities. In order to get past this financial obstacle, serial construction will be required. Therefore, in comparison to bigger nuclear reactors, SMR designs should show quicker learning curves through increased levels of simplicity, standardization, and modularization. Additionally, factory-centered manufacturing offers a state-of-the-art environment for quality control that can lower construction risks, promote education, and make it possible to use novel production methods. In addition, compared to larger reactors, SMRs may require less upfront capital due to their reduced size and predicted faster delivery timeframes. Some of these benefits have already been experienced in other industries but still need to be demonstrated for SMRs.

Keywords: Nuclear energy, small modular reactors, opportunities, challenges

**ENCAPSULATION OF BETALAIN PIGMENT BY PECTIN AND CARRAGEENAN
HYDROGELS**

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ABSTRACT

Betalains, natural pigments found in red beets (*Beta vulgaris*), are known for their vibrant colors and strong antioxidant properties. Encapsulation of these pigments is crucial to enhance their stability and bioavailability. In this study, the suitability of hydro-encapsulation of betalain pigments using two different polysaccharides, pectin and carrageenan, was investigated.

The FT-IR analysis aims to determine the chemical interactions between betalains and the polysaccharides, revealing which bonds and interactions protect the pigments during encapsulation. Additionally, the DPPH assay measures the antioxidant activity of the encapsulated betalains, helping to identify which polysaccharide provides more effective protection.

The purpose of this study is to compare the hydro-encapsulation of betalain pigments with pectin and carrageenan, identifying the more suitable encapsulation material. The interactions of pectin and carrageenan with betalains and their ability to preserve antioxidant activity will provide important insights for future applications in the food and pharmaceutical industries. The analysis results will show which polysaccharides are more effective in enhancing the stability and bioavailability of betalains.

In conclusion, this study aims to explore the potential of pectin and carrageenan in the hydro-encapsulation of betalain pigments, providing valuable information for developing more stable and effective encapsulation systems.

Keywords: betalain, hydro-encapsulation, pectin, carrageenan

**ROLE of WOMEN in INDUSTRIAL REVOLUTION and LUDDISM MOVEMENT; DO
WOMEN STILL RESIST INNOVATION?**

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ABSTRACT

The aim of this paper is to provide a preparation for further quantitative research. In this paper, the author provides a brief literature review about the role of women in Industrial Revolution and why women refused innovations and new changes, how they prevented innovations from diffusion. The study will give a historical background and it will link this historical background with today's working women population who resist innovations and prevents them from diffusion. Hence, "Diffusion of Innovations" theory of Bass, Everett Rogers' "Diffusion of Innovations" theory and "LISA" theory of Mellor et al will also be revisited.

Three different scales will be assembled to come up with a suitable questionnaire which will be applied on women in higher education institutes. The first one of these scales is "Innovativeness Scale" by Hurt et al to see the innovativeness level of women academics, the second one is "Acceptance Scale" by Venkatesh et al to see the to what extent women academics accept innovations, the third one is "Innovation Fear Scale" by Pliner and Hobdel to see to what extent women academics fear innovations. Therefore, this paper will be an introduction for the latter quantitative study.

Keywords: Women, Industrial Revolution, Luddism, Resistance to Innovations, Academics.

**ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP), CHRONIC
PANCREATITIS AND PANCREATIC CANCER**

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ABSTRACT

Endoscopic retrograde cholangiopancreatography (ERCP) is a combined endoscopic and fluoroscopic procedure in which an upper endoscope is led into a second part of the duodenum, making it possible for passage of other tools via the major duodenal papilla into the biliary and pancreatic ducts. Contrast material may be injected in these ducts, allowing for radiologic visualization and therapeutic interventions when indicated. ERCP initially started as a diagnostic procedure through cannulation of the pancreatic and biliary ducts but has evolved over the years to a predominantly therapeutic tool. Difficult biliary cannulation is proposed to be defined as cannulation attempts duration of more than 5 minutes, more than five cannulation attempts, or at least two pancreatic guidewire passages.

Keywords: Endoscopy, Cholangiopancreatography-(ERCP), Chronic, pancreatitis, Pancreatic cancer

Endoscopic retrograde cholangiopancreatography (ERCP) is a combined endoscopic and fluoroscopic procedure in which an endoscope is advanced into the second part of the duodenum, thus allowing other tools to be passed into the biliary and pancreatic ducts via the major duodenal papilla. Contrast material may be injected into these ducts, allowing for radiologic visualization and therapeutic intervention when indicated. ERCP initially started as a diagnostic procedure through cannulation of the pancreatic and biliary ducts but has evolved over the years and is currently predominantly used as a therapeutic tool. This activity reviews the indications and procedural techniques for endoscopic retrograde cholangiopancreatography and highlights the role of the interprofessional team in managing patients undergoing this procedure (Colombo PE, Quenet F, Alric P.et.al.,2021).

Endoscopic retrograde cholangiopancreatography (ERCP) is a combined endoscopic and fluoroscopic procedure in which an upper endoscope is led into a second part of the duodenum, making it possible for passage of other tools via the major duodenal papilla into the biliary and pancreatic ducts. Contrast material may be injected in these ducts, allowing for radiologic visualization and therapeutic interventions when indicated. ERCP initially started as a diagnostic procedure through cannulation of the pancreatic and biliary ducts but has evolved over the years to a predominantly therapeutic tool. Difficult biliary cannulation is proposed to be defined as cannulation attempts duration of more than 5 minutes, more than five cannulation attempts, or at least two pancreatic guidewire passages. Direct visualization of the ducts is done through cholangiopancreatography (Tso DK, Almeida RR.,2019).

ERCP uses endoscopy to find the major and minor papillae. Cannulation is done, and contrast material is injected to identify the biliary and pancreatic ductal systems. During ERCP, diagnostic procedures

can be done, namely cholangiopancreatography, biopsy, or brush cytology. An intraductal ultrasound may also be done. Therapeutic uses include sphincterotomy, stent placement, and stone removal (Abbarh S, Seleem M.,2019).

ERCP indications include obstructive jaundice, biliary or pancreatic ductal system disease treatment or tissue sampling, suspicion for pancreatic cancer, pancreatitis of unknown cause, manometry for sphincter of Oddi, nasobiliary drainage, biliary stenting for strictures and leakage, drainage of pancreatic pseudocysts, and balloon dilation of the duodenal papilla and ductal strictures. Sphincterotomy is indicated in cases of the sphincter of Oddi dysfunction or stenosis, difficulty with biliary stenting or accessing the pancreatic duct, biliary strictures, bile duct stones, bile sump syndrome following choledochoduodenostomy, choledochocoele, and in poor surgical candidates with ampullary carcinoma (Tso DK, Almeida RR.,2019).

Techniques used in ERCP -include endoscopic papillectomy, sphincter of Oddi manometry, sphincterotomy, endoscopic papillary balloon dilation, stone removal, tissue sampling, placement of biliary and pancreatic stents, cholangiopancreatography, and biliary and pancreatic drainage (Bai XL, Li X, Liang TB.,2020).

The procedure starts with passing the duodenoscope through a mouthguard. Duodenoscope is then advanced through stomach pylorus into the duodenal bulb. The scope should be advanced to the second part of the duodenum to visualize the major duodenal papilla, a protuberance at the junction of the horizontal and vertical duodenal folds. Cannulation of the major duodenal papilla is then done. The recommended wire-guided technique is done through a guidewire that passes under fluoroscopy into the common bile duct or pancreatic duct before contrast injection (Colombo PE, Quenet F, Alric P.et.al.,2021).

On the other hand, the standard contrast-assisted method involves contrast material injection after introducing the cannulation device tip into the major duodenal papillary orifice to assure proper positioning. Difficult cannulation may be due to periampullary diverticulum, impacted biliary stone, bile duct stenosis, or tumor of the bile duct or pancreatic head. Infrequently, cannulation of the minor papilla with sphincterotomy may be done in cases of idiopathic recurrent acute pancreatitis or patients with pancreas divisum.

Complications directly attributed to ERCP- are as high as 6.8%. A quarter of these are severe and most commonly require intervention, blood transfusion more than 4 units, or hospitalization over 10 days. Mortality rates are about 0.3%. The incidence of post-ERCP pancreatitis (PEP) is 3.5%, making it the most frequent complication following the procedure. In 90% of cases, pancreatitis is mild-to-moderate in severity. Infections, as cholangitis and cholecystitis, occur at a rate of 1.4%. Gastrointestinal (GI) bleeding happens 1.3% of the time. Although duodenal and biliary perforations occur at a lower rate of 0.6%, mostly related to sphincterotomy, they carry the highest mortality rates among ERCP complications (Abbarh S, Seleem M.,2019).

Other complications account for 1.3% of total complications. These include cardiovascular and analgesia-related events, pneumothorax, retroperitoneal, mediastinal and subcutaneous emphysema, hepatic hematoma, portal venous air embolism, splenic injury, post-sphincterotomy papillary or ampullary restenosis, duodenal obstruction, and impaction of the basket catheter while removing biliary stones (Bai XL, Li X, Liang TB.,2020).

Chronic pancreatitis- is an irreversible and progressive disorder of the pancreas characterized by inflammation, fibrosis, and scarring. Exocrine and endocrine functions are lost, often leading to chronic pain. The etiology is multifactorial, although alcoholism is the most significant risk factor in adults. The average age at diagnosis is 35 to 55 years. If chronic pancreatitis is suspected, contrast-enhanced computed tomography is the best imaging modality for diagnosis. Computed tomography may be inconclusive in early stages of the disease, so other modalities such as magnetic resonance imaging, magnetic resonance cholangiopancreatography, or endoscopic ultrasonography with or without biopsy may be used. Recommended lifestyle modifications include cessation of alcohol and tobacco use and eating small, frequent, low-fat meals. Although narcotics and antidepressants provide the most pain relief, one-half of patients eventually require surgery. Therapeutic endoscopy is indicated to treat

symptomatic strictures, stones, and pseudocysts. Decompressive surgical procedures, such as lateral pancreaticojejunostomy, are indicated for large duct disease (pancreatic ductal dilation of 7 mm or more). Resection procedures, such as the Whipple procedure, are indicated for small duct disease or pancreatic head enlargement. The risk of pancreatic cancer is increased in patients with chronic pancreatitis, especially hereditary pancreatitis. Although it is not known if screening improves outcomes, clinicians should counsel patients on this increased risk and evaluate patients with weight loss or jaundice for neoplasm (Halász A, Pécsi D, Farkas N.,2019).

Computed tomography (CT)- is considered the best initial imaging test in the workup for CP. Advantages of CT scans are that they are widely accessible, show a detailed view of pancreatic morphology changes seen in CP, and are especially useful in detecting changes seen in advanced disease. It can also quickly assess extra-pancreatic pathology that may explain various presentations mimicking chronic pancreatitis. Another advantage of CT is its ability to detect various complications of acute and chronic pancreatitis such as pseudo cysts, biliary or duodenal obstruction, venous thrombosis, pseudoaneurysms and pancreatico-pleural fistulas (Van Cutsem E, Tempero MA.,2020).

While CT - has seen profound improvements over the last 3 decades (such as multidetector and multi-phase imaging with contrast), there are significant limitations in diagnosing CP, particularly in evaluation of pancreatic ductal anatomy as well as assisting in diagnosis of early CP. MRCP & secretin enhanced MRCP (sMRCP) are both sensitive and specific for characteristic changes seen in CP. Specific advantages of MRCP evaluation in CP are better visualization of both the pancreatic parenchyma and ducts. Parenchymal changes that are visualized via MRI include pancreatic atrophy, depressed T1 signal, irregular contour of head or body, heterogeneous parenchyma, and delayed gadolinium enhancement of the pancreas after administration (Salerno R, Mezzina N.,2019).

Endoscopic retrograde cholangiopancreatography (ERCP) is a modality seldom used for diagnosis of CP at the present time. It allows for a detailed pancreatogram, which can show some changes related to chronic fibrosis and atrophy. However following the advent of CT, MRCP, and EUS, its use is typically limited to therapeutic interventions rather than purely diagnostic. Historically, specific findings described in a retrograde pancreatogram include the main pancreatic duct caliber & contour, clear definitions of its side branches, intraductal filling defects, strictures and cavity formation. Normal MPD caliber & contour is typically described as a smooth, consistent tapering from head to tail²³. Normal MPD size is more difficult to definitively determine as it varies with age, race and gender (Halász A, Pécsi D, Farkas N.,2019).

Although ERCP is sensitive for detection of changes in the pancreatic duct, there are several drawbacks when used for the diagnosis of CP. First, like EUS, it is operator dependent and prone to interobserver variability. Differences in ERCP lie not just in quality of the pancreatogram but also in the interpretation of the images. Next, pancreatograms do not provide assessment of the classic CP changes within the pancreatic parenchyma. Finally, ERCP is the most invasive diagnostic modality and carries post-procedural risks, most notably, post-ERCP pancreatitis. For these reasons, the American Society for Gastrointestinal Endoscopy (ASGE) recommended that ERCP only be used for diagnosing CP, once other imaging methods have been exhausted (Bordaçahar B, Couvelard A.,2018).

In summary, diagnosing CP can range from routine in those with severe disease and obvious calcifications on CT imaging to elusive in those patients with early changes of CP. The workup of suspected CP should follow a progressively non-invasive to more invasive STEP-wise approach in a patient with a suspicious clinical presentation and risk factors that raise their pre-test probability of disease. After a thorough history and physical exam, basic labs should be obtained such as lipase, amylase, metabolic panel and indirect PFTs (fecal elastase-1, serum trypsin). Computed tomography remains the best initial imaging modality to obtain as it has good sensitivity for severe CP and may obviate the need for other diagnostic tests. When equivocal, an MRCP should be obtained for a more detailed evaluation of the both the pancreatic parenchyma and ducts. If the diagnosis remains in doubt, EUS should be performed with or without pancreas function testing. Endoscopic retrograde cholangiopancreatography (ERCP) remains a last line diagnostic test and seldom should be used outside of therapeutic purposes (Salerno R, Mezzina N.,2019).

Pancreatic cancer- refers to the carcinoma arising from the pancreatic duct cells, pancreatic ductal carcinoma. It is the fourth leading cause of cancer deaths in the United States. The 5-year survival rate in the United States ranges from 5% to 15%. The overall survival rate is only 6%. Surgical resection is the only current option for a cure, but only 20% of pancreatic cancer is surgically resectable at the time of diagnosis. This activity describes the pathophysiology, presentation, and diagnosis of pancreatic cancer and highlights the role of the interprofessional team in its management (Van Cutsem E, Tempero MA.,2020).

Pancreatic cancer refers to the carcinoma arising from the pancreatic duct cells, pancreatic ductal carcinoma. It is the fourth leading cause of cancer deaths in the United States. The 5-year survival rate in the United States ranges from 5% to 15%. The overall survival rate is only 6%. Surgical resection is the only current option for a cure, but only 20% of pancreatic cancer is surgically resectable at the time of diagnosis. Close cooperation among various specialties, including surgeons, oncologists, radiation oncologists, pathologists, and radiologists, is extremely important for the chance of survival in patients with resectable disease and borderline resectable disease (Bordaçahar B, Couvelard A.,2018). More than 90% of adenocarcinomas of the pancreas are duct cell adenocarcinomas, with other types being cystadenocarcinoma and acinar cell carcinoma. Two-thirds arise in the pancreatic head; one-third arise in the rest (body and tail of the pancreas). If adenocarcinoma of the pancreas is suspected, multidetector computed tomography, MDCT, is the best imaging modality to diagnose and evaluate the extent of disease, including perivascular extension and distant metastasis.

Abdominal MRI /MRCP with IV contrast is as good in the preoperative evaluation of pancreatic cancer and the assessment of vascular invasion. MRI is more sensitive to detect metastatic hepatic disease, with a sensitivity approaching 100% compared with 80% for CT. MRI also employs a standard multiphase post-contrast imaging protocol. There is a small subset of pancreatic adenocarcinoma, which will provide the same attenuation on CT scans so that it will be more conspicuous on MRI. If pancreatic cancer is highly suspected and the CT scan is negative, that would be an indication to order further imaging with MRI of the abdomen with IV contrast. The downside to MRI is that if the patient cannot follow breathing instructions or has difficulty holding their breath, the images will be of poor quality. CT images are much faster to obtain and do not require significant breath-hold ability (Evans DB.,2020).

Ultrasound is of limited value in pancreatic imaging. Often, the pancreas will be poorly visualized sonographically secondary to bowel gas. Ultrasound can detect the secondary biliary ductal dilatation associated with pancreatic head cancer, but it is not helpful in visualizing the pancreatic mass itself.

ERCP with endoscopic ultrasound can be performed, and fine-needle aspiration biopsies can be done of suspicious lesions for the pathologic specimen. However, with a mass in the pancreas, biopsy confirmation is not necessary, and one can proceed directly to excision, given that a full workup has been performed (Uc A, Zimmerman MB.,2018).

Endoscopic ultrasound, a test performed by gastroenterologists, can delineate the pancreatic mass and can be used to biopsy the mass under ultrasound guidance.

Endoscopic retrograde cholangiopancreatography (ERCP) is a test in which an endoscope injects a contrast dye into the biliary duct and pancreatic duct. The level of biliary or pancreatic obstruction can be delineated. In some cases, the placement of a biliary stent can help relieve symptoms of jaundice.

Treatment: If the pancreatic adenocarcinoma is considered locally advanced, then by definition, it is unresectable. Neoadjuvant treatment with chemotherapy and/or radiation is typically preferred in this situation. Treatment with chemotherapy takes approximately. If the adenocarcinoma of the pancreas is located in the head of the pancreas, then the Whipple procedure (pancreaticoduodenectomy) is the procedure of choice. If the tumor is in the body or tail of the pancreas, the distal resection is needed. Postoperatively, patients may receive chemotherapy with 5-FU, gemcitabine, and radiotherapy. If the hepatic artery is involved in the tumor, then the tumor is considered to be unresectable. However, if the superior mesenteric vein is involved in the tumor, then resection and vascular reconstruction. The same

is true for portal vein involvement. It can be resected and reconstructed with a graft (Uc A, Zimmerman MB.,2018).

If the adenocarcinoma of the pancreas is located in the body or tail of the pancreas, then the surgical procedure of choice is distal pancreatectomy with splenectomy. If there is extensive involvement of the celiac artery and splenic artery, a modified Appleby procedure can be performed if it meets the criteria (Evans DB.,2020).

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**EFFECTS OF CADMIUM ON THE ENDOCRINE SYSTEM, COMPLICATIONS AND
DIAGNOSTIC METHODS**

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ABSTRACT

Endocrine disrupting chemicals (EDCs) are exogenous substances that alter the function(s) of the endocrine system and consequently produce the adverse health effects in an intact organism, or its progeny, or (sub) populations. There is a huge list of EDCs including natural and synthetic hormones, industrial by-products, pesticides, consumer products, pharmaceuticals, pollutants and different components of the plastics. They are found everywhere on the earth and are continuously exposed to the wildlife and human population. There are some EDCs which are very resistant to degradation. Owing to their lipophilic nature, they are particularly accumulated in adipose tissues and remain there for many years.

Keywords: Cadmium, Endocrine system, Complications, Diagnosis

Endocrine disrupting chemicals (EDCs) have widespread environmental distribution originated from both natural and anthropogenic sources. From the last few decades, their contamination has been raised dramatically owing to continuous discharge in sewage and untreated industrial effluents. They have rapidly gained a considerable attention due to their critical role in the development of multiple endocrine-related disorders notably diabetes mellitus (DM). Cadmium, among the most hazardous EDCs, are not only widely spread in our environment, but they are also found to be associated with wide range of health hazards (Thanigaivel, S.; Vickram, S.;2022).

After entering into the human body, they are preferably accumulated in the liver, kidney and pancreas where they exhibit deleterious effects on carbohydrate metabolism pathways notably glycolysis, glucogenesis and gluconeogenesis through the modification and impairment of relevant key enzymes activity. Impairment of hepatic glucose homeostasis plays a crucial role in the pathogenesis of DM. Along with compromised function of pancreas and muscles, diminished liver and kidney functions also contribute considerably to increase the blood glucose level. These metals have potential to bring conformational changes in these enzymes and make them inactive. Additionally, these metals also disturb the hormonal balance, such as insulin, glucocorticoids and catecholamines; by damaging pancreas and adrenal gland, respectively. Moreover, these metals also enhance the production of reactive oxygen species and depress the anti-oxidative defense mechanism with subsequent disruption of multiple organs (Mielcarek, K.; Nowakowski, P.; et al,2022).

Endocrine disrupting chemicals (EDCs) are exogenous substances that alter the function(s) of the endocrine system and consequently produce the adverse health effects in an intact organism, or its progeny, or (sub) populations. There is a huge list of EDCs including natural and synthetic hormones, industrial by-products, pesticides, consumer products, pharmaceuticals, pollutants and different components of the plastics. They are found everywhere on the earth and are continuously exposed to the wildlife and human population. There are some EDCs which are very resistant to degradation (Al-Hasawi, Z.M.,2022).

Owing to their lipophilic nature, they are particularly accumulated in adipose tissues and remain there for many years. Cadmium and arsenic, among the most hazardous EDCs, are widely spread in environment and are found to be associated with wide range of health hazards. Upon administration into the human body, they are accumulated preferably in the liver, kidney and pancreas where they exhibit deleterious effects on carbohydrate metabolism through the modification and impairment of relevant key enzymes activity. Disruption of glucose homeostasis plays a crucial role in the pathogenesis of diabetes mellitus (DM). Along with compromised function of pancreas and muscles, diminished liver and kidney functions also contribute considerably to increase the blood glucose level (Hossain, M.B.; Tanjin, F.; 2022).

The importance of cadmium as common EDCs with a wide range of health hazards and high potential for human exposure is indicated by ranking seventh (cadmium) on the priority list of substances issued by the agency for toxic substance. Although, there are multiple sources for cadmium exposure, the terrestrial food is considered as a major source of its exposure and 98% of the ingested cadmium comes from this source. While the remaining 1% cadmium comes from aquatic food e.g. fish and shellfish and 1% comes from drinking water. Plants grown in contaminated water and meat of the animals fed upon these contaminated plants, come under the terrestrial food source. Cadmium concentration in agricultural products varies widely depending upon the plant and soil types, agricultural methods and growing conditions. Cadmium in the soil principally comes from natural sources, phosphate fertilizers and sewage sludge (Ferro, J.P.; Ferrari, L.; 2021).

There are certain plants (e.g. spinach, soybeans, romaine lettuce, peanuts, tobacco) which have comparatively greater potential to bioaccumulate the cadmium and they are called as cadmium hyper-accumulators. Cadmium accumulates especially in the liver and kidney of animals; this is why offal (meat from the organs) has comparatively higher cadmium amounts as compared to the muscle meat. Frequently consumed food items including staples rice, potato, wheat, cereal crops, leafy salad vegetables are considered as the most important dietary cadmium sources (Al-Hasawi, Z.M., 2022).

Cigarette smoking is the second most important cause of cadmium exposure. One cigarette has almost 1–2 µg cadmium but 10% of this total cadmium is inhaled from cigarette smoking. It has been reported that smokers have 4–5 times greater serum cadmium level as compared to that of non-smoker individuals. WHO has recommended a provisional tolerable weekly intake (PTWI) for cadmium that is 7 µg/kg of body weight. Commercially, cadmium is employed for the steel protection from corrosion, as weld and solder metal in alloys, as a pigment in paints and polyvinyl chloride plastics (M. Grau-Perez, A. Navas-Acien, 2018).

The heavy metal concentration is increasing in the environment from year on year. The mobilization of these heavy metals through the extraction process from ores and then processing for various purposes causes the spread of these metals in the environment. Since, the metals are not biodegradable, they are accumulated in the environment with subsequent contamination of the food chain. Heavy metal contamination poses a great risk to human health. Therefore, remediation of this heavy metal contamination demands due attention (Ferro, J.P.; Ferrari, L.; 2021).

A number of physical as well as chemical methods employed for this remediation purpose have their own serious limitations such as high cost, labor-intensive, modification of soil characteristics and disturbance of native microflora of soil. In contrast, phytoremediation is a comparatively better solution for this type of contamination. In phytoremediation, certain plants and soil related microbes are employed in order to reduce the hazardous effects of heavy metal in the environment. It is a comparatively recent technology and is considered as cost-effective, novel, efficient, eco-friendly and especially solar-driven technique gained significant public acceptance. It is currently considered as an active area of research. This technique is particularly important for cadmium, present in the soil in heavy amount (Moiseenko, T.I.; Gashkina, N.A., 2020).

Novel proficient metal hyper-accumulators are being introduced for phytoremediation and phytomining purposes. Different molecular tools have been employed for a better understanding of the mechanism of metal uptake, translocation, sequestration and tolerance in plants. From an economical point of view, phytoremediation may cost as less as 5% of alternative clean-up methods. Rice has a tendency of higher arsenic level as compared to other different cereal crops (like barley and wheat), due to its greater potential of arsenic uptake up from water and soil, plus the rice is usually grown in flooded conditions. That is why rice has greater chances of arsenic uptake (Mielcarek, K.; Nowakowski, P.; et al, 2022).

Effects of cadmium on glycogenolysis: During glycogenolysis, glycogen phosphorylase phosphorylates the glycogen and gives rise to glucose-1-phosphate and finally, it is converted into glucose-6-phosphate by phosphoglucomutase. Like gluconeogenesis, glucose-6-phosphate obtained from glycogenolysis is converted into glucose with the help of glucose-6-phosphatase and released into the systemic circulation. It is evident from the studies that there is considerable decrease in glycogen storage in metal (cadmium and Arsenic) fed experimental animals. It has been purposed that accelerated glycogenolysis happens due to the activation of glycogen phosphorylase (Hossain, M.B.; Tanjin, F.; 2022).

On the other hand, decreased glycogen transferases activity may also reduce the glycogen level. It is evident from the literature that there may be decreased glucokinase activity resulting in decreased production of glucose-6-phosphate required for glycogen synthesis. Due to the exposure of cadmium to the placenta, there was enhanced glycogen phosphorylase activity. Soengas et al. have found the clear dose-dependent decrease in the glycogen synthetase to glycogen phosphorylase activation ratio after cadmium exposure to fishes resulting in glycogen depletion. Enhanced glycogenolysis owing to cadmium exposure may also be the result of elevated plasma cortisol level. Since it is well documented that cortisol is involved in the activation of glycogenolysis (M. Grau-Perez, A. Navas-Acien, 2018).

In case of destruction of pancreatic acinar cells, there is a tremendous increase (up to 10 times) in the serum amylase level in acute condition. However, chronic pancreatitis ultimately causes the exhaustion of acinar cells with subsequent restricted release of amylase from the pancreas into the circulation due to decreased amylase expression. Secondary diabetes may also develop owing to the destruction of pancreatic β -cells in case of chronic pancreatitis (Al-Hasawi, Z.M., 2022).

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STATE OF CHARGE ESTIMATION FOR ELECTRIC VEHICLES WITH LONG SHORT-TERM MEMORY: A REVIEW

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ABSTRACT

The increasing demand for electric vehicles in recent years increases the importance of the battery management system (BMS). Battery values such as current, voltage and temperature are measured and precautions are taken in terms of battery usability, battery life and safety with BMS. The estimation of the battery state of charge (SOC), health, temperature, energy, function, power, security, battery life and remaining useful life (RUL) is important for BMS. In particular, it is very significant to estimate SOC accurately and reliably. Methods used for SOC estimation can be considered in four main categories: physics-based, data-based, statistical and hybrid algorithms. Because battery data is very large and complex, data-based algorithms are more widely used for SOC estimation. Deep learning (DL) algorithms are data-based algorithms. In recent studies, long short-term memory (LSTM) method is a well-known DL strategy that has been shown to outperform many other approaches for SOC estimation. Current, voltage and temperature parameters are used when estimating SOC. These parameters change depending on time. The LSTM model performs very successfully in time series. LSTM is an algorithm that consists of sequential structures and can learn long-term operations. For these reasons, the LSTM method is one of the frequently used algorithms in SOC estimation. In this review, LSTM methods used for battery SOC estimation in electric vehicles are mentioned. Data sets, temperature conditions and fusion algorithm studies with LSTM are mentioned. This study is presented by examining the articles published in the last five years. Aim of this review is to examine the latest and current research on SOC estimation with LSTM methods.

Keywords: Electric Vehicles, SOC Estimation, Long Short-Term Memory

INTRODUCTION

Nowadays, electric vehicles are becoming widespread. The reasons such as the need to reduce the greenhouse gas effect, a greener and cleaner environment, quiet and easy operation, and not requiring a gas station increase the demand for electric vehicles. Four types of electric vehicles are produced: battery electric vehicles (BEV), hybrid electric vehicles (HEV), plug-in hybrid electric vehicles (PHEV) and fuel cell electric vehicles (FCEV) (Abd El Halim et al., 2022). BEV is the energy stored in power source batteries. Range depends on battery capacity. HEV is a combination of drive systems internal combustion engine and electric powertrain. PHEV, like HEV, contains both an internal combustion engine and an electric motor. These types of vehicles are also known as series-parallel vehicles. They can operate on fuel only, electricity only, or both. The main drive is provided by an electric motor and requires a large battery. When the battery is low, the internal combustion engine is used. FCEV is powered by fuel cells that generate electricity. Electricity is produced through chemical reactions.

The use of battery packs has also increased with the spread of electric vehicles. The current, voltage and temperature parameters in the battery constantly change while driving in electric vehicles. Continuous monitoring of battery packs for safe and long-lasting battery use is important and necessary to provide information about the battery to other units in electric vehicles. Battery management systems control the

battery's state of charge (SOC), state of health (SOH), state of temperature (SOT), state of energy (SOE), state of function (SOF), state of power (SOP), state of security (SOS), battery life (SOL) and remaining useful life (RUL) (Hasib et al., 2021). It also enables longer-range use of the electric vehicle by optimizing battery performance. For these reasons, the battery management system is a very important component for the development of electric vehicle technology. In addition, BMS is to ensure the battery doesn't catch fire.

The estimation of SOC is important for BMS. The fact that battery voltage-current and temperature parameters cannot be measured directly and does not have a linear relationship between these parameters has made SOC estimation an important parameter. The accurate SOC estimation is critical to control battery charge, discharge and extend battery life. Electric vehicles are verified to operate reliably and efficiently if accurate SOC estimation is made. For this reason, in recent years, many studies have been carried out to develop an accurate and reliable method for SOC estimation. DL methods have advantages such as automatic feature extraction, high sensitivity to noise and more accurate results. Because of these advantages, DL methods have been used in many studies for SOC estimation. These are recurrent neural network (RNN), deep neural network (DNN), LSTM, gated recurrent unit (GRU), convolutional neural network (CNN), deep belief networks (DBN), generative adversarial network (GAN) and autoencoder (AE). Numerous SOC estimation studies have been carried out, especially with the LSTM method.

LONG SHORT- TERM MEMORY

The LSTM algorithm has feedback neural network structures and is different from other neural network structures. LSTM models are an advanced extension of RNN structures. The memory of RNN structures is expanded, allowing them to preserve long-term dependencies of input data and thus learn more powerfully. The LSTM structure allows reading, writing and deleting information from memories by remembering the information sent for a longer time. An LSTM model selects important features from the input parameters and stores this information for a long time. The decision to delete or store information is made according to the weighting values assigned to the information during the training process. In this case, the LSTM model decides which information to store or remove (Namini et al., 2019).

The LSTM structure generally consists of a memory cell that stores information, which is constantly updated by three special gates in time step t : input gate $i(t)$, output gate $o(t)$ and forget gate $f(t)$. When the LSTM structure is examined, the $f(t)$ is used to decide which information should be removed from the LSTM memory from the model. The $i(t)$ is the structure that decides whether new information that will enter the model later will be added to the LSTM memory. The $o(t)$ uses a sigmoid layer to decide which of the sections in the LSTM memory contributes to the output. Cell state $c(t)$ is generated by $o(t)$. Candidate state $g(t)$ is used to decide the information to be written to $c(t)$. Hidden state $h(t)$ contains the characterization of data from the previous time. The output of each cell is produced by output state $y(t)$. The sigmoidal activation function (σ), model input weights (W_{xi} , W_{xf} , W_{xg} and W_{xo}), recurrent weights (W_{hi} , W_{hf} , W_{hg} and W_{ho}), and biases (b_i , b_f , b_g and b_o) are LSTM parameters. The structure of LSTM is shown in Figure 1. The equations for various gates of LSTM are given in expressions 1 to 7.

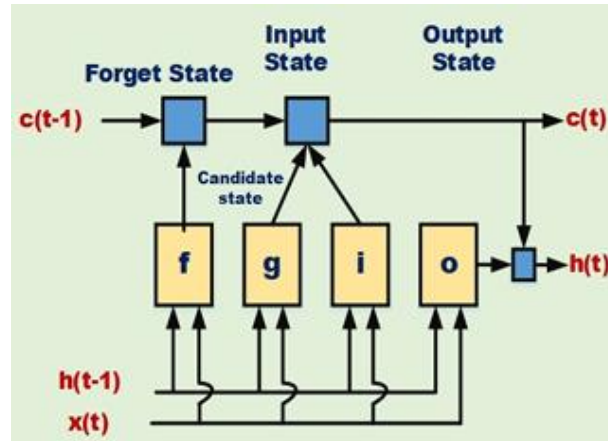


Figure 1. The Structure of LSTM (Vedhanayaki et al., 2024)

$$i(t) = \sigma(W_{xi}x_t + W_{hi}h_{t-1} + b_i) \quad (1)$$

$$f(t) = \sigma(W_{xf}x_t + W_{hf}h_{t-1} + b_f) \quad (2)$$

$$g(t) = \sigma(W_{xg}x_t + W_{hg}h_{t-1} + b_g) \quad (3)$$

$$o(t) = \sigma(W_{xo}x_t + W_{ho}h_{t-1} + b_o) \quad (4)$$

$$c(t) = (f(t) \cdot c(t-1)) + (i(t) \cdot g(t)) \quad (5)$$

$$h(t) = o(t) \cdot (\sigma c(t)) \quad (6)$$

$$y(t) = W_y h_t + b_y \quad (7)$$

LSTM STUDIES FOR SOC ESTIMATION

Nowadays, many methods have been developed to determine the battery charge status. The methods which are developed and used vary depending on the type of battery and the area of use. Some methods are combined for more precise and accurate SOC estimation. In this section of the study, the methods which are developed and applied for electric vehicle battery SOC estimation are discussed.

Mamo et al. proposed a LSTM model with an attention mechanism. Differential equation (DE) algorithm was used for hyperparameter selection (Mamo et al., 2020). Yang et al. proposed a hybrid system using LSTM method for SOC estimation and unscented kalman filter (UKF) to reduce noise and errors (Yang et al., 2020). Fasahat et al. combined AE and LSTM algorithms for SOC estimation (Fasahat et al., 2020). Tian et al. estimated SOC with LSTM and used adaptive cubature kalman filter (ACKF)

algorithm to smooth the estimation results (Tian et al., 2020). Wei et al. conducted a hybrid study using nonlinear autoregressive with exogenous inputs neural network (NARX) and LSTM algorithm. This hybrid NARX-LSTM model yielded high accuracy SOC estimation results (Wei et al., 2020).

Ragone et al. created the data set with MATLAB/Simulink software. They estimated battery SOC by applying LSTM, support vector machine (SVM) and artificial neural network (ANN) methods on this data set. Error analyzes of training and test data were calculated and compared separately for each method (Ragone et al., 2021). Gu et al. used the time-based sliding window algorithm (SW) and Shapley additive explanation theory (SHAP) during data preprocessing to estimate SOC with LSTM. The proposed method was applied on data obtained from five different real-life vehicles (Gu et al., 2021). Ren et al. proposed a new model (PSO-LSTM) by combining the particle swarm algorithm (PSO) and LSTM for accurate and reliable SOC estimation. The data optimized with PSO was processed with LSTM (Ren et al., 2021). Javid et al. proposed robust adaptive online long short-term memory (RoLSTM) hybrid algorithm for SOC estimation. Robust and adaptive online gradient learning method (RoAdam) was used for optimization (Javid et al., 2021).

Shahriar et al. estimated battery SOC for electric vehicles using recurrent learning approaches. This new approach is specified as a hybrid CNN-GRU-LSTM method. The new approach was applied on data at different temperatures and error rates were calculated. Performance analysis was made by comparing LSTM, CNN-LSTM, CNNBi-LSTM and GRU algorithms with the CNN-GRU-LSTM method. (Shahriar et al., 2022). Vellingiri et al. developed a new deep learning-based SOC estimation algorithm for renewable energy management system in hybrid electric vehicles. In this approach, which they call HCNN-LSTM, they hybridized the CNN and LSTM model for an accurate SOC estimation (Vellingiri et al., 2022). Ding et al. used LSTM method for SOC estimation in parallel battery packs (Ding et al., 2022). Hu et al. presented a new model for SOC estimation by combining temporal convolutional network (TCN) and LSTM algorithms. This hybrid algorithm is named as TCN-LSTM (Hu et al., 2022).

Nagarale et al. conducted a deep learning-based SOC and SOH estimation study. LSTM and bidirectional LSTM (BiLSTM) algorithms are compared. It has been stated that the error rate of LSTM is less (Nagarale et al., 2023). Ma et al. used the heap-based optimizer (HBO) algorithm for hyperparameter selection. Corrupt or missing data can be a problem for accurate SOC estimation. For this reason, mixture kernel mean p-power error (MKMPE) and LSTM methods were combined. It has been stated that this hybrid algorithm, called HBO-MKMPE-LSTM, provides robust and accurate results through error analysis (Ma et al., 2023). Zhao et al. used multi-level optimization methods when estimating SOC with a recurrent neural network. Particle swarm optimization (PSO) was used to obtain the optimum weight and threshold value, and adaptive moment estimation (ADAM) and stochastic gradient descent (SGD) optimizations were used to increase the accuracy of SOC estimation. With this proposed method, LSTM, GRU and NARX algorithms were compared (Zhao et al., 2023). Wang et al. made a real-time SOC estimation using Jetson Nano. Multilayer neural network (MNN), LSTM, GRU, and gradient boosting machine (GBM) algorithms were used for SOC (Wang et al., 2023). Li et al. used the whale optimization algorithm (WOA) for parameter selection when estimating SOC. They proposed two different approaches using extended kalman filter (EKF) and LSTM methods. It is emphasized that EKF-LSTM and LSTM-EKF algorithms give different results depending on the order of priority in data processing (Li et al., 2023). Xu et al. conducted a fusion study with LSTM and adaptive unscented kalman filter (LSTM-AUKF) algorithms for SOC estimation (Xu et al., 2023).

Peng et al. carried out SOC estimation in three stages. They determined the appropriate number of epochs for training the LSTM network with the random weight (RW) algorithm. They used the feedback AWEKF algorithm to optimize the network's output estimations. Error rates of LSTM combined with the RW algorithm (RWLSTM) and LSTM combined with the AWEKF algorithm (RWLSTM-AWEKF) were calculated (Peng et al., 2024). Zhao et al. used LSTM methods for long-term estimation and support vector regression (SVR) methods for short-term estimation of SOC. The SOC estimations of these two algorithms are combined to obtain a more accurate and stable SOC estimation. The error rates of hybrid SOC estimation and SOC estimation obtained from the LSTM algorithm were compared (Zhao et al., 2024). Takyi-Aninakwa et al. estimated SOC using the extended-input LSTM (ELSTM) model in order to improve learning ability. Adaptive singular value decomposition-transformed unscented kalman filter

(ASVDUKF) algorithm was used to reduce error rates and eliminate noise in SOC estimations. The ELSTM-ASVDUKF algorithm has been validated using two different batteries at different temperatures (Takyi-Aninakwa et al., 2024). Vedhanayaki et al. made SOC estimation using LSTM, GRU and BiLSTM algorithms. Hyperparameter selection was made with the Bayesian optimization algorithm. Along with the battery parameters, the averages of the parameters were also discussed. As a result of the error analysis, it was seen that BiLSTM gave more effective results (Vedhanayaki et al., 2024). Dang et al. estimated SOC using differential equation-informed multilayer perception (DE-MLP), differential equation-informed recurrent neural network (DE-RNN), and differential equation-informed long short-term memory (DE-LSTM) algorithms. A more accurate SOC estimation was made by optimizing the parameters with differential equation-informed neural networks (DENN) (Dang et al., 2024). Shah et al. proposed the positional encoded-attention LSTM (PALSTM) algorithm. Data were enriched with positional encoding and a time-step internal attention mechanism and used for more accurate SOC estimation (Shah et al., 2024). Savargaonkar et al. proposed the uncorrelated sparse autoencoder with long short-term memory (USAL) algorithm for SOC estimation. The algorithm has been validated by applying it on three different data sets. (Savargaonkar et al., 2024). The LSTM algorithm, hybrid LSTM algorithms, datasets, and ambient temperatures used by researchers for SOC estimation are shown in Table 1.

Table 1. The Parameter Comparison of The Existing Literature

References	Algorithm	Type of Dataset	Ambient Temperature (°C)
Mamo et al. (2020)	LSTM with attention mechanism, DE	University of Maryland CALCE Dataset	0, 25, 45
Yang et al. (2020)	LSTM, UKF	DST, US06, FUDS Driving Cycles	0, 10, 20, 30, 40, 50
Fasahat et al. (2020)	LSTM, AE	University of Maryland CALCE Dataset	0, 25, 45
Tian et al. (2020)	LSTM- ACKF	University of Maryland CALCE Dataset	0, 10, 25, 30, 40, 50
Wei et al. (2020)	NARX-LSTM	DST, UDDS Driving Cycles	20
Ragone et al. (2021)	LSTM, SVM, ANN	FTP75, US06, HWFET, HDUDDS, SC03, LA92 Driving Cycles	25
Gu et al. (2021)	SW-SHAP- LSTM	Five Different Real-life Vehicles Datasets	-
Ren et al. (2021)	PSO- LSTM	UDDS Driving Cycle	25
Javid et al. (2021)	RoLSTM	McMaster University in Ontario, University of	0, 10, 25; -10, 50

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		Maryland CALCE Datasets	
Shahriar et al. (2022)	LSTM, CNN-LSTM, CNNBi-LSTM, GRU, CNN-GRU-LSTM	LG 18650HG2 Li-ion Dataset	10, 0, 10, 25
Vellingiri et al. (2022)	HCNN-LSTM	FUDS, BJDST, US06 Driving Cycles	0, 25, 45
Ding et al. (2022)	LSTM	NCM 18650 Cylindrical Batteries Dataset	25
Hu et al. (2022)	TCN-LSTM	US06, HWFET, UDDS, LA92 Driving Cycles	0, 10, 25, 40
Nagarale et al. (2023)	LSTM, BiLSTM	Panasonic 18650PF Li-ion Dataset	0 - 45
Ma et al. (2023)	HBO-MKMPE-LSTM	Panasonic18650PF Li-ion Dataset	- 20, -10, 0,10, 25
Zhao et al. (2023)	Multi-level optimization RNN, LSTM, GRU, NARX	University of Maryland CALCE Dataset	0, 25, 45
Wang et al. (2023)	MNN, LSTM, GRU, GBM	Simulated Data	25, 30, 35, 40
Li et al. (2023)	WOA, EKF-LSTM, LSTM-EKF	Lithium-rich Manganese and 18650 Battery Dataset	25
Xu et al. (2023)	LSTM-AUKF	N18650CK Power Lithium Dataset	-20 - 80
Peng et al. (2024)	RWLSTM, RWLSTM-AWEKF	US06 Driving Cycle	10, 0, 25, 50
Zhao et al. (2024)	LSTM, SVR	UDDS, NEDC Driving Cycles	25
Takyi-Aninakwa et al. (2024)	ELSTM-ASVDUKF	US06, DST, FUDS Driving Cycles	-10, 50
Vedhanayaki et al. (2024)	LSTM, GRU, BiLSTM	Hamilton's McMaster University Dataset	-10, 0, 10, 25

Dang et al. (2024)	DE-MLP, DE-RNN, DE-LSTM	McMaster University's Dataset	-20, -10, 0, 10
Shah et al. (2024)	PALSTM	University of Maryland CALCE Dataset	0, 10, 25, 40, 50
Savargaonkar et al. (2024)	USAL	NASA Ames Laboratory, LFP/graphite A123 APR18650M1A, LiCoO ₂ -graphite Datasets	10, 25, 45, 60

CONCLUSION

BMS is a very important component for the development of electric vehicle technology. BMS are systems that control and manage battery packs consisting of one or more cells during charging and discharging. BMS is the technology that provides electrical and thermal management of battery packs. Conditions such as battery charge state, temperature, health and remaining life are checked with BMS. Accurate and precise SOC estimation is especially important for electric vehicles. In recent years, interest in DL methods has been increasing in studies on SOC estimation. In this review study, SOC estimations made with LSTM, one of the DL algorithms, are mentioned. Studies conducted in recent years have also been examined in terms of dataset, temperature, optimization methods and hybrid methods.

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A STUDY ON EVALUATION OF BACKGROUND SUBTRACTION AND PATTERN RECOGNITION METHODS FOR CLASSIFICATION OF GPR B-SCAN DATA

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ABSTRACT

GPR is an imaging technique used to map underground structures using electromagnetic waves. In this study, the effects of background subtraction methods, which have a significant impact on extracting the features of buried objects in GPR images, are included. Then, the extraction of features from background-removed images was examined and the effect of various pattern recognition methods (Random Forest, K-NN, SVM) on the classification performance for the sample data set was presented. In the feature extraction phase, a new feature set that gives high classification results is defined over the data set. The main steps of the classification process were determined, and features were extracted and classified by defining six different methods. These methods were determined by considering several parameters such as the use of fixed or moving antenna, fixed and dynamic background subtraction, variation of depth of the buried object and excessive clutter. Five features were extracted from foreground (white) for six largest regions: area, average, second moment and third moment. Then we performed curve fitting by placing parabola to the largest six foreground regions, in this case coefficients of the parabolas selected as features. The developed methodologies were tested on two data sets containing 520 and 1080 data. The dataset contains two different classes: surrogate buried mines and other buried objects (oil can, plastic box). It has been observed that classification algorithms such as Random Forest and K-NN offer high accuracy rates, but SVM has lower accuracy rates than other algorithms.

Keywords: Ground Penetrating Radar, background removal, feature extraction, classification, pattern recognition.

INTRODUCTION

Buried Object detection and identification are important issues for many disciplines (Daniels, 2004). It covers various applications such as detection and identification of ancient ruins, cables, pipes, or mines (Sezgin, 2011). Accurate and reliable detection of underground objects makes significant contributions in various fields such as environmental protection, infrastructure maintenance, archaeological exploration, and military operations. For this purpose, Metal Detector (MD), Infrared Sensor (IR), Ground Penetrating Radar (GPR), Vapor Sensors (VS), etc. can be used. Among the sensors used for these various applications, Ground Penetrating Radar (GPR) is an important tool for detecting and imaging underground objects (Sezgin, 2009). GPR is an imaging technique that maps structures beneath the surface using electromagnetic waves.

GPR DATA PROCESSING METHODOLOGY

In most applications, the first step of GPR buried object detection is pre-preprocessing. Pre-processing stage may contain filtering, alignment and application of depth dependent gain to the signal. After this step, background removal / clutter reduction, then anomaly detection methods are applied (Sezgin, 2009). Anomaly detection methods can be realized based on prediction of the next A-scan signals from previous ones or calculation of the target energy by correlating the background removed A-scan signals in a window, etc. If the second method is used, we have constant or dynamic background signal calculation options (Sezgin et al., 2020). When we calculate background signal estimation at the beginning near to the starting location, this is named as constant background calculation, if we update this background signal as antenna moves along with cross-track, this is named as dynamic background calculation (Sezgin, 2010). If we subtract this background estimation of A-scan signal from incoming A-scan signals, we obtain estimation of background removed B-scan data. Since background removal

methods affect the generation of consistent information content related with GPR data, we aimed to examine this issue in this study. In addition, the effects of discriminative feature extraction and pattern recognition methods on classification performance is also investigated.

GPR Data Processing Scenario

Typical GPR data is given in Figure-1. The coordinate system and a sample B-scan image is given in Figure-1(a) which is reconstructed by horizontal concatenation of A-scan signals given in Figure 1(d). Grid structure of B-scan data, background removal windows and correlation window are presented in Figure-1(b). In Figure-1(c), $DTS_x(z)$ represents detection function obtained along with x axis. Background removed A-scan signal - $s_x(z)$ is obtained by (1) (Sezgin, 2011), $b(z)$ represents background signal estimate.

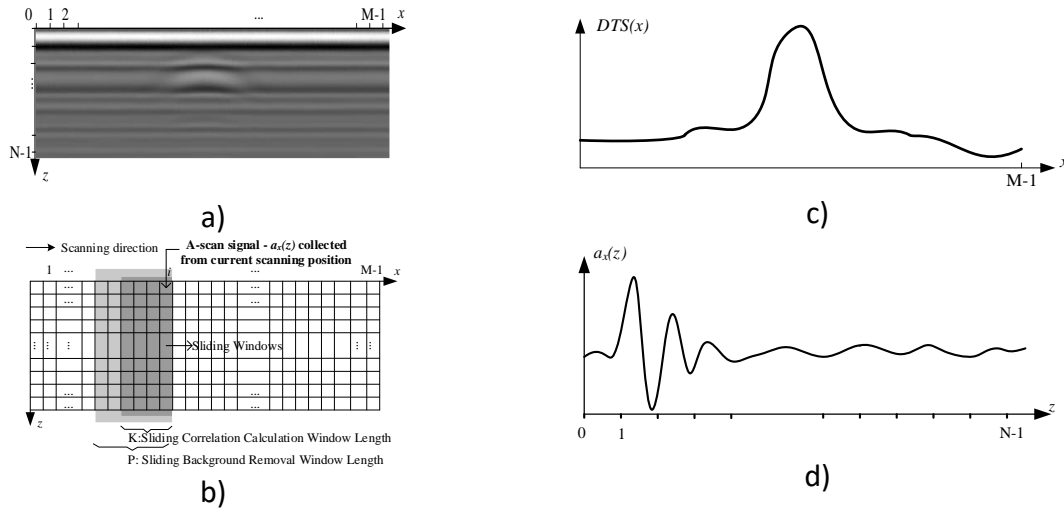


Figure 1. GPR data processing scenario, a) GPR B-scan data (reconstructed by horizontal concatenation of A-scan signals), b) data grid of GPR image, c) detection function, d) an example A-scan signal.

$a_x(z)$: Raw A-scan signal (column vector) acquired at position x

$b(z)$: A-scan background signal estimate

$s_x(z)$: Raw A-scan target signal estimate at position x

N : Length of A-scan signal

M : Number of A-scan signal in B-Scan data

P : Background calculation window length

K : Number of A-scan signals to be correlated

$B(x, z)$: Raw 2-D GPR B-scan data

$\beta_z(x)$: z^{th} row of B scan data

$B_T(x, z)$: B-scan 2-D target data estimate

$$s_x(z) = a_x(z) - b(z) \quad (1)$$

$$B_T(x, z) = \{s_x(z)\}, x = 1, \dots, M-1, z = 1, \dots, N-1 \quad (2)$$

Pre-processing

One of the most basic operations in GPR data processing is filtering of A-scan data. Thus, some of the disruptive effects caused by both noise and clutter can be eliminated. This filtering process is realized by using a bandpass filter whose parameters are determined by taking into consideration of signal properties (Sezgin et al., 2020).

After this filtering process in depth dimension, the clutter caused by the change in the height of the search coil to the ground can be eliminated to a certain extent by using a second band-pass filter with different parameters, applied to the signals in the direction of movement. (Sezgin et al., 2020)

Background Subtraction

GPR background subtraction aims to reveal the only information related to buried object, not coupling effect etc. By using this data enhancement technique, the remaining patterns become more distinctive. GPR background removal methods are divided into two basic categories, constant and dynamic background removal (Sezgin, 2011). In constant background removal, the average A-scan is calculated from the initial a few A-scans and then it is subtracted from rest of the A-scans. In dynamic background subtraction, a similar process is performed, but background signal estimation is obtained by using a sliding P-sized window demonstrated in Figure-1 (Sezgin, 2011). Results of two main methods of background subtraction are shown in Figure 2 for sample images collected with variable search head height.

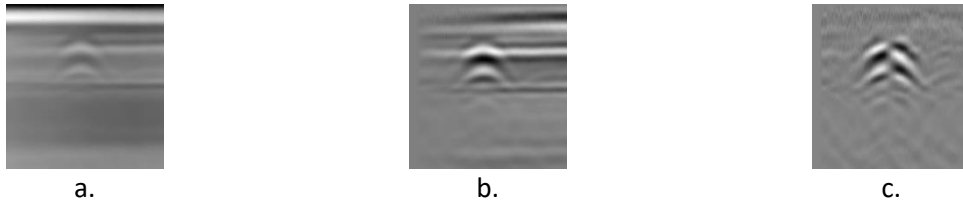


Figure 2. a) Raw GPR data collected with variable height of antenna b) Result of constant background removal c) Result of dynamic background removal

Post-Smoothing Filter

Generally, to prevent inconsistent feature generation, a Gaussian smoothing filter is applied to images before starting to extract features. In this study we adopted to use this approach. The mathematical expression for the Gaussian filter is as follows (Shreyamsha Kuma, 2013):

$$G_{\omega}(x, y) = \frac{1}{2\pi\omega^2} e^{-\frac{x^2+y^2}{2\omega^2}} \quad (4)$$

Here, $G_{\omega}(x, y)$ denotes the value of the Gaussian filter at position (x, y) , and ω represents the standard deviation.

Gabor Filter

Gabor filter is a technique that is frequently used in image analysis and gives optimal localization properties for directive patterns (Szeliski, 2022). This filter is used to highlight certain frequency components contained in an image and can also highlight different structures in the image (Sezgin et al., 2020). The mathematical expression of Gabor filter is given by (5).

$$G(x, y; \lambda, \theta, \sigma, \gamma) = \exp\left(-\frac{x'^2 + y'^2}{2\sigma^2}\right) \cos\left(2\pi \frac{x'}{\lambda}\right) \quad (5)$$

Here, $x' = x\cos(\theta) + y\sin(\theta)$ and $y' = -x\sin(\theta) + y\cos(\theta)$ are pixel coordinates, they are obtained by applying angle and frequency parameters to x and y coordinates. θ is the directivity (in radians), λ is the wavelength of the cosine factor, σ is the standard deviation and γ is the spatial aspect ratio. The Gabor filter reveals various features of structures in the image by emphasizing different frequency components at different rates (Zhao et al., 2015).

Binarization

Image segmentation is an important topic that covers a wide area of image processing and has different methods for specific applications (Gonzalez, 2009). One of the simplest segmentation methods is thresholding. It can be bilevel or multilevel. The most appropriate thresholding method should be selected according to the application requirements (Sezgin and Sankur, 2004). Bilevel thresholding methods aim to separate an image into foreground and background regions according to certain criteria.

Morphological Processes

Morphological operations are mathematical tools analyze shapes and structures of the image. Basic morphological operators can be listed as Erosion, Dilation, Opening, Closing, Skeleton, hit and miss. The erosion operator is performed by moving a specific structural element kernel over the image. If all pixels under the structuring element at a given location in the image meet a certain condition, the corresponding pixel remains "white"; otherwise, the pixel is changed to "black" (Gonzalez, 2009).

Feature Extraction

Feature extraction is the process of revealing hidden information in data as numerical values. It is integral part of pattern recognition, machine learning and neural networks-based classification applications. Features represent specific aspects or characteristics of an object or scene. These features may include brightness, color, edges, corners, textures, and other significant properties of the image.

Parabola Fitting

In GPR data classification processes, the shape of target reflection can be informative. This information can be obtained by using morphological operators or curve fitting techniques. In this study we use curve fitting technique to obtain this information. The reflected GPR waves can be represented by a parabolic curve (Lei et al., 2019). Parabolas can be used to determine the position and shape of buried objects (Dou et al., 2016). The analytical equation of this curve includes parameters such as the depth of the object and the relative permeability of the medium.

The parabolic is usually expressed in the following form:

$$y = ax^2 + bx + c \quad (6)$$

Here, a , b and c are the coefficients of the parabola. These coefficients define a parabola that best fits the given white (foreground) region. Using the resulting parabola model, y (vertical) values were calculated for the parabolic curve in a certain x range (Atkinson and Han, 2005).

Classification Methods

There are different methods for data classification including deep learning and classical pattern recognition methods (Alpaydin, 2020). Selection of data classification method may vary depending on the characteristics of the data set, its size, and other parameters. Deep learning generally requires large amounts of dataset to produce consistent results, so it may not be suitable for small and medium-sized data sets, generally.

K-Nearest Neighbors (K-NN) is another simple and effective classification method. Its principle is to use majority of the labels of its K nearest neighbors to classify a data point (Kataria and Singh, 2013). Naive Bayes is particularly effective for text classification and assumes independence between features (Alpaydin, 2020). While SVM tries to find the best separation between two classes, Decision Trees classify the dataset into a tree structure based on decision rules. Random Forest is an ensemble learning method that provides powerful classification by bringing together many decision trees. Each decision tree is trained on a randomly selected subset of features, thus increasing the model's sensitivity to different features. Random Forest is both more resistant to overfitting and generally offers high

performance and stability. Additionally, this method can also be used to better understand relationships in the dataset, and generalization ability can be increased by combining trees (Breiman, 2001).

The Proposed Method

Main steps of classification steps are given in figure 3. Six different classification methods are defined in Table 1, considering various parameters. These parameters are fixed or moving antenna (height of search head is unstable during scanning), constant background subtraction, dynamic background subtraction, depth of the buried object, and excessive clutter.

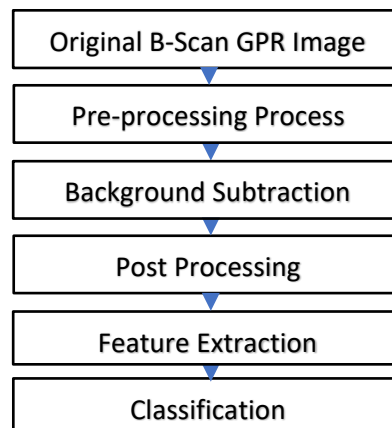
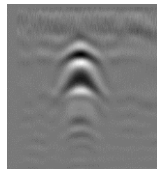


Figure 3. Main structures of classification process

First of all, pre-processing is applied to A-scan signals and then a bandpass filter is applied horizontal axis to remove clutter caused by the change in the height of the search head. After this stage, two different background subtraction ways are performed with $P=15$. At the next stage a Gaussian filter is used to reduce noise and smooth the image before converting it to a binary image with $\omega = 3$.

In the post processing stage, Gabor filter, binarization and morphological process are applied to the data. Both the fixed thresholding method and the adaptive thresholding method are used in the process of converting GPR data into binary images. GPR data can often have a high dynamic range and the contrast of different objects or structures may vary. In this case, adaptive thresholding methods determine a threshold value for each pixel by analyzing local pixel information in the image. In this way, important points will be revealed more clearly in GPR images automatically. Adaptive thresholding is particularly has advantageous when used in challenging applications, such as GPR (Acharya and Ray, 2005). In some cases, since the adaptive thresholding method doesn't give accurate results when we use Gabor filters, the fixed thresholding method is also used (threshold value is set to 89). Gabor filter parameters are $\lambda = 10$, $\theta=0$, $\sigma=10$ and $\gamma=1$. The erosion operator is used to remove noisy regions on the binary image and eliminate thin connections between large areas. The structural element is cube, and the filter size (kernel size) is chosen as 3×3 .

After filtering the binary image, we performed feature extraction process. At this stage, a few features are extracted. Four of them are: the areas of the foreground regions in the binary image, their means, 2nd moments, 3rd moments. Finally, we fit a parabola to the foreground region and then we selected coefficients of fitted parabola (a, b, and c) as features. Since some elements of the data set contain heavy cluttered data creating small regions, we selected features of the 6 largest regions.



a)



b)



c)

Figure 3. a) Background subtracted GPR image b) Gabor filter applied ($\lambda = 10, \theta=0, \sigma=10, \gamma=1$) c) Fit parabola to white area

The most appropriate classification algorithms are selected according to the size of dataset, number of features and number of classes. We tested Random Forest, K-NN (with K=3) and SVM (kernel type: Linear) classification algorithms over the dataset.

As seen in Table 1, feature extraction was done by pre-processing and post-processing in 6 different methods. In method-1 and method-2, the features are extracted from the parabola equation. In method 3, after applying the Gabor filter, the areas of the foreground regions is calculated as features. In method 4, after applying the Gabor filter, the areas, means and moments of the foreground regions is calculated as features. In Method-5, feature extraction is made from the area of the foreground region, its mean, moments, and the parabola equation, without applying the Gabor filter. In Method-6, the areas of separate foreground regions of 4 different Gabor filters are calculated as features.

Table 1. Processing steps and feature extraction Methods

Processes	Application on	Methods					
		1	2	3	4	5	6
Normalization	A-scans	Yes	Yes	Yes	Yes	Yes	Yes
Band Pass Filter	A-scans	Yes	Yes	Yes	Yes	Yes	Yes
Horizontal Bant Pass Filter	Rows of GPR data	Yes	Yes	-	Yes	-	Yes
Depth Dependent Gain	A-scans	-	-	-	-	-	Yes
Gauss Filter	B-scans	Yes	Yes	-	Yes	Yes	-
Constant Background Subtraction	B-scans	-	Yes	Yes	Yes	-	-
Dynamic background Subtraction	B-scans	Yes	-	-	-	Yes	Yes
Gabor Filter	B-scans	-	-	Yes	Yes	-	Yes
Fix Threshold	B-scans	-	-	Yes	Yes	-	Yes
Adaptive Threshold	B-scans	Yes	Yes	-	-	Yes	-
Erosion to the foreground	B-scans (binary)	-	-	-	-	-	Yes
Parabola fitting to the foreground	B-scans (binary)	Yes	Yes	-	-	Yes	-
Foreground Area calculation	B-scans (binary)	-	-	Yes	Yes	Yes	Yes
Mean and Moment calculation	B-scans (binary)	-	-	-	-	Yes	-

EXPERIMENTAL RESULTS

Developed methodologies for processing and analyzing GPR data to classify buried objects were tested on two datasets with 520 and 1080 data. Our dataset consists of two different classes containing surrogate mines, and other buried objects (oil cans, plastic materials, etc.). The resulting classification result is shown in table 3 and table 4.

In **Method 1**, dynamic background subtraction, Gaussian filter, and adaptive thresholding is used in the processing stage. It is derived from the parabola equations in feature extraction.

In **Method 2**, the only difference with Method 1 is that constant background subtraction is performed.

In **Method 3**, constant background subtraction, Gabor filter, and fixed thresholding were performed in the processing stage. The areas of the foreground regions are calculated as features.

In **Method 4**, Gaussian filter, constant background subtraction, Gabor filter and fixed thresholding is used in the processing stage. Areas, moments, and means of the foreground regions are calculated as attributes.

In **Method 5**, dynamic background subtraction, Gaussian filter, and adaptive thresholding is used in the processing stage. As features, the roots of the Parabola equation, the foreground areas, means and moments of the foreground regions are calculated.

Finally, in **Method 6**, dynamic background subtraction, 4 separate Gabor filters, fixed thresholding and morphological processing are used in the pre-processing stage. The parameters of the Gabor filter are given in table 2.

Table 2. Gabor Filter Parameters in method 6

Parameters	Filter-1	Filter-2	Filter-3	Filter-4
Wavelength (λ)	4	4	4	4
Directivity (θ)	0.52	0.78	-0.52	-0.78
Standard Deviation (σ)	10	10	10	10
asymmetry parameter (γ)	1	1	1	1

These methods were classified with Random Forest, K-NN and SVM classification algorithms on the Weka software tool (Hall et al., 2009). As a result, we achieved an accuracy rate between 45% and 100% with random forest, K-NN and SVM classification algorithms.

Table 3. Classification results of six methods

Methods	Number of Objects	Random Forest	K-NN (K=3)	SVM
Method-1	520	%99,0385	%99,0385	%74,0384
Method-2	520	%99,0385	%90,2778	%87,5000
Method-3	520	%98,0769	%100,000	%93,2692
Method-4	520	%100,000	%99,0385	%90,3846
Method-5	520	%100,000	%100,000	%98,0769
Method-6	520	%99,0385	%99,0385	%97,1153

Table 4. Classification results of six methods

Methods	Number of Objects	Random Forest	K-NN (K=3)	SVM
Method-1	1080	%93,0556	%90,2778	%73,6111
Method-2	1080	%90,2778	%86,1111	%64,3518
Method-3	1080	%81,7734	%83,2512	%73,6111
Method-4	1080	%87,5000	%87,0370	%77,3148
Method-5	1080	%93,0556	%92,5926	%78,2407
Method-6	1080	%93,0556	%90,7407	%76,8518

CONCLUSION

In this study, we made an overview for GPR buried object detection and identification, we proposed a novel set of features then we tested our features by using a few classical pattern recognition methods over real GPR data set for classification purpose. The obtained results show that the use of a specific methodology and feature set is critical for the accurate detection of underground objects. It is seen that classification algorithms such as Random Forest and K-NN offer high accuracy rates, but SVM has lower accuracy rates than other algorithms.

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ANALYSIS OF SAEEDNIA'S ALGORITHM WITH MATLAB

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ABSTRACT

For Saeednia's algorithm, we select a random permutation π of size m and create an $m \times m$ permutation matrix P_π by permuting the rows of an identity matrix of the same size. Such a matrix is always row-equivalent to an identity matrix. Then, by permuting the columns of the identity matrix, we generate its inverse P_π^{-1} . Similarly, P_π^{-1} is column-equivalent to the row-permuted matrix. Next, we create a one-time-use matrix H_π from the key matrix H as $H_\pi = P_\pi^{-1} \cdot H \cdot P_\pi$. We then encrypt x as $y = H_\pi x \pmod{n}$ and send the user a pair (y, π') where $\pi' = H \cdot \pi \pmod{n}$. Upon receiving the message, the user computes the permutation π from π' and H^{-1} as $\pi = H^{-1} \cdot \pi' \pmod{n}$. The user then calculates $(H^{-1})_\pi = P_\pi^{-1} \cdot H^{-1} \cdot P_\pi$ and, keeping in mind that $(H_\pi)^{-1} = (H^{-1})_\pi$, decrypts the ciphertext as $x = (H_\pi)^{-1} \cdot y \pmod{n}$. In this research, matrices of sizes 10x10, 40x40, 50x50, 60x60, 70x70 were used and the decryption process was found using their invertible forms. We perform this encryption and decryption using Matlab. The results obtained from Matlab indicate that as the matrix size increases, the decryption process becomes progressively more difficult.

Keywords: Cryptography, Saeednia's algorithm, Encryption, Decryption, Matlab.

**A SEMANTIC APPROACH TO DESCRIPTIVE ELEMENTS FROM GAGAUZ
LITERATURE**
**GAGAUZ YAZININDAN AKSEDEN BETİMSEL UNSURLARA DAİR SEMANTİK BİR
YAKLAŞIM**

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ABSTRACT

In the study; Emphasis was placed on the "descriptive expression" pattern that reflects the unique qualities of a being, place, object or character. The research universe, blended with "impressionistic and explanatory description" and "sensual and spiritual portrait" patterns, has been semanticized with an interpretive reaction. This aesthetic impression, which is based on getting an idea about the entity that touches certain senses of the reader and passes through the focus of the narrative, has also been represented as "describing" or "the art of drawing a picture with words". The artist generally conveys to the reader the impressions that a landscape or being leaves on the senses in an orderly and systematic way. Therefore, it has been revealed that the latent aesthetic details reflected from the depiction mirror add an original color and harmony to the expression by activating the reader's perception of attention. For this reason, visual images and formal details passing through the descriptive focus were important. In addition, it has been observed that the artist was inspired by subjective or objective systems when constructing the descriptive scene. Thus, by creating an associative effect on the various senses of the interlocutor, the enthusiastic lyricism in the atmosphere of emotions and thoughts is revealed.

The act of verbally expressing, visualizing or designing a concept or object reflects the semantic frequency of the descriptive theme. The literary perspective reflected from the universe of the work is illustrated through interpretive analysis of descriptive textures synchronized within the context of the text. The data layer of theoretical findings regarding the research horizon was designed through metaphorical images. Descriptive motifs that build an aesthetic bridge in Gagauz literature were processed with the document analysis method and exhibited with a semantic approach. This spatial indicator, which draws the discourse generation in a sensory direction, has redesigned the observation meridian with artistic pleasure. Therefore, the authentic sequence, voiced with the original rhythm of visual connotations, transformed the Gagauz literary plane into a powerful structure and further expanded the horizon of meaning with a rich imagination.

Keywords: Gagauz literature, Descriptive elements, Semantics, Aesthetics.

ÖZET

Çalışmada bir varlığın, mekânın, obje ya da karakterin kendine özgü niteliklerini yansıtan “betimleyici anlatım” desenine dikkat çekilmiştir. “izlenimsel ve açıklayıcı betimleme” ile “tensel ve tinsel portre” örgeleriyle harmanlanan araştırma evreni, yorumsal bir reaksiyonla semantize edilmiştir. Okuyucunun belirli duyularına temas eden ve anlatı odağından geçen varlıkla ilgili fikir edinme esasına dayanan bu estetiksel izlenim, “tasvir etme” veya “sözcüklerle resim çizme sanatı” olarak da temsil edilmiştir. Sanatçı, genellikle bir manzaranın ya da varlığın duyular üzerinde bıraktığı intibaları düzenli ve sistemli bir şekilde okura aktarmıştır. Dolayısıyla betim aynasından yansıyan gizil estetik detayların, okuyucunun dikkat algısını canlandırarak ifadeye orijinal bir renk ve âhenk kattığı belirmiştir. Bu nedenle tasviri odaktan geçen görsel imgeler ve biçimsel ayrıntılar önem arz etmiştir. Ayrıca sanatçının, betim sahnesini inşa ederken öznel ya da nesnel dizgelerden ilham aldığı görülmüştür. Böylece muhatabın çeşitli duyularına çağrışımsal bir etki yaratılarak, duygu ve düşünce atmosferindeki coşkun lirizm açığa çıkarılmıştır.

Bir kavramı ya da nesneyi söz ile ifade etme, göz önünde canlandırma veya tasarlama eylemi, betimleme izleğinin anlam frekansını yansıtmıştır. Çalışma evreninden yansıyan edebi perspektif, metin bağlamında senkronize edilen tasviri dokuların yorumsal analiziyle resmedilmiştir. Araştırma ufkuna dair teorik bulguların veri katmanı ise metaforik imgeler vasıtasıyla dizayn edilmiştir. Gagauz yazınında estetiksel bir köprü kuran betimleyici motifler, doküman analizi yöntemiyle işlenerek anlambilimsel bir yaklaşımla sergilenmiştir. Söylem kuşağını duyusal bir yöne çeken bu uzamsal gösterge, gözlem

meridyenini sanatsal bir hazla yeniden tasarlamıştır. Dolayısıyla görsel çağrışımların özgün ritmiyle sesletilen otantik dizilim, Gagauz edebi düzlemini güçlü bir yapıya dönüştürerek anlam ufkunu varsıl bir imgelemele daha da genişletmiştir.

Anahtar kelimeler: Gagauz yazını, Betimleyici unsurlar, Semantik, Estetik.

Giriş

Varlıkların özgül yapılarının sözcüklerle resmedilmesi esasına dayanan betimsel dizayn, sanatlı bir söylemin orijinal tasarımını vurgular. Öykü veya roman odaklı yaratı motiflerini destekleyen ve anlam yörüngesini güçlendiren bu izlenimsel boyut, esas gayesi görsellik olan sanatsal bir devinimin coşkun iletimidir. Okuyucuyu imgesel bir platforma çeken tasviri düzlem, gözlem ufkundaki gizil estetik birimleri açığa çıkararak okurun düş katmanında lirik bir çağrışım yaratır. Biçim ve renk ayrıntılarıyla harmanlanan düşünsel yönelim, söylem tablosuna özgün bir renk ve âhenk katar. Böylece kavramsal etkileşimi kelimelerle görünür kılmaya ya da gözlemlenen varlıkları zihinsel platformda canlandırma eylemi, betimleyici yaklaşım modelini öne çıkarır. Duyusal enlemenden yansıyan olguların niteliklerini ve bu niteliklerin iç dünyada uyandırdığı intibaları yansıtan sanatçı, betimsel bölgede nesnel bir yön çizebileceği gibi, gözlem sınırına öznel his panelleri de döşeyebilir. Sanatsal ve açıklayıcı kutuplardan akseden duygu eksenini, sanatçının izlediği amaç doğrultusunda yeniden senkronize edilir. Bu nedenle kişi betimlemeleri tarzında şekillenen tinsel ve tensel portreler de bu sezgisel ve düşünsel kutupların birer yansımasıdır.

Betimleme (tasvir); kurmaca eseri oluşturan mekân, olay, zaman gibi unsurların sözcüklerle resmedilmesi, görünür hâle getirilmesidir (Mocan, 2012: 1833). Daha doğrusu; varlıkların durumlarını, özelliklerini, sözcüklerle resim çizer gibi anlatma ve okuyucunun gözleri önünde canlandırmadır (Akt. Karadağ, 2003: 85). Sanatlı bir söylem olan tasvir, anlatılanların somutlaştırılması için izlenen bir yoldur (Mocan, 2012: 1833). Aynı zamanda okuyucunun göremediği, ancak hayal edebildiği bir imgenin ayrıntılı olarak sergilenmesidir (Akt. Önal ve Tümer, 2022: 1178). Dolayısıyla okuyucunun zihninde yepyeni bir imaj oluşturan betimsel unsurlar, yalnızca dış görünüşün sözcüklerle resimlenmesi değildir (Karadağ, 2003: 86). Okurun hayal gücünü harekete geçiren ve onu metne bağlayan aktif bir role de sahiptir. Betimleme, üstlendiği fonksiyonlarla yazarın üslubunda kendini hissettirdiği gibi, metnin üst yapısında da etkili olmaktadır. Bu fonksiyonlar; süsleme, bilgi verme ve açıklama, duyguları ifade etme, gerçeğe benzerlik sağlama, görselleştirme şeklinde belirmektedir (Akt. Önal ve Tümer, 2022: 1178). Tasvir tekniği kullanılırken dikkat edilmesi gereken nokta, tasvirin metin içinde bir işlevinin olmasıdır. Aksi takdirde yapılan tasvirler sadece sanatçının yeteneğini gösterir, metne herhangi bir katkı sağlamaz (Mocan, 2012: 1833). Bununla birlikte her yazar, betimlemeden farklı nitelikte yararlandığı gibi, farklı oranda da başarılı olur. Çünkü her edebi metinde betimleme, yazarın gözlem ve izlenim gücüne bağlı olarak farklı boyutta esere yansır (Baran, 2021: 34).

Bulgular

Gagauz edebi yörüngesinden yansıyan betimsel öğelerin semantik katmandaki görünümü şu şekildedir:

1.

O oturardı hem, sansın bakardı görünmeyän sonsuz uzaklara. İçersi da karannıktı, ama diildi ölä nicä dışarsı. İkonaların önündä, yanardı kandil, da şafkınnan aydınnadardı malika İvannanın simasını hem o açık, derin, ama görmeyän bakışlan bakan, gözlerini. Gözlär bom-boştu. Onnarın içindä ne bir şafk, ne bir fikir oynamasını yoktu nicä görmää,- sadä bir boş bakış. Salt üzündän vardı nicä annamaa, ani onun nesa zeetleer hem brakmêêr raada.

(Zanet, 2023: 12)

Metinde “Malika İvanna” ya dair resmedilen söylem tablosu özgün bir perspektifle dizayn edilmiştir. Söz konusu karakterin fiziksel ve ruhsal eksenindeki görünüm açısını **sanatsal (izlenimsel) betimleyici anlatım** modeliyle desenleyen yazar, böylece okuyucunun hayal dünyasında ekstrem bir betim iklimi yaratmıştır. Daha doğrusu, hislerinin etkisiyle imgelediği görüngü düzlemini kişisel kanı ve beğeni örgeleriyle harmanlamış, benzetimsel üslubun anlam akışıyla güçlendirdiği ifade eksenini öznel bir yaklaşımla semantize etmiştir.

2.

Ev üç odalıydı. Gözäl hem kırnak donaklıydı: pençerelerdä tantelili perdelär, içerlerdä kilim, tablalar hem peşkirlär asılıydı. Bük başta kızların çizleri hazırđı – hepsinä bir takım. Duvarlar sinkalı kireçliydı. Kireçin benizi ölä ayrılmıştı, ani gelärdi sansın duvarlara açık gök taşından kraa konmuştu.

Tavannar taftadandı. Odalardan sade büyük başın erleri tafta döşeliydi, kalanın – suvalıydı. Suva üstünä saman döşeliydi. Bu diildi ondan, ani yoktu neylän hasır yada pala almaa. Bölä taa uygundu yaşamaa, zerä evdä hepsi taa çok yalnayak gezärdilär da diil lääzımdı vakıt kaybetmää palaları yıkamaa yada erleri enidän suvamaa deyni. Saman boldu, onu sık diıştırärdilär.

(Zanet, 2014: 5-6)

Sanatsal betimleyici anlatım ile motiflenen metinde, “ev” izleğinin estetiksel bir devinimle tasvir edildiği görülmektedir. Renk ve biçim detaylarıyla özgünce işlenen bu belîğ izlenim, varlığa dair nitelikleri görsel bir tasarımla yansıtmaktadır. Yazarın duygu ve düşünce odağından akseden bu sanatsal imgelem, okuyucunun düş evreninde varsıl bir intiba yaratıp anlam tablosunu coşkun bir lirizmle desenlemektedir. Nitekim yazar, “ev” imgesini semantize ederken özdeşleyimsel bir ilgi kurarak mekânsal portreyi, kendi his paletinden yansıyan özgün renklerle betimlemektedir.

3.

Şindi Varka onsekiz yaşındaydı, etişmiş gözäl simalı kızdı: yanakları – pembä alma, dudakları – iki olmuş kirez, gözleri sä – kara üzüm gibi, kaşları – pak iki eni ay. Kalın, kol gibi, kara pelii pek düzärdi onun incecik, fidancık gibi boyunu. Bölä käämil kız Yarküüdä başka yoktu. Delikannıların çoyu beenärdi Varkayı, ama o sevärdi sade Stoyanı.

(Karagançu, 2018: 19-20)

Parçada, “Varka” adlı karakterin tensel portresinden akseden ve onu farklı kılan dış özellikler ayrıntılı bir şekilde ifade edilmektedir. Kahramanın görüntü düzleminden yansıyan estetiksel iz düşüm, yazarın akıcı ve etkili söylemiyle okuyucunun zihninde canlandırılmaktadır. Görüldüğü üzere, sözcelerle resmedilen **fiziksel betim** katmanı, metaforik enlemden yansıyan estetik örgeler vasıtasıyla güçlü bir yapı sergilemektedir.

4.

Domnika yas tuttu ydu kocasına iki yıl, sora sa göz koydu ydu Avramoglu Kostiyä. O gözäl simalı, kara gözlü, pembä yanaklı, incä belli, kıvrak boylu, büyük güüslü, kıvrıcık saçlı, kırnak insancık çok adamı maaledä uykusuz yapardı, ama vardı ilişkili hem sevärdi sade Kostiyi. Sevärdi aalemin gözündän saklı, sevärdi bütün canından, sade onun için yanardı ürecii gecä-gündüz. Sevärdi umutlanmayarak ona eş olmaa. Yaşardı büünkü günnän, şindiki sevgiylän.

(Karagançu, 2018: 6)

Parçada “Domnika” karakterinin fiziki özellikleri tasviri boyutta motive edilmiştir. Yazar, karakterin öne çıkan tensel niteliklerini öznel bir yaklaşım ve etkili bir söylem tarzı ile aktarmıştır. Asıl amacı görsellik olan bu otantik düzlemi betimsel bir hazla işleyen yazar, aynı zamanda **fiziksel betimleyici anlatım** kuşağından yansıyan gizil estetik uyumu da görür kılmıştır.

5.

Evelki zamannarda Ayıda varmış kuyruk. Uzunmuş hem tüülüymüş, nicä herbir yaban hayvannarda.

Ama ayı haylazmış, uykucuymuş hem bayıra karşı aar gidärmüş.

Bir sıra, kışın, buluşmuş Ayı Tilkiylän.

Tilki taşıyarmış bir kucak balık. Çeketmişlär onnar lafetmää, da Tilki-çapkın inandırmış kendini, ani Ayı gitsin onunnan barabar gölä gecä. Pek çok balık varmış hem varmış kolayı onnarı tutmaa Ayının kuyruuna, uzun tüülerinä. Ayı, ahmaan biri, inanêr. O kolverer kuyruunu buz oyuna. Ayaz sa ölä keskinmiş, male-e-e! Donêr-yapışêr kuyruk buza. Çekmiş onu Ayı, çekmiş, taa koparınca...

(Konstantinov&Danaji, 2022: 10)

Metinde, Tilki tarafından kandırılan Ayı’nın, kuyruğunu kaptırma hikâyesi konu edilmektedir. Ayı karakterinin **tinsel portresinden** yansıyan “Ama ayı haylazmış, uykucuymuş hem bayıra karşı aar gidärmüş.” ve “Ayı, ahmaan biri, inanêr.” cümleleri onun ruhsal betimiyle ilgili çarpıcı detaylar sunmaktadır. Yazarın modellediği tinsel örgede Ayı karakteri “ahmak, uykucu, haylaz, kolay kandırılan” bir izlenim sergilemektedir.

6.

Mälçu çalışmasınnan, akıllı, terbiyeli, becerikli hem kırnak olarak, beendirmiş kendini ev karı saabisinä dâ, onun kızına da. Bir yıldan sora evlenmiş Varçiyä da kalmış iç güveliinä. İkisi büütmüşlär beş uşak. En küçüü çocuktı, Dimu adınnan, angısı biräbir benzärdi bobasına: akıllı, becerikli, çalışkan.

(Karagançu, 2018: 58-59)

Parçada “Mälçu” ve “Dimu” adlı karakterlerin **tinsel portresi**, yazarın betim atmosferinden yansıyan özgün imgeler vasıtasıyla çizilmiştir. Mälçu akıllı, terbiyeli, becerikli, temiz ve düzenli bir baba motifleriyle karakterize edilirken; oğlu Dimu da babası gibi akıllı, becerikli ve çalışkan bir perspektifle

örüntülenmiştir. Eserin kahramanlarına yönelik çizilen ruhsal portrede, sözcüklerle resmedilen estetiksel tablo dikkate sunulmuştur.

7.

Avşam üstü. Evelki bir gagauz evin içersi. Soba üstündä birkaç çift yapaa çorap. Sobanın setindä yanêr fener. Dolma pat. Pençeredä perdä var. Görüner dış hem yannaşık odaların kapuları. Dış kapunun yanında bakırlıkta asılı bakır. Köşedä ikona, ikonanın önündä yanêr kandil. Karşı duvarda ayna. Aynanın altında bir uzun skemnä, örtülü palaylan, içersi donaklı: duvarlarda kilim, peşkir, nişurka; erdä palalar; pata döşeli hasır; patın köşesindä üklük. Yan duvarda asılı kürklär, rubalar. Onnarın altında durêr kış ayak kablari. Patta, soba yanında, oturêr Babu İvanna, yapaa diker hem türkü çalêr... (Zanet, 2018: 474)

Yazar, eski bir Gagauz evine dair gözlemlerini duygusallıktan uzak ve öznel olmayan bir anlatım tarzıyla yansıtmıştır. Sanatlı söyleyişe başvurmada, gerçeğe uygun ve oldukça yalın bir ifade sergileyerek, okuyucuya nesnel bilgiler sunmuştur. Tasvir ettiği mekânsal imgeyi **açıklayıcı betim** penceresinden yansıtan yazar, böylece okuyucunun hayal dünyasında nesnel bir intiba bırakmıştır. Ayrıca kelimelerle inşa ettiği objektif yapının betim yürüncesini güçlü ve aktif bir boyuta taşımıştır.

8.

Koladaya karşı. Ştena ikiyâ bölük: bir tarafında – gagauz maazası; öbür tarafında – büünkü gagauz evin içersi. Maaza hem içer arasında bir ara var – aul esabı. Aulda kaar. Burada asılı umıvalnik. Uzakta görüner proçka. Maazada üç fiçî şarap (sade ikisinä çep urulmuş), bir kada turşu, peynir küpü, kartofî, alma, suvannan sarımsak dizileri asılı... settä çölmek, filcan, çarpak hem fener. Masa erinä bir başaşaa batlacık. İçerlär tertipli. Duvarlar donaklı. Köşedä ikona. İçerdä: televizor; (televizor üstündä, televizorun bezinnän örtülü, bir kalpak); var masa hem masa dolayında skemnelär; pençerä setindä magnitifon, fener; duvarda ayna, yanında krivat. Krivatta, hırlayarak, uyêêr Kırış. Giriş kapusu kapalı. Kufneyä açılan yan kapu açık.görüner duhovkalı bir gaz plitası, üstündä çüven. Plita başında Kirana, başı dartılı...

(Zanet, 2023: 402)

Yazar bu parçada, nesnel bir gerçeklikle tasarladığı mekânsal portreyi, okuyucunun hayal enleminde canlanacak şekilde tasarlayarak fotoğrafsal bir izlenim yaratmaktadır. Okuyucuya söz konusu mekân hakkında bilgi vermek amacıyla genel hatlar üzerinde yoğunlaşan yazarın esas gayesi, sanat yapmak değil; bilgi aktarımıdır. Bu nedenle yazar, gözlem raylarından geçerken objektif bir rota çizerek söylem periyodunu **açıklayıcı bir betimle** dizayn etmektedir.

9.

Bir gözâl yaz günüydü. Pek sıcaktı. Üülendän sora kara tarafından çeketti kalkınmaa aar kara-boz bulutlar. Onnar kapadılar dübüdüz gökü, sakladılar güneşi. Çöktü karannık. Kopuştu bir büyük lüzgâr, angısı tezdä döndü tozlu furtuşkaya. Gök gürlmeleri hem çimçirik çakmaları bu karannık göktä pek tıtsıydılar.

Birdän sus oldu. Birkaç minuttan sora çekettilər düşmää iiri yaamur damnaları. Yaamur sıklaştı. Bir dä yaamurlan bilä tolu da çeketti yaamaa. Bu hakına bir borannı yaz yaamuruydu.

Yaamur gözä görünmâz durgundu. Gök buluttan paklandı – bulutlar kaydılar poyraz tarafına. Genä güneş çıktı. Doz-dolay temizdi, ortalık çiçää kokardı. Yollar üstü sellär gidärdi, uşaklar sellär içindä gezärdilər, tıynak tutardılar.

(Kolça, 2020: 81)

Parçanın anlam atmosferinde; sıcak bir yaz gününde gerçekleşen mevsimsel doğa olayının izlenimsel görünümü dikkate sunulmuştur. Yazar, estetik bir dizilimle işlediği devinimsel olguyu, göz önünde yaşanırçasına, bütün detaylarıyla aktarmıştır. Böylece hayal gücü ve sezgi öğeleriyle harmanladığı **sanatsal betim** ufkunu, coşkun bir lirizmle yeniden tasarlamıştır.

10.

Deniz sansın ayakça kalmıştı: üüsek koyu mavi dalgalar, hızlanıp, tukurlanardılar kenara, köpürürdülär dä, sansın verilip, çıkınırdılar geeri. Deniz sansın düüşärdi kendi kenarınnan. Alçak bulutlar kayardılar gün duusuna dooru su içmää.

Genç olan yatardı bir çadır boyunda pala üstündä da siiredirdi denizi. Kara saçları onun yalabardılar. Açan dalga atardı kendini pek yakına, olan kıpıştırırdı gözlerini, sakınırdı fırlamasın su suratına.

(Kuroglu, 2011: 240)

Parçada; “deniz” imgesine yönelik kurgulanan ifade düzlemi, teşbih (benzetme) ve teşhis (kişileştirme) tarzında örüntülenen sanatsal örgeler vasıtasıyla güçlendirilmiştir. Sözcüklerle resmedilen “deniz” izleği, sanatsal bir devinimin belîğ yankısını resmetmiştir. Söylem kuşağına estetik derinlik katmak, anlatı ufkunda konuşlanan tekdüze ritmi kırmak adına retorik öğelerden esinlenen yazar, inşa ettiği **sanatsal betim** alanı ile görsel bir seremoni yaratmıştır. Dolayısıyla yazarın gözlem ufkundan yansıyan düş fotonları, betim reaktörlerini estetiksel bir hazla aktivize ederek kişisel kanı ve beğeni motiflerini öne çıkarmıştır.

11.

Yamalı Sandinin üç oolu vardı: Vanka, Paruş hem Tuku. Bütün küü bilârdi bu gözâl boylu, keresteli olannarı: saçları kıvrışık, nicä çorlan, anterileri gündän yanık, kara, nicä toprak, burnuları iiri, nicä duvan gagası, büyük kirpiklerin altından bakışları şılêr, nicä koor şafkı gecä yarısı. Üçü dâ gözâl, biri-birindän taa üstün.

(Kuroglu, 2011: 202)

Parçada; “Vanka, Paruş ve Tuku” adlı karakterlerin dış görünüşlerine dair gözlem tablosu, estetiksel bir yönelimle betimlenmiştir. Yazar; teşbih (benzetme) ve mübalağa (abartma) gibi edebi sanatlarla desenlediği anlatı şemasında, ayrıntılı bir ifade düzlemi yaratarak detaylı bir **fiziksel portre** çizmiştir. İzlenimlerini aktarırken öznel bir tutum sergileyen yazar, his dağarcığından akseden metaforik imgelerle anlam yelpazesini güçlendirmiştir.

12.

Üredecilik zanaatını, angısını dayanıksız beklârdim, zar-zor kablettirdim güzün 1954-tâ, açan biraz taa islâa kolayını aldydım. Eni erä geçärkän, olurdu köstek tâ, ama şükür Saşa Skurihinä, oradaki sovhoz agronomuna, ani kaldıydı direktörün erinä. Skurinin – maalim bir erif, savaşardı annasın herbir zaametçinin zorunu, onuştan insannar da onu sayardı. Bu bir tombarlak suratlı, maavi gözlü, siirek kaşlı, kel başlı genç otuz yaşında adamdı. Bu bir orta boylu, omuzlu erifi dayma görârdim atlı beygirdä.

(Ekonomov, 2019: 66)

Parçada; dış görünüşsel bir uyumla tasvirlenen eser kahramanı, okuyucunun hayal ekseninde canlandırılarak estetiksel bir izlenim yaratılmıştır. Yazar; kahramanın boyunu, yüz hatlarını, saçını ayrıntılı bir şekilde anlatarak özgün bir **fiziksel portre** çizmiş; söylem profiline sanatsal bir âhenk yükleyerek betimsel evrenin anlam sınırlarını genişletmiştir.

13.

Maalemizdän birisinä deerlär cümbüşçü Vani. Ölädir o – cümbüşçü, şakacı, şennikçi. Nicä o laf – küçük Hocalardan biridir. Onun lafları dürtür-saplêr kimi sa da taa çok onuştan demişlär Cümbüşçü Vani ona.

(Kösä, 2012: 17)

Paragrafta; “Vani” adlı karakterin **ruhsal portresinden** akseden özellikler sübjektif bir dizilimle motiflenmektedir. Çoğu insanı güldürdüğü için neşeli, şakacı ve mutlu bir kişi izlenimi veren Vani karakteri; his dünyası ve kişilik deseni ile de dikkat çekmektedir. Bu bağlamda öznel bir betimle çizilen tinsel kreasyon, söylem frekansını güçlendirerek anlam potansiyelini varsıl bir odağa taşımaktadır.

14.

Ganilerin sokaanda taman onnarın evinä karşı yaşardı Keşkeş Monilär, onnar evdä çokluktular. Moninin karısı Arika bulü altı uşak anasıydı hem taa yaşardı Arikanın anası hem bobası. Kocası Moni Arikaya gelmişti iç güveliyä da biraz aar başlı olarak çok işlerä karışmazdı. Hepsini içerdä, aulda, alış-veriştä işleri Arika kendisi çevirirdi. Moni usluysu, münüzdü, çalışmayı sevmäzdi. Arika sa çemrekti hem biraz da kurnazdı, şalvirdi...

(Baboglu, 2006: 18)

Parçada; “Moni” ve “Arika” isimli karakterlere özgü resmedilen **ruhsal portrede** karşılaştırmalı bir dizayn söz konusudur. Moni karakteri uslu ve çalışmayı sevmeyen bir imajla betimlenirken; Arika karakteri güçlü, çevik ve kurnaz bir profille semantize edilmektedir. Böylelikle iki zıt karakterin tinsel portresini çizen yazar, okuyucunun dikkat algısını estetiksel bir izlenimle canlandırmıştır.

15.

Ştena aydınannêr. Bekilin evi. Köşedä Bekilin yayı, oklarlan kolçanı, topuzu, kalkan, mızrak hem iki kılıç: birisi incä kılıç, birisi da uz kılıç. Yanında çelik asker korumak tertipler: güüslük, omuzluklar, şlem. Evdä var iklük hem pat. Evin kapusu açık. İçerdä Bekilin karısı patta oturêr hem onun ayaklarında izmetçiykası. El işleri yapêrlar.

(Zanet, 2023: 466)

Yazar; okuyucuyu bilgilendirmek adına, izlenimlerini nesnel ve ayrıntılı bir yaklaşımla aktarmış; anlamsal doğrultuyu duygu ve düşünce vektörlerinden soyutlamıştır. İfade yörüngesinde adı geçen “Bekil” karakterine ait evi **açıklayıcı anlatım** tarzıyla betimleyen yazar, gözlem çarkını çevirirken kendinden bir şeyler katmamaya ve detay basamağını atlamamaya özen göstermiştir.

16.

Ştena ikiya bölük: sol taraf içër, saa taraf aul içi.

Aul içindâ uzun hem dayanıklı bir skemnâ. Skemnâ arkasınnan zala dooru. Aulda iki çocuk joşki oynêêr. Görüner, ani çocukların birisi yavaş, öbürü – zulumca. Zulumca pinjaklan giimli.

İçerdâ iki kapu var: birisi solda, birisi da saada – aula. İçerdâ fırın aazı, sofrâ, skemneciklâr. Sofrada örtülü ekmek tepsileri. Skemneciklerin birindâ kukla. Köşedâ küçük bir kız, arkasınnan sol kapuya, “Kuvancık” türküsünü çalarak, bulaşık yıkêêr. Kızın başında moda, önündâ dâ – fita.

(Zanet, 2023: 568)

Metinde; mekânsal portreden yansıyan nesnel görünüm, tasviri boylamın özgün âhengiyle harmonize edilmiştir. Yazar, tarafsız bölgede inşâ ettiği gözlem piramidini, **açıklayıcı betim** tarzıyla resmetmiş; genel detaylar üzerinde yoğunlaşarak objektif bir yaklaşım sergilemiştir. Ayrıca kurguladığı lirik gerçekliğe kanı ve beğeni örgelerini katmadan özgün bir izlenim yaratmıştır.

17.

Avşamdan hava açıktı. Üülen tarafından usulca esârdi bir lüzgercik. Yorgun aar çiftçilik işlerinden insannar tez yattıydılar uyumaa. Usluluk duyulardı küüdâ. Sade birkaç evdâ taa yanardı gaz lampaları. Gecâ yarısından sora kara bulutlar dübüdüz kapladıydılar gökü. Bol-bol yaamur borannan geldiydi Yarküüyün üstünâ. Durmamayıcı çimçirik çakardı, gök gürlârdi. Bir üüsek kavak aacını, yakın kliseyâ, yıldırım urduydu. Boran köktân çıkarardı aaçları, alardı fukaara evlerin kamış örtülerini. Ama tezdâ furtuna geçtiydi komşu küülerâ.

(Karagançu, 2018: 3)

Metinde; “Yarküü” adlı yerleşkede yaşanan hava olayı, yazarın özgün anlatımıyla **sanatsal bir betim** kazanmıştır. Yazar, edebi sanatlar aynasından yansıyan estetiksel çağrışımı düşsel motiflerle motive ederek okuyucunun zihin orbitalinde otantik bir imgelem yaratmıştır. Duygusallığın ve öznelğin baskın olduğu bu söylem tarzında, değişik duygulara seslenen özgün detaylar göze çarpmıştır.

18.

Geldi oktâbri. Ayın çeketmesindâ urdular yaamurlar, sora birkaç sabaa kraa düştü. Kimi fidannarda yapraklar morardılar, kimisindâ bozardılar. Baalar oldular kırmızıya bakar, koyu ohra benizindâ. Sora bir afta içindâ bu sayısız yapraan taa çoyu sergi oldu erâ da yaptı bir gevrek, senââ kokar kilim. Ayın bitkisindâ havalar oldular islââ, güneşli, nicâ yazdan kalmışlar. Bulutlar kaybeldilâr, da göktâ kaldı bir incecik, biyaz tütüncük perdesi. Alçak günün sıcaa taa yısıdardı islââ.

(Kara Çoban, 2004: 173)

Parçada; güz mevsiminin doğada yarattığı değişim ve estetiksel devinim, **sanatsal betim** kuşağında tasvir edilmektedir. Hayal gücünün ve özgün üslubun ön planda olduğu bu söylem ikliminde, sözcüklerle resmedilen düşsel faktörlerin coşkun lirizmi ilgi çekmektedir. Okuyucunun zihninde canlandırılan metaforik tasarım, yazarın duygu evrenine dair düşsel derinliği yansıtmaları açısından önem arz etmektedir.

19.

Dimu aga bir orta boylu, kalın hem biraz kamburca erif yakın etmiş yaşında. Giyimi onun – bir eski, soluk, ne zamansa eşilmiş kufayka; brezent donnarın paçaları sokulmuş kısa konçlu rizina çizmelerâ. Bir elindâ adamın – aaç saplı lomcaaz buzu delmâ deyni, öbüründâ – iki maymuncuk sapı, kısıklı koltuunda; sırtında – omuzlarında iki pateşkaylan gerili torba, angısında gücülâ belli, ani nesâ var. Adamın biyaz suratı – uzunca, sivri çenedân sarkêr keçi sakalı, kalın dudaklarını sansın halkalêêr incâ kuyrucaklı bıyıklar; ama alma gibi yanaklarından belli, ani bu – bir saalam adam; çatak-patak kaşlar az belli çakır gözlâr üstündâ; kara kalpak altından kısa enseyâ sarkêr biyaz saçlar; annısı – uurak hem üüsek. Bu adam beenârdi insan arasında gezsin, bişey annatsın yada seslesin. Yoktu onun Sazlık küüyündâ kişi, ani onu tanımasın...

(Ekonomov, 2019: 87)

Parçada; “Dimu aga” adlı karakterin **tensel portresine** özgü ince detaylar akıcı ve estetik bir dille ifade edilmiş; yaşadığı yer olan “Sazlık küüyü”nde tanınan ve sevilen biri olduğuna dikkat çekilmiştir. Eser kahramanının boyu, yüz hatları ve giyimi ile ilgili ayrıntılar öznel ve sanatsal bir tarzla iletilmiştir.

20.

Milana ufak, al-pembä yanaklı, gaytan kaşlı hem kıvrak boylu bir dilberdi. Küü çocukları çoyunun gözü onda kaldıydı. Ama o Lambuyu seçti. Hepsı şaşardı bu işä. Milana sade Lambunun omuzunadan etişärdi. Ačan onnar ikisi çıkardı horunun kenarına, gelärdi sansın bir meşa aacınnan bir kırmızı gül çiçää bakışêr. Kırmızı, zerä Milana, utanmaktan, kıp-kırmızı olardı...

(Zanet, 2014: 6)

Parçada; “Milana” adlı karaktere ait fiziksel özellikler, **tensel betimleyici anlatım** penceresinden yansıtılmıştır. Milana karakterinin yüz hatları ve boyu hakkındaki detaylar estetik bir yönelimle aktarılmıştır. Ayrıca benzetimsel bir yön çizilerek teşbih (benzetme) sanatına gizil bir gönderme yapılmıştır.

Sonuç

Araştırma evreninde, izlenimsel odaktan yansıyan ve anlam şeridini kuvvetlendiren “betimsel unsurlar” örgesine vurgu yapılmıştır. Varlık düzlemini sözcüklerle resmeden bu görsel tasarım; “sanatsal, açıklayıcı, tinsel ve tensel” bir perspektifle dizayn edilmiştir. Olay ve olguların zihinsel platformda canlandırılma eylemi, tasviri enlemin sanat odağından özgünce yansıtılmıştır. Kurgu katmanında güçlü bir izlenim yaratmak adına, duygu ve düşünce vektörleri kinestetik bir reaksiyonla aktive edilmiştir. Bu estetiksel çağrışımın anlam sınırından geçen görsel birimler ise sanatçının sıra dışı üslubunu gün yüzüne çıkarmıştır. Böylece düşsel ve reel temlerin gizil bileşimiyle harmanlanan uzamsal imgelem, tasviri veya betimsel yaratının retorik vurgusunu işaretleyerek anlam dairesini belig bir âhenkle dramatize etmiştir.

Çalışmada Gagauz yazınından akseden betimsel motifler, semantik bir yaklaşımla analiz edilerek yorumsal örgeler vasıtasıyla sesletilmiştir. Öznel ya da nesnel çağrışımlarla senkronize edilen söylem periyodu, sanatçının duygu ve düşünce enlemini lirik bir iz düşünle tasarlamıştır. Zihinsel boyutun hayal sınırlarını genişletmek ve kurgusal yörüngenin anlam iklimini zenginleştirmek çalışmanın esas gayesini görünür kılmıştır. Varlığın karakteristik yönlerini nitelemek amacıyla “sözcüklerle resim çizme” eylemi, sanatçının gizil edebi hünerini de gün yüzüne çıkarmıştır. Sanatçı, gözlem orbitaline çizdiği duygu ve düşünce eksenine düş meridyenini ekstrem bir doğrultuya taşımış, okuyucunun çeşitli duyularına hitap ederek estetiksel bir reaksiyonla imgelediği varlıkla ilgili çarpıcı bir izlenim yaratmıştır. Dolayısıyla gözlem aynasından yansıyan renk ve biçim dizgesine otantik bir haz katmıştır. Sanatçının düş yörüngesine giren okuyucu, aynı zamanda görsel atmosferin betim sınırlarını da keşfedebilmiştir. His paletini çarpıcı renklerle kuşatan bu sanatsal dizilim, Gagauz edebi ufkunu güçlendirerek yaratı tepkimesini özgün bir tarzla yeniden semantize etmiştir.

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**GREENE’S TRAVELS IN SEARCH OF A MOOD: JOURNEY WITHOUT MAPS AND THE
LAWLESS ROADS**

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ABSTRACT

Graham Greene is one of the most prominent authors of the twentieth century. Alongside prose, Greene wrote numerous works of art in different genres including poetry, drama and travelogues. He was recruited by MI6, the secret service of the United Kingdom focusing on overseas operations. His writing career and past publications created a perfect cover for his travels. These made it possible for him to gather intel under the guise of an author. His appointment required him to take notes meticulously and these notes paved the way for several novels he produced during his lifetime. He travelled widely including Liberia, Sierra Leone, Mexico, Kenya, and Vietnam and used these countries as settings for his novels. The effect of travelling on Greene’s literary production cannot be underestimated. Travelling also offers a fantastic opportunity for Greene to explore both countries of destination and an inward personal reflection. His two travelogues, *Journey Without Maps* (1936) and *The Lawless Roads* (1939), are scrutinised in this study and it is asserted that both travelling and writing on these travels are an encounter of two states of mind for Greene: of physical setting and that of Greene as a traveller. In other words, Greene perceived and observed that foreign landscapes and the mood they portrayed were easily infused. To show this, this study closely reads both texts and analyses how Greene’s childhood memories are evoked by the mood of the equally depressing landscapes.

Anahtar Kelimeler: Graham Greene, Travel Writing, Journey Without Maps, The Lawless Roads

**İLTİZAM (TAX-FARMING SYSTEM) IN THE DIYARBEKİR PROVINCE IN THE 18TH
CENTURY AND THE CHALLENGES ENCOUNTERED**

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ABSTRACT

The iltizam system was a kind of taxation method readjusted to the conditions of the time in order to address the economic problems of the Ottoman Empire. The system of iltizam refers to the delegation by the state of the duty of collecting taxes to a specific individual for a fixed annual fee.

"İlzam" refers to the assignment of iltizam, and the person to whom iltizam is assigned is called a "mültezim". Mültezims would evaluate the tax revenues, estimated income, expenses, and profits of the areas up for auction, and then make offers based on the amount they could annually pay to the state. The Treasury would typically delegate the right of taxation for a period ranging from 1 to 3 years by selecting the highest bid among the offers made.

The purpose of this study is to examine the problems encountered during the implementation of iltizam in the Diyarbakir province through examples from the Diyarbakir Ahkam Registers, which consist of complaints submitted to the Divan-ı Humayun (Imperial Council). When examining the registers containing complaints from the people and local administrators, the following problems in the functioning of the iltizam system can be identified:

1. Intervention of the sipahi (cavalryman) in the tax collection by the mültezim.
2. Dismissal of the mültezim from duty and allocation of the land to another person for iltizam.
3. Problems encountered in the collection of iltizam dues from mültezims.
4. Interference in tax collection by the mültezim.
5. Interference in the timar (land granted for military service) of the sipahi or mültezim, its produce, and tax by another sipahi, mültezim, etc.

Keywords: Ottoman, Diyarbakir, İltizam (Tax-farming system)

SENSITIVITY OF PROFESSIONALS REGARDING VIOLENCE TOWARDS DISABLED CHILDREN

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ABSTRACT

Violence against children is an important problem in all societies and still constitutes the invisible part of the iceberg. Being disabled is unfortunately one of the individual risk factors for violence against children. Although many factors contribute to the risk of violence in children with disabilities, the sensitivity of professionals working with children with disabilities towards violence is one of them. The purpose of this review is to examine the sensitivity of professionals working in this field regarding violence against disabled children. In this regard, a search was made in the "Google Scholar" database in Turkish-English between 2009 and 2024 with the keywords 'Disabled Child', 'Violence Against Disabled Children', 'Sensitivity of Professionals Regarding Violence Against Disabled Children'.

As with every child, violence is an important problem for disabled children. Disabled children's self-expression skills are not sufficiently developed, they are dependent on their caregivers, they have to live a more isolated life compared to their non-disabled peers, support mechanisms for disabled individuals are not sufficiently developed, they stay in boarding institutions, they cannot express any maltreatment they are exposed to. Having difficulty in sexual intercourse and having insufficient knowledge about sexual health may increase their risk of exposure to violence. Studies indicate that the risk of disabled children being exposed to violence is 4 times higher than their non-disabled peers, and the rate of exposure to physical, sexual and emotional violence varies between 1.5-4.5.

A multidisciplinary approach is important and necessary in preventing the risk of violence against disabled children and ensuring the child's well-being. In the multidisciplinary approach, professionals' sensitivity to violence determines their response to the violent behavior they encounter, so their sensitivity is important in preventing and intervening in violence. In the literature; It is known that parents and teachers show sensitivity towards violence against disabled children, but it seems that there are almost no studies on the field experiences of social workers, health workers, lawyers and police officers regarding their sensitivity, observations and experiences towards violence against disabled children. There is a need for studies in which the sensitivities of professionals are evaluated within the framework of a multidisciplinary approach on this subject. It is recommended to conduct descriptive, experimental and longitudinal studies on the subject in the future.

Keywords Violence Against Disabled Children', 'Sensitivity of Professionals Regarding Violence Against Disabled Children

**MICROENCAPSULATION OF CHOKEBERRY EXTRACT - BIOLOGICAL AND
SYNBIOTIC EFFECT**

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ABSTRACT

Chokeberry is renowned for its exceptional health properties attributed to its high levels of antioxidants, vitamins, and minerals. Regular consumption of chokeberry products has been linked to improved cardiovascular health, strengthened immune function, and reduced inflammation. Microencapsulation of thermolabile polyphenolic compounds of chokeberry offers a promising solution to enhance their stability and bioavailability. By encapsulating these compounds within protective matrices, their susceptibility to degradation during processing and storage is minimized, allowing for controlled release and improved efficacy upon consumption. Natural biopolymers, such as alginate, chitosan, fructooligosaccharides, galactooligosaccharides, and inulin are widely utilized in microencapsulation due to their biocompatibility, biodegradability, and ability to form stable matrices. These materials provide an environmentally friendly approach to encapsulating bioactive compounds, offering numerous benefits for food, pharmaceutical, and cosmetic applications. The prebiotic effects of polyphenolic compounds and natural biopolymers play crucial roles in maintaining gut health and overall well-being. Prebiotics serve as substrates for probiotics, stimulating their growth and activity in the gastrointestinal tract, thereby fostering a balanced and healthy gut microbiota and depression. The synergistic effect of polyphenols and *Lactobacillus* enhances gut health by promoting beneficial microbial activity and reducing inflammation. This combination can improve the bioavailability of polyphenols, thereby amplifying their antioxidant properties and overall health benefits. Therefore, this study aimed to investigate the bioactivity aspects, prebiotic and synbiotic effects, and the efficiency of microencapsulated chokeberry extract. Chokeberry extract with *Lactobacillus helveticus* underwent microencapsulation employing a combination of different carrier materials, including inulin, fructooligosaccharides, and galactooligosaccharides with combination. The resultant powders were evaluated for their polyphenolic compounds and antioxidants (ABTS, FRAP, CHP), inhibition of xanthine oxidase (XO inhibition) activities, and encapsulation efficiency. Additionally, the prebiotic value of the obtained powder against a range of probiotic microorganisms, including *Faecalibacterium prausnitzii*, *Lactobacillus rhamnosus* GG, *Lactobacillus salivarius*, *Lactobacillus plantarum*, *Bifidobacterium animalis*, and *Bifidobacterium longum* was assessed. Research findings have demonstrated the efficacy of microencapsulation in preserving polyphenols and their antioxidant activity of chokeberry-isolated powders. Encapsulation efficiency reached an average of 96% in trials incorporating a 20% addition of natural biopolymers, with particularly notable efficacy observed when utilizing a combination of galactooligosaccharides and inulin at the same concentration. Furthermore, the resultant capsules exhibited significant prebiotic activity against tested probiotic microorganisms. Well-designed and high-quality chokeberry powders present promising opportunities for harnessing the biological potential of chokeberry bioactives across diverse applications, including functional foods, synbiotics, nutraceuticals, and pharmaceuticals. This research received full funding from the National Science Centre, Poland [grant no. 2020/39/D/NZ9/01810].

Keywords: *Aronia melanocarpa*, polyphenolic compounds, microencapsulation, synbiotics, galactooligosaccharides.

**COMPARATIVE STUDY OF ESG MATERIALITY ASSESSMENT METHODS
OF VARIOUS CORPORATIONS**

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ABSTRACT

Traditionally, investment into a business had always been about the financial performance of the firm. Investors seldom looked at any other factors if they were satisfied with the numbers on the balance sheet. However, over the last few decades, events like the Enron scandal made us realize that the numbers can be manipulated and thus, it is important to look at other aspects as well. This has given rise to “Impact investing”, which investors use to evaluate the risk management of a firm before they decide to invest in it. It involves considerations of the “ESG” factors, including interactions of the firm with the environment, society and its corporate governance Standards. Corporations vary in the parameters used under ESG and in the weights assigned to each of them. The materiality assessment for assigning weights to these parameters is generally two fold, with impact materiality looking at the effect of the organization on ESG topics and financial materiality considering the impact of ESG topics on the finances of the organization. Materiality analysis procedures involve standards such as those by the Global Reporting Initiative and Carbon Disclosure Project (CDP); which are based on stakeholder engagement. These are chosen by balancing the preferences of numerous stakeholders like customers, employees and shareholders; which vary across organizations. Besides stakeholders, the focus of the industry also has considerable impact on materiality criteria. For instance, a financial services industry may give more weight to responsible lending practices, an energy industry may value investment in renewables. Similarly, the geographic location of the industry would determine whether they wish to focus on certain sustainability criteria which would increase their resilience towards specific natural disasters they may be prone to.

This paper aims to reflect on these varied parameters and study their impact on the organizations’ environmental and financial performance.

INTRODUCTION

Till a couple of decades ago, investment decisions predominantly hinged on a firm's financial performance. However, cases such as Enron's collapse highlighted how financial data could be manipulated, underscoring the need for broader evaluation criteria. This shift gave birth to impact investing, where Environmental, Social, and Governance (ESG) factors played a crucial role in assessing a firm's risk management. ESG considerations, as the name suggests, encompass a company's environmental practices, societal interactions, and governance standards, providing a comprehensive view beyond mere financials. Corporations adopt different ESG frameworks based on their unique stakeholder needs, industry focus, and geographical regulations. These frameworks include standards set by the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and others, each offering distinct approaches to materiality assessment and reporting. This paper takes examples of firms from different sectors and explores the diverse ESG parameters and their influence on both environmental and financial performance of organizations.

The rise of Impact Investing

Back in the 1990s, Enron was the apple of the investor’s eyes. Things looked very promising on the books of account and there was no reason to believe that Enron was even remotely close to failure. As a result of this, people invested millions of dollars of their hard earned money into this entity as stock prices showed a very positive upward trend. However, little did they know that the company had very skillfully been “cooking the books”. Any losses and liabilities would reflect on the books of special

purpose entities created for this purpose, while Enron would remain profitable and flush with valuable assets. Billions of dollars of debts and losses that resulted from failed transactions and projects were successfully concealed. These heavily manipulative accounting techniques kept deceitfully getting capital from the public while the reality was extremely grim. Eventually, the practices gave way and the behemoth that Enron was, buckled. Investors lost their billions and sued Enron for damages. Even the employees lost billions in pension benefits.

The discovery of the accounting fraud at Enron sent shockwaves through the world of finance. The implications were such that its accounting firm – among the top five largest audit and accountancy partnerships in the world, had to be dissolved. This led to a big shift in the way investors analyzed a firm from the point of view of investment. Recognizing the fact that the financial performance could appear healthy even when there is heavy mis-governance, people began demanding more and more transparency and oversight. The investment strategies of people evolved in such a way that financial performance of the firm was no longer the only consideration. Several other factors began being brought under scrutiny, all of which can broadly be categorized into the three heads of ESG – Environment, Society and Governance. The Environmental aspect comprises a study of how environmentally sound the practices of the organization is, including the use of renewable resources, control of green house gas emissions, the extent of recycling, water utilization, wastage and pollution control etc. The Society aspects of ESG encompass how well does the organization interact with the society, of which it is a part. This includes emphasis on Diversity and inclusiveness, health, safety and working conditions for the employees and sharing of resources with local communities. Finally, the governance factor, which is where Enron's colossal failure occurred consists of transparency, oversight, ethical standards and shareholder rights.

Materiality Analysis and Reporting Standards

In ESG, materiality assessment is the key tool used to understand and prioritize ESG issues vital to an organization (Conserve ESG, n.d.). This exercise helps arrive at a materiality matrix, which determines what is the most important for stakeholders and helps the company map its business strategy by taking sustainability into consideration. Different organizations have developed their own materiality analysis frameworks, each having unique features.

The most widely used of these standards are those set by the **Global Reporting Initiative (GRI)**. It enables transparency by having a stakeholder-centered approach. It accounts for the perspective of a wide range of stakeholders- employees, customers, investors and civil society. Materiality topics are chosen in such a manner to prioritize the stakeholders' interest, reflecting the organization's significant economic, environmental, and social impacts. The GRI process involves identifying potential material topics, assessing their significance through stakeholder engagement, and prioritizing the topics based on their relevance to the organization and stakeholders to come up with an easy-to-use modular set of universal standards, sector standards and topic standards (GRI, 2021).

However, the **Sustainability Accounting Standards Board (SASB)** focuses on the financial materiality of sustainability issues from the perspective of investors. As it is industry-based, it is cost-effective for companies to provide. It helps find as materiality topics, the subset of sustainability issues which is the most crucial to financial performance. This makes it of interest to investors. These standards are tailored to the industry that requires it (SASB, 2024). It provides investors and other market participants with a visual representation of the potential risks and opportunities associated with sustainability.

International Integrated Reporting Council's (IIRC) approach involves promoting integrated reporting, combining financial and non-financial information to provide a holistic view of the organization's value creation over time. Consequently, its material issues are the ones which influence the firm's capacity to generate some value over the short, medium, and long term. The process of involving materiality factors in IIRC's framework involves identifying and assessing risks and opportunities, considering both internal and external factors that impact value creation. (integratedreporting.ifrs.org, n.d.)

The **Task Force on Climate-related Financial Disclosures (TCFD)** focuses on climate-related risks and opportunities that are financially material. It is based on risk assessments, capital allocation and

strategic planning. Thus, its materiality definition involves climate-related issues as those that could have a significant financial impact on the organization. In order to decide on these criteria, the TCFD recommends a specific approach for identifying, assessing, and disclosing climate-related financial risks and opportunities, including scenario analysis to understand potential future impacts. The recommendations are centered around four thematic areas- governance, strategy, risk-management, targets and metrics (TCFD, 2023).

In the case of **CDP (formerly Carbon Disclosure Project)**, the emphasis is on environmental impacts, particularly related to climate change, water security, and deforestation. Material topics are chosen considering environmental impact as the primary agenda, and is decided by the relevant stakeholders, particularly investors. CDP's process of analyzing companies involves detailed questionnaires that help organizations disclose their environmental impacts, strategies, and performance metrics (CDP, 2023).

European Financial Reporting Advisory Group (EFRAG) supports the development of European sustainability reporting standards, considering both financial and non-financial impacts. Here the material topics chosen are those that are relevant to understanding the company's impacts on the economy, environment, and people, including impacts that affect the company's value. EFRAG's approach is still evolving, but it involves extensive stakeholder consultation and alignment with European Union regulations and policies (EFRAG, 2023).

We see that though all the reporting standards are similar in essence, there may be slight differences. As for stakeholders, GRI and CDP emphasize a broader stakeholder approach, while SASB, TCFD, and IIRC focus more on the needs of investors. They also differ in their scope for materiality, with GRI and CDP considering a wider range of impacts (economic, environmental, and social) when compared to SASB and TCFD, which concentrate on financial materiality, particularly from investors' perspectives. They also vary. In their specificity towards the industry, SASB provides detailed, industry-specific standards, while GRI offers more general guidelines applicable across industries. Also, while most of the criteria are valid across wide geographic distributions, EFRAG specifically addresses European requirements and regulations, aiming to harmonize with EU policies. Understanding these differences helps organizations align with the most relevant standard for their context and stakeholder needs.

The Adoption of Different Standards by Various Corporations

The adoption of different materiality analysis standards discussed above by corporations often depends on the nature of their business, their stakeholder base, regulatory requirements, and strategic goals.

For instance, Unilever, a consumer goods company with a broad stakeholder base comprising customers, employees, suppliers, and communities, opts for the GRI standards. In 2021, it prepared its sustainability disclosure report using GRI standards to report on a wide range of sustainability issues, reflecting its comprehensive approach to corporate responsibility and its impact on various stakeholders. Unilever's sustainability report includes detailed disclosures on environmental impacts, social contributions, and governance practices, aligning with GRI's multi-stakeholder approach. This includes topics like climate action, sustainable sourcing, water usage, human rights and community development (Unilever PLC, 2021).

On the other hand, Nike, which is a multinational corporation in the apparel and footwear industry, has a considerable amount of investor interest. Thus, it incorporates SASB standards to address financially material sustainability issues relevant to its industry. Nike's reporting includes SASB's industry-specific metrics such as labor practices in the supply chain, environmental impacts of product manufacturing, and management of chemicals. It also has a detailed metric to study the environmental impact of the supply chain. This helps guide investors in comprehending the financial implications of these sustainability issues (Nike, 2022).

Shell, a major energy company, adopts TCFD recommendations to disclose climate-related financial risks and strategies- in the face of major climate risks and opportunities for its sector. Its TCFD-aligned disclosures include scenario analysis, detailing how different climate scenarios might impact the company's business model, asset portfolio, and financial performance. They report on their transition plans towards renewable energy and carbon reduction goals (Shell Energy Transition Progress Report 2022, n.d.).

Novo Nordisk, a global healthcare company focused on diabetes care and other serious chronic diseases, uses the IIRC framework to provide a holistic view of how it creates value over time. Its Sustainable Advisory Council generates an integrated report which combines financial and non-financial information, showcasing how environmental, social, and governance (ESG) factors are integrated into their business strategy. This includes patient access to medications, product quality and patient safety, progress in the R&D and regulatory approval, responsible pricing strategies, and climate action initiatives. (Novo Nordisk, n.d.)

Walmart, a global retail giant with significant environmental impact through its supply chain participates in CDP's climate change, water, and forestry programs to disclose its environmental impacts. Walmart's CDP disclosures include detailed information on greenhouse gas emissions, water usage, and efforts to reduce deforestation in its supply chain. This transparency helps the brand address environmental concerns and meet investor and customer expectations (CDP Response Archive, n.d.).

Finally, we look at Siemens, a European multinational conglomerate with diverse industrial operations. It aligns its sustainability reporting with EFRAG's evolving standards to comply with European regulations. Siemens' sustainability reports focus on issues relevant to the European context, such as energy efficiency, digitalization, and workforce diversity. They provide comprehensive disclosures that meet EU requirements, emphasizing their contribution to the European Green Deal (INVITATION TO COMMENT ON EFRAG'S ASSESSMENTS ON Lease Liability in a Sale and Leaseback, n.d.).

Key Takeaways:

- **Extent of Industry Influence of the Corporation:** Corporations in different industries face unique materiality issues. For instance, energy companies like Shell focus on climate-related financial disclosures, while consumer goods companies like Unilever address a broader range of sustainability issues.
- **Stakeholder Needs: of the Company** The choice of standards often depends on whose needs the corporation prioritizes. Investor-focused companies might adopt SASB or TCFD, while those with a broader stakeholder focus might choose GRI.
- **Regulatory Environment of a Specific Region:** Companies operating in regions with specific regulatory requirements, like Siemens in Europe, might align with regional standards such as those developed by EFRAG.
- **Strategic Goals of the Company:** The strategic priorities of the corporation also play a role. Companies aiming for holistic value creation and long-term sustainability might adopt the IIRC framework for integrated reporting.

By adopting these standards, corporations can ensure that their sustainability reporting is relevant, reliable, and aligned with the expectations of their stakeholders.

The Demerits of ESG

While it cannot be denied that ESG investing makes investment decisions a lot more well considered and thoughtful, there certainly are some demerits to it. The primary demerit emerges from the very essence of what this research aims to evaluate: the subjectivity in the manner of ESG evaluations. Since there are no set criteria, some firms may appreciate and highly mark certain practices, which on the other hand, may add no value if judged with the criteria of another firm. Secondly, even though the main idea behind ESG is to promote sustainability, there may be instances where it turns out to be counter-intuitive. Organizations being evaluated may align their practices superficially to appear all nice and shiny specifically according to the ESG criteria, but may actually be not as beneficial for the environment, society or may not actually involve sound governance. By doing so, they will manage to appease investors and score well in terms of ESG criteria, but would not actually be acting in accordance with the spirit of ESG.

Thirdly, unlike financial performance, it is not very easy or straightforward to evaluate organizations on ESG criteria. The financial statements and accounts are traditionally part of mandatory filings and disclosures, which all organizations have to mandatorily do in a standardized form. This makes comparisons easy, as the evaluator really knows that he/she is comparing apples to apples. On the other hand, when it comes to ESG criteria, such as environmentally sustainable practices or the soundness of the governance mechanism of the firm, there is no requirement for mandatory disclosure of the data pertaining to this. Whatever is available is what has been presented voluntarily by the corporation out

of its own will and hence, may involve deliberate concealments or embellishments. This is also not easy to compare with other similarly placed corporations as each one may have its own unique manner of presenting the information. Finally, it is possible that conducting ESG evaluation will involve additional costs over a basic financial assessment, as it involves studying a lot more dimensions and factors.

CONCLUSION

ESG investing represents a significant evolution in how investment decisions are made, aiming to provide a more holistic view of a firm's sustainability and ethical practices. However, it comes with challenges such as subjectivity in evaluations, potential superficial compliance by organizations, and lack of standardized mandatory disclosures, which can lead to inconsistencies and additional costs. Despite these drawbacks, the integration of ESG factors into investment strategies of a number of companies such as Siemens, Walmart and Novo Nordisk reflects a growing recognition of the importance of sustainability and ethical governance in achieving long-term value. As businesses and investors continue to navigate these complexities, the ongoing refinement and adoption of diverse ESG standards will be crucial in promoting transparency, accountability, and genuine sustainable practices across industries. This shift towards impact investing underscores the evolving priorities of stakeholders and the need for a balanced approach that considers both financial and non-financial aspects of corporate performance.

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PREVALENCE OF TOXARA CATIS IN PETS CATS IN BELGRADE AREA

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ABSTRACT

In the aim of evaluating the intestinal parasites fauna of pet cats from Belgrade area, in period 2020-2023, we performed a parasitological examination of the 271 pet cats. All cats brought for examination from Veterinary clinics in the Belgrade. All animals had clinical symptoms that indicated parasitic infections (weight loss, stunted growth, notice the presence of proglottids crawling on its feces, feces with blood, etc.). Fecal samples we examined with flotation methods by McMaster and Richardson-Kendell. Determination of parasite eggs was made on the basis of their morphological characteristics. During our examination we found presence of *Toxocara cati* in 6.48% of examined cats, in most . In cats infected via ingestion of larvated eggs in feces or soil, the larvae will migrate through the liver, lungs, and trachea, where they are ultimately coughed up and swallowed, and then mature to adults in the small intestine. In contrast, when a cat is infected via ingestion of larvae in a paratenic host (e.g., a mouse or, less commonly, an earthworm, cockroach, etc), the larvae mature without migrating to the liver or lungs. The larvae can also move throughout the body and cause more damage to the infected individuals. Rarely, kittens are infected by transmammary transmission from acutely infected lactating cats and in these kittens, larvae mature without hepatopulmonary migration. Infected kittens will exhibit illthrift, diarrhea, and a pot-bellied appearance; adult cats may vomit, and adult ascarids are occasionally found in the vomitus. It is possible for *Toxocara cati* to be transmitted to humans, usually as a consequence of humans consuming the larval stage of the parasite, resulting in a condition known as toxocariasis. Typically, this happens when an individual pets an infected cat, picks up the parasite off of the fur and touches their face before washing their hands. The larvae migrate through the viscera in humans. Depending on the location and number of the larva in the human host, the disease can either be asymptomatic or cause conditions such as fever, cough, pneumonia, and vision loss. The two more severe forms of the disease are visceral toxocariasis and ocular toxocariasis.

Keywords: cats, *Toxocara cati*, zoonoses

**APPROACHES TO URBAN HOUSING: CONSTRUCTION, DEMOLITION, AND
REHABILITATION**

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ABSTRACT

Housing strategies play a fundamental role in shaping not only the physical environment of urban areas but also the social dynamics within them. The choices made by architects and planners regarding how to address housing issues can significantly impact residents' quality of life, community cohesion, and societal perceptions. This exploration delves into three primary approaches to housing—construction, demolition, and rehabilitation—and examines their effects on urban development and social integration.

Building involves creating new housing spaces that are structurally sound, healthy, and functional. This approach not only provides shelter but also incorporates emotional and symbolic aspects, contributing to a sense of belonging and comfort for residents. Examples from history, such as the "Islands" of Porto and the Economic Neighborhoods of the Estado Novo, illustrate varying degrees of success in fostering community relationships and integrating residents into broader society.

Demolition is often considered a last resort for addressing substandard housing conditions. While it aims to remove physical manifestations of stigma and improve living standards, demolition can have profoundly negative effects on displaced residents. These include loss of community, disruption of social networks, and increased pressure on infrastructure and services. The destruction of housing also perpetuates feelings of exclusion and helplessness among inhabitants, reinforcing negative stereotypes.

Finally, rehabilitation focuses on restoring and improving existing housing conditions. This approach positively impacts residents by enhancing their quality of life, health, and sense of ownership. It also strengthens community bonds, preserves architectural heritage, and can boost the local economy. Rehabilitation fosters social equity and integration, transforming residential spaces into vibrant, sustainable communities.

Keywords: Community Empowerment; Social Stigma; Housing Crisis; Public Perception; Cultural Preservation

Introduction

Housing stands as a pivotal element in the fabric of urban society, transcending its basic function of providing shelter to encompass broader dimensions of community, identity, and social well-being. As cities expand and populations grow, the architectural and urban planning decisions surrounding housing become increasingly critical. These decisions not only shape the physical landscape but also influence social dynamics, economic opportunities, and cultural cohesion within urban environments.

Construction involves the creation of new residential spaces, aimed at meeting the growing demand for housing. Beyond erecting physical structures, this approach embodies aspirations of fostering vibrant communities, promoting social interaction, and enhancing residents' quality of life. Demolition, conversely, represents a response to the challenges posed by aging, substandard, or stigmatized housing. It is often viewed as a means to eradicate blight, improve living conditions, and revitalize urban areas. However, demolition carries significant social costs, including displacement, community fragmentation, and the loss of historical and cultural heritage embedded in these spaces. Rehabilitation presents a nuanced approach that seeks to rejuvenate existing housing stock while preserving community ties and historical continuity. It focuses on enhancing living conditions, revitalizing neighborhoods, and integrating marginalized communities into the broader urban fabric.

This study examines these three housing strategies through historical contexts and contemporary examples, aiming to elucidate their respective impacts on urban resilience, social equity, and cultural sustainability. By exploring the advantages, challenges, and societal implications of each approach, it

seeks to contribute to a comprehensive understanding of how housing interventions shape the socio-spatial dynamics of modern cities.

Materials and Methods

Study Design: The research adopted a qualitative methodology as it sought to explore the subjective experiences and perceptions of individuals residing in diverse housing environments. This approach was chosen to capture nuanced insights into how architectural design influences social interactions, community identity, and residents' quality of life.

Data Collection: Semi-structured interviews and focus groups served as primary data collection methods. Interview guides were developed to explore participants' perceptions of their living spaces, neighborhood cohesion, and interactions within the community.

Data Analysis: Thematic analysis was employed to systematically analyze the qualitative data. This process began with open coding to identify initial patterns and themes emerging from the transcripts. Through axial coding, connections between these themes were established to elucidate overarching insights into the social implications of housing architecture.

Limitations: While the study provided valuable insights into urban housing contexts, its findings may not be fully generalizable to rural or peri-urban settings due to the focus on specific geographic locations and demographic groups. Potential biases, such as social desirability and recall bias, might have influenced participant responses despite efforts to minimize these effects.

Data Availability: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. This transparency promotes openness in research practices and facilitates future collaboration and verification of findings within the scholarly community.

A Three-Directional Act

The architect's approach to housing issues is crucial and directly influences how society views residential spaces. Architecture has a close relationship with the social paradigms of its environment; at least three ways of acting upon it can be identified: construction, creating new housing spaces; demolition, attempting to dissipate stigma by removing its physical manifestation in a given location; and rehabilitation, improving the image and housing qualities of the complex and, concurrently, the way its inhabitants are perceived. This section aims to understand the impact of each of these approaches, considering their advantages and disadvantages for the resident, society, and architectural space. However, it should be noted that each situation is unique and must be evaluated according to its context.

The Act of Building: A Symbol of Urban and Social Transformation

To build, v. tr.

To gather and methodically arrange the parts of a whole.

Starting from the etymological meaning of the word "to build," it is understood that this act involves gathering parts. These components will include not only the physical and constructive aspects of the housing but also its symbolic side, which encompasses the emotional aspect of the inhabitant. Therefore, for a dignified home to be effectively built, it must not only be healthy and structurally sound but also functional and capable of offering comfort. A construction that does not meet these parameters cannot be considered dignified for the inhabitant. For example, a construction with techniques that do not prevent the appearance of pathologies that may affect the health of the inhabitants, or a home that is not adapted to the climate of its location; poor interior spatial organization or insufficient space to accommodate all its inhabitants. Finally, there is the question of the housing location on a macro scale: whether the socialization networks are conducive to a good relationship between the inhabitants, their neighbors, and society at large.

The act of building is essentially positive for the inhabitant; however, when these principles are ignored, the possibility of a dignified life in the housing is compromised from the start. Housing is a mirror of its inhabitant, observable by society as a whole. Thus, the symbolism of housing involves a matter of appropriation, when the inhabitant tries to make their home more comfortable, "more theirs" by personalizing it and making it unique, using symbols such as decorations, photographs, among others, which define the home as singular, just like its inhabitant. This factor allows for the creation of a timeline within the home itself, functioning as a network of affection among the inhabitants, and as an exhibition for those who visit the home.

From the 19th century to the present, various examples integrate the act of building, such as the "Islands" of Porto, the Economic Neighborhoods of the Estado Novo, and the SAAL Neighborhoods, each with different parameters of comfort, location, and the possibility of creating social networks. In the case of the Islands, their urban organization, behind bourgeois residences, constituted a factor of marginalization and isolation of this social stratum; on the other hand, the formal organization of these housing spaces favored the production of neighborly relationships, through the exterior corridor that distributed access to the homes and also functioned as a common space, ensuring a sense of community among the inhabitants. "A dense network of family relations and neighborhood solidarities (...)" Considering the importance of 'vicinalities' generated in the space of the islands, it can be concluded that working families may have faced very difficult living conditions, even in extreme poverty, but rarely would they have experienced isolation."

The Economic Neighborhoods, by contrast, due to their peripheral locations, did not contribute to the formation of neighborhood relations, as the architectural design of the space was not conducive to the production of these relationships. "These neighborhoods act as true contexts of stigmatization, and the interviewees, or those actively responsible for producing these images, are actors whose opportunities, projects, and identities are irremediably linked to the negative public images of their residential contexts." Thus, it can be inferred that the architectural design of the residential space is crucial for producing neighborly relations and for the "presentation" of its inhabitant to society at large. Both in the islands and in the neighborhoods, their image was completely antithetical to the surrounding buildings, leading to a process of spatialization of poverty. Social spaces have a dual nature, being both public and private. They play a crucial role in mediating individual transactions and behaviors, as well as expressing various sociocultural issues. Economic neighborhoods can be characterized by "a scarcity of leisure and social spaces. They represent residential monofunctionality, being far from the economic, social, and cultural centers of the city (contributing to their visibility and stigmatization) and lacking collective structures."

The improvement of housing spaces has accompanied the shift in social thinking regarding the issue; after April 25th, in the SAAL housing, the goal was not only to achieve a good geographical location for new housing complexes but also to dignify the housing space. The architect worked to address all needs, improving not only the interaction among inhabitants but also their relationship with the city and society. The models analyzed so far interact differently with society, presenting various forms of communication with it; in turn, they are also perceived differently by those who do not live there. The different forms of communication of these housing complexes with the rest of society can have varying effects on citizenship, socialization, and integration. "Exclusion consists not only of the economic impossibility of choosing one's housing or any other symbolic asset that urban society imposes or proposes as a norm of integration, but also results from the stigmatizing social image of certain population categories, an image developed from different perspectives (physical, such as ethnic origins, material, such as the appearance of the construction or its location, sociological, psychological, or cultural) interpreted as signs of social value by other groups. Exclusion is not only in the economic or material order but also in the symbolic order, in the representations that individuals or groups make of themselves and others."

The Act of Demolishing: A Mark on the Territory, the Inhabitant, and Society

To demolish, v., tr.

To tear down; destroy; raze; annihilate;

The act of demolishing housing is one of two solutions that can be considered for precarious housing, the other being rehabilitation. Demolition holds a profoundly negative character, destroying housing not only as a shelter but also as a social space. Moreover, demolition will have consequences not only at the inhabitant's scale but also at the community and society scales.

Currently, many social neighborhoods built in the 1970s have problems not only due to precarious conditions caused by lack of maintenance but also because they depend on social action mechanisms that are clearly incapable of ensuring their conservation.

Thus, it is possible to perceive a strong distinction in the territory between urban continuity spaces and spaces of growth, dispersion, diffusion, or urban eccentricity, largely excluded from the debates on the 'crisis of the city.' The territory itself demonstrates physical traces of segregation where social inequalities and polarizations are extrapolated. In this sense, it is possible to analyze the significant impacts of demolition on inhabitants:

- **Displacement and Homelessness:** The demolition of housing leads to the displacement of communities, causing instability in socialization and leading to a lack of a sense of belonging;
- **Deterioration of Quality of Life:** While the motivation for demolition may be due to the unhealthiness of housing and the attempt to rehouse these inhabitants in homes with dignified conditions, the inhabitant, who lived in inhumane conditions, loses the few positive aspects they had from a social point of view;
- **Community Disintegration:** The constant demolition of unhealthy housing and the rehousing of inhabitants in the outskirts led to the total disintegration of communities;
- **Access to Services:** For vulnerable populations, sudden relocation exacerbates the problem due to the abrupt change in the location of the home;
- **Disruption of Education and Work:** The location of an individual's home establishes a connection perimeter with all dimensions of their life. Thus, with demolition and the need to find new housing, this network of connections is lost, leading inhabitants to find new jobs near the home and new schools for children within that perimeter. This factor disrupts inhabitants' routines and may create obstacles in education and professional life;
- **Redistribution and Rehousing of Inhabitants:** Demolishing housing implies that inhabitants are relocated to other areas. This factor leads to a new community receiving these inhabitants; schools, social services, industries, and other workspaces may suffer from increased pressure;
- **Pressure on Infrastructure:** With the relocation of several families, infrastructures like roads, water systems, among others, may be overloaded. Additionally, the demand for public transport and support systems will be much higher; thus, the lack of response to these needs affects all inhabitants in general;
- **Change in Community Identity:** New inhabitants will impact the community as they did not choose to move. Feelings of anguish and resentment towards the new spaces will destabilize the community.

Therefore, there are various social, economic, and political impacts of demolition. Demolishing a space carries an unresolved nature that further stereotypes it. Finally, it carries the idea that its inhabitants are at the mercy of others' will, characterizing them as spectators in a narrative where they lose the leading role. Thus, when deciding to demolish a space as a means of dissipating stigma, the opposite occurs, connoting the problem as unresolved, consequently emphasizing the stigma further. Hence, it can be concluded that the act of demolishing has a significant negative impact on relocated inhabitants, communities, and society at large. Thus, demolition should be considered a last resort, taking into account its social consequences. In the case of the Islands of Porto, the need for demolition was due to high levels of unhealthiness, insecurity, and substandard housing conditions. This decision led to the abandonment of the Island model and the consequent increase in peri-urban peripheral neighborhoods, which did not provide comfort and security to inhabitants.

As previously analyzed, demolishing does not present itself as the best option; however, in recent years, it has been employed in various contexts, representing a last resort after unsuccessful attempts at

rehabilitation. The architect is then faced with the challenge of rehabilitating the inhabitant's relationship with the city and society.

The Act of Rehabilitating: The Transformation of the Residential Space and Its Repercussions

To rehabilitate, v., tr.

To restore to a good condition or healthy state; to reform.

The etymological meaning of the word rehabilitation suggests a transformation, a positive return to previous conditions, in a progressive sense. From this perspective, we can see that when it comes to housing, this term suggests the improvement of conditions for inhabitants in multiple dimensions.

-Inhabitants: Rehabilitation directly impacts the inhabitants of the space by improving their quality of life. They benefit from improved housing conditions, enhanced comfort, and the potential elimination of pathologies, directly affecting their health. Besides the physical aspect, rehabilitating the housing space influences the sense of ownership and belonging of inhabitants to their space;

- Community: Improving the residential space will have positive impacts on the community in general, leading to a strengthened sense of community belonging, which can be translated into improvements in local security and the relationship among the inhabitants of the residential space;

- Society: Rehabilitation of the housing space can also impact the inhabitants' view of society, as well as the perception of this place by others. The transformation of the housing space can lead to improved neighborhood relations and the establishment of an integrated community, thereby creating a sense of social equity;

- Architectural and Urban Heritage: Rehabilitation can contribute to the preservation of the built environment's heritage, respecting the architectural style of the place and its surrounding spaces, and promoting the harmonious coexistence of historical and contemporary elements;

- Economy: It is necessary to take into account the economic aspect of rehabilitation, as improved housing spaces can lead to increased market value and the consequent revitalization of urban areas. Thus, the act of rehabilitating residential spaces has a transformative character, leading to various positive impacts on the social, economic, cultural, and environmental dimensions.

Thus, the act of rehabilitating can have far-reaching positive consequences, transcending mere physical improvement of space and contributing to a profound transformation of the inhabitants' lives, the community, and society in general.

Results

Architectural Features and Social Dynamics: The study identified several key architectural features that significantly influence social dynamics within residential communities. Participants highlighted the importance of spatial layout in fostering or inhibiting social interactions. Open communal spaces were universally praised for promoting neighborly engagement and fostering a sense of community cohesion. Conversely, dense and compartmentalized housing layouts were associated with reduced social interaction and a lack of communal bonding.

Perceptions of Quality of Life: Participants' perceptions of their quality of life were closely linked to the functionality and aesthetics of their living environments. Modern amenities, such as green spaces, recreational facilities, and well-designed public areas, were instrumental in enhancing residents' well-being and satisfaction with their living conditions. The integration of sustainable architectural practices, such as passive design principles and energy-efficient materials, also received positive feedback for contributing to a healthier and more comfortable living environment.

Community Identity and Sense of Place: The architectural design was found to play a crucial role in shaping community identity and residents' sense of place. Historical and cultural elements integrated

into building aesthetics were valued for preserving local heritage and fostering a collective identity among community members. Participants expressed pride in architectural features that reflected their cultural roots and contributed to a distinct neighborhood identity.

Challenges and Concerns: Despite the overall positive associations with well-designed architecture, challenges were identified related to affordability and accessibility. Low-income neighborhoods often lacked investment in architectural enhancements, leading to disparities in housing quality and community amenities. Participants emphasized the need for equitable urban planning policies that prioritize inclusive design principles and ensure access to essential services for all residents.

Discussion

Implications for Urban Planning and Policy: The findings underscore the critical role of architectural design in shaping social interactions and community well-being. Urban planners and policymakers can leverage these insights to inform future housing developments and neighborhood revitalization efforts. Integrating participatory design processes that engage residents in decision-making can foster community ownership and ensure that architectural interventions align with local needs and preferences.

Sustainable and Inclusive Design Practices: Promoting sustainable architectural practices, such as passive design strategies and renewable energy integration, emerged as a key recommendation for enhancing environmental sustainability and reducing carbon footprints in urban areas. Inclusive design approaches that prioritize accessibility and affordability can mitigate social inequalities and create more resilient communities.

Preserving Cultural Heritage: Preserving cultural heritage through architectural design not only strengthens community identity but also promotes tourism and economic development. Collaborative efforts between architects, local communities, and cultural heritage experts are essential for safeguarding architectural landmarks and promoting their significance as assets for sustainable development.

Future Research Directions: Future research should explore longitudinal studies to assess the long-term impacts of architectural interventions on community cohesion, residents' well-being, and urban sustainability. Comparative studies across diverse geographical contexts could further elucidate universal principles of effective architectural design and their contextual variations.

Conclusion

In conclusion, the approaches of constructing, demolishing, and rehabilitating housing are not merely technical interventions but profound societal choices that shape the urban landscape and influence the lives of inhabitants. Each approach carries its own set of implications, reflecting broader societal values, economic considerations, and urban planning philosophies.

Each approach—construction, demolition, and rehabilitation—thus plays a crucial role in shaping the socio-spatial dynamics of cities. The choice among these strategies necessitates a nuanced understanding of local contexts, community needs, and long-term urban planning goals. Effective housing interventions should prioritize inclusivity, resilience, and sustainability, aiming to create equitable and thriving urban environments where all residents can live with dignity and opportunity.

As cities continue to evolve, the discourse surrounding housing strategies remains pivotal in navigating the complexities of urbanization, inequality, and cultural preservation. By critically evaluating these approaches and learning from past experiences, urban stakeholders can chart a path towards more equitable, resilient, and socially cohesive cities for generations to come.

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**THE POSSIBILITY OF BALKAN TRANSLATION STUDIES AND CULTURAL
TRANSLATION**

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ABSTRACT

Literary critic and comparatist Emily Apter in her work *The Translation Zone*, proposes several theses regarding translation. First she suggest that nothing is translatable and at the same time everything is translatable, but also that "the translation zone is a war zone" and "translation might be a traumatic loss of native language" (2006: xi). The last two theses are especially applicable in relation to translation studies focused on the so-called "small" or "peripheral/marginal" Slavic languages (according to the terminology of F. Kafka and G. Deleuze and F. Guattari) and the languages within the Balkan Sprachbund. There is a perception of the Balkans as a neuralgic and politically unstable region with a traumatic war past, old and current inter-national conflicts and unresolved issues, among which are the questions of some of the Slavic national languages, their distinctiveness and individuality in relation to the others, linguistically close and related languages. However, in this text our aim is to discuss the possibility of joint Balkan translation and cultural studies, commenting on the positive example of the "Balkanika" International Literature Award dedicated to writers from 8 Balkan countries (North Macedonia, Bulgaria, Albania, Serbia, Montenegro, Greece, Türkiye and Romania). This literary award has the noble premise of cultural cooperation and cultural translation with the common language of peace, cultural openness and the desire for mutual understanding, exchange and cultural enrichment based on understanding and support between these Balkan countries, as an opposite and counterbalance to the numerous political conflicts, nationalist and hegemonic tendencies and interstate problems. Hence, through the example of "Balkanika" Literary Award, we want to point out to the possible advantages of the comparative and regional approach in the study of separate national languages towards more successful and more appropriate language and cultural translations, despite the numerous challenges of the approach.

Keywords: regional translation studies, Balkanika Literary Award

**A COMPARATIVE RESEARCH ABOUT PERCEPTION OF BLOCKCHAIN
TECHNOLOGY: TÜRKİYE AND PAKISTAN CASE**

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ABSTRACT

Blockchain, originally developed for cryptocurrency, has evolved into a versatile tool with applications extending into financial services, supply chain management, healthcare, real estate, identity verification and many other sectors. By leveraging blockchain's core attributes—decentralization, immutability, and transparency—organizations can significantly improve customer services, reduce operational costs, and streamline processes. This decentralized technology is fundamentally altering how data is managed, transactions are processed, and assets are tracked, with implications far beyond the financial sector.

This study explores the multifaceted impact of blockchain technology across various industries in Türkiye and Pakistan, focusing on its potential to enhance transparency, security, efficiency, and cost-effectiveness in business operations. The aim is to systematically examine how blockchain is perceived and implemented across different cultural and national contexts, identifying key factors that influence its adoption. This research can significantly benefit various sectors and the community by providing insights into the effective implementation of blockchain technology in Türkiye and Pakistan. This study guides various sectors in adopting secure, efficient blockchain processes by analyzing its impact and cultural differences, driving innovation, improving customer services, reducing costs, and enhancing operational efficiency in various sector and cultural settings.

The methodology involves administering a questionnaire formed by a perception scale with 26 items and 5 subdimensions: Quality Customer Services, Reduced Cost, Efficiency and Security, Secure Remittance, and Regulatory Compliance. Data were analyzed using independent sample t-tests, ANOVA, correlations, and logistic regression to uncover patterns of blockchain integration and its perceived impacts on business operations in these cultural settings. Findings suggest statistically significant levels of perceptions and differences between two countries.

Keywords: Blockchain, Decentralization, Technology Adoption

**A STUDY ON THE 5-YEAR CHANGES ON THE ANTHROPOMETRICS DATA OF
ALBANIAN BODYBUILDERS**

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ABSTRACT

Bodybuilding is the process of building muscle through the combination of many elements such as: weight, training, nutrition, diet and rest. It is sport that requires many training strategies for maximising overall the muscle system performance. Success in bodybuilding is mainly three components: muscularity, symmetry and definition. Observing and controlling anthropometric parameters of bodybuilders is very important, because it is related to the competition results. The purpose of this study is to identify the changes of all anthropometrics data during a 5-year period of time for the Albanian bodybuilders. The used method for assessment of anthropometric data through usual tape measurement. These measurements included girth and circumference for shoulder, chest and waist respectively. All the participants were measured during the championship for bodybuilding category from 2017-2022. The results of this study show that there is no significant changes between the age groups for weight, body mass index (BMI) and force. From the comparison of the anthropometric data of circumference, it is noticed that for three parameters assessed bodybuilders had the highest circumference during the last year. This increasing trend that has been seen progressing from year to year, in these 5-years, is thought to be related to the post-pandemic situation of Covid 2019.

Keywords: bodybuilding, anthropometric data, body mass index (BMI)

Introduction

Bodybuilding is a sport that requires adequate training strategies in order to maximize skeletal muscle hypertrophy (Alves et al., 2020). Bodybuilding is the process of building muscle through the combination of many elements such as: weight, training, nutrition, diet and rest. It is sport that requires many training strategies for maximising overall the muscle system performance. Success in bodybuilding is mainly three components: muscularity, symmetry and definition. Observing and controlling anthropometric parameters of bodybuilders is very important, because it is related to the competition results. The training program of bodybuilder include split training. Resistance Training Split routines were used by all competitive bodybuilders as opposed to training all the major muscle groups within each session (whole-body training sessions), with a frequency of 5–6 training sessions per week. Muscle groups trained in these sessions included the chest, upper and lower back, shoulders, thighs, hamstrings, buttocks, arms, calves, and abdominals. In contrast to the split-training routines reported in the aforementioned studies, a recent case study (Schoenfeld et al., 2020) reported whole-body training routines and a training frequency of 5–6 times per week for most weeks. (Trabelsi et al., 2012) observed variations in non-competitive bodybuilders training routine, in which changes that occur in body composition and markers of renal function in bodybuilders during Ramadan were verified. Self-reported practices of competitive bodybuilders suggest that these athletes separate training into off-season (OFF) and pre-competition (PRE) phases (Manore et al., 1993). Within the OFF phase, bodybuilders are commonly cited as following high-volume (repetitions 3 sets 3 load) split training routines, which involve training muscle groups once (6- day split) or twice (3-day split) per week (Kraemer, W. J., & Ratamess 2004). Bodybuilders reportedly perform large volumes of aerobic exercise accompanied with caloric restriction during this phase to help increase the rate of fat loss (Hackett et al., 2013). As a sport, bodybuilding has been the subject of study in gender-related research, with a great deal of this work having been conducted in gyms rather than at competitions (Parent et al., 2022). The optimal characteristics of strength-specific programs include the use of concentric (CON), eccentric (ECC), and isometric muscle actions and the performance of bilateral and unilateral single- and multiple-joint

exercises. In addition, it is recommended that strength programs sequence exercises to optimize the preservation of exercise intensity. Muscle strength may increase significantly within the first week of training (Coburn et al., 2006). Both single- and multiple-joint exercises have been shown to be effective for increasing muscular strength in the targeted muscle groups using multiple modalities, for example, free weights, machines, cords, etc. (Cronin et al., 2003). Numerous studies have used frequencies of two to three alternating days per week in previously untrained individuals (Candow & Burke., 2007). The purpose of this study was to identify the changes on the anthropometric data of Albanian competitive male bodybuilders during a 5-year period.

Material and Methods

Participants

The participants were male Bodybuilders in the same category, junior aged from 16 to 23 years old, for a 5-year period of time from 2017-2022. The subjects for every year were selected respectively as following: 55 subjects on 2017; 23 on 2018; 41 subjects on 2019; 32 subjects on 2020 and 33 on 2021 in total 184 bodybuilders. All participants were amateur bodybuilders competing according to the standards of the International Federation of Bodybuilding and Fitness (IFBB) and they were among the best of their categories in the competition analysed. From the junior category there are 4 Absolut champions for every year, which conclude 20 national champions in 5 years. Among them, there are one European champion in classic bodybuilding, one Balkan champion and one world champion. Participants were fully informed of the study aims and read and signed an informed consent form authorizing the use of their data. The study was approved by an Institutional Ethics Committee and conformed to the principles outlined in the Declaration of Helsinki.

Anthropometry Measurements.

Body weight was determined with an electronic scale to the nearest 0.1 kg with subjects barefoot and wearing swim suits. The used method for assessment of anthropometric data through usual tape measurement. These measurements included girth and circumference for shoulder, chest and waist respectively. All the participants were masured during the championship for bodybuildong category from 2017-2022. Height body was measured to the nearest 0.1 cm using “Health o Meter” Professional, Model 500KL-BT; ISO 13485:2016; Pelstar, LLC, USA

Training

Resistance and aerobic training. Split training sessions was performed for all participants in order to train each muscle group every week. Therefore, training one muscle group every week seems to be supported by the current literature. Male Bodybuilders and Wellness competitors performed 50–60 minutes of aerobic exercise in the fasted state 3 days per week. Based on the current body of scientific evidence, it is highly advisable to discourage the performance of fasted aerobic exercise in order to prevent negative alterations in metabolism and reduce the need for thermogenic ingestion. Additionally, the performance of high volumes of aerobic exercise has a negative impact on muscle hypertrophy (Wilson et al., 2012).

Nutrition & Supplements

The participants' diets constantly changed according to their perceptions; i.e. carbohydrate ingestion increased if they felt that they were losing too much fat-free mass and decreased in order to reduce body fat. In general, their bulking diets were hyper caloric, high protein (2.5 g of protein per kg of body mass, with each meal containing 0.30 to 0.60 g of protein per kg of body weight) and low fat (~15% of calories coming from fat). The major sources of carbohydrate were bread, oatmeal, rice, pasta and potatoes. Dietary protein usually comes from egg whites, chicken, lean red meat, fish and whey protein concentrate. Since they were before competition race, they were recommended to increase their protein ingestion to ~3 g/kg of body weight and decreased carbohydrate ingestion by 15–25%. Their fruit and vegetable ingestion was extremely low and their sources of vitamins and minerals seemed to be mainly nutritional supplements. The combination of high protein, low fiber and high vitamin ingestion seems

to be common among bodybuilders, and has been previously linked to health problems, especially in the gastrointestinal system (Della Guardia et al., 2015). Supplements most frequently used for participants were concentrated whey protein, chromium picolinate, omega 3 fatty acids, BCAA, poly-vitamins, glutamine and caffeine. Regarding protein supplementation almost all subjects used whey protein. Several studies have suggested a positive effect of creatine supplementation on muscle strength, power and lean body mass (Gualano et al., 2012). Specifically for bodybuilders, the benefits of creatine may be related to the increased capacity for repeating high intensity efforts, (Gentil et al., 2017), which can increase training performance and result in muscle size gains.

Results

Table 1. Descriptive statistics of anthropometric data for junior bodybuilding, before and after a 5-year period of time.

Variable	Mean \pm SD Before 5-years (in cm)	Mean \pm SD After 5-years (in cm)	Absolute change (in cm)	Percentage of change (in %)
Shoulder	115.3 \pm 3.6	120.4 \pm 2.2	5.1	4.23
Chest	108.2 \pm 1.9	113.0 \pm 1.7	4.8	4.24
Biceps-Right	34.01 \pm 1.5	35.11 \pm 1.3	1.1	3.13
Biceps-Left	33.93 \pm 0.83	35.01 \pm 1.1	1.08	3.08
Forearm-Right	28.52 \pm 0.71	29.65 \pm 0.4	1.13	3.81
Forearm-Left	28.67 \pm 0.62	29.55 \pm 0.7	0.88	2.97
Wrist-Right	17.22 \pm 0.66	17.74 \pm 0.5	0.52	2.93
Wrist-Left	17.29 \pm 0.84	17.73 \pm 0.3	0.44	2.48
Waist	74.10 \pm 2.6	77.9 \pm 1.22	3.8	4.87
Thigh-Right	52.97 \pm 1.94	54.57 \pm 0.9	1.6	2.93
Thigh-Left	53.18 \pm 1.83	54.60 \pm 0.6	1.42	2.60
Calf-Right	35.72 \pm 0.61	36.44 \pm 0.4	0.72	1.97
Calf-Left	35.84 \pm 0.57	36.47 \pm 0.2	0.63	1.72

Table 1 gives the statistics and difference of anthropometric variables: shoulder, chest, waist, measurements of upper limbs biceps and forearm for both sides right and left, as well as for lower limbs (legs): thigh and calf, right and left both sides.

Table 2 reports the independent samples t-test results for the before and after 5-years changes of anthropometric data for junior Albanian competitive male bodybuilders.

Table 2. Independent samples t-test of the 5-years changes of anthropometric measurements.

Variable	Levene's test sig.	Mean before 5-years	Mean after 5-years	Percentage of change	t-value	Sig. p-value
Shoulder	0.273	115.3	120.4	4.23	0.512	0.014*
Chest	0.105	108.2	113.0	4.24	-3.643	0.018*
Biceps-Right	0.305	34.01	35.11	3.13	-2.425	0.039
Biceps-Left	0.003	33.93	35.01	3.08	-6.160	0.808
Forearm-Right	0.000	28.52	29.65	3.81	2.234	0.236
Forearm-Left	0.002	28.67	29.55	2.97	3.416	0.070
Wrist-Right	0.000	17.22	17.74	2.93	-1.743	0.414
Wrist-Left	0.001	17.29	17.73	2.48	-1.278	0.876
Waist	0.306	74.10	77.9	4.87	2.932	0.012*
Thigh-Right	0.000	52.97	54.57	2.93	-4.721	0.263
Thigh-Left	0.001	53.18	54.60	2.60	-3.662	0.154
Calf-Right	0.005	35.72	36.44	1.97	0.339	0.306
Calf-Left	0.000	35.84	36.47	1.72	0.263	0.258

*p < 0.05 statistically significant

Discussion

Based on the results for the biomechanical variables for body, upper limb and lower limbs,, between two groups, before and after a 5-years period of time, and from the comparisons of results of table 1, it can be concluded that for: The results of before and after taken for every biomechanical variable: shoulder, chest, biceps-right; biceps-left, forearm-right, forearm-left, wrist-right, wrist-left, waist, thigh-right; thigh-left; calf-right and calf –left circumference measured in cm, absolute change and respective percentage of change, as well as the average of percentage changes are taken in total.

The results reported in table 2 are related to the before and after 5 years measurements within the same group of study. Shoulder circumference after has changed considerably with the respective values: 4.23%; chest circumference 4.24%, waist circumference 4.87%. By comparing the results of other variables it is reported that the values have changes almost in the same levels between: biceps –right 3.13% and biceps –left 3.08%; forearm right 3.81% and forearm –left 2.97%; wrist-right 2.93% and writ-left 2.48%; thigh-right 2.93%; thigh –left 2.6%; calf-right 1.97% and calf-left 1.72% average percentage change in total.

Regarding to the changes between right and left part of the body, it is noticed that there are not important differences between biceps circumference, forearm circumference, waist circumference, thigh circumference and calve circumference. From the comparison of the anthropometric data of

circumference, it is noticed that for three parameters assessed bodybuilders had the highest circumference during the last year.

From the independent samples t-test in table 2, it is seen whether the Levene's test is significant. Since the significance values: for shoulder $p = 0.273 > 0.05$, for chest $p = 0.105 > 0.05$ and for waist $p = 0.306 > 0.05$, this means that the equal variances is not significant, this implies that equal variances assumed. The mean score of the shoulder circumference after 5 –year period of time is 120.4 cm (SD = 2.2) and that for before was 115.3 cm (SD = 3.6). This difference was statistically significant: $t(183) = 0.5612$; $p = 0.014 < 0.05$. Regarding to the chest circumference variable, the Levene's test result $p = 0.105 > 0.05$, non significant, equal variances assumed. This variable is reported as follow: mean value 113.0 cm (SD = 1.7) for after 5 years and 108.2 cm (SD = 1,9) for before 5 years.. In this way, the difference was statistically significant, because $t(183) = -3.643$, $p = 0.018 < 0.05$, statistically significant. For the last variable waist circumference, results of Levene's test $p = 0.306 > 0.050$, show that it is no significant and it implies that equal variances assumed. The value reported in means for after 5 years is 77.9 cm (SD = 1.22) and for before 5 years: 74.10 cm (SD = 2.6). The respective values from t-test results, $t(183) = 2.932$ and $p = 0.012 < 0.05$, confirm that the differences between two groups are statistically significant. Although a recent review suggests that a higher training frequency may result in higher muscle hypertrophy there are studies in which trained participants obtained significant results with this type of routine (Ostrowski et al., 1997; Schoenfeld et al., 2016). Moreover, (Ahtiainen et al., 2011) reported that trained men were only able to repeat a training session 5-6 days after performing nine sets of lower body exercise. Therefore, training one muscle group every week seems to be supported by the current literature. One criticism regarding the splitting routine involves exercise choice, since it did not consider that shoulder and upper limb muscles are highly involved in multi-joint upper body exercise (McClaw & Friday., 1994). On the day after the anthropometric evaluations, maximal strength tests were performed using 1RM. Another important finding of the present research was that after 1 week of detraining, no negative effects were observed in upper- and lower-body strength and body composition. These results have direct implications in strength training and conditioning practice, considering that, for young, trained women, 1 week may be an adequate period for application of detraining without causing a decrease in the performance of the parameters analyzed (Prestes et al., 2009).

Conclusion

It is important to highlight the anthropometric results obtained in this study. By increasing their fat-free mass, bodybuilders are in risk for their health. The results of this study show that there is no significant changes between the age groups for weight, and body mass index (BMI). From the comparison of the anthropometric data of circumference, it is noticed that for three parameters assessed bodybuilders had the highest circumference during the last year. This increasing trend that has been seen progressing from year to year, in these 5-years, is thought to be related to the post-pandemic situation of Covid 2019. The scientific evidence of bodybuilder study allow us to find those practices who can affect negatively to their health and in the same time to discover the one from which have the best potential benefits. With regard to training the main focus should be directed to decrease fasten-cardio and volume and to increase resistance, which may led them to the success. The findings emphasis the importance of supplements use for health preservation, including also vitamins and minerals necessary for human body. Further research are needed for health purposes regarding to the dietary supplement consumption and different types of resistance training in this context.

Limitations: The present study has several limitations which should be addressed. Due to the insufficient evidence, it is difficult to provide specific guideline for muscle adaption, volume, frequency, hypertrophic responses, strength improvements and intensity of resistance training (RT) techniques and methods which are included in their daily training routine.

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**SOME BIOMECHANICAL ASPECTS OF ANALYSING PERFORMANCE AND ITS
INDICATORS IN BASKETBALL GAME**

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ABSTRACT

Basketball is a sport which is characterized by high intensity and short recovery times. The anthropometric characteristics play an important role in a basketball game performance. The purpose of a biomechanical analysis in a sport is to evaluate the technique of the movement performed. In a basketball game, one of the basic elements of the technique is focused in player's position. The positions of the players in basketball can be mainly classified into three groups that reflect the similarities of the position of guards, forwards and centre. In biomechanical analysis, positioning is closely related to stability. There are many biomechanical principles involved in executing an efficient basketball three-pointer. Its accuracy is also a reason why it is so popular. For a player to improve his delivery, improve accuracy, make his shot more efficient and accelerate his run to the shot, it is important to look at some biomechanical principles. Movement analysis, using a biomechanical approach is highly recommended to evaluate performance and the pathways leading to success. The performances and its indicators in a biomechanical analysis are closely related to the technique performed for a specific movement. The results of the analysis movement are used to identify the effectiveness and efficiency of a movement. The role of biomechanics in movement assessment is also useful for injury prevention. In addition, the biomechanical analysis serves as a method to improve athletic performance and also to prevent injuries caused by improper movements.

As a conclusion, implementing biomechanics knowledge in training and injury prevention is very essential. Based on biomechanics principles, the movement analysis of various shots in basketball can be used as a layout for the development of sport specific strength and increasing performance of the players.

Keywords: biomechanical principles, performance indicators, movement analysis

Introduction

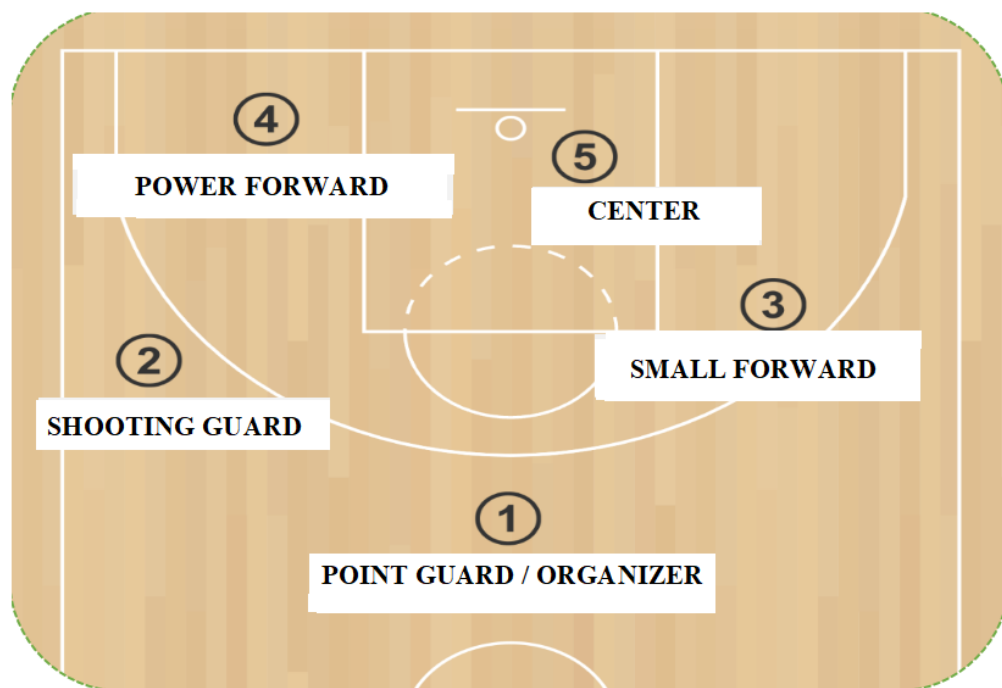
Basketball is a sport which is characterized by high intensity and short recovery times. Sport training is an effective and safe way to improve body composition, overall being and individual performance. The anthropometric characteristics play an important role in a basketball game performance. Recent studies have shown that the metabolic load experienced during a basketball game varies according to the playing position (Rodríguez et al., 2003). These studies suggest that the physiological characteristics of players vary according to their role on the field and therefore the specific development of qualities needed for each playing position should be studied by coaches. The inclusion of individualized physical fitness sessions would specifically develop the skills required by each playing position and improve the players' physical performance during the match. This can reduce the number of spins or wrong choices resulting from fatigue at the end of a game and can positively affect the outcome of the game (Delextrat & Cohen (2009). The purpose of a biomechanical analysis in a sport is to evaluate the technique of the movement performed. The results of the movement assessment can be used to identify the effectiveness and efficiency of a movement. In addition, it also serves to prevent injuries caused by improper movements. The role of biomechanics in movement assessment is also useful for injury prevention.

Methodology

In a basketball game, one of the basic elements of the technique is focused in player's position. The positions of the players in basketball can be mainly classified into three groups that reflect the similarities of the position of guards, forwards and center. Furthermore, with the evolution of rules and

tactics, team positions are classified according to the specific individual role point guard / organizer, shooting guard, small forward, power forward and center (Harris et al., 2000). Much research that has studied movement and timing has shown that in basketball, game activity depends on the role of player positioning, with center involved in significantly less high-intensity movement than forwards and guards (Grosgeorge 1990), (figure 1). The correct shot of the "Lay-up" depends on the physical ability of the player, the speed of the ball, the lift and height of the release, the length and speed of the first and second step, etc, (Abdelkrim et al., 2010). Furthermore, various trials have shown that forwards spend the most time running during the match (Miller & Barlett, 1994). These findings show that in basketball there is a wide range of skills and physiological demands for different playing positions (Hoare 2000)]. In biomechanical analysis, positioning is closely related to stability. The horizontal localization of center of gravity (COG) in relation to base of support (BOS) affects all stability. The closer the horizontal localization of the COG to the boundary of the BOS, the smaller the force required to push it out of the BOS and consequently out of equilibrium. Likewise, when the horizontal force is provided by the position of COG near the center of BOS, the stability of that body increases. Also, the height of the COG in relation to the BOS can affect stability. The higher the position of COG, the greater the potential torque, if the body undergoes an angular displacement. If the basketball player receives a pass, the most stable position for him to catch the ball will be a staggered position, with one foot forward and the other in line with the direction of the throw and leaning in the direction of the forward foot (Bendo 2019).

Figure 1.



Positioning of players in the offensive field

Results and Discussion

In biomechanical analysis, positioning is very important element and it is closely related to stability. Players perform a variety of shots, which include the arc, the jump shot, the spot shot, and the lay-up. The lay-up shot is one of the most basic actions in the game of basketball; there are two steps and the shot. This shooting method is mainly performed by players who are not tall enough to throw the ball when they are on the fast attack, as well as by players who are close to the basket with no opponents in their way. Learning how to shoot a lay-up is an efficient move for all players and can help make them all better players.

From the physiological-biomechanical point of view, basketball is classified among sports activities with alternating engagement of aerobic-anaerobic energy, with medium to high circular demands of strength and endurance. Specific technical, coordinative and psychological qualities are also important (Raiola et al., 2015).

From a physiological point of view, moments of mainly aerobic engagement (slow running, walking, recovery and game breaks) alternate with others, such as lactic-type anaerobic engagement (running kicks, jumps, sprints, accelerations, changes of direction and speed) (D'Elia et al., 2021). Like all team sports, the sport of basketball also requires the realization of a series of intermittent efforts, or the alternation of sprints and short jumps with active or passive pauses (Padulo et al., 2016). It is characterized by a heart rate (HR) that has an interval between 80% and 95% of (HRmax)10 and a percentage of (VO2max)11 between 70% and 80%. Finally, the play/pause ratio is 1:1 and, most often, actions take place around 20–40 seconds (Czuba et al., 2013; Falcone et al., 2019).

In addition, biomechanics in the field of sports is a method to improve athletic performance. This is consistent with studies conducted that state that biomechanics is necessary for the implementation of athlete selection and performance in training. So the movements performed can improve performance and prevent injuries. Sports achievements are a benchmark for the quality of training in a sport (Irawan & Prastiwi, 2022). One method of achievement development is the method of movement analysis from a biomechanical perspective. There are two perspectives in biomechanics, namely kinetics and kinematics. The kinetic perspective is classified as difficult to observe. This is because this perspective focuses on the effect of a force caused by a motion. Meanwhile, the kinematic perspective focuses on data related to displacement, velocity, and acceleration (Apurva & Akanksha, 2021).

Basketball is an interesting game to watch, especially when the athletes perform different movements to make a shot. Throws also vary, depending on the distance and skill of the athlete (Irawan & Prastiwi, 2022). The biomechanics principles tell us how players should move the body efficiently and improve their skills (Chakraborty & Mondal, 2019). Proper knowledge of these biomechanical parameters will help basketball players to increase their performance (Chakraborty & Mondal, 2020).

Conclusions

There are many biomechanical principles involved in executing an efficient basketball three-pointer. Its accuracy is also a reason why it is so popular. For a player to improve his delivery, improve accuracy, make his shot more efficient and accelerate his run to the shot, it is important to look at some biomechanical principles.

Movement analysis, using a biomechanical approach is highly recommended to evaluate performance and the pathways leading to success. The performances and its indicators in a biomechanical analysis are closely related to the technique performed for a specific movement. The results of the analysis movement are used to identify the effectiveness and efficiency of a movement. The role of biomechanics in movement assessment is also useful for injury prevention. In addition, the biomechanical analysis serves as a method to improve athletic performance and also to prevent injuries caused by improper movements.

As a conclusion, implementing biomechanics knowledge in training and injury prevention is very essential. Based on biomechanics principles, the movement analysis of various shots in basketball can be used as a layout for the development of sport specific strength and increasing performance of the players.

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**A PROTOTYPE IMPLEMENTATION OF IMU BASED POSITIONING SYSTEM FOR
HANDHELD DETECTORS**

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ABSTRACT

Location-dependent data collection is crucial for some subsurface imaging detectors. The positioning information in question can be obtained based on image processing, Radio Frequency (RF), and Inertial Measurement Unit (IMU). In this study, IMU-based positioning system for Ground Penetrating Radar (GPR) sensor has been studied. Ultimate aim is to use this system for GPR based mine detectors. In order to obtain ground truth for acceleration values, IMU module was placed on a four-wheel mechanism and the acceleration data was obtained and registered by using the data coming from embedded encoders. In the next stage location calculation was carried out by using Kalman filter and then we made a comparison between ground truth data and Kalman filter estimation. Test setup contains a robotic system equipped with an L298N H-Bridge motor driver to control two DC motors, MPU6050 IMU sensor is used for acceleration data collection and two Arduino systems: Arduino Nano and Uno to process signals. By taking the noise covariance into account, Kalman filter estimation performance was improved and acceleration estimation of $a=40 \text{ m/s}^2$ was obtained within a range of 40 ± 0.25 . The results show that the acceleration estimation of the mechanism during 1-meter movement using the Kalman filter is obtained within a reasonable error range. In the final phase of the project, a precise real-time positioning system will be completed to accurately determine the position of the mine detector. This prototype system can serve as a reliable testbed for IMU-based positioning projects for undergraduate students.

Keywords: Ground Penetrating Radar, Inertial Measurement Unit, Positioning, Kalman Filtering.

INTRODUCTION

Inertial Measurement Units (IMUs) have become a cornerstone in the field of location determination, offering significant advantages in various applications ranging from robotics to personal navigation systems. By integrating accelerometers, gyroscopes, and sometimes magnetometers, IMUs provide comprehensive motion tracking capabilities, enabling precise measurement of orientation, velocity, and displacement (Woodman, 2007). The advent of microelectromechanical systems (MEMS) technology has further miniaturized IMUs, enhancing their applicability in constrained environments (Naseri & Faez, 2015). Despite inherent challenges such as sensor drift and cumulative errors over time, advanced algorithms and sensor fusion techniques, like Kalman filtering and complementary filtering, have been developed to mitigate these issues and enhance the accuracy of IMU-based localization systems (Groves, 2013). This paper explores the current state of IMU-based location determination, reviewing recent advancements and methodologies that address the limitations and improve the robustness of these systems.

METHODOLOGY

In this study, we adopted to use IMU sensor and Kalman filtering to estimate position of the moving detector search head. In Inertial Measurement Units (IMUs), which include accelerometers and gyroscopes, Kalman filters integrate sensor data to estimate parameters like orientation, velocity, and position. They enhance position tracking by compensating for IMU drift and incorporating measurements from sources like GPS or visual odometry. The Kalman filter is a recursive estimator that combines noisy sensor inputs with a system model to accurately estimate dynamic states over time. It is widely applied in aerospace, robotics, and automotive industries for real-time state estimation.

Kalman filters operate through prediction and measurement update steps: predicting the current state based on past estimates and adjusting it using new sensor data. They excel in environments where GPS signals are unreliable, ensuring continuous and accurate navigation for applications such as indoor

navigation and autonomous vehicles. This technology encounters challenges related to model accuracy but remains pivotal in providing precise motion tracking and acceleration estimation for complex operational environments.

The main blocks of structure are illustrated in Figure-1. We use a robotic mechanism moving along with a straight line. There are encoders on the wheels of the system to obtain ground-truth data. This data is saved and Kalman filtering is applied over the saved data. Then the differences between real positions and estimation of Kalman filter are calculated. By incorporating the noise covariance, the difference between the acceleration data measured within the system and the acceleration data estimated after Kalman filtering was minimized to ± 0.025 . To determine the speed and movement characteristics of the motor based on encoder readings, we follow these steps: First, establish the number of counter. In this case, there are 20 slots per revolution. To calculate the Revolutions Per Second (RPS), divide the number of counter by 20 to get the number of revolutions. If necessary, further divide this result by 60 to convert it to seconds. Next, calculate the distance traveled by the motor. This is done by using the formula for the circumference of the wheel, which is $2\pi r$, and multiplying it by the RPS and the elapsed time. The velocity is then determined by dividing the distance by the elapsed time. Finally, calculate the acceleration by subtracting the old velocity from the new velocity and dividing by the elapsed time. By following these calculations in figure 1, the speed and movement characteristics of the motor can be accurately assessed based on the encoder readings. (Brown, Hwang, 1997).

Slot Count:

- Disk slots = 20 slots

Revolutions Per Second (RPS):

- $RPS = ((\text{number of rotations of the wheel per second}) / (60)) / \text{Elapsed Time}$
 - Formula: $RPS = (\text{Counter} \div 60) \div \text{Elapsed Time}$

Distance:

- $\text{Distance} = RPS \times 2\pi r \times \text{Elapsed Time}$
 - Note: $2\pi r$ is the circumference of the wheel

Velocity:

- $\text{Velocity} = \text{Distance} \div \text{Elapsed Time}$

Acceleration:

- $\text{Acceleration} = (\text{New Velocity} - \text{Old Velocity}) \div \text{Elapsed Time}$

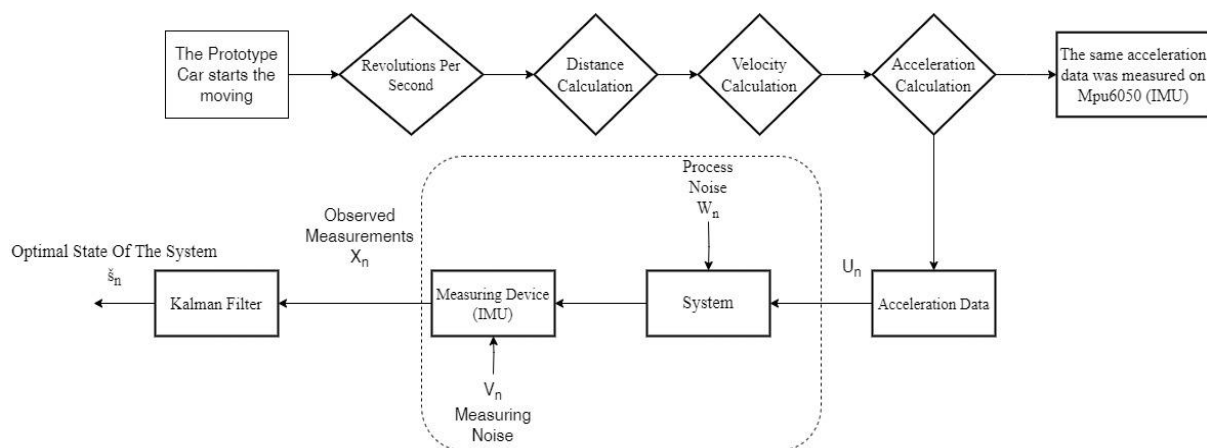


Figure 1: Main blocks of structure.

Generally, Kalman filter performs estimation of the state of a dynamic system from noisy and incomplete measurements. Moreover, the Kalman filter estimates unknown variables from a series of measurements over time, commonly used in control systems, signal processing, and navigation. It operates on a linear dynamic system defined by a state equation and a measurement equation.

The state equation predicts the next state using a state transition matrix, control input matrix, control vector, and process noise. The measurement equation relates the measurement vector to the state vector, incorporating measurement noise. The filtering process involves; Initializing the state estimate and covariance, predicting the next state and covariance using the process model. It updates the state estimate and covariance with new measurements, calculate the Kalman gain, and apply it to the measurement residual.

This predict-update cycle repeats consequential time steps. Accurate initialization and noise covariance estimation are crucial for this process. For nonlinear systems, the Extended Kalman Filter (EKF) or Unscented Kalman Filter (UKF) may be used. The Kalman filter effectively estimates system states when system dynamics and measurements are well-modeled linearly (Kalman, 1960).

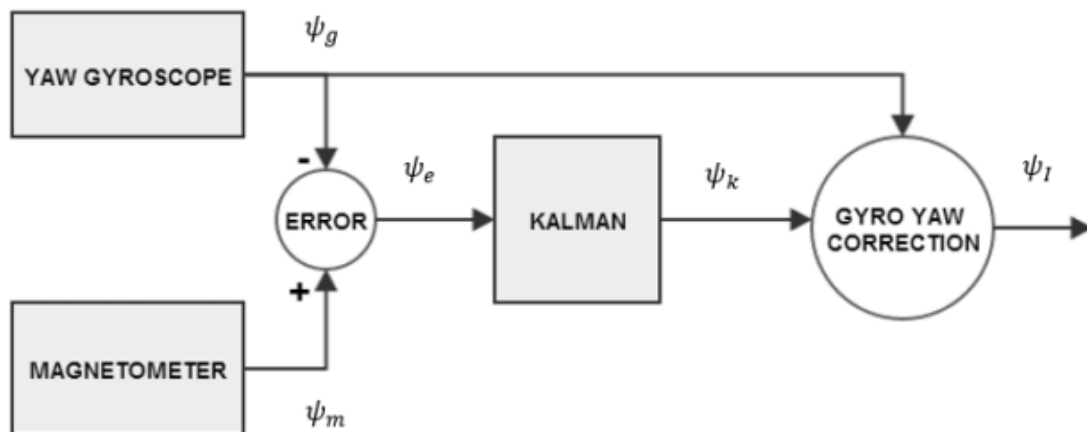


Figure 2: Feedback of Kalman Filter (Shaukat, S. A., Munawar, K., Arif, M., Bhatti, A. I., Bhatti, U. I., & Al-Saggaf, U. M., 2016).

Implementation

The Kalman Filter was implemented using Python to process acceleration data obtained from a text file containing motion data. Following application, the discrepancy between the measured and estimated data outputs was assessed. Additionally, position and velocity information was derived from the filtered data.

The difference between the initially measured acceleration value and the estimated acceleration values obtained after the Kalman filter was around $\pm 8-9$. Subsequently, to further minimize the discrepancy, the margin of deviation was reduced to ± 4 using the truth calibration method. Kalman filter matrix and covariance values were examined in order to ensure that the data were close to reality and the difference was small. The margin of error was reduced by adding Q (process noise covariance) (Kalman, 1960).

The process noise covariance matrix (Q matrix) in a Kalman filter plays a crucial role in representing model uncertainties and the inherent randomness of dynamic systems. It accounts for the inaccuracies and uncertainties in the system model, reflecting unexpected changes in state variables over time, such as those caused by environmental factors. By determining the magnitude and correlation of these random changes, the Q matrix adjusts the filter's response: a larger Q matrix allows the filter to react more quickly to measurement changes, albeit with noisier estimates, while a smaller Q matrix results in smoother estimates with slower response times. Consequently, the Q matrix enhances the Kalman filter's accuracy and predictive capability, facilitating the system's adaptation to real-world conditions. Utilizing this method, the discrepancy between the measured acceleration value and the estimated acceleration value was minimized to ± 0.002 .

IMU Sensor

The MPU6050 is a digital device, is compact in size, has low power consumption, is highly accurate, offers high repeatability, and has excellent shock resistance. It features application-specific performance customization and is available at an affordable price. (MPU-6000 and MPU-6050)

Table-1 The accelerometer's full scale range and its sensitivity per Least Significant Bit (LSB).
(MPU-6000 and MPU-6050)

AFS_SEL	Full Scale Range	LSB Sensitivity
0	±2	16384 LSB/g
1	±4	8192 LSB/g
2	±8	4096 LSB/g
3	±16	2048 LSB/g

The value of 'g' refers to the acceleration due to gravity, approximately 9.81 m/s². LSB sensitivity is the sensitivity of the accelerometer in terms of how many LSBs correspond to one 'g' of acceleration. Lower values in this column mean higher sensitivity, as fewer LSBs are needed to represent the same amount of acceleration. As a result of the planning done within the project, the full-scale range was set to ±2g to ensure the accuracy of the acceleration data. This means that for every 1g of acceleration, the output registers will change by 16384 LSB. This setting represents the highest sensitivity level. To convert the raw accelerometer data to actual acceleration values, a calibration factor of **1/1634** g/LSB should be used. This calibration ensures that the data accurately reflects real-world accelerations

EXPERIMENTAL RESULTS

The experimental setup was created by moving the car forward for 2 seconds and moving back for 2 seconds on the cable channel placed on a 1.20-meter board. The accuracy of the calculations mentioned in the method section was ensured in this experimental setup. Chassis: The robot is built on a transparent plastic chassis, which serves as the base on which all components are mounted. Motors and Wheels: Two DC motors are connected to the rear wheels of the robot. These motors provide driving force to the robot. The wheels are attached to the motors, allowing movement when the motors are powered. Motor Driver: A motor driver board is integrated into the chassis. This card controls the speed and direction of the motors according to the signals it receives from the microcontroller.

Microcontroller: Arduino Uno microcontroller board is placed on the chassis. This board acts as the robot's brain, processing inputs and controlling outputs. Sensors: Various sensors are used on the chassis, including the FC-03 encoder to perform the calculations mentioned in the methodology section and the MPU6050 sensor used to obtain acceleration data. Cabling: Multiple cables connect different components together, providing power and signal paths between the microcontroller, motor driver, sensors, and motors. Power Source: There is a battery pack mounted on the chassis that provides power to the entire system.

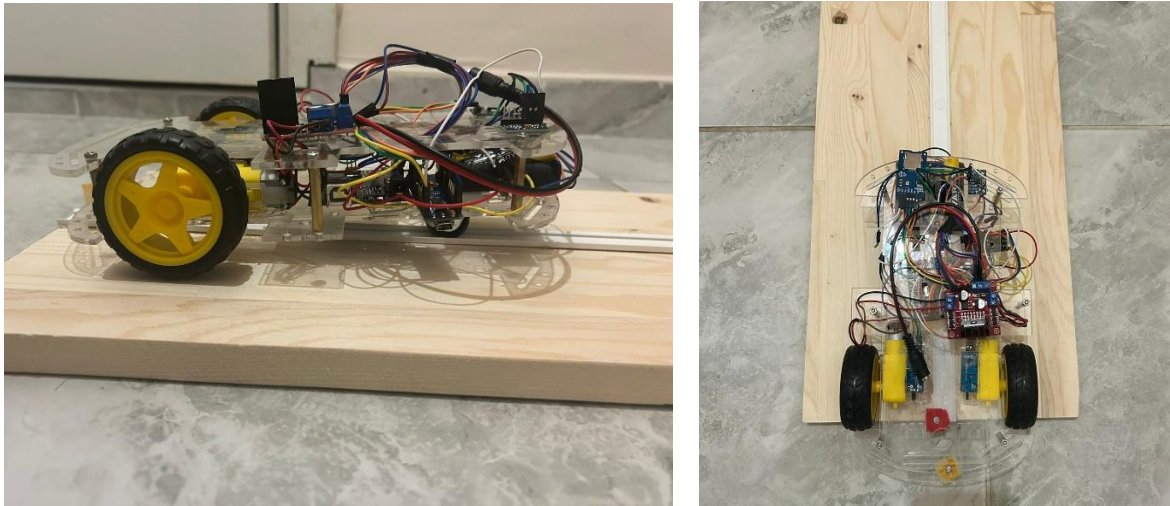


Figure 3: The experimental setup and the robotic vehicle.

Encoder discs containing 20 holes were affixed to the shaft of each of the two DC motors utilized in the experimental vehicle developed as part of the project. The holes on these discs are identified and quantified by integrated encoders. The encoders are configured to register a count upon detecting every 20 holes. These counts are utilized to compute the rotational speed of the engine (Revolutions Per Second, RPS), distance covered, instantaneous speed, and acceleration values. This data encompasses speed, position, and distance details through fundamental physics calculations.

The operation of the two DC motors within the vehicle is managed using the L298-N motor driver board. This motor driver board facilitates the control of the forward and reverse motion of the motors. Instructions for motion were transmitted to the vehicle through the motor driver board, enabling the vehicle to execute the intended movements. In this scenario, the vehicle was directed to move forward for 2 seconds, pause for 1 second, and then reverse for 2 seconds. During the tests conducted in accordance with these directives, it was observed that the vehicle traversed a total distance of 1 meter (100 cm) during its 2-second forward and backward motion.

This experiment illustrates that the vehicle maintains a consistent speed within the specified timeframe and accurately follows the provided instructions. To regulate the vehicle's speed and sustain it at the desired rate, a Pulse Width Modulation (PWM) signal is employed via the L298-N motor driver board. The PWM signal is instrumental in adjusting the motor rotation speed by managing the energy supplied to the motors. Throughout the calibration process, the value assigned to the enable pin of the motors was set at 90, and the output voltage was adjusted to 1.76V.

Following these modifications, the vehicle's speed was gauged at 1.35 m/s in the tests conducted. This calibration guarantees that the vehicle maintains a consistent speed and effectively executes the issued commands. The acceleration of the vehicle was computed using the distance and speed data acquired during the vehicle's motion. The calculated acceleration was determined to be 0.67 m/s^2 . To validate the accuracy of this acceleration value, an MPU6050 IMU (Inertial Measurement Unit) sensor was employed. The IMU sensor captures vehicle acceleration and angular velocity data and is calibrated within $\pm 2g$. The data collected by the sensor was juxtaposed with the vehicle's calculated acceleration values, and through the calibration process, it was ascertained that they aligned with the acceleration value of 0.67 m/s^2 . This underscores the precision and dependability of the sensor data. All recorded acceleration data was stored on an SD card for subsequent analysis. These data, meticulously scrutinized by team members, were utilized to estimate position, velocity, and acceleration, provided that the system dynamics matrices were appropriately adjusted. Upon analysis, a deviation of approximately ± 0.002 was noted in comparison to the recorded acceleration data. This deviation signifies that the acquired data is highly accurate, and the system operating reliably.

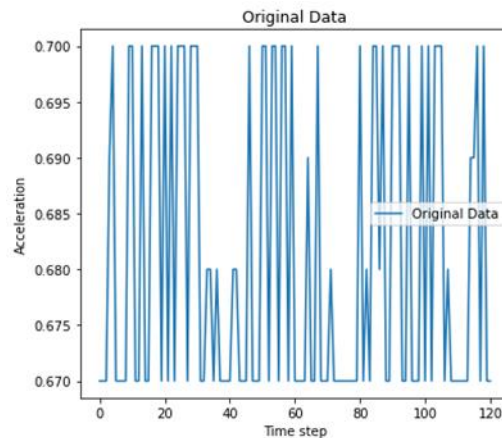


Figure 4: Acceleration data is measured through the vehicle's forward movement for 2 seconds, backward movement for 2 seconds, and stopping for 1 second (Brown, Hwang, 1997).

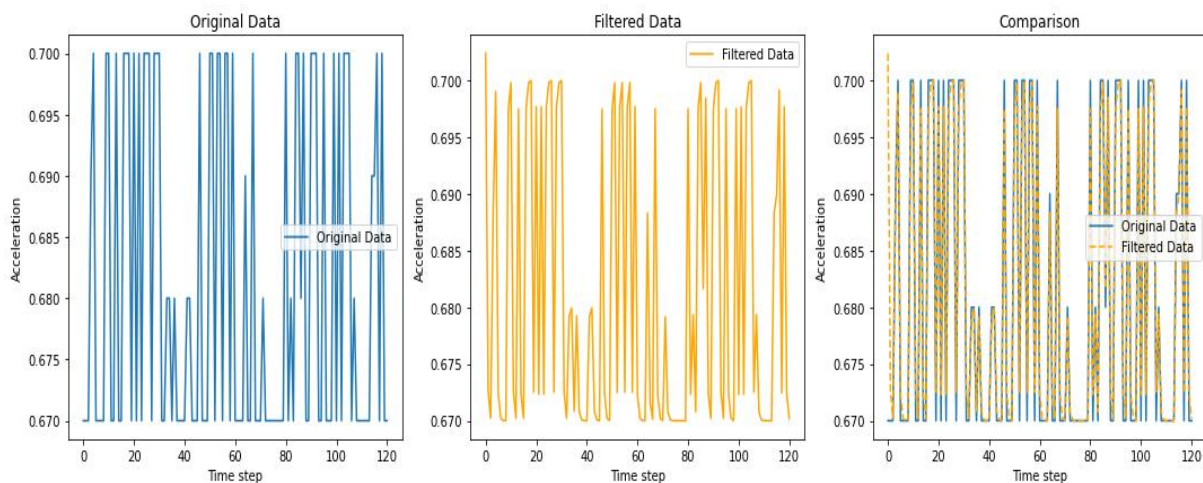


Figure 5: The differences between the real acceleration data and the output of the kalman filter (Brown, Hwang, 1997).

CONCLUSION

Our study shows that, within a reasonable margin of error of the acceleration estimate for a mechanical system during 1-meter motion determined by applying the Kalman filter, the Kalman filter performs robustly in dynamically tracking the acceleration parameters of the system. The study, which compares the real acceleration values obtained through ground truth measurements with the acceleration values estimated from the Kalman filter, shows differences in the range of ± 0.002 units. This highlights the effectiveness of the Kalman filter in providing close estimates of true acceleration values, which is vital for dynamic monitoring and control applications in mechanical systems.

In the final phase of this research, we will focus on developing a precise real-time positioning system for enhancing the reliability and effectiveness of mine detection. This system will integrate advanced sensor fusion techniques, utilizing IMUs to achieve superior positional accuracy. In the future stages of this project, we aim to extend our research to achieve three-dimensional positioning. This will involve the development of sophisticated algorithms and the integration of additional sensors to ensure accurate 3D tracking. The prototype developed in this study shows promise as a robust testbed for undergraduate research in IMU-based positioning projects, offering practical hands-on experience. This platform facilitates the exploration and validation of sensor fusion, real-time data processing, and positioning

algorithms, contributing to the advancement of precision positioning systems and providing valuable learning opportunities for engineering students.

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**COMPARATIVE STUDY ON THE STABILITY OF LINSEED OIL, PARAFFIN OIL AND
SUNFLOWER OIL**

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ABSTRACT

Introduction: Stability of oils is crucial for their shelf life, nutritional value and safe usage in medical, cosmetic and culinary applications. Our study is focused on chemical composition, oxidative stability and storage conditions.

Aim: To compare the stability of linseed oil, paraffin oil and sunflower oil at different storage conditions.

Methodology: These Oils were chosen randomly and stored under different storage conditions. The study is focused on evaluating the changes of different parameters such as peroxide value, acidity number organoleptic data. Measurements were taken periodically for 3 months.

Results: Accelerated Aging Tests

Linseed Oil: Rapid increase of peroxide value from 12-28 mEqO₂/kg (CODEX ALIMENTARIUM is < 15 mEq O₂/kg), indicating high susceptibility to oxidation; Significant degradation under elevated temperatures. High peroxide values and rancidity detected after 2 weeks, 12-17 mEqO₂/kg. Rapid oxidation and loss of nutritional value. It is highly unstable at light exposure.

Sunflower Oil: Moderate increase from 4.5-15 mEqO₂/kg Moderate degradation; retains stability longer than linseed oil. Detectable rancidity after 4 weeks; Moderate sensitivity to light;

Paraffin Oil: Minimal change of PV from 1 to 6 mEqO₂/kg; is stable with negligible changes even after prolonged exposure to air. Resistant to light-induced degradation; High stability across temperature variations.

Discussion: The increase of temperature speeds up the ageing of these oils and their characteristics tend to run off the standards. Paraffin oil can be considered the most stable one, while the most sensitive to temperature can be considered the linseed oil. **Linseed oil** has high nutritional value, but low stability. Requires careful storage (dark, cool, airtight conditions). **Sunflower Oil:** Balanced stability and nutritional content. Suitable for various culinary uses with moderate storage precautions. **Paraffin Oil:** High stability but minimal nutritional benefits. Best suited for medical and cosmetic applications.

Conclusion: Stability Ranking shows as follows: **Paraffin Oil** with the highest stability, minimal nutritional content; **Sunflower Oil:** shows moderate stability, good nutritional value; **Linseed Oil:** lowest stability, high nutritional value.

Recommendations: **Linseed Oil:** should be used within a short period, store properly. **Sunflower Oil:** is versatile for cooking, moderate storage care. **Paraffin Oil:** Ideal for applications requiring high stability

There are necessary health impact studies of consuming oxidized oils.

Keywords: oils, medical, nutrition, acid value, peroxid value, stability tests

ADAPTATION OF WESTERN CULTURE ELEMENTS IN HAIKU POEMS

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ABSTRACT

The purpose of the present paper is to analyse the following haiku poem, published by Michele Rule in the *Haiku Canada Members Anthology 2024*: "summer days -/ the wild grass in the garden/ neverending." Here, we deal with a haiku poem, an originally Japanese poem, made of three lines and 5-7-5 syllables, which, as we are going to see, can be adapted function of language and of style, to the point where it is no longer a fixed type of poem. The perspective from which the haiku poem by Rule will be analysed is that of the reader-response approach, based on the background of the author of the present paper regarding haiku poems and also notions of culture. We know that the main way in which the haiku poem has been explained was through the device of juxtaposition, meaning that it is made of two parts, separated by a cutting line. The two parts can be combined in order to arrive at the figurative meaning of the poem, as well as to other layer or layers than those presented at literal, concrete level. The scene, especially in the second part, is visual. The first part situates the poem in the here and now. Arriving at the meaning of the poem can be done by combining the time, the summer days, with the neverending wild grass in a garden, which could be interpreted as a present and future full of hope, suggested by the symbol of the colour green, which is universal across cultures. At the same time, we may consider those countries where the lawn is an important and frequent part in the everyday lives of the inhabitants in a certain area. For example, we may think about seeing such areas in American films and neighbourhoods, as well as in Great Britain. As children, we may all remember how free we felt during our holidays, and how rich our imagination could be, imagining an entire land being situated in our own garden. Nature and gardens are, however, a universal element.

Keywords: reader-response approach, free associations, symbols, juxtaposition.

INTRODUCTION

The present paper will offer, for the beginners, an idea about what haiku poems are and how they can be read, as well as provide a background that can be used by anyone curious in Japanese haiku writing by doing away with the old definitions that can be found in various online sources and dictionaries of literature. For the more advanced readers and authors of haiku poems, it will bring about a fresh perspective, based on the interpretation function of reader-response theories (Iser & Tompkins, 1983; Mart, 2019) according to the background and perception of the author of the present paper, who is a member of several haiku communities in Romania and abroad, which both read, write, and publish such poems in their periodical publications.

The haiku poem has been, in fact, imagined by Western culture members much in the same way as they had imagined Japan and its culture themselves. Our perception of another culture is largely influenced by our own understanding of reality, by our own mindsets and values, and mostly based on what we already know about life. We may read about another culture, but once we get into contact with its members we may realize that they do not behave or think the way we have grown accustomed to expect based on our readings. Our information may also come from past times or from what others have perceived and got to know.

We may all be familiar with the definition of the haiku poem as a three lines poems, based on a 5-7-5 syllable pattern, including a reference to the season or time of day when we observe what is going on around us during the present moment. Often, the poem is about various aspects in nature, but it is in no way a simple description of what we see. The details are always carefully selected and each and every word is deliberately searched for and nothing, no detail, is left to chance. The haiku poems include visual elements and not abstract ones as we are used to in the Western poems, at least based on the way we can think about poems in general. Naturally, poems in all cultures can be different, starting from the style and the way they are based on figures of speech or on colloquial language, to where or not they are written in free or in fixed form. Haiku poems, as surprising as it may seem to beginners, can also be

fixed in form or written in free form, in a number of syllables that are generally less than 5-7-5. Additionally, the haiku poem is not just description of reality, but a combination of elements in the two parts which work together to create another level of meaning. Figures of speech we use in Western poetry are not present in authentic haiku poems. Still, they are also poems, even if the language is different from the usual one we find in Western style poems. Through exercise, meaning through reading good haiku poems and their comments, where available within the national and international haiku communities' online and off-line sources, we can begin to get into the spirit of this type of poem. Such a poem is not simple, and it has at its basis deep philosophical meanings once we start to think about what it can mean. Haiku poems are as complex as Western style poems, even if they are, apparently, so short.

The way Western culture members write haiku may differ or not from the way the Japanese write these poems, based on introducing certain cultural specific elements, such as certain traditions and practices, or references to a specific city or area. Some universal elements regarding life experiences, seasons, our reactions to them, universal human nature emotions or beliefs may also be present. As an example, we may all associate spring with childhood, or winter with old age. We may all enjoy the beauty of nature, while in Western culture we may not have a specific Cherry Blossoms Festival. Yet, we increasingly find that we enjoy celebrating it and finding out about it lately, as we are curious about other cultures and their specific features.

The paper will discuss the haiku poem written by Michele Rule, and which can be read in the *Haiku Canada Members Anthology 2024*: "summer days -/ the wild grass in the garden/ neverending."

While, at first sight, this seems like a universal poem about nature, and about the summer season, it can be read in several ways, starting from the strong relationship between Japanese culture and nature, based on their religious and meditation practices, e.g. according to Zen Buddhism (Kiuchi, 2022) and to Shintoism (Minoru, 2013), the native religion of Japan, and then based on Anglophone cultures, regarding the habit of having a lawn in certain neighbourhoods in Great Britain and in the USA (Ghys, 2013; Groth, 1994; Teyssot, 1999). Gardening is a well-known, specifically British, pastime, which is familiar to those interested in British language, culture, and civilization. We can, therefore, speak of common elements within cultures, and, even if there are slight differences, we can find common grounds for understanding and for sympathizing with other cultures' members and their practices.

After all, nature is part of our environment no matter where we live. Even in cities, we can still find some parks or green spaces. Therefore, we can agree that haiku poems can be written anywhere we are, and about any space that surrounds us, even the city, our own home, and we can even include elements specific to contemporary life, such as various gadgets and specific technology.

The particular example by Rule (2024) of haiku poem relies on nature as a common setting in such poems, drawing it close to traditional, Japanese, Zen Buddhist poems based on meditation techniques relying on the here and now. A high degree of awareness of the here and now translates into a very strong sense of observation, the author of a haiku poem being able to select the needed words in order to draw in the readers' minds the images and ideas that are intended by the author.

MATERIALS AND METHODS

The haiku poem is an extreme example of dialogue between author and reader, inviting the reader to participate in the process of meaning-making. The juxtaposition (Gilli, 2001; Trumbull, 2012) can be seen as contributing to understand the meaning of the poem at a figurative level. The summer days are likely defined as a garden which never ends, and which reminds us of a fantasy realm in fairy tales. As an example, we are all familiar with the story of *Alice in Wonderland* by Lewis Carroll from British culture, about a young girl who falls asleep while on the grass with her sister. We could claim that the nature around her looks infinite, and then we can think about the way proportions and sizes look to us, generally as larger, as we are younger in age, and which, later in age, look so small to us.

In the case of the poem by Rule (2024), we can see how, in the first part, "summer days" we have the time of year which we are talking about in the poem. As we may be aware of, if we are a bit familiar with haiku poems, such poems are about the here and now, based on the Zen Buddhist mindset. Traditionally, students supervised by a haiku master or teacher go on walks in nature, observe what is going on around them during those precise moments, and then start writing about it and then they discuss the poems with their master. Variations of such contests are done online, with the same anonymous author, whose name is revealed at the end.

The reader-response approach shows the influence of emotions, understanding, background regarding the topic in commenting, in this case, a haiku poem by Rule (2004). The “summer days” are separated through a kireji, or cutting line, from the rest of the last two lines, which are “the wild grass in the garden/ neverending.” We can view the “summer days” as a term that, in what follows next in the poem, receives a fantasy-like, poetical definition, through “the wild grass in the garden/ neverending.” Why is the grass wild and neverending? This could be since, usually, summer is the season of holidays, when very rarely someone stays at home. The garden is, thus, associated with the idea of home, and of our yard and garden as owners of such a house. Such houses can be found in London suburbs, for instance, as well as everywhere else in neighbourhoods throughout Great Britain. Once we learn English as a foreign language, we are always introduced through our textbooks and various books we read about them to their daily lifestyle and specific preoccupations. Gardening can be one of them. Usually, our perception of gardening and our ideas about it differ from one culture to another. In some cultures, gardening is done using a detailed trimming of the garden and clear intervention of the gardener on nature. Nature is, as we can say, under the control of human beings. At the opposite end, we have the Japanese Zen Buddhist understanding of gardens which are, at first sight, places created by human beings, as they are based on certain rules. For instance, they need to include, usually, a pond, some stones, which are miniature correspondents of lakes and mountains, respectively. There is also a bit of a portion of sand, which is neatly arranged, suggesting a beach or a portion of land by the water. The vegetation is left to grow naturally, however, with no trimming, and usually simple flowers and grass are used, and not plants that are carefully trimmed and flowers that are specifically planted for reasons of decoration as in Western culture. We can speak, in Western culture, of horticulture, meaning of the scientific arrangement of gardens and green spaces. In Japanese culture, all we have are some rules. The Japanese Zen Buddhist gardens are small, miniature spaces, while the British gardens that come to our mind are those from the royal palace, which are extremely impressive. Western-culture gardens are frequently associated with royal palaces’ gardens, which are always large spaces, and which look clearly a bit artificial due to all the human effort and care put into their design and maintenance.

British gardens could be considered a distinctive mark, or feature of British culture and lifestyle. At the same time, they could be considered as part of cultural products, as well as of what Baciú (2012) called culture identity manifestations, a grid which includes symbols, values, traditions, rituals, practices and personalities. The British gardens can be considered as symbols of British culture, and they can be found in the royal world (Biswas, 1937), for aristocratic classes, as well as for the common man and for the working classes (Willes, 2014), in their everyday lifestyle, and they can also be found in the colonies, or present-day former colonies, such as India (Herbert, 2012). Gardening has been present, as a practice, through the history of Great Britain (Cecil, 1896; Uglow, 2005). Moreover, amateur gardening can be related to a practice of entertainment in the 19th and 20th century in Great Britain (Constantine, 1981). The summer days can be interpreted, in the haiku poem, as being spent anywhere in this world, as long as a garden, whether it belongs to our home or to a holiday resort, or institution, or place we visit, and no matter what it looks like. Through the free association method, popular in psychoanalysis, and through which we can say as patients in a psychotherapeutic setting or to write in a diary for ourselves, for personal, self-analysis, what comes to our mind, in no particular order, related to certain word, idea, image, phrase, or person, we can relate various symbols to the garden. We can picture in this haiku poem a Japanese, Zen Buddhist garden where anyone can meditate in an urban setting, without having to leave behind city life and society, with all its comfort. Not all of us are fit to be Buddhist monks living in temples and outside secular life. Yet, Zen gardens in parks and in various areas in the city, since they are such small places, can be available without too much complications and anyone can retreat there to meditate for a while.

Parks are considered in many parts of the Western world as public gardens, where we can walk and sit on the bench, as well as watch the lake, and enjoy some peace and quiet, as well as the beauty of nature. In this respect, the use of gardens looks similar in Western and Asian cultures. However, the depth of the connection between human beings and nature through meditation and awareness of the here and now is specific to Asian cultures.

Zen Buddhism creates a strong sense of awareness of the present moment, while Shintoism is a religion claiming that human beings are not above elements in nature such as animals and plants, but are part of nature themselves. The strong bond with nature for human beings is thus created through religion and

its practices, such as Zen meditation in a natural setting and through the way in which the Japanese there are beneficial spirits called kami in nature everywhere around us.

Going back to the haiku poem by Rule (2024), we can consider that it is an example of awareness of the present moment, of the summer days. While this haiku refers to summer days in general and not to one day in particular, it can still be seen as a Zen moment of extreme awareness of the present moment, since several summer days can be spent looking at the same scenery. The wild grass can be regarded as an allusion to or as a free association with the Japanese Zen gardens where human intervention is minimal, and where plants are left to grow naturally, being trimmed to a minimal extent. The neverending wild grass in the garden can be seen as an example of association with the symbol of the green colour of the grass, which is not precisely mentioned in the poem but which can be deduced by the readers. The summer holidays as children can be a privilege of letting our imagination free, and of imagining that a garden is a neverending fantasy realm where we are free. The summer holidays for children mean freedom from school, and freedom to do what they want, at least for a limited amount of time. Green can be seen as a symbol of hope, and it can also be associated with the idea of energy and enthusiasm.

As we do not know how the garden looks like, if it is small or big, looking like a Zen garden with minimal design, or like a British garden, or a public garden, or even a usual garden in a home anywhere in the world, in the front or back yard, or maybe it is a deserted garden in a deserted house, left untrimmed, and uncared for, we readers are free to fill in the missing details function of our imagination at a certain moment in time. We interpret based on our most recent experience or based on our wishes at the moment. As Freud (1983) believed, we all daydream, and these daydreams are imaginings related to what we need at a certain moment in time.

RESULTS

Free associations (Schachter, 2018) can be related to the allusions and symbols of some carefully chosen words. Here, the neverending wild grass in the garden, correlated with the summer days, which are defined as a neverending garden through juxtaposition, can suggest a variety of worlds. Readers can imagine lots of scenarios related to the summer days, through further associations. Summer can be seen as a beautiful season, when generally children and even adults have a period of holidays, when they can relax and daydream about various trips they can take all over the world. They can think about other cultures, which are like taking a break from our common, everyday reality, once we get in contact with them. In this case, we can consider British, American or Japanese gardens, lawns, or even public parks. We may also think a bit about the garden of paradise or about a garden where the grass grows in abundance, or simply about a garden which is left in its natural form or even not trimmed enough. Another culture may be an occasion to daydream about a different world and about a different lifestyle. The haiku chosen for analysis in this paper, by Rule (2024) shows us how the combination of the two parts, the summer days and the neverending wild grass in the garden shows us the infinite possibilities of the realm of imagination. For holidays, we all daydream of what we could try and do differently, and of what we could explore. Through exploring other cultures, we can access different realities, or simply daydream about them.

DISCUSSION

The haiku poem, through being so adaptive to other cultures and mindsets apart from those of Japanese and Asian cultures in general, can be seen as a way of thinking and writing in a very powerful and concise form about universal issues that we enjoy and that preoccupy us, such as summer days and gardens. The haiku poem has been part of art therapy through writing poems and, especially, haiku-like, short forms of poetry, where we can express anything we wish to. Naturally, such poems are not genuine haiku, once most patients are told not to be preoccupied about the rules, yet they are means of making us aware of what we are thinking of and how we are feeling. Art of therapy is not the same as art which is created as an artistic and cultural product for a public audience. It is a means of personal, and even private, expression. Through haiku poems, we get into contact with the cultural mindset of the Japanese culture, but we also learn how to look at the world and to consider various aspects of life from a fresh perspective. We notice we can look at the world differently and that we can create beauty in poems through very simple, visual, colloquial language, without needing to distort reality. Zen Buddhism teaches us to look at reality the way it is, not the way we fantasize about it and distort it, by attributing to it emotions that are specific to human beings.

We live in a world where we have contact with other cultures and where we have access to their cultural products. Haiku is one such cultural product. We have various reactions to haiku poems, from trying to get into its original Japanese mindset, to adapting it to our own realities. We may go as far as to say that the poem by Rule (2024) can be open to allow any readers imagine any type of garden, which could very well be a British one, and even one inspired by the fantasy realms in the story of *Alice in Wonderland* by Lewis Carroll, where children are free to daydream and to imagine a vast world. Perhaps the adaptation of the realities in the haiku poem by Rule (2024) is part of the way we readers participate in making the meaning and in building a parallel poem through our own interpretation.

CONCLUSION

We are expected to be in contact with other cultures on an almost daily basis due to the way the world is structured today, starting from a political and geopolitical level. Contact with other cultures starts from international relations which are established by geographical proximity of the countries. Cultural contact can also be had through having access to cultural products of other cultures. Certain cultures are appealing to the others, as the respective country has soft power (Nye, 2021), meaning that it promotes cultural products such as poetry, in our case, haiku. The Japanese haiku has spread all over the world and it inevitably acquires features of the cultural background and mindset of people living in other geographical spaces outside Asia.

Through poetry, such as this haiku poem, even if emotion is not directly expressed through words, readers work their way through adding emotion to its meaning as they build its meaning through interpretation and through the interaction with each and every element in the poem.

In the case of the poem by Rule (2024), while the language sounds objective and empty of emotion, we build emotion as readers through associations with the elements in the poems based on our personal experience with feeling enthusiastic at the arrival of the summer holidays. The poem can be applied to personal experience at any age, and the emotions can be those of enthusiasm, or of imagination, of contemplation, of daydreaming, of playing.

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**CHARACTERISTICS OF TEACHERS AS A CONSTRUCT IN THE STRUCTURE OF
TEACHING COMPETENCIES**

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ABSTRACT

Theoretical analysis of the structure of competencies reveals their most common constructs: knowledge, skills, attitudes, and values (as integral parts of competencies), which are linked to personality traits, psychophysical abilities, and motivations. Developed constructs are a prerequisite for the competencies required by every individual for successful functioning in a social environment. Constructs such as behavior, knowledge, skill, thinking, and attitudes can be logically considered as pedagogical principles and as such can be integrated into the fundamental constructs of teaching competencies. This highlights the existence of relationships between constructs such as psychophysical abilities and personality traits. If we consider personality traits within the context of teacher characteristics, then teacher characteristics can be viewed as a specific link between constructs in the structure of competencies. Therefore, the aim of our study is to identify the existence of a connection between teacher characteristics and teaching competencies. The quality of inclusive educational work in schools significantly depends on teaching competencies.

An empirical non-experimental study on the existence of a connection between teacher characteristics and competencies was conducted on a sample of 712 primary school teachers, using appropriate instruments. After self-assessment of general and specific teacher competencies, and the evaluation of teacher characteristics, a correlation analysis was conducted using Pearson's correlation coefficient. The following results were obtained: a weak correlation was identified between teacher characteristics and general teaching competencies ($p < 0.01$; $r = 0.47$); and a weak correlation between teacher characteristics and specific teaching competencies ($p < 0.01$; $r = 0.46$). Although the findings indicate a weak correlation of variables, it is important for our research that the existence of a correlation between general and specific competencies and teacher characteristics was confirmed. Additionally, a moderate correlation ($p < 0.01$; $r = 0.62$) between general and specific teaching competencies was identified.

It should be emphasized that the identified correlation of variables does not imply causality, even in the case of a very strong correlation.

Pedagogical implications: support empirical research on teacher competencies, given the importance and role of teachers in implementing a high-quality educational process.

Keywords: competencies, teacher characteristics, inclusive education.

INTRODUCTION

In the introductory part of the paper, the following are defined: competencies, teacher characteristics, inclusive educational work, and the structure of competencies.

Competencies present a theoretical and methodological challenge, which is the focus of interest among the scientific and professional public. They represent a response to changes and demands in the world of work, where the development of employees' abilities is prioritized. This is also true for teacher competencies, which are a dynamic combination of cognitive and metacognitive knowledge, skills,

abilities, attitudes, and values that enable an individual to act actively and effectively in a specific situation or profession (Дукић, 2019; Dukić, 2021)

In addition to knowledge of the subject they teach and an interdisciplinary understanding of their field, a teacher needs to have pedagogical and psychological knowledge, an understanding of students' developmental characteristics, learning styles, teaching skills, knowledge of strategies, methods, and techniques of teaching, as well as an understanding of the social and cultural context of education and schools (Jurčić, 2014; Hollenweger, 2016).

Therefore, for a teacher to be successful in their job, they must have developed general (generic) competencies and specific competencies, including pedagogical-psychological and methodological-didactic competencies. We will explain general and specific competencies in more detail. General competencies, represent appropriate multifunctional systems of knowledge, skills, abilities, and attitudes necessary for personal development, social inclusion, and employment (European Commission, 2010). They are universal in nature (generic and transferable). They include: instrumental, systemic, interpersonal and specific general competencies (Дукић, 2022; Dukić, 2023).

Specific competencies are the professional competencies of teachers for inclusive educational work, specifically for conducting educational work in an inclusive environment. They include:

- Competencies for supporting student personality development and the values of social inclusion;
- Competencies for inclusive teaching and learning;
- Competencies in subject matter, subject-specific pedagogy, and adapting instruction to students with special educational needs;
- Competencies for creating an inclusive learning environment;
- Competencies for communication and collaboration in inclusive working conditions;
- Competencies for professional development; and
- Competencies for participating in the development of the school and the educational system (Дукић, 2019; Dukić, 2023).

The quality of inclusive educational work in schools significantly depends on teacher competencies. Let us recall that the student is at the center of the teacher's inclusive educational work. Every student is given the opportunity for holistic and harmonious development to their personal maximum, respecting individual differences and abilities, and applying flexible curricula in a stimulating learning environment (Бранковић, 2011; Kafedžić, 2015). In this context, the role of the teacher is crucial.

The teacher has multiple roles: organizer, planner, leader, collaborator, helper, coordinator, diagnostician, therapist, and evaluator. It is essential for the teacher to be creative and skilled in applying new content, forms, and methods of work both inside and outside the classroom. Additionally, it is desirable for the teacher to demonstrate and develop, among other things, their integrity, personal strength, professionalism, and management ability (Župljanin, 2013). The teacher becomes a key factor with professional functions that significantly engage not only the intellectual but also the emotional and social spheres of their personality. In this context, the role of the teacher is crucial. The characteristics and competencies of the teacher come to the fore.

Theoretical analysis of the structure of competency reveals its most common constructs: knowledge, skills, attitudes, and values (as integral parts of competency), which are linked to personality traits, psychophysical abilities, and motives. Developed constructs are prerequisites for the competencies necessary for each individual to act successfully in a social environment.

Constructs such as behavior, knowledge, expertise, thinking, and attitudes can be logically considered as pedagogical principles and, as such, incorporated into the basic constructs of teaching competencies.

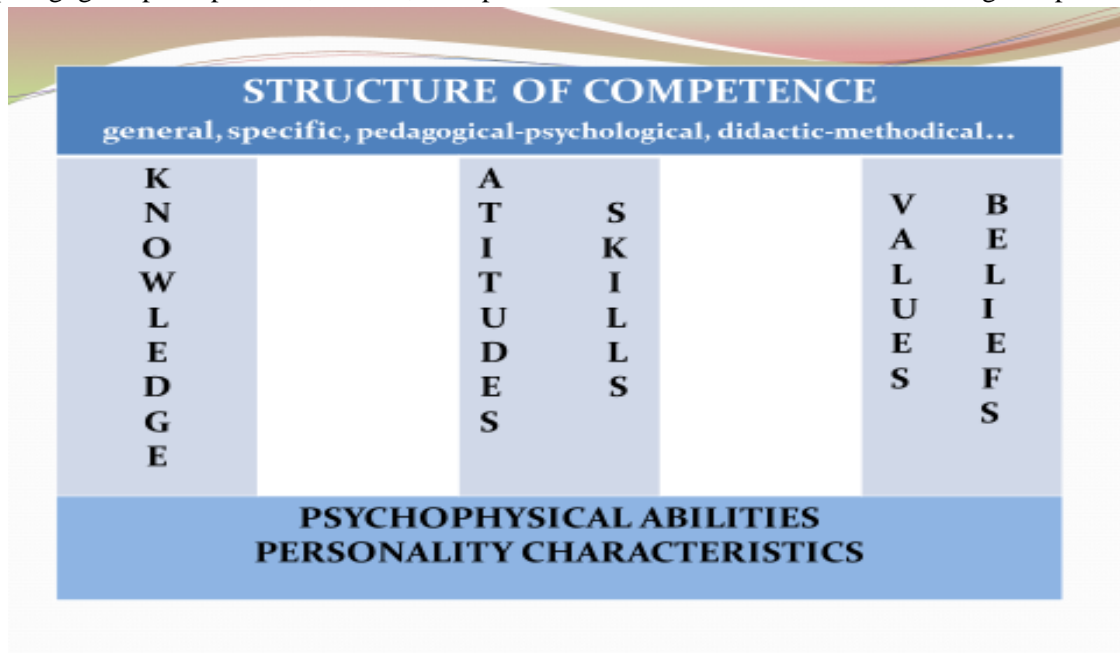


Figure 1. Structure of competence

In this context, the existence of connections and relationships between constructs such as psychophysical abilities and personality traits is emphasized (Дукић, 2019).

If personality traits are incorporated into the characteristics of teachers, then the characteristics of teachers can be viewed as a link between constructs in the structure of teaching competencies.

MATERIALS AND METHODS

In this part of the paper, the research objective, hypotheses, methods, and instruments are defined.

The **RESEARCH OBJECTIVE** is set as follows: The objective of our empirical non-experimental research is to identify the existence of a correlation between teacher characteristics and teacher competencies, observed through the structure of teaching competencies for conducting inclusive educational work in primary school.

Based on the research objective, we formulated the following hypotheses.

HYPOTHESES:

We hypothesize that there is a relationship between teacher characteristics and teacher competencies, observed through the structure of teaching competencies for conducting inclusive educational work in schools. Auxiliary hypotheses:

- We hypothesize that there is a relationship between teacher characteristics and general competencies.
- We hypothesize that there is a relationship between teacher characteristics and specific competencies.
- We believe that there is a relationship between general and specific teacher competencies.

RESEARCH METHODS AND INSTRUMENTS

The empirical non-experimental research was conducted using the method of theoretical analysis and synthesis and the survey research method, with the application of appropriate instruments:

- A five-point Likert scale for self-assessment of general and specific teacher competencies, and for assessing teacher traits;
- A survey questionnaire for teachers' attitudes and opinions about competencies.
- The following tests were applied: F-test, t-test, and χ^2 (chi-square) test.
- Pearson's correlation coefficient (r) was applied to identify the correlation between teacher traits and competencies.
- The results of this research were processed using the SPSS 20.0 for Windows statistical software package.

The SAMPLE is representative and represents the population of teachers employed in primary schools. There were 761 teachers in the sample, of which 633 female teachers and 128 male teachers. The teachers were predominantly highly educated, 75.40% of them with a university degree. 76% of teachers have up to 20 years of work experience.

PREVIOUS RESEARCH TASKS

To conduct the research task in accordance with the defined research objective, we previously investigated teachers' attitudes regarding general and specific teacher competencies, as well as teachers' attitudes about teacher traits as dimensions of pedagogical-psychological competence (according to self-assessments and peer assessments). This extensive research is documented under the title "Competencies and Professional Development of Teachers for Inclusive Educational Work in Primary Schools."

In the following text, we provide lists of competencies that teachers self-assessed and the characteristics of teachers that were evaluated for their importance in inclusive educational work.

a)

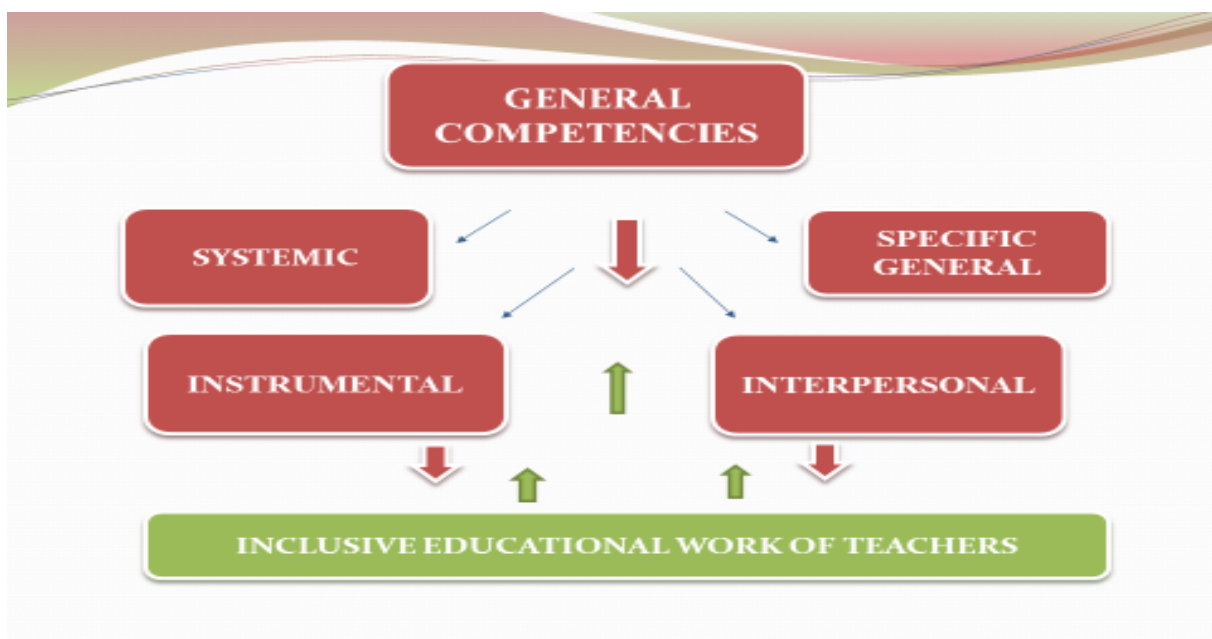


Figure 2. General competencies

The level of teachers' proficiency in GENERAL competencies was identified based on self-assessment of their proficiency in four groups of general competencies: INSTRUMENTAL, SYSTEMIC, INTERPERSONAL, and SPECIFIC GENERAL competencies, using 20 indicators.

b) Specific competencies are the professional competencies of teachers for inclusive educational work, specifically for conducting educational work in an inclusive environment. The level of teachers' proficiency in SPECIFIC competencies was identified based on self-assessment of their proficiency in all seven groups of specific competencies using 42 indicators.

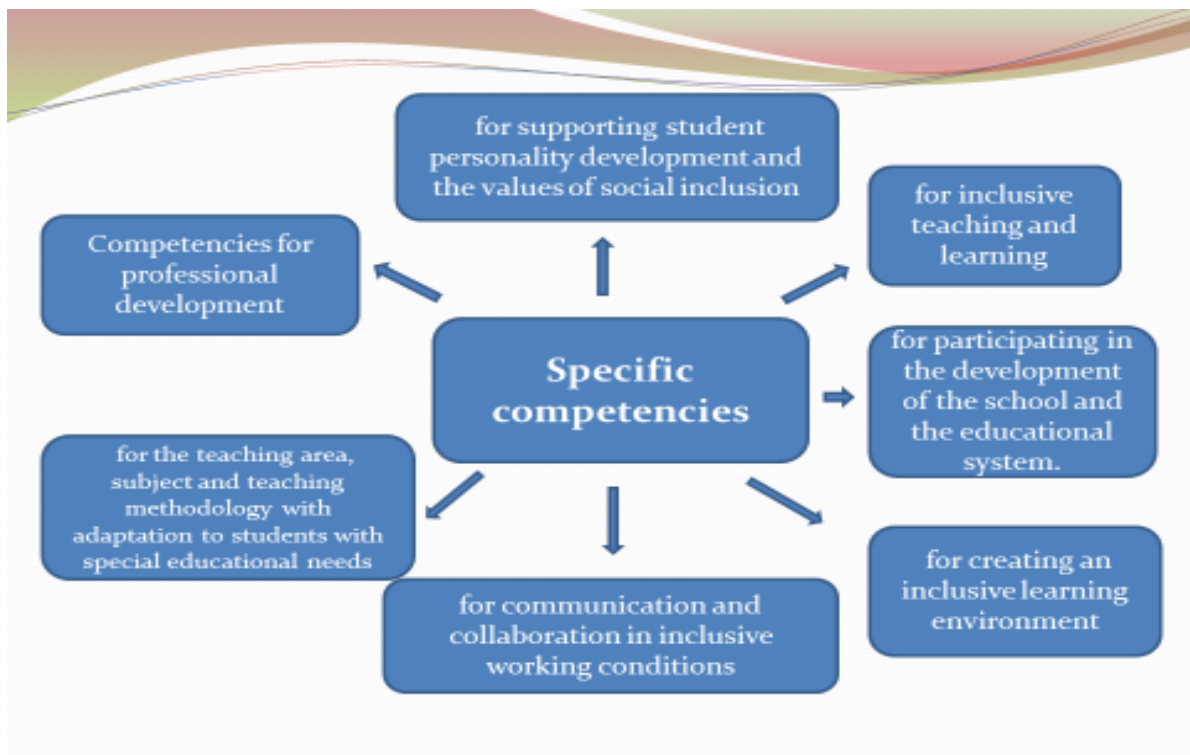


Figure 3. Specific competencies

c) Without intending to delve into a broader consideration of teacher characteristics, an assessment of desirable teacher characteristics for successful educational work was conducted. The statement perceived as teacher characteristics were rated on a scale from one to five, where the numbers signify: one - not important, to five - most important.

- Possesses emotional stability, self-control, and self-confidence;
- Has integrity (honesty with oneself, exuding honesty, fairness that fosters trust);
- Demonstrates professionalism (willingness to take responsibility for the success of each student), conscientiousness, and consistency;
- Exhibits pedagogical tact that generates student satisfaction with teaching (care, approachability, and calmness);
- Shows patience, openness, and flexibility;
- Has enthusiasm (to achieve goals and tasks successfully);
- Respects and understands students, expresses empathy and altruism;

- Possesses creativity for new challenges and sets demands according to students' capabilities and abilities;
- Enjoys their work;
- Has authority that is accepted by students.

Our findings indicated that teachers highly valued the considered traits. This suggests that these traits are familiar to them, reflecting their experiential understanding of a teacher as a person in the educational process, and thereby also reflecting pedagogical-psychological competence.

RESULTS and DISCUSSION

The relationship between teacher characteristics and competencies (both general and specific) was identified using correlation analysis, applying Pearson's correlation coefficient.

- a) By examining Table 1. and Figure 4. the application of correlation analysis identified a statistically significant relationship at the $p < 0.01$ level between the total score on the general competencies (GC) scale and the total score on the teacher characteristics (TCh) scale. The Pearson correlation coefficient is $r = 0.47$ and is statistically significant at the 0.01 level. Since the value of the Pearson coefficient falls within the range of 0.25 to 0.50, the finding indicates a weak association between the variables (general competencies GC and teacher characteristics TCh).

Table 1. *Pearson Correlation GC-TCh*

		SUMA GC	SUMA TCh
SUMA GC	Pearson Correlation	1	0,468
	Sig. 2-tailed)	-	0,000
	N	761	761
SUMA TCh	Pearson Correlation	0,468	1
	Sig.(2-tailed)	0,000	-
	N	761	761

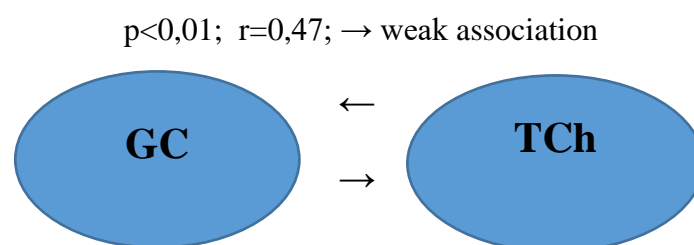


Figure 4. The correlation between general competencies and teacher characteristics

Although the findings indicate a weak association between the variables, it is important for our research that the sub-hypothesis about the existence of a relationship between general competencies and teacher characteristics was confirmed.

b) By examining Table 2. and Figure 5. the application of correlation analysis identified a statistically significant relationship at the $p < 0.01$ level between the total score on the specific competencies (SC) scale and the total score on the teacher characteristics (TCh) scale.

Table 2. *Pearson Correlation SC-TCh*

		SUMA SC	SUMA TCh
SUMA SC	Pearson Correlation	1	0,455
	Sig.(2-tailed)	-	0,000
	N	761	761
SUMA TCh	Pearson Correlation	0,455	1
	Sig.(2-tailed)	0,000	-
	N	761	761

Sig.=0,00; $p < 0,01$; $r = 0,46$; → weak association

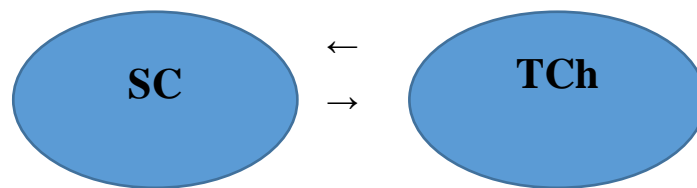


Figure 5. The correlation between specific competencies and teacher characteristics

The correlation coefficient is 0.46 and is statistically significant at the 0.01 level. The value of the Pearson coefficient falls within the range of 0.25 to 0.50, indicating a weak association between the variables (specific competencies and teacher characteristics).

The second sub-hypothesis about the relationship between specific competencies and characteristics of teachers was confirmed.

b) Upon reviewing Table 3. and Figure 6. through correlation analysis, a statistically significant relationship at the 0.01 level was identified between the total score on the scale of general competencies (GC) and the total score on the scale of specific competencies (SC).

(Sig. 0,00; $p < 0,01$; $r = 0,62$) → moderate association

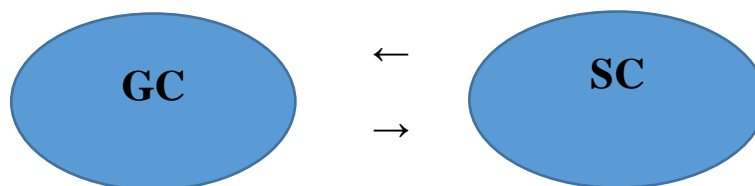


Figure 6. The correlation between general competencies and specific competencies

The Pearson correlation coefficient is $r = 0.62$ and is statistically significant at the 0.01 level. The value of the Pearson correlation coefficient falls within the range of 0.50 to 0.75, indicating a moderate to strong association between the variables of general and specific competencies. Therefore, the third subhypothesis was also confirmed.

Table 3. *Pearson Correlation GC-SC*

	SUMA GC	SUMA SC
SUMA GC Pearson Correlation	1	0,622
Sig.(2-tailed)	-	0,000
N	761	761
SUMA SC Pearson Correlation	0,622	1
Sig.(2-tailed)	0,000	-
N	761	761

It is important to emphasize that the identified association between the variables does not imply causality, even in the case of a very strong correlation.

CONCLUSIONS

1. Accelerated changes and increasingly complex demands of life and work in contemporary society necessitate the development of competencies.
2. Theoretical and empirical findings in the study of competency structures are foundational for further research and enhancement of teaching competencies.
3. Empirical findings have identified:
 - the existence of a relationship between teacher characteristics and general competencies;
 - the existence of a relationship between teacher characteristics and specific competencies;
 - the existence of a relationship between general and specific teacher competencies indicating a moderate correlation.
4. Therefore, empirical findings have confirmed the relationship between teacher characteristics and teacher competencies when viewed through the structure of teaching competencies required for conducting inclusive educational work in schools.
5. The findings confirmed that there are no "rigid" boundaries between competencies and that they intertwine to a certain extent. This could be one of the reasons why the terminological and conceptual issues of teacher competencies are complex, and the theoretical and methodological problems of determining the types of competencies and the criteria for their classification are even more complex.

Pedagogical implications: support empirical research on teacher competencies, given the importance and role of teachers in implementing a high-quality educational process.

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**COMPETENCIES IN HOTEL MANAGEMENT PROGRAMS: A COMPARATIVE
ANALYSIS OF HOSPITALITY GRADUATES AND RECRUITERS PERCEPTIONS**

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ABSTRACT

It is crucial for higher education institutions to continuously develop hospitality management programs to meet competencies and skills required by the industry. In this perspective, this paper aims to expose the differences between hospitality graduates' and recruiters' assessments of the competencies that hospitality employers need in the workplace.

A questionnaire about the classification of competencies was carried out with graduates (employees carrying a degree in hospitality management, from a university in Lebanon) and recruiters of the hotel industry in Lebanon who were asked to rate the importance of 27 competency /skill to be analysed. In order to achieve the objective of the research, individual interviews were conducted with 10 recruiters. Hospitality graduates and recruiters evaluated competencies/ skills associated with five domains: Leadership, interpersonal, creative, technical and administrative domains.

The results of this study showed that although graduates perceptions showed some differences with those of recruiters, overall, their perceptions of the competencies /skills required by the industry were similar. Both recruiters and graduates agree on the fact that the hospitality industry, in Lebanon, needed competencies related to the domain of soft skills (interpersonal skills, communication, ethics and leadership), but also strong conceptual and practical skills. Interpersonal skills were also marked as essential to the success of a recent graduate seeking a job. These are also the competencies most in demand by recruiters and hospitality professionals, according to similar studies conducted around the world.

Hospitality higher education institutions could use the findings of this study to design curricula that meet the industry's future needs and expectations with regards to competencies of future graduates.

Keywords: Employability, Hospitality management, Competencies, Curriculum, soft skills, Hospitality education.

**TECHNOLOGY ADOPTION AND CUSTOMER SATISFACTION: A STUDY OF MOBILE
PAYMENT SERVICES**

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ABSTRACT

The rapid pace of technological advancement necessitates continuous study and adaptation. This research document offers an in-depth exploration of the evolving landscape of mobile payment technologies and their impact on consumer behavior in the digital age. The central question guiding this research is: How have mobile payment technologies transformed consumer behavior, and what are the implications for the future of digital transactions? This question encompasses the technological advancements in mobile payments, shifts in consumer preferences and behaviors, and the strategic actions required by businesses and policymakers to adapt to these changes. The relevance of this study extends beyond the academic sphere, offering tangible insights for businesses, consumers, and policymakers. Chapter 1 introduces the study, highlighting the significant shift in consumer payment preferences and behaviors influenced by advancements in mobile payment technologies. It outlines the objectives, significance, and structure of the research. Chapter 2 presents a comprehensive analysis of mobile payment systems. It includes a detailed overview of services ranging from Apple Pay to Google Wallet, examines the technological infrastructure underpinning these solutions. The chapter concludes with a comparative analysis of various platforms, discussing user experience, and future trends. In Chapter 3, the focus shifts to exploring the consumer psyche, examining the critical role of trust, convenience. It assesses the impact of these factors on consumer preferences backed by case studies that illustrate both success stories and challenges in the mobile payment landscape. Chapter 4 delves into a comprehensive literature review, providing theoretical and empirical insights into mobile payment adoption and customer satisfaction. It analyzes various technology adoption models and consumer behavior theories, presents empirical studies on customer satisfaction. The chapter synthesizes these findings, offering a comprehensive understanding of the interplay between technology and consumer. This document aims to provide a holistic view of the mobile payment ecosystem.

KEYWORDS: mobile payments, mobile technology, customer satisfaction, consumer behavior, technology

1. INTRODUCTION

In the rapidly evolving landscape of the digital age, the convergence of technology and consumer behavior has fostered unprecedented changes in how transactions are conducted. Among the most significant developments is the advent and proliferation of mobile payment technologies. These technologies not only offer a testament to the ingenuity of modern financial solutions but also underscore a significant shift in consumer preferences and behaviors towards payments and transactions (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A.,(2019). This document aims to delve deep into the multifaceted domain of mobile payments, exploring its technological underpinnings, the consumer psyche surrounding its adoption, and the broader implications for businesses and society. The journey through this exploration begins with an overview of the evolution of mobile payment technologies, tracing their journey from simple mobile credit additions to sophisticated platforms like Apple Pay and Google Wallet. This evolution is not merely a tale of technological advancement but a reflection of a paradigm shift in consumer payment preferences, driven by a desire for greater convenience, security, and speed in transactions. The significance of this study lies in its comprehensive

approach to understanding mobile payments from both technological and consumer behavior perspectives. By analyzing the technological infrastructure, security protocols, and user experience design of mobile payment systems, alongside the trust, convenience, and security concerns of consumers, this document provides a holistic view of the current state and future directions of mobile payments. Moreover, through detailed comparative analyses, case studies, and a review of theoretical and empirical literature, this document aims to bridge gaps in existing knowledge, identify emerging trends, and offer insights into the factors driving the adoption and satisfaction of mobile payment services across different cultures and over time. Structured to facilitate a coherent and systematic exploration, the document is divided into chapters that progressively delve into various aspects of mobile payments, from technological perspectives and consumer psyche to a comprehensive literature review. Each chapter not only stands on its own in providing detailed insights into its focal topics but also contributes to the overarching understanding of mobile payments as a pivotal element in the digital age's economic transactions. The primary aim of this thesis is to dissect the complex ecosystem of mobile payment technologies and understand the dynamics of consumer behavior in this digital context. It seeks to unravel how technological advancements have reshaped consumer expectations and behaviors regarding payments and investigate the implications for businesses and the broader financial services landscape (Al-Dalawi, A.S.(2015)). This study is highly relevant in today's digital age, where mobile payments are becoming increasingly prevalent. Understanding the intersection of technology and consumer behavior is crucial for:

Businesses: To develop more user-friendly and secure payment solutions that meet consumer expectations. Policymakers: To create regulatory frameworks that ensure the security and reliability of mobile payment services while fostering innovation. Consumers: To gain insights into the security and convenience of mobile payment options, influencing informed choices and behaviors. Academic and Research Communities: To fill existing knowledge gaps and explore new areas of inquiry within the domains of digital finance and consumer behavior. In essence, this investigation not only seeks to contribute academically to the field of digital payments but also aims to provide practical insights that can guide the development of more robust, secure, and consumer-friendly mobile payment solutions. Through this comprehensive analysis, it aspires to pave the way for future research and innovation in the rapidly evolving landscape of digital transactions.

1.1 OVERVIEW OF THE EVOLUTION OF MOBILE PAYMENT TECHNOLOGIES

In today's digital age, the intersection of technology and consumer behavior has reshaped the landscape of commerce, particularly with the evolution of mobile payment technologies. As smartphones become increasingly ubiquitous, they serve not only as communication devices but also as powerful tools for conducting transactions and managing finances on the go. This convergence of technology and consumer behavior has ushered in a new era of convenience, security, and efficiency in the way people pay for goods and services (Gao, L., Waechter, K.A., (2015)). Mobile payment technologies have evolved significantly over the years, adapting to the changing needs and preferences of consumers. Initially, the introduction of Near Field Communication (NFC) technology paved the way for contactless payments, allowing users to simply tap their smartphones or smartwatches on compatible terminals to complete transactions. This technology provided a seamless and expedited payment experience, eliminating the need for physical cards or cash. As consumer demand for convenience continued to grow, mobile payment platforms expanded their capabilities to offer a broader range of services. The introduction of mobile wallets, such as Apple Pay, Google Pay, and Samsung Pay, transformed smartphones into digital wallets, storing payment information securely and enabling users to make purchases both in-store and online with just a few taps. Moreover, the rise of peer-to-peer (P2P) payment apps revolutionized the way people transfer money to friends, family, or acquaintances. Services like Venmo, PayPal, and Cash App allow users to send and receive money instantly, splitting bills or reimbursing each other for shared expenses with unprecedented ease. In response to the growing emphasis on security and fraud prevention, mobile payment technologies have also implemented advanced authentication methods, such as biometric recognition (e.g., fingerprint or facial recognition) and tokenization. These measures add an extra layer of protection to financial transactions, instilling

confidence in users and fostering widespread adoption of mobile payment solutions. Furthermore, the COVID-19 pandemic accelerated the adoption of contactless payment methods, as consumers sought ways to minimize physical contact and reduce the risk of virus transmission. Merchants increasingly embraced mobile payments to offer touch-free checkout options, further fueling the integration of technology into everyday consumer behavior (Jameel, A.S., Hamdi, S.S., Kareem, M.A., Raewf, M.B., Ahmad, A.R.,(2021).

1.2 The Paradigm Shift in Consumer Payment Preferences and Behaviors

In recent years, there has been a significant paradigm shift in consumer payment preferences and behaviors, driven largely by advancements in technology and changes in lifestyle habits. Traditional payment methods, such as cash and physical cards, are gradually being supplanted by digital alternatives, as consumers increasingly prioritize convenience, security, and seamless experiences in their financial transactions. One of the primary catalysts for this shift has been the widespread adoption of smartphones and mobile devices. With the majority of consumers now owning a smartphone, these devices have become central to everyday life, serving not only as communication tools but also as personal assistants, entertainment hubs, and, importantly, digital wallets. The convenience of having payment capabilities integrated directly into one's smartphone has led to a rapid increase in the use of mobile payment apps and services (Rampton, J.,(2016).

Moreover, the COVID-19 pandemic has accelerated this transition, as concerns about hygiene and physical contact prompted many consumers to seek out contactless payment options. Merchants and businesses quickly adapted to this shift by implementing contactless payment terminals and promoting mobile payment solutions, further solidifying the trend towards digital transactions.

Another key driver of the paradigm shift in payment preferences is the rise of e-commerce and online shopping. As consumers increasingly turn to online channels to make purchases, they are becoming accustomed to the convenience of digital payment methods. Services such as PayPal, Venmo, and digital wallets offered by tech giants like Apple and Google have gained popularity, allowing users to securely store their payment information and make purchases with just a few clicks. Additionally, the emergence of peer-to-peer (P2P) payment platforms has revolutionized the way individuals transfer money to friends, family, and acquaintances. These apps offer a convenient and efficient way to split bills, share expenses, and send money instantly, without the need for cash or checks. In tandem with the shift towards digital payments, consumers are also increasingly prioritizing security and fraud prevention. Biometric authentication methods, such as fingerprint and facial recognition, along with tokenization techniques, have become standard features of mobile payment apps, providing users with peace of mind and enhancing trust in digital transactions. As a result of these changes, businesses and financial institutions are adapting their strategies to meet the evolving needs and preferences of consumers. From implementing robust security measures to enhancing the user experience of their mobile payment apps, companies are investing in technology and innovation to stay competitive in an increasingly digital marketplace. The paradigm shift in consumer payment preferences and behaviors represents a fundamental transformation in the way financial transactions are conducted (Rathore, H.S.,(2016). As digital payment methods continue to gain traction, driven by technological advancements and changing consumer expectations, businesses must adapt to meet the demands of an increasingly digital-savvy and convenience-oriented customer base. This transformation in consumer payment preferences and behaviors reflects a broader societal shift towards digitalization and convenience. As technology continues to evolve and shape our daily lives, so too does our approach to managing finances and conducting transactions.

One of the notable aspects of this paradigm shift is the growing acceptance and adoption of contactless payment methods. Whether through NFC-enabled smartphones or wearable devices, consumers appreciate the speed and simplicity of tapping to pay, especially in environments where minimizing physical contact is paramount, such as during the COVID-19 pandemic. Furthermore, the convenience of digital wallets and mobile payment apps has fundamentally changed how consumers interact with their finances. With the ability to store multiple payment methods, loyalty cards, and even boarding passes in one centralized platform, users are empowered to streamline their financial management and seamlessly transition between different transactions. The rise of peer-to-peer payment platforms has

also reshaped social dynamics surrounding money transfer. What once involved cumbersome processes like writing checks or visiting ATMs has been replaced by the simplicity of sending funds with just a few taps on a smartphone. This shift has not only facilitated greater financial connectivity between individuals but has also fostered new forms of social interaction and collaboration(Gao, L., Waechter, K.A.,(2015).

A significant aspect of this paradigm shift is the increasing acceptance and adoption of contactless payment methods. Whether through smartphones or wearable devices equipped with NFC technology, consumers appreciate the ease and speed of tapping to pay. This convenience has become particularly relevant in situations where minimizing physical contact is crucial, such as during the COVID-19 pandemic.

Table 1. Factors influencing the paradigm shift in consumer payment preferences

Factor	Influence on Payment Behavior	Adoption Rate Increase	Consumer Preference Shift
Smartphone Adoption	High	Rapid	Towards mobile apps
COVID-19 Pandemic	Very High	Accelerated	Towards contactless
E-Commerce Growth	High	Steady	Towards online payments
Peer-to-Peer (P2P) Platforms	Moderate	Rapid	Towards digital transfers
Security Concerns	High	Steady	Towards secure transactions
Digital Wallets Usage	High	Rapid	Towards centralized management
Contactless Payments	Very High	Accelerated	Towards tap-to-pay
Integration in DailyLife	High	Steady	Towards digital integration

Source: Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. Eur. Bus. Rev. 31 (1), 2–24. <https://doi.org/10.1108/EBR-11-2018- 0203>

Moreover, the convenience offered by digital wallets and mobile payment apps has fundamentally altered how consumers interact with their finances. With the ability to store multiple payment methods, loyalty cards, and even boarding passes in one centralized platform, users can streamline their financial management and seamlessly transition between different transactions with ease. The rise of peer-to-peer payment platforms has also transformed the landscape of money transfer and social dynamics surrounding financial interactions (Fornell, C., Larcker, D.F.,(1981). Cumbersome processes like writing checks or visiting ATMs have been replaced by the simplicity of sending funds with just a few taps on a smartphone. This shift has not only facilitated greater financial connectivity between individuals but has also fostered new forms of social interaction and collaboration. Security has emerged as a paramount concern for consumers in the digital age, given the increasing frequency of data breaches and identity theft. In response, mobile payment technologies have implemented advanced security features such as biometric authentication and tokenization to safeguard sensitive data and build trust among users. Furthermore, the integration of mobile payments into various facets of daily life, including transportation, dining, entertainment, and shopping, has normalized digital transactions to the point where they are now expected rather than optional. This cultural shift underscores the enduring influence of technology on consumer behavior and highlights the imperative for businesses to prioritize digital innovation to remain competitive in today's marketplace (Statista.,(2017).

1.1 Objectives and Significance of the Study

The objectives of studying the paradigm shift in consumer payment preferences and behaviors are multifaceted. Firstly, it aims to understand the driving forces behind this transformation, including technological advancements, changes in societal norms, and shifts in consumer expectations. By identifying these factors, researchers can gain insights into the motivations and behaviors that shape the adoption of digital payment methods. Another objective is to examine the impact of this paradigm shift on businesses and financial institutions. By analyzing how companies are adapting to meet the changing needs and preferences of consumers, researchers can identify strategies for enhancing customer engagement, improving user experiences, and driving innovation in the realm of digital payments (Jameel, A.S., Hamdi, S.S., Karem, M.A., Raewf, M.B., Ahmad, A.R., (2021).

Furthermore, studying consumer payment preferences and behaviors can shed light on broader trends in digitalization and technological adoption. By exploring the cultural and societal implications of the shift towards digital transactions, researchers can better understand the ways in which technology is reshaping our daily lives and influencing consumer behavior across various domains. The significance of this study lies in its potential to inform strategic decision-making for businesses, policymakers, and other stakeholders in the financial industry. By fostering an environment conducive to innovation and trust, policymakers can facilitate the widespread adoption of digital payments, thereby unlocking economic opportunities and driving socio-economic development (Liébana-Cabanillas, F., Lara-Rubio, J., (2017). The study of consumer payment preferences and behaviors is essential for gaining insights into the ongoing transformation of the payments landscape and its broader implications for businesses, policymakers, and society as a whole. . Understanding the objectives and significance of studying the paradigm shift in consumer payment preferences and behaviors is crucial for various stakeholders in today's digital economy. By investing in technologies that enhance convenience, security, and user experience, businesses can gain a competitive edge and foster customer loyalty in an increasingly crowded marketplace (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A., (2019). The study of consumer payment preferences and behaviors is essential for various stakeholders, including businesses, financial institutions, policymakers, and society as a whole. By gaining insights into the objectives and significance of this research, stakeholders can collaborate to shape a future where digital payments are inclusive, secure, and empowering for all (Mouakket, S., (2020). Financial institutions also benefit significantly from insights into consumer payment behaviors. By understanding the factors driving the shift towards digital payments, they can adapt their services and infrastructure to meet evolving customer expectations. This may involve investing in technology to improve transaction security, enhancing digital banking platforms for a smoother user experience, or developing innovative products that cater to specific consumer needs.

1.2 Scope and Delimitation of the Study

The scope of the study encompasses an in-depth exploration of consumer payment preferences and behaviors in the context of digitalization and technological advancements. This involves investigating various aspects related to the adoption, usage, and perceptions of digital payment methods among different demographic groups, geographical regions, and socioeconomic backgrounds. The study seeks to analyze the factors influencing consumer decision-making processes regarding digital payments, including convenience, security, user experience, and social norms. It aims to uncover patterns and trends in consumer behavior, such as the adoption rates of different payment methods, the frequency of digital transactions, and the preferences for specific payment platforms or technologies (Haselton, T., (2017).

Furthermore, the study examines the implications of consumer payment preferences for businesses, financial institutions, policymakers, and society as a whole. This includes assessing the impact of

digitalization on traditional payment systems, identifying opportunities for innovation and growth in the digital payments market, and exploring regulatory challenges and policy considerations. While the scope of the study is broad, certain limitations and delimitations are acknowledged to ensure the feasibility and focus of the research. These may include constraints related to sample size, geographical coverage, data availability, and methodological approaches. For instance, the study may focus on specific demographic groups or regions to provide more targeted insights into consumer payment preferences. Similarly, certain types of digital payment methods or technologies may be prioritized for analysis based on their prevalence or significance in the market (Al-Dalawi, A.S., (2015). Additionally, the study may be limited by the availability of relevant data sources or the reliability of data collected through surveys or interviews. Researchers may need to exercise caution in interpreting findings and drawing conclusions based on the limitations of the data. Furthermore, the study may be delimited by its focus on specific research questions or objectives, excluding certain aspects of consumer behavior or payment preferences that fall outside the scope of the research. By acknowledging both the breadth of the research topic and its inherent limitations, researchers can conduct a rigorous and meaningful investigation that contributes valuable insights to the field (Fornell, C., Larcker, D.F., (1981). However, certain limitations and delimitations are acknowledged to ensure the feasibility and focus of the research. These limitations may include constraints related to sample size, geographical coverage, data availability, and methodological approaches. For example, the study may focus on specific demographic groups or regions to provide more targeted insights into consumer payment. Additionally, the study may be limited by the availability and reliability of data collected through surveys, interviews, or secondary sources. Researchers must carefully consider the quality and validity of the data when drawing conclusions and making recommendations (Singu, H.B., Chakraborty, D., (2022).

2. Detailed Overview of Mobile Payment Services: From Apple Pay to Google Wallet

In the realm of digital commerce, mobile payment systems have emerged as a transformative force, revolutionizing the way individuals conduct financial transactions. With the ubiquity of smartphones and the growing preference for convenient, secure, and seamless payment methods, mobile payment services have become integral to modern-day commerce. A comprehensive analysis of mobile payment systems from a technological perspective reveals the evolution, functionalities, and key players in this rapidly expanding ecosystem. At the forefront of mobile payment services are industry giants like Apple Pay and Google Wallet, each offering distinct features and capabilities tailored to meet the diverse needs of consumers and businesses alike (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A., (2019). Apple Pay, launched in 2014, utilizes Near Field Communication (NFC) technology to enable contactless payments at supported merchants. By securely storing payment information and tokenizing transactions, Apple Pay offers users a convenient and secure way to make purchases both in-store and online, using their compatible Apple devices such as iPhones, Apple Watches, and iPads. Similarly, Google Wallet, initially introduced in 2011, has evolved into Google Pay, offering a comprehensive suite of payment solutions integrated across various Google services and platforms. Google Pay allows users to store payment cards, loyalty cards, and transit passes securely, facilitating seamless transactions both in-store and online. With its support for peer-to-peer payments, integration with Google Assistant, and compatibility with a wide range of Android devices, Google Pay has established itself as a versatile and user-friendly mobile payment service (Gao, L., Waechter, K.A., (2015).

Table 2. Major mobile payment services.

Service	Launch Year	Technology	Unique Features	User Base (approx. millions, 2023)
Apple Pay	2014	NFC	Tokenization, Privacy focused	507
Google Pay	2011	NFC, Online	Integrated with Google services, P2P	150
Samsung Pay	2015	NFC, MST	MST for wider terminal compatibility	200
PayPal	1998	Online, P2P	Wide acceptance, Online payments	377
Venmo	2009	P2P	Social payments, P2P	70
Cash App	2013	P2P	P2P, Bitcoin trading	36

Source: Gao, L., Waechter, K.A. (2015). Examining the role of initial trust in user adoption of mobile payment services: An empirical investigation. *Inf. Syst. Front.* 19(3), 525–548. <https://doi.org/10.1007/s10796-015-9611-0>

Table 2, highlights the diverse landscape of mobile payment services, showcasing a range of technologies and features designed to cater to different consumer needs and preferences. In the digital era, mobile payment systems have transformed the way transactions are conducted, offering users unparalleled convenience and security. Among the prominent players in this space are Apple Pay and Google Wallet, each providing unique features and functionalities tailored to meet the needs of modern consumers (Zhang, J., Harjan, S., (2021).

A comprehensive analysis of mobile payment systems underscores their transformative impact on the digital economy. From Apple Pay to Google Wallet and an array of other services, these platforms have revolutionized the way individuals and businesses engage in financial transactions. As technology continues to advance, mobile payment systems are poised to play an increasingly central role in shaping the future of commerce, offering users unprecedented convenience, security, and flexibility in managing their finances.

2.1. Technological Infrastructure Underlying Modern Mobile Payment Solutions

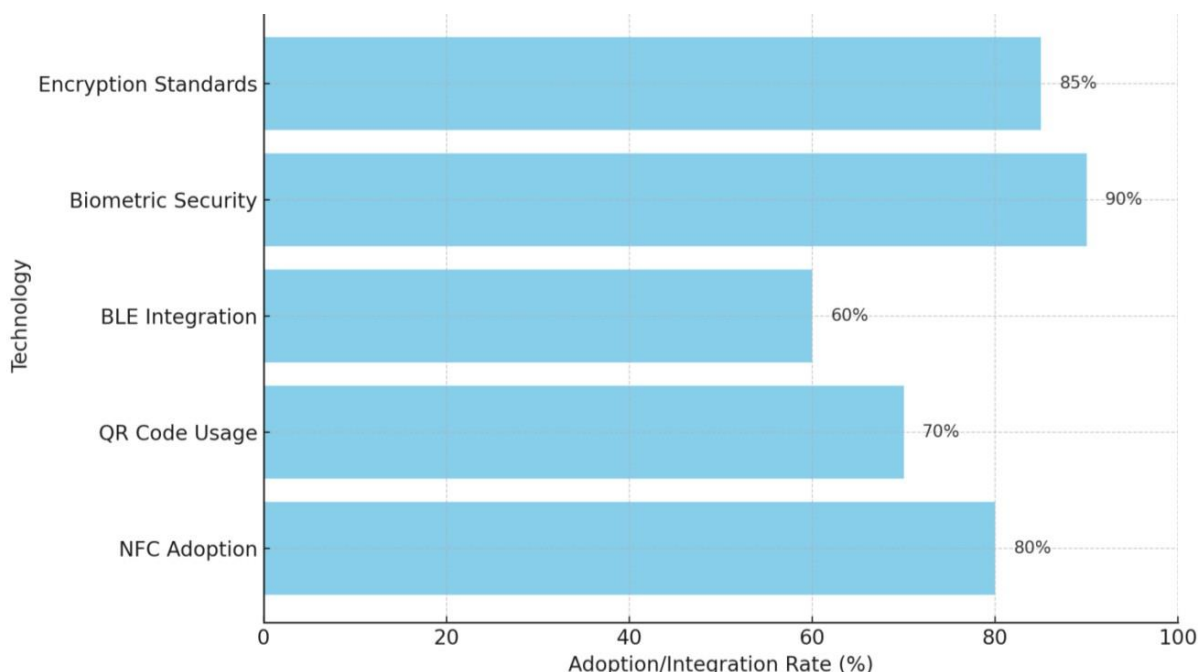
The technological infrastructure underlying modern mobile payment solutions is a complex and sophisticated ecosystem designed to facilitate secure, efficient, and seamless transactions. At its core, mobile payment systems rely on a combination of hardware, software, and communication protocols to enable users to initiate and authorize payments using their mobile devices (Al-Dalawi, A.S., (2015). One of the key components of this infrastructure is Near Field Communication (NFC) technology, which allows for short-range wireless communication between devices. NFC enables contactless payments by establishing a connection between the user's mobile device and a point-of-sale terminal or another NFC-enabled device.

In addition to NFC, mobile payment systems often leverage other communication technologies, such as Bluetooth Low Energy (BLE) or Quick Response (QR) codes, to enable alternative methods of payment initiation and authentication. BLE technology, for instance, allows for secure communication between devices over longer distances, enabling features like proximity-based payments and device pairing. QR codes, on the other hand, provide a convenient and versatile means of transmitting payment information, allowing users to scan a code displayed on a merchant's terminal or mobile device to initiate a transaction (Yeboah, E., Boateng, R., Owusu, A., Afful-Dadzie, E., Ofori-Amanfo, J., (2020). At the heart of the transaction processing infrastructure are secure data centers and networks equipped with advanced encryption and security protocols to protect sensitive payment information from unauthorized access or interception. These data centers employ industry-standard security measures, such as tokenization and end-to-end encryption, to ensure that payment data is encrypted and transmitted securely throughout the transaction lifecycle (Rathore, H.S., (2016).

Furthermore, mobile payment systems often incorporate additional layers of security, such as biometric authentication (e.g., fingerprint or facial recognition) and device-level encryption, to further safeguard

user data and prevent fraudulent transactions. By combining these advanced security features with robust transaction processing infrastructure, mobile payment solutions provide users with peace of mind and confidence in the security of their financial transactions. Moreover, mobile payment systems integrate additional layers of security, including biometric authentication and device-level encryption. Biometric authentication methods like fingerprint or facial recognition provide enhanced security by verifying the user's identity, while device-level encryption ensures that payment data stored on the device remains secure against unauthorized access.

Graphic 3. Usage Rates of Technologies in Mobile Payment Systems



Source: Chin, W.W. (1998). The Partial Least Squares Approach to Structural Equation Modeling, vol. 295. Lawrence Erlbaum, London.

Graphic 3, illustrates the hypothetical usage rates of various technologies integral to mobile payment systems, demonstrating their prevalence and importance within the ecosystem. Underpinning these communication technologies is a robust infrastructure of backend systems and servers that facilitate transaction processing, authentication, and authorization. When a payment is initiated, the user's payment information is securely transmitted to a payment gateway, which acts as an intermediary between the merchant's point-of-sale system and the financial institution that issued the payment method. The payment gateway verifies the authenticity of the transaction and forwards the payment request to the appropriate payment processor or acquirer for further processing.

In addition to NFC, mobile payment systems may incorporate other communication technologies like Bluetooth Low Energy (BLE) or Quick Response (QR) codes. BLE enables proximity-based payments and device pairing, while QR codes offer a versatile method for transmitting payment information, allowing users to scan codes displayed on terminals or other devices to initiate transactions (Singu, H.B., Chakraborty, D., (2022).

2.2 Security Protocols and Standards in Mobile Payments

Security protocols and standards play a critical role in ensuring the integrity, confidentiality, and authenticity of mobile payments, safeguarding sensitive financial information and protecting users against fraud and unauthorized access. One of the fundamental security protocols employed in mobile payments is encryption. Encryption techniques are used to encode sensitive data, such as payment card information and transaction details, making it unreadable to unauthorized parties. End-to-end encryption

ensures that data remains protected throughout the entire transaction process, from initiation to authorization, minimizing the risk of interception or tampering (Fornell, C., Larcker, D.F., (1981).

Furthermore, mobile payment systems often incorporate strong authentication mechanisms to verify the identity of users and ensure secure access to payment accounts. Biometric authentication methods, such as fingerprint recognition, facial recognition, or iris scanning, offer an additional layer of security by uniquely identifying users based on their physiological characteristics.

Table 3. Statistical overview of various security measures employed in mobile payments.

Security Measure	Purpose	Adoption Rate (%)
Encryption	Encode sensitive data to protect against unauthorized access	95
Tokenization	Replace sensitive data with unique tokens to minimize risk exposure	90
Biometric Authentication	Verify user identity based on physiological characteristics	85
Multi-factor Authentication (MFA)	Enhance security by requiring multiple forms of verification	80
PCI DSS Compliance	Ensure secure processing, storage, and transmission of card data	95
EMV Standards	Secure chip-based transactions and authenticate cardholder information	90
Regulatory Compliance (GDPR, CCPA)	Protect consumer data and ensure privacy rights	88
User Education & Awareness	Mitigate risk by informing users about best practices	75
Stakeholder Collaboration	Strengthen security measures and mitigate risks across the ecosystem	70

Source: Al-Sharafi, M.A., Arshah, R.A., Abo-Shanab, E.A., Elayah, N. (2016). The effect of security and privacy perceptions on customers' trust to accept internet banking services: An extension of TAM. J. Eng. Appl. Sci. 11 (3), 545–552.
<http://medwelljournals.com/abstract/?doi=jeas.2016.545.552>

Table 3, highlights the critical security protocols and standards in the mobile payment ecosystem, emphasizing the importance of each measure in ensuring transaction integrity and user security. Security protocols and standards form the backbone of mobile payment systems, safeguarding sensitive financial information and ensuring secure transactions. By implementing encryption, tokenization, strong authentication mechanisms, and adherence to industry standards and regulations, mobile payment providers can mitigate risks, enhance user confidence, and foster trust in the digital payment ecosystem (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A.,2019:p.179).

2.3 Integration with Existing Financial Systems

Integration with existing financial systems is a critical aspect of mobile payment solutions, facilitating seamless interoperability and enabling users to access their accounts, transfer funds, and make payments across various channels and platforms. To achieve effective integration, mobile payment providers must establish connections with a wide range of financial institutions, payment networks, and infrastructure components, ensuring compatibility and consistency in transaction processing (Mouakket, S., (2020). Moreover, integration with existing financial systems enables mobile payment providers to leverage existing authentication mechanisms and security protocols established by financial institutions. By aligning with industry standards and best practices, mobile payment platforms can ensure compliance with regulatory requirements and enhance the overall security of transactions (Pal, D., Funilkul, S., Patra, S., (2020). Furthermore, integration with existing financial systems enables mobile payment solutions to support a wide range of payment methods, including credit cards, debit cards, bank transfers, and digital wallets. This interoperability allows users to link their preferred payment methods to their mobile payment accounts, providing flexibility and choice in how they manage their finances.

Table 4. The key aspects of integration with existing financial systems for mobile payment.

Integration Aspect	Objective	Score Rating(1-10)
API Connectivity	Enable real-time data exchange between mobile payment platforms and financial institutions	10
Transaction Processing	Facilitate secure and efficient transaction verification and fund transfers	9
Payment Method Support	Support a wide range of payment methods for flexibility and user choice	8
Security Protocol Alignment	Align with existing security protocols of financial institutions for enhanced transaction security	10
Regulatory Compliance	Ensure mobile payment operations comply with financial regulations and standards	9
Value-Added Services	Integrate with third-party services for loyalty programs, rewards, and finance management tools	7
User Convenience Enhancement	Enhance user experience by providing seamless access to financial accounts and services	8
Financial Inclusion	Expand access to financial services for unbanked and underbanked populations	7

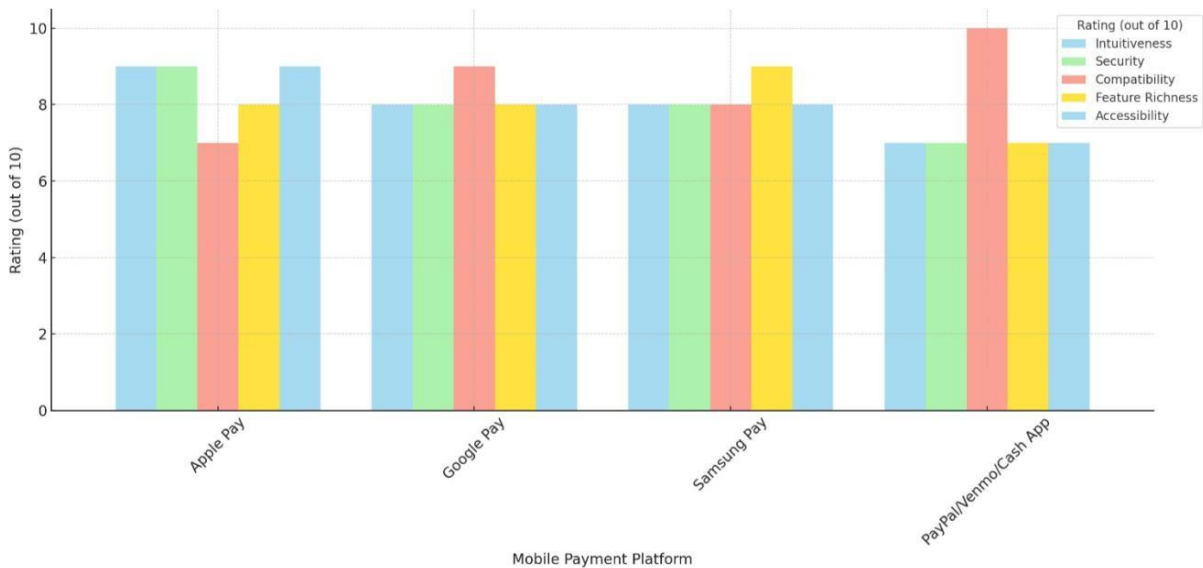
Source: Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A. (2019). Understanding the differences in students' attitudes towards social media use: A case study from Oman. In 2019 IEEE Student Conference on Research and Development (SCOREd), pp. 176–179, IEEE

Table 4, emphasizes the multifaceted approach required to achieve effective integration between mobile payment platforms and existing financial systems. Furthermore, integration with financial systems allows mobile payment platforms to leverage existing security protocols and authentication mechanisms established by financial institutions. This ensures that transactions conducted through the mobile app are secure and compliant with industry standards and regulations, enhancing user trust and confidence in the platform. Through seamless connectivity with banking infrastructure, mobile payment platforms can provide users with convenient access to their financial accounts, support diverse payment methods, ensure transaction security, and offer value-added services that enhance the overall user experience. By effectively integrating with existing financial systems, mobile payment solutions can drive innovation, foster financial inclusion, and empower individuals to manage their finances efficiently in the digital age (Ready, B., (2017).

2.4 User Interface and User Experience Comparisons

When comparing mobile payment platforms, a crucial aspect to consider is the user interface (UI) and user experience (UX) offered by each platform. Apple Pay, for instance, provides users with a sleek and intuitive interface that seamlessly integrates into the iOS ecosystem. Its design prioritizes simplicity and efficiency, allowing users to make payments quickly and easily using their iPhone, Apple Watch, or iPad. The incorporation of biometric authentication, such as Touch ID or Face ID, adds an extra layer of convenience and security, further enhancing the overall user experience. Similarly, Google Pay offers a user-friendly interface tailored to Android devices, ensuring consistency and familiarity for users accustomed to the Android ecosystem. The app's layout and navigation are designed to be intuitive and straightforward, enabling users to access their payment information and make transactions with minimal effort. Integration with other Google services, such as Gmail and Google Maps, further enhances the user experience by providing contextual information and suggestions relevant to the user's transactions (Zhang, J., Harjan, S., (2021).

Graphic 4. UI\UX Comparison of mobile payment platforms



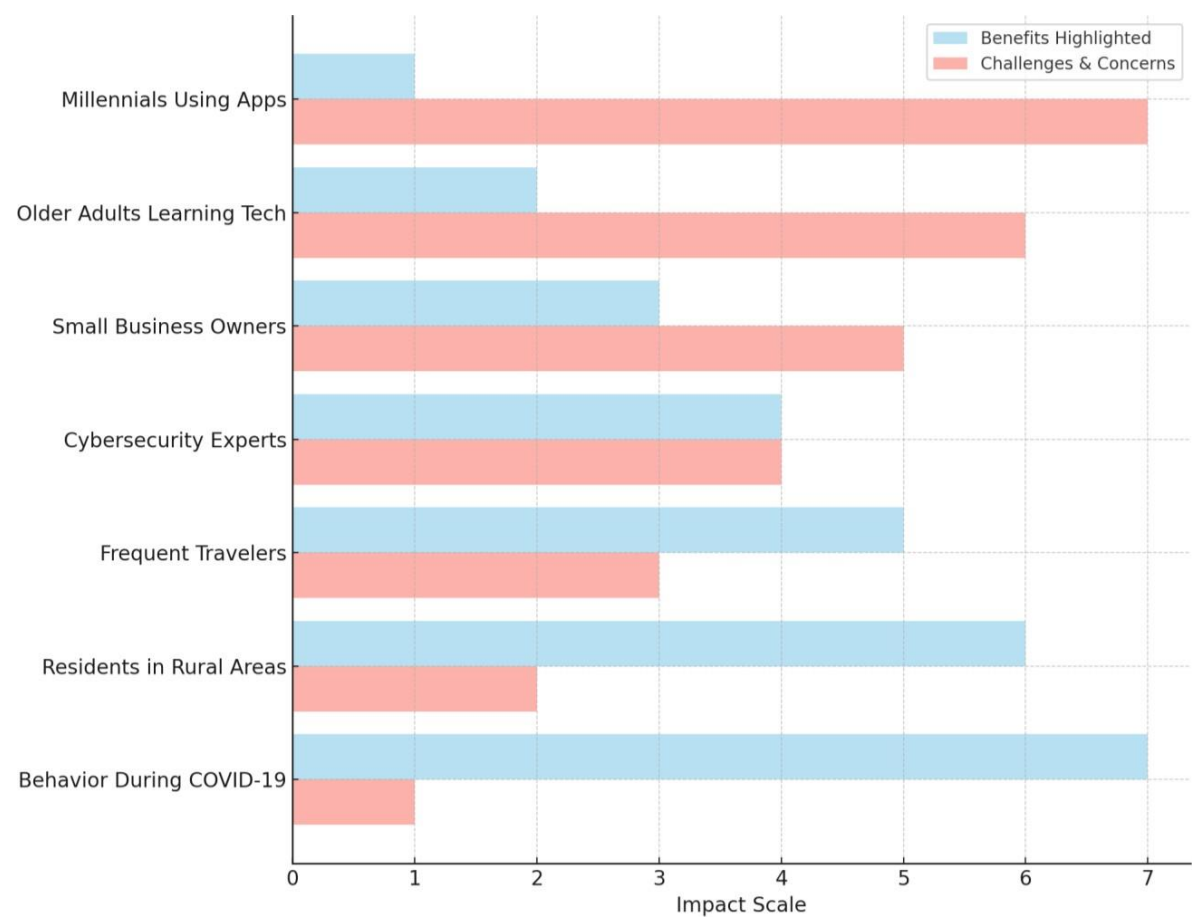
Source: Hammood, W.A., Mohamad, S., Arshah, R.A., Hammood, O.A., Al-Halbusi, H., Al- Sharafi, M.A. (2020). Factors influencing the success of information systems in flood early warning and response systems context. TELKOMNIKA 1 8(6), 2956–2961.

Graphic 4 rates each platform on Intuitiveness, Security, Compatibility, Feature Richness, and Accessibility, all scored out of 10. Furthermore, the user interface and experience comparisons extend beyond the initial payment process to include features such as account management, transaction history, and customer support. Apple Pay, Google Pay, and Samsung Pay all offer streamlined interfaces for managing payment methods, viewing transaction history, and accessing support resources within their respective apps. These features contribute to a cohesive and user-friendly experience, allowing users to manage their finances seamlessly from their mobile devices (Zhou, T., (2014).

2. CASE STUDIES: CONSUMER PERCEPTIONS AND EXPERIENCES WITH MOBILE PAYMENTS

Case studies provide valuable insights into consumer perceptions and experiences with mobile payments, offering real-world examples of how individuals interact with and perceive digital payment platforms in their daily lives. By examining these case studies, mobile payment providers can gain a deeper understanding of consumer behavior, preferences, and pain points, allowing them to refine their offerings and address user needs effectively. In a different case study, a small business owner implements mobile payment solutions in their store to cater to the preferences of tech-savvy customers and streamline the checkout process. While initially skeptical about the security and reliability of mobile payments, the business owner finds that customers respond positively to the new payment options, leading to increased sales and customer satisfaction. Through interviews and surveys, the cyber security expert identifies common concerns such as data privacy, identity theft, and fraudulent activities.

Graphic 5. Consumer perceptions and experiences with mobile payments



Source: Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24. <https://doi.org/10.1108/EBR-11-2018- 0203>

Case studies offer valuable insights into consumer perceptions and experiences with mobile payments, highlighting the benefits, challenges, and opportunities associated with digital payment platforms. By examining real-world scenarios and understanding the diverse needs and preferences of users, mobile payment providers can develop tailored solutions that meet the evolving demands of consumers while prioritizing security, usability, and trustworthiness in the digital payment ecosystem. Another case study delves into the experiences of frequent travelers who rely on mobile payment apps to facilitate transactions while abroad. These consumers appreciate the convenience of mobile payments for making purchases in foreign countries without the need to carry local currency or navigate unfamiliar payment systems. However, they express concerns about the security of their financial information when using mobile payment apps in unfamiliar environments with potentially different cybersecurity standards. Despite these concerns, the ease of use and accessibility of mobile payments outweigh the perceived risks for many travelers, making it a preferred payment method during their journeys (Jameel, A.S., Ahmad, A.R., (2020).

Table 5. Impact of various mobile payment success stories on consumer behavior and the economy,

Success Story	Impact Description	Impact on Consumer Behavior & Economy (1-10)
Financial Inclusion in Rural Areas	Empowered unbanked populations with access to financial services.	9
Economic Growth & Entrepreneurship	Enabled small businesses to expand and innovate with digital payments.	8
Adaptability During COVID-19	Facilitated contactless transactions and economic resilience during the pandemic.	9
Innovation in Emerging Markets	Promoted financial inclusion and growth in developing economies.	8
User-Centric Design & Engagement	Enhanced user experience and adoption through tailored solutions.	7
Trust & Credibility Building	Built long-term relationships based on security and reliability.	8
Digital Transformation Across Industries	Drove efficiency and customer satisfaction in retail, healthcare, and more.	7
Collaborative Ecosystems	Fostered innovation and scalability through partnerships.	8

Source: Haselton, T. (2017). "Say goodbye to your debit card: here's how to use your phone to pay at the store." [Online] Available at: <https://www.cnbc.com/2017/05/06/how-to-use-apple-pay-android-pay-samsung-pay.html>

Case study analysis of success stories showcases the transformative impact of mobile payments on consumer behavior, financial inclusion, and economic development. By providing secure, convenient, and accessible payment solutions, mobile payment platforms have empowered individuals, businesses, and communities worldwide, driving innovation, growth, and resilience in the digital economy. As mobile payments continue to evolve and expand, these success stories serve as inspiration for future initiatives and collaborations aimed at harnessing the full potential of mobile technology to create positive social and economic change (Jameel, A.S., Hamdi, S.S., Kareem, M.A., Raewf, M.B., Ahmad, A.R., (2021).

3. LITERATURE REVIEW

Theoretical frameworks provide valuable insights into the factors influencing technology adoption and consumer behavior in the context of mobile payments. Several prominent theories and models have been developed to explain the adoption and usage of technology, including mobile payment platforms. These frameworks draw on concepts from psychology, sociology, economics, and information systems to elucidate the drivers and determinants of consumer adoption and satisfaction with mobile payment solutions (Yeboah, E., Boateng, R., Owusu, A., Afful-Dadzie, E., Ofori-Amanfo, J., (2020). In addition to these theoretical frameworks, empirical studies have identified several factors that influence mobile payment adoption and customer satisfaction, including perceived security, perceived usefulness, perceived ease of use, trust, compatibility with existing habits and routines, perceived financial risk, and perceived social influence. These factors interact in complex ways to shape consumer attitudes, intentions, and behaviors towards mobile payments, highlighting the multidimensional nature of technology adoption and consumer satisfaction in the digital age (Zhou, T., (2014). Moreover, Social Cognitive Theory (SCT) provides insights into the role of social influences, self-efficacy, and observational learning in shaping individual behavior (Al-Qaysi, N., Mohamad-Nordin, N., Al-Emran, M., Al-Sharafi, M.A., (2019). Additionally, the Service Quality (SERVQUAL) model offers a framework for assessing customer satisfaction and service quality across dimensions such as reliability,

responsiveness, assurance, empathy, and tangibles. Applied to mobile payments, the SERVQUAL model suggests that customer satisfaction is influenced by the perceived quality of service provided by mobile payment providers, including factors such as transaction reliability, customer support, security features, and user interface design. By evaluating and improving service quality along these dimensions, mobile payment providers can enhance customer satisfaction and loyalty (Al-Dalawi, A.S., (2015).

3.1 Formulating a Comprehensive Understanding

Formulating a comprehensive understanding in the field of mobile payment research involves synthesizing theoretical and empirical insights to develop a nuanced understanding of user experiences, perceptions, and behaviors in the digital payment landscape. By integrating findings from theoretical frameworks, empirical studies, cross-cultural analyses, interdisciplinary perspectives, and ecosystem-centric analyses, researchers can develop comprehensive models that explain the factors influencing user satisfaction with mobile payment services. At the core of formulating a comprehensive understanding is the integration of theoretical frameworks explaining technology adoption and consumer behavior with empirical evidence obtained from studies examining user satisfaction with mobile payment services. Theoretical frameworks such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovations theory provide conceptual frameworks for understanding the determinants of user adoption and usage of technology-based services. Furthermore, formulating a comprehensive understanding involves integrating perspectives from cross-cultural studies, interdisciplinary approaches, and ecosystem-centric analyses with theoretical frameworks to develop holistic models of user satisfaction in the digital payment landscape. Cross-cultural studies offer insights into cultural, social, and contextual factors influencing user experiences and perceptions of mobile payment services across diverse global markets. Interdisciplinary approaches draw insights from psychology, sociology, economics, and design to explore the cognitive, affective, and social dimensions of user satisfaction. Ecosystem-centric analyses examine how ecosystem integration, platform convergence, and service bundling impact user satisfaction with mobile payment services (Herzallah, F.A.T., Al-Sharafi, M.A., Alajmi, Q., Mukhtar, M., Arshah, R.A., Eleyan, D., (2019). Formulating a comprehensive understanding in mobile payment research entails integrating theoretical and empirical insights from diverse sources to develop holistic models that explain the factors influencing user satisfaction with mobile payment services. By synthesizing insights from theoretical frameworks, empirical studies, cross-cultural analyses, interdisciplinary perspectives, and ecosystem-centric analyses, researchers can develop nuanced understandings of user experiences and perceptions in the dynamic and rapidly evolving digital payment landscape, ultimately informing the development of effective strategies for enhancing user engagement, loyalty, and satisfaction.

4. CONCLUSION

To sum up, this study into the convergence of technology and consumer behavior in the digital era, particularly through the perspective of mobile payment technologies, has uncovered a dynamic and swiftly changing landscape. The progression from the early stages of mobile payments to the sophisticated ecosystems we use today highlights not only technological advancements but also a significant shift in consumer expectations, preferences, and behaviors concerning financial transactions. Our research emphasized the essential roles of trust, convenience, and security in influencing consumer adoption and satisfaction with mobile payment services. It is evident that these elements, along with the technological foundations of mobile payment systems, are crucial in shaping the future of digital transactions. The comparative studies and case analyses of various mobile payment platforms have offered valuable insights into their effectiveness and the reasons behind their success or failure. This thesis aimed to unravel the complexities of mobile payments and has, through thorough examination, illuminated the technological progress, consumer behavior dynamics, and strategic considerations vital for advancing the field. The purpose was not just to catalog the current state of mobile payment technologies but to provide a framework for understanding how these technologies interact with human behavior in the context of financial transactions (Fornell, C., Larcker, D.F., (1981). The relevance of this thesis extends beyond the academic sphere, offering tangible insights for businesses, policymakers, and consumers. For businesses, the findings underscore the importance of designing user-centric payment solutions that prioritize security and convenience. For policymakers,

the importance of creating regulatory frameworks that protect consumers while fostering innovation has been highlighted. And for consumers, this thesis offers a deeper understanding of the mobile payment landscape, empowering them to make informed choices. As we look to the future, the thesis questions that guided this exploration remain pertinent. The conclusion of this study, therefore, is not an end but a call to action for continued research, innovation, and dialogue among all stakeholders involved in the digital payments ecosystem. It invites scholars, industry professionals, policymakers, and consumers to contribute to a future where digital payment technologies are not only technologically advanced but also socially inclusive, environmentally sustainable, and deeply integrated into the fabric of global commerce (Al-Dalawi, A.S., (2015).

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**TEACHING ADOLESCENTS WITH ADHD OR LEARNING FROM THEM? THAT
IS THE QUESTION!**

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ABSTRACT

Attention deficit hyperactivity disorder or ADHD is a neurodevelopmental disorder that most often occurs in children but may also persist across adolescence and adulthood. It mainly affects three main behaviours: hyperactivity, impulsivity, and inattention along with difficulties also in areas of academic achievement, social and emotional development. ADHD, being one of the most prevalent mental health disorders in children, has been widely researched medically. On the other hand, education of students with ADHD has been under-researched and specifically the knowledge and perceptions of teachers. According to various studies the presence of students with ADHD in classrooms has led to a negative rapport between teachers-students which resulted in more negative perceptions, added tensions in the class dynamics and additional work for teachers who were already overwhelmed by their load. Studies have also pointed to teachers' emotional toll and heightened stress level due to the presence of few students with ADHD in their classes, their difficult behaviours, and their need for additional instructional support. This presentation will therefore shed the light on middle school teachers' knowledge about ADHD and the limited but crucial information they have regarding ADHD, its main symptoms and causes, and the best instructional and behavioural practices to be used in classrooms with adolescents. This presentation will also present international data on teachers' knowledge and perception about ADHD as well as the challenges faced on the academic to allow for more awareness about this pressing matter, reflect together as an educational community about research and practical gaps but also present solutions to optimize the teaching/learning processes and ensure in return students' rights to quality and rights-based education.

Keywords: 302 Words

**COGNITIVE DISSONANCE AND CHRISTIAN RELIGIOUS EDUCATION:
BELIEF, VALUES AND BEHAVIOR**

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Universitas Kristen Indonesia

ABSTRACT

Cognitive dissonance is a psychological phenomenon that occurs when there is a conflict between a person's beliefs, values, and behaviors. In the context of Christian Religious Education (CRE) in a multicultural society, cognitive dissonance can arise when religious teachings clash with local cultural values or practices. This study analyzes the impact of cognitive dissonance on the behavior and interpretation of Christian teachings in a multicultural environment. Using a qualitative approach with interpretive techniques, the research involves in-depth interviews and participatory observations in various multicultural Christian communities. The results show that cognitive dissonance often arises when individuals attempt to balance Christian teachings with local cultural norms. Strategies to address this dissonance include reinterpreting religious teachings, compromising behaviors, or seeking more inclusive theological justifications. This research emphasizes the importance of flexible and contextual religious education that recognizes cultural diversity and encourages dialogue and theological adjustments. These findings aim to contribute to the development of a more adaptive CRE curriculum in multicultural societies.

Key words: Cognitive dissonance; behavior; multicultural; Christian Religious Education (CRE)

FACTORS INFLUENCING CAREER CHOICES OF COLLEGE STUDENTS

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ABSTRACT

The process of choosing a career is complicated and affected by a number of variables, such as socioeconomic status, cultural norms, educational opportunities, personal interests, and family expectations. Career choice greatly influences future professional and personal fulfilment and is a significant, decisive decision for students and graduates. In the context of Barak Valley, Assam (India), where socio-cultural dynamics are diverse, understanding the factors that shape career choices among college students is of higher importance. For educational institutions, policymakers, and career counsellors, understanding and shaping the influence of career choices among college students is crucial. This research investigates the determinants affecting the career choices of college students in Barak Valley, Assam (India). The present study is based on primary data collected from students and graduates of different colleges in three districts of Barak Valley, Assam (India). The major finding sheds light on the significant influences of family expectations, peer pressure, socio-economic status, and personal interests on career choices. The paper tries to convey a message to the educated group of society that making a good career choice is highly important for self-actualization.

Keywords: Factors Influencing, Career choice, Socio-economic Status, College Students.

INTRODUCTION

Career selection is one of several significant decisions that students will make in determining future plans. This decision will impact them throughout their lives. The essence of who the student is' will revolve around what the student wants to do with their life-long work. It is possible to say that choosing one's ideal career is everyone's top priority. However, college students seem to be more concerned about their future careers. The career choices of college students are profoundly influenced by a variety of factors, that shape their aspirations, goals, and professional paths. In the Barak Valley region of Assam, India, these influences take place due to the region's diverse cultural heritage, economic landscape, and educational opportunities. Understanding the factors that shape career decisions among college students in this region is crucial for designing effective educational and career development initiatives tailored to their specific needs and aspirations. The Barak Valley region, includes districts such as Cachar, Karimganj, and Hailakandi, is characterized by its diverse population, rich cultural traditions, and a combination of urban and rural communities.

This study aims to identify the key factors that significantly impact career choices among college students in the Barak Valley region by conducting surveys and data analysis. Understanding these factors is crucial for educational institutions, policymakers, and community stakeholders in designing effective interventions and support mechanisms to assist students in making informed career decisions aligned with their aspirations and the needs of the region. Through this research, we aim to contribute to the body of knowledge on career development within the Barak Valley region, providing insights that can inform targeted initiatives aimed at fostering the personal and professional growth of college students and contributing to the socio-economic advancement of the region as a whole.

REVIEW OF EARLIER RESEARCH WORK

Hadiyati, M. A., & Astuti, B. (2023) explored the factors influencing students' career choices, emphasizing the significance of career decisions during adolescence. Factors such as intelligence, special talents, interests, personality, and family background play crucial roles in shaping career preferences. The study's qualitative approach through interviews, observations, and documentation provides valuable insights for educational institutions and career practitioners to enhance career guidance programs. However, the paper acknowledges limitations in considering all relevant factors that may influence career choices, highlighting the complexity of this decision-making process.

K.G. Priyashantha, W.E. Dahanayake & M.N. Maduwanthi. (2023) conducted a systematic literature review to investigate factors influencing career indecision over the last two decades. Through the analysis of 118 articles, the study identified four main determinants of career indecision and highlighted eight factors/areas for future research. The paper provides theoretical and practical implications for practitioners and policymakers, emphasizing the importance of addressing individual, contextual, and social factors in understanding and addressing career indecision.

Shahid et al., (2022) explored the relationship between students' career choices, motivations, and academic performance in medical education. The study, conducted at Yusra Medical College, Islamabad, reveals that the most common reasons for choosing a medical profession were the desire to help people, personal satisfaction, and interest in the field. Despite the prevalent influence of parental expectations on career decisions in a family-oriented society, the lack of doctors in society emerged as a significant motivation for students. Interestingly, the research indicates that academic performance among medical students is largely independent of their reasons and motivations for entering the medical profession. The findings suggest that while motivations like the desire to help others play a role in career choice, they may not directly impact academic success, providing valuable insights for medical educationists and highlighting the complexity of career decision-making processes among students.

Silvino B. Lupas Jr., Elizabeth N. Farin (2021) provided a comprehensive analysis of the factors influencing career choices among STEM students in Zambales. The study utilized a descriptive assessment method and a survey questionnaire to determine the career preferences of STEM students in Public Secondary High Schools in Zone 2, Division of Zambales. The findings highlighted the importance of personal career preferences, family support, peer influence, and school guidance in the career decision-making process of students. The research sheds light on the significance of understanding the complex process of career decision-making and its impact on students' future endeavours. Additionally, the paper emphasizes the role of teachers, parents, researchers, and students themselves in recognizing the profound influence of career choices on individuals' lives, providing valuable insights for various stakeholders in the education sector.

Khalil Omar et al., (2021) have investigated the crucial factors that impact students' career choices, focusing on personality, parents or guardians, peer groups, career guidance counsellors, and environment while exploring the significance of economic considerations. The study, conducted at the Faculty of Business and Management, UiTM Puncak Alam, utilized multiple regression analysis to establish relationships between the aforementioned variables and career choices among 436 final semester undergraduate students. The research revealed that personality, parents or guardians, peer groups, career guidance counsellors, and environment significantly influence students' career choices, emphasizing the importance of various stakeholders in aiding students towards making informed career decisions. The paper contributes a clear understanding of the complex dynamics influencing career choices among undergraduate students, offering recommendations for stakeholders to enhance career decision-making processes and mitigate potential dissatisfaction in future career pursuits.

Andrea S. Gubik (2021) explored the factors influencing Hungarian students' entrepreneurial career decisions using the 2018 GUESSS database. It investigates the impact of positive entrepreneurial attitudes, knowledge about entrepreneurial processes, family entrepreneurial backgrounds, and the university environment on students' career aspirations. The study provides comprehensive understanding of entrepreneurial intentions, offering a broad analysis of individual characteristics, family backgrounds, and the students' self-assessments on various influencing factors, contributing significantly to the understanding of entrepreneurial career choices in Hungary.

Gregory Hennessy and Jeffrey (2021) discussed the complexities of career decision making, emphasizing the evolving challenges in today's dynamic work environment, such as increased career mobility and contingent employment. It highlights the need for a shift towards understanding career decisions as heuristic-driven processes, advocating for real-time data capture methods to unravel how individuals navigate uncertain career landscapes. The paper calls for a broader perspective that considers not only individual traits but also decision-making environments and social influences, offering valuable insights for future research directions.

Ethel Ndidiamaka Abe and V. Chikoko (2020) investigated the factors influencing career decision-making among STEM students at a university in South Africa. It explores the complex interplay of interpersonal, intrapersonal, and career outcome expectancy factors that shape students' career choices, shedding light on the multifaceted nature of these decisions. By employing a hermeneutic

phenomenological approach to traditional content analysis, the study uncovers the significant roles played by family, teachers, peers, and personal interests in guiding students towards STEM careers. The paper not only contributes to the existing literature on career decision-making in STEM but also provides valuable insights for educators and policymakers to address skills shortages in the field, making it a noteworthy addition to the scholarly discourse on this topic.

S. Saranapala and U. M. Devadas. (2020) studied the crucial aspect of career choice among management and commerce undergraduates in Sri Lankan national universities. By exploring various factors influencing career decisions, such as personal and job-related factors, the study enlightens the level of career awareness among students. The findings emphasize the significant impact of personal factors on career choices, suggesting the need for enhanced career development activities within university curricula to better align students with suitable career paths.

Islam et al. (2020) have studied a comprehensive analysis of college students' perceptions regarding nursing as a career choice. The study, conducted with 164 respondents using a descriptive cross-sectional approach, reveals that a majority of students view nursing as a respectful and honourable profession, with a significant portion perceiving it as a female-only career choice. The findings underscore the growing demand for nursing globally, emphasizing the need to address factors influencing students' career choices in the healthcare sector. Thus, the paper elucidates the perception of nursing among college students, highlighting the importance of understanding and promoting nursing as a viable and esteemed career option.

Nimra Sharif, Nawaz Ahmad & Sami Ullah Sarwar (2019) explored the various factors influencing career choices among young students in Pakistan, focusing on influencers such as mothers, fathers, tutors, future income, future status, and societal differences. Through data analysis using one sample t-test and one-way repeated Measure ANOVA, the study highlights the significant impact of these influencers on career decisions. The literature review analyses the roles of parents, particularly mothers, in shaping students' career aspirations. Additionally, the discussion emphasizes the importance of fathers in career development and the influence of future income and status on career decisions. As a result, the study offers useful information on the complex factors that shape young students' career choices in Pakistan.

Loan et al., (2019) studied the stages of the career decision-making process for secondary students enrolling in Vocational and Technical Education Institutes (VTE) in Vietnam. It identifies four key stages: needs identification, information search, evaluation of alternatives, and choices, each influenced by various factors like personal interest, family context, school support, professional educational system, and socio-economic factors. The paper highlights the lack of vocational guidance in Vietnamese secondary schools and emphasizes the pivotal role of teachers and administrators in providing students with information about higher education and vocational programs. Furthermore, it discusses how parental influence, especially in families with non-farming backgrounds, impacts students' decisions to pursue higher education or vocational training, showcasing the evolving perspectives on career choices in Vietnam. The study underscores the importance of these factors in shaping policies and programs to support secondary students in making informed career decisions in the Vietnamese context.

Irshad Ahmad Najar & Dr. M. Yousuf, (2019) have discussed about the intricate process of career selection, emphasizing that it is not merely based on individual interest but is influenced by a myriad of factors such as personality, environment, attitudes, family background, and more. It highlights the significance of considering various determinants in making informed career choices to ensure long-term success and fulfilment. The paper provides valuable insights into the complexities of career decision-making, stressing the need for a holistic approach that takes into account the multifaceted nature of career selection.

K. Gedam et al. (2019) have carried out a thorough systematic literature review on career decision-making (CDM) from 1991 to 2018, analysing 127 peer-reviewed journal articles. It categorizes articles based on research methods, journals, authors, and countries of study, highlighting the evolution of the field over time. The study identifies untapped research areas and emphasizes the need for further exploration in industries beyond vocational sectors and in countries with limited CDM research. The paper concludes by discussing the limitations of the study and the potential for future research in enhancing career decision-making processes.

Humayon et al., (2018) investigated the impact of family influence, personal interest, and economic considerations on the career choices of undergraduate students in Vehari, Pakistan. Utilizing a

quantitative research design with cross-sectional data, the study reveals that these factors significantly influence students' career decisions. Despite limitations in sample size and generalizability, the paper provides valuable insights for understanding the dynamics of career choice among undergraduate students in higher educational institutions in Pakistan. Thus, study concluded that each of these variables significantly influences career choice in a positive way.

Kamalpreet Kaur & Navneet Kumari., (2018) have pondered the comparison of career decision making, achievement motivation, and self-efficacy among senior secondary school students from Punjab based on gender and stream. The study reveals insignificant differences in achievement motivation across gender and stream, with males reporting higher self-efficacy than females. Also, the research highlights the importance of personal factors in career decision-making and the role of achievement motivation in striving for success. The methodology employed enriches the study by providing valuable insights into the levels of career decidedness and self-efficacy among students, contributing to the existing literature on adolescent development and educational psychology.

Shahzad et al., (2018) have evaluated the factors influencing students' career choices, highlighting variables like socioeconomic background, environment, personality, educational background, opportunity, and motivation. Through Confirmatory Factor Analysis (CFA) and Structure Equation Modelling, the study establishes the connections between these factors and career selection. The cross-sectional design and sample selection from various educational levels contribute to a comprehensive understanding of the determinants shaping students' career decisions, offering valuable insights for educational and career counselling professionals.

Twumasi et al., (2018) have carried out a thorough systematic review to explore factors influencing youths' career choices in collectivist and individualistic cultures, emphasizing family expectations in collectivist settings and personal interests in individualistic settings. Social responsibility and societal expectations play significant roles in youth career decision-making across cultures. The study highlights the need for further research on parental influence, diversity, and bicultural youths' career prospects. While the review provides valuable insights into cultural influences on career choices, it acknowledges limitations in generalizing findings to all cultural orientations within countries.

Kazi, Ahmed, Sharif, and Nimra (2017). Through a quantitative approach using questionnaires, the study highlights the significance of interest in the subject as the primary factor impacting career decisions, with additional considerations such as financial outcomes, ease of subject, and future job opportunities playing minor roles. The paper emphasizes the importance of aligning students' preferences with educational offerings to prevent dissatisfaction and career failures, underscoring the need for effective career counselling programs in educational institutions.

Mwaa Mutinda Alphonse., (2016) analysed the crucial role of parental factors in shaping the career choices of high school students in Kenya. It highlights the impact of parents' education levels, occupations, and values on students' career decisions, emphasizing the need for a thoughtful career choice process to ensure meaningful and satisfying career paths. The study's findings aim to empower parents to make informed decisions during their children's career selection process, ultimately contributing to a more purposeful career development among high school students in Nairobi County.

Selvanathan et al., (2016) have discussed the determinants of career choices among undergraduate students in Malaysia. Through an exploratory strategy involving literature review and a descriptive research approach with a questionnaire survey, the study identifies three key independent variables - Personal Factors, Job Related Factors, and Organizational Factors - influencing career choice. The findings reveal strong positive correlations between these variables, explaining 89.7% of the variation in career choice. The paper contributes into clear understanding of the factors shaping career decisions among Malaysian undergraduate students, offering significant implications for workforce planning and development in the country.

Anwar Ali Mohammad Abdo (2016) focused on the significance of career choice among undergraduate students, particularly in relation to factors such as self-efficacy, family influence, personal interest, and economic considerations. The study presents findings from Universitas Indonesia, showing a gender distribution among respondents and emphasizing the importance of salary considerations in career decisions. It highlights the development of a model for influencing factors in career choice, providing a practical implication for industry recruitment strategies. The paper concludes with suggestions for future research, emphasizing the need to explore additional factors influencing career decisions among students.

Koech et al., (2016) investigates the factors influencing career choices among undergraduate students at the University of Eldoret in Kenya, focusing on aspects like peer influence, gender, parental influence, job opportunities, and personal interest. The study utilized questionnaires with both closed and open-ended questions to gather data from second, third, and fourth-year students, highlighting the importance of career benefit factors in decision-making. The findings revealed that family factors, peer influence, and role models play significant roles in shaping students' career choices, with career benefit factors being the most influential. Additionally, the study showed a positive correlation between career choices and advice from high school teachers, mentors, and role models.

James and Denis. (2015) highlighted the factors influencing career choice among undergraduate Agriculture students at Makerere University, Uganda. It highlights the importance of agriculture in addressing poverty and unemployment in Sub Saharan Africa. The study utilized a structured questionnaire to collect data on demographic characteristics, factors influencing career choices, and attitudes towards farming after university. The study concluded that most students were direct entrants from A' Level, with a fair male to female ratio, indicating the need for support in making informed career decisions. Overall, the paper provides significant insights into the perceptions and motivations of undergraduate students towards pursuing a career in agriculture, shedding light on the challenges and opportunities in this field.

Mirza Naveed Shahzad et al., (2014) has evaluated various factors influencing students' career decisions, such as educational background, socioeconomic status, personality, and motivation. The study conducted in Gujrat city with a sample size of 380 students implemented stratified random sampling and utilized methods like confirmatory factor analysis and neural network analysis to validate the factors influencing career choices. The paper presents essential findings into the complex interplay of determinants affecting students' career decisions, offering a comprehensive analysis through statistical techniques like cluster analysis and ROC curves.

Maxwell. D. Eremie. (2014) focused on the factors influencing career choices among Senior Secondary School Students in Rivers State, Nigeria. Through a sample of 400 students from five secondary schools, the study found significant differences in career choices between male and female students, particularly in terms of the prestige of a profession, gender parity, and parental influence. The findings suggest the importance of involving professional career counsellors in the decision-making process to consider students' interests, abilities, skills, and personalities, aligning with previous research on the influence of prestige and gender parity on career choices.

Olamide & Olawaiye (2013) showed the factors influencing career choices among secondary school students through a Likert-type scale questionnaire analysis. It delves into the impact of environment, opportunity, and personality on career decisions, highlighting significant differences in students' perceptions based on gender. The study emphasizes the importance of early career exploration and informed decision-making to guide students towards fulfilling and suitable career paths.

V. Anojan and B. Nimalathan (2013) investigates the factors influencing career choices among second-year undergraduate students at the Faculty of Management Studies & Commerce, University of Jaffna, Sri Lanka. By presenting statistical values of influencing factors, the study provides valuable insights for understanding the determinants of students' career decisions. The paper suggests the importance of conducting similar research across various faculties to comprehensively evaluate the factors influencing students' career choices, emphasizing the need for more in-depth statistical analyses for clearer explanations.

Shumba and Naong, (2012) in their study explored the factors influencing students' career choices and aspirations in South Africa through a quantitative study involving 133 first and second-year university students. The study highlights the significant influence of family, self-identification of preferred career choices, and teachers on students' career decisions, emphasizing the importance of parental guidance, teacher support, and early career guidance programs in schools. The findings align with existing literature on the impact of family and school environments on career choices, indicating that career decisions are often made long before university entrance based on subjects chosen in school. Overall, the study offers insightful information about

the intricate interactions between educational, familial, and personal factors that shape students' career aspiration in the context of South Africa.

Paul Greenbank (2012). Career Decision-making by Business School Students presents a compelling case study highlighting the challenges faced by undergraduates in aligning their academic experiences

with their career goals. The study emphasizes the importance of developing students' employability skills to succeed in the competitive graduate labour market. By analysing the factors influencing students' decision-making processes and employability development, the paper underscores the need for Business Schools to focus on encouraging critical evaluation of values underlying career preparation strategies.

Smitha Bhat et al., (2012) discussed the factors influencing the career choices of medical graduates through a cross-sectional observational study of 250 interns from five medical colleges in Mangalore, Karnataka. The study reveals that the majority of interns considered post-graduation essential, with a high preference for clinical specialties like Medicine, Surgery, Obstetrics, and Paediatrics. Gender significantly influenced specialty choices, with males leaning towards Medicine and Surgery, while females preferred Obstetrics and Paediatrics. The findings highlight the importance of job satisfaction, income, lifestyle friendliness, and career prospects in determining specialty choices, providing valuable insights for policy modifications to encourage junior doctors to pursue underrepresented yet essential fields in medicine.

Kochung Edwards and Migunde Quinter. (2011) examine the various factors influencing career choices among secondary school students in Kisumu. Through a descriptive survey design involving 332 students, the study reveals that factors such as availability of advancement opportunities, learning experiences, personal interests, and external influences play significant roles in shaping students' career decisions. The conclusion reveals the importance of considering individual preferences, opportunities for growth, and external factors in guiding students towards suitable career paths, providing valuable insights for educational policymakers and career counsellors.

Mutekwe et al., (2011) examined the factors influencing female students' career choices and aspirations in Zimbabwean schools. Through qualitative methods like focus group interviews, the study uncovers how gender role socialization, parental expectations, teacher attitudes, and the gendered occupational landscape impact girls' career decisions. The paper highlights the need to challenge gender stereotypes in education and career choices to empower female students to pursue traditionally male-dominated fields, emphasizing the role of parents, teachers, and the curriculum in fostering gender equality in career aspirations.

Tanuja Agarwala (2008) have studied the career choice determinants of management students in India, emphasizing the influence of skills, competencies, and family members like fathers on their decisions. It also explores the cultural values of individualism-collectivism and the protean/conventional career orientations of MBA students, providing valuable insights into the career decision-making processes within the Indian context. The study's findings contribute to the existing literature by shedding light on the factors and relationship types that impact the career choices of Indian MBA students, offering implications for career counselling practices and highlighting the significance of familial and cultural influences on career decisions.

Singaravelu et al., (2005) investigates the career development behavior of Asian international, non-Asian international, and domestic students, focusing on factors influencing their career and major choices. The study reveals similarities in the level of career certainty among the three groups but variations in the influences of family, school counsellors, and friends. Notably, the father's role stands out as significant across all groups, aligning with existing literature on decision-making influenced by family values. However, the study acknowledges limitations such as a small sample size and the need to consider within-group differences when generalizing the findings to international students beyond the studied institution.

The research paper by Albion et al., (2002) have examined the factors influencing career decision-making in adolescents and adults through two studies using the Career Decision-making Difficulties Questionnaire. The study validates the multidimensional structure of the questionnaire, highlighting common difficulties across different age groups. It emphasizes the evolving nature of career decision-making, moving from a static event to a dynamic construct. The paper investigates into the historical context of career counselling and the changing landscape of work, shedding light on the importance of understanding how individuals navigate career choices at various life stages.

Michael Borchert. (2002) explored the factors influencing high school students' career choices, focusing on the impact of environments, opportunities, and personality traits. The study utilized statistical analysis to investigate how these variables shape students' decisions, with a sample population of 325 senior students. Through pilot studies and data analysis, the paper delves into the significance of parental

educational levels, personality perceptions, and the quality of life in guiding students towards their career paths.

The research paper by Lent et al., (2002) focused on factors influencing occupational field selection, barriers to pursuing choices, and coping strategies through quantitative method. The study explores various barriers faced by students, such as personal adjustment difficulties, financial concerns, and negative social influences, emphasizing the importance of considering both contextual and personal factors in understanding career choice implementation. The paper also highlights the influences on expected career choices, including interests, work experiences, and social/family influences, shedding light on the complexity of decision-making processes among university and technical college students. Tang, Fouad, and Smith (1999) showed the factors shaping Asian Americans' career decisions, employing a path model to analyse variables such as acculturation, family background, and self-efficacy. By investigating the relationships among these predictors and career choices in a sample of 187 college students, the research supports the notion that Asian Americans' occupational preferences are influenced by a combination of cultural adaptation, familial influences, and personal beliefs. While the study provides valuable insights into the career development of Asian Americans, caution is warranted in generalizing the findings due to the diverse nature of the Asian American population and the limitations inherent in the sample selection and study design.

Pak Auyeung and John Sands investigates the factors influencing accounting students' career choices across different cultural backgrounds, focusing on Australian, Hong Kong, and Taiwanese students. The study reveals that factors like parental, peer, and teacher influence, as well as association with others in the field, significantly impact career choices for Hong Kong and Taiwanese students, while Australian students are more influenced by aptitude for the subject matter. Surprisingly, material factors such as employment availability, prestige, earning potential, and cost of education are more critical for Hong Kong and Taiwanese students. The study provides valuable insights into the cultural variations in career choice determinants among accounting students, highlighting the importance of considering cultural backgrounds in career counselling and educational planning.

OBJECTIVES

The main objective of this research is to study the factors influencing career choices of college students. The specific objective of this study are as follows:

1. To investigate personal, family, and peer group influence on the career choices of college students in Barak Valley, Assam.
2. To explore how socio-economic and cultural factors influence the career choices of college students in Barak Valley.
3. To study the influence of education and experience on the career choices of college students in Barak Valley.
4. To analyse the influence of the job market and available opportunities on the career choices of college students in Barak Valley.

HYPOTHESES

1. Personal, family, and peer group have no influence on the career choices of college students in Barak Valley, Assam.
2. Socio-economic and cultural factors have no influence on the career choices of college students in Barak Valley.
3. Education and experience have no influence on the career choices of college students in Barak Valley.
4. Job market and available opportunities have no influence on the career choices of college students in Barak Valley.

METHODS

The study is descriptive in nature and is based on primary data collected from 207 students and graduates across various colleges in the three districts of Barak Valley, Assam, India. Barak Valley comprises of Karimganj, Hailakandi, and Cachar districts. An appropriate sample size at a 95% confidence level was considered for the study. The respondents were selected using Simple Random Sampling, and data was

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gathered through a structured questionnaire. The data was analysed using one-sample t-tests to evaluate the influence of various factors on career choices.

DATA ANALYSIS AND RESULT

In order to fulfil the objective of this research a structured questionnaire was prepared and distributed to college students. The Demographic profile of the respondents is given below:

Demographic Profile:

Gender

Sl no	Gender	Frequency	Percent
	Male	124	59.9
	Female	83	40.1
	Total	207	100.0

(Table 6.1 Gender of the respondents)

Age Group

Sl no	Age Group	Frequency	Percent
	18-21	59	28.5
	21-24	101	48.8
1.	24 and above	47	22.7
	Total	207	100.0

(Table 6.2 Age of the respondents)

Current Academic Qualification

Sl no	Academic Qualification	Frequency	Percent
	Under Graduate	150	72.5
	Post Graduate	57	27.5
	Total	207	100.0

(Table 6.3 Academic Qualification of the respondents)

Findings- Objective 1 - Personal, family, and peer group influence on the career choices of college students in Barak Valley, Assam.

Table no- 6.4 Shows Influence of Personal, Family and Peer group

Sl no.	Statements	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
	I consider my own interests and passions when making my career	88	102	13	3	1
	My own strengths and weaknesses significantly influence my career choice.	82	106	14	3	2
1.	My career choices are influenced by my personality type.	70	89	37	7	4
2.	I consider my skills and abilities when choosing a career.	86	89	26	5	1
3.	My parents have a great influence in deciding my career.	60	72	53	20	2
4.	My family's expectations have a significant influence on my career	61	75	50	18	3
5.	My family's professional background significantly influences	52	70	47	30	8
6.	The opinion of friends or peers have a significant influence on my	28	64	61	43	11
7.	The influence of teachers, mentors, or role models significantly influence my career decision.	45	86	55	16	5
8.	The role of career counselling is important in shaping my career decisions.	53	89	43	18	4

The above table shows that personal, family, and peer influences significantly influence college students' career choices in Barak Valley, Assam. A substantial number of students either strongly agree or agree with these influences. They consider their interests, strengths, and skills, along with family expectations and friends' opinions, when making career decisions. Teachers, mentors, and career counselling also play important roles. Thus, the responses highlight the significant role of personal, familial, and social influences in shaping the career choices of students in Barak Valley.

Now, to test these hypotheses, one-sample t-test was conducted using data collected from 207 respondents. The results are summarized as follows:

Hypothesis-1 Personal, family, and peer group have no influence on the career choices of college students in Barak Valley, Assam.

Table – 6.5 Hypothesis Testing of Objective 1

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Personal/Family/Peer Group Influence	207	3.8923	0.53175	0.03696

Table-6.6 T-test on the influence of Personal/Family/Peer Group

One-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Personal/Family/Peer Group Influence	105.313	206	0.000	3.89227	3.8194	3.9651

Interpretation- The above table shows the results of the one-sample t-test with a high t-value of 105.313 and a p-value of 0.000, which strongly reject the null hypothesis *Personal, family, and peer group have no influence on the career choices of college students in Barak Valley, Assam*, suggesting that Personal, family, and peer group have a significant influence on the career choices of college students in Barak Valley, Assam. Furthermore, the mean difference of 3.89227, along with the 95% confidence interval (3.8194 to 3.9651), further supports this conclusion. Therefore, it is evident that these factors significantly influence the career choices of college students in Barak Valley, Assam.

Findings- Objective 2 - To explore how socio-economic and cultural factors influence the career choices of college students in Barak Valley

Table-6.7 Shows Influence of Socio-economic and Cultural Factors

Sl no	Statements	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
	I feel pressured to choose a particular career path due to societal expectations. "Passions when making my career choice."	32	87	43	38	7
	Societal expectations regarding prestige and status significantly influence career choice.	45	79	47	33	3
1.	Societal expectations about gender roles significantly influence career choices in our community.	38	71	58	33	7
2.	My cultural background affects my career choices.	30	62	36	71	8

3.	My family financial support greatly influences my career choice.	69	82	36	12	8
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The above table shows a clear consensus among college students in Barak Valley regarding the significant influence of societal expectations, particularly regarding prestige, status, and gender roles, on their career choices. A substantial number of respondents agree that these factors play a pivotal role in shaping their career decisions. However, opinions are divided regarding the influence of cultural background and family financial support, with some agreement but also a notable portion expressing neutrality or disagreement on these factors.

Hypothesis-2 Socio-economic and cultural factors have no influence on the career choices of college students in Barak Valley.

Table-6.8 Hypothesis Testing of Objective 2

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Socio-economic and Cultural Factors	207	3.5372	0.76737	0.05334

Table-6.9 T-test on the influence of Socio-economic and Cultural Factors

One-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Socio-economic and Cultural Factors	66.320	206	0.000	3.53720	3.4320	3.6424

Interpretation- The above table depicts that the results from the one-sample t-test, with a t-value of 66.320 and a p-value (Sig. 2-tailed) of 0.000, strongly reject the null hypothesis that *socio-economic and cultural factors have no influence on the career choices of college students in Barak Valley*. Therefore, it can be concluded that socio-economic and cultural factors indeed have a significant influence on the career choices of college students in Barak Valley.

Findings- Objective 3- *To study the influence of education and experience on the career choices of college students in Barak Valley.*

Table-6.10 Shows the Influence of Education and experience

Sl no.	Statements	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
	The importance of academic performance significantly shapes my career choices.	56	115	23	10	3
	My educational level significantly influences my career choices.	68	107	24	5	3
1.	My skills and experiences like internships and part-time jobs influence my career choice.	45	98	34	28	2

The above table shows that a significant level of agreement with the influence of education and experience on career decisions. A substantial number of students agree that academic performance, educational level and experience play a significant role in shaping their career choices. While there are some variations in opinions, with smaller numbers expressing neutrality or disagreement, the overall responds suggests that education and experience are perceived as influential factors in determining career paths among college students in Barak Valley.

Hypothesis-3 Education and experience have no influence on the career choices of college students in Barak Valley.

Table-6.11 Hypothesis Testing of Objective 3

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Education and Skill related Factors	207	3.9646	0.66572	0.04627

Table-6.12 T-test on the influence of Education and Skill related Factors

One-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Education and Skill related Factors	85.682	206	0.000	3.96457	3.8733	4.0558

Interpretation: From the above table, the results of the one-sample t-test strongly reject the null hypothesis that *education and experience have no influence on the career choices of college students in Barak Valley*. With a remarkably high t-value of 85.682 and a p-value of 0.000, it's evident that education and skill-related factors significantly influence career decisions. The 95% confidence interval (3.8733 to 4.0558) further supports this conclusion, indicating a substantial influence. Therefore, it's clear that education and experience play a crucial role in shaping the career choice of students in Barak Valley.

Findings- Objective 4- *To analyse the influence of the job market and available opportunities on the career choices of college students in Barak Valley.*

Table-6.13 Shows Influence Job market & Available Opportunities

Sl no.	Statements	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
	The level of competition in a particular field strongly influences my career choice.	50	105	41	8	3
	The prestige associate with certain professions influences my career decisions.	46	90	54	15	2
1.	The perception of job securities influences my career choice	50	91	44	20	2
2.	The availability of job opportunities in desired field	57	91	40	16	3
3.	The potential for career advancement influences my	43	101	51	8	4
4.	The perception of job satisfaction significantly Influences my career	52	104	38	10	3
5.	The geographical location of job opportunities influences my career choices	54	83	44	21	5

The above table suggests that among the factors presented, the level of competition in specific fields significantly influences the career choices of college students in Barak Valley, with a considerable number strongly agreeing or agreeing. Other factors such as the availability of job opportunities, perception of job security, and potential for career advancement also receive significant agreement. Conversely, factors like the prestige associated with professions and the geographical location of job opportunities receive relatively lower agreement. Therefore, it can be concluded that competition, job security perception, and career advancement potential are the primary factors in shaping the career choices of students in the region while prestige associated with professions and geographical location suggesting a lesser influence on career choice as compared to other factors.

Hypothesis-4 Job market and available opportunities have no influence on the career choices of college students in Barak Valley.

Table-6.14 Hypothesis Testing of Objective 4

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Job Market and Available Opportunities	207	3.8468	0.65374	0.04544

Table-6.15 T-test on the influence of Job Market and Available Opportunities

One-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Job Market and Available Opportunities	84.660	206	0.000	3.84679	3.7572	3.9364

Interpretation- From the above table, the results of the one-sample t-test indicate a significant influence of job market and available opportunities on the career choices of college students. The high t-value of 84.660 and a p-value of 0.000, indicates that the null hypothesis *Job market and available opportunities have no influence on the career choices of college students in Barak Valley* is rejected. The 95% confidence interval of the difference (3.7572 to 3.9364) further confirms this significance, suggesting that job market dynamics and available opportunities have significant influence on career choice.

CONCLUSION

The study on factors influencing the career choices of college students in Barak Valley, Assam, concludes that all the factors including – personal interest, family, peer group, significantly influence career choices. Socio-economic and cultural backgrounds, education and experiences, and job market dynamics and available opportunities also influence these choices. Statistical analyses strongly reject the null hypotheses, underscoring the substantial impact of these diverse factors. Thus, the career choices of college students in Barak Valley are influenced by a combination of personal, social, and economic factors. Recognizing these influences is crucial for modifying more effective educational programs and career counselling services that address the specific needs and aspirations of students in this region.

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**THE ROLE OF GAME-BASED LEARNING FOR CHILDREN IN EDUCATION, OVER
MERE GAMIFICATION ALTERNATIVE TITLE: WHY GBL IS CRUCIAL FOR
CHILDREN IN EDUCATION, OVER MERE GAMIFICATION**

Dr. Grace E Olugbodi

ABSTRACT

Game-based learning is essential for children in education because it offers a dynamic and immersive approach to learning that engages students on multiple levels. Unlike gamification, which typically involves adding game-like elements to non-game activities, game-based learning involves using actual games as educational tools. When immersive, this is even more powerful.

One key difference is the level of immersion and interactivity. In game-based learning, students actively participate in virtual environments, making decisions, solving problems, and experiencing consequences in real time. This hands-on approach fosters deeper understanding and retention of concepts compared to traditional methods.

Furthermore, games inherently provide immediate feedback, allowing students to learn from their mistakes and adjust their strategies accordingly. This iterative process promotes critical thinking and problem-solving skills while maintaining a sense of enjoyment and motivation.

Additionally, game-based learning can cater to diverse learning styles and abilities, offering customisable experiences and scaffolding support as needed. It also promotes collaboration and social interaction, as many games involve multiplayer modes or cooperative challenges.

Overall, game-based learning goes beyond mere entertainment; it harnesses the inherent engagement of games to create meaningful educational experiences that can transform how children learn and retain information.

INVESTIGATING THE IMPACT OF BEAUTY PRODUCTS ADVERTISEMENT ON YOUNG WOMEN AND THE SOCIAL MEDIA ENGROSSMENT

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ABSTRACT

According to the DataReportal (2024), 1.44 billion population exist in India and the population has increased by 13 million during early 2023 over the beginning of 2024. Out of this population, 462.0 million people were active social media users. The users in social media may vary from person to person such as different colour, height, and weight.

The proprietors promote their products through celebrities on social media to grab the customers without spending much money. Meanwhile, social media plays a crucial role in our day-to-day life. Accordingly, proprietors promoting their advertisement and create a big impact on young women about their appearance.

Usually, Young women are paying more attention on beautifying themselves above men. They are very conscious about their physical appearance. Those advertisements on social media platforms fascinated by young women, leading to increased purchases cosmetics to enhance their beauty. Young women relied on, external appearance enhancing their self-confidence and courage. This study aims to investigate: 1. The effect of social media beauty product advertisements on young women and 2. How is prompting to buy such products. This study will be quantitative and qualitative in nature.

80 respondents will participate in this quantitative study, and a survey method will be used with the help of a structured questionnaire. The findings of the study will indicate that beauty product advertisements will have a significant impact on young women through social media celebrities. In conclusion, women will be impacted due to social media beauty product advertisements and will buy the product on various online networking sites.

Keywords: Advertisement, Beauty products, Beautifying, Social media, Young women

**EXPLORING THE SOCIAL AND ENVIRONMENTAL IMPACT OF GREEN ROOFS: A
COMPREHENSIVE REVIEW**

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ABSTRACT

Green roofs offer a sustainable solution for decreased urban energy consumption and environmental challenges like heat islands, air pollution, and stormwater runoff. While much research focuses on the eco-benefits, this study explores the social impact of green roofs. A survey of 104 users of the Alumni Green Roof at the University of Technology Sydney revealed users commonly relax (91.8%) and socialize (70.6%) in this green space, with exercise being less frequent (38.5%). Those visiting weekly or more reported significantly greater social well-being and attachment to the place than infrequent visitors. More extended visits over 30 minutes were also associated with enhanced social well-being. No significant differences were found based on visit frequency or duration for perceived economic, physical, or environmental impacts or collective identity benefits. The findings suggest green roofs provide important community spaces promoting social connection, relaxation, and psychological restoration - similar benefits to ground-level parks and gardens, even in dense urban areas lacking open green space. Green roof implementation should be encouraged to support social cohesion and human well-being in sustainable cities.

Keywords: green roofs, social cohesion, energy conservation, sustainability, urban heat, air pollution, community spaces, psychological well-being

Introduction

As urban populations grow, cities face increasing environmental stresses like the urban heat island effect, air pollution, and stormwater runoff issues (Razzaghmanesh et al., 2021). Green roofs have emerged as an innovative technology to help mitigate these challenges more sustainably (Vijayaraghavan, 2016). Covering 20-25% of typical urban surface areas, green roof systems can decrease building energy demands, reduce urban heat, improve air quality, and better manage stormwater (Önder and Dunnett, 2019; Raji et al., 2010).

The environmental benefits of green roofs in areas like stormwater management, urban cooling, air purification, and building energy conservation are well-documented (Figures 1a-d). However, there has been minimal empirical research on the potential social impacts and human well-being effects for urban communities (Manso et al., 2021). Some studies suggest green roofs could enhance social well-being, mental health, and community interaction by providing valued green spaces in densely populated areas (Loh and Yeo, 2019; Litt et al., 2020). Yet their limited accessibility and space may reduce opportunities for physical activity compared to ground-level parks and gardens (Williams et al., 2019).

This paper fills this research gap by examining the social impacts and community benefits of the Green Roof based on the European nations of Berlin, Copenhagen, and Zurich.

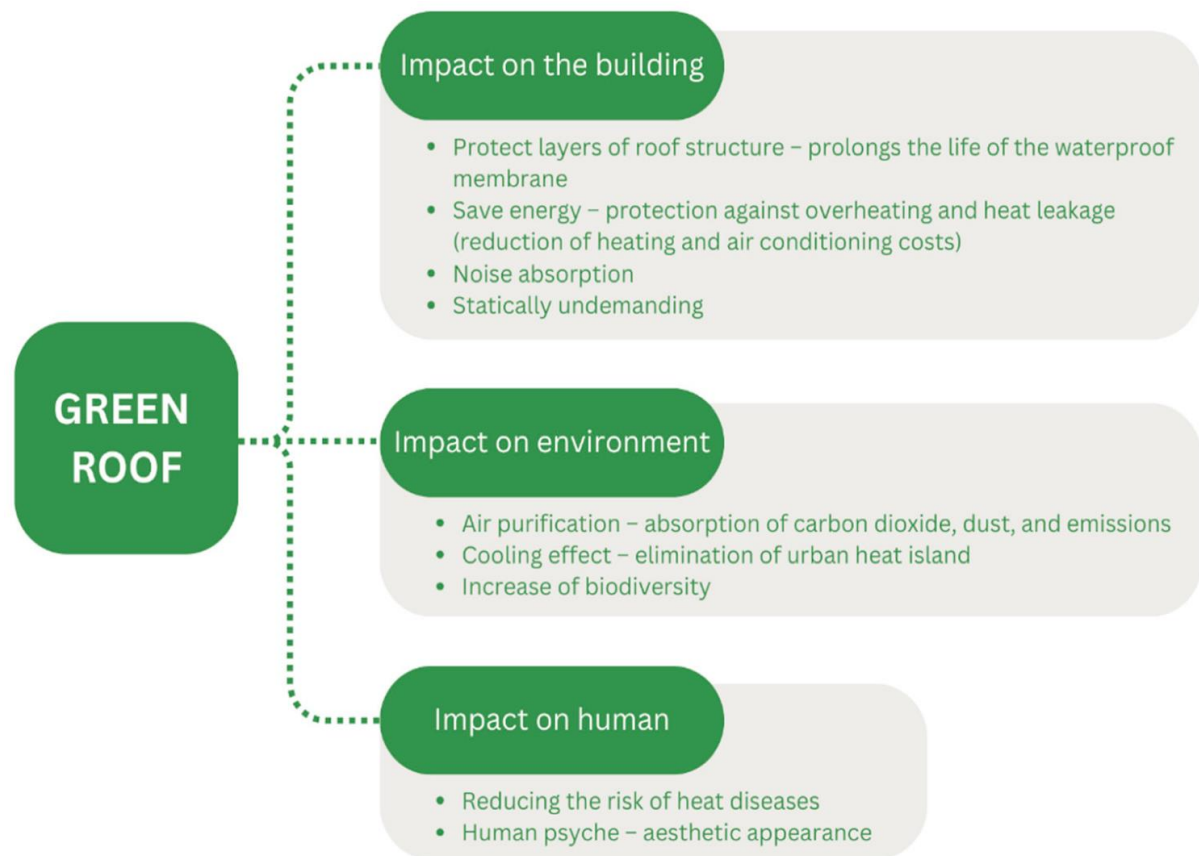


Figure 1 The benefits of green roofs (Vargova et al., 2023)

Literature Review

Green roofs have demonstrated remarkable capabilities in managing stormwater runoff, a pressing issue in urban areas. Green roofs' vegetation and soil layers effectively absorb rainwater, preventing it from overwhelming municipal sewer systems and causing overflows into local water bodies. A notable example is the Kauffman Center for the Performing Arts in Kansas City, Missouri, where the 4.4-acre green roof serves as a permitted stormwater detention facility (EPA, 2018). This green roof's design allows it to retain water for its needs and channel excess water into an underground cistern for reuse and recycling. This process saves an estimated 84% of the city's annual irrigation demand and \$56,000 per year in municipal water costs (EPA, 2018). Green roofs mitigate the urban heat island effect, where built-up areas experience significantly higher temperatures than surrounding rural areas. This effect has become increasingly problematic, with cities like Kansas City ranking among the top 10 U.S. metro areas experiencing intense urban heat islands (EPA, 2018). In 2014, the Kansas City metro area was found to be 4.6°F (2.6°C) warmer on average than the surrounding rural areas during summer months (EPA, 2018). Green roofs help alleviate this issue through evapotranspiration and shading, effectively cooling the urban environment and reducing the demand for energy-intensive air conditioning systems. Urban areas often grapple with air pollution challenges, and green roofs can contribute to improving air quality. In comparison, Kansas City maintains air quality below the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter (PM_{2.5}); city planners recognize the potential of green roofs to reduce exposure to smog further and maintain clean air (EPA, 2018). A study by Fallman et al. (2008) found that green roofs in Stuttgart, Germany, contributed to a 5-8% decrease in ozone concentrations during an August heat wave, outperforming cool (light-colored) roofs in terms of ozone reduction.

Effective stormwater management through green roofs directly impacts public health and sanitation. In Kansas City, the city agreed to make improvements to reduce its 5.4 billion gallons of annual combined sewer overflow discharges to comply with the Clean Water Act (EPA, 2018). Sewer overflows can pose risks to public health and damage property, making green roofs a valuable mitigation measure by controlling and preventing stormwater runoff that contributes to these overflows. The urban heat island effect impacts energy consumption and severely affects public health. As urban areas experience higher temperatures, the number of heat waves, heat-related mortality, and morbidity cases have increased (Jamei et al., 2023). The widespread application of air conditioning systems, while necessary to save lives, further contributes to energy demand and environmental strain. Green roofs offer a sustainable solution by mitigating urban heat islands, reducing the need for excessive air conditioning, and promoting public health by creating more excellent and more comfortable urban environments. Green roofs have demonstrated significant potential in reducing the energy demand of buildings, particularly for cooling loads. A scoping review by Jamei et al. (2023) analyzed studies published between 2000 and 2020 to evaluate the role of green roofs in building energy use across different climate zones. The findings revealed that well-irrigated and uninsulated green roofs could substantially reduce cooling loads, with a maximum mean decrease of 50.2% in temperate climate zones. In hot-humid and hot-dry climates, the mean decreases in cooling loads were 10% and 14.8%, respectively (Jamei et al., 2023). These energy savings benefit building owners and contribute to reducing greenhouse gas emissions and promoting sustainability. While the environmental benefits of green roofs, such as stormwater management, urban cooling, and air purification, are well-documented, the literature highlights these sustainable systems' multifaceted social and public health impacts. By mitigating urban heat islands, improving air quality, and managing stormwater effectively, green roofs can reduce heat-related illnesses, improve respiratory health, and enhance sanitation in urban areas. Additionally, the energy conservation potential of green roofs can lead to cost savings for building owners and reduced environmental impacts associated with energy production. The literature review has highlighted the quantitative evidence and empirical findings supporting green roofs' various environmental and social impacts. However, it is essential to note that the extent of these benefits may vary based on factors such as climate conditions, green roof design elements, and accessibility considerations. Further research is needed to explore these nuances and inform the development of green roof strategies tailored to specific urban contexts.

Methodology

This study employed a quantitative approach to investigate the social impacts and community benefits of green roofs in European cities, focusing on the cases of Berlin, Copenhagen, and Zurich. The primary data collection method involved a comprehensive literature review and analysis of existing research, government reports, and industry publications on green roof implementation and their associated environmental, economic, and social effects.

The literature review focused on gathering and synthesizing relevant information from scholarly sources, such as peer-reviewed journal articles, conference proceedings, and academic books. Government reports, policy documents, and industry publications were also consulted to obtain practical insights and case studies from European cities pioneering green roof initiatives. The literature search was conducted using various online databases, including Google Scholar, Web of Science, and ScienceDirect, as well as relevant government and industry websites. The search terms included "green roofs," "social impact," "urban sustainability," "community benefits," "Berlin green roofs," "Copenhagen green roofs," "Zurich green roofs," and combinations of these terms.

The collected literature was systematically analyzed and synthesized to extract key findings, themes, and insights related to the research objectives. Particular attention was given to the documented social impacts, community benefits, and real-world examples of green roof implementation in the selected European cities. To complement the literature review, observational data, and visual evidence, such as photographs and illustrations, were obtained from publicly available sources to provide contextual information and support the case study analyses.

The gathered information was then organized and presented, highlighting green roofs' environmental, economic, and social impacts, explicitly focusing on the social and community benefits observed in Berlin, Copenhagen, and Zurich.

European Case Studies

Green roofs are a commonly used form of blue-green infrastructure in metropolitan areas. They are designed to serve multiple functions, such as helping to combat climate change and adapting to urban environments. Their widespread implementation is crucial for strengthening resilience against urban hazards like flooding, heat island effects, and biodiversity loss. Subsidy programs are the most popular policy model for promoting and facilitating the implementation of specific initiatives. However, the effectiveness of these programs is generally assessed using isolated government statistics, local evaluation reports, and sporadic monitoring efforts. This can lead to inconsistencies and make it difficult to compare results over time and across different locations (Chen et al., 2023). The absence of accessible data, accompanying metadata, and standardized quantitative evaluation techniques makes it difficult to monitor and systematically compare the efficacy of various policies to incentivize green roofs. The absence of sufficient data and the expensive nature of regular, extensive monitoring campaigns also impede the analysis of the spatial distribution of green roofs throughout cities and the identification of their potential for development. This information could assist policymakers in formulating effective and sustainable policies for urban management. European cities have pioneered green roofs, incorporating them into urban planning strategies to tackle environmental and social challenges effectively. The experiences of cities such as Berlin, Copenhagen, and Zurich provide valuable insights into green roofs' diverse and profound impacts on urban life.

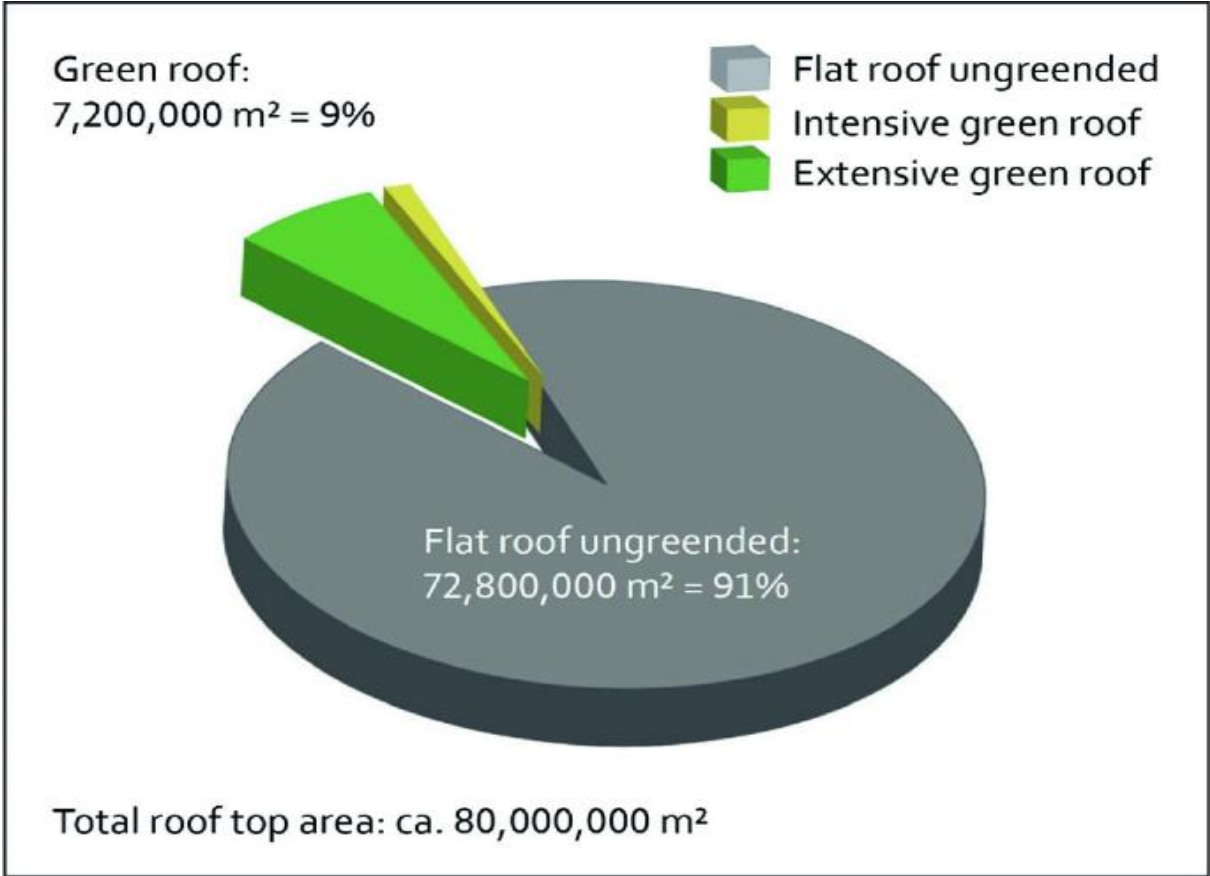


Figure 2 Green Roof and Walls Technology Standardization and Market Across Europe (V. Enzi et al., 2022)

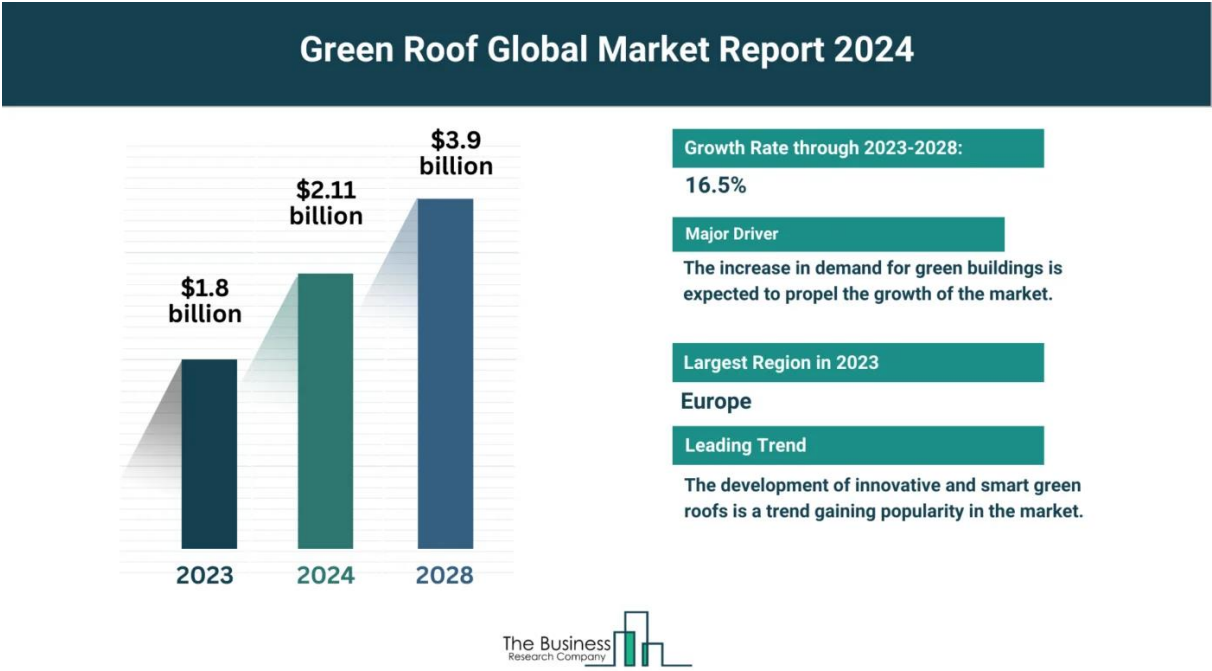


Figure 3 Green Roof Global Market Report in Europe (Company, 2024)

Berlin is a leading example of green roof integration, with a robust framework for incentivizing and promoting their adoption. The city boasts many green roof installations, ranging from extensive to intensive systems, across residential, commercial, and public buildings. These green roofs contribute to the city's green infrastructure and serve as vital habitats for urban wildlife. Research by Haase et al. (2014) underscores their role in creating biodiverse ecosystems, enhancing the city's ecological resilience, and supporting biodiversity conservation efforts. Moreover, green roofs in Berlin significantly mitigate urban heat island effects, reduce stormwater runoff, and improve air quality. The city's commitment to sustainability and innovation has spurred collaborations between government agencies, research institutions, and private stakeholders to further advance green roof technologies and practices. These collaborative efforts have led to the developing of best practices, guidelines, and funding mechanisms to support green roof implementation across various sectors. A good example is the plant development on a green roof of a retrofit building in Berlin spanning from 1986 to 2019. The ten expansive green roofs, covering a combined area of 655 m², vary in their orientations and inclinations. This project represents a change in the urban planning approach in post-war Berlin, moving away from demolishing apartment complexes that survived World War II towards the gradual restoration of the remaining old rental courtyard buildings. During the same time frame, cities have been increasingly understood as ecosystems. The Berlin funding program for roof greening was created to offer extensive financial support for building initiatives focused on establishing green roofs, renovating roofs to enhance their greenery, urban gardening, garage roof greening, and developing green roof terraces.

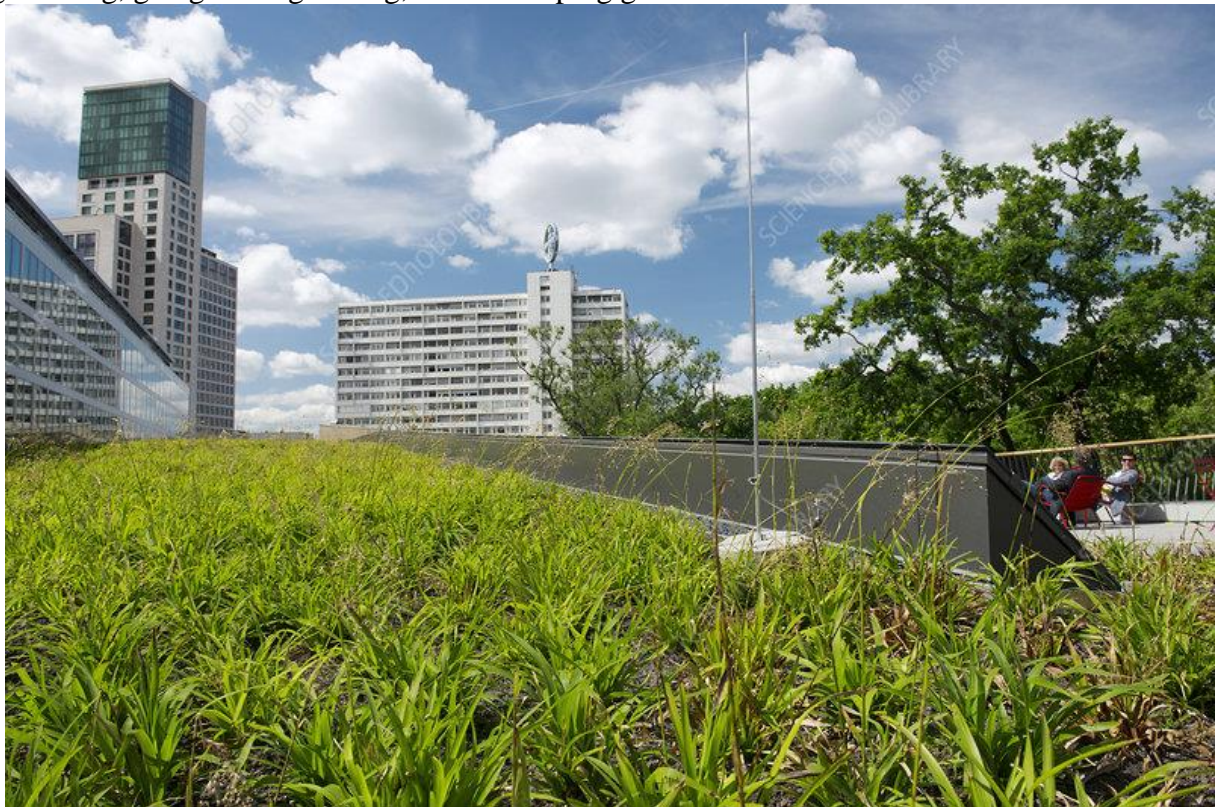


Figure 4 Green roof, Berlin, Germany (library, 2024)

Copenhagen has emerged as a model city for sustainable urban development, with green roofs playing a crucial role in its transformation. The city's ambitious climate goals and emphasis on green infrastructure have led to the widespread adoption of green roof solutions. Copenhagen's green roofs provide environmental benefits such as stormwater management and heat island

reduction and contribute to the city's social fabric. Green roofs in Copenhagen are integrated into public spaces, parks, and residential developments, creating opportunities for recreation, social interaction, and community engagement. The city's commitment to accessible green spaces has resulted in innovative designs prioritizing public access and usability. Moreover, Copenhagen's green roofs serve as educational platforms, raising awareness about sustainability and ecological stewardship among residents and visitors alike. In 2010, Copenhagen, Denmark, implemented a policy that requires new municipal buildings to feature green roofs if the roof slopes are less than 30 degrees. This legislation applies to many buildings, including cycling shelters, schools, mixed-use buildings, and underground garages. The policy's objective is to improve the ability of Copenhagen to withstand climate change, promote biodiversity in urban areas, and boost the well-being of its residents by harnessing the advantages offered by green roofs, such as the retention of rainwater and absorption of heat (Copenhagen, 2022). An example of a green roof is the Danish State Archives, which serves as part of the future elevated pedestrian passage that will connect two places in the center of Copenhagen. There is about 220 m² of space on the roof deck. Two significant record storage buildings face each other on one side of the area, and the front of an older building with offices for the Danish National Railway (DSB) faces the other. The State Archives roof deck is the first part of the passageway to be finished. At least four different parts have also been finished. The planned raised passage, about 900 m long, will be completed in the next few years.

The rooftop garden's primary goal is to allow people to use public transit and make a peaceful garden in the middle of Copenhagen, close to the Central Station and the Port of Copenhagen. The goal was to create an urban park that would last by taking advantage of the environment's best features. Because of these goals, the visual design was changed by using many different plant types and reducing the amount of hard surfaces. In a technical sense, the roof garden was built so that all rainwater flows through the growing medium and the reservoir plates before it gets to the draining system. These technological methods make the most of the reservoir effect, which holds back up to 70% of the water yearly and speeds up natural evaporation.



Figure 5 Danish National Archives Green Roof Garden (Green Roofs, 2024)

Zurich exemplifies how green roofs can be seamlessly integrated into the urban fabric to enhance quality of life and environmental sustainability. The city's strategic approach to green roof implementation encompasses diverse stakeholders, including government agencies, developers, and community groups. Zurich's green roofs serve as multifunctional spaces, providing recreational amenities, biodiversity hotspots, and aesthetic enhancements. Research in Zurich has demonstrated the effectiveness of green roofs in reducing energy consumption, improving air quality, and enhancing urban biodiversity. The city's comprehensive green roof policy framework, financial incentives, and technical support have catalyzed widespread adoption among property owners and developers. Zurich's experience underscores the importance of proactive planning, stakeholder engagement, and policy coherence in realizing the full potential of green roofs as a sustainable urban solution. In Zürich, it has been required since 1991 that all flat roofs that aren't used as roof decks be "greened" when new housing developments are built or old ones are fixed. One of the main goals of this strategy is to boost biodiversity. Of course, these green roofs help the water cycle and keep people from getting too hot. The results have already been measured in Zürich, and more information has been gathered about the total costs of installation, upkeep, profit, energy savings, and the project's role in the water cycle. In an urban area, green roof surfaces are critical. Because they don't get disturbed much, green roofs give many wild plant and animal species a place to live. They create an extra green space that helps compensate for the lost green spaces when buildings are built.



Figure 6 The Green roof in Kloten International Airport is Dock E.

Green roofs, characterized by vegetative cover atop buildings, offer multifaceted benefits beyond environmental sustainability. They provide valuable recreational spaces, contribute to well-being, increase property values, and play a pivotal role in managing urban heat island effects and rainwater absorption. The case studies of Berlin, Copenhagen, and Zurich highlight the transformative impact of green roofs on European cities. These examples demonstrate how green roofs can address environmental challenges, enhance social well-being, and contribute to sustainable urban development. Green roofs serve as oases within urban landscapes, offering

tranquil spaces for relaxation, socialization, and recreation. Incorporating seating areas, walking paths, and greenery provides residents and workers opportunities to escape the city's hustle and bustle. By drawing upon the lessons learned from these experiences, cities worldwide can leverage green roofs as integral to their urban planning strategies, creating healthier, more resilient, and livable environments for current and future generations.

Urban heat islands, characterized by elevated temperatures in densely populated areas, pose significant challenges to urban dwellers. Green roofs mitigate the urban heat island effect by providing natural cooling through evapotranspiration and shading. The vegetation on green roofs absorbs solar radiation, reducing heat absorption by building materials and lowering surface temperatures. This cooling effect not only enhances thermal comfort indoors but also reduces the energy consumption of buildings by decreasing the need for air conditioning during hot weather. Green roofs create more comfortable and sustainable urban environments by combating the urban heat island effect. Green roofs are crucial in managing stormwater runoff by absorbing and retaining rainwater. Green roofs' vegetation and substrate layers act as natural sponges, capturing precipitation and releasing it slowly. This helps alleviate pressure on urban drainage systems, reducing the risk of flooding and erosion in downstream areas. Additionally, green roofs filter pollutants and contaminants from rainwater, improving water quality and protecting aquatic ecosystems. By promoting rainwater absorption and retention, green roofs contribute to sustainable water management practices and enhance the resilience of urban infrastructure to climate change impacts.

Limitations

While this study provides valuable insights into green roofs' social and environmental impact, it is essential to acknowledge certain limitations. Firstly, the convenience sampling method used for the survey may have introduced self-selection bias, as individuals with a more positive perception of the green roof may have been more likely to participate. Additionally, the study focused specifically on the Alumni Green Roof at the University of Technology Sydney, which may limit the generalizability of the findings to other green roof settings or urban contexts.

Another limitation is the cross-sectional nature of the survey, which captures participants' perceptions at a single point in time. Longitudinal studies could provide more comprehensive insights into the long-term impacts of green roofs on social well-being and community cohesion. Furthermore, while the observational research helped contextualize the survey findings, the subjective nature of observations and the potential for observer bias should be acknowledged.

Finally, the scope of this study was limited to the social and environmental aspects of green roofs. Future research could explore the economic implications and cost-benefit analyses to provide a more holistic understanding of the sustainability implications of green roof implementation.

Discussion and Implications

The findings of this study highlight the multifaceted benefits of green roofs in promoting social well-being, community cohesion, and environmental sustainability. By providing accessible green spaces in dense urban areas, green roofs offer respite from the hustle and bustle of city life, fostering opportunities for relaxation, socialization, and psychological restoration. The positive association between visit frequency, duration, and enhanced social well-being underscores the importance of designing and maintaining green roofs as inviting community spaces that encourage regular use.

Moreover, the results suggest that green roofs can contribute to place attachment and a sense of community, particularly for frequent users. This has significant implications for urban planning and creating sustainable, livable cities prioritizing human well-being and social connectivity.

From an environmental perspective, the literature review and case studies demonstrate the vital role of green roofs in mitigating urban heat island effects, managing stormwater runoff, improving air quality, and promoting biodiversity. By integrating green roofs into urban infrastructure, cities can enhance their resilience to climate change impacts while creating healthier and more sustainable environments for their residents.

The study's findings have practical implications for policymakers, urban planners, and developers. Incentives and policies that encourage the implementation of green roofs, such as tax credits, grants, and zoning regulations, can foster the widespread adoption of this sustainable technology. Additionally, community engagement and participatory design processes can ensure that green roofs meet the needs and preferences of residents, promoting a sense of ownership and stewardship.

Furthermore, the results underscore the importance of interdisciplinary collaboration among architects, engineers, ecologists, and social scientists to design and implement green roofs that optimize environmental and social benefits. Ongoing research and innovation in green roof technologies, including advancements in plant selection, substrate composition, and water management systems, can further enhance their efficacy and sustainability.

Recommendation

To maximize the benefits of green roofs, policymakers and stakeholders should prioritize several vital recommendations. Firstly, supportive policies and incentives, such as tax breaks and grants, can encourage widespread adoption. Secondly, raising public awareness through educational campaigns will help highlight the multifaceted advantages of green roofs, fostering community support. Thirdly, fostering collaboration among stakeholders, including government agencies, developers, and communities, is essential for overcoming barriers and promoting successful implementation. Additionally, ongoing research and innovation are crucial for advancing green roof technologies and practices, ensuring their effectiveness and durability.

Furthermore, community engagement initiatives and participatory design processes can enhance social cohesion and ownership of green roof projects. Regular monitoring and evaluation of green roof performance should be integrated into urban planning processes to inform evidence-based decision-making. Finally, incorporating green roofs into broader urban planning strategies as essential components of green infrastructure networks will optimize their contributions to biodiversity conservation, climate resilience, and public health. By following these recommendations, cities can realize the full potential of green roofs as integral elements of sustainable urban development.

In conclusion, green roofs represent a holistic and innovative approach to urban sustainability, offering a range of environmental, social, and economic benefits. Through their capacity to provide spaces for recreation, enhance well-being, increase property values, and mitigate urban heat island effects while promoting rainwater absorption, green roofs emerge as integral components of resilient and livable cities. However, realizing the full potential of green roofs requires collaborative efforts among policymakers, stakeholders, and communities. By implementing supportive policies, raising public awareness, fostering collaboration, advancing research and innovation, engaging communities, and integrating green roofs into broader urban planning strategies, cities can harness the transformative power of green roofs to create healthier, more vibrant, and sustainable urban environments. As cities grapple with the challenges of urbanization and climate change, green roofs offer a promising solution for building resilient and inclusive cities that prioritize the well-being of both people and the planet.

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**TEACHERS' VIEWS ON THE GENERAL STRUCTURE AND FUNCTIONING OF SPECIAL
EDUCATION PRESCHOOLS**

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ABSTRACT

In recent years, various reforms and policy changes have been implemented in the field of special education. These changes aim to increase access to special education services, improve the quality of education, and support the integration of individuals with special needs into society. Particularly, steps such as the increase in the number of special education preschools and the enhancement of their infrastructure have helped broaden access to special education services. However, there are still some challenges and shortcomings in the field of special education, especially in teacher training, adequacy of resources, and the integration of children with special needs.

Therefore, the field of special education is continuously being developed and strengthened. In this context, the aim of this research is to deeply understand the experiences, needs, and recommendations of teachers working in special education preschools, provide information to make special education preschool programs more effective, develop strategies to improve student success, contribute to teachers' professional development, assess the current situation in the field of special education preschools, and identify needs to enhance practices in special education preschools.

This needs analysis also aims to provide a roadmap for stakeholders. Teachers' perspectives will contribute to shaping special education policies and management decisions, and help develop more effective and inclusive special education policies. The research group for the study was determined by conducting interviews with teachers. Interviews were held with a total of 27 teachers from 3 preschools. The data obtained was analysed through inductive data analysis, and the findings were discussed in the light of the literature.

Keywords: special education preschools, teachers' views, general structure, functioning

ÖZET

Son yıllarda özel eğitim alanında çeşitli reformlar ve politika değişiklikleri uygulanmıştır. Bu değişiklikler, özel eğitim hizmetlerine erişimi artırmayı, eğitimin kalitesini iyileştirmeyi ve özel gereksinimli bireylerin topluma entegrasyonunu desteklemeyi amaçlamaktadır. Özellikle, özel eğitim anaokullarının sayısının artırılması ve altyapılarının güçlendirilmesi gibi adımlar, özel eğitim hizmetlerine erişimi genişletmeye yardımcı olmuştur. Ancak, özel eğitimin özellikle öğretmen eğitimi, kaynakların yeterliliği ve özel gereksinimli çocukların entegrasyonu konularında hala bazı zorluklar ve eksiklikler bulunmaktadır.

Bu nedenle, özel eğitim alanı sürekli olarak geliştirilmeye ve güçlendirilmeye devam etmektedir. Bu bağlamda, bu araştırmanın amacı, özel eğitim anaokullarında çalışan öğretmenlerin deneyimlerini, ihtiyaçlarını ve önerilerini derinlemesine anlamak, özel eğitim anaokulu programlarını daha etkili hale getirmek için bilgi sağlamak, öğrenci başarısını artırmak için stratejiler geliştirmek, öğretmenlerin mesleki gelişimlerine katkıda bulunmak, özel eğitim anaokulları alanındaki mevcut durumu değerlendirmek ve uygulamaları geliştirmek için ihtiyaçları belirlemektir.

Bu ihtiyaç analizi aynı zamanda paydaşlar için bir yol haritası sunmayı amaçlamaktadır. Öğretmenlerin bakış açıları, özel eğitim politikalarının ve yönetim kararlarının şekillendirilmesine katkı sağlayacak ve daha etkili ve kapsayıcı özel eğitim politikalarının geliştirilmesine yardımcı olacaktır. Araştırma grubu, öğretmenlerle yapılan görüşmelerle belirlenmiştir. Üç anaokulundan toplam 27 öğretmenle görüşmeler yapılmıştır. Elde edilen veriler tümevarımsal veri analizi ile analiz edilmiş ve bulgular literatür ışığında tartışılmıştır.

GİRİŞ

Özel eğitim anaokulları, erken yaşta özel gereksinimleri olan çocukların eğitim ve gelişim süreçlerinde kritik bir rol oynamaktadır. Bu okullar, bireyselleştirilmiş eğitim programları ve destek hizmetleri ile çocukların bilişsel, sosyal ve duygusal gelişimlerini desteklemeyi amaçlamaktadır (MEB, 2018). Özel eğitim alanında yapılan araştırmalar, erken müdahalenin çocukların yaşam boyu öğrenme ve uyum sağlama becerileri üzerinde olumlu etkileri olduğunu göstermektedir. Bu nedenle, özel eğitim anaokullarının yapı ve işleyişlerinin nasıl olduğu, hangi yöntem ve stratejilerin kullanıldığı, bu okullarda görev yapan öğretmenlerin deneyimleri ve görüşleri büyük önem taşımaktadır (Hester vd., 2004).

Erken müdahale (early intervention), özellikle çocukların erken yaşlarda gelişimsel gecikme veya engellilik yaşadıkları durumlarda, ailelerin ve çocukların uzun vadeli faydalar elde etmelerine yardımcı olur. Erken müdahale hizmetleri, aile merkezli bir yaklaşımı benimser ve ailelerin kapasitelerini artırmayı amaçlar. Bu, ailelerin çocuklarının gelişiminde ana öğretmen rolünü üstlenmelerini sağlar. Erken müdahale uzmanları, ailelere rutinler ve aktiviteler üzerinden eğitim verirler ve bu, ailelerin çocuklarıyla etkileşimlerini güçlendirir (Campbell, 2004; Campbell & Sawyer, 2007). Erken müdahale uzmanlarının, aileleri bilinçli bir şekilde eğitmeleri önemlidir. Bu, uzmanların, ailelere belirli stratejileri ve yöntemleri nasıl kullanacaklarını doğrudan öğretmeleri anlamına gelir. Bilinçli öğretim olmadan, aileler bu stratejileri neden ve nasıl uygulayacaklarını tam olarak anlamayabilirler. Aileler, erken müdahale seansları sırasında uzmanları izleyerek ve dinleyerek de öğrenebilirler. Ancak, bu tür öğrenme, amaca yönelik öğretim kadar etkili değildir. Aileler, doğrudan eğitim aldıklarında, çocuklarına daha etkili bir şekilde yardımcı olabilirler. Araştırmalar, ailelerin müdahale seanslarına aktif katılımının, uzmanların öğretim davranışlarını olumlu yönde etkilediğini göstermektedir. Ailelerin katılımı ve motivasyonu, müdahale sürecinin başarısını artırır (Brown & Woods, 2013). Uzmanların, aileleri daha etkili bir şekilde eğitmek için profesyonel gelişim programlarına katılmaları önemlidir. Bu programlar, uzmanların bilgi ve becerilerini artırarak, ailelere daha iyi hizmet sunmalarını sağlar (Sawyer & Campbell, 2017).

Kısaca erken müdahale, çocukların gelişimsel hedeflerine ulaşmaları ve ailelerin bu süreçte etkin bir rol oynamaları açısından kritik öneme sahiptir. Amaca yönelik öğretim stratejilerinin kullanılması ve ailelerin aktif katılımı, müdahalenin etkinliğini artıran önemli faktörlerdir. Türkiye’de özel gereksinimli bireylerin eğitimine planlı ve programlı bir bakış açısı sunan önemli erken müdahale uygulamalarından biri özel eğitim anaokullarıdır (MEB,2018) .

Bu çalışmada, özel gereksinimli bireylerin eğitiminde bir erken müdahale yöntemi olan özel eğitim anaokullarında görev yapan öğretmenlerin, bu okulların genel yapısı ve işleyişine yönelik görüşleri incelenmiştir. Aline yazında, özel eğitim alanındaki birçok araştırma genel olarak ilköğretim ve ortaöğretim düzeyine odaklanırken, özel eğitim anaokulları üzerine yapılan çalışmalar sınırlı kalmaktadır. Bu eksikliği gidermek amacıyla, bu çalışma, öğretmenlerin özel eğitim anaokullarında karşılaştıkları zorluklar, uyguladıkları eğitim yöntemleri, kullanılan materyaller ve destek hizmetlerine ilişkin deneyim ve görüşlerini, önerilerini ortaya koymayı hedeflemektedir. Çalışmamızın, özel eğitim anaokullarının etkinliğinin artırılması ve bu alandaki uygulamaların geliştirilmesine yönelik önemli katkılar sağlayacağı düşünülmektedir. Öğretmenlerin deneyim ve görüşleri doğrultusunda yapılacak değerlendirmeler, bu okulların daha etkili bir şekilde yapılandırılması ve işleyişinin iyileştirilmesi için değerli veriler sunacaktır.

YÖNTEM

Bu araştırma, nitel araştırma deseni kullanılarak gerçekleştirilmiştir. Araştırmanın verileri, yarı yapılandırılmış görüşme formu aracılığıyla toplanmıştır. Bu kapsamda, toplamda 27 katılımcı ile

derinlemesine görüşmeler yapılmıştır. Görüşmelerden elde edilen veriler, tümevarımsal veri analizi yöntemiyle analiz edilmiştir. Bu analiz yöntemi, verilerden temalar ve desenler ortaya çıkararak genel bir anlayışa ulaşmayı amaçlamaktadır.

Çalışma Grubu

Katılımcıların %88,9'u kadın, %11,1'i erkektir. Yaş dağılımı ise 27-64 yaş arasında değişmektedir.

Katılımcıların %59.26'si okul öncesi öğretmenliği, %14.81'si zihin engelliler öğretmenliği, %7.41'i özel eğitim öğretmenliği, %7.41'i sınıf öğretmenliği, %3.70'i çocuk gelişimi, %3.70'i sosyoloji, %3.70'i biyoloji lisans bölümlerinden mezundur.

Katılımcıların öğretmenlik deneyimleri 2-40 yıl arasında değişmektedir.

BULGULAR

Bu çalışmada elde edilen bulgular aşağıda sunulmuştur. Araştırma kapsamında 27 öğretmenin verileri analiz edilmiştir.

Tablo 1. Katılımcıların Özel eğitim Anaokullarına İlişkin Görüşlerinin Tematik Frekans ve Yüzde Verileri

	Olumlu		Olumsuz		Çekimsiz	
	f	%	f	%	f	%
Eğitim Ortamı ve fiziksel Koşullar	16	26,66	14	18,18	5	15,15
Eğitim Programı ve Materyaller	20	33,33	13	16,88	9	27,27
Öğretmen Eğitimi ve Profesyonel Gelişim	6	10	20	25,97	2	6,06
Aile ile İşbirliği	15	25	12	15,58	9	27,27
Genel Değerlendirme ve İyileştirme Önerileri	3	5	18	23,37	8	10,38
TOPLAM	60	100	77	100	33	100

Eğitim Ortamı ve Fiziksel Koşullar

Eğitim Ortamı ve Fiziksel Koşullar teması için yukarıdaki nicel verilere ek olarak öğretmenlerimiz geliştirilmesini bekledikleri konuları “Okulumuz için oyun alanına ihtiyaç vardır.”, “Sınıf düzeni, kapı, pencere.”, “Materyal ve tehlikeli merdivenlerin olmaması.”, “Her şey.”, “Büyük ve özel eğitime uygun olmalı.”, “Daha uygun fiziki koşullar sağlanabilir, okullarda asansör olabilir, duvarlar çocukların boylarını geçecek kadar yumuşak malzeme ile kaplanabilir.”, “Okulumuz ana binası 2 katlı ve bodrum katta yemekhane var. Öğrenciler ile 3 kat aşağıya inip beslenme saati yapmak zor oluyor. Okul öncesi özel eğitim öğrencilerine yönelik gerekli hareket imkanı yok.”, “Tek kat okul planı ve hareket imkanı sağlayabilecek donanımlı oyun salonu.”, “Bina olarak çok elverişli değil.”, “Sınıflara duvar koruyucu gerekiyor.”, “Çocukların güvenliğine yönelik çevre düzenlemeleri.”, “Materyal ihtiyacı sınıf

malzemesi.”, “Okulumuzdaki imkanlar yeterli seviyede ancak bir binada 2 ayrı kurum olduğumuzdan ayrı ve daha büyük okul olmasını isterdik.”, “Ergoterapi desteği için yalıtılmış Işık odası olması iyi olurdu.”, “Engelli rampası.”, “Çocukların ihtiyaçlarına göre materyal temini yapılıyor.”, “Spor odası olmalı.”, “Özel eğitime uygun değil.”, “Yetersiz.”, “Tek kat bina olmalı,her sınıfta temel özbakım becerileri için bir lavabo olmalı,sınıflarda daha yüksek pencereler olmalı güvenlik açısından ,kullanılan masa vb köşeli değil daha yuvalalak kesimli olmalı.”, “Okulumuzun prefabrik olan ek binasında görev yapıyorum. Bu bina eğitim öğretim için uygun. Okulumuzun diğer binası 2 katlı ve yemekhaneye inip çıkmak biraz zor oluyor.”, “Merdiven inip çıkmak zor oluyor. Asansör olsa daha iyi olur.”, “Derslik sayısı ve dış mekan açısından yetersiz olmakla birlikte uyaran açısından uygun.”, “Öğrenci ihtiyacı ön planda olan fiziksel düzenlemeler arttırılmalı.”, “Daha çok oda ihtiyacı bulunmaktadır.”, “Eğitim materyalleri ve oyuncak zenginliği.”, “Geliştirilebilir.”, “Materyal.”, “Daha iyi olabilir.”, “Bakım odalarının sayısı arttırılabilir, erken çocukluk sınıfları iyileştirilebilir, park bahçe çocuklarımızın ihtiyaç ve gelişimlerine daha uygun hale getirilebilir.”, “Anaokulu fiziksel olarak güzel yapılanmış. Ancak içerisinde bakım odası ve oyun odasının yeterli olduğunu düşünmüyorum.”, “Evet uygun . Ancak akıllı tahta bulunması daha verimli hale getirebilirdi.”, “Daha çok bağımsız yaşamayı desteklemek üzere planlanabilirdi.”, “%80 oranında iyi.”, “Servis ,yemek fiziki koşullar.”, “Sınıflar arasında geçiş kapıları çocukların dikkatini dağıtıyor.”, “Düzen ve donanım özel eğitim anaokulu olduğumuz için tamamen özel gereksinimli çocuklara göre tasarlanmış şekildedir.”, “Oyun odası ve park alanlarının yetersizliği, sınıf ortamı yeterli.”, “Kullanılan etkinlik masalarının üzerine ağırlıkla bir tarafa eğilmesin bu sınıflar için uygun değil.”, “Engel türüne uygun olarak sınıflar planlanabilir. Sınıf yerleşiminde çocuklar için risk teşkil etmeyecek şekilde düzenlemeler yapılabilir.”, “Özel eğitime uygun değil.”, “Yerdeki evaların kaldırılması ve kilitli dolaplar olmalı, bilgisayarlar duvara monteli olmalı.” şeklinde ifade etmiştir.

Eğitim Programı ve Materyaller

Eğitim Programı ve Materyaller teması için yukarıdaki nicel verilere ek olarak öğretmenlerimiz geliştirilmesini bekledikleri konuları “Bireysel farklılıklardan dolayı bazen çok iyi bazen az uygulanabiliyor.”, “Okul öncesi programı uygulanmasına rağmen çocukların seviyesinden dolayı uygulama tam sağlanamıyor.”, “Tüm öğrenciler için 100 de 100 olmasa da uygulanabilir.”, “Biraz daha çeşitlilik daha iyi olur.”, “Eğitim programı özel eğitim çocuklarına göre değil.”, “Uygulamada zor ve işlevsiz”, “Bep doğrultusunda.”, “Bep lerin çok işlevsel kullanıldığını düşünmüyorum.”, “Materyaller yeterli ve etkili.”, “Esnek bir eğitim programına sahibiz uygun ve kullanışlı.”, “Uygulanabilir. Fakat öğrenci sayısının fazlalığı ve öğrencilerin ilgi sürelerinin azlığı süreçte olumsuz olarak karşımıza geliyor.”, “Yeterli teknolojik alt yapı mevcut değil. Öğrencilere yönelik uygulama kitabı zaten yok.”, “Okul öncesi özel eğitim planı yok. Normal çocukların planlarını uyguluyoruz. Özel eğitim çocuklarına uygun bir plan değil.”, “Duyu bütünleme ile ilgili okulumuzda materyal yok.”, “Orta ağırlar için eğitim programları seviye olarak üstte kalıyor.”, “Bu alanda yeterli ve kapsamlı doküman olmadığını düşünüyorum.”, “Bu alanda özel eğitime uygun çok çeşitli materyal olmadığını düşünüyorum.”, “Uygulanabilir.”, “Etkili ama yetersiz.”, “Normal.”, “Eğitimin şartı.”, “Okulumuzda her kazanımın başlangıç ve genelleme oturumlarına uygun düşünülmüş materyal desteği var. İdareimiz bu konuda sürekli güncel materyalleri takip ederek tamamlıyor.”, “Bireysel gelişim odaklı program yaptığımız için eğitim programı bizlere çok hitap etmiyor.”, “Kaba değerlendirme ayrıntılı alınıp dikkatli hazırlandığı sürece uygulanır.”, “Uygun buluyorum.”, “Öğrencinin düzeyine uygun hazırlandığı takdirde işlevsel olarak uygulanabilir.”, “Kullanım amaçlarını yerine getirecek düzeydeler.”, “Çocuğun ihtiyacına hitap etmediği yerler olmakla birlikte bireysel farklılıklar doğrultusunda düzenleme ve uygulamalar yapılabilir.”, “Her öğrencimin değerlendirmesini ayrıntılı alıp gwrçekçi hedeflerle Bep hazırlarım,performans kayıt çizelgelerimle hem gelişimi görürüm hem bir sonraki aşamayı.Benim için kullanışlıdır.”, “Hayır,kitap komisyonlarında daha fazla özel eğitimci olmalı.”, “Çocuğun bulunduğu düzeyi Gedep ,oçidep vb değerlendirme alıyorum. Bu değerlendirmeye göre plan hazırlıyorum, yani hazır bir planı çocuğa uygulamıyor, ihtiyaca yönelik hazırladığım planı uyguluyorum.”, “Çocuğa özel hazırladığımız için çok rahat uygulayabiliyoruz.”, “Okul öncesi programı çocuklarımız için çok uygun değil.”, “Bep amaç ve hedefleri doğrultusunda hareket edilerek süreç devam ettiriliyor.”, “Daha fazla geliştirilmeli ve üzerinde durulmalı.”, “Uygulanması daha basit program geliştirilebilir.”, “Yeniden değerlendirilmesi faydalı olur.”, “Daha zenginleştirilebilir.”, “Daha geliştirilebilir.”, Etkili ama yeterli değil.”, “Geliştirilebilir.”, “Kazanımların (müfredat

kazanımları) çocukların gelişimlerini çokta karşılamadığını zaten çoğunlukla bepe uyulmadan ihtiyaç odaklı çalışmalar sürdürüyoruz.”, “Geliştirilebilir.”, “Çocukları ne kadar uzun sürede gözlemleyip hazırlasakta programları değişkenleri fazla olduğu için hazır olan kazanımlar ihtiyaç karşılamıyor.”, “Uygulanıyor.”, “BEP ler uygulanması konusunda bir sıkıntı yaşamıyorum.”, “Eğitim programları çocukların ihtiyaçlarına uygun fakat uygulanırken sıkıntılar yaşanıyor.”, “Yeterli ve etkili. Ayrıca yeni çıkan oyuncak ve materyallere de okul idaresinin güncellemesi ile ulaşabiliyoruz.”, “Uygunluk her zer zaman mümkün olmasa da uyarlamalarla bunu sağlamaya çalışıyoruz.”, “Her çocuk için yeterli ve alınan hedefler doğrultusunda uygulanabilmektedir.”, “Bireysel farklılıklar göz önünde bulundurularak çocuğa uygun hale getirilmektedir.”, “Bazı öğrenciler için uygunken bazı öğrencilere kazanımlar uygun olmayabiliyor.”, “Daha fazla olsa daha çok etkili olur.”, “Değerlendirme formları kullanarak.” şeklinde ifade etmiştir.

Öğretmen Eğitimi ve Profesyonel Gelişim

Öğretmen Eğitimi ve Profesyonel Gelişim teması için yukarıdaki nicel verilere ek olarak öğretmenlerimiz geliştirilmesini bekledikleri konuları “Davranış bozuklu ile ilgili daha çok eğitim almak isterim.”, “Fırsatlar var ama daha fazla çoğaltma yapılabilir.”, “Fırsat göremiyorum.”, “Yeterli.”, “Dil ve konuşma.”, “Fırsat yok.”, “Otizm.”, “Yetersiz.”, “Otizm ve dil konuşma alanında daha fazla eğitim almak ve kendimi geliştirmek istiyorum.”, “Yetersiz kaldığını düşünüyorum.”, “Özel eğitim alanında eğitim almadım. Almak isterim.”, “Fırsat yok.”, “Benim yeterli çünkü özel eğitim alanında yüksek lisans yapıyorum.”, “Bir miktar daha iyileştirebilirsek daha elverişli olabilir.”, “Yetersiz.”, “Otizm le ilgili daha fazla bilgi sahibi olmak.”, “Yetersiz.”, “Hizmetiçi faaliyetler yeterli değil. İyi olan kursların kontenjanı az oluyor.”, “Bireysel alınan eğitimler yüksek fiyatlı. Hizmet içi alınanlarda da genelde eğiticiler pek verimli eğitimler yapmıyorlar.”, “Yeterli.”, “Özel Eğitim Alanı harici bir alan mezunu olduğum için üniversite düzeyinde yeterli ders bulunmaması en büyük eksiklik. Öğretim sürecinde alanla ilgili eksiklikleri gidermek adına her türlü eğitime katılınabilir..”, “Bu fırsatların daha cazip hale getirilmesi gerektiğini düşünüyorum.”, “Yeterli değil, bu nedenle kendim özel olarak değişik eğitimler de aldım, ABA gibi.”, “Fırsat sunulduğunu düşünmüyorum.”, “Oyun yoluyla eğitim ve dil konuşma ile ilgili eğitim almak isterdim.”, “Şimdiye kadar bir çok eğitim için başvurduğum ama kabul etmediler.”, “Yeterli değil, dil ve konuşma, davranış değiştirme, otizm.”, “Eğitimlerin ihtiyaca göre artırılması gerekmektedir.”, “Yeterli değil.”, “Otizm.”, “Otizm ile ilgili eğitim.”, “Uygulama alanında eğitimler.”, “Geliştirilebilir.”, “Oyun.”, “Yetersiz.”, “Yeterli bulmuyorum . Otizm ve üstün yetenekliler konusunda eğitim almak isterim.”, “Yeterli bulmuyorum tabi ki bulunan il ve yapılan çalışmalar bunu etkiler.”, “Evet, uygun.”, “Bir okul öncesi öğretmeni olarak özel eğitim konusunda pek eğitimim yok. Bu konuda eğitim almak isterim.”, “Pek fırsat sunulduğunu düşünmüyorum.”, “Okul öncesi öğretmeni olduğum için yeterli gelmediği anlar oluyor. O yüzden kendimi geliştirmeye çalışıyorum. Ancak dil konuşma, olumsuz davranış söndürme ve matematiksel terimlerin öğretimi konularında ekstra eğitim almak isterdim.”, “Eğitim sayıları fazla olabilir. Ancak eğitimin kalitesinin daha da artması gerektiğini düşünüyorum.”, “Yeterli olmuş olsa bile her yeni çocuk ile yeni deneyimler elde edilmektedir. Farklı grup özelliklerine yönelik eğitim tekrarları olursa daha etkili olacağını düşünmekteyim.”, “Çok yeterli olduğunu düşünmüyorum.”, “Kısmen yeterli. Oyun terapisi, resim analizi eğitimleri almak isterim.”, “Çok yeterli olduğunu düşünmüyorum.”, “Tüm eğitimler verilmeli.”, “Fırsatlar az. Olan her fırsatı değerlendiriyorum.” şeklinde ifade etmiştir. Yukarıdaki nicel verilere ek olarak öğretmenlerimizin günlük işleyişte karşılaştığı en büyük zorluk “Davranış bozukluğu, engelli bireyler.”, “Öğrenci düzeyi, veli tutumları.”, “Öğrenci fazlalığı materyal eksikliği.”, “Özel eğitimi bilmeyen idareciler ve veliler.”, “Fiziksel yetersizlik.”, “Anaokulu olduğundan yaş itibarıyla bezli ve tuvalet alışkanlığını kazanamamış çocuklarla karşılaşıyoruz bu konuda zorlanıyoruz.”, “Velilerin beklentilerinin yüksek olması. Plan konusunda milli eğitimin yönetmelikte kesin sınırlılıklarının olmaması.”, “Öğrencilere yönelik sosyal aktiviteler.”, “Velilerin işbirlikçi olmaması.”, “Fazla öğrenci sayısı.”, “Aile.”, “Eğitim ortamının fiziksel olarak zorlaması.”, “Ağır bedensel öğrencilerle çalıştığım için okulda bir fizyoterapistin eksikliği fazlasıyla hissediliyor.”, “Özel eğitimci olmayan sertifika programları ile özel eğitim yapmaya çalışanlar ve uzman görüşüne kıymet vermeyen velilerimize maalesef yol gösteremiyor olmak, dolayısıyla eğitimde bir ayağın eksik olması, çalışmaların pekiştirilememesi.”, “Velilerimizin bizden mucize gelişim beklemesi bizi zor durumda bırakıyor.”, “Farklı tanı grupları ile bir arada çalışmak ve sınıf mevcudu büyük bir sorun.”, “Veli tutumu.”, “Çocuk sayısının daha az olması gerekiyor bazen iki öğretmen yetemiyoruz.”, “Aile iş

birliği.", "Çocukların davranış problemleri.", "Velilerin bu süreçte bize ve çocuklarına yardımcı olmamaları.", "Veli eğitimleri", "Velilerin katılım sağlamaması en büyük zorluklardan biri.", "Bazen her yolu denesekte öğrenmeyen çocuğa başka nasıl öğretebilir ya da bu kazanımdan vazgeçmeli miyim ikilemi beni çok zorluyor.", "Bireysel eğitim bazında verilen yönergeye kapalı olan, gelişim kaybetmeyen öğrenciler.", "Öğrencilerin davranış ve özbakım sorunları.", "Kesintisiz 6 saat çalışma. Hiç aranın olmaması." şeklinde ifade etmiştir.

Aile ile İşbirliği

Aile ile İşbirliği teması için yukarıdaki nicel verilere ek olarak öğretmenlerimiz geliştirilmesini bekledikleri konuları "Gayet güzel ilerliyor, aile katılımı normal düzeydedir.", "İlgilenen velilerin çocukları daha iyi ilerliyor.", "Aileler daha fazla bilinçlenmeli.", "Daha fazla katılmalılar.", "Vasat.", "İyi.", "Olumlu.", "İlgili velilerimiz de var onlarla bol bol veli katılımı etkinlikler yaparız.", "Zorlanıyorlar ama çaba gösteriyorlar.", "Aileler çok fazla pımpirikli. O sebeple çok fazla müdahale ediyorlar. Ayrıca çocuklarının özel durumları hakkında bilgi sahibi değiller.", "Okul kadar önemli. Özel Eğitim çocuklarının eğitimi sadece okulla olmuyor. Ailenin katkısı çok değerli.", "Aile iletişimimiz oldukça iyi düzeyde.", "Ailelerin eğitim sürecine katkısı çok az düzeyde.", "Sınırlı düzeyde.", "Pek çoğu iş birliği sağlamıyor bu da davranış değişikliğinde zorlanmamıza neden oluyor.", "Gayet iyi ve yeterli.", "Bazen yetersiz ve duygusal açıdan.", "Aileler genelde karamsar ve bahaneci yaklaşıyorlar. Açık sözlü olduğunuz zaman kırılıyorlar. Hedefimizin öğrenci ve gelişimi için işbirliği olduğunun pek farkında değiller. Kabul ve aile eğitimlerini okul olarak planladık uyguladık. Ancak isteksiz olan veli zaten eğitimde gelmiyor.", "Aileler öğrencilerin tek ihtiyaçlarının yaşamsal ihtiyaçları karşılamak olarak baktıklarından eğitim sürecinde bizler kadar istikrarlı ve planlı olamıyorlar.", "Gayet velilerimiz ile verimli çalışmalar işbirliği yapmaktayız.", "Ailenin katılımı yadsınamaz çok önemli.", "Bu kademe ailenin kabul süreci olduğundan dolayı, öğrenciler kadar aileleri ile çalışma yapmak çok önemli. İkna yoluyla aile katılımı gerçekleştirebiliyor.", "Her aile kendi eğitim ve bilinç düzeyi doğrultusunda katkı sağlıyor.", "Kimi aileler tavsiye ve eğitimden tamamen faydalananıyor ,ama kimi aileler halen kabul aşamasında . Kabul aşamasında olan velilerimiz herşeyi bizden daha iyi bildikleri için onlara yol göstermiyorum,ama diğer velilerimizle normal düzeyde katılım var.", "Aile olmadan özel eğitim olmaz.", "Benim velilerimle olan ilişkim çok iyi, aile katılımına da istekle yardımcı oluyorlar. Ellerinden geleni yapıyorlar.", "Ellerinden geldiği kadar işbirliği yapıyorlar. Özellikle anneler daha ilgili babalar ilgisiz. Hem anne hem baba ilgilenen çocuklarımız çok şanslı.", "Aile eğitimlerine katılım güzel olmakla birlikte velilerin evde yapılması istenilen durumda yetersizler.", "Veliler katılım olarak iyi olmakla birlikte yeterli ilgiyi evde göstermiyorlar.", "Bilinçli olunmaması.", "İyi.", "Yetersiz.", "Katılımları zayıf.", "Katılım konusunda eksiklikler var.", "Elimizden geldiğince aileyi sürece dahil etmeye çalışıyoruz.", "Katılım konusunda eksiklikler var.", "Yok denecek kadar az. Tek taraflı bir iletişim akımı var. Katkı sağlamıyorlar ve süreci zorlaştırıyorlar.", "Zayıf.", "Aile işbirliği, aileden aileye değişim göstermekle birlikte genel olarak yüksek düzeyde değil.", "Aileler eğitim sürecine verimli bir şekilde katıldığında okuldaki eğitimin daha anlamlı ve verimli hale geleceğini düşünüyorum.", "Aile katılımı her aile de aynı ölçüde olmasa da istekli ailemiz var.", "Eğitim sürecine katkıları bazı ailelerde hiç yokken bazı ailelerimiz de bu konu da çok istekli olup okuldaki materyalden evine bile alarak uygulamalar yapıyor.", "Yapılan toplantılara gelmeyen ve ev ziyaretine onay vermeyen veli profili ile karşılaşmaktayız. Daha çok telefon ile görüşme talep edilmektedir.", "Yetersiz, bahaneler üretilmesi, çalıştığını ifade etmesi gibi.", "İyi düzeyde.", "Aile katılımlarına ilgi yüksek." şeklinde ifade etmiştir. Yukarıdaki nicel verilere ek olarak öğretmenlerimizin ailelerle iletişimi güçlendirmek için kullandığı yöntemler "Veli toplantısı, aile eğitimleri, whatsapp'ta yazışmalar.", "Yüz yüze görüşme, öğrenci veli birlikte etkinlikler.", "Bireysel görüşme.", "Konuşmak.", "Aile katılım etkinlikleri, toplantı ve aile gezileri.", "Veli katılımlı çalışmalar.", "Sevgi ve saygı çerçevesinde gerekli önlemleri alıyoruz.", "Yüz yüze görüşme.", "Günlük kısa bilgilendirme ve fikir alışverişi yapıyoruz.", "Sürekli iletişim halinde olmak.", "Gelişim durumlarıyla alakalı sık bilgilendirme toplantıları yapıyoruz. Okul içi uygulamalarda öğretim oturumlarına veliyi izleyici olarak alıp uygulama yapmaya çalışıyoruz.", "Bol bol iletişime geçiyor ortak etkinlikler yapıyoruz.", "Öğrenci ile kurulan bağ doğrultusunda aile ile iletişim daha sağlıklı bir şekilde kurulabiliyor.", "Okulda ve her gün yüz yüze iletişimimiz var.Profesyonel olarak ve onların duygularını incitmeden durum izahını çalışıyorum. Ayrıca sorun hissettiğim dönemlerde okul rehber öğretmenimizin de olduğu bir görüşme düzenliyorum.", "Ailelerle iletişimi güçlendirmek için onları dinliyorum. Hepsini yaralı ve dertli onları

anladığımı görünce bana olan güvenleri artırıyor.”, “Veli toplantıları, aile eğitimi saatleri, whatsapp bilgilendirmeleri, defter takibi.”, “Öğrenci etkinlikleri paylaşımı.”, “Ev ziyareti ve velinin okula davet edilmesi.”, “Çocukları hakkında bilgilendirerek teşvik etmeye çalışılıyor.”, “Sık sık yüz yüze görüşmeler msj video ödevlendirme.”, “Her hafta öğrencilerle ilgili yapılan çalışmalar hakkında bilgi ve fotoğraf paylaşımı yapıyoruz. Aynı zaman ev ziyaretleri de yapıyoruz.”, “Ev ziyaretleri veli grup toplantıları.”, “Birebir iletişime geçerek okuldaki eğitimin evde de devam etmesinin sağlanması, okuldaki etkinliklere velilerin katılması ve bu konuda sorumluluk verilmesi gibi yöntemler kullanıyorum.”, “Sürekli iletişim halinde olmaya çalışıyoruz.”, “Toplantı süreci sık sık tekrar ediliyor, öğrenci hakkında bilgi amaçlı mes anlar atılmaktadır. Çocuğun gelişimi hakkında bilgi istendiğinde görüşme sağlanıyor.”, “Empati kurmaya çalışıyorum. Sorunlarını dinleyip yardımcı olmaya çalışıyorum.”, “Toplantı ve etkinlikler.” şeklinde ifade etmiştir.

Genel Değerlendirme ve İyileştirme Önerileri

Genel Değerlendirme ve İyileştirme Önerileri teması için yukarıdaki nicel verilere ek olarak öğretmenlerimiz geliştirilmesini bekledikleri konuları “Materyal ve çevre düzenlemesi.”, “Çok fazla zorluklar yok ama daha fazla materyaller ve oyun alanına ihtiyaç vardır.”, “Özel Eğitim kadrolarının tam olması.”, “Yeterli bölümlerin olması.”, “Merdivenler tehlikeli, materyaller eksik.”, “Normal anaokulu gibi öğretmen ve idareci tahsis edilmesi özel eğitimci personelinin ağırlıklı olarak işe koşulması.”, “Özel eğitimci personelin ağırlıklı olarak işe koşulması.”, “Daha fazla okul yapılmalı ve yaş grupları ve özel durumlara göre donanım ve personel eksikliği giderilmeli.”, “Okul yapısı çocukların yaş seviye ve tanısına göre düzenlenmeli.”, “Yönetmelikte okul öncesi özel eğitim çocukları için kazanım ve göstergeler belirlenmeli ve okul öncesi planı özel eğitim için güncellenmeli.”, “Tek katlı binalar olmalı duyu bütünleme alanları ve materyalleri olmalı uygulama okullarında dil konuşma terapisti ve fizyoterapist görev yaparsa daha faydalı oluruz.” “Okulların tek katlı olup orta ağır programın güncellenmesi ve dil konuşma terapistlerine norm oluşturulması ve duyu bütünleme alanları yapılması.”, “Tek katlı olmalı fizyoterapi ergoterapi olmalı buna göre düzenlenmiş alanlar olmalı.”, “Ders süreleri kısaltılmalı bireysel eğitim ağırlıklı eğitim ortamı sağlanmalı.”, “Sınıf ortamının düzenlenmesi.”, “İdarenin tutumlu ve kurallı davranması.”, “Mutlaka rehberlik, fizik tedavi, ergoterapi ve dil konuşma normları da olmalı.”, “Okul normlarında ihtiyaç duyulan branşlara yer açılması.”, “Fiziksel koşullar.”, “Veli ile ılımlı şekilde konuşmak ayrıntılı bilgi vermek sürecin nasıl işleyeceğini anlatmak.”, “Özel eğitim alanı öğretmeni eksikliği, okul öncesi öğretmenin bu konudaki deneyim ve bilgi eksikliği ile birleşince çözüm odaklı olma konusunda sıkıntılı bir süreç olabiliyor.”, “Öğrencilerin ilgi sürelerinin kısa olmasından dolayı ders saatlerinin uzun olması en büyük zorluk diye düşünüyorum.”, “Fiziksel olarak düzenleme yapılmalı, zihinsel ve otizme uygun kitap setleri yok, aileyi sadece biz değil kurum olarak da ,özel eğitim anaokullarının gündüz bakım evi değil ,erken eğitim kurumu olduğu belki bizim daha üstlerini tarafında genel olarak bilgilendirilmeli.”, “Özel eğitim öğretmenlerinin olduğu, fiziksel olarak özel eğitime uygun olan bir bina, sınıfların özel eğitim öğrencilerine, ve güvenliğe uygun olduğu, öğrenci düzeylerine uygun kitap v.b materyaller, ücretine bakılmaksızın gelişebileceğimiz yeni programlar (ABA,OÇİDEP,FLORTİME) vb bize sunulması, Gerçekçi olalım, olduğu kadar değil olması gerektiği gibi yapalım.”, “Tek katlı olması gerektiğine inanıyorum. Bizim bahçemiz de öğrencilerimiz için çok uygun.”, “Özel eğitim anaokulları için ayrı bir program olsa da biz kazanım ve göstergeleri oradan alsak daha iyi olur.”, “Kesinlikle bunlardan ilki bina ve derslik sayısı ve bireysel eğitim sınıflarının yetersizliği.”, “Aile desteği.”, “Sınıf sayıları artırılmalı okullarda fizik tedavi ve sağlık personeli olmalı.”, “Öğretmenlere ihtiyaçları sorulmalı.”, “Sınıf mevcutları dörtten fazla olmamalı.”, “Okul aile işbirliği ve gerekli tıbbi tedavi süreci.”, “Materyal.”, “Sınıfların dağılımı.”, “Fiziki yapısı, çevre ve park düzenlenmesi.”, “Sınıflarda kadrolu özel eğitim sertifikas veya tecrübe olan ara eleman lar görevlendirilebilir Belli saat aralıklarında teneffüs yapmak.”, “İyileştirilmesi gereken en önemli husus partner. Anaokullarında okul öncesi öğretmenlerinin olmaması gerekir. Adapte olmakta zorlandıkları aşık ve öğrencilerin durumlarını kaldıramıyorlar aynı zamanda partnerli çalışmaya alışkın olmadıkları için verimli olamıyorlar.”, “Her sınıf için hostes ayarlanabilir ve aileler için zorunlu eğitimler verilmelidir.”, “Sayıları artırılmaları.”, “Yeni binaların yapılması.”, “Bu okulların materyal ve fiziksel yapı açısından geliştirilmesi hem öğretmen hem de öğrenciler açısından yararlı olacaktır.”, “Okul öncesi öğretmenlerine özel eğitim hakkında eğitimler vermek.”, “Ben okulumdan memnunum ama bence iyileştirilmesi gereken en önemli noktası idarenin kesinlikle bir özel eğitim mezunu olmasıdır.”, “Özel eğitim ortamı için uygun bina alını

değil, özellikle oyun alanları, bina yapısı gerekli şekilde inşa edilmemiş. ", "Veliye eğitim, okulu sadece nefes alma gibi görmemeleri , öğretmene eğitim sürecinde destek, süreklilik. ", "İşleyiş tam anlamıyla oturmamış. Müfredat, sınıf defterlerinin doldurulması vb. bazı konular okullara göre farklılık gösteriyor. Bu konuda ortak bir yol izlenmesi fayda sağlayacaktır. ", "En baştan planlı bir yol belirlenip o yolda ilerlenmesi gerekir. ", "Fiziksel şartları. ", "Branş değiştirmek. " şeklinde ifade etmiştir. Yukarıdaki nicel verilere ek olarak öğretmenlerimizin özel eğitim anaokulunun işleyişinde karşılaştığınız en büyük zorluklar "Çok fazla zorluk yok.", "Yeni böpler.", "Materyal eksikliği.", "Normal anaokulu gibi öğretmen ve idareci tahsis edilmesi. ", "Fiziksel yetersizlik, temizlik ve personel yetersizliği. ", "Şu an için yok. ", "Velilerin bilgisizliği. ", "Okullara yönelik yapılan programlar orta ağır ve erken çocukluk eğitiminde seviye olarak üstte olduğu için program güncellenmeli ayrıca konuşmadığı için çocuklar dil konuşma terapistine ihtiyacımız fazla bulunmakta. ", "Ders saatlerinin uzun olması çocuklar için yorucu olması. ", "Bazı ailelerin bizleri dinlememesi. ", "Bölgesel olarak imkan yetersizlikleri. ", "Velilerin ilk kabul süreçleri olduğu için iknada zorluk. ", "Öğrencilerin ilgi sürelerinin kısa olmasından dolayı ders saatlerinin uzun olması en büyük zorluk diye düşünüyorum. ", "Bazen eğitim yaptığımı ve bir eğitmeni olarak değil sadece bir bakıcı olarak görüldüğümü düşünüyorum. Ayrıca genel olarak özel eğitim tam anlamıyla yapıldığını da düşünmüyorum. ", "Okul öncesi eğitim programını özel çocuklarımıza uygun hale getirmekte zorlanıyoruz. ", "Tuvalet eğitimi. ", "Yeterli personel olmaması. ", "Davranış problemleri. ", "Öğrenci profili. ", "Sınıflara özel yardımcılarının olmaması, ara saatlerimizin olmaması. ", "Öz bakım becerileri ve aileler. ", "Sınıf yetersizliği. ", "Çok farklı engel gruplarından olan çocukların aynı sınıfta olması ciddi anlamda zorluklar yaşıyor. Ailelerin ilgisizliği büyük sorunlara sebep oluyor Ayrıca bir anaokulu öğretmeni olarak özel eğitime alışmak uzun bir zamanımı aldı. ", "Benim yok. ", "Hasta çocukların okula gönderilmesi, ailenin uyarıları dikkate almaması. ", "Ortak bir yol izlenmemesi. Çünkü yeni yaygınlaşan bir okul türü olduğu için bazı durumlar için oturmamış durumlar var. Bunlarda zorluk olarak karşımıza çıkıyor. ", "Evrak yükünden öğrencilerle daha az ilgilenmesi. " şeklinde ifade etmiştir.

SONUÇ ve TARTIŞMA

Özel eğitim alanında, özellikle okul öncesi düzeyde, erişimi artırmayı, eğitim kalitesini artırmayı ve özel gereksinimli çocukların topluma entegrasyonunu desteklemeyi amaçlayan çeşitli reformlar ve politika değişiklikleri yaşanmıştır. Öğretmenlerin bakış açılarına odaklanan bu çalışma, özel eğitim anaokullarının karşılaştığı güçlü yönler ve zorluklara ilişkin eleştirel içgörülerini ortaya çıkararak bilinçli politika oluşturma ve uygulama iyileştirmeleri için bir temel sağlar.

Eğitim Ortamı ve Fiziksel Koşullar: Öğretmenler, okulların fiziksel altyapısında ve eğitim ortamlarında önemli iyileştirmelere ihtiyaç olduğunu belirtmişlerdir. Özellikle oyun alanları, sınıf düzeni, güvenlik önlemleri, engelli erişimi ve bina yapısı (tek katlı olması, asansör ihtiyacı vb.) konularında eksiklikler olduğu vurgulanmıştır. Ayrıca, materyal eksikliği ve öğrencilerin özel ihtiyaçlarına uygun donanım yetersizliği de sıkça dile getirilmiştir. Bu kaygılar, özel ihtiyaçları olan çocukların gelişimsel ihtiyaçlarının desteklenmesinde elverişli bir öğrenme ortamının önemini vurgulayan mevcut literatürle uyumludur (MEB, 2018). Örneğin, Campbell ve Sawyer (2007) erken müdahale programlarının hem öğrenmeyi hem de terapötik faaliyetleri kolaylaştıracak, bu programların genel etkinliğini arttıracak fiziksel alanlar sağlaması gerektiğini vurgulamaktadır.

Eğitim Programı ve Materyaller: Öğretmenlerin özel eğitim anaokullarında kullanılan eğitim programları ve materyallerine ilişkin görüşleri karışıktır. Bazıları programların esnekliğini ve uygunluğunu takdir ederken, diğerleri onları özel eğitim öğrencilerinin özel ihtiyaçlarına yeterince uygun olmadığı için eleştirmektedir. Mevcut eğitim programlarının özel eğitim öğrencilerinin ihtiyaçlarına tam olarak cevap veremediği görülmektedir. Öğretmenler, eğitim programlarının daha işlevsel hale getirilmesi, özel eğitime uygun materyal çeşitliliğinin artırılması ve özel eğitim anaokullarına özgü bir müfredatın geliştirilmesi gerektiğini belirtmişlerdir. Ayrıca, teknolojik altyapının güçlendirilmesi ve öğrenci seviyelerine uygun kitap ve materyallerin sağlanması talep edilmiştir. Bu eleştiri, genel eğitim programlarının genellikle özel gereksinimli çocukların kendine özgü öğrenme gereksinimlerini karşılamada başarısız olduğunu gösteren önceki araştırmalarla tutarlıdır (Hester ve diğerleri, 2004). Öğretmenler, pratik ve uygulaması kolay olan daha özel materyallere ve bireyselleştirilmiş eğitim planlarına (BEP) ihtiyaç duyulduğunu belirtti. Bu, öğretmenlerin öğrencilerinin ihtiyaçlarına göre tasarlanmış etkili eğitim materyalleri oluşturma ve kullanma

becerilerini geliştirmeye yönelik mesleki gelişim programlarını savunan Sawyer ve Campbell'in (2017) bulgularını yansıtır.

Öğretmen Eğitimi ve Profesyonel Gelişim: Birçok öğretmen, aldıkları eğitimin onları özel eğitim anaokullarında çalışmanın zorluklarına yeterince hazırlamadığını düşünüyor, özel eğitim alanında daha fazla hizmet içi eğitim ve profesyonel gelişim fırsatlarına ihtiyaç duyduklarını ifade etmişlerdir. Özellikle otizm, dil ve konuşma terapisi, davranış yönetimi gibi alanlarda eğitim talep ettikleri görülmüştür. Okul öncesi öğretmenlerinin özel eğitim konusunda daha fazla eğitim alması gerektiği vurgulanmıştır. Ayrıca, mevcut eğitimlerin kalitesinin artırılması ve daha cazip hale getirilmesi önerilmiştir. Bu yetersizlik, etkili öğretim stratejilerini uygulama ve sınıf dinamiklerini verimli bir şekilde yönetme becerilerini engelleyebilmektedir. Bu nedenle mesleki gelişim programları, öğretmenlerin gerekli bilgi ve becerilerle donatılması açısından çok önemlidir. Brown ve Woods (2013), öğretmenlerin en son eğitim uygulamaları ve müdahaleleri konusunda güncel kalmaları için sürekli mesleki gelişimin hayati önem taşıdığını ve bunun da öğrenci sonuçlarını önemli ölçüde iyileştirebileceğini vurgulamaktadır.

Aile ile İşbirliği: Araştırmada öğretmenler aileleri eğitim sürecine dahil etmenin önemini vurgulayarak aile katılımının eğitimsel müdahalelerin etkinliğini önemli ölçüde artırabileceğini belirtti. Bu bakış açısı, erken müdahalede aile merkezli yaklaşımların çocuklar için daha iyi gelişimsel sonuçlara yol açabileceğine işaret eden Campbell (2004) tarafından da desteklenmektedir. Ancak bazı ailelerin sürece yeterince dahil olmadığı belirtilmiştir. Öğretmenler, aile eğitimi ve işbirliğini güçlendirmek için çeşitli yöntemler (veli toplantıları, aile eğitimleri, WhatsApp grupları, ev ziyaretleri vb.) kullandıklarını, ancak bu konuda daha fazla desteğe ihtiyaç duyduklarını ifade etmişlerdir. Ailelerin bilinçlendirilmesi ve eğitim sürecine aktif katılımlarının sağlanması için daha fazla çaba gösterilmesi gerektiği vurgulanmıştır.

Genel Değerlendirme ve İyileştirme Önerileri: Öğretmenler, özel eğitim anaokullarının işleyişinde karşılaştıkları zorlukları dile getirmiş ve iyileştirme önerilerinde bulunmuşlardır. Bu öneriler arasında fiziksel altyapının geliştirilmesi, öğrenci sayısının azaltılması, destek personel sağlanması (fizyoterapist, dil ve konuşma terapisti vb.), ders sürelerinin kısaltılması ve özel eğitime özgü müfredat geliştirilmesi yer almaktadır. Ayrıca, okul yönetiminin özel eğitim konusunda uzman kişilerden oluşması ve okullarda ortak bir uygulama standardının oluşturulması gerektiği belirtilmiştir.

Sonuç olarak, özel eğitim anaokullarının genel yapısı ve işleyişinde çeşitli alanlarda iyileştirmelere ihtiyaç olduğu görülmektedir. Özel eğitim anaokullarının geliştirilmesi ve politika oluşturma süreçlerinde dikkate alınmalıdır. Paydaşlar, fiziksel koşulların iyileştirilmesine, eğitim programlarının özelleştirilmesine, öğretmen eğitiminin geliştirilmesine ve aile işbirliğinin teşvik edilmesine odaklanarak, özel eğitimin kalitesini ve etkililiğini önemli ölçüde artırabilir. Bu iyileştirmeler, özel gereksinimli çocukların hak ettikleri desteği ve eğitimi almalarını sağlamak ve sonuçta onların topluma başarılı bir şekilde entegre olmalarını kolaylaştırmak için gereklidir. Öğretmenlerin deneyimleri ve önerileri, özel eğitim anaokullarının etkinliğini artırmak ve öğrencilerin ihtiyaçlarını daha iyi karşılamak için önemli bir kaynak teşkil etmektedir.

ÖNERİLER

Bu araştırmanın bulguları doğrultusunda, özel eğitim anaokullarının genel yapısı ve işleyişi ile ilgili olarak aşağıdaki öneriler geliştirilmiştir:

- Eğitim Programlarının Geliştirilmesi:** Öğretmenlerin görüşlerine göre, mevcut eğitim programlarının daha esnek ve bireyselleştirilmiş olması gerekmektedir. Öğrencilerin bireysel ihtiyaçlarına ve gelişim seviyelerine uygun programların hazırlanması, eğitimde daha yüksek verimlilik sağlayacaktır.
- Öğretmen Eğitimi ve Profesyonel Gelişim:** Özel eğitim alanında çalışan öğretmenlerin, sürekli mesleki gelişim olanaklarıyla desteklenmesi gerekmektedir. Öğretmenlere yönelik düzenli hizmet içi eğitim programları, yeni öğretim stratejileri ve yöntemleri konusunda bilgilendirme yapılması önemlidir.

3. Aile Katılımının Artırılması: Özel eğitim anaokullarında aile katılımının teşvik edilmesi, çocukların gelişiminde kritik bir rol oynamaktadır. Ailelerin, eğitim süreçlerine daha aktif olarak dahil olmalarını sağlayacak etkinlikler ve bilgilendirme toplantıları düzenlenmelidir.

4. Fiziksel Altyapının İyileştirilmesi: Öğretmenler, özel eğitim anaokullarının fiziksel altyapısının iyileştirilmesi gerektiğini vurgulamışlardır. Eğitim ortamlarının, çocukların güvenliği ve rahatlığı gözetilerek düzenlenmesi, eğitimin kalitesini artıracaktır.

5. Kaynak ve Materyal Sağlanması: Özel eğitim anaokullarında, öğretmenlerin ders materyalleri ve kaynaklara erişimlerinin artırılması gerekmektedir. Eğitici materyallerin zenginleştirilmesi, öğretim sürecini daha etkili hale getirecektir.

a. Destek Hizmetlerinin Geliştirilmesi: Özel eğitim öğrencilerinin, psikolojik danışmanlık ve rehberlik hizmetlerinden daha etkin bir şekilde yararlanmaları sağlanmalıdır. Öğrencilerin sosyal ve duygusal gelişimlerini destekleyen hizmetler, eğitim süreçlerinin başarısını artıracaktır.

b. Öğrenci Takip Sistemlerinin Kurulması: Öğrencilerin gelişim süreçlerinin yakından takip edilmesi ve düzenli olarak değerlendirilmesi amacıyla, kapsamlı bir öğrenci takip sistemi oluşturulmalıdır. Bu sistem, öğretmenlere ve ailelere, çocukların gelişimi hakkında düzenli geri bildirim sağlayacaktır.

Bu önerilerin hayata geçirilmesi, özel eğitim anaokullarının genel yapısı ve işleyişinin iyileştirilmesine katkıda bulunacak ve öğrenci başarısını artıracaktır. Bu öneriler, öğretmenlerin görüşleri doğrultusunda geliştirilmiş olup, özel eğitim anaokullarının daha etkili ve verimli bir şekilde hizmet vermesine yönelik adımlar içermektedir.

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**CULTURAL CODES IN LIFESTYLE TRANSFER: THE ITALIANIZATION EXPERIENCE
WITH DELONGHI'S "SOMETHING PERFETTO" ADVERTISEMENT**

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ABSTRACT

Cultural codes are symbols and systems of meaning that hold importance for members of a specific culture. While these codes are used to facilitate communication among members, they also assist in conveying the lifestyle of the group to outsiders. Cultural codes, transmitted from generation to generation, serve as guiding principles in shaping social interactions and behavior, as well as in making sense of the world. Symbols and rituals, as forms of cultural codes, are crucial in the transfer and understanding of lifestyle among different cultures.

This study examines the lifestyle presentation in advertising discourse through the lens of cultural codes, focusing on the global advertising campaign titled "Something Perfetto" by the DeLonghi brand. It explores the role of cultural codes and the transfer of Italian cultural codes in the advertising discourse. In the "Something Perfetto" advertising campaign, a synthesis between American lifestyle and Italian coffee culture is created through an American actor. This synthesis exemplifies cultural expansion and identity construction, while also demonstrating the use of cultural elements in brand positioning. This study demonstrates how symbols and rituals associated with Italian coffee culture and lifestyle are presented through an American actor in DeLonghi's "Something Perfetto" campaign, and how these elements strengthen the brand image using cultural codes. Directed by Bennett Miller and cinematographed by Greig Fraiser, with Brad Pitt in the lead role, this advertisement creates a synthesis between American lifestyle and Italian coffee culture, facilitating audience identification with the brand. Analyzed through semiotic analysis, this campaign reveals how cultural codes are employed in advertising discourse and how they enhance persuasive power in brand positioning.

Keywords: Advertisement, Cultural Codes, Semiotics, Culture, Brand Positioning, Marketing Communication

INTRODUCTION

Every culture possesses its distinct language, symbols, traditions, and set of values. These cultural elements enable advertisers to effectively communicate their messages to their intended audience (Bilginer Halefoğlu, 2024). The primary goal of advertising is to persuade consumers by appealing to their values. This study analyzes how cultural elements are positioned in advertising discourse based on Roland Barthes' semiotic approaches.

The strategies of using cultural elements in advertisements enable consumers to identify with the advertisement and establish strong emotional bonds with the brand. This demonstrates the effective use of Pathos, the principle of emotional appeal from Aristotle's rhetoric. Additionally, the use of local cultural elements in advertisements can be seen as a sign that the brand is culturally sensitive and understands the lifestyle and values of its target audience, which is significant in terms of Ethos, indicating credibility and character.

The proper use of cultural elements serves as a powerful tool to influence the target audience, capture their attention, and affect their purchasing decisions. In this context, it is observed that cultural elements are becoming increasingly important in the advertising world. Each culture's unique language, symbols, traditions, and values set allow advertisers to convey their messages in a manner that is suitable and effective for the target culture.

This study presents significant findings on how cultural elements are used in advertising discourse and their impact on the target audience. The data obtained through Barthes' semiotic analysis approach reveals how advertisements manipulate cultural codes and thereby shape consumer perceptions.

Concept of Culture and Cultural Codes

The concept of culture is one of the most challenging terms to define in the history of thought. Etymologically, the term "culture" originates from the Latin verb "colere," which means to inhabit, cultivate, work, or organize. The term "culture," derived from this verb, is rich in content and used in many different senses, including the meaning of crops grown and produced by human labor and hands (Oğuz, 2011: 125).

Culture is the way of life formed by a society. It is related to the development characteristics, production styles, historical background, and social relationships created by communities. The way of life of each society varies, which brings about cultural differences. The lack of uniformity in cultural elements is the reason for this difference. Culture is a set of behaviors arising from and learned through interaction among individuals. Therefore, culture is not innate; it is not passed down through generations like genetic traits. Culture is not related to instinctual events; it is entirely a social event and product. Language, religion, and values are elements of culture.

Cultural codes are described as symbols and systems of meaning that hold significance for members of a specific culture. These codes facilitate communication among members while also assisting in conveying the lifestyle of the group to outsiders.

Transmitted from generation to generation, cultural codes serve as guiding principles in shaping social interactions and behavior and in making sense of the world. Symbols and rituals, as forms of cultural codes, are crucial in the transfer and understanding of lifestyle among different cultures.

A cultural code is an unconscious meaning we assign to anything (it could be a car, food, relationship, or country) through our culture (Rapaille, 2009: 7). According to Rapaille, "Cultural code is vital when customers choose a product. Being a successful brand is not just about selling a product; to be a successful brand, one must immortalize an element of culture" (Rapaille, The Brandage). The code is an unconscious reference system. People use this unconscious reference system without even realizing it.

The Use and Role of Cultural References in Advertising

Advertising operates within a intricate realm that impacts consumer behavior. Advertisers utilize diverse tactics to capture consumer interest, endorse products or services, and ultimately enhance sales. One such tactic involves integrating cultural allusions and components into advertisements.

Cultural elements encompass the values, norms, symbols, and rituals that define the cultural identity of a society. Integrating these elements into advertisements aims to enhance the recognizability and acceptance of products or services among the target audience (Özcan, 2018). Previous research has examined the effects of culture in advertising, often analyzing the use of cultural value themes. Advertisement themes are designed to align with the values of customers, making values the source of underlying captivates (Pollay, 1983). The objective of advertising is to convince consumers by aligning with the values of the target audience. When an advertisement fails to resonate with these values, it risks alienating the group by weakening the alignment between the brand and consumer identities. Therefore, advertisements are often seen as reflections of prevailing cultural values within a society, with culturally aligned depictions in ads expected to be more impactful than incongruent themes (Gupta & De, 2007; Zhang & Gelb, 1996). Thus, advertising functions as a conduit for transferring cultural significance from advertisers to consumers, as illustrated in the cultural meaning transfer theory (McCracken, 1986).

McCracken (1986) also argues that in a consumer society, cultural meaning constantly moves from one place to another. Initially, it moves from the culturally constituted world (the world of daily experience shaped by a person's culture's beliefs and values) to consumer goods, and then from these goods to individual consumers. Advertising serves as one of the primary mechanisms for this process. It connects consumer products with culturally constructed meanings. Cultural meaning encompasses cultural principles, which are concepts or values that define how the world is structured, judged, and understood. These principles permeate all aspects of social existence, including consumer goods (McCracken, 1986). Meanings become associated with the advertised product because advertisements draw upon shared cultural symbols (Escalas & Bettman, 2005). These concepts are chosen by advertisers and then conveyed in advertising messages through the use of text and visuals as thematic elements (Pollay, 1986).

Cultural elements can facilitate audience identification with advertisements. For instance, advertisements can attract audiences by incorporating local customs, values, or religious beliefs. This approach can prompt audiences to pay closer attention to the advertisement and exhibit greater interest in the product or service (Peltekoğlu, 2010). The use of cultural elements can foster emotional connections among audiences. By reflecting societal values or integrating social rituals, an advertisement can enable audiences to establish a profound affinity with the ad. Such a connection can enhance audiences' loyalty to the product or service (Sucu, 2020). Cultural elements also facilitate communication and improve the comprehension of the message by the target audience. Shared cultural references can establish a communication bridge among audiences and help convey the intended message of the advertisement more effectively (Srivastava, 2010).

The Use of Cultural Codes for Persuasion

In today's marketing industry, various strategies and techniques are employed to promote products and persuade consumers. Among these strategies, the strategic use of rhetorical triangle and persuasive proofs is seen as a powerful tool to enhance the impact of advertisements and capture consumer attention. Persuasive proofs are crucial tools used in communication to convince the audience, and they are often examined under Aristotle's concept of the "Rhetorical Triangle." This triangle encompasses three fundamental elements: Ethos, Pathos, and Logos.

According to Aristotle, "Ethos" represents a credible and recognized personality. In advertisements, a brand or speaker employs Ethos to leave a positive impression on viewers or consumers. This can be achieved by featuring celebrities or experts in the advertisement. For instance, in the study of a coffee brand's advertising campaign featuring a well-known actor, the brand aims to leverage the actor's credibility and recognition to influence the audience.

"Pathos" represents emotional appeals and attempts to influence the decisions of viewers or consumers by establishing an emotional connection. In advertisements, the use of cultural elements can be an effective way to evoke emotional responses from the audience. For example, an advertisement that references local customs, values, or cultural and religious beliefs can encourage viewers to form a deeper emotional connection with the ad. "Logos," on the other hand, employs logical reasoning and evidence. It seeks to influence the target audience through numerical data, scientific evidence, and rational arguments. Cultural codes can also be used to support logical arguments.

Cultural codes are significant tools for enhancing the effectiveness of advertisements. Cultural elements encompass the values, norms, symbols, and rituals that constitute a society's cultural identity. The incorporation of these elements in advertisements aims to make products or services more easily recognizable and acceptable to the target audience (Özcan, 2018). Cultural codes can facilitate audience identification with advertisements and create emotional bonds. By reflecting societal values or integrating social rituals, an advertisement can enable audiences to form a deep connection with the ad (Sucu, 2020).

The strategic use of the rhetorical triangle and persuasive proofs in advertising, combined with cultural codes, creates a powerful impact on viewers. The balanced use of Ethos, Pathos, and Logos enhances the success of the advertisement by establishing deep emotional bonds with the target audience and supporting these bonds with rational arguments. Effective use of cultural elements facilitates audience identification with the advertisement and fosters strong emotional connections with the brand.

For example, an analysis using Roland Barthes' semiotic approaches can examine how cultural elements are positioned in advertisements. As demonstrated in the theory of cultural meaning transfer, advertisements serve as a medium for transferring cultural meaning from advertisers to consumers (McCracken, 1986). This encompasses cultural principles, which are concepts or values that delineate how the world is structured, assessed, and understood. Cultural codes serve as guiding principles for thought and behavior across various facets of social existence, including consumer products (McCracken, 1986).

Table 1. Rhetorical Choice and Mapping Table (Source:(Mohamad, 2022:8)

1) THREE (3) MODES OF PERSUASION			
Aristotelian Three (3) Rhetorical Components of Discourse (Aristotle & Kennedy, 1991)	APPEALS TO LOGIC (<i>Logos</i>)	APPEALS TO ETHICS (<i>Ethos</i>)	APPEALS TO EMOTIONS (<i>Pathos</i>)
	CHARACTERISTICS/ DESCRIPTORS		
	Theoretical, abstract language, systematic organisation, definitions, factual data and statistics, quotations, citations from experts and authorities, informed opinions	Language appropriate to audience, appropriate, sincere, fair, and future minded presentation, appropriate vocabulary, correct grammar, focus on dynamism, direct involvement in action in future matters	Descriptive, emotive language, connotative and descriptive meanings, narrative descriptions, emotional tone, and figurative language, indirectness, and carefulness in language
	RHETORICAL EFFECTS		
	Evokes a cognitive, rationale response	Demonstrates the author's credibility, competence, vigour, and respect.)	Evokes an emotional response
MAPPING OF THREE (3) LIWC2015 PSYCHOLINGUISTIC DOMAINS (Pennebaker, et al., 2015)			
2) Topoi (choice of words/ language) Compositionality of Writing Model (Bulté & Housen, 2018)	ANALYTICAL THINKING (ANALYTIC)	CLOUT (CLOUT)	EMOTIONAL TONE (TONE)
	& NINE (9) RHETORICAL DEVICES (RDs)		
	Lexical-Phrasal level		
	RD1: Numerical- Nominal Data (Numbers, Percentage - Proper Academic or Technical Phrases) (e.g., more than 90% ..., The study was conducted in 6 schools, involving 17 teachers..., TESL, EAP)	RD1: Pronouns (<i>Personal versus impersonal</i>) (e.g., 'I', 'my', 'we', 'our', 'they', 'theirs' as opposed to 'it', 'its', 'those', 'these')	RD1: Emotive Phrases 1) Positive and negative nouns (e.g., opportunities, achievement, success, challenges, problems,) 2) Positive and negative adjectives (e.g., useful, effective, important, lacking, limited)
	Sentential level		
3) Arrangement of Text Compositionality of Writing Model (Bulté & Housen, 2018)	RD2: Lengthy-Complex Sentences (e.g., subordination such as 'after...', 'because ...', 'in which...'; coordinating conjunctions such as 'but...')	RD2: Future Tense (e.g., The study will contribute..., In the future, the findings can help...)	RD2: Passive Voice (e.g., It was found..., the implications are highlighted..., the method has been applied in different settings...)
	Textual Style		
3) Arrangement of Text Compositionality of Writing Model (Bulté & Housen, 2018)	RD3: Formality: Formal (from Informal- formal continuum)	RD3: Personalism: Impersonal/Writer-oriented (to Personal/Reader-oriented)	RD3: Sentiment: Positive/ Negative (Negative-Neutral-Positive Language)

Table 1 is derived from Mohamad's 2022 study and serves as a valuable resource for researchers in identifying rhetorical strategies and understanding meanings. It also illustrates the use of different persuasive techniques and how these methods can lead to varied reactions. This resource can be utilized by communicators and marketers when planning strategies to influence their target audiences. The table categorizes three different persuasive techniques inspired by Aristotle's "Rhetoric" into logical approaches (Logos), ethical appeals (Ethos), and emotional appeals (Pathos). It details rhetorical effects and language features extensively.

Ethos, Pathos, and Logos concepts from Aristotle's "Rhetoric" are fundamental elements for enhancing persuasiveness in communication. Ethos represents the speaker's character and credibility, Pathos aims to evoke emotional responses from listeners, and Logos presents logical arguments to guide rational

thinking. These elements are combined to formulate effective communication strategies and persuade audiences (Aristotle, 2006, p. 37).

Rhetoric is the art of using communication to influence or persuade an audience. At its core are three essential components: Ethos, Pathos, and Logos. Ethos pertains to the speaker's character, credibility, and ethical stance. Pathos seeks to evoke emotional responses from the audience and establish emotional connections. Logos involves presenting logical arguments and evidence to persuade the audience. Together, these components form the "Rhetorical Triangle," which defines fundamental strategies in rhetoric and plays a crucial role in influencing audiences (Meyer, 2009, pp. 9-16).

The Rhetorical Triangle, comprised of Ethos, Pathos, and Logos, constitutes the foundation for creating an effective and persuasive communication style. These concepts embody the speaker's character and credibility (Ethos), the elicitation of emotional responses from the audience (Pathos), and the presentation of logical arguments and evidence (Logos). Their integration is key to achieving effective communication and persuasion (Zafer, 2017, pp. 3-5).

Strategic use of Ethos, Pathos, and Logos in advertising enhances the effectiveness and persuasiveness of advertisements. Ethos relates to the character and credibility of the individual presenting a product or service. Pathos elicits emotional responses from viewers, while logos establishes logical relationships and includes persuasive arguments (Evlioğlu Gezer, 2020, p. 152).

The goal of advertisements is to increase consumer confidence in a product and persuade them to make a purchase. Therefore, the use of persuasive proofs such as Ethos, Pathos, and Logos ensures effective communication of advertisements. The credibility of a product or service, emotional impact, and logical arguments influence consumer purchasing decisions and determine the success of a brand. Hence, careful evaluation and utilization of these persuasive proofs are crucial in developing and implementing advertising strategies.

For instance, advertisements featuring celebrities support the authenticity and credibility of the advertisement. Therefore, the brand has chosen to collaborate with celebrities to establish empathy with the audience and enhance the advertisement's credibility. This example exemplifies the use of Ethos from Aristotle's rhetorical triangle, involving the use of a charismatic figure (Arıcı & Kılınç, 2018, pp. 537-539).

Strategic use of the rhetorical triangle and persuasive proofs forms the basis of effective communication and persuasion strategies in advertising. Balanced use of Ethos, Pathos, and Logos enhances the success of advertisements by establishing deep emotional connections with the target audience and supporting logical arguments. Effective use of cultural elements facilitates audience identification with advertisements and strengthens emotional ties with the brand.

MATERIALS AND METHODS

Incorporating cultural aspects into advertisements can profoundly influence consumer behavior. Thoughtful selection and integration of these aspects enable advertisers to forge deeper bonds with their target audience and enhance brand promotion more efficiently. However, strategies for incorporating cultural elements in advertisements must be meticulously designed and showcase cultural awareness.

This research investigates the placement of cultural elements in commercial films and analyzes them using Roland Barthes' semiotic methods. According to Barthes (2021), semiotics is founded on two basic components: the signifier and the signified. These elements analyze and uncover meaning through representation and reference. Representation is manifested through the signifier, while the signified is elucidated through connotation. To put it differently, the plane of expression is delineated by the signifier, whereas the plane of substance is articulated by the signified (Barthes, 2021: 47). Barthes outlines the fundamentals of semiotics with four core concepts: I. Language and Utterance. II. Signified and Signifier. III. Syntax and Structure. IV. Transmission and Conveyance. He posits that, akin to linguistic signs, a sign in semiotics comprises a signifier and a signified. What the interpreter grasps from this sign is the signifier. The instrument that facilitates conveyance and imparts significance is the signifier (Barthes, 1979, 31-35).

The primary aim of semiotics is to uncover the structural operations in various domains such as behavioral tendencies, ways of life, manners, non-verbal communication, fashion styles, social and cultural frameworks, artistic endeavors, architecture, and astronomy (Parsa & Parsa, 2012, 1-2; Barthes, 2021: 27; Rifat, 2011). According to Oswald (2011, 37-38), the fundamental goal of semiotics is comprehension and interpretation. In addition, the analysis of popular cultural works, which contribute to the analysis of new approaches, cultural trends, and codes using cultural codes, also contributes to the contribution to the analysis of popular cultural works.



In this study, the DeLonghi brand's global advertising campaign titled "Something Perfetto" is examined through the transmission of lifestyle via cultural codes, analyzing lifestyle presentation in advertising discourse, the role of cultural codes, and the transmission of cultural codes related to Italian life.

The "Something Perfetto" advertising campaign showcases symbols and rituals of Italian coffee culture and lifestyle. This study aims to demonstrate how DeLonghi strengthens its brand image through cultural codes by explaining what coffee means to Italy and its place in Italian lifestyles, and how it facilitates the audience's identification with the brand. By examining the Something Perfetto advertisement using Roland Barthes' semiological analysis method, this study discusses how cultural codes related to Italian lifestyles are conveyed through the advertising message. Additionally, the use of cultural codes and influential figures in the advertisement for persuasion is evaluated from Aristotle's persuasive proofs perspective.

ANALYSIS AND RESULTS




In this study, executed to explore the use of cultural components in advertisements, cultural cultural components within signifiers are detected and analyzed in Table 2 within the framework of Barthes' semiotic approach.

Table 2. Analysis of DeLonghi "Something Perfetto-Perfetto From Bean To Cup" Adv.

	Sign	Signifier	Signified	Denotation	Connotation
Time kod: 0-4 sn. 	The man putting on his helmet and getting on his motorcycle. Auditory sign: the sound of the engine starting.	Brad Pitt	Beginning, Departure	The man who started his engine / Brad Pitt	Setting out, starting the day, leaving home
Time kod: 5-8 sn 	The man walking along the seaside road where cars are parked at sunrise. Sunrise. Engine. Auditory indicator: Soft melody similar to whistling.	Brad Pitt riding his motorcycle	Journey	The man who rides his motorcycle on the seaside road as the day is just beginning / Brad Pitt	Freedom, desire to achieve goals, travel, individuality.
Time kod: 9-15 sn	Hand putting coffee beans into a paper bag. A paper bag with Brad written on it. The man who	Coffee beans. Brad Pitt. Auditory signifier: the sound of coffee beans falling into	Image of coffee beans. The beginning of the coffee preparation ritual. The effort spent to reach real	The man who came to the coffee sales point bought coffee beans and left the shop.	Reaching the object of desire. Personal presentation of the object of desire and demonstration of its value.





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	<p>bought the coffee. Driving away from the shop on motorcycle. Auditory indicator: the sound made by the nuclei. The sound of the motorcycle</p>	<p>a paper bag. The sound of Brad Pitt hitting the paper bag on the counter and verbally thanking him.</p>	<p>coffee. The blend of coffee that is unique to one's taste and makes the person drinking coffee feel special. Naturalness, handcrafted and carefully selected.</p>		
<p>Time kod: 16-25 sn.</p> 	<p>Motorcycle repair shop. Two men of different ages. Motorcycle. Coffee cups. A paper bag with Brad written on it. Don't go away by motorcycle. Curvy asphalt road. Heading towards the sea and the sun. auditory indicator: soft whistle-like melody. Motorcycle engine sound.</p>	<p>Motorcycle mechanic man. He drinks coffee while servicing his motorcycle indoors. Brad Pitt. Brad Pitt Brad Pitt sits on the sofa. rad Pitt rides away on a motorcycle. Auditory signifier: Soft melody. Motorcycle engine sound.</p>	<p>Drinking coffee is an action that can happen anytime and anywhere. Apart from moments of pleasure, it also accompanies work times.</p>	<p>Brad Pitt waits for the repair to be completed at the motorcycle repair shop. when the work is finished, he drives away on his .motorcycle.</p>	<p>Valuable things should be given importance and care should be taken. It is worth witing patiently.</p>
<p>Time kod: 26-36 sn.</p> 	<p>Fuel station. The man buying fuel. Woman drinking coffee. Coffee packaging with name written on it. Sunlight is like a sunset. Motorcycle riding. Auditory indicator: soft whistle-like melody.</p>	<p>Fuel station. Brad Pitt. Woman drinking coffee from the fuel station. Auditory signifier: soft melody similar to a whistle.</p>	<p>Stop by the fuel station and take a break. The distance traveled for coffee. Drinking coffee can happen anywhere and anytime of the day. The important point of small breaks is to drink coffee. On the way home after a long drive.)</p>	<p>The man comes to the fuel station, refuels his motorcycle and heads back home.</p>	<p>The man had to travel so far that he needed to refuel in order to buy coffee. This coffee is worth traveling such a long way and spending time and effort. It means that the coffee making process is a journey of adventure and discovery. This coffee is an object of desire.</p>
<p>Time kod: 37- 41 sn.</p>	<p>Tree lined road. The man entering the house door.</p>	<p>Tree lined road. Brad Pitt. House and large kitchen.</p>	<p>As a charismatic and prestigious face of</p>	<p>The man who went to buy coffee on his motorcycle</p>	<p>. The coffee making process is a journey of adventure and</p>

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	<p>Two-storey house. Large and spacious kitchen. Stairs. Coffee machine.</p>	<p>Delonghi coffee machine.</p>	<p>Hollywood, Brad Pitt represents quality, reliability and luxury. Delonghi coffee machine is part of a technological, innovative and luxurious lifestyle.</p>	<p>returns home.)</p>	<p>discovery. Making coffee is not just making a drink, it's a way of life. This lifestyle also finds meaning in the well-known Hollywood star Brad Pitt, who has quality, style and charm.</p>
<p>Time kod: 42 – 44 sn</p> 	<p>Coffee machine. Trees and garden. Man. Coffee beans. Auditory indicator: Sound of coffee beans, soft melody.</p>	<p>Delonghi. Trees and garden. Brad Pitt. Coffee beans.)</p>	<p>Technology, innovation and luxury. Nature and rootedness. Naturalness, purity and handmade.</p>	<p>The man who comes home puts the coffee beans into the coffee machine.</p>	<p>The rare coffee beans, which are the product of naturalness, purity and manual labor, meet the machine that will process them.</p>
<p>Time kod: 45 – 50 sn.</p> 	<p>Coffee machine. Digital display. Coffee machine milk dispenser and coffee cup. Man. Coffee with milk prepared by the coffee machine. Auditory indicator: the sound of milk foam as it flows into the glass; soft melody.</p>	<p>Delonghi Dinamica Plus. Delonghi coffee machine selection screen. Brad Pitt. Latte coffee. Auditory signifier: the sound of milk foam flowing into the glass; soft melody.</p>	<p>Technical specifications of Delonghi. Memorizing personal choices. Delicious latte coffee prepared by Delonghi.</p>	<p>The man makes his choice of latte coffee on a high-tech coffee machine.</p>	<p>Delonghi's Dinamica Plus coffee machine is part of a technological and luxurious lifestyle.</p>
<p>Time kod: 51 – 60 sn.</p> 	<p>Man drinking coffee sitting on the sofa. Coffee machine. There is a coffee machine on the kitchen counter, next to it is a paper bag with three different</p>	<p>Brad Pitt sitting on the couch drinking a latte. Delonghi. Three different types of coffee made with Delonghi and Delonghi sitting on the kitchen</p>	<p>Only Delonghi is enough to prepare different types of coffee. Delonghi is an innovative, technological and luxurious device. Delonghi for perfect coffee pleasure from bean to cup.</p>	<p>The man enjoys sipping the coffee made by the machine. He is content and happy.)</p>	<p>The prestigious and high-quality Delonghi coffee machine "Perfetto" promises to offer a perfect coffee experience. The journey of coffee from bean to cup symbolizes</p>

	coffees and coffee beans with names on it. Perfetto text. Auditory display: Soft melody and sound spot "Perfetto".	counter. A paper bag with coffee beans and the name Brad on it. Perfetto text and slogan. Auditory signifier: Soft melody and sound spot "Perfetto, from bean to cup"			that every step is made with care and passion. Delonghi is a status symbol and it is perfect.
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DISCUSSION AND CONCLUSION

In this commercial film by DeLonghi, titled "Something Perfetto – Perfetto From Bean To Cup," various settings, objects, visuals evoking Italian coffee culture, and a whistle-like music are used. The global advertising campaign targets primarily those who use a coffee machine at home, but also has the potential to appeal to consumers of takeaway coffee.

Incorporating local cultural elements in advertisements aims to help the target audience connect with the ad and build stronger emotional ties with the brand. When consumers recognize familiar places or objects in ads, the ad's effectiveness increases. In this commercial, the selection of cultural places and objects, along with the choice of a globally recognized actor and cultural codes, aims to help the target audience emotionally connect with the brand. The use of persuasive proofs such as ethos and pathos is also clearly evident. The use of ethos is prominently highlighted in the advertisement featuring Brad Pitt, giving viewers a sense of reliability and authenticity associated with the famous figure. Emphasizing their real-life marriage and alliances enhances the credibility of the advertisement, allowing viewers to establish a strong connection with both the advertisement and the product. The use of pathos enhances the emotional impact of the advertisement, facilitating an emotional connection with the audience. Effective use of rhetorical strategies and cultural elements in advertisements helps viewers understand the advertisement and creates a positive impression of the product. Through both emotional and influential person use, the DeLonghi coffee brand advertisement successfully delivers its message.

Using local environments, settings, and products in advertisements demonstrates the brand's effort to grasp the lifestyle and principles of its target audience. This approach aids consumers in comprehending the advertising message more effectively and viewing the product or service as aligned with their needs. Customers who perceive the service or product as harmonious with their own culture may approach the purchasing decision more positively. This commercial film portrays Italian coffee culture to familiar viewers, reflecting coffee as a culture with Italian coffee culture and rituals.

Brad Pitt, throughout the advertisement, portrays a journey of a coffee bean, showing the process of making coffee. Starting from the farm where the beans are harvested, the advertisement depicts the grinding process and eventually transforming into a perfect cup of coffee. The entire advertisement promises viewers a "Perfetto" or perfect coffee experience. The journey of coffee from bean to cup symbolizes that each step is carried out with care and passion.

In this advertisement, the perfect coffee obtained using DeLonghi's coffee machine is presented as a symbol of luxury and stylized modern life. Brad Pitt's participation adds an extra layer to this myth, showing that drinking coffee is not just a beverage preparation process but also a lifestyle choice.

Italian coffee drinking culture, originating from Abyssinia and with roots in Italy dating back to the 16th century, is a daily routine. For Italians, coffee is not just a beverage but also a social and cultural practice in daily life. Espresso holds a central place in Italian coffee culture.

Italians gather in coffee houses to socialize and chat. Coffee is an important part of Italian daily life. In Italian culture, there is a specific time for each type of coffee to be consumed, and Italians expect adherence to this time. The practice of drinking coffee has turned into a ritual. The preparation, presentation, and consumption of coffee adhere to specific rules and habits. In Italian culture, the cultural code of coffee is 'routine.'

The competitors of this commercial film are not only coffee machine brands but also brands of takeaway coffee consumption venues. This is because the advertisement also shows that coffee drinking should be a ritual.

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