

**5th INTERNATIONAL NEW YORK  
CONFERENCE ON  
EVOLVING TRENDS IN  
INTERDISCIPLINARY RESEARCH  
& PRACTICES**

October 3-5, 2021  
Manhattan, New York City

Editor  
Prof. Dr. Enrique Mallen

*Proceeding Book*

ISBN 978-605740332-2



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Issued: 15.10.2021

ISBN: 978-605-74033-2-2

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# Proceeding Book

**Editor**

Prof. Dr. Enrique Mallen

By

Institute of Economic Development and Social Research Publications ®

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# Conference Identification

## CONFERENCE NAME

5th INTERNATIONAL NEW YORK CONFERENCE ON  
EVOLVING TRENDS IN INTERDISCIPLINARY  
RESEARCH & PRACTICES

## DATE AND PLACE

October 3-5, 2021  
Manhattan, New York City

## ORGANIZATION

IKSAD - Institute of Economic Development and Social  
Research  
Liberty Publishing House

## PARTICIPANT COUNTRIES

USA, Morocco, India, Nigeria, Hungary, Ethiopia, Republic of Moldova, Jordan, Pakistan, Poland, Saudi Arabia, Azerbaijan, Kazakhstan, Brazil, Algeria, Vietnam, Malaysia, Bulgaria, Romania, Iraq, Russia, Georgia, Tunisia, Kyrgyzstan, UK, South Africa, United Arab Emirates, Iran, Lebanon -Turkey

TOTAL NUMBER OF PAPERS FROM TURKEY

32

TOTAL NUMBER OF INTERNATIONAL PARTICIPANTS

53

***NUMBER OF ACCEPTED PAPERS: 85***

***NUMBER OF REJECTED PAPERS: 23***

## EVALUATION PROCESS

All applications have undergone a double-blind peer review  
process

## CONFERENCE LANGUAGES

English, Russian and Turkish

## PRESENTATION

Oral Presentation/ Virtual

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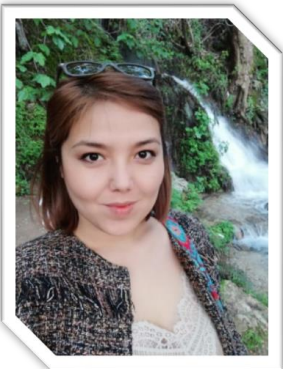
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Meeting ID: 840 9687 4823

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**5<sup>th</sup> INTERNATIONAL NEW YORK CONFERENCE ON  
EVOLVING TRENDS IN INTERDISCIPLINARY  
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**CONFERENCE  
PROGRAM**

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*Participant Countries: USA, Morocco, India, Nigeria, Hungary, Turkey, Ethiopia, Republic of Moldova, Jordan, Pakistan, Poland, Saudi Arabia, Azerbaijan, Kazakhstan, Brazil, Algeria, Vietnam, Malaysia, Bulgaria, Romania, Iraq, Russia, Georgia, Tunisia, Kyrgyzstan, UK, South Africa, United Arab Emirates, Iran, Lebanon*

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- ❖ Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

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**exp. H-1, Prof. Dr. Paul Cezanne**



Meeting ID: 840 9687 4823

Passcode: 070707

## OPENING SPEECH

03.10.2021

New York Local Time: 09:30

Ankara Local Time: 16:30

*-Welcoming Speech-*

**Mustafa Latif Emek**

*President*

*Institute of Economic Development and Social Research (IKSAD)*

***-KEYNOTE SPEAKER-***

**Prof. Dr. Enrique Mallen**

*Sam Houston State University*

*“The Online Picasso Project:  
Visual Cultures and the Internet”*



**03.10.2021 | HALL-1****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Prof. Dr. Enrique Mallen**

Authors	Affiliation	Presentation title
<b>Bartosz Józwik Alina Betlej Lech Euzebiusz Gruszecki Andrzej Pietrzak</b>	<i>The John Paul II Catholic University of Lublin, Poland</i>	DOES RELIGIOUS FAITH AFFECT ECONOMIC GROWTH AND ENVIRONMENTAL QUALITY? A PRELIMINARY RESEARCH RESULTS
<b>Prof. Dr. Sedat Cereci Dr. Gulsen Yetis</b>	<i>Hatay Mustafa Kemal University, Turkey Istanbul University, Turkey</i>	RELATION between HEALTH and MEDIA: SOCIAL RESPONSIBILITY of MEDIA on HEALTH PROBLEMS
<b>Şlapac Mariana</b>	<i>Institute of Cultural Heritage, Republic of Moldova</i>	THE PHENOMENON OF “BUILDING SACRIFICES” IN THE LIGHT OF COMPARATIVE CASTELLOLOGY
<b>Enrique Mallen</b>	<i>Sam Houston State University, USA</i>	PABLO PICASSO'S POETRY AND THE LIMITS OF LANGUAGE
<b>Assist. Prof. Dr. Alakbarova Khumar Elqam</b>	<i>Institute of Oriental Studies named after academicianBunyadov Z. of ANAS</i>	IMMIGRANT LIFE IN THE “BROOKLYN HEIGHTS”
<b>Beatriz Souza Costa Anacelia Santos Rocha Camilla de Freitas Pereira</b>	<i>Dom Helder Câmara Higher School, Brazil</i>	THE WORK OF NGOs IN THE AMAZON: A PROBLEM OR A SOLUTION FOR THE REGION?
<b>Luong Nguyen Kim Ngoc Bui Anh Tuan Bui Hoang Tan</b>	<i>Can Tho University</i>	3D TECHNOLOGIES AND CULTURAL HERITAGE EDUCATION FOR SUSTAINABILITY: A STUDY ON HUYNH THUY LE ANCIENT HOUSE IN VIETNAM
<b>Pham Duc Thuan Le Tuan Anh Vo Ngoc Hien</b>	<i>Can Tho University, Vietnam Vietnam Education Publishing House, Vietnam</i>	VIETNAM IN ORGANIZATION INTERNATIONALE DE LA FRANCOPHINE (OIF): CHALLENGES AND OPPORTUNITIES
<b>Prof. Dr. Morakeng Edward Kenneth Lebaka</b>	<i>University of Zululand. South Africa</i>	"THE CENTRAL SIGNIFICANCE OF LOBOLA CEREMONY WITHIN BAPEDI PEOPLE'S CULTURAL CONTEXT"
<b>Amarah Abu Zaitoun Prof. Dr. Zeidan Kafafi Prof. Dr. Naif Haddad</b>	<i>Yarmouk University, Jordan Hashemite University, Jordan</i>	RE-ASSESSMENT AND RE-INTERPRETATION OF KHIRBET EZ-ZERAQOUN'S RELIGIOUS COMPLEX DURING THE EARLY BRONZE AGE: A PROPOSED 3D RECONSTRUCTION

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

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**03.10.2021 | HALL-2****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Prof. Dr. Surendra M. Gupta**

Authors	Affiliation	Presentation title
<b>Pengfei Yao Surendra M. Gupta</b>	<i>Northeastern University Boston, USA</i>	TEACHING-LEARNING-BASED OPTIMIZATION ALGORITHM FOR SOLVING MULTI-OBJECTIVE U-SHAPED DISASSEMBLY LINE BALANCING PROBLEM
<b>BUI Anh Tuan HUYNH Nguyen Diem Phuong NGUYEN Ngoc Phuong Anh</b>	<i>Can Tho University, Vietnam</i>	APPROACHING DIGITAL TECHNOLOGIES IN ASSESSING HIGH SCHOOL STUDENTS' MATHEMATICAL COMMUNICATION COMPETENCY: A CASE STUDY IN ONLINE CLASSES
<b>Le Nguyen Diem Chi Dang Thi My Duyen Mai Tan Thien</b>	<i>Delta Learning Center, Viet Nam Can Tho University, Viet Nam</i>	USING ONLINE PORTFOLIOS IN CLASSROOMS FROM MATHEMATICS TEACHERS' PERSPECTIVES: A CASE STUDY
<b>Ismail Olaniyi MURAINA Imran Ademola ADELEKE</b>	<i>Adeniran Ogunsanya College of Education, Nigeria</i>	PREDICTING STUDENTS' CHOICE OF SELECTING APPROPRIATE AND RELEVANT RESEARCH DESIGN FOR DATA ANALYSIS USING VISIRULE
<b>Assoc. Prof. Dr. Rositsa Dimkova</b>	<i>St. St. Cyril and Methodius University, Bulgaria</i>	IMPROVING THE QUALITY OF SPORTS EDUCATION IN HANDBALL THROUGH A TRAINING MODEL
<b>Dr. Remus RUNCAN Dr. Bogdan NADOLU</b>	<i>Aurel Vlaicu University of Arad, Romania West University of Timisoara, Romania</i>	SOCIAL CONDITIONING FOR THE SELF-HARM BEHAVIOUR IN ADOLESCENCE
<b>Zeynep Hilal Çelik Başak Türküler Aka</b>	<i>Adel Psychological Counseling Center, Turkey Bahçeşehir University, Turkey</i>	HIGHER ORDER FACTOR STRUCTURE OF EMOTION REGULATION AND ADAPTATION OF AFFECTIVE STYLE QUESTIONNAIRE
<b>Rafael do Prado Calazans Rute Estanislava Tolocka Maria Imaculada de Lima Montebello</b>	<i>Methodist University of Piracicaba, Brazil Guarulhos University, Brazil</i>	AMPUTE SOCCER AND QUALITY OF LIFE IN THE SOUTHEAST BRAZILIAN REGION
<b>Alişan BALTACI İnci MERCAN ANNAK Emine ÖNER KARAVELİ T. Şahan SÖKMENSÜER Hakan AKAYDIN Seyran BALKAŞ DEMİR</b>	<i>Yüksek İhtisas University, Turkey</i>	ATTITUDES TOWARDS DISTANCE EDUCATION SERVICES AMID COVID-19 PANDEMIC: A RESEARCH ON UNIVERSITY STUDENTS IN THE FIELD OF HEALTH
<b>Yunis Zeynalzade</b>	<i>ADA University, Azerbaijan</i>	GREEN ENERGY POTENTIAL OF AZERBAIJAN FOR A TRANSITION TO A NON-OIL-BASED ECONOMY

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

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**03.10.2021 | HALL-3****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Prof. Dr. Mehmet Karaca**

Authors	Affiliation	Presentation title
Lecturer Dr. Emine BAŞ	Selçuk University, Turkey	BINARY ARTIFICIAL BEE COLONY ALGORITHM FOR BINARY OPTIMIZATION
Prof. Dr. Mehmet Karaca Assoc. Prof. Dr. Ayse Gul Ince	Akdeniz University, Turkey	WITHIN CANOPY 100-SEED INDEX PROPERTIES IN COTTON: A NOVEL VALUABLE AGRONOMIC TRAIT
Edanur Maraş Banu Arıcıoğlu	Recep Tayyip Erdogan University, Turkey	COMPARISON OF REVASCULARIZATION AND MTA PLUG HEALING ACHIEVEMENTS IN IMMATURE PERMANENT TEETH
Assist. Prof. Dr. Halime PEHLIVANOGLU Assist. Prof. Dr. Aslı AKSOY	Tekirdag Namık Kemal University, Turkey Halic University, Turkey	IS DONKEY MILK AN ALTERNATIVE FOR NEWBORN NUTRITION?
Sema SAMATYA YILMAZ Ayşe AYTAÇ	Kocaeli University, Turkey	THE EFFECTS ON AC ELECTRICAL AND MECHANICAL PROPERTIES OF ALL BICOMPONENT NANOFIBER OF THE PLA-Ag NPs THAT EXISTED IN CORE OR IN SHELL
Çağatay Ersin Ali Öz	Çankiri Karatekin University, Turkey Mehmet Akif Ersoy University, Turkey	COVID 19 CONTAGION RISK MONITORING AND TRACKING DEVICE DESIGN FOR INDOOR AREAS
Çağatay Ersin Ali Öz	Çankiri Karatekin University, Turkey Mehmet Akif Ersoy University, Turkey	BARRIER DESIGN THAT WORKS WITH ANDROID-BASED QR CODE
Assoc. Prof. Dr. Ayse Gul Ince Prof. Dr. Mehmet Karaca	Akdeniz University, Turkey	AN INTERSPECIES MENTOR GRAFTING METHOD FOR COTTON (GOSSYPIMUM L.)
ELNUR ZEYNALOV ELBRUS	Ph.D. Candidate from Azerbaijani National Academy of Sciences Institute of Economics	RELATIONSHIP BETWEEN THE DYNAMICS OF THE WORLD FINANCIAL EXCHANGE RATE AND THE FINANCIAL STABILITY OF THE REPUBLIC OF AZERBAIJAN
Ph.D., dos. GULNAR SAMADOVA HANLAR	Azerbaijani National Academy of Sciences Institute of Economics	ECONOMIC ASSESSMENT OF THE IMPACT OF THE COVID-19 PANDEMIC ON HEALTH TOURISM

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**03.10.2021 | HALL-4****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Dr. Tuan Duc Ho**

Authors	Affiliation	Presentation title
<b>Kaviya Piriya Sundar Dr. Kanmani. S</b>	<i>Anna University, India</i>	DEVELOPMENT OF PHOTOCATALYTIC REACTORS
<b>Ahmad Danny Islafh Abdullah</b>	<i>Keningau Vocational College, Malaysia</i>	DESIGNING A TOOL TO FACILITATE TUBE AND PIPE NOTCHING PROCESS
<b>Ikram CHERIFI Zoulikha MEKKAKIA MAAZA</b>	<i>University of Science and Technology of Oran Mohamed Boudiaf, Algeria</i>	A SURVEY ON GEOGRAPHIC ROUTING PROTOCOLS FOR VEHICULAR AD HOC NETWORKS
<b>Nehakumari N. Gohil</b>	<i>The Maharaja Sayajirao University of Baroda, India</i>	AN EFFICIENT MICROWAVE-ASSISTED SYNTHESIS OF SOME NEW PYRIDYL PYRAZOLINE SUBSTITUTED COUMARINS, ITS CHARACTERIZATION AND BIOLOGICAL EVALUATION
<b>Md. Mahbubor Rahman Ismail KARACAN</b>	<i>Bangladesh University of Textiles Erciyes University, Turkey</i>	STUDY ON STRUCTURAL TRANSFORMATIONS OCCURRING IN THE THERMAL OXIDATION OF BAMBOO PRECURSOR FIBER PRIOR TO CARBONIZATION AND ACTIVATION
<b>Nghia Duc Mai Dr. Tuan Duc Ho</b>	<i>Air Force Officer's college, VietNam Nha Trang University, VietNam</i>	DEVELOPMENT OF THE SOURCE OF RAW MATERIALS FROM FISH FAT FOR PRODUCING BIODIESEL FOR THE DIESEL ENGINE FUEL OF THE FISHING VESSELS
<b>Dr. Redouane BELBACHIR Dr. Ali KIES Amel BOUMEDJOUT Zoulikha MAAZA MEKKAKIA</b>	<i>ASAL Algerian Space Agency, Algeria University of Sciences and the Technology of Oran, Algeria</i>	ACCURATE BANDWIDTH ESTIMATION AND PREDICTION FOR IEEE 802.11-BASED MOBILE AD HOC NETWORKS
<b>Dr. Redouane BELBACHIR Dr. Ali KIES Khedidja BELBACHIR Claude Duvallet</b>	<i>ASAL Algerian Space Agency, Algeria University of Sciences and the Technology of Oran, Algeria</i>	DEPLOYED RSUS BASED ON ORSD ALGORITHM IN VEHICULAR AD HOC NETWORK
<b>Dr. Tran Nam Anh Nguyen Tran Ngoc Thao Do Ngoc Tram</b>	<i>Can Tho Pediatric Hospital, Vietnam University of Medicine and Pharmacy at HCMC, Vietnam</i>	THE STRATEGIES TO PREVENT THE COVID-19 PANDEMIC IN SOUTH EAST ASIA COUNTRIES BASED ON SCIENTIFIC DATA: A COMPARATIVE PERSPECTIVE

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**03.10.2021 | HALL-5****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Assoc. Prof. Dr. F. Oben ÜRÜ**

Authors	Affiliation	Presentation title
<b>Thao Thi Phuong Nguyen</b>	<i>The University of Danang - University of Economics, Danang, Vietnam</i>	INFORMAL PAYMENT AND SALE GROWTH. THE CASE OF SMALL AND MEDIUM-SIZED FIRMS IN VIETNAM
<b>Assoc. Prof. Dr. Caroline Akhras</b>	<i>Notre Dame University, Lebanon</i>	ART IN CONTEXT: WOMEN LEADERSHIP IMPACTING WORKPLACES
<b>Assoc. Prof. Dr. F. Oben ÜRÜ Assoc. Prof. Dr. Ebru GÖZÜKARA</b>	<i>Istanbul Arel University, Turkey</i>	INNOVATION THROUGH CROWDSOURCING: CASES OF OPEN COLLECTIVE INNOVATION
<b>Nur Beder Tariq Aziz Tariq</b>	<i>Yildiz Technical University, Turkey</i>	THE MODERATING ROLE OF RELATIONAL SELF-PERCEPTION IN THE EFFECT OF LEADERSHIP STYLES ON RESISTANCE TO CHANGE
<b>Assist. Prof. K. Praveen Prof. L.R.K. Krishnan</b>	<i>VIT Business School, India</i>	THE IMPACT OF WORK FROM HOME ON EMPLOYEE PRODUCTIVITY AND ENGAGEMENT
<b>Mihaela Curea Marilena Mironiuc</b>	<i>"Alexandru Ioan Cuza" University of Iasi, Romania</i>	INTANGIBLE CAPITAL AND THE FIRM – STATE OF THE ART AND PERSPECTIVES
<b>Lect. Selin Engin</b>	<i>Adiyaman University, Turkey</i>	PERFORMANCE MANAGEMENT IN UNIVERSITIES: CASE OF ADIYAMAN UNIVERSITY
<b>Adnan Jawabri Rouhi Faisal Suad Bakkari</b>	<i>Khawarizmi International College, United Arab Emirates</i>	STUDY ON THE EFFECTIVENESS OF DIGITAL MEDIA MARKETING OF AL FOAH, AL AIN, ABU ADHABI, UAE
<b>Dr. Dipanwita Pal</b>	<i>The University of Burdwan West Bengal, India</i>	Women and Politics: Visions and Revisions

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**04.10.2021 | HALL-1****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Prof. Dr. Kadagidze Lamara**

Authors	Affiliation	Presentation title
<b>Ly Dai Hung</b>	<i>Vietnam Academy of Social Sciences, Hanoi</i>	A MACRO-FINANCE MODEL OF GOVERNMENT BONDS YIELDS IN VIETNAM
<b>Prof. Dr. Kadagidze Lamara Assoc. Prof. Dr. Piranashvili Maka</b>	<i>Grigol Robakidze University, Georgia</i>	ECONOMIC POTENTIAL OF MOUNTAIN AND SKI RESORTS OF GEORGIA
<b>Vuong Quoc Khanh Nguyen Van Kham Bui Hoang Tan</b>	<i>Thu Dau Mot University, Vietnam Can Tho University, Vietnam</i>	THE IMPACT OF THE LAW "FLOWERS HAVE LAND" OF THE GOVERNMENT OF THE REPUBLIC OF VIETNAM ON THE SOCIO-ECONOMIC IN THE MEKONG DELTA (1970 – 1975)
<b>Asst. Prof. Dr. Gül Ekinci</b>	<i>Gaziantep University, Social Sciences Institute, Turkey</i>	FOREIGN DIRECT INVESTMENTS AND SYRIAN REFUGEE ENTREPRENEURS IN TURKEY
<b>Kənan Şöhrət oğlu Vəkilov</b>	<i>Baku State University, Azerbaijan</i>	THE IMPACT OF MODERN TRENDS IN SCIENTIFIC RESEARCH ON THE DEVELOPMENT OF THE KNOWLEDGE ECONOMY
<b>Allahverdiyeva Samira</b>	<i>Ph.D. Candidate from Western-Caspian University</i>	THE ESSENCE OF FOREIGN TRADE POLICY
<b>VELİZADE SEFTER VELİ</b>	<i>Ph.D. Candidate from Azerbaijani National Academy of Sciences Institute of Economics</i>	NEW OPPORTUNITIES FOR COOPERATION IN THE CAUCASUS AND ITS IMPORTANCE FOR THE REGION

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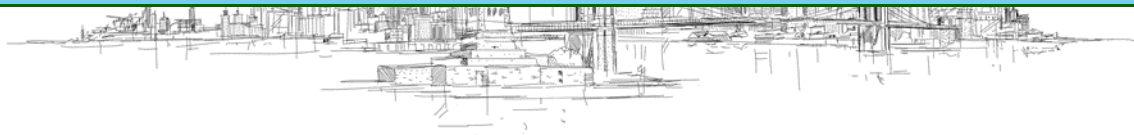


**04.10.2021 | HALL-2****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Dr. Adil Geybulla**

Authors	Affiliation	Presentation title
<b>Adil Geybulla Nigar Geybulla</b>	<i>Azerbaijan Medical University</i>	THE TREATMENT OF HODGKIN'S LYMPHOMA WITH A POLYCHEMOTHERAPY REGIMEN - STANFORD V
<b>Merve Şimşek Geyik Büşra Yazıcılar İsmail Bezirganoglu</b>	<i>Erzurum Technical University, Turkey</i>	MICROSCOPIC AND PHYSIOLOGICAL ANALYSIS OF SOMATIC EMBRYOS UNDER IN VITRO CULTURE IN TRITICALE
<b>Sadagat M.Rustamova Ziyafat R. Seyidova</b>	<i>Azerbaijan Medical University, Azerbaijan</i>	ABOUT THE FACTORS THAT LEAD TO AGE-RELATED ENDOCRINE DISORDERS
<b>İlhan ÖZDEMİR Engin DEVECİ Cenap EKİNCİ Şamil ÖZTÜRK</b>	<i>Atatürk University, Turkey Dicle University, Turkey Dicle University, Turkey Çanakkale Onsekiz Mart University, Turkey</i>	EVALUATION OF CHANGES AND METASTASIS OF A SPECIFIC CELL LINE IN BREAST CANCER MODELS
<b>Büşra Deveci İşıl Sezen Ermiş İlhan ÖZDEMİR Engin DEVECİ</b>	<i>Dicle University, Turkey Harran University, Turkey Atatürk University, Turkey Dicle University, Turkey</i>	EFFECT OF DELTAMETHRIN ADMINISTRATION ON GINGIVA IN RATS
<b>İşıl Sezen Ermiş Serap Mutlu ÖZÇELİK İlhan ÖZDEMİR Engin DEVECİ</b>	<i>Harran University, Turkey SBU.Gazi Yaşargil Training and Research Hospital, Turkey Atatürk University, Turkey Dicle University, Turkey</i>	INVESTIGATION OF THE EFFECT OF FOLIC ACID AGAINST DELTAMETHRIN ADMINISTERED TO RATS DURING PREGNANCY
<b>İşıl Sezen Ermiş Engin DEVECİ İlhan ÖZDEMİR Şamil ÖZTÜRK</b>	<i>Harran University, Turkey Dicle University, Turkey Atatürk University, Turkey Çanakkale Onsekiz Mart University, Turkey</i>	THE EFFECT OF HESPERETIN AGAINST TESTICULAR TORSION IN RATS
<b>İlhan ÖZDEMİR Müge ŞENTÜRK Tuba Nur KARABIYIK Şamil ÖZTÜRK</b>	<i>Atatürk University, Turkey Atatürk University, Turkey Atatürk University, Turkey Çanakkale Onsekiz Mart University, Turkey</i>	BIOENGINEERING TECHNIQUES USED IN STEM CELL TREATMENT
<b>KERIMZADE G.E., RZAYEVA A.M.</b>	<i>Azerbaijan Medical University, Azerbaijan</i>	SURGICAL ANATOMY OF THE TEMPORAL BONE KERIMZADE G.E., RZAYEVA A.M.
<b>Huseynova Gulgiz Agagasan Nasirova Zarifa Jahangir</b>	<i>Azerbaijan Medical University</i>	THE URINARY BLADDER GLANDS IN POSTNATAL ONTOGENESIS
<b>HACIYEV MURAD ZAMAN</b>	<i>Ph.D. Candidate from Ministry of Education of the Republic of Azerbaijan Western Caspian University</i>	DETERMINING THE SENSITIVITY OF THE AZERBAIJANI ECONOMY TO THE GLOBAL CRISIS
<b>Dr. Hasanov Arzu Najaf</b>	<i>Ganja State University, Economy and Management faculty, Tourism Business department Ganja, Azerbaijan</i>	PROBLEMS OF USING INNOVATIVE TECHNOLOGIES IN THE WORK OF TOURISM GUIDE

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

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



**04.10.2021 | HALL-3****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Dr. Rabia DEMİR**

Authors	Affiliation	Presentation title
<b>Aynura Aliyeva Gahraman gizi</b>	<i>Institute of Archaeology and Ethnography of National Academy of Sciences of Azerbaijan</i>	ABOUT RELIGIOUS TOLERANCE IN AZERBAIJAN DURING INDEPENDENCE YEARS
<b>Dr. Ali KOÇ Dr. Rabia DEMİR</b>	<i>Kahramanmaraş Sutcu Imam University, Turkey</i>	MEMORY CASE FROM THE EASTERN IN CONTEMPORARY ART
<b>Dr. Rabia DEMİR Dr. Ali KOÇ</b>	<i>Kahramanmaraş Sutcu Imam University, Turkey</i>	TECHNICAL AND THEME CAN BE REPRODUCED; ESSENTIAL ON VIDEO ART
<b>Nurad Aghayev</b>	<i>National Aviation Academy, Baku, Azerbaijan</i>	FEEDBACK IN AVIATION
<b>Assoc. Prof. Dr. Anarkan Kasmalieva Gulperi Stamkulova Dr. Aigul Anarkulova</b>	<i>Kyrgyz - Turkish University, Kyrgyzstan Academy of Management under the President of the Kyrgyz Republic, Kyrgyzstan</i>	THE VALUES OF THE TRADITIONAL GAMES OF THE TURKIC PEOPLES
<b>Assist. Prof. Dr. Zekiye Aslıhan Öztürk</b>	<i>Tekirdag Namık Kemal University, Turkey</i>	DADA'S UNIQUE ARTIST, REBELLIOUS AND FUTURE LOOKING: FRANCIS PICABIA
<b>Vugar Alasgarov</b>	<i>Azerbaijan University of Languages, Azerbaijan</i>	THE WAYS OF FRENCHIFYING COMPUTER SCIENCE TERMS OF ENGLISH ORIGIN
<b>Sheishenkul Bakirov Gulperi Stamkulova</b>	<i>Director of the Paralympic Sports School, Kyrgyzstan Academy of Management under the President of the Kyrgyz Republic,</i>	ROLE OF INTERNATIONAL ORGANIZATIONS IN THE DEVELOPMENT AND COOPERATION OF TURKIC- SPEAKING STATES

(All speakers required to be connected to the session 10 min before the session starts)  
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.



**04.10.2021 | HALL-4****New York Local Time: 10:00–12:30****Ankara Local Time: 17:00–19:30****HEAD OF SESSION: Res. Assist. Gökhan GÜNCAN**

Authors	Affiliation	Presentation title
Seda Sabah Aydan Ermiş Soner Çankaya	<i>Institute of Health Sciences, Turkey Institute of Graduate Education, Turkey</i>	ANALYSIS OF MOTIVATION LEVELS OF DISABLED INDIVIDUALS IN PARTICIPATION TO SPORT ACTIVITIES
Prof. Dr. Kadir Suat Karantay	<i>Yeditepe University, Turkey</i>	NEW TRENDS IN INTERDISCIPLINARY/INTERSEMIOTIC PRACTICES
Dr. Büşra KARTAL Assoc. Prof. Dr. Tezcan KARTAL	<i>Kırşehir Ahi Evran University, Turkey</i>	PRESERVICE TEACHERS' TEACHER EFFICACY BELIEFS AND ATTITUDES TOWARDS STEM
Dr. Büşra KARTAL Assoc. Prof. Dr. Tezcan KARTAL	<i>Kırşehir Ahi Evran University, Turkey</i>	PRESERVICE TEACHERS' UNDERSTANDINGS OF SCIENCE, TECHNOLOGY, AND MATHEMATICS AND THE RELATIONSHIPS AMONG THESE DISCIPLINES
Dr. Murat BAYAT	<i>Düzce University, Turkey</i>	EVALUATING THE RELATIONSHIP BETWEEN CONSUMERS' INDIVIDUAL VALUES AND THEIR VOLUNTARY SIMPLICITY LIFESTYLES
Assoc. Prof. Dr. Hasan Çiftçi	<i>Harran University, Turkey</i>	ETHICS AND PRIVACY ON SOCIAL MEDIA
Assoc. Prof. Dr. Fettah Kuzu	<i>Gaziantep University, Turkey</i>	THE PERCEPTION OF RELIGION IN CLASSICAL TURKISH POETRY
Serpil SAMUR Hasan DÖNMEZ	<i>Baskent University, Turkey</i>	AN EXAMINATION OF NURI BILGE CEYLAN'S FILM "KIŞ UYKUSU" WITHIN THE FRAMEWORK OF HERBERT ZETTL'S AESTHETIC ELEMENTS OF CINEMA
Res. Assist. Gökhan GÜNCAN	<i>Yalova University, Turkey</i>	BILL GUARANTEE OF THE BILLS OF EXCHANGE
Elif DEĞİRMENCİ Yavuz YILDIRIM	<i>Nişantaşı University, Turkey Ibn Haldun University, Turkey</i>	ANALYSIS OF HIGHER EDUCATION IN TURKEY FROM THE STRATEGIC MANAGEMENT PERSPECTIVE AND APPLICATION OF IBN HALDUN UNIVERSITY

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



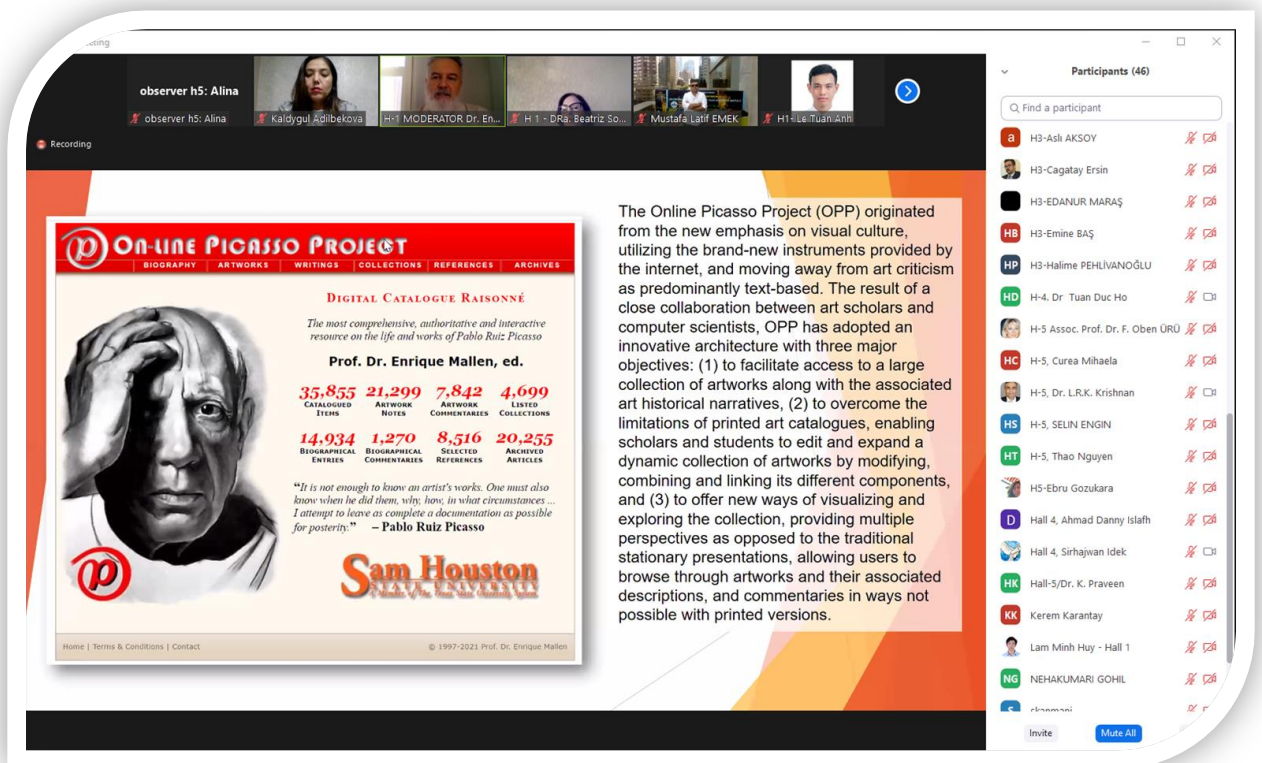
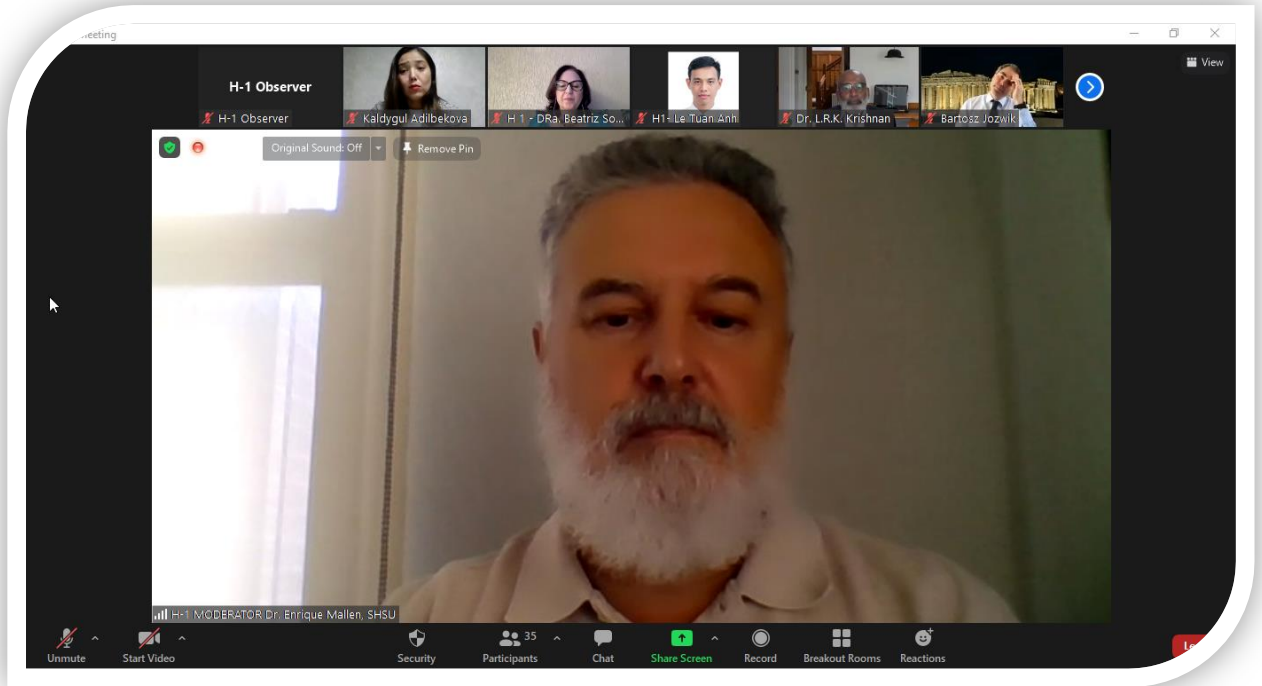


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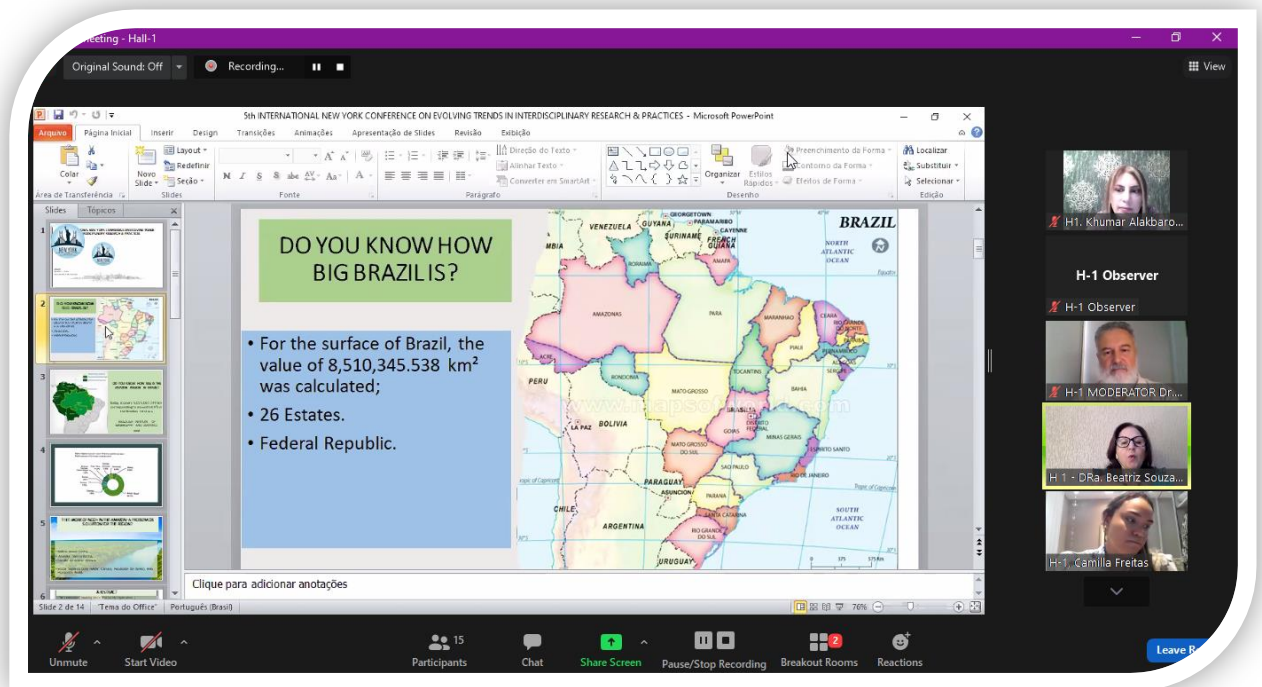




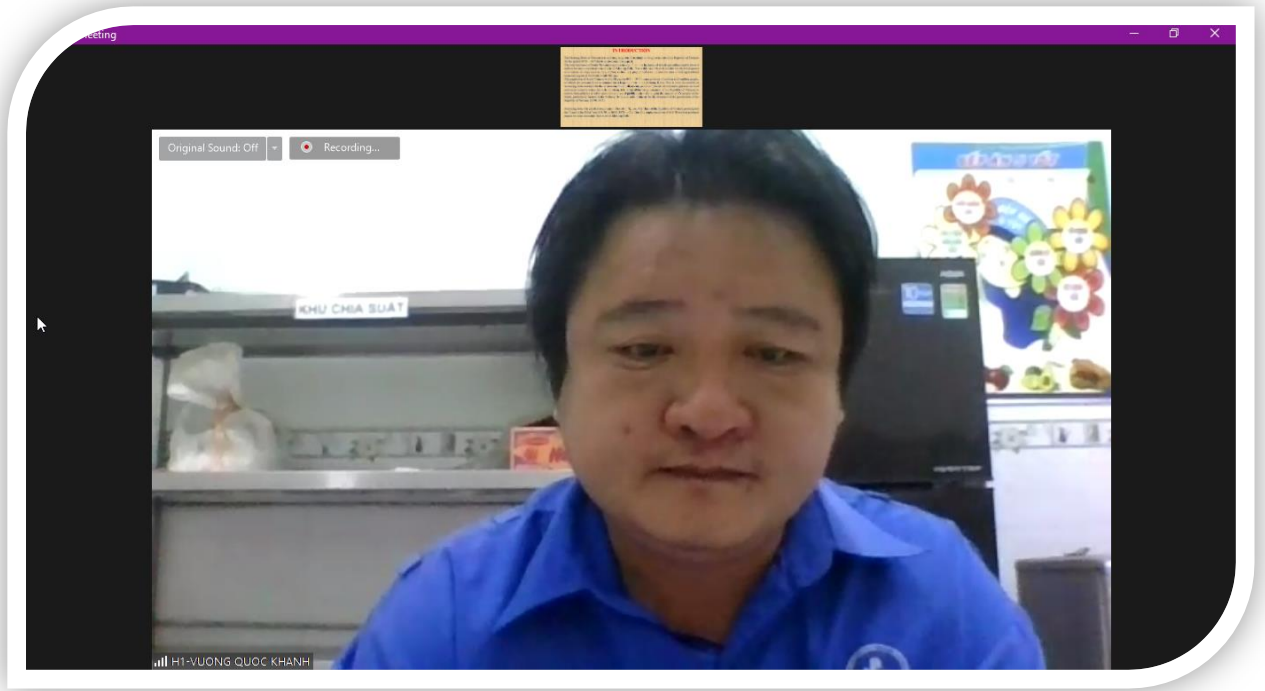
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# GALLERY



# GALLERY



Sinema estetiği, sinematografi ile kurulan ve güzeli konu edinen özel bir estetik alandır. Buradan hareketle **çalışmanın amacı**, sinema sanatının estetik unsurları olarak **Herbert Zetti** tarafından ortaya konan

IŞIK

ALAN

SES

RENK

bakımından, Nuri Bilge Ceylan'ın Cannes Film Festivalinde (2014) en iyi ödülünü alan «Kış Uykusu» filmi incelemektir.

GÖRSELLEŞTİRME-RESİMLEME

ZAMAN-HAREKET

KIŞ UYKUSU  
WINTER SLEEP

Observer Hall-4

Observer Hall-4

H-4 Tezcan Kartal


H-4 Fettah Kuzu

H-4 Serpil Samur



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Recording...



## INNER SITUATION

### Strengths

- A powerful management approach prioritizing academic development and supporting technology,
- Devoted and solution oriented management staff,
- Motivating mission, vision and values based on the values of the society,
- A science oriented, silent campus far from the city with a rich library capacity, wide working
- An academic personnel studying at international level,
- An important potential for researchers with its research university identity,
- The number of academic staff per student is at a high level, the students are qualified and devoted, there is a limited number of students and scholarship opportunities.

Observer Hall-4

Observer Hall-4

H4- GOKHAN GÜNCAN

H4-Hasan Dörmeç


H-4 Yavuz Yıldırım

Meeting

observer h5: Alina H1. Khumar Ala... H-4. Dr Tuan D... skanmani

H1 -Yunis Zeynalzade observer h5: Alina H1. Khumar Alakbarov... cyano prem H-4. Dr Tuan Duc Ho skanmani

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Mustafa Latif EMEK

Unmute Start Video Security Participants 34 Chat Share Screen Record Breakout Rooms Reactions

# GALLERY

Meeting - Hall-1

Participants: MODERATOR Prof. Dr. K..., H1-VUONG QUOC KHA..., H-1, Gul Ekingi, Samira Allahverdiyeva, vivo 1823, H1-Nguyen Van Kham

### Conclusion

- ▶ Advantages are beneficial and contribute to coherent marketing when planned and organized properly.
- ▶ Winter resorts provide employment opportunities and additional income for each Georgian family.
- ▶ The expansion of winter resorts will have a favorable impact on a number of tourism-related sectors

Unmute Start Video Participants Chat Share Screen Pause/Stop Recording Breakout Rooms Reactions Leave Room

Meeting - Hall-1

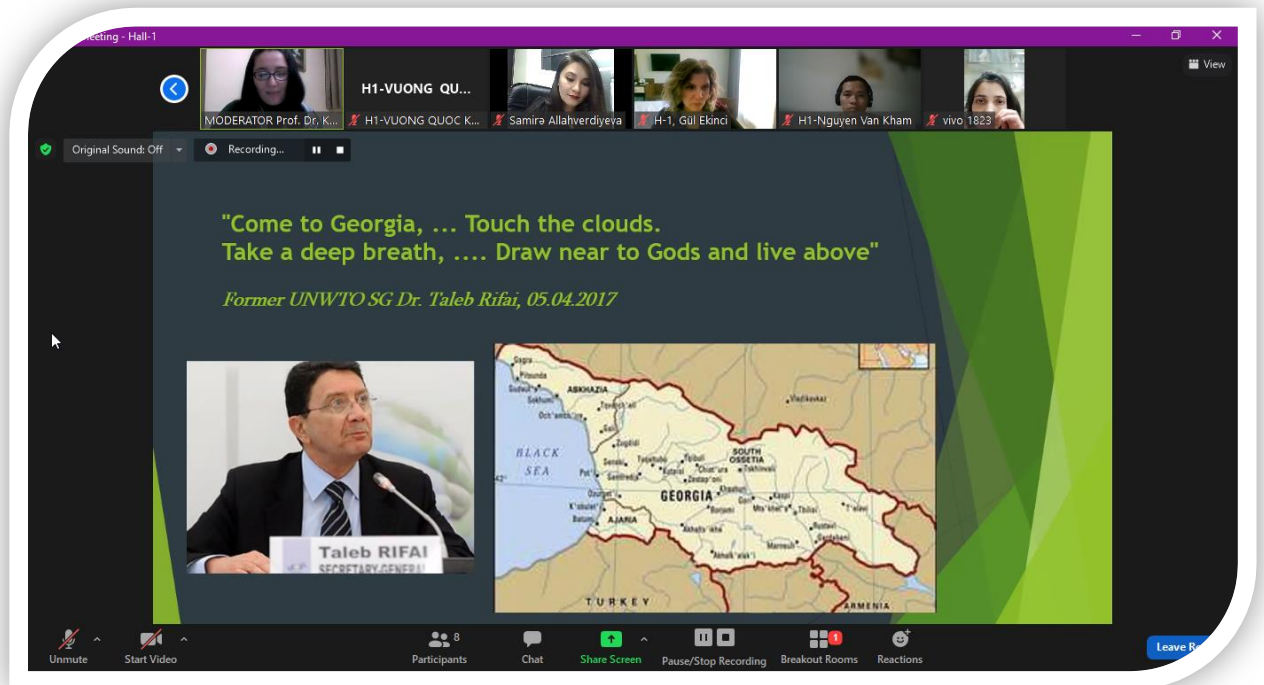
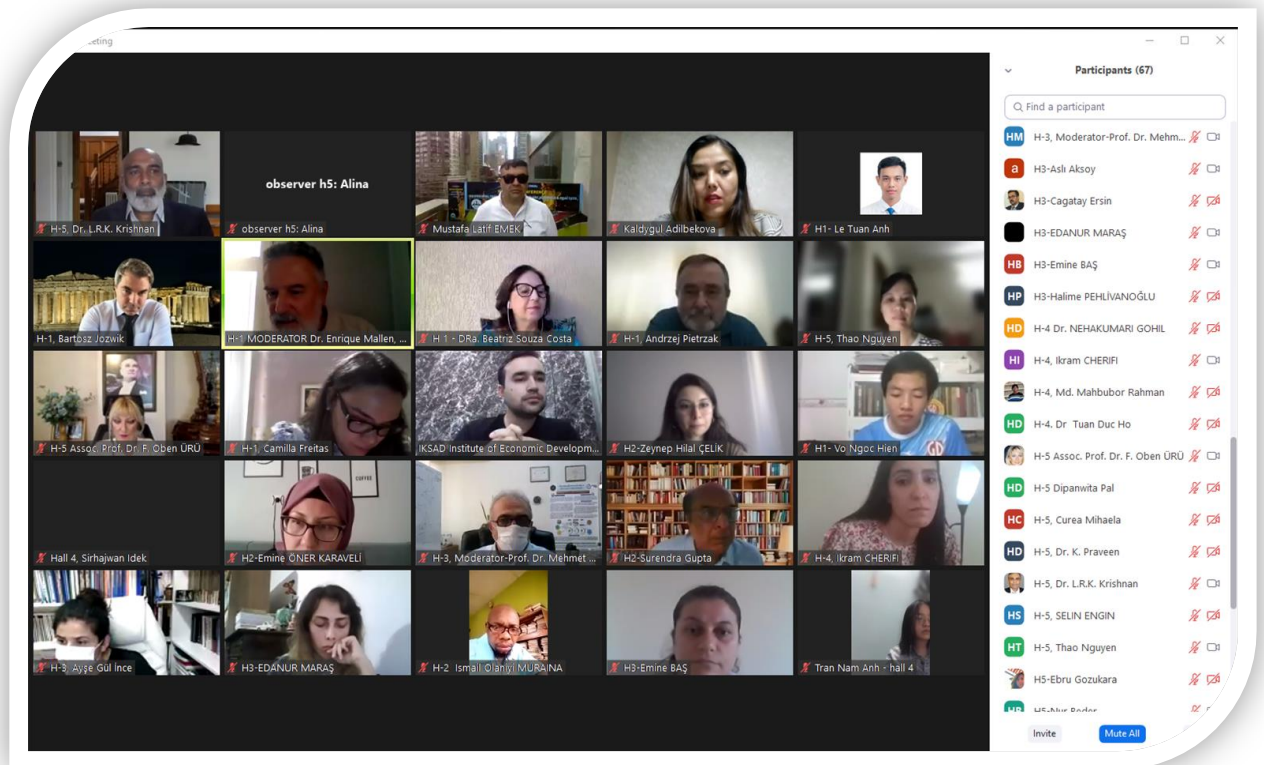
Participants: H-1 Observer, H-1, Andrzej Pietrzak, H-1 MODERATOR Dr. En..., H1. Khumar Alakbaro..., H-1, Camilla Freitas, H-1- Vo Ngoc Hien

H-1, Bartosz Jozwik

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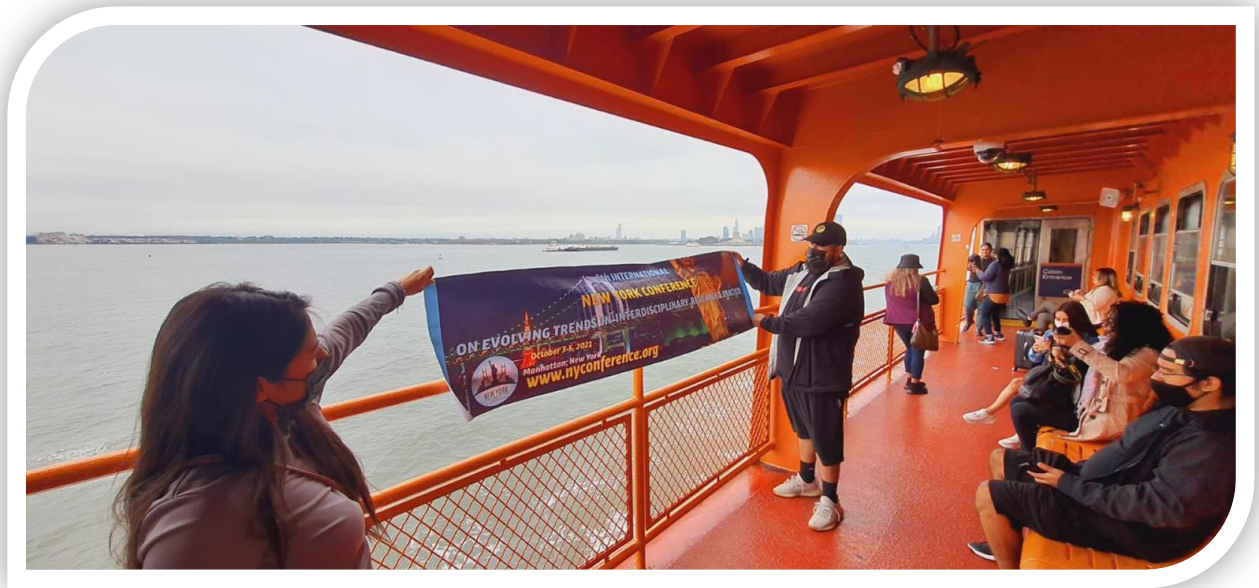


# New York Trip Gallery





# New York Trip Gallery



**5th INTERNATIONAL NEW YORK CONFERENCE ON  
EVOLVING TRENDS IN INTERDISCIPLINARY RESEARCH & PRACTICES**

*Proceeding Book*

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## PABLO PICASSO'S POETRY AND THE LIMITS OF LANGUAGE

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### **Abstract**

Pablo Picasso started writing poetry in 1935. As in Cubism, the idiosyncrasy of artistic representation in his poetry brought attention to the limits of the “sign”. In both cases, the work is not always comprehensible or decipherable. As Georges Bataille, Picasso recognized the severe imposition of language on experience but also that language is often fissured by the violence of lived experience. Language might be dictatorial, but it never achieves the power and completion it desires. The power of language is challenged by what operates within language itself at its heterogeneous instant, that elusive, ungraspable part of the speaker that verbal communication fails to recognize. Picasso’s writing, as Bataille’s, is threatened with becoming lost in the very heterogeneity it uncovers. It can no longer be understood as a discourse of truth, but as a discourse that is unstable. The clashing combination of disparate, ambiguous interpretations we find in Picasso has as its goal to expose verbal communication to the violent excitation of the heterogeneous in order to force the reader to confront the impossibility at the heart of our experience of reality. Like the “spider or spit” of Bataille’s *informe*, mobile or fluid enough to evade classification and meaning, Picasso’s poetry conveys a contradictory structure of excitement (*jouissance*) which at once exhausts the possible functions of language and subverts it with an experience which the poem can only indicate but not represent. By emphasizing the obvious *aporia* of language, the artist announces that the illusory order around us is collapsing.

**Keywords:** Bataille; ambiguity; heterogeneity; *jouissance*; *informe*.

The onset of Picasso’s writing endeavor is said to have coincided with a devastating marital crisis, a financially risky divorce to be exact. This brought about a substantial decrease in his pictorial output. Writing now became his alternative outlet. He had always been interested in literary creation. As early as 1893, when he was just 12 years old, Picasso had started to write and designed a manuscript periodical which he named *Azul y Blanco*. However, while these earlier incursions into verbal expression show Picasso’s proclivity for language, his deep interest in linguistic representation really came to fruition in 1912 during his so-called synthetic cubist period, as he started inserting strings of words into his compositions. At this point, to quote Bernadac, Picasso became “obsessed with the relationship between painting and writing ... the battle between words and images.”

Cowling also noticed the interconnection between Picasso’s writings and his plastic works. “A glance at the manuscripts”, she points out, “reveals that he was attentive to the look and lay-out of the pages, relishing the dramatic impact of such things as variations in the size and style of the script, changes in the flow of ink ... contrasts between letters, numbers, dividing lines and the special punctuation marks he favored, different systems for crossing-out and large blots of ink.”

Nevertheless, to say that Picasso’s poems constitute visual compositions does not entail that they are not to be evaluated linguistically. Indeed, the method he used in his writings is essentially syntactic in nature, although the manner in which he arranged the constituents in his poems could very well derive from the lessons learned during his involvement with the cubist *collage*. Phrases link to each other in fluctuant, reversible attachments, intentionally left tentative and ambiguous, open to potential deletions and insertions as the poems undergo



revisions, just as pieces of paper were precariously pinned to the support in the cubist *papier collé* and were left opened to the possibility of being displaced or removed.

As was the case with *papier collés*, lexical items in Picasso's poems do not lose their physical presence as they enter the realm of signification; they are equally valid as material elements, providing tonality and rhythm to the lines of the poem, as the color and texture of the pasted papers did in the cubist composition. In Cubism, the idiosyncrasy of artistic representation brought attention to the non-arbitrariness of the plastic "sign". Furthermore, Cubism insisted on the role of representation in the production of that reality, as Cottingham (1998) has emphasized. Cubism demanded from its audience the necessity to engage in a relationship with the artistic endeavor as the viewer/reader is encouraged to find his/her own meaning and understanding from the object perceived.

Picasso's writing is perpetually in the making, constantly evolving. The many alterations Picasso makes to the poems often take the form of adjuncts, at times highlighted by graphic elements like dashes, arrows, word bubbles, erasures, etc. Throughout his writing career, he would rely on a process of revisions, deletions, addition and accumulation. His poems are composed through multiple reelaborations and repetitions. This method may actually be linked to Picasso's conception of creativity in general, which must never be fixed, and must remain forever evolving, forever transforming itself. It may be argued that discontinuity and rupture are the features that most characterize Picasso's works, both in the area of the visual arts and in literature.

For the purposes of illustration, I will discuss the poem "que el silencio roa las florecitas" written on October 21, 1935.

[<sub>CP</sub> que el silencio<sub>1</sub> roa las florecitas<sub>1</sub> en el vasito<sub>1</sub> puesto encima del triángulo [<sub>CP</sub> que abraiga las cebollas<sub>1/2</sub> la vela y las manzanas<sub>2</sub> hechas de hilos de hierro en el rincón de la cocina<sub>2/3</sub> [<sub>CP</sub> donde la cafetera<sub>3</sub> con el cuello<sub>3</sub> levantado hacia el techo se quedó muda de gritar<sub>3/4</sub> tanto [<sub>CP</sub> de no poder soportar las ofensas<sub>4</sub> [<sub>CP</sub> que el gas inflige<sub>4</sub> a su frescura [<sub>CP</sub> que el recuerdo<sub>4/5</sub> de su origen llora<sub>5</sub> y araña<sub>5</sub> en la pared la mijita de sol<sub>5</sub>

One of the first things one notices as one skims across the lines of the poem is the persistence of syntactic connectors such as "que", "y" and "de" which lose the causal or subordinating effects they have in conventional grammatical constructions to be transformed by Picasso into "true accelerators," as Joris (2004) has noted, thus allowing readers to connect one constituent to the next, in multiple ramifications. Their accentuated frequency immediately overcomes their common function which is to serve as dividers, creators of dialectical or ontological differentiations between two terms. In Picasso, the multiple connectors function vectorally, pointing to "nomadic spaces" outside and beyond those terms, according to Joris. When arranged in numerous concatenations, prepositions like "de" display their clear rhizomatic quality, linking wildly heterogeneous series of terms, subverting any of their single or double functions, and forcing the reader to eventually abandon any conventional reading. As Deleuze writes of this type of link: "[It] is not even a specific relation or conjunction, it is that which subtends all relations ... which makes relations shoot outside their terms and outside the set of their terms" (Deleuze and Parnet 2007). The presence of numerous conjunctions is indicative of a very important feature of Picasso's poetry.

In current syntactic theory, adjuncts are modifiers which freely attach at a higher level in the sentence structure and provide circumstantial information pertaining to the nucleus of the phrase and its relation to both its complement and specifier. In Picasso's case, we see that

the different adjunct phrases interact with other constituents in the poem in strings of metaphoric combinations, often contradictory.

The already mentioned multiple revisions of a poem which are characteristic of Picasso have an added twist. In many cases, later versions involve translating the original poem from Spanish to French or vice versa. Thus the poem illustrated earlier was later paraphrased in French by the author as shown here, with slight variations: either adding or deleting strings not required by the original poem. Among the minor alterations observed in the French version, we may point out three erasures marked below with \*\*\*. The most interesting of these is the last one as it indicates a hesitation on the interpretation on the part of the poet. In French, the gerund “voyant” could, in principle, be coindexed with “vaisseau” or “mer” as in the Spanish poem, but the presence of the erasure blocks a “direct” coindexation, thus prompting the reader to link “mer” exclusively with “la” instead.

le front que bien \*\*\* est déjà que  
le temps qui mouille son corps plein de sel  
dans le robinet qui perd tout son sang goutte à  
goutte et n' a conscience de l' heure qui se \*\*\*  
remue de dans de la coquille bleue de son  
destin que brûlant au fond de tant de faits qui  
frient mettent le feu à tant de choses déjà mises  
...  
grand mât de son vaisseau perdu sans écueils  
et sin vagues [ dans les nuages ] presque sur [ la mer ou plutôt ] suspendu \*\*\*  
la voyant à deux doigts et ne pouvant faire que  
...

Thus we could argue that the erasures function as pivotal elements. The insertions we find in the French variant (identified through brackets and highlighted below) also serve to emphasize the existing string. The large majority of these insertions are, again, adjunctive clauses, and they serve to modify the content of preceding lexical items.

le front que bien \*\*\* est déjà que  
le temps qui mouille son corps plein de sel  
dans le robinet qui perd tout son sang goutte à  
goutte et n' a conscience de l' heure qui se \*\*\*  
remue de dans de la coquille bleue de son  
destin que brûlant au fond de tant de faits qui  
frient mettent le feu à tant de choses déjà mises  
...  
grand mât de son vaisseau perdu sans écueils  
et sin vagues [ dans les nuages ] presque sur [ la mer ou plutôt ] suspendu \*\*\*  
la voyant à deux doigts et ne pouvant faire que

Many of the additions in his poems were left clearly differentiated by Picasso by encircling them (as if they were word bubbles) or by indicating the insertion points with arrows. Another interesting thing about this version is that Picasso has added dashes (—) in multiple places to indicate some sort of segmentation of the text. When one analyzes the position of these bracketed syntactic constituents in the poem, one notices that they also, for the most part, correspond to adjunct phrases.

les oranges en fil de fer [<sub>CP</sub> et mille autres secrets ] dans ce coin de la cuisine—où la bouillotte \*\*\* le col levé \*\*\* [<sub>CP</sub> et bouche ouverte toute tremblante ]—resta muette de tant crier \*\*\*—[<sub>PP</sub> dans ] l'impossibilité de supporter [<sub>AP</sub> plus longtemps ] l'offense que le gaz inflige à sa fraîcheur et que le souvenir de son origine pleure et griffe dans le mur

The insertions are like footnoted “afterthoughts.” In fact, it is quite a task for printed versions of these poems to decide exactly where the added text must be incorporated, as the writer intentionally left this detail ambiguous. The reader is also free to choose whether to follow the suggested insertions or to continue with the original text, ignoring the later additions. Picasso’s use of these dashes at different stages of the writing process is quite illustrative. Some are inserted early on and visually occupy an important place in the manuscript; others are very small and are added to the manuscript after proofreading. The violation of the expected arbitrariness of language with respect to the physical world by focusing on its graphic realization leads readers to question the presumed independent structure of the poem as a linguistic representation. These dashes, usually used in typographical corrections to indicate the deletion of a word or a sentence, become a punctuation indicator in Picasso, to signal both a certain spacing that encourages pauses and silences when one reads the poem aloud; or to suggest breaks in the train of thought of the reader. Doing so turns the typographic signs into both phonetic and semantic elements, thus blurring the separation between art and literature.

If additions and revisions of a poem are usually represented by linear graphic elements, in a few cases they are also indicated through the use of color underlining. Thus in a poem from October 10, 1936, color plays the role of visual cue to distinguish the new additions from the previous state of the text of October 3. Added sentences are marked in blue, while those from the text-matrix are highlighted in orange. Similarly to what we had observed for the word bubbles and phrases within dashes, the contiguous word strings selected from the matrix-poem and used for the subsequent version must be analyzed as adjunctive phrases. Thus certain strings may be interpreted as “floating” constituents which may later recombine in a new poem, as if we were dealing with small paper cutouts in a *papier collé* composition.

In sum, evading hierarchical clausal structures, Picasso’s labyrinthine writing proceeds by paratactic relations between terms that produce semantic concatenations held together (and simultaneously separated) by spatial metonymical juxtapositions or by the play of connectors.

[<sub>CP</sub> que le silence<sub>1</sub> [<sub>CP</sub> si c' est possible à l' heure que marque l' horloge]  
grignote [<sub>NP</sub> les ayant endormies d' avance pour ne pas leur faire  
souffrir le moindre mal] les petites fleurs [<sub>CP</sub> qui sont] dans le plus petit vase]  
—[<sub>AP</sub> mis<sub>1</sub> dessus le triangle qui abrite les oignons]  
—[<sub>NP</sub> la bougie et les oranges en fil de fer [et [<sub>NP</sub> mille autres secrets]]]  
—[<sub>PP</sub> dans ce coin de la cuisine]  
—[<sub>CP</sub> où la bouillotte<sub>2</sub>]  
—[<sub>NP2</sub> le col levé [et [<sub>NP</sub> bouche ouverte toute tremblante]]] resta<sub>2</sub> muette  
de tant crier  
—[<sub>NP2</sub> [PP dans] l'impossibilité de supporter [<sub>AP</sub> plus longtemps] l'offense<sub>3</sub>]  
—[<sub>CP3</sub> que le gaz inflige à sa fraîcheur]  
—et [<sub>CP3</sub> que le souvenir de son origine pleure]  
—et [<sub>CP3</sub> griffe dans le mur la miette de soleil<sub>4</sub>]

- [<sub>CP</sub> qui<sub>4</sub> passe ses doigts [CP qui montrent la sortie]]
- et [<sub>CP4</sub> caresse l' affront [VP tombé par terre à terre]]
- [<sub>CP</sub> bien est déjà]
- [<sub>CP</sub> que le temps mouille son1 corps<sub>5</sub>]
- [<sub>AP5</sub> si salé de sa sagesse]

I propose that Picasso's heterogeneous poetry was in part influenced by the transgressive view of language defended by his contemporary, the French writer and philosopher Georges Bataille (1897–1962). Indeed the influence might go both ways. The latter had already written at the end of 1929 of Picasso's works that that “when [he] paints, dislocation of forms leads to dislocation of thought. In other words, the immediate intellectual movement which in other cases leads to the idea, simply aborts”. Bataille's writing involves pushing language to its limits, moving to the edge of the abyss and confronting it, threatening metaphor by making metonymy its instrument for exploring horizontality. As Lechte (1995) argues, “Bataille's writing, qua writing, is the outcome of the tension between the metonymy of desire which produces writing, and the themes of this writing which, in effect, repeat the dream of bringing writing to an end in the maelstrom of horror, *jouissance* and death.”

In a similar line, Jacques Lacan saw desire as metonymy because the object of desire is “always already” lost, never immediately present. Desire, constituted by the original metaphor of separation takes a horizontal trajectory which would only come to an end when the drive energy necessary to sustain it comes to an end. A similar predisposition for horizontality (difference, heterogeneity and chance) may be found in the poetry of Pablo Picasso.

As Rothenberg and Joris (2001) point out, “there is a sense in which language is itself a part of the work he makes—the ways in which it can be made to reveal and equally to mask the life from which it issues.” The apparently random attachment of adjunctive phrases in the illustrated poems generate a range of heterogeneous interpretations which is triggered by numerous, reversible interconnections between the lexical items heading those phrases. Multiple phrasal constituents are combined and left “unattached” for the reader to interpret. The interpretation is directed by a chain of semantic coindexations which is characterized by its multidirectional instability, as any of the terms in the chain could become its head.

Both Bataille and Picasso recognize the severe imposition of language on experience but also that language is often fissured by the violence of experience. The power of language is challenged by what operates within language itself at its heterogeneous instant, that elusive, ungraspable part of the speaker that verbal communication fails to recognize. Picasso, like Bataille, wants to expose all verbal communication to the violent excitation of the heterogeneous in order to force the reader to confront the impossibility at the heart of his/her experience of reality. Like the “spider or spit” of Bataille's *informe*, mobile or fluid enough to evade classification and meaning, Picasso's poetry conveys a contradictory structure of exhaustion and excitement (*jouissance*) which at once exhausts the possible functions of language and subverts it with an experience which the poem can only indicate but not represent.

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## **DOES RELIGIOUS FAITH AFFECT ECONOMIC GROWTH AND ENVIRONMENTAL QUALITY? A PRELIMINARY RESEARCH RESULTS**

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### **Abstract**

Religious faith, expressed both by beliefs concerning the so-called supernatural sphere and participation in religious services, significantly influences all forms of human activity, including economic activity and attitudes towards the environment. In our research, we want to test a hypothesis based on a modern model EER (the model of relationships between, Economic growth, Environmental degradation and Religious faith) published by Gruszecki, Betlej, Jóżwik, Pietrzak (2021). The theoretical EER model refers to results published by Grossman and Krueger (1991) and Barro and McCleary (2003). According to the model, a higher intensity of formal religious acts involving attendance at religious services is related to lower GDP per capita and higher environmental degradation. We test the hypothesis based on the EER model and the environmental Kuznets curve (EKC) for a panel of 52 countries for the period 1960-2018. Data about religiosity (weekly attendance in religious services) comes from various surveys carried out by the Pew Research Centre. We also apply this model to implement five groups of countries: low weekly attendance, middle-low, middle, middle-high and high weekly attendance. Our preliminary empirical results confirm the EER hypothesis that religious faith influences environmental degradation.

**Keywords:** environmental Kuznets curve, EKC model, EER model, environmental degradation, religion, religious faith, panel data analysis, panel cointegration

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## **RELATION BETWEEN HEALTH AND MEDIA: SOCIAL RESPONSIBILITY OF MEDIA ON HEALTH PROBLEMS**

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### **Abstract**

Media are now instruments that are relevant in every field and affect everyone. Media has social responsibilities due to its position. Media are usually used to make fun and to spend enjoyable time, but they are the most effective instruments in a society. Media always convey attractive and interesting messages, but people want to learn from media too. This study examines social responsibility of media on health problems and evaluates responsibility of media by warning people about health risks. Media are the most common instruments in social life and they mostly conduct social life and social dynamics form due to media. Because of social situation of media, they have some social responsibilities too. There are many different diseases which emerged because of different reasons in the world recently and people are in despair because of their ignorance about diseases. Many people suffer from diseases but they do not know what they have to do to get health and there is less way to sign them solutions. There are some health works on newspapers and some health programs on television in Turkey and some doctors or academicians write or speak about diseases and preventions against diseases and about cure ways. People complain about diseases to journalists or to doctors on television via telephone and learn health ways on media. Media have some social responsibilities about social life or about economy or about culture and about health and have an important role about law and signing correct ways. Most of people use media in the world and they wait for news about life and opinions about events in the world and warning about dangers in their lives. Meanwhile media have a great responsibility to illuminate people about their health. Media can warn people about diseases and can sign correct ways for health and can support health ways.

**Keywords:** Health, media, social responsibility, disease.

## THE PHENOMENON OF “BUILDING SACRIFICES” IN THE LIGHT OF COMPARATIVE CASTELLOLOGY

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### **Abstract**

The purpose of this article is to examine the phenomenon of –building sacrifices in the light of comparative castellology. The defensive structure had to become –lively by sacrificing a human being, whose soul was leaving its own body and passing away into the body of the new construction, in order to take shape and last over time. In the legends and ballads of many peoples there is news about human sacrifices, so-called –building sacrifices or –foundation sacrifices (Bauopfer), especially for building and founding of some castles and fortresses. A soul had to be incorporated and the foundations had to be –blessed with blood in order to build an enduring construction. –Building human sacrifices may be children, girls, young women, more rarely men, people with disabilities, married couples etc. Over time, the wild habits changed and human sacrifices were replaced by birds or domestic animals, salt, plant foods, coins etc. Also sugar, wine, spirit, oil, holy water, basil flowers, horseshoes etc. may be placed on the foundations of the new constructions. In some places, they used the ritual of –burying the stolen shadow, the shadow being considered a duplicate of the human being and a counterpart of the soul. The –building sacrifice is mentioned in both West and East, being applied to different types of constructions, including the defensive ones. This ritual was also found in Moldavia. At the ethnographic level, synchronous and asynchronous parallelisms can be distinguished, while at the art level, the –building sacrifice is equivalent to the creative sacrifice, which basically means a huge self-sacrifice when a very valuable work is created. In the space of historical Moldavia, there is only one example of a –human building sacrifices which is related to a fortification – the case of a man’s burial under the walls of the citadel of Orheiul Vechi fortress.

**Keywords:** defensive architecture, comparative castellology, –building sacrifices, –foundation sacrifices, Bauopfer, –human building sacrifices.





## IMMIGRANT LIFE IN THE “BROOKLYN HEIGHTS”

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### Abstract

From the middle of the last century, a new trend in Arabic and Egyptian literature began to emerge. This is due to the "immigrant theme", which reflects the life of Arabs who have temporarily or permanently settled abroad due to work, education, hard life, political persecution, and endless armed conflict. Thus, a large number of interesting works began to be written, the main characters of which were in exile, and the plot of which took place against the background of foreign countries.

Miral al-Tahawy's "Brooklyn Heights" is one of the many works on the "immigrant theme" in Egyptian literature.

The title of the work includes the Brooklyn Heights overlooking the Atlantic Ocean in New York, and the name was not chosen by chance. It is from these heights that a mysterious view opens up to the Statue of Liberty-a beacon for immigrants, promising a happy life, freedom and equality and the Brooklyn Bridge. The story, which begins with this symbolic name, tells the story of an Arab woman named Hind, who divorces her husband after being betrayed, takes her only son, and settles in Brooklyn.

The author comprehensively explains the "immigrant theme" not only with the participation of Hind, but also by including in the plot the stories, memories of many other immigrants. By including these images from different places in the work, the writer conveys to the reader the realities of the socio-political life of the place where they came from, the objective, subjective reasons that make them choose the life of emigration. Thus, the author describes in detail the "big house of immigrants" formed in Brooklyn.

**Keywords:** Miral al-Tahawy, immigrants, Brooklyn, Egypt, immigrant theme, Arabic literature

## “BRUKLIN YÜKSƏKLIKLƏRİ”NDƏ MÜHACİR HƏYATI

**Açar sözlər:** Miral Ət-Tahavi, mühacirlər mövzusu, mühacir, Bruklin, Misir, ərəb ədəbiyyatı

### GİRİŞ

İnformasiya texnologiyalarının yüksək sürətlə inkişaf etdiyi, kağızdan online müstəvidə qiraətə daha çox üstünlük verildiyi XXI əsrdə ədəbiyyatın da kütləvi informasiya vasitəsi funksiyası daha qabarıq özünü büruzə verir ki, bu da müasir zamanın tələbi ilə birbaşa əlaqəlidir. Bu gün qlobal dünyada baş verən bütün hadisələr müxtəlif baxış bucaqları və fərqli tərzdə ədəbiyyatda inikas yolu ilə birbaşa ictimaiyyətə ötürülür. Ədəbiyyatın dünyanı,

cəmiyyəti və həyatı yaxşıya doğru dəyişmək, mütərəqqiyə çağırmaq, yalnız məhəlli xarakterli deyil, eləcə də ümumbəşəri və qlobal problemlərin həlli yollarını göstərmək, mədəniyyətlər və dinlərarası münasibətlər kontekstində çağırışlara cavab vermək rolu müasir Misir ədəbiyyatı tərəfindən də uğurla həyata keçirilir. Lakin hazırda misirli yazarların bu bəşəri əhəmiyyətli vəzifəni yerinə yetirərəkən istiqamətləndiyi konkret cərəyan, tendensiyanı müəyyən etmək çətinlik yaradır. Beləki, müasir yazarların yaradıcılığını izlərkən öncəki əsrin ədəbi cərəyanlarının əsas xüsusiyyətləri ilə bərabər, dünya ədəbiyyatında baş verən son yeniliklərin də özünü büruzə verdiyinin şahidi oluruq. Və əlbəttə, elə yazarlar da vardır ki, milli ədəbiyyatın xarakterik cəhətlərinin qorunub saxlanılmasını, orta əsr ərəb ədəbiyyatı dəyərlərindən istifadə etməklə müasir dünya ədəbiyyatının yeni dəbinə qarşı durmağı doğru sayırlar. Ona görə ötən əsrin 60-cı illərində Misirdə yaranan –yeni dalğallı əsəbi cərəyanından sonra (bu cərəyanın nümayəndələrinə –altmışıncılar da deyilir) əsrin sonlarından başlayaraq neorealizm, neorealizm və humanizm prinsiplərinin çulğalaşmış şəkildə XXI əsr Misir ədəbiyyatında da davam etdiyini demək mümkündür.

Ümumi xətti isə dövrün nəbzini tutmaq və real ictimai-siyasi mənzərəni inikas etdirmək olan müasir ərəb, eləcə də Misir ədəbiyyatında mövzu baxımından yeni bir tendensiya iş, təhsil, ağır həyat tərz, siyasi təqiblər, bitməyən silahlı qarşıdurmalar səbəbindən xarici ölkələrə müvəqqəti və ya daimi yerləşmiş ərəblərin Avropada, Amerikada yaşamını əks etdirən –mühacirlər mövzusu ilə bağlıdır. Xüsusən XXI əsrdən başlayaraq əsas qəhrəmanları mühacirətdə olan, süjet xətti əcnəbi ölkələrin fonunda cərəyan edən çox sayda maraqlı əsərlər yazılmağa başlayır.

Ələlxüsus, bu gün Suriyada səngiməyən vətəndaş müharibəsi, nəhəng dövlətlərin də iştirakı ilə müxtəlif cəbhələrdə hərbi əməliyyatlar nəticəsində minlərlə suriyalı ərəbin Türkiyə və Avropa ölkələrinə qaçqın kimi mühacirət etməsi müasir ərəb ədəbiyyatında bu mövzunu aktual etmişdir. Ərəblərin sərhədlərdə üzləşdikləri vəhşiliklər, faciələr, doğmalarını itirmələri, qaçqın düşərgələrində yaşadıkları və Avropa ölkələrində onlara göstərilən qeyri-humanist münasibəti ehtiva edən çox sayda bədii ədəbiyyat nümunələri yaradılmış, sənədli, bədii reportaj şəklində ekranlaşdırılmışdır. Bu, başqa bir tədqiqat üçün geniş mövzu ola bilər. Bizim konkret olaraq araşdırmağa çalışdığımız isə Misir ədəbiyyatında –mühacirlər mövzusuudur. Və bununla bağlı qeyd edilməlidir ki, bu mövzu, xüsusən ABŞ və onun siyasəti hələ XX əsrin ortalarında misirli yazıçıların yaradıcılığında ara-sıra yer almışdır. Bu da təbii ki, xüsusən II Dünya Müharibəsindən sonra ABŞ-ın Ərəb Şərqiə heç bitməyən maraqlarının artması ilə bağlı olmuşdur. Belə ki, ABŞ-ın 50-ci illərdən sonra mürəkkəb tarixi dövənlərdə Misirin daxili işlərinə müdaxilə cəhdləri, Ərəb-İsrail müharibələrində nümayiş etdirdiyi siyasət, 1991 və 2003-cü illərdə İraqa qoşun yeritməsi, apardığı hərbi əməliyyatlar, Ərəb Şərqiə sızdırdığı ABŞ istehsalı məhsullar, texnikanın nailiyyətlər, –fast foodlar, musiqi və kino şəklində Amerika mədəniyyəti, eləcə də şəxsi mənafeyi naminə humanitar yardımlar – bütən bunlar artıq XX əsrin ikinci yarısından sonra yeni dövr Misir ədəbiyyatında Amerika və –mühacirlər mövzusunun yaranmasına şərait yaratmışdır. Daha asan qazanc xəyal edənlərin, iş və ya təhsil məqsədilə gedənlərin, böyük dövlətlərin –böyük fürsətləriəndən yararlanmaq, azadlığı hər anlamda dadmaq istəyənlərin, həmçinin siyasi baxışlarına görə təqib olunanların bura axını və son illər artıq güclü ərəb diasporlarının formalaşması isə XXI əsrdə bu mövzunun ədəbiyyatda daha miqyaslı inkişaf xəttini təmin edib.

**TƏDQQAT:** –Mühacirlər mövzusunda müasir Misir ədəbiyyatında işlənmiş çoxsaylı əsərlər arasında Miral Ət-Tahavinin –Bruklin yüksəklikləri romanı xüsusi çəkiyə malikdir.

Miral Ət-Tahavi 1968-ci ildə Nil deltasında, bədəvi ailəsində anadan olub. Bədəvi həyat tərzinə, qadına qarşı yasaqlar mövcud olan bir cəmiyyətdə olmasına baxmayaraq, mütərəqqi düşüncəli atasının sayəsində ilkin təhsil aldıqdan sonra Qahirə Universitetində təhsilini davam etdirmiş, magistr və doktorluq dərəcəsi almışdır. 2007-ci ildə anasının vəfatından sonra yeganə oğlu ilə ABŞ-a köçən Ət-Tahavi Şimali Karolina Universitetində ərəb dilindən dərslər deməyə başlayıb, hazırda Arizona Dövlət Universitetində dosentdir (2).

Bədii yaradıcılığa hekayələrlə başlayıb və ilk hekayələr toplusu 1995-ci ildə işıq üzünə görüb. Daha sonra –Çadırıl (1996), –Göy badımcanlı (1998), –Ceyranın ayaq izləri (2002) romanları ilə gündəmə gəlib.

Ət-Tahaviyə böyük şöhrət gətirən isə –Bruklin yüksəklikləri romanı olur (1). Əsər çox tənqidlərə tuş gəlsə də, 2010-cu ildə ərəb ədəbiyyatı sahəsində ali mükafat sayılan –Nəcib Məhfuz Mükafatına layiq görülür, ingilis, alman, italyan, ispan, holland, danimarka, norveç, urdu və hind dillərinə tərcümə olunaraq, böyük oxucu kütləsi qazanır.

Əsərin adı Nyu-Yorkda Atlantik okeanı sularına baxan Bruklin yüksəkliklərini ehtiva edir və bu ad, məkan təsadüfi seçilməmişdir. Belə ki, məhz bu yüksəkliklərdən çox mühacir üçün mayak olan, xoş güzəran, azadlıq, bərabərlik vəd edən –Azadlıq heykəlinə və Bruklin körpüsünə əsrarəngiz mənzərə açılır. Çoxlarının xəyallarda gördüyü azadlıq simvolu sayılan o heykəl məhz bu yüksəkliklərdən bütün əzəməti ilə görünür. Mühacirlər bu yüksəkliklərdən yalnız Amerikanın zahiri gözəlliyini seyr edə, ona heyran ola bilərlər, lakin özlərini amerikalı kimi hiss edə bilməzlər. Əsl Amerika başqadır.

Və əsərə seçilmiş bu simvolik adla başlayan hekayət ərinin xəyanətindən sonra boşanaraq tək oğlunu götürüb Bruklinə yerləşmiş Hind adlı ərəb qadından bəhs edir. Roman qəhrəmanın gəzdirdiyi Bruklin küçələrinin, məhəllələrin, kafe və restoranların, barların, qəbiristanlıq və parkların adlarına müvafiq fəsillərə bölünüb. Hind hər gün oğlunu məktəbə yola salandan sonra iş tapmaq üçün Bruklini qarış-qarış gəzir, yeni insanlarla tanış olur. Şəhərin təsvirlərində verilən bir epizodla, xırda ştrixlə, fərqli insanlarla yazıçı, obrazın hafizəsində xatirələri oyadır, keçmişə qayıdır. Beləcə, küçədə oturub söhbət edən yaşlı rus, yəhudi, latın amerikalı, uzaq şərqli qadınları görəncə sinəsində xaç gəzdirən xristian nənəsini, onun söhbətlərini xatırlayır. Başqa bir şeylər isə böyüdüüyü şəhəri, küçəni, kimlərsə qohumlarını, qonşularını xatırladır, bəzən hansısa söhbət onu uşaqlıq çağlarına qaytarır, rəfiqələri ilə keçirdiyi günləri yada salır. Beləcə, rəqs müəllimi, yaşlı qonşusu Çarli pivə yeşiklərini alıb evinə yığarkən, yaxınlıqdakı bardan gələn pivə qoxusu da ona atasını xatırladır. Ailələri tipik müsəlman ailəsi, yaşayışları Misir məişətinin bir parçası olmuşdur. Atasını işdən ya gec gələr, ya heç gəlməzdi. Anasını atasının yolunu gözləyən, elə hey ağlayan xatırlayır. Atasını isə evə girər-girməz ona bağırdı: –Nədi?! Elə hey uşaq doğmaqla məni evə bağlayacağımı düşünürsən?!

Atasını içki həvəskarı idi, uşaqkən Hindi qonşu Mahmud dayının dükənində pivə dalınca göndərirdi. Böyük qardaşı, dindar, şəriət qanunlarına riayət edən biri idi və tez-tez onunla

içkiyə görə mübahisə edərdi. Atası isə elə hey içkini tərif edər, –İçki fironların kəşfidirll deyərdi. Atası savadlı, müasir baxışlı biri idi. Universitetin hüquq fakültəsini bitirsə də, işləmirdi, dost-tanışa hüquqi məsləhətlər verir, yeyir-içir, məclisləri gəzirdi. Tədricən ailələrinin maddi durumu zəiflədi, içki düşkünü atası evlərinin ruzi-bərəkətini beləcə kəsdı. Amma Hind atasına pıvə alışqanlığına görə qızgın deyil. Çünki bu gün onu rahatladan kiçik hekayə, şeirlər yazır və buna görə atasına borcludur. Həmişə saçlarını tumarlayıb ona Qurandan ayələrlə müşayiət olunan maraqlı rəvayətlər, hekayətlər danışar, balaca Hinddə yazmağa həvəs yaradardı...

Yazıçı mühacirlər mövzusunu yalnız Hindin iştirakı ilə deyil, onun rastlaşdığı, dostlaşdığı çoxsaylı digər mühacirlərin hekayətlərini, xatirələrini, çətinliklərini, qorxularını, həyat tərzini süjetə daxil etməklə hərtərəfli açıqlayır. obrazlar qalereyası zəngindir - özləri kimi əcnəbi mühacir qadınlarla evlənən ərəblər, milli mətbəxi ilə məşhur uzaq şərqililər, ekzotik rəqsləri ilə seçilən latın amerikalılar, ədviyyat satan farslar, əfqanlar, hindlilər, əvvəllər Sovet İttifaqından, hazırda isə Rusiyadan mühacirət edən yəhudilər, ruslar və digər millətlər... Onların aralarında Hind kimi tənha qadınlar da çoxdur, yerli sakinlərlə ailə qurub güvənli sabah, daimi çörək, çarpayı arzulaşırlar. Amma əksəriyyəti elə özləri kimi mühacirlərlə evlənir, xoş gün-güzəranı deyil, darısqal, şəraitə kirayə otağı, borcları paylaşırlar.

Bu mühacirlər arasında özünü xoşbəxt sayanlar, hər şəraitə adaptasiya olub ömrü yola verənlər var. Lakin müəllif əksər mühacirlərin eyni mənəvi yükü daşıdıqlarını qeyd edir - Hindin yaxın dostlarından biri Nəbulusdan gələn Nəcib Əl-Xəlili kimi həsrət yükü çəkənlər çoxdur. Artıq uzun illərdir Bruklində məskunlaşıb, özünün ayrıca şərq məhsulları satılan dükanı, evi var. Amma o, Hindlə söhbətlərində elə hey Vətəni xatırlayır, xatirələrini danışır, darıxır və nə vaxtsa geri qayıtmaq arzusundadır. Nəcib Amerikanın böyük yalan olduğunu, hər kəsin bu yalana inanıb bura axıxdığını deyir. Burada isə hər şey yalan və məchuldur. ABŞ-da azadlıq vəd edirlər, azadsan deyirlər, amma heç də azad, sərbəst deyilsən. Bir qarın çörəkdən asılısan, bütün günü onu qazanmaqla məşğulsan, ömrünün sonuna kimi ya kirayə pulu toplayırsan, ya kreditləri, ya da uşaqların təhsil haqqını ödəyirsən. Müəllif obrazın dili ilə Amerikanı –insanın ömrünü kəsən, adamları udan ət məşinll adlandırır. Hind istər yeni gələnlər, istər artıq uzun illərdir məskunlaşan, özünə müəyyən şərait, davamlı iş təmin edənlər arasında Nəcib kimi düşünənlərin çox olduğunu şahidi olur.

Hind bəzi mühacirlərin böyük ailələrinin böyük problemlər yaratdığını görür, amma yenə də onlar bir-birinə güvənə, sığına bilirlər. O isə yalnızdır. Ərinin xəyanətindən sonra yıxılan və bir daha həyatına kimisə buraxmayacağına əmin olan obraz bu gün oğlu yanında olsa da, təklikdən sıxılır, qorxur. Onu həmişə sevəcəyini deyən oğlunun böyüdükcə uzaqlaşdığını hiss edir. Oğlu ingilis dilini öyrənib, öz dostları, maraq dairəsi var, Bruklində çətinliklərdən sıxılma da, Amerikanı sevir, nə vaxtsa geri qayıtmaq istəyi yoxdur. Bəzən tərzində dəyişikliklər edir, adını dəyişib Ben qoymaq istədiyini deyir. Onunla bərabər keçirdiyi vaxtlarda Hind oğlunun fikirlərinin uzaqlarda olduğunu, daha çox öz məşğuliyyətlərinə meyllənməsini hiss edir. Bu qürbətdə oğlunun gələcəyi, özünün sabahı Hindi çox düşündürür, narahat edir.

Ət-Tahavinin əsərdə yaratdığı daha bir qəribə taleli obraz Lilitdir. Bu yaşlı qadın hələ də gözəlliyini, düz qamətini saxlaya bilib, dəbli, bahalı geyinir, hər zaman qiymətli zinət əşyaları taxır. O, Hindi misirli olması ilə cəlb edir. Hind onun keçmişi, ömür hekayəti ilə öz həyatının bəzi anlarını eyniləşdirir, beləcə bu yaşlı qadına baxarkən gələcək taleyini təxmin edə bilir.



Əsl adı Leyla Əs-Səid olan bu qadın təhsilli xanımdır, ailəsi Misirin tanınmış-seçilən hörmətli ailələrindəndir. Leyla günlərin birində ərinin bitməyən xəyanətlərindən bezib, azyaşlı oğlunu da tərk edib Amerikaya yerləşir və ərinin göndərdiyi pulların hesabına qayğısız, sözün əsl mənasında azad həyata başlayır. Özünü Lilit kimi təqdim edən Leyla həyat tərzi də bütöyün dəyişir - geyimini, saçını, danışığını, yemək tərzi, musiqi zövqünü. Fərqli insanların çevrəsinə, təsirinə düşür, alkoqol, narkotika, hər şeyi dadır. Həyatına çox adam daxil olur, çox macərələr yaşayır, amma xoşbəxtliyi tapa bilmir. Hazırda artıq böyümüş oğlu və onun islam dinini qəbul etmiş amerikalı həyat yoldaşı ilə bir yerdə yaşayır. Gənclikdə də maddi ehtiyac duymayıb, indi də varlı oğlunun hesabına yenə bahalı həyatını sürdürür. Amma sürdürüyü düşkün həyat tərzi izsiz ötüşməyib, yaddaşa bağlı problemləri var, çantasında kağız parçasına yazılmış ünvanını gəzdirir ki, itməsin. Lilit ölür və onu qürbətdə müsəlman qəbiristanlığında dəfn edirlər. Onun bahalı geyimləri, ayaqqabıları və digər əşyaları isə Amerikada adət olduğu kimi, qutulara yığılıb küçələrə qoyulur ki, ehtiyacı olanlar yararlınsın. Qutularda yığılmış bəzi nimdaş paltarlar yenə Hindi keçmişə qaytarır, anasının, nənəsinin geyindiği əlbisələri, o günləri xatırlayır. Əşyaların arasındakı ərəb dilində kitablar isə onu məktəb illərinə, gəncliyinə qaytarır. Kitablardan arasından mərhumənin oğlunun ayrı-ayrı illərdə çəkilmiş fotoları, məktublarla bərabər gündəliyi xatırladan cızma-qaralar, qeydlər çıxır. Lilitin yaşadıklarını və unutmamağa çalışdıklarını, qorxularını, göz yaşlarını, arzularını, hissələrini özündə ehtiva edən bu xatirələrini oxuduqca, Hində elə gəlir, sanki bütün bunları o yaşayıb. Lilitin həyatı bir film kimi gözləri önündə canlanır. Yazıçı qəhrəmanların oxşar taleyini işləməklə, əslində, mühacir həyatı yaşayanların hamısının oxşar taleyi, aqibəti, gələcəyi paylaşdığını diqqətə çatdırmaq istəyir.

**NƏTİCƏ:** Sonunda qeyd etmək yerinə düşər ki, yazıçı müxtəlif ölkələrdən ayrı-ayrı obrazları daxil etməklə, onların keçmişlərilə bağlı yalan-doğru hekayətlərini də süjetə əlavə edir, gəldikləri yerin ictimai-siyasi, sosial-məişət həyatı ilə bağlı reallıqları, onları mühacirət həyatını seçməyə vadar edən obyektiv, subyektiv səbəbləri oxucuya çatdırır. Beləliklə, müəllif Bruklində formalaşmış -böyük mühacir evilni bütün xırda detalları ilə dolğun təsvir edir. Qeyd edək ki, Bruklin Nyu-Yorkun rayonlarından biridir, eyni adı daşıyan təbii yüksəklikləri ehtiva edir və 1883-cü ildə Röblinq tərəfindən salınmış ən qədim asılqan körpü ilə məşhurdur. Körpü Nyu-York sitidə İst River çayının üzərindən keçərək şəhərin Manhetten və Bruklin ərazilərini birləşdirir. Tikildiyi dövrdə Bruklin körpüsü dünyanın ən böyük körpüsü olub. Bu körpü o dövrdə mövcud olan bütün körpüləri uzunluğuna və eninə görə 50% keçib. Eləcə də, Bruklin körpüsü o dövrdə dünyada polad məfillərdən hazırlanmış ən böyük asılqan körpü olub (3).

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## THE WORK OF NGO'S IN THE AMAZON: A PROBLEM OR SOLUTION FOR THE REGION?

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### **Abstract**

The controversies involving NGOs in the Amazon region are not current. The questions about the alliances signed with governments of countries interested in the internationalization of the Amazon are frequent, as well as in the exploitation of its rich resources as well as the diversion of resources from partnerships with the Public Power. However, the CPI's established to investigate the activities of these institutions are contemporary. In this way, it will be demonstrated how these institutions work and the result of CPI's. In order to solve the problem, the present research understands the greater inspection of activities. To achieve the proposed objective, legal-theoretical methodology was used, as well as deductive reasoning and doctrinal research. The research is based on the theoretical framework of the CPI's reports for the years 2001-2002 and 2007-2010. It was concluded that the functioning of these institutions is important for the Amazon, solving problems when social policies are non-existent or insufficient.

**Keywords:** Amazon; ONG's and CPI's; Internationalization of the Amazon; Public Policy.

### **INTRODUCTION**

The Amazon is the largest tropical forest worldwide. It holds incalculable natural wealth and the largest hydrographic basin, with a large number of animal and plant species, and has attracted global attention for decades.

The urbanization policies for the region in the period of the military government brought about the desired economic development and settlement, but also provided serious issues that continue to date; it is possible to mention, for example, agrarian disputes and predatory exploitation of natural resources, driven by burning and deforestation.

Throughout history, the lack of public policies in the Amazon has given rise to the formation of environmental movements and civil associations with the objective of helping in environmental, social and health issues, among others.

However, recently, complaints targeting Civil Society Organizations and which involve misuse of public funds have received attention from the media and the Brazilian government. Given that these institutions survive on public and private fundraising, they were accused of forming partnerships with international funding institutions. Such partnerships would be intended to elaborate strategies for the internationalization of the Amazon and political interference in the elaboration of laws and government decisions. These accusations gave rise to the establishment of Parliamentary Inquiry Commissions (CPIs) and social questioning (BRASIL, 2010).

In this way, it will be verified whether Civil Society Organizations today represent a Brazilian problem or a solution and help for the Amazon region in places where there is no

implementation of public policies. To achieve the proposed objective, the research used the legal-theoretical methodology, as well as deductive reasoning and doctrinal and bibliographic research.

## 1 AMAZON SCENARIO: EXTENSION AND DEGRADATION

The Amazon is one of the world's largest tropical forests, and has an extensive hydrographic basin, as well as a large biodiversity reserve and gene bank. The region also has one of the most abundant existing mineral provinces (ARAGÓN, 2018). It is home to the largest world biome, including flora and fauna, mineral deposits, large rivers and lakes. The Amazon region is inhabited by a diverse range of indigenous peoples, quilombolas, traditional communities (rubbers, chestnut farm workers, small fishermen, babassu coconut breakers, and riverside dwellers, among others) and other inhabitants who arrived in the region from the 1960s onwards (ROQUETTE, 2019).

In order for this region to be protected, it has 287 conservation units (UCs), covering 116 million hectares, or 23% of the area. This dimension is based especially on the decrees for the creation of conservation units, not deducting the portion of about 9 million hectares of overlap between them and other areas of the Union, including indigenous lands. Most of the conservation units are for sustainable use, covering 61% of the area, such as extractive reserves and sustainable development reserves (BORGES et al., 2007).

Sustainable Use Conservation Units are provided for in art. 7 of Law No. 9985/00. These areas aim to make nature conservation compatible with the sustainable use of a portion of its natural resources. In this sense, sustainable use means exploitation of the environment while preserving renewable environmental resources and ecological processes, enabling the execution of economic activities in a socially fair manner (BRASIL, 2020).

The region is plentiful of environmental goods, and also marked by social and cultural richness, since numerous indigenous tribes and traditional communities occupy the territory (CUNHA, 2016).

The area covers seven million kilometers (km), occupying regions of Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname and French Guiana, also called Pan-Amazon (ARAGÓN, 2018).

In Brazil alone, it covers an area of 4.2 million km<sup>2</sup> (49.29% of Brazil), encompassing five units of the Federation (Acre, Amapá, Amazonas, Pará and Roraima), a considerable part of the state of Rondônia (98, 8%), more than half of the state of Mato Grosso (54%) and also part of the states of Maranhão (34%) and Tocantins (9%) (ROQUETTE, 2019).

Considering all this information about the natural heritage, the Amazon offers potential for economic activities in the countries it occupies, exporting inputs to several other countries

Furthermore, it plays a significant role in the maintenance of the global and regional climate, through the exchange of energy, moisture between the continental surface and the atmosphere – thus favoring the absorption of excess carbon from the atmosphere, water cycling and transportation of trace gases, aerosols and water vapor to remote regions (ROCHA et al.; 2012). In addition, deforestation process may have hindered the restoration of the forest and reduced the volume of rainfall, causing the Northwest of the Amazon to become drier and the Southeast rainier (ROSSONI; MORAES, 2020).

Deforestation has been the process with the greatest impact on the region, and causes socioeconomic problems and hinders sustainable development. In this aspect, it fosters poverty and hinders economic growth (ROSSONI; MORAES, 2020). This does not mean, however, that degradation is synonymous with widespread poverty, but with the concentration of wealth in the hands of a few.

Until approximately the early 1970s, it was found that the Amazon rainforest remained preserved. At this time, with the beginning of human interventions, deforestation began, in addition to the inauguration of the Trans-Amazonian Highway (FEARNSIDE, 2020).

In this context, between 1967 and 1971 the Brazilian government created the First Five-Year Development Plan, “[...] directing government strategies based on the binomial ‘security and colonization,’ pointing out the indispensability of filling the ‘demographic gap’ in order to develop and avoid the possibility of a guerrilla movement entering the region” (TAVARES, 2011, p. 116).

From the mid-1980s onwards, the Amazon, as an economic power, consolidated itself with family production and returned to the production of commodities, such as cattle, oil palm and soy, and to the exploitation of minerals and wood. As for logging, many of them are illegal (LOUREIRO, 2012). This form of production has fostered deforestation for more than three decades in the Legal Amazon, therefore contrary to sustainable development.

Between 1988 and 2010, it was found that most of deforestation occurred in 1995 (29,059 km of deforested area), with a view to the recovery of the Brazilian economy attributed to the Real Plan. On the other hand, in the second half of the 1990s, more precisely in 1997, with the cuts in the Real Plan, deforestation began to decrease (ROCHA et al., 2012).

In this perspective, the National Institute for Space Research (INPE), by collecting data between 1998 and 2019, found that the largest records of active foci detected by the satellite in the Amazon region occurred in 2004, 2005, 2016 and 2017. However, 2004 was the most critical year, reaching approximately 275,000 fire foci (BRASIL, 2019).

The destruction of the Amazon is a consequence of selective logging, fires and the effects of the fragmentation of the edge, contributing to the ruin of the forest. As a result, deforestation causes loss of biodiversity, reduced water cycling (and precipitation) and contributes to global warming (FEARNSIDE, 2020).

The devastation and degradation of the Amazon rainforest by illegal logging has far-reaching consequences. The extraction is followed by burning and, after, the use of the area for extensive cattle raising or monoculture. Furthermore, even when there is no absolute clear cutting, with no incidence of total deforestation, forest degradation occurs, with the loss of biodiversity, soil degradation, expulsion of animals, alteration of the regime of water courses and decrease in their quality (BRASIL, 2015).

On the other hand, deforestation in the Amazon has contributions from various actors, such as farmers. They, even if represented by small farmers concentrated in the region, cause important damage. But there are still other threats, such as large-scale transportation and energy infrastructure projects, and also the exploration of mineral reserves (ROQUETTE, 2019).

The crisis in the Brazilian economy and politics, with the great recession in 2015, also reflected in preservation and research in the Amazon. In this sense, a union of private forces began to maintain activities that are important to controlling deforestation and preserving the region. Despite this fact, the crisis also caused, as a consequence, an increase in deforestation that has continued to date. Thus observes Artaxo:

After 2015, however, political and economic crises arose. Severe budget cuts were made in science agencies. Since then, many labs have been operating with very little money, and some professors have used their own salaries to support labs and graduate students. Important federal institutions, such as the National Institute for Space Research and the National Institute of Amazonian Research, are now trying to run on 30 to 40% of their 2015 budget. The deep cuts to science have weakened the inclusion of science in public policies and services that preserve the Amazon. Over the past 4 years, deforestation has grown, reaching 8000 km<sup>2</sup> last year. (ARTAXO, 2019, p. 323)

In this scenario of insufficiencies of governmental and social actions, which persist throughout



history, there are the activities developed by NGOs in the Amazon region. They try to ensure economic and environmental sustainability by reducing forest degradation and protecting indigenous peoples, which will be demonstrated in the next topic.

## 2 THE FORMATION OF NON-GOVERNMENTAL ORGANIZATIONS OF CIVIL SOCIETY IN THE AMAZON

Historically, the third sector had its origins with the creation of philanthropic institutions in the late nineteenth century. As an example, we can mention the *Santas Casas de Misericórdia* and other institutions of the Catholic Church to assist needy communities (MAÑAS; MEDEIROS, 2012). However, Civil Society Organizations had risen and functioned, in a more organized way, in the last decades of the twentieth century, as a consequence of the international panorama at the time, in which the communist regimes of Eastern Europe were being fought, motivated by the welfare crisis state, together with the growth of neoliberal policies around the world. The emergence of these Civil Society Organizations gave rise, then, to new subjects for the public space (PINTO, 2006).

With regard to environmental entities, their emergence occurred in different ways between countries. Thus, in central countries, concerns about environmental preservation began in the nineteenth century, a period in which an inventory of natural heritage was made.

In the United States, in this aspect, some natural parks were created, as Yellowstone, in 1872, and still others as Yosemite, General Grant, and Sequoia. Soon, these interests were driven by conservation movements in groups such as the Sierra Club in the United States, in 1872; National Audubon Society, in 1905; Izaak Walton League, in 1922; Wilderness Society, in 1935, and the National Wildlife Federation, in 1936, which supported the emergence of Civil Society Organizations some time later (WALDMAN, 2007).

Civil Society Organizations are private, non-profit entities with the purpose of helping, through actions of solidarity, different causes in society. The activities carried out by these institutions can encompass numerous areas, such as human rights, animal rights, indigenous rights, gender, the fight against racism, the environment, urban issues, and immigrants, among many others.

The concept of “Non-Governmental Organization” was born in 1940, by the United Nations (UN), to define the entities of society that worked on humanitarian or public interest projects. The growth of these entities in Latin America took place in the 1960s and 1970s and evidenced an important role in the fight against the State, in the development of public policies and implementation of changes (SCHEID et al., 2010).

Aguiar (2017) explains that one of the most significant segments of the third sector are the NGOs, totaling 540 thousand registered entities in the world. For Piqueras (2000), the work developed by the NGOs, within a social reality, occurs in place of social economic policies in various sectors, as follows:

As an expression of civil society (fundamentally embodied by the middle classes) and as an extension of the social arm of the minimal State (or the form that the State is currently taking), a triumphant NGO movement comes to light. Its form of intervention or social action does not pursue structural transformations but palliative measures to make up the prevailing social order, but without leading to reformism, given that its interventions are punctual and of any socio-political integrative project, generating or ensuring dependent clienteles by contributing to the disempowerment, submission or dissolution of popular movements or native forms of intervention. The NGO movement also collaborates in the self-exploitation of populations (through the reinforcement and dissemination of forms of ‘self-help,’ ‘volunteering’ and ‘social economy’ that are highly promoted from within the sphere of political economic power). Contributing, in short, to the replacement of social policies and rights that were hard won by assistance of one kind or another, and contributing in general to the acceptance of the

inevitability of the given order (PIQUERAS, 2000, p.17).

In the Amazon, the 1960s were marked by rural and urban social movements focused on confronting the military dictatorship, with opposition to the government through support for workers' unions and rural social movements (VASCONCELLOS; SOBRINHO, 2015).

According to Camely (2009), the first NGOs emerged in the Amazon in 1964 with the allegations of devastation of natural resources, driven by the development of the region and integration policies implemented by the military government at the time.

With international pressure and Brazilian organizations' support, international NGOs, and environmental movements, international banks started to make demands regarding the preservation of the Amazon region, threatening to cancel projects financed by them (CAMELY, 2009).

Camely (2009) also explains that at the late 1970s, when the restructuring of capitalism, the advent of neoliberalism and the globalization process took place, NGOs received a great incentive to act, especially in the most vulnerable countries.

This concern is explained by the phenomenon of international environmental globalization, and with the advent of transnational relations it gave rise to countless contact channels involving national and international NGOs and even governments. This fact provided several forms of integration. In this context, one can see the rise of non-state actors, particularly NGOs, which seek to influence domestic, international, and global policies (NASCIMENTO; 2011).

The Amazon, the center of environmental and climate concerns in the international arena, was responsible for affecting the perception of these countries regarding the need for concrete and more articulated actions to try to resolve these issues. Thus, national actors were forced to create coordinated policies aimed at improving or creating inter-regional decision-making and cooperation mechanisms to contain social and environmental issues in the region (MELLO-THERY, 2019).

In the 1970s, when global environmental concerns grew, the Amazon also became one of the main themes of activist groups in the world. In the 1980s, issues related to global warming, protection of the ozone layer and biodiversity, deforestation and desertification, as well as environmental issues, became the center of world political and economic agendas (MILANI, 2008).

For Zhouri (2006), in the 1980s environmentalists from northern and southern countries mobilized in defense of the Amazon rainforest, and this spread throughout the 1990s with the concern with logging. Thus, Milani (2008) reinforces that the 1990s in Latin America was marked by the ascendancy of indigenous movements and rubber tappers, in addition to the emergence of ecological movements, the first green parties, the *Movimento dos Atingidos por Barragens* (Movement of People Affected by Dams - MAB) and the NGOs, all with a discourse on environmental protection and in-depth reform of the economic system.

From this perspective, the 1990s were characterized by the activities of the NGOs in the Amazon related to social and environmental development issues, with incentives for Afro-descendant and indigenous groups, women, as well as against inequalities in general, such as economic, social and those related to cultural human rights (VASCONCELLOS; SOBRINHO, 2015).

Bentes (2005) asserts that, in the period between 1989 and 2002, the Amazon became the first and only object of direct intervention by international environmentalism. This fact was consolidated by environmental actions and policies of international institutions. In this scenario, organizations that previously had missions related strictly to nature began to feel the need to work on social promotion linked to the conservation and sustainable use of natural resources (COUTO, 2012).

Between the 1972 Stockholm Conference and the United Nations Conference on the Environment and Development, held in Rio de Janeiro in 1992, a thought was established, based on the notion that human interference in nature would have reached a level to the point of

causing irreversible damage to the structure and functioning of ecosystems, and it was urgent to take preventive political measures based on the ethical and political principle of precaution (MILANI, 2008).

In view of these international concerns, the number of NGOs has grown dramatically, and Brazil currently hosts more than 820,000 of these institutions (SOUZA; PANUZZIO, 2019).

NGOs have the public good as their purpose and, on behalf of civil society, apply all their resources to the benefit of it. They act as representatives of civil society, intermediaries between citizens and the political and administrative institutions of the State. In the Amazon, the main activities of these institutions are linked to citizenship, social responsibility, justice, popular organization and sustainable development. Despite the diversity of activities in each institution, they share the will to influence policies (BUCLET, 2002).

The institutions operate by making a local diagnosis of all issues, thus giving visibility to public authorities, or by implementing projects for the populations involved. In this scenario, the State would fulfill its social responsibilities for the “benefit” of the activities carried out by the NGOs (BUCLET, 2002).

Despite that, there are often complaints involving these institutions, regarding the misuse of public funds, collusion with international institutions, infiltration and influence within the government. Zhouri (2006) exemplifies and affirms that major non-governmental organizations such as Greenpeace, the World Wide Fund for Nature (WWF) and Friends of the Earth, which were previously resistant to development, gave in to pressure from the World Bank and international banks. Therefore, now they have an active role in the design of forest policies and strategies with bodies such as the World Bank and the Brazilian government.

An example of this is forest certification as a political strategy to achieve the dream sustainable development, supported by the NGO WWF (World Wildlife Fund), which created Buyers Groups in several countries. These groups were organized into a global certified timber trade network called the Global Forest and Trade Network. The action is supported by national and international institutions such as the World Bank (FRERIS, LASCHEFSKI, 2001).

It is observed, in this scenario, that “Human institutions soon discovered that NGOs not only incorporated the virtues, but also the human failures. The search for individual return began to be part of the daily life of some institutions” (BRASIL, 2010, p. 03).

The Brazilian Amazon is home to several national and transnational NGOs. From this perspective, the following chapter will analyze the issue of international NGOs and the controversy surrounding them in relation to their political interests and influencing role.

### **3 THE PROBLEMS INVOLVING NON-GOVERNMENTAL AND TRANSNATIONAL ORGANIZATIONS IN THE AMAZON**

The activities carried out by the NGOs in the Amazon plays a relevant role in supplying putting into action public policies that have not been implemented. For Tristão and Tristão (2016), environmental NGOs in Brazil play a significant role in deepening and expanding non-formal environmental education actions and encouraging government initiatives. They also provide support for private enterprise organizations interested in developing projects in the area.

According to Martins et al. (2001) the term “Non-Governmental Organizations” is not legal and has a political connotation. The term wants to emphasize a commitment to organized civil society, social movement, social transformation, but, in legal terms, these institutions are registered as non-profit civil associations.

As noted, Civil Society Organizations of Public Interest (OSCIPs) include non-profit institutions (NGOs and Philanthropic Entities) provided for in Law No. 9.790/99, called “Law of the Third Sector.” The quality of an institution such as OSCIP is certified by the Ministry of Justice (MARTINS et al, 2001). In this regard, the report of the Parliamentary Inquiry Commission (CPI) of NGOs provides:

It is noteworthy that NGOs are not necessarily OSCIPs. In order to become an OSCIP, the NGO must apply for this condition with the Ministry of Justice and attach the documentation required by law. However, OSCIP is necessarily an NGO, since both are characterized as non-profit legal entities under private law, in addition to being focused on achieving social objectives that have at least one of the purposes provided for in art. 3 of the aforementioned Law No. 9.790/99. As mentioned, not every NGO is an OSCIP. Therefore, the absolute majority of NGOs are outside the legal treatment that is given to OSCIPs. Note that, according to data from 11/14/2002, from the Ministry of Justice, only 1,271 NGOs are qualified as OSCIP (BRASIL, 2001, p. 20).

In Brazil, the most active OSCIPs are of international origin, and achieve a greater notoriety. Examples of these non-governmental organizations are WWF-Brasil, Greenpeace, and The Nature Conservancy-TNC. Among the Brazilian companies, it is possible to mention *SOS Mata Atlântica*, *Instituto Socioambiental-ISA*, *Sociedade de Preservação da Vida Selvagem- SPVS*, and *Associação Brasileira de ONG's-ABONG* (BRASIL, 2002).

The focus of complaints regarding these organizations is on different factors. According to Rabinovici (2011), the media has an important influencing role by promoting and broadening the debate without offering deeper reflections. Thus, those responsible for damages in the Amazon constantly alternate between foreign governments, the military, transnational companies and OSCIPs, but without concrete measures being taken to resolve the issues.

An example of these cases, in which the CPI recommended the Federal Public Ministry to bring an action, involves *Hiléia Amazônica (Angrhamazônica)*, directed by Ms. Nair Queiroz Blair. She received from the Ministry of Culture the amount of R\$ 2,187,000.00 to carry out musical events in five cities. However, it was found that the referred NGO held only one event in Brasília and has not yet returned unused amounts (BRASIL, 2010).

Controversies involving these entities and even government bodies are recurrent, especially when transnational NGOs are involved. Thus, the first NGO CPI took place in 2002, by the Federal Senate, to investigate complaints made by the press about the irregular performance of some NGOs that took care of indigenous, environmental and national security interests, especially those in the Amazon region (SOUZA; PANNUZIO, 2019).

This CPI, which lasted 21 months, sent more than five hundred files to the authorities, received more than seven hundred documents, and held more than fifteen public hearings, finding irregularities in only 10 organizations. In the 2010 CPI, 31 organizations were investigated superficially based on issues arising from previous CPIs or new requests from members who joined the CPI and irregularities were found in seven organizations investigated in depth (SOUZA; PANNUZIO, 2019).

Again, in 2010, the Federal Senate instituted a new CPI aiming to investigate the release of public funds for NGOs and OSCIPs, in addition to the use by these entities of these resources and others received by them from abroad from 1999 until November 8, 2007 (BRAZIL, 2010).

In 2019, the denunciation of the increase in fires in the Amazon gave rise to requests, led by Senators Plínio Valério (PSDB-AM) and Randolfe Rodrigues (REDEAP), for the opening of new CPIs. In addition to these requests, Deputy João Henrique Caldas (PSB/AL) requested the opening of a Temporary External Commission (CET). Despite the investigation requests dealing with burning and deforestation in the region, the requests of Senator Plínio Valério and Deputy João Henrique also directed the measure to NGOs in a generic way (SOUZA; PANNUZZIO, 2019).

The aforementioned intended investigation has a broad spectrum in the entire sector, involving more than 820 thousand associations, foundations and religious organizations, which had already occurred in the National Congress in the years 2001 to 2002 and 2007 to 2010. It was in the meantime that it was verified the need for more adequate standards for the relationship between the State and NGOs, given the large size of the amounts transferred to these institutions



(SOUZA; PANUZZIO, 2019).

These occurrences, however, are not new. In the mid-1950s, groups of scientists and bureaucrats with professional interests in the environment created an NGO in Rio de Janeiro, that is, the Brazilian Foundation for Nature Conservation (FBCN). In fact, this institution had the objective of influencing state decisions through lobbying, to the detriment of public mobilizations. The strategy was successful, given that before and during the military government, the FBCN manipulated the drafting of laws, bodies and policies for nature and its members rose to leadership positions in the area, a situation that lasted until the 1970s (ABERS; OLIVEIRA, 2015).

Environmentalist infiltrations into the Brazilian government last throughout national history. In the 1999 reelection of Fernando Henrique Cardoso, the Ministry of the Environment was headed by José Sarney Filho, who appointed Mary Allegretti to the position of Amazon coordinating secretary. Allegretti was a famous activist since the 1980s, as an assistant to Chico Mendes and also the founder of an NGO she worked for from 1980 to 1990 (ABERS; OLIVEIRA, 2015). The aforementioned institution is the *Instituto de Estudos Amazônicos*, active in the preservation of extractive reserves in the Amazon region.

Camely (2009) denounces a perverse plan of international NGOs organized in consortium and linked to international organizations that elected them to act in different regions of the world, applying their strategies. According to the author, in the Amazon, the formation of these NGOs was possible thanks to the public policies of agencies of the Brazilian government. In this sense, these policies had and have strategic participation of the NGOs as the main actors, both in the elaboration and in the execution of these.

The WWF institutional website declares the political partnerships, as described below:

What is WWF-Brasil doing for the Amazon? WWF-Brazil develops activities in the Amazon region together with government authorities, local and indigenous communities, non-governmental organizations and the private sector to protect large portions of the Amazon and its unique biodiversity, as well as its unique ecological services and functions (WWF, online).

Internationally, after the 1972 Stockholm Conference, Brazilian sovereignty was called into question. The Brazilian Amazon, seen as the Eldorado, aroused the greed of North American and European countries. Then, between the 1970s and 1980s these countries wanted to establish control over the region. The speech gained strength with the criticism from large North American and European conservation NGOs against the multilateral banks (in particular the World Bank) that were converting environmental issues in the Amazon into an international political problem (ZHOURI, 2006).

Zhour (2006) attests that, in this panorama, British NGOs were the most active, exemplifying that the Friends of the Earth had great importance in the organization of the Altamira Gathering, which took place in February 1989. On this occasion, indigenous groups joint together against the construction of a gigantic hydroelectric plant. Likewise, Survival International led in the causes involving the demarcation of indigenous lands, with the crucial role of the lobby for the demarcation of Yanomami lands in 1991.

It is important to inform that NGOs depend on donations, mainly from the United States, to survive. Soon, they began to develop a discourse that did not contemplate the negative effects of industrialization, since donations would come from heavily industrialized nations, such as the USA and European countries. In this scenario, conservation NGOs have established alliances with international institutions, in the governments of these countries, transforming themselves into genuine multinationals (BENTES, 2005). Therefore, it was found in the CPI of NGOs in the Amazon region:

The CPI raised concrete evidence that the President of ASSOCIAÇÃO AMAZÔNIA, Mr.

CHRISTOPHER JULIAN CLARK, maintains a close relationship with the notorious international biopirate Dr. BRUCE DAKOWSKY, CEO of the English NGO THE FOUNDATION FOR ETHNOBIOLOGY - FEB, a non-profit institution based at OXFORD UNIVERSITY, in the United Kingdom, whose objective “is to identify molecules capable of causing the development and reproduction of natural compounds in the laboratory for commercial development and licensing (BRASIL, 2001, p. 65).

In addition to the aforementioned information, there are other serious ones involving NGOs and land grabbing financed by international investments, as described below:

ASSOCIAÇÃO AMAZÔNIA asked the Instituto de Terras de Roraima – ITERAIMA and the Brazilian Institute for the Environment and Renewable Natural Resources – IBAMA to transform the land it owned into an Environmental Protection Area (APA) or a Private Natural Heritage Reserve (RPPN). Mr. PAOLO ROBERTO IMPERIALLI, an Italian Count with vast resources in Europe, financed the demarcation of 172,000 hectares of land in the Amazon, in exchange for three quarters of the area, which only authorized persons can enter. The demarcation of land sponsored by Mr. PAOLO ROBERTO IMPERIALLI, by itself, proves the purpose of “land grabbing.” In the way in which the demarcation took place, entirely without the knowledge of INCRA or ITERAIMA, what could be the intention of ASSOCIAÇÃO AMAZÔNIA, other than illegal occupation of public lands? (BRASIL, 2001, p. 66).

Geopolitical plans in the Amazon region have interests that go far beyond environmental protection. The structured construction of the influence network can be seen, even in conservationist countries like Brazil, in view of its enormous capacity for international financial collection. These actions are identified especially through multilateral institutions, such as the World Bank, and multinational institutions, media campaigns, as well as training in specific actions in the region for public officials, excluding the indigenous and local population (the most interested), as well as management in protected areas with concepts developed by the NGOs themselves (DIEGUES, 2008).

These large NGOs influence, in addition to government institutions, small local institutions that also receive some financial resources, as long as they work in the mold of the former (DIEGUES, 2008). In the same direction, Bentes states:

The redirection of attention of industry to forests was accompanied by environmental problems becoming a technical problem, whose solution would result from scientific-technological sophistication, reviving the old green prejudice against the Amazon: the G-7 wants to “save” the Amazon from its “unprepared” inhabitants through the North American and European scientists’ management in cooperation with Brazilian scientists. G-7 countries, together with the big conservation NGOs, formed the world opinion and made the Amazon become the only object of intervention by international environmentalism through the PPG-7, scientific conservation and multilateral projects concerned with climate change, biodiversity, precision in deforestation rates and the degree of regional emission of carbon dioxide (BENTES, 2005, p. 231).

For Camely (2009), this pressure and domination of developed imperialist countries over developing and dominated countries, but rich in biodiversity, is explained by the fact that they are owners of the key natural assets for the current needs of industrial development.

As a result of the investigations of the CPIs established in the years 2001 to 2002 and 2007 to 2010, the need to produce more adequate standards for the relationship between the State and organizations was found (SOUZA, 2019).

It appears in a 2002 CPI report that the investigation accused deficiencies in the registration of environmental NGOs with the National Environment Council (CONAMA), in which many

institutions had different addresses, or did not have any social project, in addition to transnational NGOs that received public funds, but were inserted in valuable Brazilian deposits.

The National Environment Council (CONAMA) was established by Law No. 6.938/1981, which provides for the National Environmental Policy, regulated by Decree No. 99.274/1990. It is a consultative and deliberative body that advises, studies and indicates guidelines for government policies directed at environment and natural resources to the Council of Government, and deliberates, within its competence, on norms and standards compatible with the ecologically balanced environment, essential to a healthy quality of life (BRASIL, 1981).

The CPI also found that the service provided to the environment and indigenous communities would be unsatisfactory. The NGOs investigated were: *Associação Amazônia*; Napacan; Focus on sabbatical; Adesbrar, *Grupo Boticário* Foundation; SPVS; *Unificação das Famílias pela Paz Mundial*; Cooperíndio; Paca – *Proteção Ambiental Cacoalense*; Cunpir; Sodiurr; Arikom; Alidicir, and CIR/RR (BRASIL, 2002).

The final report of the 2010 NGO CPI, chaired by Senator Heráclito Fortes (DEM-PI), had as its object the transfer of federal resources to NGOs and OSCIPs in the period from 1999 to April 30, 2009. According to the aforementioned report, during the period 2001-2006, it is estimated that 13.7 billion reais were transferred in the investment modality to institutions declared non-profit private entities. Of this total, it is estimated that less than 5 billion reais were transferred to entities that could be classified as NGOs.

Despite these CPIs discontinuance, they presented important conclusions. For example, they point out that the system of control, inspection and regulation of the partnership relationship between the Government and NGOs is fragile and needs improvement. Another example of this can be given to the creation of multidisciplinary groups of the State with police power. This is because among the problems detected there are lack of criteria for choosing institutions, generating favoritism; diversion of the object of the contract with public money; insufficiency of internal and external control mechanisms, which have not proven capable of preventing, correcting and repressing the problems arising from the relationship between the institution and the State (BRASIL, 2010).

In the 2001 CPI, 13 institutions were investigated (BRASIL, 2002). In the CPI established in 2010, 251 applications submitted by its members were received, and 219 were considered. Of this total, there were 75 requests for invitation or summons, 87 requests for information and 21 requests for breach of confidentiality by the Council for Financial Activities Control (COAF) - Ministry of Finance (BRASIL, 2010).

However, Souza and Pannuzio (2019) state that the balance of CPIs occurred between 2001 and 2002, and 2007 to 2010, are positive. During the entire investigation period, few irregularities were identified compared to the huge number of organizations and the intensity of the investigations (10 cases in the first and seven in the second). Consequently, these CPIs resulted in the enactment of Law No. 13.019/2014, with stricter control rules regarding partnerships and public resources transferred.

After these CPIs, advances can be observed, especially with regard to the improvement of data production, also including the Government, which created the Map of Civil Society Organizations. This instrument consists of a platform administered by the Institute for Applied Economic Research (IPEA) that contains numerous data about each organization; FASFIL survey – Private Foundations and Non-Profit Associations, carried out by the Brazilian Institute of Geography and Statistics (IBGE); Portal Brasil, replacing the old SICONV – Resource Transfer Agreements and Contract System in addition to containing research carried out by various institutions (SOUZA; PANUZZIO, 2019).

In 2019, Senator Plínio Valério again defended a CPI for NGOs in order to investigate possible leaders who could take advantage of the name of the Amazon to raise money, also considering

the attempts of foreign interference in Brazil;<sup>1</sup> however, it has not been carried forward to date.

With regard to the current government of President Jair Bolsonaro, according to Fearnside (2019), the NGOs are in the crosshairs of this Head of State, promising to expel the international companies Greenpeace and WWF. In the same sense, the environment Minister Ricardo Salles, as one of the first acts in office, suspended for 90 days all projects that the ministry had contracted through NGOs, and the reintegration would only occur after a deep investigation, which has not happened to this day. And the aforementioned minister no longer occupies the Ministry.

Despite the small proportion of irregularities pointed out in the last CPI carried out, the fact is that in terms of public resources, the diverted financial sums are large. It points to the need for stricter inspections of work and expenses incurred by these institutions.

#### 4 CONCLUSION

The Amazon, due to its potential in natural resources, has been the target of several impasses related to local exploitation, social issues, and international interests in its wealth, among others. In this context, the region has become economically, and from the point of view of global environmental balance, an international reference.

Within this scenario of environmental goods, deforestation is one of the main problems of the region. This degrading practice entails serious socio-environmental issues and results in an unequal wealth distribution, in addition to the predatory exploitation of natural resources, contrary to the concept of sustainable development.

Although the emergence of the first NGOs in Brazil took place at the end of the nineteenth century, with the actions instituted by the Catholic Church, only in the twentieth century did they reach their peak given the increase in social inequalities in the country and also in the international context with the occurrence of the welfare state crisis, aggravated by the growth of neoliberal policies around the world.

From the Amazon, these national and international institutions have vigorous performance and visibility throughout the world. Recurrent denunciations of international alliances with interests in the internationalization of the region and misuse of public money gave rise to the establishment of CPIs and social questions about the integrity of these institutions and the advantages of maintaining activities in partnership with the Public Power.

The accusations involving these institutions permeate political interference with the aim of facilitating exploitation in the region, diversion of public money, land grabbing and illegal exploitation of natural resources, masked by a discourse of environmental protection to the region.

However, the CPIs identified that, considering all existing entities, very few misused the public resource, and, therefore, led to the conclusion that the activities are important and should continue with greater supervision and control of funding partnership contracts.

Regarding the infiltration of these entities linked to international institutions in the government in order to influence its decisions, adoption of laws and programs, the government itself must observe its contracts, with professionals trained to carry out the country's true interests, protecting its sovereignty, environment and relying on international agreements when it is the nation's interest.

NGOs are not substitutes and do not even perform their work for the State. These institutions act as State partners, and seek social benefits according to the particularities of the region when

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<sup>1</sup> For more information refer to: PLÍNIO, Valério defende instalação de CPI das ONGs. **Senado Notícias**.

Brasília, 25 ago. de 2019. Available in the Portuguese language at:

<https://www12.senado.leg.br/noticias/materias/2019/09/25/plinio-defende-instalacao-de-cpi-das-ongs>. Access on April 26, 2021.



public policies are insufficient or non-existent, and even direct the State in the fields of action. Non-Governmental Organizations are relevant to society and all the problems that involve them do not have the power to suppress their social role. On the other hand, the situation exposed leads to a greater supervision by the Public Power in terms of partnership with these entities. Thus, although currently there are still requests for investigations into these institutions, a greater attention to and surveillance of the contracts, as well as of the functioning of the institutions within what is specified in the Brazilian legislation, are necessary. From this perspective, the partnership of institutions with the Public Power through performance of activities or projects previously established in work plans would be an important instrument for the inspection of irregularities in the region. This partnership would provide a greater protection to the Amazon, an asset that is so important to humanity. These alliances, consolidated through Public-Private Partnerships, will be able to carry out actions aimed at inspecting and protecting the region, which is currently a challenge for the Public Administration. It will be possible for these private organizations to invest resources and create innovative proposals in partnership with the public entity, making their objectives effective. In this way, Government and for NGOs will be able to take actions in favor of the Amazon, which would be difficult or impossible to accomplish in isolation. Following this logic, solidary and legal actions between NGOs and Public Power can be much more efficient than isolated actions. Therefore, there is evidence of the importance of NGOs as a solution when carrying out activities for the good of the region.

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## **3D TECHNOLOGIES AND CULTURAL HERITAGE EDUCATION FOR SUSTAINABILITY: A STUDY ON HUYNH THUY LE ANCIENT HOUSE IN VIETNAM**

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### **Abstract**

In today's digital era, 3D technology is growing strongly and creating many revolutionary innovations in many areas of life. The applications of 3D technology are quite diverse from 3D modeling, 3D printing to 3D visualization and 3D rendering, which has changed the trend of experience and simplified workflow. Accordingly, in the field of cultural heritage education, 3D technology is approached as an important factor in model visualization and improving methods of educating historical and cultural values for learners from national heritages. This paper aims to exploit the applications of 3D technology in the study of the heritage of Huynh Thuy Le ancient house in Vietnam, a typical French-Vietnamese house architecture, the setting for the work *L'Amant* ("*Lover*") by French writer Marguerite Duras. The research results both provide a solution to approach the heritage of ancient houses flexibly with a multi-dimensional perspective without being limited in space and time, and at the same time increase the cultural and historical values of the national heritage through modern educational and technological solutions. This result also suggests many in-depth research directions on digital application in heritage education through practical models, thereby helping the community to choose an appropriate model for conservation and sustainable development of cultural heritage.

**Keywords:** 3D technology, cultural heritage education, sustainability, ancient house

## **VIETNAM IN ORGANIZATION INTERNATIONALE DE LA FRANCOPHINE (OIF): CHALLENGES AND OPPORTUNITIES**

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### **Abstract**

Organization internationale de la Francophonie is becoming a diverse political - economic - cultural space, where Vietnam has more opportunities to strengthen its position and integrate internationally. Joining the Organization internationale de la Francophonie (OIF) since 1970, Vietnam has enlisted a lot of valuable help and support from the Francophone community in terms of funding, education and technology... Besides, this is also a forum for Vietnam to implement its foreign policy, a channel to take advantage of strengthening bilateral relations with some developed members such as France, Canada, Switzerland... or with African countries. When joining Organization internationale de la Francophonie, Vietnam quickly made important contributions, gaining an increasingly important voice as an active member of the organization. Today, when international relations have changed a lot, Vietnam in Organization internationale de la Francophonie is also facing challenges and opportunities to take advantage of the benefits from this organization to make a worthy contribution to the development of the country.

This article refers to Vietnam in Organization internationale de la Francophonie, the research method to survey the sources, analyze the relevant factors to assess the challenges and opportunities of Vietnam in the Organization internationale de la Francophonie.

**Keywords:** Organization internationale de la Francophonie, Vietnam, challenges, opportunities

### **1. INTRODUCTION**

Organization internationale de la Francophonie is becoming a diverse political - economic - cultural space, where Vietnam has more opportunities to strengthen its position and integrate internationally (Bensmaïa, R., & Waters, A. 2003). Joining the Organization internationale de la Francophonie (OIF) since 1970, Vietnam has enlisted a lot of valuable help and support from the Francophone community in terms of funding, education and technology... Besides, this is also a forum for Vietnam to implement its foreign policy, a channel to take advantage of strengthening bilateral relations with some developed members such as France, Canada, Switzerland... or with African countries (Bourhis, R. Y. 1997). When joining Organization internationale de la Francophonie, Vietnam quickly made important contributions, gaining an increasingly important voice as an active member of the organization. Today, when international relations have changed a lot, Vietnam in Organization internationale de la Francophonie is also facing challenges and opportunities to take advantage of the benefits from this organization to make a worthy contribution to the development of the country.



## 2. DISCUSSION

### 2.1. Information about Organization internationale de la Francophonie (de la Francophonie)

(OIF) was established in 1970, currently about 88 countries and territories are members of OIF. 16% of the world's population speaks French (Véronique, G. D. 2012). Today, with the growing need for economic, cultural and educational cooperation, the French language plays the role of a –bridge connecting countries around the world.

The objective of the OIF is culture and language with a focus on the French language and French culture. But after more than 40 years of existence, the OIF is not only a linguistic and cultural organization, but it also covers a number of other goals such as politics, economy and environment.

OIF increasingly asserts its role in solving global problems such as poverty reduction, economic cooperation, and climate change response. In the future, the –French Commonwealth will be increasingly linked from the sharing of culture and language, along with economic and political values (Wright, S. 2008).

From 10 to 17 October 2019, the 17th Summit of Francophone Countries was held in Yerevan, the capital of the Republic of Armenia. The conference had nearly 40 presidents and prime ministers from OIF member countries and territories, representatives of the United Nations, and many international and regional organizations. The theme of the conference was –Living together in solidarity, sharing human values and respecting diversity: The source of peace and prosperity in the French language community. The OIF is committed to supporting member countries in achieving the Sustainable Development Goals, responding to climate change, economic growth, and promoting the use of French at international multilateral forums. The conference agreed to admit 4 countries and territories, namely Ireland, Malta, Gambia and the US state of Louisiana as observers, bringing the total number of Francophone members and observers to 88 countries and territories, through which affirms OIF's position as the second largest comprehensive international organization in the world after the United Nations.



**Image 1: The Seventh Francophonie Summit was held in Hanoi in November 1997**

Source: The World and Vietnam Report

On September 8, 2020, for the first time, the United Nations Security Council held an online open discussion session on cooperation between the United Nations and Organization internationale de la Francophonie (OIF). OIF Secretary General Louise Mushikiwabo, United Nations Assistant Secretary-General Bintou Keita and Armenian Foreign Minister cum President of the Conference of Francophone Ministers Zohrab Mnatsakanyan attended and spoke at the discussion.

The OIF Secretary-General reaffirmed the importance of multilateral cooperation in maintaining international peace and security. Over the past time, OIF has actively cooperated with partners, including the United Nations, in areas such as peacekeeping, crisis prevention and management. The OIF supports member countries to strengthen their French language skills, ensure linguistic diversity and strengthen the role of women.

The Assistant Secretary-General of the United Nations welcomed the growing partnership between the two organizations to promote international peace and security. Many specific cooperation programs have been implemented in areas such as conflict prevention, early warning and peacekeeping, in addition to other areas of cooperation such as sustainable development, good governance, democracy, rule of law, human rights and the enhancement of the participation of women and youth.

The member states of the United Nations Security Council recognize the role of the OIF; welcomes OIF to promote conflict prevention, peace building, enhance the role of women and youth, as well as actively respond to climate change, cyber security; highly appreciated many specific initiatives and cooperation programs of OIF implemented in practice. Many member countries of the United Nations Security Council believe that the OIF can continue to promote its role in the United Nations and suggest that the two organizations continue to promote closer cooperation towards maintaining peace and international security.

## **2.2. The role of de la Francophonie in Vietnam**

Vietnam successfully organized the 7th OIF Summit in 1997 in Hanoi. Vietnam attended most of the General Assembly courses of the Francophone Parliamentary Union (APF) and actively participated in activities within the framework of the General Assembly. With the trust of APF member sub-committees, Vietnam has been elected as Vice President of APF for three terms (2007-2009, 2009-2011, 2013-2015) and has assumed the role of Asia Regional President- Pacific for the term 2015-2017. OIF shows its respect and regularly sends high-level delegations to visit Vietnam. During his visit to Vietnam in March 2014, Francophonie General Secretary Abdu Diup spoke highly of Vietnam's role and contribution in the Francophone Community such as in reforming OIF's activities and strengthen OIF's economic cooperation relationship. OIF is committed to supporting Vietnam in international economic integration, start-ups, especially young people and women, implementing tax and financial reform policies, connecting Vietnamese businesses South with African businesses.

In November 2014, for the first time, the document of the OIF Summit (Resolution on the Situation of Countries in Crisis, Exiting the Crisis and Consolidating Peace in the OIF) expressed concern about the dispute between Vietnam and China in the South China Sea. OIF calls on relevant parties to exercise maximum restraint and resolve disputes through peaceful means on the basis of international law, including the 1982 United Nations Convention on the Law of the Sea, show solidarity and mutual support in the OIF (Trang T. 2021).



**Image 2: Vietnam's Foreign Minister Mr. Pham Binh Minh welcomed with OIF Secretary General Louise Mushikiwabo to visit Vietnam in December 2019**

Source: The World and Vietnam Report

OIF and implementing agencies have collaborated with a number of OIF member countries to carry out many projects in Vietnam, of which the main projects are: Professional Training for French Language Teachers (CREFAP) ;Strengthening French in Southeast Asia (VALOFRASE); Established the Francophone Knowledge House in Hue; French language training for Vietnamese diplomats and civil servants since May 2013. Established the Center for Francophone Studies and Cooperation in Asia-Pacific (CECOFAP).



**Image 3: French Language Festival 2019 was held in Ho Chi Minh City**



Source: <https://hcmcpv.org.vn/tin-tuc/ngay-hoi-quoc-te-phap-ngu-tai-tphcm-1491852677>

OIF continues to work with the Agency for Francophone Universities (AUF) to support Vietnam in teaching French and in French at the high school and university levels as well as in scientific research in a number of key areas such as: technology, economics, commerce, pharmacy, basic science, law, etc., and at the same time train highly qualified applied informatics engineers for the Asia-Pacific region at the Francophone Informatics Institute. Since 1994, AUF has opened an Asia-Pacific office in Vietnam and currently has about 40 universities in Vietnam that are members of AUF. AUF has also established "Digital Space" in 3 cities: Hanoi, Ho Chi Minh City and Da Nang.

In addition, OIF also carries out smaller-scale projects in informatics, law, energy, environment, poverty alleviation, helping to train teachers and supporting school facilities in impoverished areas. The projects that OIF implements in Vietnam are generally evaluated as effective.

Since Vietnam officially joined the United Nations peacekeeping operations. In June 2014, OIF expressed interest and desire to promote cooperation with Vietnam in this field. Ministry of Foreign Affairs of Vietnam (2014) OIF sponsored Vietnam to attend a specialized French language training course on UN peacekeeping operations in Geneva (Switzerland) from February 15 to 18, 2016.

Vietnam Television (VTV) has signed an agreement with TV5Monde to broadcast this channel 24/24 on the microwave cable television system (MMDS) since November 1997. TV5Monde cooperates with Vietnam through cooperation in fields such as training editors, technicians, digital video editing, cinematography...). From April 2011, TV5Monde in Asia has Vietnamese subtitles.

Hue City is an official member of the Association of Mayors of OIF Member Countries (AIMF). Hue City and AIMF have implemented many projects on improving the environment, education and culture.

Vietnamese Ambassador to OIF Dinh Toan Thang said: –Vietnam continues to affirm that the OIF is an important forum to implement its foreign policy in accordance with the policy of diversifying and multilateralizing international relations and actively actively integrating into the world. At the same time, Vietnam continues to be an active and responsible member of the OIF and has contributed to promoting its role as the door of the OIF in the Asia-Pacific regionl (Trang T. 2021).

### **2.3. Challenges and opportunities**

Joining the OIF, Vietnam has the opportunity to expand its relations with the European Union (EU) and the Francophone community in the world, as well as take advantage of capital and technology to develop the country. France and European countries are currently very effective partners of Vietnam. The economic growth of the two sides over the years is a testament to the relationship between Vietnam, the EU and the OIF.

As a member of the Francophonie when Vietnam needs international support, the countries in the OIF will be a reliable support for Vietnam. OIF is a "bridge" to settle international disputes by peaceful solutions. Vietnam currently has a dispute in the South China Sea with China, so the support from the OIF will be very important for Vietnam to manage the current conflicts in a peaceful way.

Through the OIF programs that Vietnam organizes, there will be a number of practical benefits in terms of international prestige. OIF's international volunteer programs such as



Keeping Peace, Francophone Olympics, World Francophonie Forum help Vietnam have the opportunity to connect with OIF countries.

However, the number of French speakers in Vietnam is still small compared to English, the number of French speakers in the total population is a big challenge (as of 2010 there were 632,000 French speakers). in Vietnam (accounting for 0.7% of the population) if there is no change in policy in the next 10 to 15 years, French in Vietnam will hardly survive and develop.

The search for prosperity in the OIF also faces the risk of being left behind in the overall development process due to the uneven development level of countries, especially those in Africa.

In Southeast Asia, only English is used for work and commerce, so French is difficult to use in Southeast Asia.

Diversity in cooperation also faces the risk of lack of understanding of the culture and ideology of the countries in the OIF with each other.

### 3. CONCLUSION

Organization internationale de la Francophonie is an internationally recognized organization and increasingly has an important role in global economic and cultural issues. With the historical relationship between Vietnam and France, Vietnam joined the OIF very early and quickly became an active member, making many contributions to the OIF. Besides, the influence of OIF in Vietnam is increasingly evident in fields such as economy, culture, education and environment. However, at present, the French language is not popular in Southeast Asia, that is why the French language has not developed in Vietnam any faster. In addition, the growth of China in the region is also a challenge for the French language in Vietnam. But with the advantage of a global language and good support for science and education, it is believed that the French language will have a development in Vietnam in the future, thereby further strengthening the relationship between Vietnam and the OIF as well as between Vietnam and France.

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## **THE CENTRAL SIGNIFICANCE OF LOBOLA CEREMONY WITHIN BAPEDI PEOPLE'S CULTURAL CONTEXT**

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### **Abstract**

In the Bapedi culture, lobola is the price for the bride paid by the groom's parents to the bride's parents. Bapedi people are not selling their daughters. Lobola is not a business. It rather symbolizes a token of appreciation by the groom's family to the bride's family for bearing and rearing the child who is now their son's wife and who will take care of their son, bear them grandchildren and thus preserve their family name. The purpose of this study was to investigate the central significance of lobola ceremony within Bapedi people's cultural context. The main question the study addressed is: Is it really necessary for the groom's family to pay lobola to the bride's family, as a token payment to guarantee the stability of the marriage? Interviews, observations, video-filming and photography were used to collect data. Most of the interviews were informal and spontaneous. The second phase included literature searches to gather and compare secondary data obtained from the field research. The results have shown that lobola ceremony is a pre-marital ceremony comprised of the submission of cattle, goats, as well as money to the bride's family. The results have also revealed that lobola ceremony cement and strengthens the relationship between the two families, but also binds the new husband to his obligations.

**Keywords:** Bapedi culture, Lobola ceremony, Bapedi people, groom, bride.

## **RE-ASSESSMENT AND RE-INTERPRETATION OF KHIRBET EZ-ZERAQOUN'S RELIGIOUS COMPLEX DURING THE EARLY BRONZE AGE: A PROPOSED 3D RECONSTRUCTION**

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### **Abstract**

The chronology of the Early Bronze Age in the southern Levant recently went through some significant modifications. Based on these modifications, the re-assessment of the Early Bronze Age's archaeological sites and its excavations results became a necessary action. This paper aims to re-assess the results of the excavation of Khirbet ez-Zeraqoun's religious complex in light of the new chronology and the complex architectural typology. It also seeks to provide an architectural analysis for it so that a 3D reconstruction could be illustrated. This analysis will test the study hypothesis, which states that the religious complex had two constructional phases, and the temples -distyle -in- antis| of Khirbet ez-Zeraqoun were the earliest of its type in the Levant. By revising the Early Bronze Age in the southern Levant and Khirbet ez-Zeraqoun's literature of the major publication related to it, a comparative study was conducted between the temples of Khirbet ez-Zeraqoun and the other temples of the Early Bronze Age in the southern Levant. This revision also led to creating the religious complex's 3D reconstruction by using sketch up software. The results demonstrate that Khirbet ez-Zeraqoun was occupied firstly by the Temple B0.1 since the Early Bronze Age I, and the temples B0.4 and B0.5 were constructed in the Early Bronze Age II. Also, Temples B0.4 and B0.5 are the earliest examples of the temples in -distyle -in- antis| in the entire Levant. According to these statements, the outcomes suggest that Khirbet ez-Zeraqoun was one of the earliest urban centres that combined two religious orientations that reflected the society's nature; the first was associated with the village community and the second the urban community.

**Keywords:** Early Bronze Age, Khirbet ez-Zeraqoun, Religious complex, 3D reconstruction, urban community, temples, distyle -in- antis.

## **TEACHING-LEARNING-BASED OPTIMIZATION ALGORITHM FOR SOLVING MULTI-OBJECTIVE U-SHAPED DISASSEMBLY LINE BALANCING PROBLEM**

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### **Abstract**

Rapid development of technology and highly demanding customers promote products' diversification leading to shorter lifecycles and larger number of end-of-life (EOL) products. This necessitates societies and governments to enact environmental consciousness and regulations on product manufacturing and consumption. As opposed to landfilling EOL products, product recovery is considered as one of the most successful, efficient, and ecofriendly strategy. Remanufacturing is a widely used option for product recovery. Disassembly is often the first step of remanufacturing, and its success is an important phase for creating profit. Aiming to physically separate EOL products into their parts and/or subassemblies, disassembly is carried out on a paced line linked with different workstations. Balancing such a disassembly line is vitally important for efficiency and profitability. A U-shaped disassembly line has many advantages compared to a straight-line alternative. Operators or intelligent machines can work on both sides of the disassembly line which increases efficiency of the process. Multiple objectives are much more suitable for the disassembly line balancing problem (DLBP) since a single profit or cost-based objective is not practical for real world cases. In this paper, four different objectives, viz., number of workstations, smoothness index, hazardous parts removal, and high demand parts removal are considered. Teaching-learning-based optimization (TLBO) algorithm, which is inspired by the teaching and learning behaviors, belongs to the meta-heuristic algorithm class. For large-scale and practical cases, exact methods cannot find optimal solution in a reasonable computational time because DLBP is NP-hard. Therefore, meta-heuristic algorithms are the most suitable options for solving the disassembly line balancing problem. In this paper, TLBO algorithm is developed, implemented and tested on a U-shaped disassembly line. Results demonstrate that compared to the traditional straight-line disassembly line, U-shaped disassembly line significantly improves the efficiency of the disassembly process. The results of TLBO are compared with several other meta-heuristic algorithms. It is concluded that the TLBO algorithm is superior to the other meta-heuristic algorithms.

**Keywords:** Remanufacturing, Disassembly line balancing problem (DLBP), U-shaped disassembly line, Teaching-Learning-based optimization (TLBO).



## **INTRODUCTION**

With the development of new technologies and increasing demands from customers, there are many more state-of-the-art products manufactured today than before. The pressure that individuals and society put on environment in terms of depletion of natural resources and increased wastes is alarming. In order to acquire the latest technology (Li and Janardhanan, 2021), individuals purchase latest electrical and electronic products which result in a lot of wastes (Wang et al., 2021). End-of-life (EOL) products are threatening the health of both the environment and individuals. With the pressure of handling increasing number of EOL products, the concept of product recovery is gaining attention. Product recovery aims to minimize the amount of waste sent to landfill by recovering materials and parts from old or outdated products (Chen et al., 2021). Environmental protection consciousness should be practiced for the whole life cycle of a product. Gungor and Gupta (1999b) first highlighted important issues related to environmentally conscious manufacturing and product recovery (ECMPRO). Reuse, remanufacturing and recycling are three efficient and effective options for product recovery. Disassembly is the first and one of the most crucial steps for remanufacturing and recycling. Disassembly is a systematic process of separating the end-of-life products into subassemblies, components or materials. Disassembly line uses linked workstations to remove targeted components or highly-valuable components from EOL products (Akpınar, İlgin, and Aktas, 2021) and plays a key role for the effective application of circular economy (Gao et al., 2021). Complete and partial disassembly are two areas of disassembly research. The meaning of complete disassembly is that all parts of an EOL product are disassembled whereas partial disassembly only requires disassembling selected or targeted components. There are four types of a disassembly lines, viz., straight-line, parallel, U-shaped and two-sided. A U-shaped disassembly line is much more compact, effective and productive since operators or machines can work on both sides of the line compared to a straight-line disassembly line. In order to better achieve the objectives of disassembly, balancing the disassembly line is extremely important. The concept of disassembly line balancing problem (DLBP) was first introduced by Gungor and Gupta (1999a), which can simply be described as the optimum assignment of disassembly tasks to workstations within the domain of predetermined constraints.

The rest of paper is structured as follows. Section 2 covers the literature review. Section 3 describes the detailed disassembly line balancing problem and contains the mathematical model and related constraints. Section 4 provides the detailed results and compares the performance of several algorithms. Section 5 provides the conclusion and directions for future research.

### **Literature Review**

Disassembly tasks are performed on a paced disassembly line and there are four basic disassembly line types: straight-line, parallel, U-shaped and two-sided. U-shaped disassembly line is used in this paper. According to Ozceylan et al. (2019), majority of disassembly topics

researched used straight-line configuration and only a few papers are related to U-shaped DLBP. U-shaped disassembly layout was first researched by Agrawal and Tiwari (2008) and a collaborative ant colony algorithm was proposed to balance the disassembly line. Avikal and Mishra (2012) and Avikal, Jain, and Mishra (2013) proposed different heuristics for U-shaped disassembly line which expanded the research field. Zhang et al. (2018) introduced pareto hybrid ant colony and genetic algorithm considering multiple objectives. Zhang et al. (2018) considered stochastic operation times in a U-shaped disassembly line. Li, Kucukkoc, and Zhang (2019) studied the sequence-dependent disassembly process on a U-shaped disassembly line. Wang, Gao, and Li (2020) considered a partial destructive disassembly mode on a U-shaped disassembly line. Most recently, Li and Janardhanan (2021) developed a mixed-inter linear programming model for profit-oriented U-shaped partial DLBP. Yao and Gupta (2021b) and Yao and Gupta (2021a) first proposed a small world optimization algorithm (SWOA) and a cat swarm algorithm (CSO) on U-shaped disassembly line respectively and compared their performances with several other meta-heuristic algorithms. Wang et al. (2021) introduced a mixed meta-heuristic approach involving multi-criterion decision making (MCDM) and variable neighborhood search (VNS) on a U-shaped layout. Qin et al. (2021) considered a multiple product partial U-shaped DLBP and compared it with two other optimization algorithms. Yao and Gupta (2021d) and Yao and Gupta (2021c) proposed an invasive weed optimization algorithm (IWO) and an ant colony optimization algorithm (ACO) for a U-shaped disassembly line and tested their performances with several other meta-heuristic algorithms.

The disassembly line balancing problem belongs to the optimization problem field, and therefore optimization approaches like mathematical programming, heuristics and meta-heuristics have been proposed for DLBP. For small sized problems, mathematical approaches and exact methods can be used to find the solution in a reasonable time. However, for the real-world disassembly cases, EOL products are large and complicated. Therefore, for large-sized DLBP, the mentioned mathematical approaches and exact methods do not have the ability to find optimal or near-optimal solutions in a reasonable amount of time. The reason for this, as shown by McGovern and Gupta (2007), is that the DLBP is an NP-hard problem. For that reason, heuristic and meta-heuristic algorithms are continually introduced for DLBP in the literature. The proposed teaching-learning-based optimization algorithm (TLBO) in this paper was originally introduced by Rao et al. (2021) which is inspired by teaching and studying relationships from teachers and students. This novel meta-heuristic algorithm can efficiently find near-optimal solutions.

Single, profit-based objective is not enough for environmentally protection concerns. For this reason, in this paper, four objectives are proposed, viz., minimize number of workstations, minimize total idle times, remove hazardous parts as early as possible, and remove high-demand parts as early as possible. Without setting primary goals of the problem, there may be several near-optimal solutions found by the TLBO. Therefore, pareto front strategy is used in this paper to help classify near-optimal solutions.

To the best of the authors' knowledge, TLBO is proposed on U-shaped disassembly line balancing problem for the first time. The performance of TLBO is compared with several other meta-heuristic algorithms and the results show that TLBO has the ability of finding near-optimal solutions and shows superior abilities on given objectives. In addition, when the same case was performed on both U-shaped layout and straight-line layout, the results showed that the solutions on the U-shaped layout had performed better on some objectives compared to that on the straight-line layout.

## **PROBLEM DEFINITION**

EOL products were processed on a U-shaped disassembly line which means that the components were disassembled on a U-shaped line to achieve preset objectives. DLBP aims to adjust task sequences to find the best solutions based on the objectives. Cycle time constraint and precedence relationship constraint should be strictly followed. Basic assumptions are listed below:

1. There is only one type of EOL products.
2. Task processing time is known and deterministic.
3. Complete disassembly is considered in this paper.
4. Sequence-dependent relationship is not considered in this paper.
5. Cycle time is known and deterministic.

### **Notation**

N Number of tasks

$i, j$  Task index,

M Number of workstations

$m$  Workstation index,

binary variable, 1, if workstation  $m$  is opened; 0, otherwise

Processing/disassembly time of task  $i$

binary variable, 1, if task  $i$  is hazardous; 0, otherwise

demand value of task  $j$

CT Cycle time

Total task processing times of workstation  $m$

Objective function,

### **Decision variables:**

1, if task  $i$  is assigned at the front side of workstation  $m$ ; 0, otherwise

1, if task  $j$  is assigned at the back side of workstation  $m$ ; 0, otherwise

Position number of task  $i$  in the sequence

**Objective functions:**

$$\text{Min } \sum \quad (1)$$

$$\text{Min } \sum \quad (2)$$

$$\text{Min } \sum \quad (3)$$

$$\text{Min } \sum \quad (4)$$

Equation (1) aims to find minimum number of workstations. Total of idle times is shown in equation (2) which is a nonlinear equation. Equation (3) describes removal of hazardous part(s) early and equation (4) facilitates removal high demand part(s) early.

**Constraints:**

$$\sum \quad (5)$$

$$\sum \quad (6)$$

$$\quad (7)$$

$$\{ \} \quad (8)$$

Equation (5) ensures that one task can only be assigned to one side of one workstation. Constraint (6) means one workstation can operate one or more tasks. Equation (7) is the cycle time constraint which means cycle time should be large than or equal to the total task processing times of each workstation.

**RESULTS**

The proposed teaching-learning-based optimization algorithm (TLBO) was coded in MATLAB and tested on Apple M1. Real case is used to test the ability of TLBO which was acquired from McGovern and Gupta (2006). TLBO was run 25 times on a straight-line disassembly line and 25 times on a U-shaped disassembly line with the same parameter values. Table 1 shows basic case information, viz., task processing/disassembly time, hazardous indices and demand values. Table 2 presents objective values found by different solutions and task sequence of each solution. Out of 25 independent runs, there were many near-optimal solutions based on pareto front strategy. A total of 10 solutions are listed in Table 2 to compare the efficiency of two different line type. From Table 2, all of these solutions got the best value on minimization of workstations, but U-shaped layout performed better on minimizing total of idle times. After calculating of average value of each objective, results showed that U-shaped line is superior to straight-line disassembly line. The performance of TLBO is also compared with eight other algorithms, viz., genetic algorithm (GA), ant colony optimization (ACO), improved ant colony optimization (IACO), improved artificial bee colony optimization (IABC), hybrid group neighborhood search algorithm



(HGNS), small world optimization algorithm (SWOA), cat swarm optimization (CSO) and invasive weed optimization (IWO). Detailed performance data of various algorithms are taken from McGovern and Gupta (2006), Zhang et al. (2018), Zhu et al. (2014), Zhu, Zhang, and Guan (2020), Yao and Gupta (2021), Yao and Gupta (2021), Yao and Gupta (2021), and Yao and Gupta (2021).

**Table 1.** Case information

Task number	Processing time	Hazardous index	Demand value
1	14	0	0
2	10	0	500
3	12	0	0
4	17	0	0
5	23	0	0
6	14	0	750
7	19	1	295
8	36	0	0
9	14	0	360
10	10	0	0

**Table 2.** Performance of two disassembly line types

Line type	Task sequence				
Straight-line	5	219	4	8260	5,6,9,7,4,1,8,10,2,3
	5	282	5	<b>7445</b>	6,9,5,1,7,4,8,10,2,3
	5	249	3	8685	5,6,7,4,9,1,8,10,2,3
	5	434	3	8325	5,6,7,9,1,4,10,8,2,3
	5	211	6	8100	6,4,9,5,10,7,1,8,2,3
U-shaped	5	219	4	8230	6,5,1,7,9,4,8,10,2,3
	5	211	4	9480	5,6,10,7,9,1,4,8,2,3
	5	259	6	7740	6,9,4,5,10,7,1,8,2,3
	5	259	3	10265	5,6,7,4,10,8,1,9,3,2

**5**                      **207**                      5                      8915                      5,6,4,9,7,8,1,10,2,3

Table 3 presents comparison results of performance on 9 meta-heuristic algorithms. Table 4 lists best solutions found by 5 meta-heuristics if setting the first two objectives as primary objectives. From Table 3 and Table 4, we can find that TLBO has the ability to find near-optimal solutions especially in minimizing number of workstations and minimizing total of idle times. For removal hazardous part(s) early, TLBO performs better than most of these algorithms.

**Table 3.** Performance comparison of 9 meta-heuristics

Objective	GA	ACO	IACO	HGNS	IABC	SWOA	CSO	IWO	TLBO
	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<b>211</b>	<b>211</b>	<b>211</b>	219	<b>211</b>	<b>211</b>	<b>211</b>	<b>211</b>	<b>211</b>
	4	4	4	4	4	4	5	4	6
	9730	10090	9730	7510	9730	9480	8880	9480	8100

**Table 4.** Performance comparison on U-shaped disassembly line

Objective	SWOA(U)	CSO(U)	IWO(U)	ACO(U)	TLBO(U)
	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<b>207</b>	<b>207</b>	<b>207</b>	<b>207</b>	<b>207</b>
	4	5	5	5	5
	8980	9696	8915	8915	8915

## CONSLUSION

TLBO has, for the first time, been proposed and implemented on U-shaped disassembly line in this paper. The results showed that TLBO has a great searching ability, and is suitable for the DLBP field. Novel optimization algorithms can be proposed on DLBP to expand the field even further. Special disassembly like partial and sequence-dependent disassembly are also interesting areas to explore. Mixed EOL products and task failure could also be areas of further research in the future.

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## **APPROACHING DIGITAL TECHNOLOGIES IN ASSESSING HIGH SCHOOL STUDENTS' MATHEMATICAL COMMUNICATION COMPETENCY: A CASE STUDY IN ONLINE CLASSES**

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### **ABSTRACT**

Communication has long played an essential role in many fields of life. In education, communication competency is one of the main competencies that need to be built and developed in the teaching process. Many studies worldwide have provided a way to assess communication competency in traditional classrooms, but there are very few evaluation studies in online classes, especially in Mathematics. This paper presents a case study assessing the levels of mathematical communication competency in online classes of high school students in Vietnam. Interactive conversations between teachers and students are recorded using Zoom, an online teaching software, and analyzed by ATLAS.ti – a widely used and accessible tool in text mining. The research also provides a qualitative analysis about the assessment levels of mathematical communication competency and challenges in online learning.

**Keywords:** Mathematical communication competency, online class, high school, ATLAS.ti.

### **1. INTRODUCTION**

Society is growing in leaps and bounds thanks to the advancement of technology (Garzñn et al., 2020). Over the past decades, Information Communication Technology (ICT), especially computers and the Internet, has become the fundamental driving force – we can speak in model terms – changes in the structure, methods, roles, and circumstances of education: higher and secondary education are the same (Horváth, 2004). Technological advancements in the field of society have developed dramatically, specifically in education. Due to the spread of COVID-19, countries have begun to use online teaching and learning strategies. Synchronous and asynchronous online teaching has been around for some time (Engelbrecht & Harding, 2005); Hollebrands & Lee, 2020; Joubert, 2013; Juan et al., 2011). Online teaching methods have been used in various contexts and are notable for teaching Mathematics (Ahn & Edwin, 2018; Albano & Dello, 2019), with significant results. Although there are some differences between traditional and online teaching, previous studies by Engelbrecht & Harding (2005); Joubert (2013) has shown that the fundamentals of teaching and learning Mathematics should be followed in an environment such as balancing activities,



being teacher-centered, and creating opportunities for students to develop a relevant understanding of Mathematics. From a cognitive point of view, that makes learning shift from ritual language to discovery language.

The ability to communicate in teaching and learning Mathematics is one of the core competencies for development for students (Radford & Demers, 2004). According to Isoda (2008), mathematical communication is an important idea that improves math learning and develops the competencies needed for learners, including mathematical thinking. Standards in Mathematics education primarily emphasize promoting the capacity to communicate Mathematics as an integral part of the teaching process (NCTM, 2000); OECD, 2003). In addition, communication capacity assessments are essential in schools and are usually done in two ways: product evaluation and process evaluation (Allen & Unwin, 1993). In Mathematics, in particular, teachers can evaluate students through the criteria been clearly stated in the National Council of Mathematics Teachers (NCTM, 2000) and the Curriculum of the US and Australia.

Recent studies have suggested many practical processes for assessing students' communication abilities, especially in traditional classroom forms (Cai et al., 1996; Kleden & Geradus, 2018; Caligaris et al., 2019). The study of Weaver & Rigelman (2005) also proposed criteria for evaluating mathematical communication capacity, including mathematical communication tools, mathematical communication methods, and thereby offering levels of mathematical communication capacity consisting of 9 levels in order of gradual increase of levels from 1 to 9, respectively: —A (Answering), S (Sharing), E (Explaining), Q (Question), C (Challenging), R (Relating), P (Predicting), J (Justifying), G (Generalizing). However, the research section on online classes is not yet widespread. Therefore, this study focuses on showing a method of assessing the level of communication ability in online classrooms of high school students in Vietnam through access to digital technology, namely the use of Zoom online teaching software and ATLAS.ti software to filter and analyze data.

## **2. LITERATURE REVIEW**

### **2.1. Mathematical communication competency**

Communication plays a vital role in Mathematics education that humans can share ideas, reflect timely, and discuss. The communication process enables students to understand Math more deeply (NCTM, 2000). Communication skills are an essential and necessary part of the curriculum and educational programs in different countries (Park & Wee, 2013). In science in general, communication is essential because the trust of science and scientific communication is always attractive (Weingart & Guenther, 2016). At that time, communicating scientific allows students to be involved in decision-making processes and participate more effectively in collaboration (Kulgemeyer & Schecker, 2009).

The communication capacity set by the Council of Europe (2004) is of the most significant importance of the eight main competencies that individuals need to perfect and develop individuals, actively citizenship, social inclusion and employment: –communicating in their native language; foreign language communication; mathematical capacity and basic competencies in science and technology; digital capacity; learning to learn; social and civic capacity; a sense of initiative and entrepreneurship; awareness and cultural expression. Communication ability is also the ability to communicate with others with accuracy, clarity, ease of understanding, closeness, expertise, efficiency, and relevance. It is a measure to determine how much of the goals of interaction are achieving. According to Hymes (1970),

communication ability is the speaker's inherent ability to understand a language exchange situation and respond appropriately, in language or non-language.

According to PISA (2003), Mathematics competence is the ability of an individual to perceive and understand the role of Mathematics in life, judge, and reason on a solid basis, using and forming a passion for exploring and exploring Mathematics to meet the needs of that individual's life. Mathematical competence is the ability of an individual to formula, apply, and explain Mathematics in multiple contexts. It includes mathematical inference and concepts, methods, facts, and tools to describe, interpret and predict phenomena. The structure of the student's mathematical capacity consists of components: mathematical information collection, processing of mathematical information, storage of mathematical information, general aggregate components.

Communication competence is also reflected in the evaluation standards according to NCTM (2000) of mathematical competence: —numbers and operations, algebra, geometry, measurement, data analysis and probability, problem-solving, reasoning and roofing, communication, connection, representation. Research by Sammons (2018) stated: "The ability to communicate Mathematics is the ability to understand, analyze, evaluate, and recognize mathematical problems including mathematical knowledge, the use of mathematical language, the forms of performance of Mathematics and the ability to express and interpret ideas clearly, the most coherent." Thus, the capacity for mathematical communication includes cognition (students must have mathematical knowledge), skills (use symbols, conventions, mathematical terminology, organize and present straightforward, logical presentation projects), and attitude (having a spirit of cooperation, sharing, exchanging problems related to Mathematics). Thus, in teaching Mathematics, teachers create a learning environment that helps students learn math knowledge and develop communication capacity in general and mathematical communication competency.

## **2.2. Approaching digital technologies in assessing competencies**

Currently, teaching and learning are just not in a traditional classroom, but learners can access education anywhere and at any time with the remarkable development of digital technology (Du et al., 2019). Such a form of learning is called online learning. Online learning has been defined for a long time; there are 46 definitions collected from 1988 to 2018 in the research of Singh & Thurman (2019). Also, according to Saul Carliner (2004), online learning refers to learning with the support of other resources through computers. The question is whether online learning is distance learning or not? During many years of research, Rudestam & Schoenholtz-Read (2009) have suggested that online learning is only a part of distance learning because distance learning is based on the definition of distance learning in educational conditions between educational conditions students and the place, training spans large distances in terms of time or geography. Nevertheless, after more than 30 years since online learning was born, students' online learning results are not inferior to traditional learning (Anstine & Skidmore, 2005). It can be said that online learning is gradually becoming a trend in education today, with a large scale and spreading across continents.

Education 4.0 is gradually gaining popularity in the context of teaching innovation. Therefore, teachers, including students, can continuously develop themselves, have access to new devices and technologies in line with the trend of globalization (Ivanova et al., 2021). The need for teaching and online is reflected in many different aspects: The first is the need to learn and acquire knowledge (Hartnett, 2016). The second is a conducive learning environment; people can study on personal electronic devices (Swanson, 2020). Moreover,

the aspect is to improve the quality of education while combining traditional and online teaching (Lin, 2008). Along with that is the birth of hundreds of software, online teaching websites are increasingly popular and adjusted from the way of organization, interface design, system management, as popular as Zoom, Google Meet, Microsoft Team (Fuady, 2021).

In the Covid-19 pandemic, most countries have switched to online teaching (Adedoyin & Soykan, 2020). Nevertheless, the quality of the lectures is reduced, or the assessment of students' abilities is overlooked. According to Hu and Hui (2012), digital technology directly influences the effectiveness of teaching and learning. Specifically, technology 4.0 affects teaching methods and classroom organization. Instead of just using paper, chalk, and blackboard, the lesson content has been delivered through many intelligent technologies to support teaching, such as Intelligent Chalk (Jeschke et al., 2006); Interactive Smart Boards (Huff, 2000); Interactive TV (Tsayang et al., 2020).

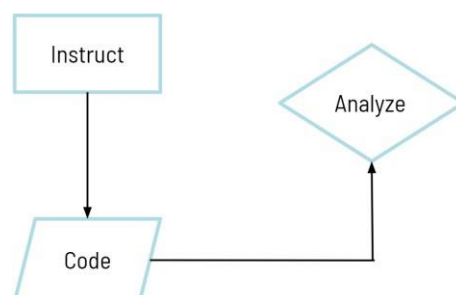
According to the Ministry of Education and Training of Vietnam, knowledge assessment changes to capacity assessment, combining assessment of learning outcomes and student progress and progress. Therefore, even in online teaching, the assessment of students' abilities will always take place throughout. For assessment of learning outcomes, teachers can check online but must always ensure accuracy, fairness, objectivity, and honesty (Alessio et al., 2017). Research by Bui et al. (2021) comparing two forms of online and paper-based tests in Mathematics obtained from 121 high school students said that online testing has many outstanding features that need to be developed. Widespread shortly. There are many methods to assess capacity, especially communication capacity, as studied by Harris et al. (2016) on Online oral communication learning (OOCL) to see the difference in communication between students and instructors. Meanwhile, Sudhir et al. (2020) used training communication skills for two groups of students on Microsoft Teams in the context of the Covid-19 epidemic, and the results showed that the online communication skills training session is feasible can provide an effective educational environment.

According to the studies mentioned, it can be said that the assessment of communication skills in general in both traditional and face-to-face teaching is critical in the teaching work of teachers. Therefore, in the pandemic situation of the century, this study approaches digital tools to assess students' ability to communicate in Math in online classes, providing students with challenges and future development directions for this paper.

### 3. RESEARCH METHODOLOGY AND RESULTS

#### 3.1. Research methodology

This study focuses on showing a method to assess the level of communication ability in online classes of high school students in Vietnam, including the following steps:



**Figure 1.** Implementation Process

In the Instruct step, we teach "Propositions and mathematical operations on sets" for 43 students in class 10A7 at Le Quy Don High School, Hau Giang province, Vietnam. Research and design open-ended questions, promote interaction between students and teachers in the lesson. Students will directly interact and type in their answers using the chat framework of an online learning platform like Zoom. After the lesson, the answers and interactions of all students will be recorded and aggregated in an Excel file.

The second step is for evaluating a student's ability to communicate in Mathematics through which criteria. The topic is quoted from Weaver & Rigelman's (2005) study on the criteria for assessing students' Math ability, including Types, Modes, and Tools. Then, the above criteria will be re-selected and supplemented to match the assessment of students' ability with the lesson taught by the research. Specifically:

Regarding the communication method, there are three criteria, one less than Weaver & Rigelman (2005), which is IR (Individual Reflection), presented in Table 1:

**Table 1.** Modes of Mathematical Discourse

Code	Definition	Explanation
T	Student to Teacher	The student primarily addresses the teacher even though the entire class or group hears the student's comments.
S	Student to Student	The student addresses another student.
G	Student to Group or Class	The student addresses a small group of students or the entire class.

Regarding communication tools, because the characteristics of the lesson and students' answers are recorded from typing in the Zoom chat box, the tools provided by the topic include W (Written) and N (Notation) in Table 2 (Weaver & Rigelman, 2005):

**Table 2.** Tools for Mathematical Discourse

Code	Definition	Explanation
W	Written	A student writes a narrative of mathematical ideas or procedures.
N	Notation	A student uses standard (formal) mathematical notation to communicate mathematical ideas or procedures.

Regarding Types, the topic proposes to add level 0 coded as NA (No Answering) because it is found that in the lesson, some students do not constantly interact with teachers and other students in the online learning environment; the criteria are shown in Table 3 (Weaver & Rigelman, 2005):

**Table 3.** Types of Mathematical Discourse

Code	Level	Definition	Explanation
NA	0	No Answering	Students do not give any answers during the lesson.
A	1	Answering	Students respond to a straight inquiry from the instructor or another student with a brief response.
S	2	Making a Statement or Sharing	Students make a basic statement or claim, or shares their work with others, but neither the remark nor the sharing includes an explanation of how or why it was made. For example, a student may read aloud to the class what she wrote in her diary.
E	3	Explaining	Students describe what they did or how they solved a problem

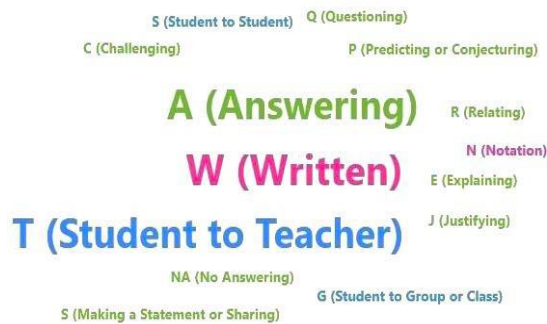


			to illustrate a mathematical notion or process, but the presentation does not give any proof for the idea or technique's validity.
<b>Q</b>	4	Questioning	Students inquire about a mathematical concept or process in order to clarify their knowledge.
<b>C</b>	5	Challenging	Students say something or ask a question that calls into doubt the validity of a mathematical concept or technique. A counter example may be included in the statement. Someone else's thinking must be evaluated as a result of a challenge.
<b>R</b>	6	Relating	Students make a remark suggesting that they have made or perceive a connection to past knowledge or experience.
<b>P</b>	7	Predicting or Conjecturing	Based on their grasp of the Mathematics behind the topic, a student develops a prediction or hypothesis. For example, students could see a pattern in a series of numbers and offer a prediction about what will happen next in the sequence, or they can declare a hypothesis about a mathematical characteristic they saw in the issue.
<b>J</b>	8	Justifying	Students justify the validity of a mathematical concept or process by explaining how they came up with the idea or technique. The argument might be in support of a concept that has been questioned by the instructor or another student.
<b>G</b>	9	Generalizing	Students deliver a remark that demonstrates the transition from a specific situation to the general case.

The final step is Analyzing. Text mining software ATLAS.ti was used to analyze students' responses: We will create 43 codes from S01 to S43 corresponding to the criteria of tools, communication methods, and capacity levels. Then, we will group the codes belonging to the same attribute together, consider which criteria each student's answer meets, and add the appropriate code. After that, we will use the "Analyze" function and select "Co-oc Table" and put the codes on the criteria as a horizontal row and the codes of 43 students in a vertical line; the software will automatically count and summarize the same number of students corresponds to the set criteria. From there, we can get statistics on which students meet which criteria.

### 3.2. Results

The survey results showed that it was not only the class's math communication capacity but also was the level of communication ability of each student assessed. The drawing below shows the level of communication ability of the whole class. The symbols of the level of mathematical communication ability are colored green.



Code	Grounded	Code Groups
● NA (No Answer)	15	TYPES
● A (Answering)	612	TYPES
● S (Making a Statement or Sharing)	1	TYPES
● E (Explaining)	87	TYPES
● Q (Questioning)	4	TYPES
● C (Challenging)	1	TYPES
● R (Relating)	5	TYPES
● P (Predicting or Conjecturing)	4	TYPES
● J (Justifying)	61	TYPES
● T (Student to Teacher)	615	MODES
● G (Student to Group or Class)	10	MODES
● S (Student to Student)	2	MODES
● W (Written)	627	TOOLS
● N (Notation)	26	TOOLS

**Figure 2.** Results of the level of ability to communicate Mathematics throughout the class.

In terms of classroom overview, the results showed that students surveyed achieved almost all of the ten levels of mathematical communication competence outlined in step 2. Only the G (Generalizing) capability is not achieved. The A (Answering) capability is the highest capacity when ATLAS.ti filter analysis software shows this symbol's highest frequency. The following frequency table also shows there are 612/790 A-level interactions. C (Challenging), R (Relating), P (Predicting), J (Justifying) levels. According to Weaver & Rigelman (2005), the above levels are high, and the class achieved shows that students are all capable of communicating mathematically well. Through general assessments that help teachers and learners have a visual view of their mathematical communication capacity (for individual students) and of the classroom (for teachers) to adjust and overcome bad points such as promoting G (Generalizing) competence by asking further questions. All of thing lead to stimulate the exploration and discovery of students, thereby maintaining and developing more levels of competence already available.

In terms of each student, table 4 results assessed the calculation and comparison of the communication competency's levels of S02 and S08 with differences. S02 students are likely to achieve the highest level of communication capacity is J (Justifying) frequency of 4 interactions, And the number of A-level interactions (32), while the S08 only achieves the highest level of E (Explaining), and the number of A-level interactions (Answering) is much less than the S02 (8 turns).

**Table 4.** Compare S02 and S08

Student	Types of Mathematical Discourse									
	NA	A	S	E	Q	C	R	P	J	G
S02	-	32	-	5	-	1	-	1	4	-
S08	-	8	-	1	-	-	-	-	-	-

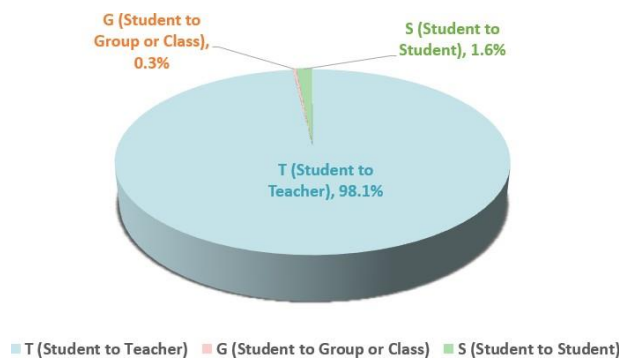
Table 5 considers S02 and S26. We will see that both students achieve the highest level of competence is J (Justifying), which has the same number of interactions (4 turns), level A (Answering) interactions are equal (S26 is 30 turns). This result can be said that S02 and S26 may rank at the same level of mathematical communication capacity.

**Table 5.** Compare S02 and S26

Student	Types of Mathematical Discourse									
	NA	A	S	E	Q	C	R	P	J	G
S02	-	32	-	5	-	1	-	1	4	-
S26	2	30	-	3	1	-	-	-	4	-

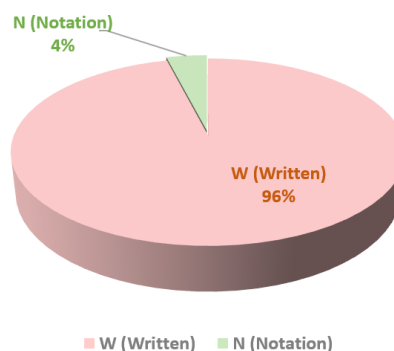
The evaluation of each student and the classification of the communications levels of the students make an essential contribution to teaching and learning Mathematics. Through the initial assessment, the teacher will monitor, observe, and guide students to develop the best math communication capacity in general and support for other competencies. On the other hand, students can see their assessments as adjusted to establish effective learning strategies, especially developing their ability to communicate mathematically.

According to Weaver & Rigelman (2005) which also recommends a review of Modes and Tools, we can see the results in the following pie chart:



**Figure 3.** Communication ratio (Modes)

From the chart, we can see: The method of mathematical communication is mainly 98.1% of T (Student to Teacher), 1.6% of S (Student to Student), and 0.3% of G (Student to Group or Class). Although there are many differences in an online classroom, such as the real external interaction of limited learning, the forms of mathematical communication in the online classroom surveyed above show that there are still relatively complete forms. Students interact in a relatively similar way to traditional classrooms.



**Figure 4.** Communication ratio (Tools)

In figure 4, only two significant tools appear: W (Written) accounted for 96%, and N (Notation) accounted for 4%. Experimental research in the online classroom with "Clauses and math on the set" in the 10th-grade math program along with ten objective test questions mainly for students to understand whether a sentence is a clause or not or find which sentence is correct and which is wrong through four options. Here, students enter the answer into the chat box of the Zoom online teaching software, so it is difficult for students to express ideas and answers in terms of other modes of expression such as gestures, behaviors, and students using drawings to describe the mathematical process.

#### 4. CONCLUSION

Through a study on assessing communication capacity in online classrooms by collecting text in chat box, we find that in terms of quantitative assessment will be better: the amount of information collected in the lesson is complete and more accurate than collecting information in traditional classrooms by observing observations and taking notes (because multiple observers are required to record manifestations). On the other hand, the teacher can observe a more significant number of students interacting in the traditional classroom through recording the session for observation. In addition, Weaver & Rigelman (2005) applied in the traditional classroom to qualitatively assess the level of mathematical communication competence in the online classroom because the form of mathematical communication and the level of mathematical communication is similar.

The assessment of mathematical communication competence is quite complex and interesting. Using qualitative analysis via text chat is a new approach that is easy to implement with digital tools. However, it is still challenging to achieve comprehensiveness when evaluating gestures, facial expressions, voices, and communication styles is impossible. Therefore, the following research direction of the topic will use AI-based to analyze video analysis to optimize information. In addition, to expand on this topic, readers can refer to some articles such as Artificial Intelligence in Mathematics Education (Thanh & Tuan, 2021), dual-use electronic lectures in E-learning (Tuan et al., 2020), neural networks (Szeto et al., 2020),...

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**USING ONLINE PORTFOLIOS IN CLASSROOMS FROM MATHEMATICS TEACHERS’  
PERSPECTIVES: A CASE STUDY**

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**Abstract**

Nowadays, the work of using portfolios in education has become considerably popular from improving students’ learning capacities to boosting communication and collaboration skills. Under COVID-19 pandemic circumstances, the act of updating the use of portfolios from traditional forms to online forms has become an essential demand, which would adapt the professional requirements and the versatility of educational formats. This article demonstrates a study on the opinion of Mathematics teachers from primary, secondary, and high schools about the use of Online Portfolios in Mathematical classrooms. The results of the research also evaluate the possibility of using Online Portfolios in teaching Mathematics, thereby providing experimental lessons to calibrate the work of using Online Portfolios in the context of responding to social crises such as the COVID-19 pandemic.

**Keywords:** Online Portfolio, Mathematics Education, classroom, case study.

**1. INTRODUCTION**

According to Fonseca (2018), the Industrial Revolution (IR) 4.0 is represented by –the advanced digitalization and integration of industrial manufacturing and logistics processes, and the use of the internet and –smartll objects (machines and products), and merging the physical and virtual world by the adoption of information and communications technology (ICT)l. Nowadays, the expansion of the COVID-19 pandemic has caused numerous difficulties, influencing significantly social-economic activities, but it can also bring us considerable opportunities, especially in terms of education by the boost of online education. According to Bao (2020), the effectiveness of online teaching and learning depends greatly on students’ positive learning attitudes and self-discipline. As a matter of fact, a noteworthy method to boost students’ learning attitude and self-discipline are through a portfolio. The portfolio is a visual demonstration of an artist, the history of works, and the current project of the creator (Paulson et al., 1991). To Nazari Terizi & Mohammadi (2021), the portfolio is one of the new educational tools and an alternative method in the assessment that is scientifically proved to bring better learning results, enhance the independence and self-studying skills of students. Plus, creating a Portfolio helps students accumulate and store knowledge efficiently and scientifically. Therefore, creating an Online Portfolio (OP) is an innovative idea that could help students catch up with the current educational tendency. Rahimi et al. (2021) presented OP’s effectiveness in his research as followed: enhancing students’ independence; fostering familiarity with classroom community; providing a thorough analysis of students’ learning capacity, etc. So as for Online Portfolios to be applied widely and beneficially, this

paper demonstrates a survey studying ideas of teachers at primary, secondary, and high schools in Viet Nam related to the use of OP in Mathematical classrooms.

## **2. LITERATURE REVIEW**

### **2.1. Portfolio and Online portfolio**

Originally, ‘portfolios’ have been used by artists as a means of their works’ collections to demonstrate their competencies (Hassaskhah & Sharifi, 2011). This concept has been later used as an assessment tool in multi-area. In this article, we will concentrate on the use of portfolios in the educational field before our concept of OP will be given. In terms of educational fields in which portfolios should carry out a more delicacy role as an alternative way of traditional testing methods (Mayer & Tusin, 1999), portfolios have proved to meet the new tendency of education following Constructivist theory, advocating that learners should be the main subject of building their own knowledge and skills (Hassaskhah & Sharifi, 2011). Thereby, as portfolios could help students gather selected pieces of evidence of their educational development that could be equivalent to the course requirements (Steffe & Gale, 1995), both students and teachers could track their developmental trace to see how much students have developed themselves. Biggs (1996) argues that the preparation of an assessment portfolio is an active process consisting of gathering, synthesizing, and organizing pieces of evidence so that students can most effectively reflect their studying processes in accordance with the learning objective. This argument is supported by Harris et al. (2001) when they claimed that when preparing a portfolio, students can enhance their learning significantly.

Cooper (1997) demonstrated the concept –portfolio as –a collection of evidence that demonstrates skills, achievements, learning or competencies. OP is a concept we develop on the basis of the Digital portfolio of Kolk (2021) but it is created to save, edit, and share through the online systems. However, compared to the traditional portfolio, OP has a wider usage range (Ucraft, 2021). Furthermore, it will be much easier for users to save their products when using an online portfolio and the saving domain is also greater as well. According to Blackburn and Hakel (2006), based on the basis that the process of establishing and maintaining a portfolio include –metacognition, critical reflection, and collaboration (Klenowski, Askew, & Carnell, 2006) which can be enhanced through portfolios and OPs, OP is expected to: (1) encourage students to articulate their learning and development goals and provide opportunities for them to do so; (2) include self-monitoring and self-assessment of progress toward goals, as well as self-assessment standards; (3) provide feedback from mentors/advisors and encourage the use of input to inform future goals; (4) encourage and provide opportunities for students to articulate solutions for achieving their goals; (5) encourage feedback evaluation and link feedback to self-assessment and goal achievement and (6) encourage students to evaluate and reflect on their portfolio submissions.

### **2.2. Comparing Portfolio and Online Portfolio**

According to Portfoliobox (2020), there are five features that should be taken into consideration whether which type of portfolio should a person use:

- Cost: Compared to the traditional portfolio, most OP would be either free or affordable.
- Availability: OP is accessible everywhere, every time, and can be edited easily.
- Collaboration: OP can be shared and accessed conveniently through the internet with the help of social media and social networking sites.
- Variation: Users could vary the content of an OP with the upload of photos, videos, illustrations, sketches, infographic posters, blogs, and so on.

- Seamless integration: OP can be shared through social networking platforms and people can conveniently show their images in and outside of their nation.

However, besides research studies advocating the advantages of online portfolios, there are those with a more subjective analysis studying every aspect of traditional portfolio and OP so that users could have a more subjective approach to both of them. In Format (2020), a more thorough analysis of both types of the portfolio have been examined and thereby giving readers more information before they can come up with their own decision:

Pros of OP compared to the traditional portfolio:

- Versatility and Update: Easily access portfolio samples and edit portfolio everywhere, every time with an internet-connected device as the only requirement.
- Saving and Sharing: OP allows users to share online through links, blogs, and social networking sites, among users, and could be saved permanently on the internet.

Cons of OP in comparison with traditional counterpart:

- Technical knowledge and skills requirements: Creating an OP is complicated work that requires enhanced technical knowledge and skills and is not a task everyone can perform easily.
- Technical issues included: Editing or fixing OP is a nearly impossible task if there is no internet.
- Copyright issues and content management: The templates, ideas, formats, and decorations are easily –shared among users.

In short, both traditional portfolios and online portfolios have their own benefits and drawbacks. Notwithstanding, we still highly evaluate the role of online portfolios thanks to their flexibility, versatility, cost-saving, sharing, and appropriacy to the current context.

### 2.3. Designing OP by Google sites (GS)

Google sites (GS) is an online application that could help users create a website easily. GS meets the majority of users' requirements pertaining to the formation of an ideal OP. Casley and Day (2014) stated that GS is encouraged for students to use to manage Electronic Portfolio because it is a simple, free service and allows students to practice reflection, cooperation, and lifelong learning. According to Nicolls and Roadnight (2012), using GS creatively as an OP could create conditions to integrate theory and practice to support education. To work with OP in GS, we need to access <http://sites.google.com>, inserting our Gmail account, and set a password. This account shall be the managing account afterward. To start creating a new website or a new OP, click on the + button at the bottom to start. Then, you can start making your own OP:

Step 1: Building main page's display

- Insert the –Page title.
- Update background image at —Change Image.
- Enter the site name at the upper left side of the screen, logo can be added by clicking –More logos.
- At the upper right side of the screen, click on –Insert to edit the content (Text box, Image, Dip, Drive). You can edit the content as your will.
- Click on –Announced on the upper right side to complete the display creation for the main page.
-

Step 2: Create the display for Subpage

- If you want to include other files, click on the –Page|| button on the upper right side, choose –+|| to add a page. You can name the new subpage based on your requirements.
- To edit content for your newly created subpage, you only need to repeat the states in step 1.
- If your subpage is a collection of smaller contents, you can choose to create subpages for that page.
- After completing all of the aforementioned steps, you can choose –Announced|| to complete a completed OP.

**3. RESEARCH METHODS AND RESULTS**

**3.1. RESEARCH METHODS**

To investigate the validity as well the ability to approach OP of Teachers and students, we have surveyed 50 Mathematics teachers of all levels in the Mekong Delta Region of Vietnam (Vinh Long, Can Tho, An Giang, Ben Tre, etc) by Google Forms. The questionnaire is designed on a 5-point Likert scale. We received 50/50 results of the survey (100%). Here is our analysis of Gender, Working Institutions, and Working Time:

Gender					Work unit					Working time							
		Frequency	Percent	Valid Percent	Cumulative Percent			Frequency	Percent	Valid Percent	Cumulative Percent			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	22	44,0	44,0	44,0	Valid	Primary School	7	14,0	14,0	14,0	Valid	Below 5 years	27	54,0	54,0	54,0
	Female	28	56,0	56,0	100,0		Secondary School	10	20,0	20,0	34,0		From 5 years to below 10 years	7	14,0	14,0	68,0
Total		50	100,0	100,0		High School	33	66,0	66,0	100,0	10 years or more	16	32,0	32,0	100,0		
						Total	50	100,0	100,0		Total	50	100,0	100,0			

**Table 1:** Participants of the survey

The survey received: 22 males (44%) and 28 females (56%), in which: 66% are High school teachers, Secondary school teachers account for 20% and 14% are Primary school teachers. Pertaining to Working Time, 32% of participants get –10 or more years||. It is seen that this research survey has attracted many experienced teachers, showing that the current education has approached and integrated with STEM significantly. –Under 5 years|| gets the highest proportion with 54% of teachers reported while the lowest percentage goes for –From 5 years to 10 years|| with 14% of participants. The current teachers have been on the path of completion, moving towards the new educational system so as to improve students’ capacities.

**3.2. RESULTS**

**3.2.1. Analyzing OP in Teaching**

**a) Validity**

According to Table 1 in the Appendix, OP usage in Teaching activities has reported an appropriate factor of Corrected item-total correlation, with Cronbach’s Alpha factor of 0.861 suiting the level of credibility. OP variable in warming activity got the factor of Cronbach’s Alpha if item deleted of 0,853 that is higher than Cronbach’s alpha factor but the factor Corrected item-total correlation is 0.557 which is the reason why we still accept it in the survey.

**b) Survey results**

In terms of Teaching activities, we have surveyed the use of OP in the following sub-activities: Warming; Formulating students’ new knowledge; Practicing exercises, and Revision. After analyzing, we have got the following table:

**Table 2: OP in Teaching**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>OP in warming activities</b>	50	1	5	3,98	,896
<b>OP in formulating students' new knowledge</b>	50	1	5	3,86	,969
<b>OP in practicing exercises</b>	50	1	5	4,00	,857
<b>OP in revision</b>	50	3	5	4,22	,616
<b>OP in teaching mathematics</b>	50	1	5	4,12	,773
<b>Valid N (listwise)</b>	50				

These activities mean revolve around the level of Agreement, level 4/5. Therefore, we can conclude that the majority of surveyed participants agree with our idea of using OP in teaching Maths.

### 3.2.2. OP in Learning Assessment

#### a) Validity

As can be seen in Table 2 in the Appendix, after accreditation, it is observed that OP in assessing learning progress got the factor of Cronbach's Alpha if Item Deleted of 0.832 which is higher than the factor of Cronbach's Alpha of the group of 0.803. Despite that, its factor of Corrected item-total correlation is 0.438, thereby meeting the validity requirement.

#### b) Survey results

We have studied OP usage in regular assessment, final assessment, progress evaluation, and general evaluation of Mathematics education.

**Table 3: OP in Learning Assessment**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>OP in informal tests</b>	50	2	5	3,78	,737
<b>OP in final exams</b>	50	2	5	3,7	,909
<b>OP in progress evaluation</b>	50	1	5	3,94	,793
<b>OP in general evaluation of Mathematics education</b>	50	2	5	3,78	,910
<b>Valid N (listwise)</b>	50				

Through the table, we can see surveyed participants' ideas of using OP as a method to assess students' capacity. With the mean ranging between 3.7 and 3.94, the result of the survey shows that the majority of answers lie between the -Neutral and -Agree options, which shows that despite the lack of faith from the participants in terms of the use of OP in students' assessment, in general, teachers still have a high level of faith when using OP as an alternate assessing method.

### 3.2.3. Analyzing OP in Mathematics Education Management

#### a) Validity

According to Table 3 in the Appendix, both variables receive the factor of Corrected item-total correlation of 0.501, which is appropriate and meets analyzing requirements. The factor of Cronbach's Alpha of 0.666 suits the credibility requirement.

#### b) Survey results

We study people's ideas of OP in educational management and OP in evaluation of teaching efficiency. Here is the result:



**Table 4:** OP in Math Education management

	N	Minimum	Maximum	Maximum	Std. Deviation
<b>OP in educational management</b>	50	2	5	4,10	,678
<b>OP in evaluation of teaching efficiency</b>	50	2	5	3,94	,740
<b>Valid N (listwise)</b>	50				

The use of OP in educational management as well as in evaluation of teaching efficiency are highly evaluated with the mean revolving around level 4, which shows that the majority of participants agree with our idea.

### 3.2.4. Analyzing OP Evaluation Results

#### a) Validity

As can be seen in Table 4 in the Appendix, the factor of Cronbach's Alpha is 0.834, the factor of Corrected item-total correlation of variables is higher than 0.3, which is appropriate to validity requirements. Although the factor of Cronbach's Alpha if Item deleted of OP variable in Educational Improvement is higher than that of Cronbach's Alpha but the Corrected item-total Correlation is appropriate, thereby being remained in our analysis.

#### b) Survey results

+ OP in improving teaching and learning progress:

**Table 5:** OP in improving teaching and learning progress

	N	Minimum	Maximum	Mean	Std. Deviation
<b>OP in improving teaching and learning progress</b>	50	2	5	4,08	,566
<b>Valid N (listwise)</b>	50				

OP in improving teaching and learning progress gets a mean of 4.08, slightly above the -Agreell option. The result of the survey is not too different and the majority of participants agree with that aforementioned idea.

+ OP merits:

**Table 6:** OP merits

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Merit: Accessibility</b>	50	1	5	3,68	,768
<b>Merit: Available anytime</b>	50	1	5	4,04	,832
<b>Merit: Accessing anywhere with Internet connection</b>	50	1	5	4,14	,833
<b>Merit: Boosting students' independent working capacities</b>	50	2	5	3,82	,850
<b>Merit: Boosting students' creativity</b>	50	2	5	3,86	,774
<b>Merit: Providing students with conditions to develop thoroughly</b>	50	1	5	3,38	,808
<b>Merit: High level of popularity</b>	50	1	5		,945
<b>Valid N (listwise)</b>	50				

The surveyed teachers have a positive attitude in terms of the merits OP bringing for students. The majority of merits receive the mean ranging between 3.68 and 4.14, revolving around the

level of –Agree, with the only exception of –High popularity with only 3.38 mean reported (above the –Neutral option). Generally, the result from this table shows that most participating teachers have a certain amount of knowledge and faith at a positive level towards OP merits in Mathematics education. OP in improving teaching and learning progress gets a mean of 4.08, slightly above the –Agree option. The result of the survey is not too different and the majority of participants agree with that aforementioned idea.

### 3.2.5. Analyzing Obstacles When Using OP in Education

#### a) Validity:

According to table 5 in the Appendix, the factor of Cronbach’s Alpha is 0.821 which is pretty high. Therefore, the variables in the survey are pretty good. The factor of Corrected Item-Total Correlation of the variables ranges from 0.526 to 0.679, making the validity suitable for analysis.

#### b) Survey result:

**Table 7:** Obstacles when using OP in education

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Obstacle: Students in remote areas are passive and less sensitive with ICT</b>	50	1	5	3,96	,968
<b>Obstacle: Dysfunctional without Internet availability</b>	50	1	5	4,04	1,049
<b>Obstacle: Time consuming</b>	50	1	5	3,36	,942
<b>Obstacle: Not a good method to review advanced lessons</b>	50	1	5	3,26	,922
<b>Obstacle: Not a durably teaching methods</b>	50	1	5	3,06	,978
<b>Valid N (listwise)</b>	50				

The use of OP brings numerous advantages yet obstacles as well. Based on the realistic challenges, we have listed out some obstacles students usually face as above. With the mean ranging between 3.06 and 4.04, this is the table that received the most varied result in the survey. Overall, participating teachers still feel a level of anxiety, showing from the fact that 3 latter obstacles receive a mean of around the level of 3 (Neutral). It can also be inferred that the level of difficulty that these challenges bring is actually moderate towards both teachers and students. Only 2 challenges that teachers can really feel, –Students in remote areas are passive and less sensitive with ICT and –Dysfunctional without Internet availability, with the mean of 3.96 and 4.04 respectively.

### 3.2.6. Analyzing OP Components

#### a) Validity

As can be seen in Table 6 in the Appendix, the factor of Cronbach’s Alpha is 0.936 which is high, making the variables valid. The factor of Corrected item-total Correlation of variables goes from 0.506 to 0.762 which is suitable for the analysis.

#### b) Survey results

We have conducted a survey about OP Component and our result is as followed:

**Table 8:** OP Components

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Component: Personalized tests</b>	50	2	5	3,86	,670
<b>Component: Group works</b>	50	2	5	3,84	,792
<b>Component: In-class activities</b>	50	2	5	4,02	,515
<b>Component: Research Reports</b>	50	2	5	3,94	,682
<b>Component: Mindmaps</b>	50	2	5	3,90	,678
<b>Component: Plans</b>	50	2	5	4,00	,571
<b>Component: Experimental Results</b>	50	1	5	3,80	,756
<b>Component: Images and sound</b>	50	2	5	4,02	,685
<b>Component: Transcripts</b>	50	2	5	3,88	,689
<b>Component: Certificate of Merits</b>	50	2	5	3,70	,886
<b>Component: Certificates</b>	50	2	5	3,78	,840
<b>Component: Scientific articles</b>	50	2	5	3,86	,783
<b>Component: Computer softwares</b>	50	2	5	3,86	,857
<b>Component: Educational Websites</b>	50	2	5	3,94	,712
<b>Valid N (listwise)</b>	50				

The means revolve around the level of 4, the –Agree|| option. It shows that though OP is still a new concept, it still receives a high level of approval from participating teachers, showing that they have a certain level of knowledge about OP Components. Through this, we can see OP's developmental potential in the future. OP has a great influence on students' cognition, boosting their confidence, creativity, mindset, self-discipline, and teamwork. The constituents of an OP is pretty diverse, intending to provide enough knowledge and essential skills the students might need in their life. Besides, the participating teachers also provide us with some other components such as files of online lectures, files related to learning content, pictures, the sample of mock tests, etc. We will study these constituents in the following time.

### 3.2.7. Analyzing the Use of OP in Mathematics

#### a) Validity

As can be seen in Table 7 in the Appendix, the factor of Corrected item-total Correlation of variables ranges between 0.394 and 0.607, and the factor of Cronbach's Alpha is 0.684. Therefore, these variables and their validity meet the analyzing requirements.

#### b) Survey results

**Table 9:** OP usage (time)

	N	Minimum	Maximum	Mean	Std. Deviation
<b>OP usage during each semester</b>	50	2	5	3,94	,620
<b>OP annual usage</b>	50	2	5	3,82	,720
<b>OP usage at each educational stage</b>	50	2	5	3,54	,838
<b>Valid N (listwise)</b>	50				

The results of these questions move from 3.54 to 3.94, between the level of –Neutral|| and –Agree||, from which it is recognizable that teachers' OP using time is still moderate.

Nevertheless, the mean of using OP each term is pretty high, showing the participants' level of approval to our idea.

### 3.2.8. Analyzing the use of OP through educational level:

#### a) Validity

We have conducted a survey using OP through different educational levels in Viet Nam and here is the result:

Through the accreditation, the factor of Corrected item-total Correlation of High school variable is smaller than 0.3, which does not meet the analyzing requirement. Therefore, we will conduct further studies in the following time.

Apart from that, the variable of Primary and Secondary schools all meet the analyzing requirement, showing in Table 8 in the Appendix.

#### b) Survey results

**Table 10:** OP usage (Educational level)

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Primary schools</b>	50	1	5	2,98	,979
<b>Secondary schools</b>	50	2	5	3,68	,683
<b>High schools</b>	50	1	5	4,08	,778
<b>Valid N (listwise)</b>	50				

As can be seen from the table, High school receives the highest level of approval with a mean of 4.08, showing that the majority of teachers participating in our survey agree with the idea of using OP in High school. The Secondary school receives a more moderate mean of 3.68. The most noteworthy part is that the participating teachers hold a moderate level of agreeing with the idea of using OP in Primary school, with only 2.98 of mean reported, slightly below the -Neutrall option. This is explained that students are still children when studying at Primary school, therefore, they are unable to acquire and understand clearly about a subject, making this result comprehensible. As a result, the application of OP for Secondary school is a great idea as they have gained enough knowledge related to ICT as well as other necessary skills to create and use an individual OP. OP should include a varied amount of knowledge which should be as sufficient as possible. We will conduct more studies related to the high school level to study further the application of OP at this level, thereby presenting a more general idea of the potential of OP usage in different educational levels in Viet Nam.

### 3.2.9. Analyzing the Overall Effectiveness When Using OP in Teaching Math in General

#### a) Analyzing different levels of evaluations

According to Table 9.1, the sig value in the gender group of Levene's Test is higher than 0.05 so we will consider the sig value of Equal variances assumed. In which the sig is higher than 0.05 so there is no difference in evaluating the use of OP efficiency at different genders from the participants.

As can be seen from Table 9.2, the sig level of Test of Homogeneity of Variances is higher than 0.05 so we will study sig at ANOVA. Through which we can see that this sig is equal to 0.500 so there is no difference in evaluating OP efficiency at the different educational levels. From this table, it is seen that the surveyed teachers at Primary, Secondary, and High schools show no significant difference.

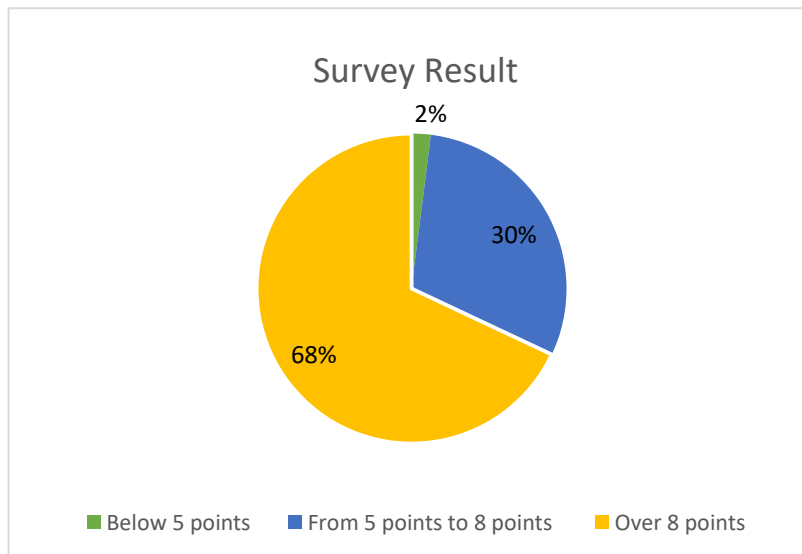
As can be seen from Table 9.3, the sig level of Test of Homogeneity of Variances is lower than 0.05 so we only study sig at Robust Tests. In this table, the sig value of Welch's test is equal to 0.511 which is higher than 0.05 so there is no considerable difference of evaluating OP to working seniority.

Notwithstanding, this is a pretty new researching direction in Viet Nam and all of the conclusion in this writing is based on the result of our survey, which makes the research

include not too many significant differences. Nevertheless, it can be seen that the current educational system is evolving and receives greater attention from the teachers. The teachers can approach quickly and efficiently with ICT as well as global education. Therefore, we will direct new research studies in the future regarding quantity and quality so that the research results shall be more varied and populous.

#### b) Analyzing research results

When conducting our survey, we have divided the evaluation of effectiveness into the different levels from 1 to 10. The higher the level is, the higher the overall efficiency of using OP in teaching Math is. In order to make the analyzing part be more convenient, we have coded the value as followed:



**Figure 1:** Result of the survey about participants' evaluation of OP effectiveness

As can be seen from the pie chart, 34 participants chose –Over 8 points‖ accounting for 68%, which also ranks first in this question about OP's efficacy. This is followed by the option of –From 5 points to 8 points‖, with 15 choices (30%). Even though OP brings various benefits to students, there are still some remaining limitations, shown by 2% of participants choosing –Below 5 points‖. Notwithstanding, overall, OP's effectiveness is still highly appreciated, with the majority of approval from participants in the survey.

#### 4. CONCLUSION

Our research shows that the use of OP in teaching Math is an innovative and interesting idea. Through this survey, OP has proved to be able to support teaching, learning assessment, and educational management under different educational circumstances. OP can be used for different purposes and is exceptionally beneficial in the current era when education has to suffer from the COVID-19 pandemic these days.

OP can not only be applicable for Mathematics but for other subjects as well, which is especially suitable for social sciences and subjects that require an open knowledge resource. Using GS to design OPs has various outstanding features such as creating a website in a short time, free-of-charge, easy editing content, customizing the interface, etc. As a matter of fact, we believe that the use of OPs based on GS would bring many benefits for both students and teachers in multi-areas, and is an appropriate educational method for educational tendencies during the Industrial Revolution 4.0. Its features are promising and should be studied in more research studies in the future. Finally, in this research trend, readers can refer to some papers such as neural networks (Szeto et al., 2020), dual-use electronic lectures (Tuan et al., 2020), chatbots in education (Thanh & Tuan, 2021), ...



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#### APPENDIX

##### OP in teaching:

**Table 1.** The result of analyzing Cronbach's Alpha of OP in Teaching

##### Reliability Statistics

Cronbach's Alpha	N of Items
,861	5

##### Item – Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Std. Deviation
OP in warming activities	16,20	7,510	,557	,863
OP in formulating students' new knowledge	16,32	6,181	,764	,810
OP in practicing exercises	16,18	6,640	,776	,805
OP in revision	15,96	8,162	,643	,846
OP in teaching mathematics	16,06	7,282	,701	,827

##### OP in learning assessment:

**Table 2.** The result of analyzing Cronbach's Alpha of OP in Learning Assessment

##### Reliability Statistics

Cronbach's Alpha	N of Items
,803	4

##### Item – Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Completion	Cronbach's Alpha if Item Deleted
OP in informal tests	11,42	4,208	,778	,686
OP in final exams	11,50	3,765	,711	,703
OP in progress evaluation	11,26	4,931	,438	,832
OP in general evaluation of Mathematics education	11,42	4,126	,581	,774

##### OP in Mathematics management:

**Table 3.** The result of analyzing Cronbach's Alpha of OP in Education Management  
**Reliability Statistics**

Cronbach's Alpha	N of items
,666	2

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OP in educational management	3,94	,547	,501	
OP in evaluation of teaching efficiency	4,10	,459	,501	

**Item – Total Statistics**

OP merits:

**Table 4.** The result of analyzing Cronbach's Alpha regarding to OP merits  
**Reliability Statistics**

Cronbach's Alpha	N of Items
,834	8

**Item – Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OP in improving teaching and learning progress	26,74	17,298	,313	,840
Merit Accessibility	27,14	15,266	,539	,817
Merit Available anytime	26,78	14,298	,652	,802
Merit Accessing anywhere with internet connection	26,68	14,549	,605	,808
Merit: Boosting students' independent working capacities	27,00	14,531	,592	,810
Merit: Boosting students' creativity	27,00	14,694	,639	,804
Merit: Providing students with conditions to develop thoroughly	26,96	14,692	,604	,808
Merit: High level of popularity	27,44	14,374	,533	,820

Obstacles when using OP in classroom

**Table 5.** The result of analyzing Cronbach's Alpha regarding to OP challenges  
**Reliability Statistics**

Cronbach's Alpha	N of Items
,821	5

**Item – Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<b>Obstacle: Students in remote areas are passive and less sensitive with ICT</b>	13,72	9,349	,589	,792
<b>Obstacle: Dysfunctional without Internet availability</b>	13,64	8,807	,621	,784
<b>Obstacle: Time consuming</b>	14,32	9,038	,679	,766
<b>Obstacle: Not a good method to review advanced lessons</b>	14,42	9,228	,660	,773
<b>Obstacle: Not a durably teaching methods</b>	14,62	9,628	,526	,811

**OP Components:**

**Table 6.** The result of analyzing Cronbach's Alpha regarding to OP Components  
**Reliability Statistics**

Cronbach's Alpha	N of Items
,936	14

**Item – Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<b>Component: Personalized tests</b>	50,54	50,580	,611	,933
<b>Component: Group works</b>	50,56	48,496	,701	,931
<b>Component: In-class activities</b>	50,38	51,220	,729	,931
<b>Component: Research Reports</b>	50,46	50,090	,652	,932
<b>Component: Mindmaps</b>	50,50	51,480	,506	,936

<b>Component: Plans</b>	50,40	50,327	,765	,930
<b>Component: Experimental Results</b>	50,60	49,755	,612	,933
<b>Component: Images and sound</b>	50,38	48,893	,783	,929
<b>Component: Transcripts</b>	50,52	49,193	,743	,930
<b>Component: Certificate of Merits</b>	50,70	46,827	,762	,929
<b>Component: Certificates</b>	50,62	47,751	,724	,930
<b>Component: Scientific articles</b>	50,54	48,417	,719	,930
<b>Component: Computer softwares</b>	50,54	47,764	,705	,931
<b>Component: Educational Websites</b>	50,46	48,947	,743	,930

**OP usage in Mathematics education**

**Table 7.** The result of analyzing Cronbach's Alpha regarding to OP usage (Time)

**Reliability Statistics**

<b>Cronbach's Alpha</b>	<b>N of Items</b>
,684	3

**Item – Total Statistics**

	<b>Scale Mean if Item Deleted</b>	<b>Scale Variance if Item Deleted</b>	<b>Corrected Item – Total Correlation</b>	<b>Cronbach's Alpha if Item Deleted</b>
<b>OP usage during each semester</b>	7,36	1,704	,532	,568
<b>OP annual usage</b>	7,48	1,398	,607	,445
<b>OP usage at each educational stage</b>	7,76	1,451	,394	,757

**OP usage at different educational level**

**Table 8.** The result of analyzing Cronbach's Alpha regarding to OP usage (Educational level)

**Reliability Statistics**

<b>Cronbach's Alpha</b>	<b>N of Items</b>
,650	3

**Item – Total Statistics**

	<b>Scale Mean if Item Deleted</b>	<b>Scale Variance if Item Deleted</b>	<b>Corrected Item – Total Correlation</b>	<b>Cronbach's Alpha if Item Deleted</b>
<b>Primary schools</b>	7,76	1,533	,450	,601
<b>Secondary schools</b>	7,06	1,772	,740	,234
<b>High schools</b>	6,66	2,311	,282	,766



**Efficiency when using OP in Mathematics education in general**

**Table 9.1.** The result of analyzing ANOVA regarding to evaluating the efficiency of using OP according to Gender

Efficacy	Levene's Test for Equality of Variances						t-test for Equality of Means		95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
Equal variances assumed	,661	,420	,809	48	,423	,120	,149	-,178	,419	
Equal variances not assumed			,799	42,862	,429	,120	,150	-,183	,423	

**Independent Samples Test**

**Table 9.2.** The result of analyzing ANOVA regarding to evaluate the efficiency of using OP according to Work Unit

**Test of Homogeneity of Variances**

Efficacy		Levene Statistic	df1	df2	Sig.
	Based on Mean	2,973	2	47	,061
Based on Median	,703	2	47	,500	
Based on Median and with adjusted df	,703	2	41,923	,501	
Based on trimmed mean	2,781	2	47	,072	

**ANOVA**

**Efficacy**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,384	2	,192	,703	,500
Within Groups	12,836	47	,273		
Total	13,220	49			

**Table 9.3.** The result of analyzing ANOVA regarding to evaluate the efficiency of using OP according to Work time

**Test of Homogeneity of Variances**

		<b>Levene Statistic</b>	<b>Df1</b>	<b>Df2</b>	<b>Sig.</b>
<b>Efficacy</b>	<b>Based on Mean</b>	3,295	2	47	,046
	<b>Based on Median</b>	,701	2	47	,501
	<b>Based on Mean and with adjusted df</b>	,701	2	37,735	,502
	<b>Based on trimmed mean</b>	2,564	2	47	,088

**Robust Tests of Equality of Means**

Efficacy

	<b>Statistic<sup>a</sup></b>	<b>df1</b>	<b>Df2</b>	<b>Sig.</b>
<b>Welch</b>	,704	2	14,265	,511

## **PREDICTING STUDENTS' CHOICE OF SELECTING APPROPRIATE AND RELEVANT RESEARCH DESIGN FOR DATA ANALYSIS USING VISIRULE**

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### **Abstract**

One of the pillars of research writing is research design. Students' understanding of research design will enable such student(s) to know the kind of variable he/she has in hand and also be able to select appropriate instrument to collect the relevant data needed to complete the research. Once the design of the project is in vague to the researcher or graduating students writing research then the problem begins to set in. Research design gives the researcher the direction of the study in terms of research questions or hypotheses formulation, use of the instrument and the analysis type. This paper presents Research Design Selection – Expert (RDS-Expert) via WIN-PROLOG 6.000 and LPA Toolkits, which available to be employed in selecting appropriate research design for a desired study. The Visirule software was used as a decision supporting tool, using Logic Programming Model to present RDS-Expert in a concisely and precisely way. The RDS-Expert serves as a guide for researchers to use in making good decision regarding the type of research design fit their studies. The study severs as a guide for graduating students as well as researchers in helping them to solve the problem of selecting appropriate and relevant research design, instrument to collect data and data analysis tools for conducting an acceptable research projects, dissertations and theses. The study contributes to the body of knowledge by examining the problem which students and amateur researchers have been facing for years.

**Keywords:** Research Design, Visirule, Logic Programming Model, Project writing

### **Introduction**

Project writing is a necessary writing across the curriculum program that offers students writers a chance to talk through their ideas with project supervision or peer writing assistant. These guided conversations lead to better learning, thinking and writing. Writing skills are crucial in every profession. Good writing skills are therefore, valued in the academics and people who are good writers appear to be more capable, intelligent, responsible and credible compared to lazy ones. Good writing skills not only ease communication in the academic's field but also positively affect careers. It is paramount especially when the job at hand involves a lot of writing. When students are about to graduate from school, they are expected to have excellent writing skills as sine-qua-non to become a graduate. In project writing, selection of appropriate research design has become a great task for the students (both undergraduate and post-graduates). Work experience in teaching has shown that students do not see any good relationship between formulation of hypothesis and selection of relevant research design to solve the problem at hand. The study provides a framework for appropriate selection of research design that fit and in line with the instrument to use in collecting data for proper problem analysis.

### **Review of Literature**

Research design refers to as the overall strategy that one chooses to integrate the different components of the study in a coherent and logical way (De-Vaus, 2001; William, 2006). The major function of a research design is to ensure that the evidence gotten helps the researchers to effectively address the research problem logically and as unambiguously as possible. Research design is the plan, strategy or procedure the researcher adopted in order to solve the problem under investigation (Colen, Marrion and Morrison, 2007). To Nwana (1981) –research design is a term used to describe a number of decisions which need to be taken regarding the collection of data before the data are collected. Research design is also seen as the blue print or plan for specific research study. It gives direction to ways by which a researcher can collect and analyze data towards solving a particular research problem. Looking at it from another angle, research design means preparing conceptual model for solving a research problem in a systematic or scientific way within the capacity of the researcher. Research design is the overall plan for connecting the conceptual research problems to the pertinent (and achievable) empirical research. Therefore, research design articulates what data is required, what methods are going to be used to collect and analyze this data, and how all this is going to answer the research question(s). MacMilliam and Schumacher (2001) said that the goal of a sound research design is to provide the results that are judged to be credible. To Durrheim (2004), research design is a strategic framework for action that serves as a bridge between research questions and the execution or implementation of the research strategy.

A research design is a systematic plan to study a scientific problem. The design of a study defines the study type (descriptive, correlational, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g descriptive-longitudinal case study), research question, hypothesis, independent and dependent variables, experimental design, and if applicable, data collection methods and a statistical analysis plan. Research design is the framework that has been created to seek answers to research questions. The following is a typical classification of research design

**Quantitative Research Method:** this method leads to the generation of empirical data which carries numerical values. Under this we have:

1. **Experimental Research Design:** In this design, the researcher attempts to establish causes and effect relationship by deliberate controls and manipulates the conditions that determine the events under study.
  - ❖ Independent variable
  - ❖ Dependent variable.
  - ❖ Intervening variable.
  - ❖ Extraneous variable.
  - a. **True Experimental Design:** These designs make use of a control group against which the experimental group is compared.
  - b. **Quasi-Experimental Research Design:** This is the design that the researcher did not have adequate control or manipulation to all the existed variables involved in an experimental study. No randomization applied to collection of data in the study.
2. **Non-Experimental Research Design:** This is the research design that does not involve the manipulation, random assignment or controlling of a variable in order to observe the variable.
  - a. **Descriptive research design:** This method requires the use of questionnaire or interview or self-report or observation for the collection of data.

- i. **Survey Design:** This is the attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables.
  - ✓ **Sample Survey:** This selects part of the population through the use of randomization.
  - ✓ **Census Survey:** This uses the whole population for the study.
- ii. **Developmental Research Design:** This research design could either be cross-sectional or longitudinal. The study attempts to describe the nature and degree of change, growth, maturity of behaviors among the members of a group. In longitudinal study, subjects are usually studied within a given period and changes are observed and recorded. In cross-sectional study, large group are studied and assessed on a particular variable, not changes after a long period of time.
- iii. **Correlational Research Design:** This research design seeks to determine if there exist a relationship between two or more variables and if so to what extent the relationship is. It could be relation or prediction studies.
- iv. **Case Study Research Design:** This research design is geared to single out and study a given social unit, which could be individuals, groups of individuals, institutions or communities.
- b. **Casual Comparative Research Design:** This research design is also known as ex-post facts research design, this design attempts to determine the factors that are associated with certain occurrences, outcomes, conditions or types of behavior by examining and tracing back of already existing conditions for information and available data for probable casual factors.
- c. **Historical Research Design:** This research design attempts to establish facts and arrive at conclusions concerning the past. It is design to investigate into past developments, experiences and events in a systematic and scientific way. Its main purpose is to discover generalizations that may assist in the understanding of the past and present phenomenal, to limited extent.

**Qualitative Research Method:** This method is based on a holistic picture and depth of understanding rather than a numerical analysis of data. Qualitative research design is primarily used to gain an understanding of underlying reasons, opinions and motivations.

- a. **Ethnography Research Design:** This is when the researcher immerse himself in the target participants' environment to understand the goals, cultures, challenges, motivations and themes that emerge. The researcher studies the shared problems of behaviors, language and actions of an intact cultural group in a natural setting over a prolonged period of time, data collection often involves observations and interviews.
- b. **Narrative Research Design:** This approach weaves together a sequences of events, usually from just one or two individuals to form a cohesive story.
- c. **Phenomenological Research Design:** This uses a combination of methods, such as conducting interviews, reading documents, watching videos or visiting places and events, to understanding the meaning participants place on whatever's being examined.



- d. **Grounded Theory Design:** this looks to provide an explanation or theory behind the events. Researcher uses interviews and existing documents to build a theory based on the data. The researcher derives a general, abstract theory of a process, action or interaction grounded in the views of participants.
- e. **Case Study Research Design:** This involves a deep understanding through multiple types of that source. It can be explanatory, exploratory or describing an event.

**Mixed Method:** This method involves combining or integration of qualitative and quantitative research and data in a research study. Qualitative data tends to be open-ended without pre-determined responses while qualitative data usually includes closed-ended responses such as found on questionnaire or psychological instruments

- a. **Explanatory Sequential Mixed Design:** The researcher first conducts quantitative research, analyzes the results and then builds on the results to explain in more detail with qualitative research design.
- b. **Exploratory Sequential Mixed Design:** the researcher first conducts with a qualitative research phase and explores the views of participants. The data are then analyzed, and the information used to build into a second, quantitative phase.
- c. **Convergent Parallel Mixed Design:** The researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem.

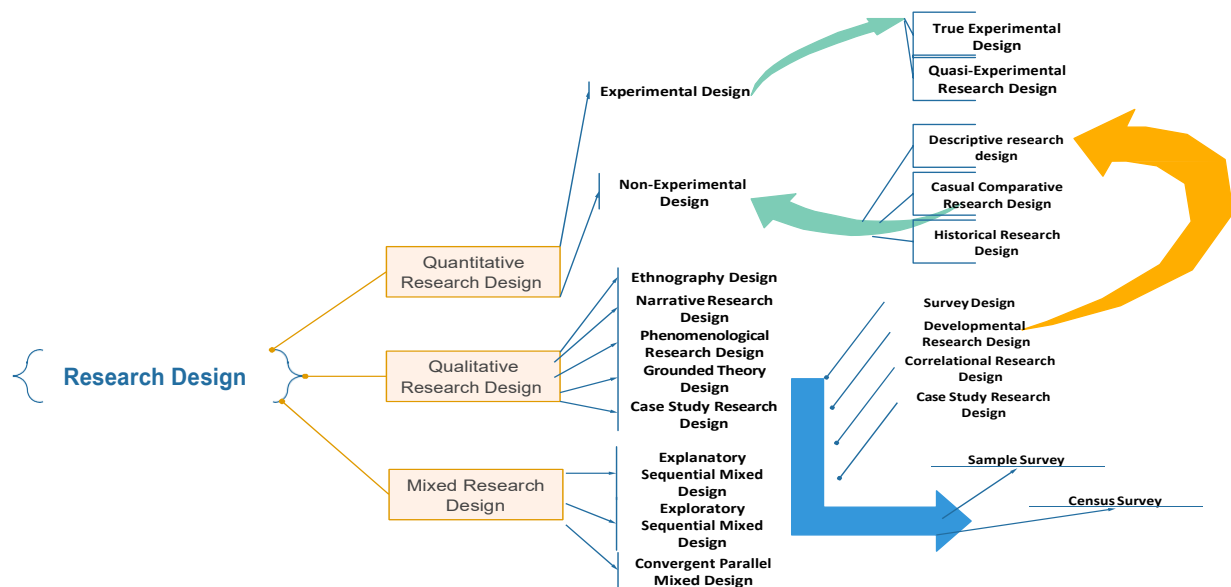


Fig. 1: Showing Research Design paths

### Use of Visirule

The Visirule software is always used as a decision supporting tool, in which the rules are basically and precisely presented using Logic Programming Model. The RSA-Expert can be of great use to researchers in making a firm decision in utilizing suitable statistical data analysis in researches (Muraina, Rahman, Adeleke, & Aiyegbusi, 2013). Visirule allows experts / researchers to concentrate on explaining and establishing the structure of the logic correctly using their chosen tools - those embedded materials that can assist researcher to accomplish his mission (Spenser, 2007; Bilgi, kulkarni, & Spenser, 2010)

The use of visirule was based on structures, we have 82 boxes altogether and precisely 24 questions were involved which related to structural analysis relevant to data collected and which depicted in yellow single choice box. White boxes (40) indicate the options to be taken by the preceding questions. Also, red boxes (17) serve as conclusion or outcome of the actions performed. These red boxes always terminate series of inferences. The only green box signified the starting point of the structure. The use of the visirule only covers the classification based on this study, which serves as the limitation of this study. In applying the visirule, the researcher just needs to run the code and follow the questions as they appear to him/her. At the end, a condition or many conditions are tending to be satisfied based on the choice of the researcher.

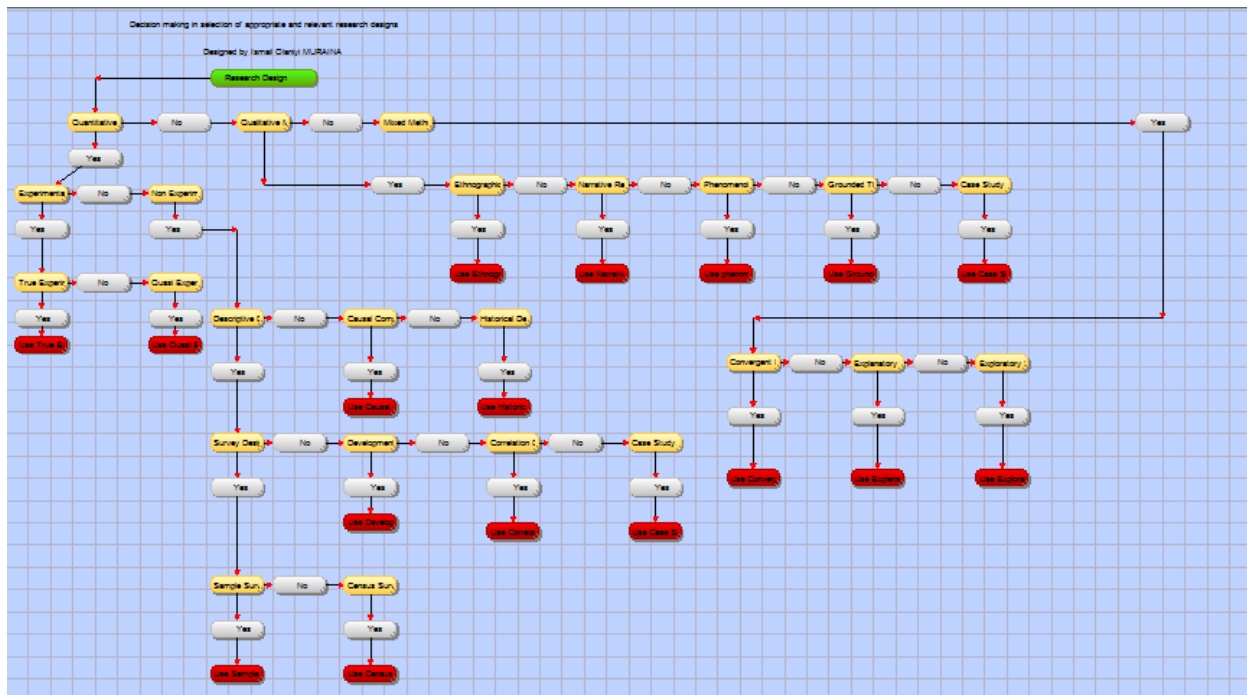


Fig. 2: Screenshot for Visirule Application and implementation

### Conclusion

This study prepared the mind of researchers to be at rest regarding the selection of appropriate research design for a particular study. In the same vein, the author enlisted the simple and clear classification of research design and embedded them into visirule software. The conditions and reasons or situation attached to the use of these designs were critically looked into. Major concentration is placed on quantitative, qualitative and mixed methods before relevant design will be chosen. To make it easy to use, a Visirule Decision Support Approach was used to assist in realizing this, by just selecting boxes rather than writing series of codes (programming).

Hence, the RDS-Expert will be invaluable to both lecturers and research students who at the end of their course would write project on their fields of study. It will also be helpful for the users with very limited knowledge of programming and research, since the use of graphics simplifies the understanding of choice of statistical design for a study. The study can be further improved by considering the limitation of this research

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## **IMPROVING THE QUALITY OF SPORTS EDUCATION IN HANDBALL THROUGH A TRAINING MODEL**

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### **Abstract**

One of the goals of sports education is to increase the popularity of sports games and to attract more athletes, especially in our case of handball. An important aspect in this context is the position of handball as part of physical education in schools and relevant institutions such as universities, colleges and others. The principles of teaching are: modernity, adaptation to social and cognitive abilities of the student, relevance and sustainability of knowledge. The process of learning in basic subjects is still ongoing sports movement conventionally. This means that learning patterns are still centered on the teacher with the delivery of basic techniques that separate sports from sports games. The training model of handball is oriented towards the students as part of the educational program. This proposal is clearly inspired by age-appropriate, game-appropriate and action-oriented sport education models and includes cross-references to the current state-of-the-art of teaching concepts for the sport games as well as to the Bulgarian curriculum for the subject –physical education and sports. This methodological approach can develop aspects of motor skills, mental skills, social skills, emotional stability, etc. The main goal is: to help teachers of physical education and sports to interact with pedagogical methods for teaching the sport of handball in certain levels of education. The objectives are: development of the basic course of handball knowledge and skills through a sports educational model; the methods used should be in accordance with the age and physical development of the students. The results of this educational model should lead to the mastering of basic handball training, organized in the form of curricula. In conclusion, we would like to note that in recent years we have seen progress in sports education and we hope that teachers in our field will continue to search for innovative ideas for training in the sport of handball.

**Keywords:** development, handball training, model, sports education.

## **SOCIAL CONDITIONING FOR THE SELF-HARM BEHAVIOUR IN ADOLESCENCE**

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### **Abstract**

The most common causes of self-harm in adolescents are related to family (abuse, arguments with parents, poor communication), school (bullying), and behaviour (cyberbullying, illicit substance use, rejection by a boy or girl friend). Adolescents self-mutilate because of difficulty talking about their feelings, of peer contagion, of peer pressure, of suicidal thoughts; out of anger / desperation to seek attention, to show their hopelessness, to show their worthlessness; to be accepted, to rebel, to reject their parents' values, to state their individuality, or to take risks. Adolescents who self-harm are, usually, adolescents with multiple problems such as co-morbid psychiatric disorders (anorexia nervosa, anxiety state, Bipolar Disorder, conduct disorder, depression, hyperactivity, Post Traumatic Disorder, psychosis), educational failure (learning problems, school refusal), and impaired psychosocial functioning; who come from families with high psychopathology rates; and who may have lived unhappy life events. Depressive disorder is less common among pre-adolescents, with no gender difference; mid-adolescence self-harm behaviour shows a female preponderance, which is also found in adult females.

**Keywords:** harm, self-harm, adolescence



## HIGHER ORDER FACTOR STRUCTURE OF EMOTION REGULATION AND ADAPTATION OF AFFECTIVE STYLE QUESTIONNAIRE

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### **Abstract**

Emotion regulation is an important and widely studied concept in the literature. Several measures have been developed to assess emotion regulation. One of the most frequently used techniques to measure emotion regulation is the use of self-report questionnaires. In this study, Emotion Regulation Questionnaire (ERQ), Cognitive Emotion Regulation Questionnaire (CERQ) and Affective Style Questionnaire (ASQ) were used together to test if there are any underlying higher-order constructs. These were selected due to being the most frequently used and comprehensive questionnaires. Furthermore, another aim of the study was to adapt Affective Style Questionnaire (ASQ) into Turkish culture. A total of 622 individuals whose ages were between 18 and 65 ( $M=28.46$ ,  $SD=9.36$ ) participated in this study. Results of Confirmatory Factor Analysis for Affective Style Questionnaire (ASQ) (Concealing, Adjusting, Tolerating) have shown that a proposed three-factor model gives an acceptable fit to the data. Reliability and validity analysis results supported the findings of the original study and indicated that the Affective Style Questionnaire is a reliable and valid measure for emotion regulation. Followingly, to investigate the higher-order factor structure of emotion regulation Exploratory Confirmatory Factor Analysis was conducted and a three-higher order factor model of emotion regulation was expected. The results showed that the best solution was reached with a five-higher order factor model. The higher-order factors of emotion regulation were named as Hiding Emotions, Self-Oriented Emotion, Perspective Shifting, Flexibility, and Others-Oriented Emotion. The correlations between higher-order factors were meaningful and shedding light on the relationship between emotion regulation strategies. All the findings were discussed in accordance with the literature.

**Keywords:** Emotion regulation, factor structure, affective style questionnaire

### **INTRODUCTION**

Emotions are inevitable and crucial aspects of life. Through emotions, people can communicate with each other and their environment since a person's internal state and intended behavior is signalled to others (Frijda, 1986). Similarly, emotions have intrapersonal functions in which people's behaviors are guided with emotional feedbacks (Vohs and Baumeister, 2011). To clarify, people act through either approach or avoidance motivations based on their feelings. Therefore, regulating emotions also become an important part of our lives. Emotion regulation is a process in which individuals use various strategies to have an impact on their emotions so that they can respond to the changes in situations and emotions (Gross, 1998). It has been suggested that the use of emotion regulation strategies flexibly determines adaptive and successful emotion regulation (Cole et al., 1994; Thompson, 1994). So, adaptive emotion regulation includes using the most beneficial emotion regulation strategy according to the situation, not the elimination of the experience of emotions or

ignoring them (Gratz and Roemer, 2004). All in all, emotion regulation can be understood as a process of having an emotion, experiencing the emotion and choosing a strategy about what to do with the emotion (Hofmann and Kashdan, 2010).

### **HOW TO MEASURE EMOTION REGULATION**

Emotion regulation has many different components. According to Garnefski and colleagues (2001), physiological aspects of emotion regulation processes include increased breathing rate, rapid pulse and perspiration; behavioral aspects include running, screaming, crying, shouting or disengaging from the moment. In addition to that, emotion regulation has social aspects such as looking for emotional support from others; as well as conscious and unconscious aspects such as denial, rumination, catastrophizing, self-blame and blaming others.

Recent studies have shown that the physiological measure of heart rate variability (HRV) can be an indicator of emotion regulation capacity (Visted et al., 2017). Likewise, skin conductance level (SCL) in which emotion eliciting videos were introduced to participants and their emotional responses are detected by a physiological index was also shown to be a physiological measure of emotion regulation (Andreano and Cahill, 2010). In addition to that, in Wu and colleagues' study (2016), changes in the hormone levels (estrogen and progesterone) of women who experience premenstrual syndrome were used to detect emotion regulation or dysregulation.

Other than physiological measures of emotion regulation, several self-report questionnaires are developed in the literature to measure emotion regulation strategies. The use of questionnaires in the field is feasible, time-efficient and cost-efficient. Therefore, researchers keep developing new emotion regulation questionnaires based on their conceptualization of emotion regulation. To clarify, for the same construct -emotion regulation- different measurements are used by focusing on different aspects of the construct. However, the higher-order factor structure of emotion regulation can be investigated by using commonly used questionnaires that share the same theoretical background and are comprehensive. In that way, the construct of emotion regulation can be evaluated from a different perspective and its revealed subdimensions can be compared with the existing dimensions.

In the present study, to evaluate higher-order factor structure of emotion regulation the following questionnaires are going to be investigated: Emotion Regulation Questionnaire (Gross and John, 2003), Cognitive Emotion Regulation Scale (Garnefski et al., 2001) and Affective Style Questionnaire (Hofmann and Kashdan, 2010). Meanwhile, the Affective Style Questionnaire (ASQ) which has not been adapted to Turkish yet, will be adapted to Turkish which is also going to be a contribution to the field.

### **Method**

#### **PARTICIPANTS**

622 participants contributed to the study and their age range was between 18 and 65 ( $M=28.46$ ;  $SD=9.36$ ). Regarding the gender, out of 622 participants, 216 of them (34.7%) were male and 406 participants (65.3%) were female. Most of the participants (55.9%,  $N=348$ ) had bachelor's degree and master's degree (17.4%,  $N=108$ ). 0.6% of the participants are primary school graduate ( $N=4$ ), 1.3% of them junior high school graduate ( $N=8$ ), 12.9% of them are high school graduate ( $N=80$ ), 10.6% of them are associate degree graduate ( $N=66$ ) and 1.3% of them have PhD ( $N=8$ ).

For the reliability of data, attention checker items were added to the pool. 75 of the participants failed to respond correctly and excluded from the data. 17 of the participants were not between the expected age range and one participant did not give valid response for his

age. A total of 93 of the participants were excluded from the study. Data was screened and evaluated for univariate outliers and all the assumptions were satisfied.

### **Measures**

#### **EMOTION REGULATION QUESTIONNAIRE (ERQ)**

ERQ has been developed by Gross and John (2003) and it has 10 items with 7-point Likert type scale. Six items correspond to Cognitive Reappraisal and four items correspond to Expressive Suppression subdimensions.

Cronbach Alpha reliabilities were found as .79 for Reappraisal subscale, and .73 for Suppression subscale. The Turkish adaptation of the study conducted by Aka and Gençöz (2014), and the reliability coefficients for Cognitive Reappraisal and Expressive Suppression subscales were .85 and .78 respectively. In the present study, Cronbach Alpha coefficients were .81 for Cognitive Reappraisal subscale and .73 for Expressive Suppression subscale.

#### **Cognitive Emotion Regulation Questionnaire (CERQ)**

This is a multidimensional scale developed by Garnefski and colleagues (2001) and it aims to identify cognitive coping strategies a person uses after experiencing negative events or situations. It has 36 items and 9 subcategories namely; Self-Blame, Acceptance, Rumination, Positive Refocusing, Refocus on Planning, Positive Reappraisal, Putting into Perspective, Catastrophizing and Blaming Others.

Internal consistencies were ranged between .66 (Acceptance and Positive Refocusing) and .81 (Rumination). Tuna and Bozo (2012) conducted the Turkish version of the study in which internal consistency values were found between .72 (Self-blame) and .83 (Catastrophizing). In the present study, Cronbach Alpha reliabilities were between .63 (Acceptance) and .83 (Positive Refocusing).

#### **Affective Style Questionnaire (ASQ)**

This scale has been developed by Hofmann and Kashdan (2010) which has 20 items with three subscales: Concealing, Adjusting and Tolerating. The internal consistency values were .84 for Concealing, .80 for Adjusting and .66 for Tolerating subscales.

#### **Difficulties in Emotion Regulation Scale (DERS)**

DERS has been developed by Gratz and Roemer (2004) and it includes 36 items with 6 subscales for lack of awareness of emotional responses (Awareness), difficulties engaging in goal-directed behaviors (Goals), lack of emotional clarity (Clarity), impulse control difficulties (Impulse), nonacceptance of emotional responses (Nonacceptance) and limited access to emotion regulation strategies (Strategies). Individuals are expected to respond each item from 1 –almost never to 5 –almost always.

Internal consistency values of the original study were ranged between .80 (Awareness) and .89 (Goals) (Gratz and Roemer, 2004). Rugancı and Gençöz (2010) conducted the Turkish adaptation of the study in which internal consistency coefficients were ranged between .75 (Awareness) and .90 (Goals and Impulse). Internal consistency coefficient in the present study were between .67 (Awareness) and .87 (Strategies).

#### **Brief COPE Inventory (BCOPE)**

The scale has been developed by Carver (1997) and it is a short form of the COPE (Carver et al., 1989). This scale has 14 subscales and 28 items. Subscales are named as: Active Coping, Planning, Positive Reframing, Acceptance, Humor, Religion, Using Emotional Support, Using Instrumental Support, Self-Distraction, Denial, Venting, Substance Use, Behavioral Disengagement and Self-Blame.

Internal consistency coefficients of the subscales were between .50 (Venting) and .90 (Substance Use) (Carver et al., 1989). Bacanlı et al. (2013) conducted the Turkish adaptation of the study in which internal consistency coefficients were between .39 (Restraint Coping) and .92 (Humor). Internal consistency coefficients for the current study were between .03 for Using Instrumental Social Support and .30 for Positive Reinterpretation.

### **Procedure**

The data collection process started after the ethical committee approval. The data were collected online through a form supported by Google Forms service (<https://docs.google.com/forms>). Participants were reached through convenient sampling technique. The research has been announced throughout social media by sharing the links. The completion of the study measures approximately took thirty minutes.

## **RESULTS**

### **Confirmatory Factor Analysis Results for Affective Style Questionnaire (ASQ)**

Data screening processes were followed by confirmatory factor analysis which was conducted to evaluate construct validity of Affective Style Questionnaire (ASQ) by using M Plus Version 7.0 (Muthen and Muthen, 2012). As an input, raw data was used, and in the analysis maximum likelihood of estimation was employed. A three-factor model consisted of Adjusting, Concealing and Tolerating was hypothesized. The proposed three-factor model gave acceptable fit to the data  $\chi^2(165, N=622) = 657.934, p < 0.001, CFI = .859, TLI = .838, RMSEA = .069, SRMR = .078$ . Factor loadings were ranged between .833 to .394 for Concealing, .779 to .526 for Adjusting, and .746 to .257 for Tolerating.

When modification indexes of the items were examined there were two modifications where items were loaded to the same factor which theoretically also makes sense. Correlated errors between item 7 (*Çabucak/hızlıca sakinleşebilirim*) and item 8 (*Duygularımın akıp gitmesine izin verebilirim*) ( $p < .001$ ) and between item 10 (*İnsanlar canımın sıkın olduğunu genellikle anlamaz*) and item 13 (*İnsanlar üzgün olduğumu genellikle anlamaz*) ( $p < .001$ ) were added to the model. Correlated error between item 7 and item 8 was found and estimate value was .33 whereas it was .52 for the correlated error between item 10 and item 13.

### **Reliability and Validity Analysis Results for Affective Style Questionnaire (ASQ)**

Next, reliability analysis was conducted in which internal consistency of Turkish version of Affective Style Questionnaire and its subscales. The internal consistency coefficients for each subscale were found as follow: .85 for Concealing, .82 for Adjusting, and .67 for Tolerating. It was found as .87 for the whole scale.

Followingly, convergent and discriminant validity of the Turkish version of Affective Style Questionnaire was tested by using bivariate Pearson correlation analysis. Results of the Pearson correlations between the subscales of Affective Style Questionnaire (ASQ) (see Table 1) and subscales of the other instruments used in the study showed significant correlations (see Table 2).

Table

*Pearson Correlations between the subscales of ASQ*

<i>r</i> (Pearson Coefficient)	Concealing <i>R</i>	Adjusting <i>R</i>	Tolerating <i>r</i>
Concealing	1	.479**	.205**
Adjusting	.479**	1	.452**
Tolerating	.205**	.452**	1

Notes. \*  $p < .05$ , \*\*  $p < .001$ .

Table 2

*Correlations between ASQ and Other Instruments of the Study*

Questionnaire	Concealing	Adjusting	Tolerating
ERQ			
Suppression	.386**	.053	-.180**
Reappraisal	.155**	.374**	.192**
CERQ			
Self-Blame	.026	-.193**	-.170**
Acceptance	-.011	.040	.153**
Rumination	-.097*	-.168**	.063
Positive Refocusing	.164**	.377**	.113**
Refocus on Planning	.096*	.353**	.236**
Positive Reappraisal	.104**	.412**	.217**
Putting into Perspective	.024	.233**	.089*
Catastrophizing	-.025	-.291**	-.174**
Other-Blame	-.007	-.115**	-.098*
DERS			
Non-accept Goals	-.042	-.252**	-.328**
Impulse	-.143**	-.431**	-.211**
Awareness	-.130**	-.407**	-.292**
Strategies	-.017	-.188**	-.427**
Clarity	-.112**	-.472**	-.269**
BCOPE	.011	-.247**	-.219**
Using Instrumental Social Support	-.162**	-.266**	-.109**
Humor	.004	.182**	.165**
Focus on and Venting of Emotions	.076	.006	-.038
Substance Use	.058	.125**	.055
Acceptance	.169**	-.115**	.104**
Suppression of	.035	.064	.069



Competing Activities			
Turning to Religion	-.062	-.103*	-.153**
Denial	-.070	-.025	-.044
Behavioral Disengagement	-.109**	-.103*	.083*
Mental Disengagement	.049	.178**	.189**
Restraint Coping	.085*	.029	-.010
Positive Reinterpretation	-.082*	.091*	.164**
Using Emotional Support	.134**	.243**	.049
Planning	-.033	-.092*	-.146**

Notes. \*  $p < .05$ , \*\*  $p < .001$ .

### Exploratory Confirmatory Factor Analysis (ECFA) Results for Higher Order Factor Structure of Emotion Regulation

To test the hypothesis for the higher factor structure of emotion regulation exploratory confirmatory factor analysis (ECFA) was conducted by using M Plus Version 7.0 (Muthen and Muthen, 2012). In the analysis, a total of 14 subscales of the three emotion regulation scales (Emotion Regulation Questionnaire, Cognitive Emotion Regulation Scale and Affective Style Questionnaire) were used as indicators and higher order factor analysis followed. In the analysis, maximum likelihood of estimation and Geomin rotation was used. For the raw standardization correlation matrix was used and as a rotation Oblique rotation was adopted. All the factor structures from 1 factor to 5 factors were tested. As it can be seen, best results were obtained from 5-factor structure  $\chi^2(31) = 115.577$ ,  $p < 0.001$ ,  $RMSEA = .066$ ,  $SRMR = .021$ ,  $CFI = .964$ ,  $TLI = .893$ ,  $AIC = 46035.777$ ,  $BIC = 46425.876$ .

Accordingly, found higher order factors are named. First factor included Suppression and Concealing subscales and named as -Hiding Emotions|. Second factor included Self-Blame and Rumination subscales and named as -Self-Oriented|. Third factor included Reappraisal, Acceptance, Positive Refocusing, Refocus on Planning, Positive Reappraisal subscales and named as -Perspective Shifting|. Fourth factor included Adjusting and Tolerating subscales and named as -Flexibility|. Last factor included Catastrophizing and Other-Blame subscales and named as -Others-Oriented|. Geomin factor correlations of the factors are demonstrated in Table 3.

Table 3

#### Geomin Factor Correlations

Factor Structures	Hiding Emotions	Self-Oriented	Perspective Shifting	Flexibility	Others-Oriented
Hiding Emotions	1	-.119*	-.067	.015	.254*
Self-Oriented	-.119*	1	.047	-.168*	.358*
Perspective Shifting	-.067	.047	1	.332*	-.149*
Flexibility	.015	-.168*	.332*	1	-.164
Others-Oriented	.254*	.358*	-.149*	-.164	1

Notes. Significant at 5% level.

## DISCUSSION

Even though several questionnaires are claimed to measure emotion regulation, they measure one or two different aspects of the concept. Thus, to interpret and measure the concept of emotion regulation, its aspects are needed to be investigated comprehensively. For this purpose, three commonly used scales are used together and a higher factor structure of the emotion regulation was tested. So, Exploratory Confirmatory Factor Analysis (ECFA) was conducted to discover higher-order structure with three emotion regulation questionnaires: Emotion Regulation Questionnaire, Affective Style Questionnaire and Cognitive Emotion Regulation Questionnaire.

Since the Affective Style Questionnaire was not adapted into Turkish, its adaptation procedure was followed beforehand. For this purpose, the factor structure of the scale has been examined with Confirmatory Factor Analysis (CFA). Results of the confirmatory factor analysis have shown that a three-factor structure including Adjusting, Concealing and Tolerating subscales was concurrent with the findings of Hofmann and Kashdan (2010). After supporting results, validity and reliability analysis was followed. Both for the total scale and each subscale internal consistency coefficients ranged between acceptable to good. These findings were also parallel to the original study of Hofmann and Kashdan (2010). Followingly, convergent and discriminant validity was used to evaluate the validity of the Turkish version of ASQ. Consistent low correlation coefficients (all  $r < .27$ ) indicated that the Turkish version of ASQ and the BCOPE scales have the discriminant validity. The convergent validity of the study was satisfied with the results of the subscale comparisons between the Turkish version of the ASQ and the DERS. The Turkish version of the ASQ has a negative correlation with the DERS subscale. Therefore, the present study demonstrates that the Turkish adaptation of the Affective Style Questionnaire (ASQ) is a valid and reliable self-report measure for emotion regulation. Consistent findings were also an indicator for the affective styles of individuals are independent of the culture (the USA vs Turkey).

Exploratory Confirmatory Factor Analysis was conducted to discover higher-order factor structure of emotion regulation. In the analysis, subscales of the measures were employed and factor structures from one to five were examined. As a result, the five-factor model gave the best solution which means that the three-factor higher-order structure of emotion regulation was not supported. This could be interpreted as emotion regulation being a complex process that starts early in life and both internal and external influences have a role in it (Calkins and Hill, 2007). Since it is a complex process, several scales have been developed to measure emotion regulation namely the Emotion Regulation Questionnaire (Gross and John, 2003), Cognitive Emotion Regulation Questionnaire (Garnefski et al., 2001), Emotion Regulation Skills Questionnaire (Grant et al., 2018), Affective Style Questionnaire (Hofmann and Kashdan, 2010) and so on. These subscales have different dimensions indicates how the concept of emotion regulation itself is multidimensional. Thus, instead of three higher-order factors of emotion regulation as hypothesized, having the best solution with a five-factor model to explain the complex construct of emotion regulation is interpretable.

Naming the factors was crucial for the interpretation of further results. Factor 1 was named as Hiding Emotions, Factor 2 was named as Self-Oriented, Factor 3 was named as Perspective Shifting, Factor 4 was named as Flexibility and Factor 5 was named as Others-Oriented. As Geomin Factor Correlations indicated, Factor 1 (Hiding Emotions) and Factor 2 (Self-Oriented) was negatively correlated in which the more people hide and/or avoid their emotions, the less they direct their attention to themselves and use strategies such as Self-Blame and Rumination. When the experienced emotion is suppressed, it is less likely for the person to blame himself or ruminate about it. Hofmann and Kashdan (2010) proposed that people conceal or suppress their emotions when they attribute them as intolerable.

Next, a positive correlation was found between Factor 1 (Hiding Emotions) and Factor 5 (Others-Oriented) in which individuals who hide/suppress their emotions are found to be more likely to direct their attention to the outer world. In other words, they look for someone to blame or catastrophize the experience.

Furthermore, Factor 2 (Self-Oriented) and Factor 4 (Flexibility) were found to be negatively correlated. Self-oriented emotion regulation strategies, namely Self-Blame and Rumination were found to be correlated with depressive symptoms and these strategies were claimed to be maladaptive coping strategies (Garnefski et al., 2001). This can be understood as when people direct their attention to themselves, they can experience negative affect in which it becomes harder to tolerate the experience. Flexibility and adjustment to new situations is the key to survival and essential for psychological health (Hollenstein et al., 2013). When people are rigidly focused on themselves it is less likely for them to tolerate and adjust to the situation.

Moreover, Factor 2 (Self-Oriented) and Factor 5 (Others-Oriented) was found to be positively correlated. To clarify, one can blame himself (Self-Blame), ruminate about the experience (Rumination), then expect and assume the worst to happen (Catastrophizing) and blame others (Other-Blame) because of what happened in the face of a negative emotional experience. Also, Factor 3 (Perspective Shifting) and Factor 4 (Flexibility) were positively correlated. Perspective Shifting needs a person to adjust his way of thinking which needs and supports being flexible, so that people can balance their emotional experience.

Lastly, a negative correlation was found between Factor 3 (Perspective Shifting) and Factor 5 (Others-Oriented). As Garnefski and colleagues (2001) suggested, Others-Oriented strategies such as Catastrophizing and Other-Blame are maladaptive; whereas Perspective Shifting strategies helps individual to adjust and creates a room for psychological growth.

This study shed light to the emotion regulation studies in terms of discovering the construct of it with its higher-order factor structure. Instead of using different questionnaires, development and use of one comprehensive questionnaire would be more feasible and efficient. In clinical practice where emotion regulation is an important area to focus on the use of one questionnaire to detect client's emotion regulation processes would be time and cost effective.

### **Limitations and Future Studies**

This study has several limitations. To begin with, the number of the male and female participants was not balanced in the study; therefore analysis based on gender could not be conducted. Thus, it is suggested for future studies to replicate this study in a sample with an equal number of male and female participants.

In addition to that, the sample of this study includes relatively mentally healthy people which prevented seeing differences between a psychologically healthy population and an anxious/depressed population in terms of the use of emotion regulation strategies. Therefore, future studies including anxiety/depression as a control variable and compare clinic and subclinical populations on emotion regulation are suggested. So, the generalizability of the study can increase from a relatively healthy population to both healthy and clinically depressed/anxious populations.

Moreover, sample of the study included a great proportion of participants who have high level of education and were active Internet users in which results may not represent the whole Turkish population. For future studies, participants from all education levels who represent Turkish culture are suggested so that generalizability of the Turkish version of ASQ may increase.

Finally, since the data was collected through online documents with self-report measures, responses of the participants are open to social desirability and response bias. To

overcome this, it is suggested for future studies to use additional methods to measure emotion regulation.

Overall, the current study indicated that the Affective Style Questionnaire and emotion regulation strategies are universal with additional proof in a different culture. Regarding the questionnaire, the results were in the line with previous findings. The current study also provided a new perspective to literature with its higher-order factor structure. For further investigations higher-order factor structure could be tested in various cultures.

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## **AMPUTE SOCCER AND QUALITY OF LIFE IN THE SOUTHEAST BRAZILIAN REGION**

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### **Abstract**

With great popular appeal and low cost for its practice the Amputee Soccer (AS) has attracted a large number of practitioners, the modality requires only a pair of crutches and a ball, the game occurs with six line players and a goalkeeper. Many of them may have health problems but studies about Quality of life (QoL) and Chronic Non-Communicable Diseases (CNCD) among such players are rare. Thus the aim of this study was to verify QoL and, CNCD of those athletes. Methodology: It is a Field Study, involving athletes from the Southeast region of Brazil that took part in the 2018 Brazilian Championship. The WHOQOL-bref QoL questionnaire and a questionnaire with sociodemographic and clinic data as well the WHOQOL-bref QoL questionnaire were used. WHOQOL-bref scores used the Australian Synthesis, and associations were analysed with Spearman's correlation test, with significance level of 1%. Forty-two male athletes participated, with a mean age of 33.55 ±9.24 years; 66.7% of the athletes reported high school, 42.9% amputation of the right lower limb. The Social Domains of QoL was good (84.12 points) as well the Physical (81.9) and Psychological (73.8) Domains, but the Environment Domains was poor (39.2) the General QoL and Health Related QoL were considered good with scores of 4.3 and 4.2 respectively. The most reported CNCD (11.9%;) was Cancer, followed by Chronic Respiratory Diseases with 11.9% and Type II Diabetes with 9.5%. There were significant associations ( $p < 0.01$ ) between the practice of physical activity in addition to soccer, with the Domain of the Environment of QoL  $\rho = 0.512$ . Although QoL was considered poor in the Environment Domain, the practice of AS when combined with other physical activities seems to positively influence the perception of QoL in this domain and dissatisfaction with the environmental domain can be mitigated with the promotion of public policies.

**KeyWords:** Ampute, Soccer, Quality of Life, Noncommunicable Diseases



## ATTITUDES TOWARDS DISTANCE EDUCATION SERVICES AMID COVID-19 PANDEMIC: A RESEARCH ON UNIVERSITY STUDENTS IN THE FIELD OF HEALTH

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### Abstract

As a result of the COVID-19 pandemic, the distance education services that higher education institutions provide and their teaching methods are currently among the widely discussed topics. In this study, university students' attitudes towards distance education services are evaluated quantitatively with a population of 979 students studying in the health field. The findings show that older students have a higher positive attitude towards distance education services in graduate education. However, it is lower for the students who define their success level as a medium compared to other students.

**Keywords:** COVID-19, Service Delivery, Attitude, Distance Learning, Higher Education

### Introduction

COVID-19 is a virus that emerged in Wuhan, China, in December 2019, affecting the whole world, and spreading rapidly (WHO, 2020). On 30 January 2020, this pandemic was declared as an "International Public Health Emergency of Concern" (WHO, 2020). The first case in Turkey was recorded on 11 March 2020. That has since galloped to 201,098 people as of 1 July 2020 (Turkish Ministry of Health, 2020).

In line with the recommendations by the World Health Organization and Centres for Disease Prevention and Control to reduce the pace of the COVID-19 outbreak; countries worldwide had to take a series of outbreak response measures, including improved surveillance, administrative and environmental controls, increased hygiene measures with masks and social distance, work practices to reduce mobility, and the use of appropriate personal protective

equipment aiming to limit and reduce the cases coming to countries from abroad and the risk of community transmission (CDC, 2020; WHO, 2020; Lie et al., 2020). Turkish Ministry of Interior also implemented several precautions such as restricting intercity travel, enforcing wearing masks, adherence to social distancing rules, lockdown, shutting down fitness centers, cinemas, and theatres (Deniz and Kiraz, 2020). In addition, higher Educational Institutions and the Ministry of National Education suspended face-to-face education and started carrying out education activities via online platforms (YÖK, 2020c; MEB, 2020).

As a result of the COVID-19 process, distance education services, which have suddenly become the primary agenda in education, like teaching and learning tools using modern technology in which educators and students virtually gained popularity. Such distance education channels enable students to learn and achieve their educational goals online (O'Lawrence, 2006; Ilmiyah, 2020).

Based on the principle that education is a fundamental human right (UN, 1948), many educational institutions have shown rapid responses and implemented emergency distance education practices worldwide to compensate for interruptions caused by the pandemic (Bozkurt, 2020). During the pandemic, the world, as in many countries, had to opt for distance education channels to replace traditional education methods (Chang and Satako, 2020).

Understanding the attitudes of students studying in the healthcare field towards distance education (which is the most used education method during this pandemic period) is also gaining importance, considering that healthcare professionals are the foremost in the fight to keep people alive. In this study, university students' attitudes towards distance education services introduced by the COVID-19 pandemic as an alternative to face-to-face education in higher education are examined. In this context, our study aims to make recommendations for future practices by evaluating the effects of distance learning practices in Turkey for educators who are shareholders in this regard and for the researchers interested in researching this subject and providing the overall intelligibility of the phenomenon.

### **DISTANCE LEARNING SERVICES**

Education is a social process that includes a selected and controlled program in order to advance one's own development at the most appropriate level (Tezcan, 1985:4). According to another definition, education is a process in which the society transfers its accumulated knowledge, skills, and values from generation to generation, raises people's expectations of their social, economic, and cultural life, their awareness of their environment, and equips them with the necessary knowledge and skills to cope with the problems they face in their daily lives (Ngaka et al., 2012:110).

Service is also an economic activity that is not physical, basically not owned, but benefits its recipients (Kottler 1991; Cited by: Koç E. 2017: 18). However, on the other hand, educational services are a perishable and intangible form of service that is central to students' lives and requires enormous motivation and intellectual skills to achieve students' goals and is also consumed at the time it is produced (Gruber et al., 2010:107).

In educational theory, debates continue between classical objectivism theorists and advocates of constructivist learning and teaching theories (Vermunt 1998:150). Duffy and Jonassen (1992) state that learning is not a passive and externally directed process, but an active, constructive and self-directed process in which the student creates the basis of knowledge by interpreting learning experiences (Cited by: Vermunt 1988:151). From this point of view, when considered within the scope of constructivist education theory, distance education services can be evaluated as a non-passive and constructive education service where the student can actively develop their knowledge base.

Being simultaneously an individual and a social being, humans' need for knowledge is as crucial as biological and physiological needs, and the human desire to know is possible with the phenomenon of education (Söyler, 2008). Furthermore, in our rapidly changing world, sufficient human resources are needed to keep up with the advancing science and technology, and training of the necessary human resources can become possible with education. This situation brings education to the fore as the most crucial factor in determining the future of societies; hence the most emphasized and discussed issue (Sönmez, 2020).

In this context, advancements in technology in recent years have developed and changed the provision of education services; using distance education technologies and individualized learning platforms have started serving as an alternative education service provision, with the opportunity to educate more people, provide equal opportunities in education, and provide lifelong learning opportunities (Sad et al., 2014).

Although the concept of distance education service was seen as impossible in the past years, it has turned into an indispensable and easily applicable training tool with the advancement of the global communication network. Distance education that started with mail sending in 1728 has been used for more than 250 years in the form of correspondence or studying at home. However, there has been significant growth and development in distance education with the development and widespread use of technological tools (Beatty, 2002).

There are also studies stating that distance education is one of the primary conduits of educational service delivery and that the traditional system is faced with the threat of new technology (Robyler, 1999). It is also known that the system has developed in most education levels such as primary education, high school, and university (İşman, 2008).

Distance education services are carried out by two different methods today. These are synchronous and asynchronous models. In the asynchronous model, previously produced course materials are sent and or delivered to the students in one way. On the other hand, the synchronous method is a model in which instant interaction, guidance, and counseling occurs between students and the instructor, and the questions asked could be answered instantly (Demir, 2014).

While planning distance education services, course objectives should be clearly determined, and appropriate models should be designed and created. In addition, preparing technological infrastructures for the education model should support education (Demir, 2014:205).

Despite the structural strengths that distance education services demonstrate, there are some weaknesses observed. These strengths and weaknesses are given in Table-1.

**Table 1.** Strengths and Weaknesses of Distance Learning (Cited by: O'Lawrence, 2005; Steen, 2008; Kupczynski et al., 2008; Ratliff, 2009; Monk, 2010; Midkiff and DaSilva, 2011; Demir, 2014; Kaya, 2002; Fedynich, 2013; Özköse et al., 2014; Oliveria et al., 2018)

**Strengths**

- Flexibility
- Ability to train very crowded groups simultaneously
- Standardization in the education service provided
- Lowering costs
- Individual and independent learning opportunity
- Student centricity
- Recording the given trainings and being able to use them in the future
- Opportunity to be individualized

**Weaknesses**

- Lack of face-to-face relationship
- Failure to socialize
- Students who do not have the ability to learn alone may have difficulties
- Being insufficient in practical lessons
- Inadequacy in developing skills and attitudes
- Problems may arise in ensuring exam security in online exams
- Difficulties in communicating with the educator in classes with high participation
- Dependence on technological

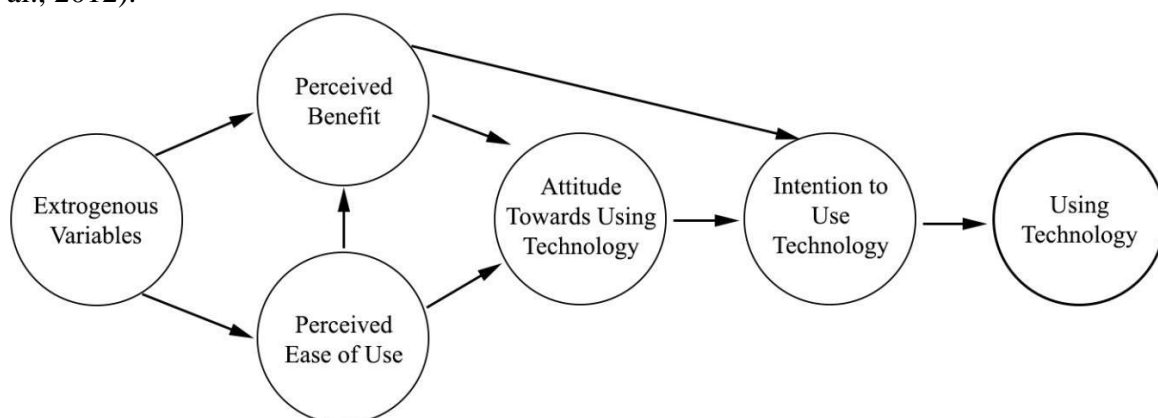
- Being independent from the concept of time and space
  - Quick feedback
  - Participating in lectures and discussions through different channels
  - The ability of timid students to attend the lesson easily
- Students who are not competent to use technology may have difficulties
  - Loss of student's interest in the lesson due to problems arising from the technological infrastructure
  - Students who are used to face-to-face education cannot overcome these habits

As suggestions to reduce the problems experienced due to structural weaknesses in distance education services, suggestions such as eliminating the infrastructure problems experienced in distance education, implementing other internet-based additional applications, implementing activities such as homework and projects instead of exams, activating accelerated repetition programs are proposed (Kürtüncü and Kurt, 2020).

Distance education is becoming an increasingly common and popular option as an innovative learning channel due to the rapid growth of the student population preferring this education option due to wars, international disputes, natural disasters, and pandemics such as COVID-19 (Bozkurt and Sharma, 2020). As such, it is stated that the rapid development of technology will help to understand which methods work and to overcome the problems by learning more through research and course development techniques together with closely examining the problems faced by students and lecturers in distance education (Galusha, 1998).

The role of an instructor is crucial in both remote and face-to-face environments. Therefore, one of the most fundamental ways considered to compensate for the aspects of distance learning that is open to development is to increase the knowledge, skills, and experience of distance learning instructors in evaluating students' work, motivating them, and guiding their learning process (Rostislav, 2018).

Various models and theories have been developed that examine individuals' behaviors of accepting and using technology based on their attitudes and intentions towards using technology (Menzi et al., 2012). Therefore, it is necessary to refer to the "Technology Acceptance Model" (TAM) developed by Davis in 1989 in order to be capable of assessing a wide range of users' behaviors in distance education and of providing a theoretical explanation of the determinants of computer acceptance (Figure 1). In this way, researchers can define why a system is unacceptable and assist with corrective measures. This model's components, which are essential in terms of its theoretical and experimental contributions to information technologies, are attitude, intention, perceived usefulness, and perceived ease of use. Behavior is shaped due to the effects of these components (Turan and Haşit, 2014; Menzi et al., 2012).



**Figure 1** Technology Acceptance Model, Source: Davis, 1989, Cited by: Baltacı and Akaydın, 2020.

Perceived benefit, as one of the model's components, is the benefits that individuals will provide themselves in performing tasks and solving problems while using any technology. The perceived benefit can be defined as the level of belief that a person will benefit from using a particular product (King and He, 2006). Davis (1989) concluded that perceived benefit strongly affects the intention to use (Özer et al., 2010). The perceived ease of use, which is learning a particular technology without much effort, has a direct and consequential effect on attitude and perceived usefulness (Davis, 1989). On the other hand, the intention is an indication of the individual's demands and efforts to develop behavior. Thus, intention is the primary determinant of a person's behavior (Yılmaz and Tümtürk, 2015). An intention, which plays a vital role in individuals forming a particular behavior, is influenced by attitude (Özer et al., 2010).

Attitude, which has an essential place in learning, is a phenomenon acquired by learning, guides individuals' behaviors, and can cause bias in the decision-making process (Kenar and Balcı, 2013). The attitude associated with the sensory components affects learning in virtual environments where distance education is implemented. Students' attitudes towards distance education services are an essential aspect that determines the effectiveness of distance education and is directly related to the student's success in courses (Arslan and Bircan, 2019). Individuals' negative attitudes towards distance education may be due to the negativities in executing a poorly planned distance education system (Rasheed, 2007). Such negativities could result from technical failures experienced in online environments, defective materials used in the educational environment, sensory inadequacies of students, and students having difficulty communicating in case of any negativity (Fidan, 2016). Therefore, it should not be forgotten that sensory factors such as attitude, self-efficacy, motivation, and anxiety would affect many factors, especially students' desire and interest in the course, and this will affect students' performance and ultimately their academic success (Kenar and Balcı, 2013). Considering these situations, it becomes necessary to uncover students' attitudes in the distance education system (Arslan and Bircan, 2019).

When the studies on distance education services are examined, students' attitudes are generally found to be positive or the same when compared to classical education. At the same time, it is stated that more positive results are obtained in distance education models when the success of students, teacher-student interactions, and participation in classes are examined in comparison to traditional education (Shutte, 1997; Elliot et al., 1999; Johnson et al., 2000; Tucker, 2000; Burns et al., 2001; Cooper, 2001; Sweeney and Ingram, 2001; Cathy et al., 2001; Frith and Kee, 2003; Hussain, 2003; Lindberg, 2004; Hannay and Newvine, 2006; Gujjar et al., 2007; Al-Fahad, 2009; Işık et al., 2010; Birişçi, 2013; Sanga, 2013; Öztaş and Kılıç, 2017).

Although the results of the studies show that distance education is not a good alternative for younger students who are generally studying on campus, who do not work actively and full-time (Hannay and Lewvine, 2006); however, it is considered that it would be appropriate to do more studies to increase the reliability of the information obtained on this subject. Therefore, it would be helpful to conduct a study to investigate social interaction in distance education lessons and understand whether students feel part of a community or alone during lessons (Tucker, 2001).

Within this context, although students prefer traditional classroom education, it was observed that they performed significantly better in questions related to the material presented in distance education. It is considered that students with less academic skills can benefit from self-learning and internet resources to improve in lessons that require accurate remembering of information (Marling, 2008). Students who have age factors and work more than thirty hours a week prefer distance education models more because of their time constraints and



providing the necessary flexibility based on learning at their own pace, and traditional methods will be preferred in other groups (Stewart, 2010).

### **COVID-19 PANDEMIC AND DISTANCE EDUCATION SERVICES**

In addition to the measures taken, the COVID-19 pandemic has led to changes in the educational lives of students in many countries (Bao, 2020; Sahu, 2020; UNESCO, 2020). According to UNESCO data, as of 17 April 2020, this affected a total of 1,724,657,870 students from pre-school to higher education, and these students represent 91.3% of the students worldwide (UNESCO, 2020).

The Higher Education Council in Turkey suspended education at universities for three weeks as of 16 March 2020 (YÖK, 2020a). Besides, as of 23 March 2020, the "YÖK Courses Platform" has been opened to students in all universities within the distance education framework (YÖK, 2020b). Further, as of 26.03.2020, it was announced that in accordance with the decision of the Executive Board of Higher Education, "Education in 2019-2020 Spring term will be continued only with distance education, open education and digital education opportunities and face-to-face education will be discontinued" (YÖK, 2020c).

Additionally, due to the increase in the number of cases and the possible risks that may arise from face-to-face education, it was decided on 11.05.2020 that –the final exams and other exams of this academic year will not be held face-to-face at universities, and alternative methods such as homework, projects, etc. (YÖK, 2020d). According to the one-month due diligence report of distance education in universities during the pandemic period conducted by YÖK; 64% of universities (n= 189) switched to the distance education system on 23 March 2020, 21.6% of them (n = 41) switched on 30 March 2020 and 13.2% of them (n = 25) switched on 6 April 2020. This report also concluded that most of the universities (99.2%) opened their theoretical courses via the distance education system (YÖK, 2020e). These decisions show that there is a rapid transition from face-to-face education to distance education in universities.

Distance education is not just an education model applied during the pandemic process. Its widespread use of technologies such as video conferencing, interactive and simultaneous audio, image and data transfer, the increase in the number of students in need of education, lack of time, and the need for lifelong learning in this century enable students to opt for distance education (İşman, 2003; O'Lawrence, 2006; Birişçi, 2013; Gunter et al., 2020).

In this context, if the Executive Board decides Higher Education to continue the distance education course system, it can be expected that students and lecturers will not approach this new system with skepticism. They should have overcome the initial adaptation period caused by the sudden transition to the distance education system. They will adapt to this new system, and the communication obstacle with the lecturers will fade with time (Buluk ve Eşitti, 2020). It was also stated that considering the following five facilitating lecturer activities for both the educational institution and the lecturers would make the process more efficient. These are:

1. Understanding the online process - understanding how to encourage group work, engage the user through online discussions, new ideas and experiments, and quizzes.
2. Technical skills - creating messages and conference opportunities to facilitate student interaction by monitoring the student.
3. Online communication skills - ability to communicate effectively with students using empathy, concise language, and deliver clear messages that encourage academic dialogue and personalize the online experience.
4. Content expertise – Instructor's command of the topic, readiness for questions, encouragement to ask questions, comment / ask questions that encourage lively discussion with reliable topic knowledge and experiences to share.

5. Personal traits - adapting to different teaching situations and demonstrations, making an effort to create a genuine excitement about online learning and keep it relevant (Muirhead, 2004).

Although distance education methods have been in use for a long time, it was the first time that they had to be used so intensely and widely. Undoubtedly, with the effect of developing and widespread technology, the readiness levels of students and instructors also play an essential role in this. Therefore, it has critical importance to reveal the role of the attitude component in understanding students' presence, their intention to use distance education methods, and their perspectives towards the system.

## **METHOD**

### **The Aim and the scope of the Research**

The literature review shows that a limited number of studies were found to explore students' attitudes towards distance education during the COVID-19 pandemic. This study is a descriptive study conducted to examine university students' attitudes towards distance education services during the COVID-19 pandemic.

### **Population and Sample**

The population of the study consists of 3,353,456 university students conforming to these criteria in Turkey, according to YÖK 2019-2020 statistics (YÖK, 2020f). Since students studying in the field of health are a subset of the total number of students, the sample size that may be sufficient to describe the population may also include the subset. For this reason, the calculation was made on the total number. According to the calculations, it was decided that data should be collected from a sample of at least 385 people at a confidence interval of 5% (Hair, 2010). 979 students who agreed to participate in the research were taken into the research sample by convenience sampling method.

### **Hypotheses of the Research**

Based on the literature reviewed, the following hypotheses were formed:

- H<sub>1</sub>: Students' attitudes towards distance education services show a statistically significant difference according to their education level.
- H<sub>2</sub>: Students' attitudes towards distance education services differ statistically significantly according to their ages.
- H<sub>3</sub>: Students' attitudes towards distance education services differ statistically significantly according to their academic success.
- H<sub>4</sub>: Students' attitudes towards distance education services show a statistically significant difference according to their gender.
- H<sub>5</sub>: Students' attitudes towards distance education services differ statistically significantly according to whether they have received distance education services before.
- H<sub>6</sub>: Students' attitudes towards distance education services differ statistically significantly depending on whether they have sufficient technological devices.
- H<sub>7</sub>: Students' attitudes towards distance education services differ statistically significantly depending on whether they have sufficient internet infrastructure.
- H<sub>8</sub>: Students' attitudes towards distance education services show a statistically significant difference according to whether they have problems in accessing distance education services or not.
- H<sub>9</sub>: Students' attitudes towards distance education services differ statistically significantly depending on whether they are worried about the COVID-19 pandemic or not.

- $H_{10}$ : Students' attitudes towards distance education services differ statistically significantly depending on whether they are willing to study during the COVID-19 pandemic.

### **Data Collection Tools**

The data of the study were collected using the –Online Learning Attitude Scale developed by Usta et al. (2016), the demographic variables section added to the data collection form by the researchers, and other questions determined based on the literature. The questionnaire consists of 13 multiple-choice questions that include the socio-demographic characteristics of the participants.

Usta et al., in 2016, to measure university students' attitudes towards online learning, developed the –Online Learning Attitude Scale. This scale is in 5-point Likert type and consists of 20 items and four dimensions. Scale sub-dimensions are named "General Acceptance, Individual Awareness, Usefulness and Application Effectiveness", respectively. The total explained variance rate of the scale is 63,821%. The internal consistency coefficient of the whole scale was found to be 0.90, showing that this scale is reliable. The minimum score obtained from the scale is "20" and the maximum score is "100". As the score obtained from the scale increases, the students' positive attitudes towards online learning also increase (Usta et al., 2016).

### **Research Application and Ethical Aspect**

The research obtained ethics committee approval from the Ethics Committee of Yüksek İhtisas University (No: 2020/08/01) on 21.08.2020. In the survey application of the research, the participants were informed about the research and its purpose, and approval was obtained stating that they wanted to participate in the study. The data collection form was delivered to the participants as an online questionnaire between 01 September 2020 and 27 October 2020 by the researchers, and the questionnaire was applied. As a result, 979 students participated in the study voluntarily.

### **Evaluation of the Data**

The data obtained were transferred to the computer with the SPSS 22.0 package program and analyzed. The results of the research were evaluated by frequency, Anova analysis, and t-test. In evaluating the findings, the expression value ranges by Hair (2010), and Nakip (2006) were taken as the basis.

### **Research Limitations**

The limitations of the study include the students' indifference to academic studies during the administration of the survey form, the application of online surveys, the use of convenience sampling method, and the fact that the research was not funded by any person or institution.

### **FINDINGS**

71.7% (n=702) of the students participating in the study are women and 28.3% (n=277) are men. 54.1% (n = 530) of these students are in the age range of 18-20, and 6.6% (n = 65) are in the age range of 27 and over. 55.0% of the participants (n = 538) consist of students studying at associate degree level. 51.2% of the students (n = 501) evaluated themselves as academically successful. In addition, it was found that 92.0% (n = 901) of the students voluntarily chose the program / department they studied (Table 2).

**Table 2.** Distribution of students according to their socio-demographic characteristics

Demographic Characteristics		n	%
<b>Gender</b>	Woman	702	71,7
	Man	277	28,3
<b>Age</b>	Between 18-20	530	54,1
	Between 21-23	317	32,4
	Between 24-26	67	6,8
	27 and above	65	6,6
<b>Educational Level</b>	Associate Degree	538	55,0
	Bachelor's Degree	349	35,6
	Post-Graduate	92	9,4
<b>Class</b>	1	509	52,0
	2	266	27,2
	3	85	8,7
	4	88	9,0
	5	25	2,6
	6	6	,6
<b>Course Success</b>	Unsuccessful	7	,7
	Average	344	35,1
	Successful	501	51,2
	Very Successful	127	13,0
<b>Income</b>	Income less than expense	155	15,8
	Income equivalent to expense	625	63,8
	Income more than expense	199	20,3
<b>The status of voluntarily choosing the program/department he/she studied</b>	Yes	901	92,0
	No	78	8,0
<b>Total</b>		979	100,0

60.8 % (n = 595) of the students participating in the study have not received distance education before; 89.1% (n = 872) have the technology required for distance education, while 87.9% (n = 861) have internet infrastructure. While 31.3% (n = 306) of the participants had problems in accessing distance education, 68.7% (n = 673) stated that they did not have any problems (Table 3).

**Table 3.** Information provided by students about distance education and the COVID-19 pandemic

Statements		n	%
I had distance education before	Yes	384	39,2
	No	595	60,8
I have the technological devices (computer, tablet etc.) required for distance education	Yes	872	89,1
	No	107	10,9
I have the internet infrastructure required for distance education	Yes	861	87,9
	No	118	12,1
I am having trouble accessing distance education	Yes	306	31,3
	No	673	68,7
COVID-19 pandemic worries me	Yes	787	80,4
	No	192	19,6
I have a desire to study during the COVID-19 pandemic	Yes	380	38,8
	No	599	61,2
<b>Total</b>		979	100,0

When observing the attitudes of age groups towards online learning in Table 4, it is realized that the average attitude towards distance education increases in all sub-dimensions as the age increases. According to the One-Way ANOVA analysis conducted to determine whether the dimensions of attitude towards online learning differ by age, it was found to be statistically significant ( $p < 0.05$ ) at a 95% confidence interval (Nakip, 2006).

**Table 4.** Comparison of age groups with sub-dimensions of attitude towards online learning scale

Sub Dimensions of Attitude Scale	Age	n	Avg.	S	St. error	95% Confidence Interval		Min.	Max.	p
						Lower Limit	Upper Limit			
General Acceptance	Between 18-20	530	2,5852	,87276	,03791	2,5107	2,6596	1,00	5,00	,000
	Between 21-23	317	2,7409	,86644	,04866	2,6451	2,8366	1,00	4,86	
	Between 24-26	67	2,7569	,92883	,11347	2,5304	2,9835	1,14	5,00	
	27 and above	65	3,0396	,92772	,11507	2,8097	3,2694	1,00	4,57	
	<b>Total</b>	<b>979</b>	<b>2,6775</b>	<b>,88554</b>	<b>,02830</b>	<b>2,6220</b>	<b>2,7331</b>	<b>1,00</b>	<b>5,00</b>	
Individual Awareness	Between 18-20	530	2,1846	1,14811	,04987	2,0866	2,2826	1,00	5,00	,001
	Between 21-23	317	2,3980	1,22859	,06900	2,2622	2,5338	1,00	5,00	
	Between 24-26	67	2,4478	1,19455	,14594	2,1564	2,7391	1,00	5,00	
	27 and above	65	2,7308	1,12912	,14005	2,4510	3,0106	1,00	5,00	
	<b>Total</b>	<b>979</b>	<b>2,3080</b>	<b>1,18512</b>	<b>,03788</b>	<b>2,2336</b>	<b>2,3823</b>	<b>1,00</b>	<b>5,00</b>	



Usefulness	Between 18-20	530	2,7962	1,25978	,05472	2,6887	2,9037	1,00	5,00	<b>,002</b>
	Between 21-23	317	2,9274	1,28471	,07216	2,7855	3,0694	1,00	5,00	
	Between 24-26	67	3,0746	1,38148	,16877	2,7377	3,4116	1,00	5,00	
	27 and above	65	3,4000	1,30197	,16149	3,0774	3,7226	1,00	5,00	
	<b>Total</b>	<b>979</b>	<b>2,8979</b>	<b>1,28694</b>	<b>,04113</b>	<b>2,8171</b>	<b>2,9786</b>	<b>1,00</b>	<b>5,00</b>	
Application Effectiveness	Between 18-20	530	2,9726	1,00116	,04349	2,8872	3,0581	1,00	5,00	<b>,024</b>
	Between 21-23	317	3,1215	1,05122	,05904	3,0053	3,2376	1,00	5,00	
	Between 24-26	67	2,8694	1,07340	,13114	2,6076	3,1312	1,00	5,00	
	27 and above	65	3,2731	1,02862	,12758	3,0182	3,5280	1,00	5,00	
	<b>Total</b>	<b>979</b>	<b>3,0337</b>	<b>1,02780</b>	<b>,03285</b>	<b>2,9692</b>	<b>3,0982</b>	<b>1,00</b>	<b>5,00</b>	

The education level of the students participating in the study and their attitude towards distance education were found to be statistically significant ( $p = 0.048$ ). Considering the online learning attitude scale score of the students, it is 54,185 out of 100 at the associate degree level, 51,606 at the undergraduate level, and 55,967 at the postgraduate level.

When the attitudes of the education level towards online learning are evaluated, it is noteworthy that the average of the scale sub-dimensions of the students studying at the undergraduate level is lower than the students studying at the associate and master's level. It can be observed from the table that the average of undergraduate students for the general admission sub-dimension is statistically lower than the associate and master's degree students significantly, and for the individual awareness sub-dimension, the average of the answers given by the undergraduate students is statistically lower than the associate degree students significantly ( $p < 0.05$ ) (Table 5). According to the One-Way ANOVA analysis, which was made to determine whether the sub-dimensions of attitude towards online learning differ according to the education level, only the general acceptance and individual awareness sub-dimensions were found to be statistically significant ( $p < 0.05$ ), and the mean of these two dimensions was accepted within the range with 95% (Table 5).

**Table 5.** Comparison of education level with sub-dimensions of attitude towards online learning scale

Sub Dimensions of Attitude Scale	Educational Level	n	Avg.	St. Deviation	St. Error	95% Confidence Interval		Min.	Max.	p
						Lower Limit	Upper Limit			
General Acceptance	Associate Degree	538	2,7347	,93619	,04036	2,6554	2,8140	1,00	5,00	<b>,000</b>
	Bachelor's Degree	349	2,5383	,79908	,04277	2,4541	2,6224	1,00	5,00	
	Post-Graduate	92	2,8711	,82598	,08611	2,7001	3,0422	1,00	4,57	
	<b>Total</b>	<b>979</b>	<b>2,6775</b>	<b>,88554</b>	<b>,02830</b>	<b>2,6220</b>	<b>2,7331</b>	<b>1,00</b>	<b>5,00</b>	

Individual Awareness	Associate Degree	538	2,3857	1,21461	,05237	2,2828	2,4886	1,00	5,00	<b>,021</b>
	Bachelor's Degree	349	2,1667	1,14198	,06113	2,0464	2,2869	1,00	5,00	
	Post-Graduate	92	2,3895	1,13262	,11808	2,1549	2,6241	1,00	5,00	
	<b>Total</b>	<b>979</b>	<b>2,3080</b>	<b>1,18512</b>	<b>,03788</b>	<b>2,2336</b>	<b>2,3823</b>	<b>1,00</b>	<b>5,00</b>	
Usefulness	-	-	-	-	-	-	-	-	-	,185
Application Effectiveness	-	-	-	-	-	-	-	-	-	,673

In Table 6, sub-dimensions of the academic achievement levels of the students' attitude towards online learning scale are compared. It is seen that the students who stated that they have moderate academic achievement have a lower attitude for the usefulness sub-dimension than the students who stated at the other success level. This result was considered statistically significant ( $p < 0.05$ ).

**Table 6.** Comparison of success level with sub-dimensions of attitude towards online learning scale

Sub Dimensions of Attitude Scale	Success Level	n	Avg.	St. Deviation	St. Error	%95 Confidence Level		Min.	Max.	p
						Lower Limit	Upper Limit			
General Acceptance	-	-	-	-	-	-	-	-	-	,557
Individual Awareness	-	-	-	-	-	-	-	-	-	,188
Usefulness	Unsuccessful	7	3,2381	1,62975	,61599	1,7308	4,7454	1,00	5,00	<b>,047</b>
	Average	344	2,7684	1,24734	,06725	2,6361	2,9007	1,00	5,00	
	Successful	501	2,9261	1,30422	,05827	2,8117	3,0406	1,00	5,00	
	Very Successful	127	3,1181	1,28038	,11362	2,8933	3,3430	1,00	5,00	
	<b>Total</b>	<b>979</b>	<b>2,8979</b>	<b>1,28694</b>	<b>,04113</b>	<b>2,8171</b>	<b>2,9786</b>	<b>1,00</b>	<b>5,00</b>	
Application Effectiveness	-	-	-	-	-	-	-	-	-	,341

According to the results of the applied t-tests, the attitude towards distance education services does not show a significant difference according to gender (Table 7).

**Table 7.** Gender and attitude towards distance education services

Attitude Towards Distant Education	Sig.	Sig. (2 tailed)	Average		Significant Difference	State
			Yes	No		
Gender	0,540	0,290	2,651	2,721	None	-

The findings as a result of the t-tests applied over the answers given by the participants for the questions asked in the form of Yes-No questions regarding distance education and the pandemic process is shared in Table 8.

**Table 8.** Attitude towards the pandemic process, technical facilities, and distance education services

Attitude Towards Distant Education	Sig.	Sig. (2 tailed)	Average		Significant Difference	State
			Yes	No		
Whether he/she chose the department he/she studies willingly or not	0,349	0,638	2,675	2,623	None	-
Whether or not to receive distance education before	0,447	0,775	2,660	2,678	None	-
Whether or not to have the technological devices required for distance education	0,385	0,043	2,692	2,498	Exists	The attitudes of those who have technological devices for access to distance education are more positive than those who do not.
Whether or not to have the necessary internet infrastructure for distance education	0,758	0,001	2,707	2,401	Exists	The attitudes of those who have sufficient Internet infrastructure to access distance education are more positive than those who do not.
Whether or not to have problems in accessing distance education	0,049	0,000	2,466	2,764	Exists	Those who do not have problems in accessing distance education have more positive attitudes than those who have problems.
Whether or not to be worried about the COVID-19 process	0,014	0,011	2,712	2,502	Exists	The attitudes of those concerned about the COVID-19 process are more positive than those who do not.
Whether or not to have a desire to study during the COVID-19 process	0,001	0,000	2,933	2,504	Exists	Those who have a desire to study in the COVID-19 process have more positive attitudes towards distance education than those who do not have.

## **DISCUSSION AND CONCLUSIONS**

The COVID-19 pandemic has affected education and training activities globally, and distance education in universities has become a mandatory alternative. Therefore, examining the students' attitudes towards distance education in the face of this sudden change will contribute to the improvement and development of this process. Additionally, determining students' attitudes towards distance education activities will ease adaptation to this process. Within the scope of this study, the attitudes of university students studying in the field of health towards distance education activities during the COVID-19 pandemic were examined.

The online learning attitude of the students participating in the study varies according to the level of education they are enrolled in, whether associate, undergraduate, and graduate education. The attitude level of students studying at the undergraduate level was found to be lower than those studying in associate and postgraduate programs comparatively. In the study, which examined the intention of distance education students to use virtual classroom environments and their attitudes towards distance education, it is stated that the acceptance level of the students in the health associate degree program is high (Çakır and Arslan, 2020). However, it is thought that the reason for the differentiation of the attitude towards distance education at the associate, undergraduate, and graduate levels will give a more remarkable result with future studies.

According to the gender variable included in the study findings, students' attitude towards distance education services does not show a statistically significant difference between genders?. There are studies in the literature confirming this result (Yıldız, 2016; Arslan and Korkmaz, 2019; Çakır and Arslan, 2020).

It has been observed that students who have sufficient internet infrastructure and sufficient technological devices regarding the distance education process have a more positive attitude. In the study, in which the perspective of university students towards distance education was examined, students stated negative opinions about distance education due to their lack of technical and technological infrastructure (Doğan and Tatık, 2015). In a qualitative study examining students' perspectives within the scope of distance education during the COVID-19 pandemic process, it is stated that students' access to the Internet and limited availability of sufficient technological devices reduces the effectiveness of distance education (Ekiz, 2020). In accord with the results of this research, in the study examining the problems faced by the students of the nursing department during the distance education process, it is noted that students experience problems during the course follow-up due to the limited internet access and access to technological devices (Kürtüncü and Kurt, 2020:71). Within the scope of the measures taken against the COVID-19 pandemic, free internet support was provided to university students by assisting them with "6 GB as a Support for Distance Education" (YÖK, 2020g). In this context, it will be beneficial for students to be informed by the instructors about this service provided as a support for educational activities and expand such services within the framework of the right to education, which is a fundamental right. In addition, universities' providing technological equipment to students within the framework of their current resources will positively affect students' attitudes.

The COVID-19 pandemic process increases general anxiety and the anxiety of students studying in healthcare. Studies have explained the psychological effects of the pandemic process on students, such as anxiety, fear, and angst regarding future jobs (Wang et al., 2020) and limitation of interpersonal communication due to social distancing in place (Xiao, 2020; Kmietowicz et al., 2020).

In the study, it was found that students who have a desire to study during the COVID-19 pandemic show a more positive attitude towards distance education services compared to students who do not have this desire. Accordingly, it is recommended to follow up with

students and increase the level of attitude towards distance education services with the support of academic staff by communicating with students periodically.

Based on the Technology Acceptance Model (Davis, 1989) and research findings, the following suggestions can be made in order to improve student attitudes towards distance education services in practice:

- It should be accurately conveyed to students that they have gained important information that they will benefit from in their careers and the flexibility of time and place that cannot be provided in the traditional method thanks to the distance education service they will receive,
- The distance education service models and systems to be built should be designed to be user-friendly, and if there are any deficiencies in the infrastructure regarding access to the system, these deficiencies should be eliminated,
- Continuous feedback should be obtained from students regarding the ease of use and benefit they perceive from distance education services, and necessary updates should be made accordingly.

The quantity and quality of studies on this subject will undoubtedly increase in the upcoming period. Therefore, it is recommended that such research should focus on the problems faced by students regarding distance education activities and increasing the effectiveness of distance education activities, with the idea that students will be more involved in distance education activities in parallel with the increase in technological development.

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## **GREEN ENERGY POTENTIAL OF AZERBAIJAN FOR A TRANSITION TO A NON-OIL-BASED ECONOMY**

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### **Introduction**

In the pre-pandemic world green politics' popularity was on the rise. Australian forest fires, floods in Kenya, South African droughts and increasing crowds of climate change activists like Greta Thunberg were among the events that took place right after –the Small Golden era of medial. The small golden era is a reference to the increasing usage of more accessible alternative media compared to the mainstream media. Stay home acts created perfect grounds for media manipulators to use the power of fast spreading information on internet and knowing that negative news is the fastest of them all they took act. The climate change issues were entering a different approach as of the famous speech of Greta Thunberg portrayed how serious environmental problems are. The new notion of environmental issues was more responsibility provoking, attention grabbing and fear igniting. The new approach for the climate change issues rose as a result of declining believing the argument that it was no more the issue of our grand children living in a polluted world. It was in fact what the Australians faced, it was what the Africans faced, and it was also what the people of Turkey faced in the most recent forest fires. In fact, an article by Ozturk et al., (2009) predict the increase in the severity of forest fires in Turkey. The world started to realise that effects of climate change is closer than we think it is.

The new trends in social media rise of green politics all lead to the increasing demands for alternative energy resources. It is mainly because people were trying to find solutions in their head as they see how real and close the problem is. Green energy resources was among the most logical solutions to start with. There was also an increasing trend for country life as with the arrival of pandemic some people decided to move to the rural regions. Especially the rapid rise of one Azerbaijani creation Country Life Vlog (2019) YouTube channel growing from 0 to 2.5 million subscribers in approximately 2 years of time showed how people are starting to have rising interest for rural lifestyle (a non-polluting lifestyle). The starting discussion of this introduction might seem out of the discussion's main principles, but it is more relevant to the discussion than it sounds. The benefits or the need to change to green energy does not only link to doing what is right or saving the nature. Although the main

theme is building up a cleaner or sustainable future out comes of green energies are not limited. In today's world a green energy fuelled, or environmentally clean city/society would mean gaining favours from green politicians, climate activists, UNDP community, etc. People would respond positively to this brave act. Especially in Azerbaijan's case it would be a very brave act as the country would leave its comfort zone and invest time and money to a new energy sector. It is economically, politically, and environmentally very beneficial to switch to green energy resources. Green or renewable energies causes more job opportunities, cheaper as well as more accessible electricity resources and allows smaller cities to catch up with megapolises Nunez (2019). For fulfilling Azerbaijan's yearly energy needs many green energy plants will be needed. However, This is a long term investment and its benefits are scaling benefits. These are just known benefits we can talk about but as we are mentioning the development and even excess amounts of accessible & cheap energy it means smaller cities around potential locations of green energy plants will develop faster. This will bring opportunities for youth and/or opportunities for local or foreign new entrepreneurs. At this point it is like a lottery what success stories can come up from these opportunities, but we can surely say one thing that it can only get better.

## **Main discussion**

### **Solar energy**

Azerbaijan is a country that experiences all 4 season which makes it hard for us to get high average heat numbers, even in relatively hot regions, suitable for maximum efficient solar energy farms. However, as we know solar panels can work even in cloudy weathers it increases the versatility of benefiting from solar panels and makes them suitable for long term usage. Especially warmer areas of the country could be noted as Kurdamir, Naxchivan and southern Lenkeran. These regions get high averages of heat during summers, and they would be the potential locations for installing solar energy plantations.



Figure 1: Climatic zones in Azerbaijan

We can see from Figure 1 (Safaraliyev, 2019) that Azerbaijan has big half desert regions. Although at first sight warmest regions might seem for the best place for solar energy harvesting studies suggest that efficiency of most solar panels drop at higher than 25 Celsius degrees Svarc (2021). So it shows that high heat averages is not the requirement for better efficiency. This fact alone shows that solar panels are not the most favourable way to go for a mass energy production. For higher numbers of energy, we need high numbers of heat averages and this time panel efficiency drops as well as life span of panels decrease. In addition to that taking into account the average prices of solar panels better alternative would be subsidizing people or other private entities for a transition to solar panels. Small solar panels could be used by medium to big farms for meeting their yearly electricity needs. They would be cheaper and would work in summer winter cloudy or open weathers constantly generating electricity. If they are damaged it would be beneficial to replace them int this scenario as these small panels would be cheaper and once installed the electricity system only panels would change making the renewal process faster. Solar panel usage can be supported by government with offering people free repair or diagnosis systems which further opens new job opportunities for technicians. Going even further the government can produce these itself and promote the usage among people with more affordable prices.



## Wind energy

Azerbaijan holds a solid wind energy potential with its high speed winds. Although being instable in wen it comes to average wind speeds Azerbaijan's windiest months go all the way up to 9 months (Weather Spark, n.d.). According to Weather Spark's statistical analysis of Baku's weather over years of 1980-2016 it suggests from april1st till June 25<sup>th</sup> (9.2 months) is the windy period of the region. However, there are downsides of wind turbines operating close to sea which known as air density factor which can harm the turbines. It affects turbines negatively reducing their efficiency as well as their life span. Air density has been a long existing problems and works to solve it is continuing but safer investment for Azerbaijan in this scenario would be to invest in mountainous areas.

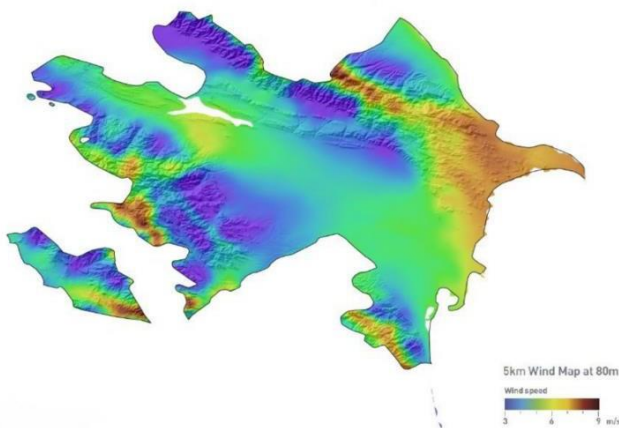


Figure 2: Azerbaijan's wind speed averages map  
Azerbaijan

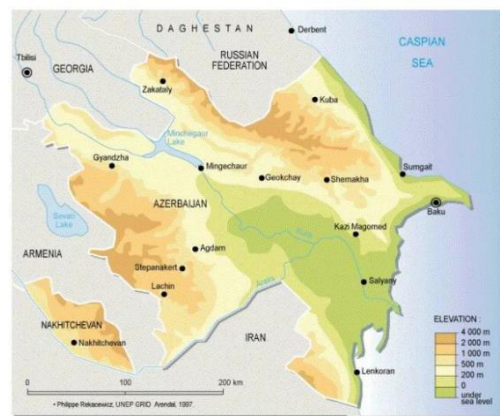


Figure 3: Topography map of Azerbaijan

As Figures 2&3 (Safaraliyev, 2015) suggest there are areas close to Baku that are mountainous and have high wind speed averages. One of such places, Khizi city was in government plans for potential construction (Afandiyeva, 2019) of wind turbines but as the plans were announced in 2019; before the pandemic and the war that took place it got delayed unsurprisingly. One other alternative usage of wind energy would be in individual farms or small villages using relatively smaller wind turbines for generating energy. For example, 10 medium size wind turbines in 50-meter heights can generate enough electricity for 10000 houses. The prices would be suitable for local governments to instal it in their own without government subsidy. The best location for these would be mountainous regions such as newly liberated mountains of Karabakh, Kalbajar and its surrounding regions, mountainous settlements of Mingachevir and its surrounding areas, and Shamakhi and its surrounding areas.

## Geothermal energy

When it comes to geothermal energy Azerbaijan is gifted by nature. The famous boiling waters of Azerbaijan has been used for medical purposes for centuries. Now with the discoveries of the modern eras these areas can also be used for electricity generation purposes. From Yevlakh to Nefchala along to the Kur River there is great potential for geothermal energy. In some sub region within this region underground water heat goes up to 90 - 95 degrees. Some regions have 80< degrees Celsius heat and these numbers represent great electricity potential Mukhtarov (2015). Now different from other 2 mentioned energy types of geothermal energy is the best one for governmental investment. Also compared to many other green energy plants geothermal energy has one of the lowest average costs per kilowatts hour.

### Average renewable power generation costs in the fossil fuel range in 2017

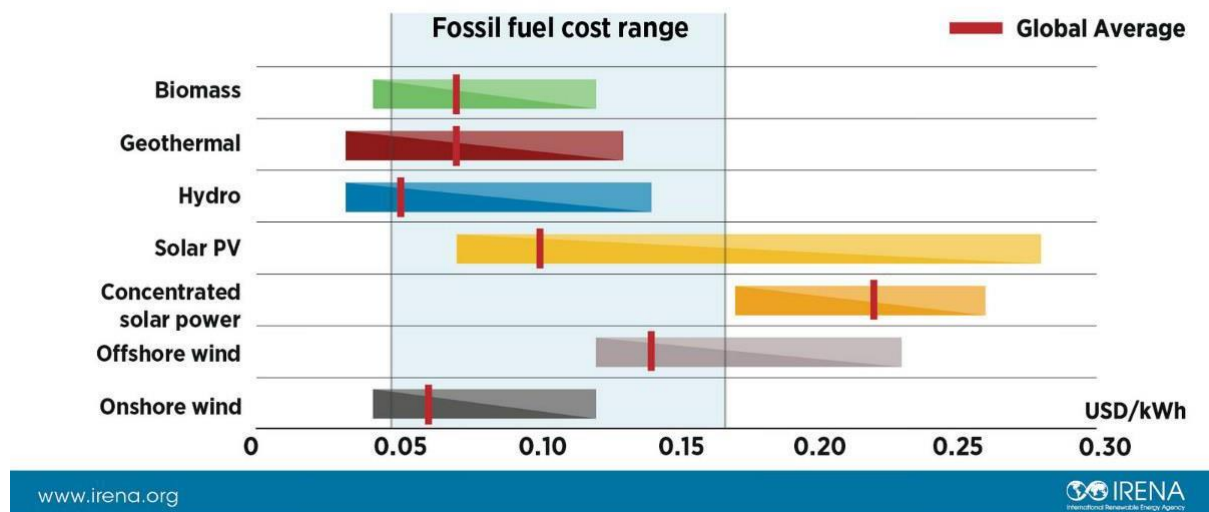


Figure 4

Construction of these plants might also be a reason for investing in touristic sides of these natura waters. For example, in the newly liberated lands of Karabakh in Istisu village government can construct a geothermal energy plant as well as a touristic sanatorium hotel. Another way would be creating possibilities for entrepreneurs to take action on that sphere and both constructions can function next to one another.



Figure 5: Azerbaijan's high perspective underground hot waters

Figure 5 (Azerbaijan Academy of Sciences, 2004) shows areas that have geothermal potential. However, some of these areas are weak in perspective. The Northern parts that are shaded in 3<sup>rd</sup> lining style mentioned in the image are of such lower perspective regions. Lining style 1 and 2 show higher in perspective zones with 1 being highest. Previously mentioned Naftalan city is also located in the shaded area close to central Azerbaijan. This area and the Istisu areas are marked as higher perspective zones. One of the most exciting parts of using geothermal energy is that it is stable and unlimited. It can be used nonstop and weather conditions does not affect them. Other than that in many regions on earth geothermal energy is usually concentrated close to volcanoes which makes it dangerous for construction. However, Azerbaijan does not have many of such dangerous volcanoes as the country has very few volcanoes besides mud volcanoes. 3 Volcanoes are all located in the borders with Armenia (Akharbaxhar, Qarqar and Boyuk ishiqli volcanoes) and they do not pose any danger to the high geothermal perspective zones.

## Conclusion

To conclude, it can be said that Azerbaijan has great potential for green energy. With the right investments in the right areas sustainable societies can be established within Azerbaijan. Geothermal being the most reliable energy type can be among the most beneficial investments in green energy industry. Wind energy and Solar energy both hold vulnerability on efficiency class. Infrastructure for harvesting solar and wind energy therefore needs to be

carefully planned. Not only money but also a lot of time and research needs to be done on these areas to fully benefit from these green energy types but the potential that Azerbaijan holds is surely exciting. When it comes to benefits on the other hand, besides known benefits there are also many potential benefits of green energy resources and not only internally but also externally. From economy to politics green energy shows great benefits worth long-term investments.

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## BINARY ARTIFICIAL BEE COLONY ALGORITHM FOR BINARY OPTIMIZATION

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### Abstract

Researchers have been drawn to population-based swarm-based algorithms in optimization because of its simple structure, high optimization performance, and ease of adaption. Swarm-based algorithms can also be used to handle binary optimization challenges. Binary optimization can be considered as discrete optimization. The only difference is that in binary optimization the variables are expressed as  $\{0,1\}$ . In discrete optimization, variables are expressed with real values. This paper focuses on solving large-scale binary optimization problems using Artificial Bee Colony algorithm (ABC), which is proposed to solve continuous optimization problems. ABC is an algorithm based on swarm intelligence. ABC was also carried out by imitating the movements of honey bees. The artificial bee colony in the ABC algorithm is made up of three types of bees: worker bees, observers, and scouts. Each type of bee has a different task in the hive. These artificial bees are assigned tasks related to the discovery and exploitation of food sources in the search space. In this study, the original ABC has been updated to solve binary optimization problems. The performance of the proposed algorithm (BinABC) has been tested in comparison problems of different sizes (250, 500, and 1000). In addition, the success of BinABC was compared in different population sizes (10, 20, 30, 40, and 50). According to the results obtained, the solution quality of the proposed algorithm was found to be effective and comparable. BinABC was also compared with BPSO and XORTSA, which were chosen as frequency comparison algorithms in the literature, and its performance was demonstrated. The results show that BinABC is a preferable heuristic algorithm for binary optimization problems.

**Keywords:** ABC, Binary, Optimization, xor gate, Swarm

### 1. Introduction

Many real-world problems can be modeled as binary optimization problems, and some are high-dimensional optimization problems. Large-scale binary optimization problems have been an important area of study in the literature. There are two main solution approaches in the literature: exact methods and approximate methods. Exact methods guarantee the optimal solution, but large-scale optimization problems cannot be solved with these methods in a reasonable time (Cinar et al., 2017). Therefore, heuristic methods offer optimal or near-optimal solutions in a reasonable time. In recent years, many population-based optimization algorithms have been proposed in the literature to solve different types of optimization problems (continuous, discrete, binary, etc.). Swarm intelligence techniques mimic the intelligence of swarms in nature. The fundamental basis of these algorithms comes from the collective behavior of a group of creatures. Artificial Bee Colony Algorithm (ABC) is one of such algorithms. ABC was first proposed by Karaboga and Basturk in 2008. The main inspiration of ABC is the swarming behavior of bees (Karaboga and Basturk, 2008). ABC is based on a particular intelligent behaviour of honeybee swarms. Kiran and Gündüz proposed a XOR-based artificial bee colony algorithm for binary optimization (Kiran and Gündüz, 2013).



In this study, the ABC algorithm has been updated to solve binary optimization problems. While updating, logic gates were used. Thus, the Binary Artificial Bee Colony Algorithm (BinABC) has been proposed. In binary optimization, the search space is expressed with  $\{0,1\}$  variables. ABC was originally proposed for continuous optimization. In continuous optimization, the search space variables are continuous integer values. By converting these continuous integer values into binary form, binary space is created. Binary values have been adapted to real world problems and contributed to the solution of many problems in optimum time. Therefore, ABC was converted into binary and tested in large-scale comparison functions. Real world problems are often large in scale. It takes a long time to solve such problems with classical methods. Solving with methods based on swarm intelligence shortens this time. Algorithms based on swarm intelligence can solve large-scale problems in a shorter time. Therefore, algorithms based on swarm intelligence are of interest to many researchers in the literature. ABC algorithm is one of the algorithms based on swarm intelligence. The basic version was developed to solve continuous problems. It has been studied by many researchers because of its success in continuous optimization problems. Many optimization problems in the form of continuous, discrete and binary have been solved with ABC.

In this study, BinABC is proposed for use in large-scale binary optimization. First of all, the original ABC algorithm has been converted to binary. And thus, the ability to solve binary problems has been gained. The performance of BinABC has been tested on the classical unimodal and multimodal comparison function. The performance of the proposed algorithm (BinABC) has been tested in comparison problems of different sizes (dimension=250, 500, and 1000). In addition, BinABC has been compared in different population sizes (population size=10, 20, 30, 40, and 50) and its success has been demonstrated. BinABC was also compared with BPSO and XORTSA, which were chosen as frequency comparison algorithms in the literature, and its performance was demonstrated.

The ABC and BinABC are described in Section 2, and the experimental tests are carried out in Section 3. The results are compared and explained.

## 2. Material and Method

### 2.1. Artificial Bee Colony Algorithm (ABC)

The artificial bee colony in the ABC algorithm is made up of three types of bees: worker bees, observers, and scouts. The fake bees make up half of the colony, while bystanders make up the other half. For each food source, there is only one worker bee. To put it another way, the number of bees engaged is equal to the number of food sources. An abandoned food source's worker bee transforms into an explorer. The artificial bees' hunt can be summarized as follows:

- Employed bees locate a food supply in the vicinity of the food source stored in their memory.
- Within the hive, employed bees exchange their information with observers, who subsequently choose one of the food sources.
- Onlookers choose a food source in the vicinity of the food sources picked by the participants.
- An employed bee whose food supply has been abandoned transforms into a scout and begins searching for a new food source at random.

The algorithm's main steps are listed below:

**Initialize**  
**REPEAT**

- Place the employed bees near their food sources and measure the amount of nectar they produce.
- Attract bystanders to the food sources and calculate nectar amounts.
- Send out scouts to look for new food sources.
- Write down the finest food source you've found thus far.

**UNTIL** (requirements are met)

The employed and observer bees are moved onto the food sources and their nectar levels are calculated, and the scout bees are determined and then moved randomly onto the possible food sources. The "roulette wheel selection" method is used to position onlookers on the dishes. Scouts are the colony's explorers in every bee colony. The explorers are on their own in their search for nourishment. They are mostly interested with locating food sources of any kind. Exploration and exploitation operations must be carried out in tandem to ensure a successful search. The scouts control the exploration process in the ABC algorithm, while bystanders and employed bees carry out the exploitation process in the search space. The preference of a food source by an onlooker bee depends on the nectar amount  $F(\theta_i)$  of that food source. As the amount of nectar in the food source grows, the likelihood of an onlooker bee choosing that source increases correspondingly. Therefore, the probability with the food source located at  $\theta_i$  will be chosen by a bee can be expressed as:

$$p_i = \frac{F(\theta_i)}{\sum_{j=1}^S F(\theta_j)} \quad (1)$$

where  $c$ : cycle,  $S$ : number of food sources around the hive. In a maximization problem, the goal is to find the maximum of the objective function  $F(\theta)$ ,  $\theta \in R^p$ .

An onlooker bee gets to the region of food source placed at  $\theta_i$  by this likelihood and chooses a neighbor food source to consume its nectar based on some visual information, such as signs existing on the patches, after witnessing the dances of employed bees. To put it another way, the spectator bee chooses one of the food sources after weighing the options available. The following formula is used to calculate the location of the selected nearby food source:

$$\theta_{i+1} = \theta_i + \Delta \quad (2)$$

where  $\Delta$  is a randomly produced step to find a food source with more nectar around  $\theta_i$ .

Only one bee is employed at each food source. As a result, the number of bees employed equals the number of food sources. If the employed bee cannot increase the position  $\theta_i$  of the food source within the predetermined number of trials "limit," the employed bee abandons the food source  $\theta_i$  and becomes a scout.

## 2.2. Binary Artificial Bee Colony Algorithm (BinABC)

The element of  $\{0,1\}$  can be assigned to binary decision variables in the binary solution space. At initialization of binary decision variables, values of 0 or 1 can be assigned with equal probability. This approach is pretty easy to understand. A number between 0 and 1 is randomly generated. The binary value is 0 if this random number is less than 0.5, otherwise

the binary value is 1. After the bees are started with binary values, the xor gate is used in the new bee production phase. The new bee production creation section of the basic ABC is changed as follows:

$$(3) \quad \left\{ \begin{array}{l} \text{BinaryValue}_i \\ \text{RandomValue}_i \end{array} \right\} \quad (\text{binary bee})$$

where  $i$  is the position of the best fitness value and  $j$  is the position of the random bees. Binary bees must be converted to continuous values before the cost of the candidate solutions can be determined. This converting process is as follows:

$$(4) \quad \text{ContinuousValue}_i = \frac{\text{DecimalValue}_i \cdot (\text{UpperB}_i - \text{LowerB}_i) + \text{LowerB}_i}{2} \quad (\text{continuous bee})$$

where  $\text{ContinuousValue}_i$  is the continuous value for the  $i$ th dimension of the numeric vector and  $\text{DecimalValue}_i$  is a decimal value ( $\text{DecimalValue}$ ) of  $m$ -dimensional binary vector for  $i$ th dimension numeric vector.  $\text{UpperB}_i$  is the upper bound of the  $i$ th dimension and  $\text{LowerB}_i$  is the lower bound of the  $i$ th dimension.

### 3. Results

For investigating the performance of BinABC, five unimodal and multimodal benchmark functions, namely Sphere (f1), Rosenbrock (f2), Rastrigin (f3), Griewank (f4), and Ackley (f5) are considered in the experiments. These functions are shown in Table 1. Dimension size is taken as 250, 500, and 1000. Population size is taken as 10, 20, 30, 40 and 50. Maximum function evaluation number is taken as 100000. All results are mean of 20 independent runs. Successful results are marked in bold. The average (Avg), standard deviation (Std), Best and Worst values of the obtained results were calculated. The results are shown in Tables 2, 3, and 4, respectively. To demonstrate the success of BinABC, binary versions of PSO and TSA, which are well known in the literature, are compared. BPSO and XORTSA results taken from Cinar et al. (Cinar et al., 2017). The comparison results are shown in Tables 5, 6, and 7 for dimension=250, 500, and 1000, respectively.

According to the results, BinABC showed more success in high population sizes (Pop=40 and 50). Optimum values of 4 out of 5 benchmark functions for size 250 were realized at population size=50. Optimum values of 1 out of 5 benchmark functions for size 250 were realized at population size=40. Optimum values of 3 out of 5 benchmark functions for size 500 were realized at population size=50. Optimum values of 2 out of 5 benchmark functions for size 500 were realized at population size=40. Optimum values of 3 out of 5 benchmark functions for size 1000 were realized at population size=50. Optimum values of 1 out of 5 benchmark functions for size 1000 were realized at population size=40. Optimum values of 1 out of 5 benchmark functions for size 1000 were realized at population size=30. The results showed that increasing the number of populations in BinABC increased the success rate.

When compared with the literature, the most successful algorithm was XORTSA. BinABC failed to pass XORTSA and BPSO. XORTSA performed optimal values of 3 out of 5 comparison functions for size 250. BPSO performed optimal values of 2 out of 5 comparison functions for size 250. XORTSA performed optimal values of 4 out of 5 comparison functions for size 500. BPSO performed optimal values of 1 out of 5 comparison functions for

size 500. XORTSA performed optimal values of 2 out of 5 comparison functions for size 1000. BPSO performed optimal values of 3 out of 5 comparison functions for size 1000. The results showed that BinABC enhanced exploration and exploitation capability with the xor gate. However, its success lagged behind the literature algorithms. This shows that different methods are needed to increase the success of ABC. It should also be tested on different binary optimization problems to demonstrate the success of BinABC.

**Table 1.** Classic benchmark functions

Function	Range	$f_{\min}$
$f_1 = \sum_{i=1}^n x_i$	[-100,100]	0
$f_2 = \sum_{i=1}^n  x_i $	[-10,10]	0
$f_3 = \sum_{i=1}^n  x_i - 1 $	[-5.12,5.12]	0
$f_4 = \sum_{i=1}^n \frac{1}{\sqrt{ x_i }}$	[-600,600]	0
$f_5 = \sum_{i=1}^n \left( \sqrt{ x_i } \right) \left( \sum_{j=1}^n x_j \right)$	[-32,32]	0

**Table 2.** Results of BinABC with dimension=250

F		Pop=10	Pop=20	Pop=30	Pop=40	Pop=50
<b>F1</b>	Best	2,58E+03	5,55E+02	1,37E+03	9,89E+02	1,98E+03
	Worst	5,99E+03	4,70E+03	4,78E+03	3,22E+03	4,11E+03
	Avg	4,14E+03	3,38E+03	2,47E+03	<b>2,17E+03</b>	2,90E+03
	Std	1,15E+03	1,20E+03	1,05E+03	6,89E+02	7,29E+02
<b>F2</b>	Best	6,47E+00	8,08E+00	6,99E+00	6,55E+00	6,25E+00
	Worst	2,34E+01	1,80E+01	1,30E+01	1,22E+01	1,27E+01
	Avg	1,24E+01	1,30E+01	1,02E+01	9,24E+00	<b>8,71E+00</b>
	Std	4,46E+00	2,78E+00	1,58E+00	1,47E+00	1,80E+00
<b>F3</b>	Best	1,71E+01	2,47E+01	2,38E+01	2,03E+01	1,45E+01
	Worst	5,16E+01	4,18E+01	2,99E+01	3,21E+01	3,10E+01
	Avg	3,83E+01	3,25E+01	2,68E+01	2,63E+01	<b>2,33E+01</b>
	Std	1,11E+01	6,08E+00	1,73E+00	3,30E+00	4,91E+00
<b>F4</b>	Best	3,25E+01	1,99E+01	6,71E+00	7,80E+00	5,98E+00
	Worst	6,43E+01	5,34E+01	2,91E+01	3,94E+01	2,77E+01
	Avg	4,89E+01	3,41E+01	1,79E+01	2,53E+01	<b>1,78E+01</b>
	Std	1,08E+01	9,17E+00	7,71E+00	1,07E+01	6,65E+00
<b>F5</b>	Best	1,66E+01	1,15E+01	1,09E+01	1,39E+01	1,30E+01
	Worst	1,97E+01	1,93E+01	1,85E+01	1,78E+01	1,67E+01
	Avg	1,83E+01	1,64E+01	1,56E+01	1,58E+01	<b>1,48E+01</b>
	Std	9,35E-01	2,37E+00	1,96E+00	1,12E+00	1,31E+00

**Table 3.** Results of BinABC with dimension=500

<b>F</b>		<b>Pop=10</b>	<b>Pop=20</b>	<b>Pop=30</b>	<b>Pop=40</b>	<b>Pop=50</b>
<b>F1</b>	Best	8,54E+03	9,56E+03	8,78E+03	5,05E+03	8,19E+03
	Worst	1,85E+04	1,52E+04	1,35E+04	1,27E+04	1,37E+04
	Avg	1,47E+04	1,26E+04	1,14E+04	1,06E+04	<b>1,05E+04</b>
	Std	3,11E+03	1,93E+03	1,63E+03	2,33E+03	1,57E+03
<b>F2</b>	Best	3,04E+01	1,73E+01	2,18E+01	2,40E+01	2,15E+01
	Worst	7,82E+02	1,36E+02	4,78E+01	4,41E+01	3,46E+01
	Avg	2,39E+02	6,73E+01	3,41E+01	3,18E+01	<b>2,68E+01</b>
	Std	2,23E+02	4,52E+01	7,82E+00	5,63E+00	3,93E+00
<b>F3</b>	Best	9,55E+00	8,83E+01	7,63E+01	5,73E+01	6,51E+01
	Worst	1,22E+02	1,12E+02	1,08E+02	9,19E+01	9,70E+01
	Avg	1,09E+02	9,71E+01	8,96E+01	<b>8,10E+01</b>	8,46E+01
	Std	1,03E+01	7,21E+00	7,57E+00	1,11E+01	8,75E+00
<b>F4</b>	Best	8,78E+01	8,43E+01	6,07E+01	5,86E+01	4,21E+01
	Worst	1,51E+02	1,32E+02	1,29E+02	1,34E+02	1,05E+02
	Avg	1,18E+02	1,08E+02	9,94E+01	1,04E+02	<b>8,87E+01</b>
	Std	1,81E+01	1,39E+01	2,47E+01	1,88E+01	1,69E+01
<b>F5</b>	Best	1,81E+01	1,85E+01	1,81E+01	1,58E+01	1,78E+01
	Worst	2,00E+01	1,99E+01	2,00E+01	1,96E+01	1,94E+01
	Avg	1,97E+01	1,95E+01	1,92E+01	<b>1,86E+01</b>	1,89E+01
	Std	5,42E-01	3,98E-01	6,11E-01	1,08E+00	4,16E-01

**Table 4.** Results of BinABC with dimension=1000

<b>F</b>		<b>Pop=10</b>	<b>Pop=20</b>	<b>Pop=30</b>	<b>Pop=40</b>	<b>Pop=50</b>
<b>F1</b>	Best	3,13E+04	2,62E+04	2,92E+04	2,02E+04	2,71E+04
	Worst	4,33E+04	4,12E+04	3,63E+04	3,49E+04	3,26E+04
	Avg	3,70E+04	3,47E+04	3,20E+04	2,98E+04	<b>2,96E+04</b>
	Std	4,03E+03	4,26E+03	1,87E+03	4,46E+03	1,97E+03
<b>F2</b>	Best	3,39E+03	1,79E+03	7,37E+02	1,72E+02	2,44E+02
	Worst	1,67E+07	8,04E+05	1,70E+05	1,35E+05	3,27E+04
	Avg	5,39E+06	1,12E+05	3,38E+04	4,03E+04	<b>6,02E+03</b>
	Std	5,97E+06	2,34E+05	5,07E+04	4,75E+04	9,64E+03
<b>F3</b>	Best	2,22E+02	2,20E+02	1,86E+02	1,97E+02	1,77E+02
	Worst	2,82E+02	2,62E+02	2,40E+02	2,36E+02	2,30E+02
	Avg	2,52E+02	2,35E+02	2,23E+02	2,23E+02	<b>2,14E+02</b>
	Std	2,03E+01	1,28E+01	1,49E+01	1,05E+01	1,57E+01
<b>F4</b>	Best	3,00E+02	2,27E+02	2,25E+02	2,13E+02	2,12E+02
	Worst	3,78E+02	3,32E+02	3,42E+02	3,39E+02	2,99E+02
	Avg	3,39E+02	2,93E+02	2,93E+02	<b>2,65E+02</b>	2,72E+02
	Std	2,19E+01	3,33E+01	3,24E+01	3,23E+01	2,49E+01
<b>F5</b>	Best	2,00E+01	1,94E+01	1,81E+01	1,93E+01	1,97E+01
	Worst	2,00E+01	2,00E+01	2,00E+01	2,00E+01	2,00E+01
	Avg	2,00E+01	1,99E+01	<b>1,97E+01</b>	1,99E+01	1,99E+01
	Std	0,00E+00	1,85E-01	5,43E-01	1,94E-01	8,99E-02



**Table 5.** Results of BinABC with dimension=250 and population size=30

<b>F</b>		<b>BPSO</b>	<b>XORTSA</b>	<b>BinABC</b>
<b>F1</b>	Avg	<b>1.90E-11</b>	4.78E-09	2,47E+03
	Std	<b>1.04E-10</b>	2.08E-08	1,05E+03
<b>F2</b>	Avg	<b>1.65E+02</b>	2.25E+00	1,02E+01
	Std	1.91E+02	<b>7.56E-01</b>	1,58E+00
<b>F3</b>	Avg	1.25E+01	<b>3.32E-02</b>	2,68E+01
	Std	6.15E+00	<b>1.82E-01</b>	1,73E+00
<b>F4</b>	Avg	4.84E-01	<b>2.24E-02</b>	1,79E+01
	Std	3.45E-01	<b>1.15E-02</b>	7,71E+00
<b>F5</b>	Avg	1.90E+00	<b>2.97E-05</b>	1,56E+01
	Std	<u>1.28E+00</u>	<u><b>2.79E-05</b></u>	<u>1,96E+00</u>

**Table 6.** Results of BinABC with dimension=500 and population size=30

<b>F</b>		<b>BPSO</b>	<b>XORTSA</b>	<b>BinABC</b>
<b>F1</b>	Avg	3.27E-01	<b>4.27E-02</b>	1,14E+04
	Std	<b>2.17E-15</b>	2.40E-02	1,63E+03
<b>F2</b>	Avg	2.86E+02	<b>8.27E+00</b>	3,41E+01
	Std	2.88E+02	<b>8.62E-01</b>	7,82E+00
<b>F3</b>	Avg	2.28E+01	<b>5.28E+00</b>	8,96E+01
	Std	6.50E+00	<b>1.51E+00</b>	7,57E+00
<b>F4</b>	Avg	3.73E-01	<b>2.67E-01</b>	9,94E+01
	Std	2.42E-01	<b>8.03E-02</b>	2,47E+01
<b>F5</b>	Avg	2.41E+00	<b>1.38E-01</b>	1,92E+01
	Std	<u>3.66E-01</u>	<u><b>7.25E-02</b></u>	<u>6,11E-01</u>

**Table 7.** Results of BinABC with dimension=1000 and population size=30

<b>F</b>		<b>BPSO</b>	<b>XORTSA</b>	<b>BinABC</b>
<b>F1</b>	Avg	<b>5.48E+00</b>	1.49E+02	3,20E+04
	Std	<b>8.30E-06</b>	2.86E+01	1,87E+03
<b>F2</b>	Avg	3.22E+02	<b>3.16E+02</b>	3,38E+04
	Std	3.22E+02	<b>1.02E+02</b>	5,07E+04
<b>F3</b>	Avg	4.97E+01	<b>4.85E+01</b>	2,23E+02
	Std	1.31E+01	<b>5.37E+00</b>	1,49E+01
<b>F4</b>	Avg	<b>4.67E-01</b>	2.39E+00	2,93E+02
	Std	<b>3.30E-01</b>	3.58E-01	3,24E+01
<b>F5</b>	Avg	<b>2.45E+00</b>	4.98E+00	1,97E+01
	Std	<u><b>4.16E-01</b></u>	<u>5.76E-01</u>	<u>5,43E-01</u>

#### 4. Conclusion

In this study, the ABC algorithm has been updated to solve binary optimization problems. While updating, logic gates were used. Thus, the Binary Artificial Bee Colony Algorithm (BinABC) has been proposed. ABC was originally proposed for continuous optimization. In continuous optimization, the search space variables are continuous integer values. By converting these continuous integer values into binary form, binary space is created. Binary values have been adapted to real world problems and contributed to the solution of many problems in optimum time. The performance of the proposed algorithm (BinABC) has been tested in comparison problems of different sizes (dimension=250, 500, and 1000). In addition, BinABC has been compared in different population sizes (population size=10, 20, 30, 40, and

50) and its success has been demonstrated. According to the results, BinABC population size=40 and 50 showed higher success. According to the results obtained, the solution quality of the proposed algorithm was found to be effective and comparable. BinABC has also been compared with BPSO and XORTSA, which are frequently used in comparisons in the literature. But BinABC could not surpass the success of XORTSA and BPSO. The results showed that BinABC enhanced exploration and exploitation capability with the xor gate. However, its success lagged behind the literature algorithms. This shows that different methods are needed to increase the success of ABC. It should also be tested on different binary optimization problems to demonstrate the success of BinABC.

In future studies, it is thought that ABC and TSA will be hybridized and its success in the feature selection problem will be tested. In addition, different methods are considered to improve the discovery and exploitation capability of binary ABC. It is deduced to use more benchmark functions as test functions instead of just five benchmark functions. The success of BinABC in hybrid functions as well as unimodal and multimodal benchmark functions will be tested.

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## WITHIN CANOPY 100-SEED INDEX PROPERTIES IN COTTON: A NOVEL VALUABLE AGRONOMIC TRAIT

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### Abstract

There exist experiments focused on fiber quality and maturity within-canopy of cotton. This research was conducted to determine the effect of grafting and fruit node position on 100-seed index properties; 100-seed cotton weight (100-SCW), 100-cottonseed weight (100-CSW) and fiber weight of 100-cotton seeds (100-CFW). Upland, Pima and interspecies and intraspecies grafts of these species were grown in a randomized complete plot design with three replications at Akdeniz University, Antalya, Turkey, during the 2019 and 2020 growing seasons. Each boll sample collected from three different fruit node positions were dissected into 100-SCW, 100-CSW and 100-CFW for four grafts and two controls. Results indicated that accession Pima 3-79 showed lower within plant variability, while accession TM-1 showed relatively high within-canopy variability for studied traits. There were effects of intraspecies and interspecies grafting on 100-SCW, 100-CSW and 100-CFW. Based on the findings of this study we concluded that natural and/or graft induced variations in within-canopy could be a potential source of variability for breeding programs aimed at improving cotton agronomic and fiber technological properties.

**Keywords:** *agronomic traits, pima cotton, seed, two-season growing, upland cotton*

### INTRODUCTION

Cotton (*Gossypium* L.) is one of the most important natural fiber and oil crops in the world. It belongs to *Malvaceae* (hibiscus or mallow) family and has more than 50 species, four of which are cultivated species worldwide. Among the cultivated species *G. hirsutum* L., known as Upland cotton native to Central America is the main cotton species widely grown the world. *G. barbadense* L, known as Pima, Egyptian or Sea Island Cotton, native to tropical South America and the Nile region is the another alltetraploid cotton species with the most desired fiber quality characteristics (Karaca et al., 2020).

Cotton continues to face competition from synthetic fibers due to variability presented within a single seed, within a single boll, within the plant, and within the field. These sources of variability in fiber quality contribute to within-bale fiber-to-fiber variability. Fiber quality variability could be optimized by reducing within-canopy variability. Within-canopy variability of cotton fiber is determined by many factors, including the growth habit of the cotton plant, genetics, environment, and cultivation practices (Faulkne et al., 2011; Kothari et al., 2015). Adaptation of cotton to its environmental conditions is strongly supported to yield and fiber quality and economic value (Pettigrew, 2004; Zonta et al., 2017; Ayele et al., 2020; Pabuayon et al., 2021).

In cotton, there is unique pattern of nodes and branches. The branches on a cotton plant can

be classified as either vegetative branches (monopodia) or fruiting branches (sympodia). Vegetative branches, like the main stem and they can produce fruiting branches. Position of node on the stem determine the position of bolls, which determines the quality and quantity of fiber yield. The number of nodes, the length of internode, the number of sympodial also determine yield. They also influence the shape of the plant, called canopy.

Plant grafting is a vegetative propagation technique widely used in fruits and vegetables. In cotton growing, cultural practices such as grafting, transplantation and pruning were not widely applied. Grafting in cotton could be used to improve resistance to pests and diseases, tolerance to abiotic stress, develop to physiological and morphological features. This research was conducted to determine the effect of grafting and fruit node positions on 100-seed cotton weight (100-SCW), 100-cottonseed weight (100-CSW) and fiber weight of 100-cotton seeds (100-CFW).

## **MATERIALS AND METHODS**

### **Materials**

*Gossypium hirsutum* L. Texas Marker-1 (TM-1, referred as T in this study) and *G. barbadense* L. Pima 3-79 (referred as P) were used to produce interspecies and intraspecies grafts. Grafts and their controls were grown in randomized plots with three replications in a greenhouse during 2019 and 2020 growing seasons. Grafting experiments were performed as described in Karaca et al. (2020). Each plot contained 15 plants and there were 45 plants for each graft and control. Bolls (28) from fruit node positions of 1—4, 6—9 and 10—Up were hand harvested.

### **Methods**

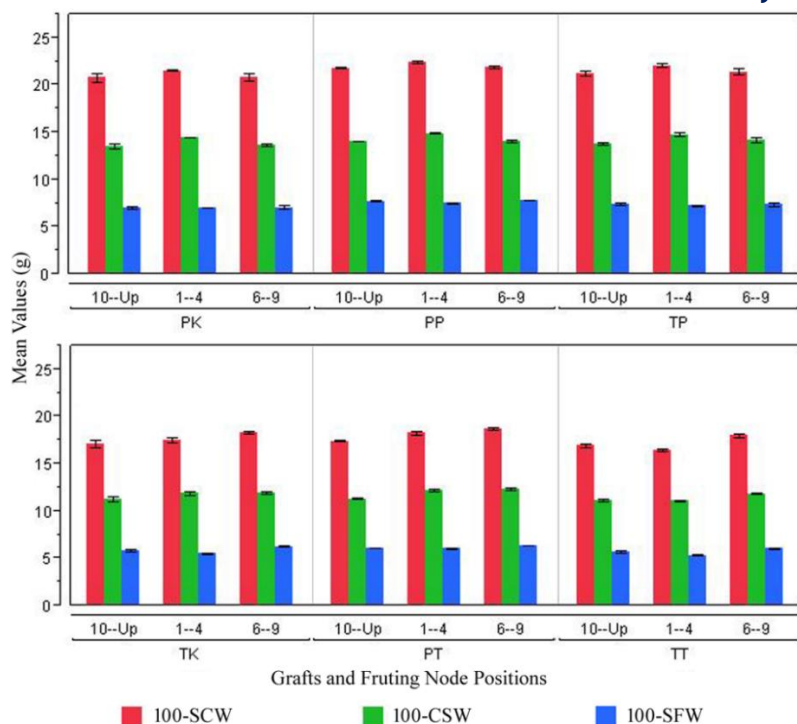
A total of 5 replications were made from each plot. Boll samples were cleaned and blended well for each plot before counting and weighing studies. Seed cotton containing 100 seeds was separated and weighed as 100 SCW (g) using a sensitive scale before separating them into 100-seeds (100-CSW) and fibers (100-SFW). 100-seed weight and fiber weight were determined using the sensitive scale as 100-CSW (g) and 100-SFW (g).

### **Statistical analysis**

Data of 100-cottonseed weight (100-SCW, g), 100-seed weight (100-CSW, g), and fibers (100-SFW, g) were subjected to two-way analysis of variance (grafting and fruit node position) and Tukey–Kramer HSD test utilizing JMP Statistical Discovery Software Version 8.0 (SAS, Cary, NC, USA).

## **RESULTS**

Mean values 100-SCW, 100-CSW and SFW were depicted in Figure 1. As it can be seen from this figure Pima 3-79 and grafts with scions of Pima 3-79 had higher 100-SCW in comparison to TM-1 and grafts with scion TM-1. Although the bolls of Pima 3-79 were smaller and lighter than TM-1, Pima 3-79 had larger seeds, resulting in higher 100-SCW, 100-CSW and 100-SFW values.



**Figure 1.** Mean values (g) of 100-seed cotton weight (100-SCW), 100-cottonseed weight (100-CSW) and fiber weight obtained from 100-seed cotton (100-SFW).

PK and TK were control accessions of Pima 3-79 and TM-1 that were not used in grafting studies. Pima 3-79—Pima 3-79 (PP) and TM-1—TM-1 (TT) were self-grafts of Pima 3-79 and TM-1, respectively. PT and TP were heterografts of Pima 3-79 (rootstock) and TM-1 (scion), and TM-1 (rootstock) and Pima 3-79 (scion), respectively. Table 1 showed mean values and Tukey-Kramer HDS groupings of 100-seed index traits studied.

**Table 1.** Effects of grafting and fruit node position on 100-seed cotton weight (100-SCW)

Grafts	Mean 100-SCW (g)	Standard Error	Tukey–Kramer HSD groupings*			
PP	22.07	0.0133	A			
TP	21.07		A	B		
PK	18.17			B		
PT	17.68				C	
TK	21.59				C	D
TT	17.16					D

Fruit node position	Mean (g)	Standard Error	Tukey–Kramer HSD groupings*	
6—9	19.87467	0.094	A	
1—4	19.75433		A	
10—Up	19.243			B



Graft x fruit node for 100-SCW (g)	Tukey–Kramer HSD groupings*							
PP,1—4								
TP,1—4								
PP,6—9								
PP,10—Up								
PK,1—4								
TP,6—9								
TP,10—Up								
PK,6—9								
PK,10—Up								
PT,6—9								
TK,6—9								
PT,1—4								
TT,6—9								
TK,1—4								
PT,10—Up								
TK,10—Up								
TT,10—Up								
TT,1—4								

\*Levels not connected by the same letter are significantly different ( $p < 0.05$ ).

Mean 100-SCW values ranged 22.07 g in PP to 17.16 g in TT. Results clearly indicated that grafting significantly affected 100-SCW (Table 1), 100-CSW (Table 2) and 100-SFW. Within these three 100-seed index traits, fiber weight was more influenced with the interspecies and interspecies grafting, indicating that grafting could be used to improve some fiber technological properties in cotton.

100-SCW, 100-CSW and 100-SFW were significantly affected by the fruit node position. Fruit node position means in this study position of the sympodial branches on the main stem of cotton plant. Results revealed that 100-SCW was similar and was not statistically significant between fruit node position 6—9 and 1—4 (Table 1). These positions produced statistically higher 100-CSW in comparison to fruit position 10—Up. 100-CSW values were significantly different among all three fruit node positions (Table 2).

**Table 2.** Effects of grafting and fruit node position on 100-seed weight (100-CSW)

Graft	Mean 100-CSW (g)	Standard Error	Tukey–Kramer HSD groupings*			
PP	14.37	0.0871	A			
TP	14.27		A			
PK	13.9			B		
PT	11.96				C	
TK	11.73				C	D
TT	11.39					D

Fruit node position	Mean 100-CSW (g)	Standard Error	Tukey–Kramer HSD groupings*		
1—4	13.237	0.0616	A		
6—9	13.02733			B	
10—Up	12.54367				C

Graft x fruit node position for 100-CSW (g)	Tukey–Kramer HSD groupings*							
PP,1—4								
TP,1—4								
PK,1—4								
TP,6—9								
PP,6—9								
PP,10—Up								
TP,10—Up								
PK,6—9								
PK,10—Up								
PT,6—9								
PT,1—4								
TK,6—9								
TK,1—4								
TT,6—9								
PT,10—Up								
TK,10—Up								
TT,10—Up								
TT,1—4								

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\*Levels not connected by the same letter are significantly different (p<0.05)

The highest 100-SCW was obtained from fruit node position 1—4, followed by 6—9 and node position 10 and above had the lowest seed weight in term of 100-SFW. Low level of 100-SCW at higher nodes indicated that less mature and probably shorter fibers would be produced. Table 3 showed how 100 SFW values were affected by grafts and fruit node positions.

**Table 3.** Effects of grafting and fruit node position on fiber weight of 100 seed cotton (SFW)

Graft	Mean SFW (g)	Standard Error	Tukey–Kramer HSD groupings*				
PP	7.69	0.0551	A				
TP	7.36			B			
PK	7.07				C		
PT	6.19					D	
TK	5.89						E
TT	5.71						E

Fruit node position	Mean SFW (g)	Standard Error	Tukey–Kramer HSD groupings*		
6–9	6.84	0.0389	A		
10–Up	6.64			B	
1–4	6.47				C

Graft x fruit node position SFW (g)	Tukey–Kramer HSD groupings*					
PP,6–9	A					
PP,10–Up	A					
PP,1–4	A	B				
TP,10–Up	A	B				
TP,6–9	A	B				
TP,1–4		B				
PK,6–9		B				
PK,10–Up		B				
PK,1–4		B				
PT,6–9			C			
TK,6–9			C	D		
PT,10–Up			C	D	E	
PT,1–4			C	D	E	
TT,6–9			C	D	E	
TK,10–Up				D	E	F
TT,10–Up					E	F
TK,1–4						F
TT,1–4						F

\*Levels not connected by the same letter are significantly different ( $p < 0.05$ ).

Results showed that the highest statistically significant 100-SFW for value was obtained on bolls collected from fruit node position 6–9, followed by position 10–Up and 1–4 (Table 3). These results clearly indicated that although all three 100-seed index traits were related, they were influenced differently from different fruit node positions on cotton plant. In comparison to TM-1, Pima 3-79 tended to produce a more consistent 100-seed index values within-canopy. This is probably due to double haploid nature of Pima 3-79. Results also showed that there were interactions between grafting and fruit node positions as shown in

Table 1, 2 and 3. Pima 3-79 did not show great variation among fruit position while TM-1 had significant differences among fruit node positions.

## DISCUSSION

Variability in cotton yield of fiber, seed or oil can be seen within a single cotton plant, across a cotton field, within a single cotton genotype and a cotton boll or even within a single seed kernel. Due to the selection pressure and intense agricultural inputs cotton becomes very sensitive plant in comparison to some other cultivated plant species. Cotton is easily affected by biotic and abiotic stress factors, genetic components, and interactions among these factors (Kothari et al., 2015).

Within canopy differences in two accessions TM-1 (TK) and Pima 3-79 (PK) indicated that genetic components played a significant role in within-canopy variability on all 100-seed index traits studied. This indicated that within-canopy variation is species specific and could be a potential source of variation for further improvement in cotton yield. Our results were according to findings of Kothari et al., (2015) who also determined that the extent of variability within a single plant for fiber length (number) was genotype dependent.

Previous studies reported that fiber quality variability has been attributed to soil chemistry, fertility, (Johnson et al., 2002), moisture content (Elms et al., 2001), and organic matter (Pettigrew et al., 1996; Johnson et al., 1999). In this study, it found that grafting also plays important roles on 100-seed index components. Indeterminate feature of cotton could produce new fruit node on which new bolls are produced. Physiologically different bolls could contain bolls that are at different maturity stage. This is probably one of the main reasons for within-canopy variation (Feng et al., 2011).

Cotton plants set flowers in a predictable pattern. Along the main axis, the setting of flowers occurs at the same fruiting position in 3-days intervals. Bolls set at each position along a single fruiting branch are set approximately 6 days apart (Lewis, 2002). Three days after the first flower sets in position one, the first position boll on the next vertical node sets. Cotton plants set the first position bolls at the bottom parts of the plants early in the season compared to bolls setting at the apical and distal positions. Bolls sets in the lower half of the plant and first fruiting position bolls have more time and resources to develop mature fibers. Under limited resources, bolls set at the top parts of the plants do not have access to the same amount of nutrients and water as bolls set lower on the plant. Cotton fruits produced at the top canopy position or on the higher branch position likely receive less carbohydrate because they are initiated late in the growing season.

Fiber length is known to be affected by fruit node position. For instance, in a previous study, it was reported that the longest fibers were produced at node seven and the short fibers were produced at node 14 (Ayele et al., 2018). Another study revealed that the upper sympodial positions of the cotton plants typically yield lower fiber length and maturity, and fiber length. These reduce the overall economic value of cotton crop (Kothari et al., 2007). Kotharia et al. (2017) reported that fiber quality was greatest in the bottom half of sympodial positions and declined in the top half of sympodial positions. In our study, we noted that TM-1 produced higher amount of fibers on the positions 6—9. Higher amount of fiber is probably related with the longer fiber in Upland cotton. In Pima cotton the larger seeds associated with longer fibers.

In the present study, we found that there exist within-canopy variations for three 100-seed index traits and TM-1 showed higher variability in comparison to Pima 3-79. Our results were in accordance that the extent of variability within a single plant for fiber length (number) was genotype dependent (Kothari et al., 2015). Developing cultivars that exhibit lower within-canopy variability could improve textile quality of cotton because it produces

stable fiber properties across the fruiting branches minimize the impact of immature fibers (Kelly et al., 2015; Ayele et al., 2018).

Previous studies indicated that the growing seasons and cultivars have a significant impact on the variation in within-canopy fiber maturity. Since our study was conducted in a single location, we were not able to study year  $\times$  cultivar and grafting interaction. Therefore, further studies are required to confirm the result of this study.

Fruiting branches are reproductive branches on which cotton bolls develop, while in some studies fruiting position refers to the order in which bolls are produced on a fruiting branch. Through this study fruit node position should refer position of fruiting node located on the main cotton stem.

## CONCLUSIONS

Variations in fiber length and maturity induced by vegetative grafting within-canopy could be a potential source of variability for breeding programs aimed at improving fiber quality. Reduced variation within-canopy could be used as next generational selection criteria for cotton breeding programs. Low level of variation between lower and upper sympodial branches could improve several technological fiber traits by obtaining more mature and longer fibers that are stable across the fruiting branches.

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## COMPARISON OF REVASCULARIZATION AND MTA PLUG HEALING ACHIEVEMENTS IN IMMATURE PERMANENT TEETH

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### **Aim**

In immature permanent teeth with necrotic pulp, the absence of a natural apical constriction for obturation and the presence of thin dentin create difficulties for endodontic treatment. The aim of this report is to compare the success of revascularization and Mineral Trioxide Aggregate (MTA) plug techniques on the healing of periapical lesion on necrotic immature permanent teeth in 6 cases.

### **Case report**

Treatment options were explained to 6 patients who were admitted to our clinic and had an immature necrotic permanent maxillary incisor with apical lesions and no systemic disease and informed consent was obtained. Revascularization and MTA plug treatments were applied to the patients randomly divided into 2 groups. Healing of the periapical lesion size and subjective symptoms were evaluated during a 9-12 month follow-up period. In periapical radiography, National Institutes of Health Image-J program with Multi-Template Matching-Fiji was used to detect reduction in lesion size and increase in root length and root width and it was found that apical lesion sizes decreased in all teeth. The healing of the lesion size were determined as 97%, 88% and 74% in cases with revascularization and 95%, 96% and 85% in teeth with MTA plug, respectively. An independent sample t-test was used to compare healing success between the two groups and no statistically significant difference was found between the groups ( $p=0.881$ ). In addition, in the revascularization group, thickening of the root dentin walls and an increase in root length were detected while there was no such increase in teeth treated with MTA plug. Besides, in both groups, all the teeth were asymptomatic and in normal function.

### **Conclusion**

In this study, it has been shown that both treatment options are successful in lesion healing and revascularization can also provide thickening of the root dentin wall and increase in root length.

**Key words:** Apexification, MTA Plug, Revascularization

## IS DONKEY MILK AN ALTERNATIVE FOR NEWBORN AND INFANT NUTRITION

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### Abstract

The importance of feeding newborn and infant with breast milk, especially in the first six months, is known. However, there may be periods when the mother's milk is insufficient, breastfeeding is not possible due to physiological reasons, and in some special cases, breast milk cannot be given to the baby. When such undesirable situations are encountered, it becomes necessary to search for alternative milk sources that can be given instead of breast milk. The most frequently used alternative milk sources are cow, goat and donkey milk, which is increasingly used. In recent years, some studies show that donkey milk is ahead of cow and goat milk in terms of nutritional values and not causing allergic reactions, low casein content, being a good source of vitamin A,E and B<sub>6</sub>, β-lactoglobulin level, high lysozyme content and valuable fatty acids (linolenic acid). It is reported that it can be an alternative milk type to breast milk in terms of its content. In addition, due to its protein profile, intestinal calcium absorption, lactose content, mineral substance content and fat-soluble vitamins, it is considered the closest milk to human milk and an excellent nutraceutical product. In addition, donkey milk stands out with its hypoallergenic structure. The increasing prevalence of food allergies all over the world and the increase in allergic reactions to cow's milk protein, especially in children up to the age of three, naturally increased the interest in donkey milk. In addition to these advantages for donkey milk, many more scientific in-vivo and in-vitro studies are needed. However, in Muslim societies, donkey milk consumption is not considered halal religiously. In this study, it is aimed to examine whether donkey milk can be a good alternative in cases where breast milk cannot be given in infant feeding in terms of literature and to compile information on this subject.

**Keywords:** Donkey milk, breast milk, cow's milk, nutraceutical, nutrition.

### INTRODUCTION

Humans need air, water, and food to survive. Water and food form the basis of nutrition. Nutrients needed at every stage of life can vary. Nutrition is related to the health condition that directly affects human life. In this context, nutritional conditions from infancy affect the future health status of the individual. For this reason, newborn babies should be fed with breast milk, especially in the first six months. However, there may be periods when breastfeeding is not possible due to physiological reasons, the mother's milk is insufficient or absent, or in some special cases, the baby cannot be breastfed. In the past, when undesirable situations were encountered, it is known that cow or goat milk is used instead of breast milk, and recently donkey milk is used.

Breast milk is a natural food with high bioavailability and is easy to digest, containing energy and nutrients required for maximum growth and development (Samur, 2008). Since milk is a substance that can meet the needs of newborns in terms of nutritional values (Budak and

Gürsel, 2012), cow's milk was given directly to the baby without knowing that the protein it contains causes allergic reactions as an alternative in cases where breast milk cannot be given. However, with the occurrence of allergic reactions in infants and children aged 0-3, cow's milk has been approached more cautiously (Cunsolo et al., 2011). Cow milk protein allergy is common in children. Immunoglobulin-E is a type of antibody that can be found in allergy-prone people and is formed against an allergen to which people are sensitive (D'Auria et al., 2008).

The interest in goat milk started to increase in the 1990s with the emergence of information about functional foods (Garcia et al., 2014). It has been reported that goat's milk is less allergenic than cow's milk, so it can be used in the nutrition of children with cow's milk allergy (Park, 1994). Although goat's milk is more similar to breast milk than cow's milk, it is reported that it should be enriched in terms of folate, iron, B12, C, and D vitamins (Altun and Sarıcı., 2017).

In recent years, the interest in donkey milk has increased due to its closeness to breast milk in terms of composition, richness compared to other kinds of milk in terms of basic nutrients, non-allergenicity, and high drinkability and digestibility (Businco et al., 2000; Lowe et al., 2010; Barlowska et al., 2011).

After the donkey milk production farms started to be established in our country, the concept of halalness of donkey milk started to be discussed. According to Islam, it is permissible to drink the milk of animals whose meat is eaten, but it is not permissible to drink the milk of animals whose meat is not eaten. The High Council of Religious Affairs issued a fatwa on drinking donkey milk and using it in the health sector. While it is emphasized in the fatwa that it is not permissible to drink donkey milk, it is stated that it is religiously permissible if it is necessary to use it for the treatment of a disease (Anon., 2020).

In this study, it is aimed to compile information on this subject by examining the literature in terms of whether donkey milk can be a good alternative in cases where breast milk cannot be given in newborn and infant nutrition.

## **NUTRITIONAL IMPORTANCE OF BREAST MILK**

The most important food in the nutrition of babies is breast milk. Breast milk is a natural substance that contains all the nutrients required for a newborn baby, has high bioavailability, and is easy to digest (Samur, 2008). Maturation of breast milk occurs after several stages. The milk secreted for 3-5 days after birth is called -colostrum. While colostrum is rich in protein, its lactose content is low. In addition, it contains components that are important for the immune system such as lysozyme, immunoglobulins, lactoferrin, and complement, and due to these properties, it protects the baby against infections (Chowanadisai and Lonnerdal, 2002; Lonnerdal, 2003; Paramasium et al., 2006; Atici et al., 2007; Polat et al., 2013). It is also rich in vitamins A, E, K, and minerals. With the epidermal growth factor it contains, it prepares the infant intestinal system for digestion and helps the baby to excrete easily with its laxative effect (Fransson and Lönnerdal, 1983).

After colostrum, the transition period milk to mature breast milk is secreted for two weeks and then mature breast milk begins to be secreted. The difference between mature breast milk from colostrum is that its fat and lactose content is high and its protein content is low (Polat et al., 2013).

Breast milk, with the substances it contains, modifies the gastrointestinal and immune system of the baby and regulates brain development. It is also effective on obesity, metabolic diseases

such as Type 1 and Type 2 diabetes, asthma, atopic dermatitis, upper respiratory tract infections, gastroenteritis, and sudden infant death. Breast milk alone perfectly meets the physiological and psychosocial needs of the baby during the first six months after birth. For all these reasons, the World Health Organization (WHO) and the American Academy of Pediatrics recommend using only breast milk for at least six months and using breast milk with additional foods until the age of 2 (Martin et al., 2016; Altun and Sarıcı, 2017; Twist, 2020).

However, in some special cases, alternative milk sources are used, if the mother does not have milk or is insufficient, breastfeeding is not possible due to physiological reasons. These alternatives are generally cow's milk, goat's milk, and increasingly used donkey's milk.

### **DONKEY MILK AND ITS IMPORTANCE**

Donkey is an important animal species that ungulates (Perissodactyla) order, family Equidae and genus Equus that can be adapted to semi-arid or completely barren regions and can be used in agriculture, trade, and army since ancient times (Ofstedal and Jenness.,1998; Taşçı,2011).

China ranks first in the world with the number of donkeys, followed by Afghanistan, Pakistan, Egypt, South America, Sudan, and some African countries (Faye et al., 2012). With the increasing interest in donkey milk, donkey farms have started to serve in Istanbul, Kırklareli, Çatalca, Balıkesir, and Edremit in our country.

The importance and use of donkey milk have been known since ancient times. For example, there is information in the literature that the Egyptian queen Cleopatra used donkey milk to have beautiful skin, and the Greek physician Hippocrates used donkey milk for urinary system problems, viral diseases, fever, and poisoning. It is also known that in various parts of the world, donkey milk is used in the production of cosmetic products due to its mineral substances (Salimei et al., 2004; Bidasolo et al., 2012).

In recent years, it has been observed that the use of donkey milk has started to increase instead of cow and goat milk in babies who cannot be fed with breast milk for various reasons (Taşçı, 2011). Cow's milk protein causes allergies in infants and children up to the age of three, as well as the fact that cow's and goat's milk causes the anaphylactic reaction, cross-reactivity, and folic acid deficiency are shown as the causes of this situation (Bruggink, 1997; Pessler and Nejat, 2004). In addition, donkey milk has similar properties to breast milk, especially in terms of digestion and consumption, due to its functional properties and richness in primary nutrients (Uniacke-Lowe et al., 2010).

High levels of serum proteins, immunoglobulins, lysozyme, and essential fatty acids can be mentioned as the reasons why donkey milk is among the foods important for health. Linolenic acid and linoleic acid, which are essential fatty acids, are known to have cholesterol-lowering effects. In addition, donkey milk can be used as a functional food in cases related to kidney diseases, atherosclerosis, and lung tumors; various studies show that it delays aging, has a strong bactericidal effect, and has positive effects on the immune system. (Tafaro et al., 2007; Zhang et al., 2008; Mao et al., 2009; Bidasolo et al., 2012).

Donkey milk has begun to take place among new dietetic foods with its high lactose content, low protein concentration, essential amino acid composition, and unique protein profile (Guo et al., 2007). It is known that the dry matter, fat, protein, casein, and ash values are lower than cow's milk (Barlowska et al., 2011; Cosentino et al., 2012). The main proteins of milk are casein and whey proteins. Donkey milk's protein content is lower than cow's milk but very

similar in proteomic profile to breast milk due to strong qualitative similarity between casein and whey proteins (Miranda et al., 2004; Šarić et al., 2012). According to Guo et al. (2007) and Brew (2003), donkey milk is similar to breast milk in terms of serum protein content and  $\alpha$ -La. Although the protein content varies according to the type and breed of the animal, the casein/serum protein ratio is on approximately 1:3. This situation reduces the allergenic capacity of donkey milk (Tidona et al., 2011; Lara Villoslada et al., 2005).

Despite its low-fat percentage (0.3%), donkey milk stands out with its high unsaturated fatty acids and low saturated fatty acid content (Ponzo and Febbraio, 2006; Blasia et al., 2008). Donkey milk is similar to breast milk in terms of triglyceride acid fraction, omega 3, and omega 6 fatty acids (Chiofalo et al., 2006). In addition, long-chain fatty acids have a positive effect on the immune system (Hoppu et al., 2002).

Donkey milk is the closest to breast milk in terms of lactose content (6.9 mg/ml). The high lactose content facilitates consumption and optimizes the absorption of calcium in the intestines (Schaafsma, 2

In terms of mineral substance content, donkey milk is closer to breast milk than other kinds of milk and is particularly rich in Ca, P, K, Na, and Mg (Sorrentino et al., 2005; Fantuz et al., 2009; Salimei and Fantuz, 2010).

Donkey milk is strong in terms of microbial inhibitory activity with its lysozyme, lactoferrin, immunoglobulins, and lactoperoxidase content (Baldi et al., 2005; Yamauchi et al., 2006; Silvia et al., 2008). In addition, some studies show antimicrobial effects against both gram (+) and gram (-) bacteria with some fatty acids such as oleic, linoleic, and lauric acid (Saric et al., 2014). In the literature, the ability of enzymes in donkey milk to inhibit pathogenic microorganisms is also mentioned (El-Agamy et al., 1992; Malacarne et al., 2002).

In studies on the bacterial load of donkey milk, it is reported that the bacterial load is lower than that of other raw milk varieties (Morgan et al., 2003).

In a study examining the characteristics of donkey milk in our country, the dry matter amount is between 8.70 and 9.41%, the fat rate is between 0.53 and 0.63%, the SH value is between 2.08 and 3.06, the pH value is between 7.27 and 7.47, and the antioxidant activity values are between 2.247-4.807 mM trolox/ml. and the amount of lysozyme was approximately 1.34 mg/mL. In the same study, *Staphylococcus* spp. It was reported that *Staphylococcus aureus* and mold were not detected, and *Salmonella* spp was detected in all samples (Şahintürk, 2019).

Budak and Gürsel (2012) stated that the milk of mammals other than dairy cows (goat, sheep, buffalo, donkey, camel, mare) can be considered as natural alternatives that can replace breast milk, and also donkey milk is the closest to it. They also stated that it can be used in the treatment of allergy, digestive system disorders, and cardiovascular diseases.

## **PROPERTIES OF BREAST MILK AND ALTERNATIVE MILK KINDS**

The components of breast milk and milk types used as an alternative to breast milk are given in Table 1, the fatty acid composition in Table 2, the vitamin and mineral content in Table 3, and the protein composition in Table 4.



**Table1.** The Components Of Breast Milk And Alternative Types of Milk (Budak and Gürsel., 2012; Altun and Sarıca.,2017, Bükülmez,2020)

Component	Breast milk	Donkey milk	Cow"s milk	Goat milk
Lactose (%)	6.9	6.9	4.7	4.1
Total dry matter (%)	12.4	9.53-8.84	12.7	12,3
Ash (%)	0.20-0.22	0.41-0.39	0.70	0.8
Fat (%)	4	0.4	3.6	3.8
Protein (%)	1.2	1.7	3.2	3.4
Casein/whey	40/60	120/107	80/20	80/20
Energy (kcal/100 ml)	68	37	69	70

**Table 2.** Fatty Acid Composition of Breast Milk and Alternative Types of Milk (Budak and Gürsel., 2012; Şahintürk, 2016; Özkaya et al.,2017)

Fatty acids (%)	Breast milk	Donkey milk	Cow"s milk	Goat milk
Butyric acid (C4:0)	0.01-0.1	0.32-0.6	3.77-6.0	4.3 -6.3
Caproic acid (C6:0)	0,2	0.28-1.22	2.32-2.9	2.1-3.7
Caprylic acid (C8:0)	0.1-0.3	8.52-12.8	1.39-1.7	3.4-3.6
Capric acid (C10:0)	1.1.-2.1	18.65-20.42	3.34-3.4	10.0-12.4
Lauric acid (C12:0)	3.1-7.2	10.67-15.9	3.9-4.15	2.7-4.9
Myristic acid (C14:0)	5.1-10.9	5.77-10.59	11.3-13.1	8.7-8.9
Palmitic acid (C16:0)	20.2-29.6	11.47-29.17	28.8-31.6	20.7-25.5
Palmitoleic acid (C16:1n-7)	2,32	2.37-3.93	1.8 ± 0.3	0.5
Stearic asit (C18:0)	6.0-8.6	1.12-3.91	6.6-14	10.3-12.1
Oleic asit (C18:1 n9)	33.3-46.4	9.7-22.15	19.2-20.7	17.7-20.3
Linoleic asit (C18:2 n6)	6.0-13.0	8.15-15.17	1.9-2.44	1.4-1.8
Linolenic asit (C18:3 n3)	1.0-3.4	6.32-16.330	0.2-0.48	0.4 -0.6
Saturated fatty acids (SFA)	39.41-42.24	46.7-67.7	68-70.8	62.2-77.4
Monounsaturated fatty acids (MUFA)	44.30-45.11	15.3-35.0	19.2-20.7	18.2-20.8
Polyunsaturated fatty acids (PUFA)	15.48	15.2-30.5	10-11.3	9.07-9.77

**Table 3.** Vitamin and Mineral Content of Breast Milk and Alternative Types of Milk (Şahintürk, 2016; Özkaya et al., 2017; Verduci et al., 2019; Bükülmez, 2020; Vincenzetti et al., 2021)

Component	Breast milk	Donkey milk	Cow"s milk	Goat milk
Vitamin A ( mcg RE)	61	0.0017	37	48
Vitamin E (mg/100gr)	0.08	0.0051	0.08	0.05
Tiamin (mg/100gr)	0.01	0.06	0.04	0.06
Riboflavin (mg/100gr)	0.04	0.03	0.2	0.13
Niasin (mg/100gr)	0.18	0.09	0.13	0.24
Pantotenik asit (mg/100gr)	0.22		0.43	0.3
Folat (mcg/100gr)	5		8.5	1
Cyanocobalamin (mcg/100gr)	0.05		0.51	0.07
Vitamin C (mg/100gr)	5		1	1.1
Vitamin D (mg/100gr)	0.1		0.2	0.1
Calcium (mg/100gr)	32	91	112	118

Iron (mg/100gr)	0.072	0.043-0.264	0.1	0.3
Magnesium (mg/100gr)	3	4	11	14
Phosphor (mg/100gr)	14	61	91	100
Potassium (mg/100gr)	51	50	145	202
Sodium (mg/100gr)	17	22	42	44
Zinc (mg/100gr)	0.2	0	0.4	0.3
Copper (mg/100gr)	0.1	0.008-0.030	0.1	0.0308
Selenium (mcg/100gr)	1.8		1.8	1.1
Manganese (mcg/100gr)			8	18

**Table 4.** Protein Composition of Breast Milk and Alternative Types of Milk (g/L) (Greppi,2010; Brumini, 2016; Vincenzetti et al., 2021)

Component	Breast milk	Donkey milk	Cow's milk	Goat milk
Protein	9–15	13–18	32	37.2
Casein	5.6	6.6	27,2	24
Whey protein	8.0	6.5	4,5	7.40
$\alpha_{s1}$ - casein	0.8		10	16
$\alpha_{s2}$ - casein			3,7	
$\kappa$ - casein	1.0	trace	3,5	8
$\beta$ - casein	4.0		10	51
$\alpha$ -lactalbumin	1.9–2.6	1.80	1,2	0.7-2.3
$\beta$ -lactoglobulin		3.7	3,3	17
Lysozyme	0.04–0.2	1.0	İz	trace
Lactoferrin	1.7–2.0	0.08	0,1	0.02-0.2
Albumin	0.4		0,4	1
Immunoglobulins	1.1		1,0	

## CONCLUSION

Breast milk is an important food for newborns and babies. It is recommended to consume only breast milk, especially in the first six months. Therefore, alternative milk sources should be used in cases where breastfeeding is insufficient.

Cow's milk should be considered as the last alternative to be used because it causes allergic reactions. Goat milk, on the other hand, has a less allergenic structure compared to cow's milk, is easier to digest and absorb. It is also closer to breast milk in terms of its antimicrobial and immunomodulatory properties. However, it is weaker than breast milk in terms of folate, vitamin A and C content.

Donkey milk is more similar to breast milk in terms of digestibility, riboflavin, sodium potassium, magnesium, protein composition, fatty acid composition (especially butyric, caproic, myristic, palmitic, palmitoleic and linoleic acid), total saturated and unsaturated fatty acids compared to other milk alternatives. It is also rich in linolenic acid, calcium and vitamin B<sub>6</sub>, which have an important place in human nutrition. Therefore, it can be considered as an alternative milk source in terms of nutritional content in cases where breastfeeding is insufficient. In addition to these advantages of donkey milk, it is known that species, race, lactation period, etc. are effective on the components of milk. Therefore, more in-vivo and in-vitro studies are needed on this subject. However, the fatwa given by the High Council of Religious Affairs is also important in Muslim societies.

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## THE EFFECTS ON AC ELECTRICAL AND MECHANICAL PROPERTIES OF ALL BICOMPONENT NANOFIBER OF THE PLA-Ag NPs THAT EXISTED IN CORE OR SHELL

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### Abstract

In this study, two different structures were obtained as a single structure while preserving their characteristic features. While 2%, 5% and 10% silver nanoparticles (Ag NPs) are found in the nanofiber core as a mixture with poly(lactic) acid (PLA) polymer; pure polyurethane (PU) polymer is embedded in the nanofiber shell. While there is pure PU in the nanofiber core reversibly; 2%, 5% and 10% Ag NPs were found in the nanofiber shell as a mixture with PLA polymer. According to the replacement of Ag NPs in the nanofiber structure, surface properties of bicomponent nanofibers and the variation of AC electrical conductivity properties were investigated. It was observed that the AC conductivity value increased more depending on the frequency when Ag NPs were used in the core compared to the nanofiber shell including Ag NPs. It has been seen that as the percentage ratio of Ag NPs in the fiber increases, the value of the real dielectric constant ( $\epsilon'$ ) reduces continually with raising frequency. Also, it has been observed the worth of the imaginary dielectric constant ( $\epsilon''$ ) rises with the rising frequency and as the percentage ratio of Ag NPs in the structure increases. To evaluate its usability in bending and strain sensor applications, the evaluation of the mechanical properties with the tensile test was also carried out. High tensile strength and high elasticity values are observed while available pure PU in the core. Surface images of bicomponent nanofibers were performed by SEM and TEM analysis. At the same time, while examining the distribution of Ag NPs in the structure by SEM analysis; it has been noticed that the fiber diameter increases when pure PU is present in the core. It has been proved by TEM analysis also that two different structures are obtained together as bicomponent structure.

**Keywords:** PLA-Ag NPs/PU bicomponent nanofiber, core, shell, AC electrical conductivity

### INTRODUCTION

The di-axial electrospinning process is demonstrated tremendous behaviour to produce mono structured nanofibers while saving the individual properties of the two-component structures (Alharbi et al, 2018). Most polymers are non-conductive. So, to develop the electrical conductivity properties of polymer composites have used metal particles (Wang et al, 2011). In the study of Alharbi et al, the fabricated PLA (core) and PVA (shell) electrospun mats showed powerful physical and high mechanical properties (Alharbi et al, 2018). In the study of Guo et al, to improve the mechanical properties of the bicomponent nanofibers, the bicomponent Polyurethane (PU)/Cellulose acetate (CA) nanofiber were fabricated with PU



(core) that have excellent mechanical properties and CA (shell) (Guo et al, 2017). Li et al found that PLA-Ag nanocomposites have high electrical conductivity and perfect electromagnetic interference shielding at low content of silver (Li et al, 2019). In the study of Doğanay et al, the conductivity of the fabricated and characterized silver nanowire (Ag NW) filled polylactide (PLA) nanocomposites was measured quite high with a value of 27 S/m (Doğanay et al, 2016). The polymer chain orientation in electrospun mats is known to raise when their fiber sized is reduced (Ji and et al, 2008; Wong and et al, 2008).

In this study, the effect of neat PU and PLA Ag NP nanofibers on the placement in core and shell of fiber on the characteristics of the whole fiber was investigated. For the first time, bicomponent nanofibers have been successfully obtained with pure PU and PLA-Ag NP. It is thought that the obtained bicomponent nanofibers can be used in bending and strain sensor and even biosensor applications.

## MATERIALS AND METHODS

Estane®GP52DTNAT055 thermoplastic polyurethane (PU) from Lubrizol (Velox) and 4043D Poly (lactic) acid (PLA) from Nature Works were purchased. The chloroform (CF) and the dimethylformamide (DMF) were supplied from Merck Company. The silver nanoparticles (Ag NPs) was assured from Nanografi. Ag NPs have 35 nm size and %99,99 purity.

The 10 wt% neat PLA and the 10 wt% neat PU solutions were prepared in CF/DMF (8/2, v/v) solvent. The 1%, 3% and 5% Ag NPs doped PLA solutions were also prepared with 10% concentration. All were stirred with a magnetic mixer at room temperature for 3 hours. At ending 3h, only the 10 wt% neat PU solution were dissolved at 120°C for another 30 min. All prepared solutions were subjected to the di-axial electrospinning process without waiting. The codes of the studied nanofibers are given in Table 1.

Names	AgNPs (wt%)	Core	Shell	Concentration (wt%)
<b>inPU-PLA</b>	-	neat PU	neat PLA	-
<b>inPU-2AgPLA</b>	2			
<b>inPU-5AgPLA</b>	5	neat PU	PLA-Ag	10
<b>inPU-10AgPLA</b>	10		NP	
<b>inPLA-PU</b>	-	neat PLA	neat PU	-
<b>in2AgPLA-PU</b>	2	neat		
<b>in5AgPLA-PU</b>	5	PLA-Ag	neat PU	10
<b>in10AgPLA-PU</b>	10	NP		

The nanofibers production have been carried out with the di-axial electrospinning method which a needle has an inner diameter of 0.64 mm (22G) and the outer diameter of 1.6 mm (14G). The production processes were determined as 23 cm distance, 1.00 mL/h feeding rate and 21 kV applied voltage.

The average fiber diameter and surface morphology were examined by QUANTA 400F Field Emission branded scanning electron microscopy (SEM) analysis. The presence of bicomponent monostructured nanofibers and Ag NPs in the core or shell of the fiber were proven by FEI 120kV HCTEM branded transmission electron microscope (TEM) analysis. To determine the mechanical properties of nanofibers was tested with Lloyd Instruments LRX Plus considering ASTM D882 conditions.

Alternative current (AC) conductivities of nanofibers were measured by the Sourcetric LCR meter (Model ST2826A) in 1MHz frequency (f) at room temperature (24°C). The thickness-measured bicomponent nanofibers were suppressed between two copper electrodes with 13 mm diameter. The capacitance (Cp) and dielectric loss factor (tanδ) of bicomponent nanofibers were measured and after, the AC conductivity have been calculated by following the equation (1) below:

$$\sigma = \frac{A}{d} \frac{1}{2\pi f C_p} \quad (1)$$

Where A is the field of the electrode, w is the angular frequency ( $2\pi f$ ) and d is the thickness of the nanofibers. Furthermore,  $\epsilon'$  (real dielectric constant) and  $\epsilon''$  (imaginary dielectric constant) were respectively calculated by following the equation (2) and the equation (3):

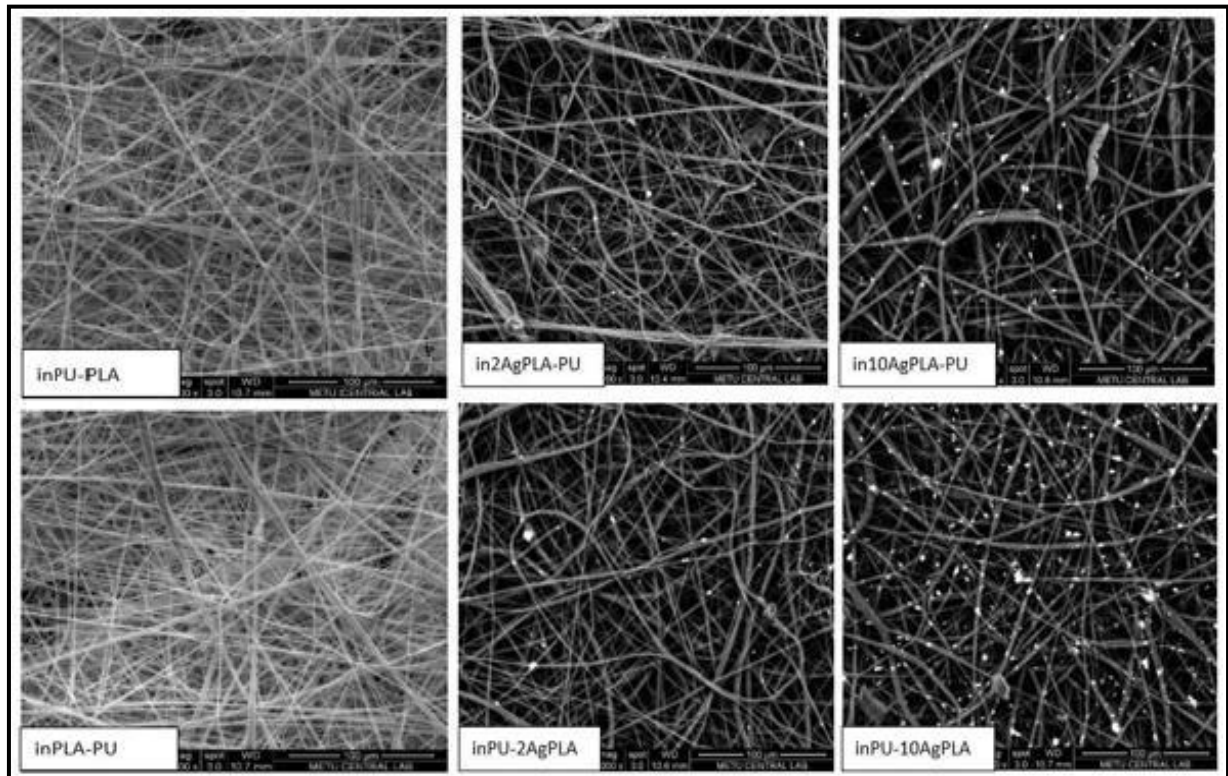
$$\epsilon' = \frac{C_p}{C_0} \quad (2)$$

$$(3)$$

## RESULTS AND DISCUSSION

SEM images of bicomponent nanofibers are showed at 1000x magnification in Figure 1. According to SEM images, the surface of all nanofibers is smooth and mostly homogeneous. Also, the distribution of Ag NPs on the surface of the fibers is homogeneous. Ag NPs were viewed as more intense on the shell of nanofiber. Diameter values of bicomponent nanofibers are given in Table 1. The fiber diameters of neat PLA and neat PU nanofibers are taken from our previous study (Samatya Yilmaz and Aytac, 2021).

The nanofiber diameters were thick when neat PU was present in the core, while the nanofibers were thinner when neat PLA was present in the core. In this case, it can be interpreted that the molecular weight of the neat PU polymer is higher than that of the neat PLA polymer (Samatya Yilmaz and Aytac, 2021). Thus, it was determined that the part that affects the thickness of the fiber is the core of the fiber. Even finer bicomponent nanofibers were obtained when PLA-Ag NPs were present in the core. The reason for this is that the conductivity of the solutions increased with the presence of Ag NPs. The surface tension decreased with increasing conductivity. Since the applied voltage does not change, and the voltage applied to this conductivity of the solution is high, the jet will lengthen, and finer fibers will begin to form. Thus, as the conductivity of the solutions increases, finer fibers will be obtained. The inPU-10AgPLA bicomponent nanofiber is the thinnest fiber with a size of 603 nm.

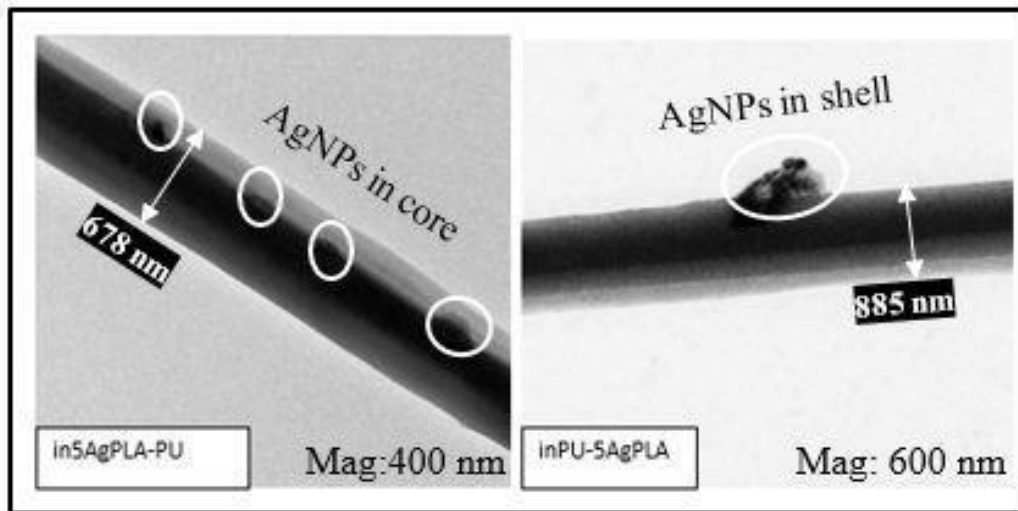


**Figure 1.** SEM images of bicomponent nanofibers ( mag: 1000x)

**Table 1.** Diameters (nm) of bicomponent nanofibers

<b>Samples</b>	<b>Fiber Diameter (nm ± 25)</b>
<b>neat PU</b>	<b>1025</b>
<b>neat PLA</b>	<b>330</b>
inPLA-PU	1026
inPU-PLA	1287
in2AgPLA-PU	755
inPU-2AgPLA	882
In5AgPLA-PU	690
inPU-5AgPLA	863
in10AgPLA-PU	603
inPU-10AgPLA	850

TEM images of 5wt% Ag NPs doped PLA bicomponent nanofiber are shown in Figure 2. The localization of Ag NPs in the core and Ag NPs in the shell be seen. In addition, the fact that they are mono-structured bicomponent nanofibers is evident by the contrast difference in the TEM images. Nanofiber diameter shell measurements are also compatible with fiber diameters obtained from SEM images.



**Figure 2.** TEM images of 5% Ag NPs doped PLA bicomponent nanofiber

The mechanical properties of bicomponent nanofibers are given in Table 2. The values of neat PLA and neat PU nanofibers are given from our previous study (Samatya Yilmaz and Aytac, 2021). All nanofibers exhibited high tensile strength and high (%) elongation behavior compared to Neat PLA. The production as monostructured bicomponent nanofiber of PLA and PU nanofibers improved mechanical properties. So, the hardness and toughness of them were balanced. While neat PLA showed lower mechanical properties in the core, the mechanical properties were increased when PLA-Ag NPs were used in the core (Li et al, 2019). However, it was observed that the tensile strength and elongation (%) values were much higher when PU was present in the interior. It was concluded that the part that dominates the mechanical properties of the fiber is the core of the fiber. However, when using neat PU inside and PLA with 10% Ag NPs on the outside, mechanical properties decreased. It has been determined that the optimum amount of Ag NPs to be used by adding PLA in the outer part, while there is PU in the inner part, is 5 wt%. In order not to decrease the mechanical properties, the amount of Ag NPs should not be used more than this value on the shell.

**Table 2.** The values of mechanical properties of bicomponent nanofibers

Samples	Tensile Stress (MPa)	Elongation (%)
neat PLA	0,3	24,7
neat PU	6,7	272,8
inPLA-PU	1,4	46,3
inPU-PLA	2,6	143,8
in2AgPLA-PU	1,6	58,9
inPU-2AgPLA	2,9	182,4
In5AgPLA-PU	2,0	71,3
inPU-5AgPLA	4,1	288,8
in10AgPLA-PU	2,1	101,5
inPU-10AgPLA	3,1	253,8

The AC electrical conductivity at 1MHz frequency values of bicomponent nanofibers were shown in Table 3. All produced Ag NP doped bicomponent nanofibers were obtained as the semiconductor. The polymers have insulating properties, but the inPLA-PU and inPU-PLA nanofibers have exhibited AC conductivity values of  $3.10E-08$  and  $1.94E-08$  at 1MHz,

respectively (Huang et al, 2014; Triantis et al, 2015). AC conductivity values occur in this way due to polar interaction movements occurring in polymer chains at high frequencies. As the amount of Ag NPs increased in the core, the AC conductivity of all fiber increased. The AC conductivity values of in5AgPLA-PU and in10AgPLA-PU nanofibers are almost the same. Thus, it has been foreseen that in5AgPLA-PU nanofiber, which has a high AC conductivity value of 3.60E-05 and medium mechanical properties, can be used in bending and strain sensor applications. It was observed that the conductivity properties of the fiber were revealed more when there were Ag NPs in the core part of the fiber. Silver is one of the elements with the highest electrical conductivity. The AC electrical conductivity and conduction of electric current of Ag NPs added bicomponent nanofibers have been associated with the movement of free electrons.

**Table 3.** AC conductivity values of bicomponent nanofibers

Samples	1 MHz	1 MHz	Samples	
<b>inPU-PLA</b>	3,10E-08	1,94E-08	<b>inPLA-PU</b>	$\sigma$ [S/m]
<b>inPU-2AgPLA</b>	2,91E-06	2,27E-06	<b>in2AgPLA-PU</b>	
<b>inPU-5AgPLA</b>	1,22E-05	3,60E-05	<b>in5AgPLA-PU</b>	
<b>inPU-10AgPLA</b>	1,44E-05	3,77E-05	<b>in10AgPLA-PU</b>	

The real dielectric constant ( $\epsilon'$ ) at 1MHz of all bicomponent nanofibers are given in Table 4. As the amount of Ag NP in the structure decreases, the real dielectric constant increases. By nature, the dielectric constant is expected to decrease as the conductivity increases. The behaviour of the imaginary dielectric constant ( $\epsilon''$ ) at 1MHz frequency of bicomponent nanofibers was given in Table 5. The imaginary dielectric constant increases as  $\tan \delta$  and frequency rise. Moreover, the raised values are associated with the movement of the free charge transporter within the nanofiber (Demirezen et al, 2016).

**Table 4.**  $\epsilon'$  values of bicomponent nanofibers

Samples	1 MHz	1 MHz	Samples	
<b>inPU-PLA</b>	1,55E-01	1,28E-01	<b>inPLA-PU</b>	$\epsilon'$
<b>inPU-2AgPLA</b>	1,97E+00	9,60E+00	<b>in2AgPLA-PU</b>	
<b>inPU-5AgPLA</b>	2,07E+00	4,95E+00	<b>in5AgPLA-PU</b>	
<b>inPU-10AgPLA</b>	1,86E+00	5,59E+00	<b>in10AgPLA-PU</b>	

**Table 5.**  $\epsilon''$  values of bicomponent nanofibers

Samples	1 MHz	1 MHz	Samples	
<b>inPU-PLA</b>	5,58E-04	3,49E-03	<b>inPLA-PU</b>	$\epsilon''$
<b>inPU-2AgPLA</b>	3,49E-02	4,08E-02	<b>in2AgPLA-PU</b>	
<b>inPU-5AgPLA</b>	1,46E-01	4,32E-01	<b>in5AgPLA-PU</b>	
<b>inPU-10AgPLA</b>	1,73E-01	4,53E-01	<b>in10AgPLA-PU</b>	



## CONCLUSION

In this study, neat PU and PLA-Ag NP nanofibers were produced with the di-axial electrospinning method in a single structure as the bicomponent. All Ag NPs doped bicomponent nanofibers were successfully fabricated as semiconductors. The surfaces of produced bicomponent nanofibers were observed to be smooth and flat. Thinner diameters were obtained when Ag NP was in the core. As the amount of Ag increased, the diameter became thinner. Significant improvements in mechanical properties were observed with increasing Ag content. Tensile strength and elasticity increased with neat PU in the core of fiber. The AC conductivity of bicomponent fibers increased when Ag NP was in the core. It is thought that in5AgPLA-PU nanofiber will find use in stress and bending sensor applications.

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## COVID 19 CONTAGION RISK MONITORING AND TRACKING DEVICE DESIGN FOR INDOOR AREAS

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### **Abstract**

The covid-19 virus, which has been influencing all countries in the world since 2019, is a dangerous type of virus due to its fatality and the risk of rapid transmission. Scientific studies in the literature show that the covid-19 virus is transmitted very quickly through airborne droplets in closed and airless environments. With the emergence of different variants of the virus, the risk of transmission has increased even more. Scientific studies have shown that there is a negative relationship between air quality and the risk of covid-19 transmission. For this reason, it was determined that the risk of virus transmission is higher in closed areas and environments with low air quality. In this study, an Internet of Things (IoT) based air quality measurement device was developed for indoor use. Thanks to this study, the air quality in closed areas (restaurants, cafes, schools, buses, subway, etc.) was instantly measured and sent to the Thingspeak IoT platform, which is used for the internet of things. Instantly sent data was converted to graphics on the Thingspeak IoT platform. The instant air quality index was also followed on the Thingspeak IoT platform, reaching the lowest and highest air quality index in the period. Thanks to the thingview program used for the android software of the Thingspeak IoT platform, the air quality index graph was also accessed with smart devices. In addition, the system will inform the user by giving a light warning in case of low air quality data to improve air quality. Thanks to this device, the user will be able to instantly access the indoor air quality index while entering closed areas and have information about the risk of covid contamination. With this internet-based device, mass vehicle density, closed areas and air quality index can be monitored from a centre. Thus, it will be possible to ventilate risky indoor environments and it will be prevented that more people are taken to dense closed areas.

**Keywords:** Covid-19, Internet of Things, Android, air quality index

### **INTRODUCTION**

Infectious epidemics are known as epidemics. Pandemics are contagious, epidemic diseases that spread to vast geographies, sometimes to a continent or even to the entire globe, causing disease and death in humans or animals (Aslan, 2020). Coronaviruses (CoV), on the other hand, constitute a large family of viruses that can cause disease in humans and animals in nature. They are single-stranded, positive polarity, membrane and non-segmented RNA viruses belonging to the Orthocoronavirinae subfamily. They consist of 4 main genera:  $\alpha$ (Alpha),  $\beta$ (Beta),  $\gamma$ (Gamma) and  $\delta$ (Delta). While  $\alpha$  and  $\beta$  genera can infect mammals, they are responsible for respiratory tract infections in humans and enteritis in animals.  $\gamma$  and  $\delta$  genera tend to infect birds (Dikmen, et al., 2020).

Coronavirus (CoV) is a large family of viruses that cause diseases ranging from the common cold to more serious diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (Altın,2020) . The epidemic caused by the SARS-CoV-2 virus and the disease defined as COVID-19, which started in

Wuhan, China in December 2019, was declared as a global pandemic in March 2020 by the World Health Organization due to its spread to the world. It was stated that the source of the epidemic came from the bat. It is thought that the virus mutates in animals and gains the ability to be transmitted from person to person. The spread of the epidemic in China and its distribution in different regions of the world adversely affected human life. The results of this spread vary according to many factors such as climate, hygiene, population, demographic characteristics, and transmission characteristics. It is stated that the disease is mainly transmitted by droplets and contact.

The COVID-19 contagious disease is transmitted from person to person mainly through droplets and at a distance of fewer than two meters. In addition, the droplets released by coughing and sneezing of individuals infected with covid-19 are transmitted by contacting and contacting the mouth, nose or eye mucosa after contact with other people's hands. Since the virus can be detected in the respiratory tract secretions of asymptomatic people, it can be contagious (Türken, Köse, 2020).

Workplaces, hospitals, nursing homes, cruise ships, aircraft, crowded gatherings (religious, wedding, etc.), schools, prisons, homeless shelters, choirs act as catalysts in the spread of the disease. Person-to-person transmission occurs through respiratory droplets during close contact. Transmission occurs as a result of direct contact with the mucous membranes of the susceptible person during coughing, sneezing, or speaking of an infected person. Transmission is usually by contact in an area closer than one meter (Saydam, 2020).

However, there is a lot of research being done on transmission due to air pollution. These studies show that the rapidity and prevalence of Covid-19 has a high correlation with air pollution.

In this study, an internet-based device was designed that minimizes the risk of covid-19 contamination due to the low air quality ratio in indoor environments. This device will be used in public vehicles and will calculate the air quality index and enable it to be tracked both over the internet and from smart devices.

Rafia Mumtaz et al. carried out an Internet of Things (IoT) Based Indoor Air Quality Sensing and Predictive Analytic—A COVID-19 Prospective study conducted by Rafia Mumtaz et al. In their study, they measured parameters such as ambient temperature and air humidity, including NH<sub>3</sub>, CO, NO<sub>2</sub>, CH<sub>4</sub>, CO<sub>2</sub>, PM 2.5. They used many machine learning algorithms for indoor air quality with the values they measured (Mumtaz, 2021).

Büşra Çağlar talked about healthy buildings and indoor quality in her study titled "The Importance of the Principle of Design for Humans in the Pandemic Process in Indoor Air Quality of Buildings". He also mentioned in his study that natural ventilation would be beneficial in the epidemic (Çağlar, 2020).

Balasubramaniyan and Manivannan developed an Internet of Things based gas sensor measurement device in their work called -IoT Enabled Air Quality Monitoring System (AQMS) using Raspberry Pi. They used propane gas sensor, temperature and humidity sensor, carbon monoxide gas sensor and combustible gas and smoke sensor and raspberry pi in their studies. They sent the data they received from these sensors to the thingspeak IoT platform and followed the results graphically (Balasubramaniyan, Manivannan, 2016).

Somansh Kumar and Ashish Jasuja have developed an Internet of Things based system using raspberry pi in their work called -Air Quality Monitoring System Based on IoT using Raspberry Pi. With the system they developed, they measured carbon dioxide and carbon monoxide gas values, temperature and humidity values. They used the IBM Watson platform, which is an IoT platform, to instantly monitor these measured values.

Mohieddine Benammar et al. In their study named -A Modular IoT Platform for Real-Time Indoor Air Quality Monitoring, an indoor air quality measurement system was designed. With the designed system, CO<sub>2</sub>, CO, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, Cl<sub>2</sub>, ambient temperature and

relative humidity parameters were measured by sensors. They used the open-source Internet of Things (IoT) based web server platform called Emoncms for live use of the system (Benammar et al., 2018).

Giovanni B. Fioccola et al. In their study called –Polluino: An Efficient Cloud-based Management of IoT Devices for Air Quality Monitoring, they developed a system that manages data from Cloud-based air quality sensors (Fioccola, 2016).

Steven J. Johnston et al. In their study titled –City Scale Particulate Matter Monitoring Using LoRaWAN Based Air Quality IoT Devices, particulate matter in the air in cities was monitored using a raspberry pi development card. In their studies, a LoRaWAN Based Air Quality measuring IoT device was designed (Johnston, 2019).

The scanned literature shows that air quality measurement studies have been carried out with different applications for both open-air and indoor spaces. In this project study, a system was designed for instant monitoring of air quality in public transportation vehicles. Unlike the literature, an open-source and cost-effective development board such as Arduino is preferred. The esp 8266 wifi module was used to send the data. In addition to the air quality index in the tracking system, a thingspeak channel was also carried out, which shows where the public transport vehicle is.

## MATERIALS AND METHODS

The covid virus, which affected the whole world and was declared a pandemic by WHO in March 2020, is very dangerous today because it is deadly and carries the risk of rapid transmission from person to person. It has been determined that more than 219 million people have been infected, over 4.5 million people worldwide have died due to the pandemic. Again, due to the pandemic, people all over the world have been in quarantine and have been exposed to curfews. Scientific studies have shown that there is a negative correlation between air quality and the risk of covid transmission. The Air Quality Index (AQI), which is widely used all over the world, determines the air quality as good, medium, bad, dangerous, etc., according to the concentrations of pollutants in the air. rating is made. The methods and criteria used in calculating the index in many countries of the world have been established in accordance with the air quality standards applied in their own countries (csb.gov.tr, 2020). The classified image of the air quality index is shown in figure 1.

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

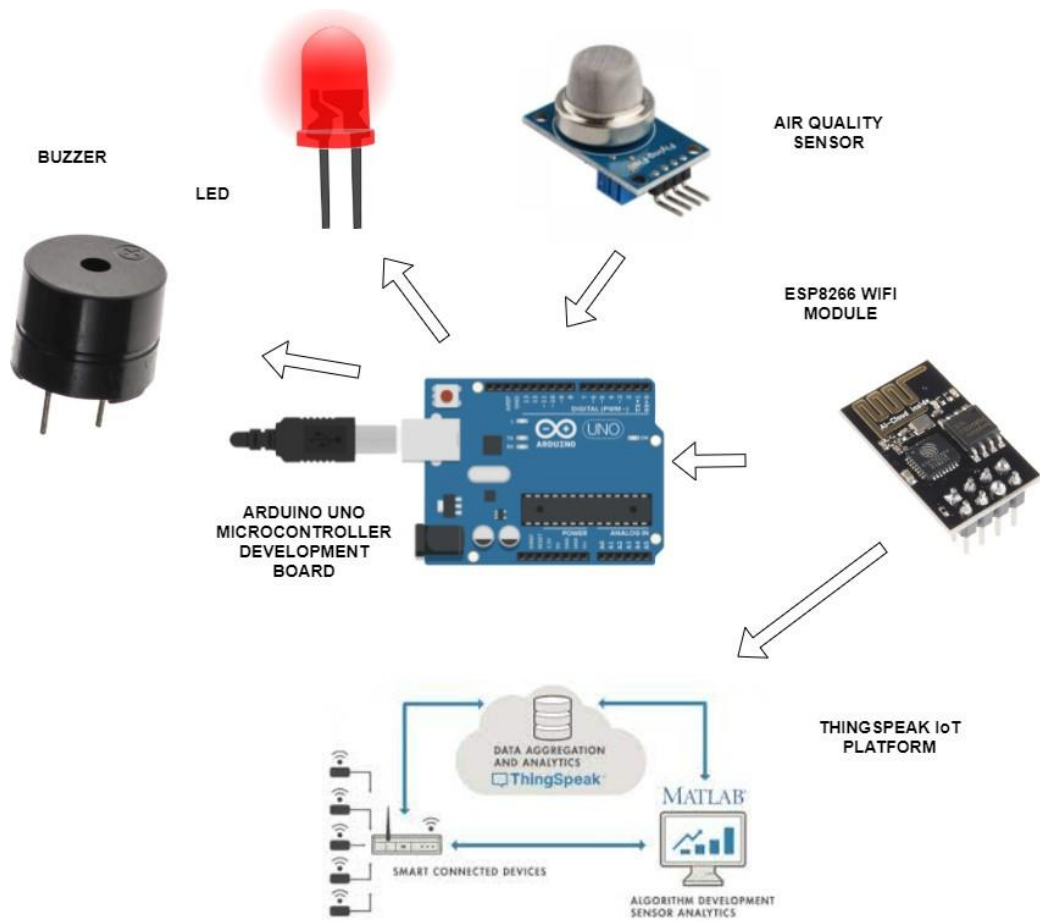
**Figure 1. Air quality index classification**

In this study, a system that calculates the air quality index for indoor areas and gives information about the risk of covid transmission has been developed. The open source Arduino Uno microcontroller development board, which is widely used in many large and

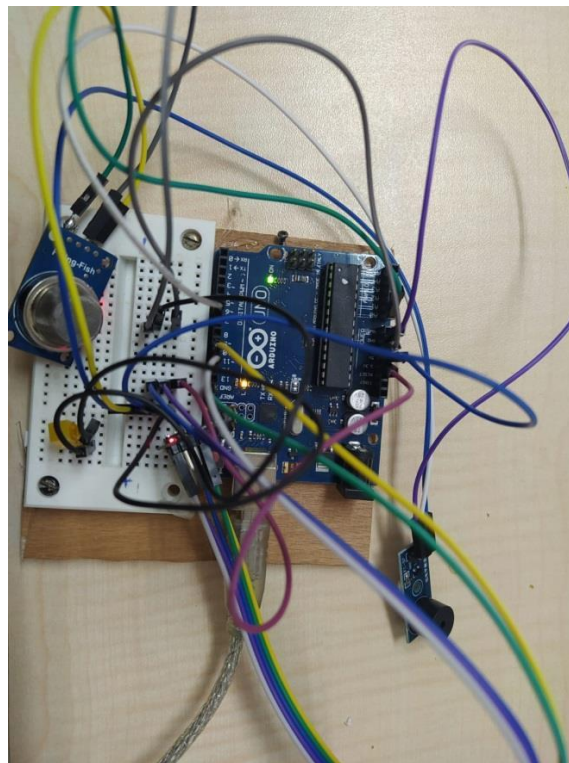
small studies today, is used in the system. For instant air quality measurement of the system, the mq135 air quality sensor was preferred. This sensor is a gas sensor that calculates the ambient air quality by measuring the amount of NH<sub>3</sub>, NO<sub>x</sub>, alcohol vapour, benzene, smoke and CO<sub>2</sub> gases. It is designed for use in home and office environments. The MQ135 air quality sensor is connected to the analogue pin of the Arduino Uno development board and instantly measures the air quality of the environment. A formula that calculates the air quality index is integrated into the Arduino ide software. Led has been added to the Arduino Uno development board and it has been provided to give a light warning when the air quality falls below the optimum level. In order for the system to be used based on the Internet of Things, a wifi module compatible with the ESP8266 Arduino has been added. This module is designed to receive and send data in environments with the internet. For monitoring the air quality index, a channel was opened on the thingspeak internet address, which is the IoT platform, and the values measured by the air quality sensor were sent to the channel on this platform with esp8266.

In this study, a system that measures the air quality index and calculates the covid risk accordingly has been designed for use in indoor areas. Arduino Uno microcontroller development board, mq135 air quality sensor, Led, buzzer, Esp8266 wifi module and thingspeak IoT platform were used in the designed system. The MQ135 air quality sensor will measure the air quality of the public transport vehicle and this data will be recorded with the help of the Arduino Uno microcontroller card. If the air quality in the public vehicle is low, the system will give a light warning with LED and an audible warning with a buzzer. Then, these instantaneously measured data with the esp8266 wifi module will be sent to the thingspeak IoT platform. The block diagram of the system is shown in figure 2.





**Figure 2.** Block diagram of the developed system  
The circuit design image of the developed system is also shown in Figure 3.



**Figure 3.** Image of the developed system

In addition, the screenshot of the software that sends data to the thingspeak IoT platform with the esp8266 wifi module on the serial port is shown in figure 4.



```
COM28
|
Data Send.
Value :19
Value :19
GET https://api.thingspeak.com/update?api_key=1FNPNELLDGNUKX5B&field1=19

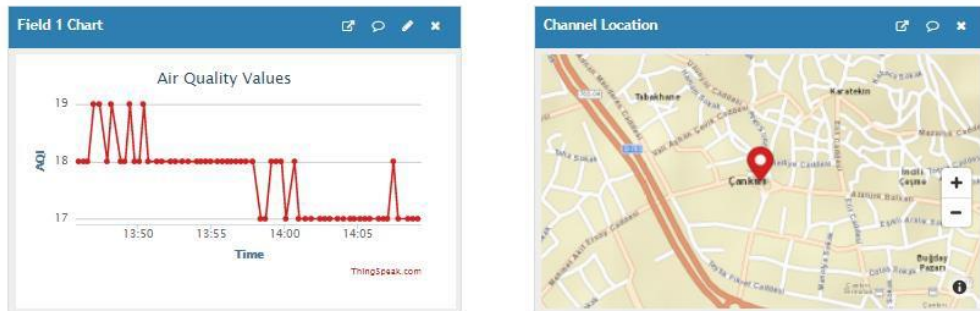
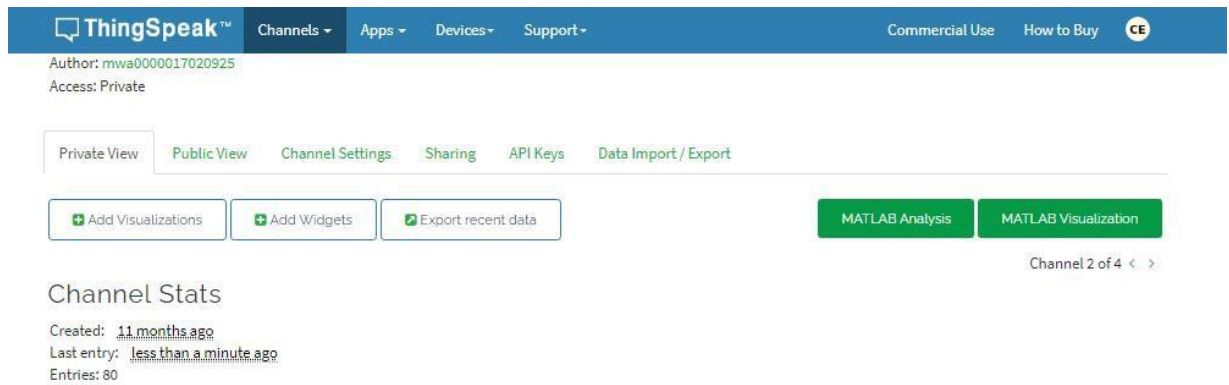
Data Send.
Value :19
Value :18
GET https://api.thingspeak.com/update?api_key=1FNPNELLDGNUKX5B&field1=18

Data Send.
Value :20
Value :19
GET https://api.thingspeak.com/update?api_key=1FNPNELLDGNUKX5B&field1=19

Data Send.
Value :19
Value :19
```

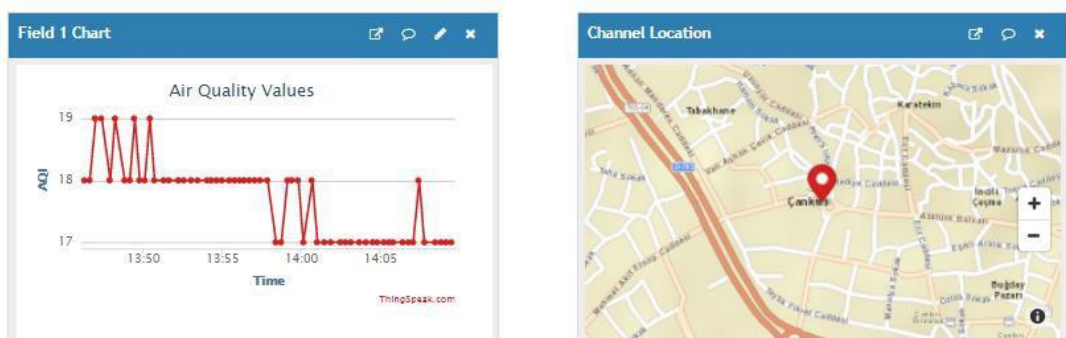
**Figure 4.** Seriport screenshot

This study was carried out for use in closed areas. With this system, it is thought that closed areas will become safer than the risk of covid transmission during the pandemic period. Scientific studies show that the covid-19 virus spreads more rapidly in closed environments and environments with low air quality. The mq135 air quality sensor used in the system measures the air quality and produces a certain voltage. The generated voltage was read with the analogue input of the Arduino Uno microcontroller card and converted into air quality index by software. Thanks to this IoT-based system, the user will be able to instantly monitor the air quality without getting on or in the public vehicle, and this will ensure that the user has information about the risk of covid contamination. Thingspeak IoT platform, which is widely used in the world, is preferred for monitoring and monitoring the system. Thingspeak is a free data platform for the Internet of Things (IoT) that remains popular today (Samsugi et al. 2018). Thingspeak is also a web-based open API IoT-based information platform that converts external components used for IoT into their data and is used to store sensor data (Camkurt, 2007). Thingspeak offers the use of real data, graphical visualization as well as plugins to collaborate with web services, social networks or API. The main feature of Thingspeak is Thingspeak Channel. The sensor data read by the microcontroller is transferred to the thingspeak channel, where the objects communicate within a certain period. This transfer takes 15 seconds to the Thingspeak channel (Aktaş et al. 2014). The image of the data measured by the air quality sensor in this project work and sent as an air quality index on the thingspeak channel is shown in figures 5 and 6.



**Figure 5.** Screenshot of Thingspeak channel I

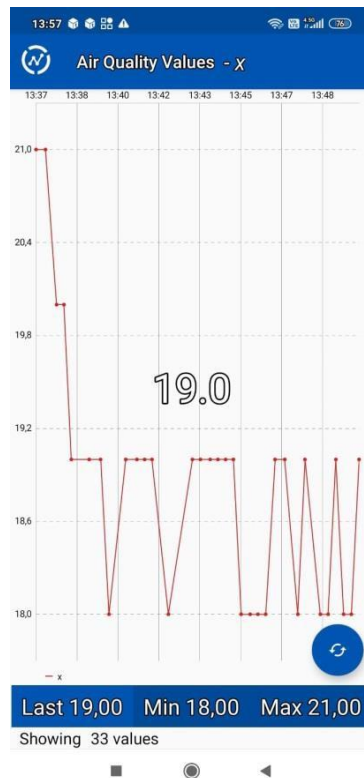
Channel Stats  
Created: 11 months ago  
Last entry: less than a minute ago  
Entries: 81



**Figure 6.** Screenshot of Thingspeak channel II

Since the system was developed for closed areas, a channel showing the location of the device was opened in the Thingspeak channel and the location of the device can be followed from the map area.

Thingspeak IoT platform is also used in smart devices. Before or while using the public transportation vehicle, the user will be able to access the air quality index graph measured by the device from his smart device (tablet, mobile phone, etc.) thanks to the android software called thingview developed for the IoT platform. The screenshot of Thingview android software is shown in figure 7.



**Figure 6.** Screenshot of Thingview android software

## RESULTS

With the increasing use of the Internet, IoT applications have become quite common. With this project work, an air quality index measuring device working with the internet of things was developed to be used in public vehicles. Arduino Uno microcontroller and Arduino compatible esp8266 wifi module are used for air quality sensor to send and receive data. The system was tested in a closed area in Çankırı and 81 data were obtained. When the indoor area is dense, the air quality index has increased, that is, the air quality has decreased. At this point, the system warns the user with a light and sound warning. Thus, as the air quality index increased, the indoor space was ventilated and it was observed that the instantaneous air quality index decreased. In the scanned literature, it has been determined that the covid-19 virus is transmitted much more in closed and airless environments. For this reason, a device that calculates instant air quality index based on the Internet of Things has been developed. The device is very low in cost and has been developed open source.

## DISCUSSION

Considering this study, it has been a study that will lead to other studies. The system has been developed in a way that is open to development with low cost. It can be ensured that the study is integrated into different fields in order to develop in later stages. A ventilation system can operate autonomously as a precaution when the air quality decreases in schools, hospitals, markets, etc.

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## **PARKING SYSTEM WORKING WITH REMOTELY CONTROLLED DATA MATRIX**

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### **Abstract**

Although QR code technology is a frequently used technology in our age, it is widely used in many fields. Exam applications, robotic applications and automation systems are carried out with QR code technology. With this study, a barrier system that works remotely via bluetooth using QR code technology was designed and realized. Barrier design that can be opened remotely with QR code technology for private areas in parking lots has been integrated with modern technology. It is thought that a solution to this problem can be found by using QR code reading systems and android devices, which are today's technologies, in private areas in the parking lots. In this study, a system that sends information via a computer to the Arduino Uno microcontroller development board, which is widely used today, has been developed by pairing a QR code placed in accessible parking lots in public and private areas with an android operating system phone. According to the accuracy of the information sent, the barrier in the private parking areas was opened to the user. The QR code created will be in the parking lot and the person who will park will not have parking problems thanks to the android program that can be downloaded to his phone. After the data matrix matching, the servo motor barrier system, which was realized as a prototype, will be opened 90 degrees and the vehicle park will be provided. The servo motor barrier system will be closed again with the button added to the android software.

**Keywords:** QR code, android, Arduino, microcontroller

### **INTRODUCTION**

XXI. In the first quarter of the century, media consumption trends show a visible change from traditional media to digital media with the socialization of mobile communication tools. One of these new communication strategies is the use of QR codes in print media. QR codes have started to be used in newspapers and magazines in Turkey in recent years, and their awareness in society is increasing day by day (Aktaş, 2017). The concept of QR code is an interface that is created by the development of linear barcodes and whose capacity can be increased from 20 to 4000 characters, and that delivers coded data with optical readers (Acartürk, 2012). In other words, data matrix technology is two-dimensional (2D) barcodes that will allow you to access texts and online addresses by reading codes with devices such as smart phones and tablets. It is possible to read the QR code from any angle with the phone's camera (Kösal,2019). Data matrix technology is becoming more and more widespread in the world and in our country, and it appears in almost every field. Some of these areas are used in drug prescriptions, identity and business cards, documentation management and monitoring of fixtures, postal services, invoice processes, material tracking, markets, library applications, which are the fields of pharmacy and medicine. One of the most important reasons for the widespread use of this technology is that it has the capacity to store strings containing many characters, such as QR codes, web page addresses, and users can access this information via

smart mobile phones and PDA devices (Kösal,2019). It has been observed that studies similar to this project have been carried out in the scanned literature. Embedded system-based smart parking lot design was carried out by Onur Inan et al. In the study, a parking system was designed by using a new technology product, arduino mega microcontroller development board. In the design, the empty spaces in the car park were displayed on the LCD screens and the drivers parked in the nearest empty parking lot (İnan, 2017). In the study, an automatic parking lot system prototype with a total capacity of nine vehicles with three floors and three rows was designed for educational purposes. The control and application of this designed prototype was carried out by a programmable logic controller (PLC). In the study, according to the user password and transaction request, the vehicle is placed in the cabin or taken out of the cabin (Bingöl, 2010). Asaf Varol and Ferhat Bağçacı carried out a Sensor Controlled Parking Lot Barrier Automation study. In the study, using the Lego Mindstorms Robotic Invention System 2.0 set, a system that finds its own direction in any area with the help of touch sensors, opens the barrier automatically with the help of sensors and closes when the vehicle passes (Varol, 2007). When some similar studies were scanned, it was observed that parking automation systems were implemented with different methods. In the studies, automation controls were carried out with PLC, microcontroller and robotic sets. Again, it has been observed in the literature that such studies are carried out using sensors. In the studies carried out, no personalized parking automation was observed. In addition, the system gained innovation and speed with the QR code (square code), which is a new technology product. In the study, the android device, which is widely used, and bluetooth technology, which is a wireless communication product, both cost reduction and can be used widely.

## **MATERIALS AND METHODS**

With the development of technology, smartphones have become communication tools that people constantly use in daily life. New communication technologies offer different opportunities to their users without the limitations of time and space. This development in mobile devices has replaced traditional transportation services with applications called digital interactive with the use of QR code (Engin, et al., 2017). QR code applications consist of fast-response codes in mobile devices. With the use of QR code, traditional transportation services have been replaced by applications called digital interactive. QR code technology, which is a new barcode system, has started to take the place of other technologies used in many parts of social life and mass media. QR code; It has been the subject of academic literature with its use in different fields from education to advertising, from clothing to food, from design to health sector. QR code, which is one of the mentioned forms of communication, has become more known and used with the spread of smartphones. QR code technology has started to take the place of other technologies used in many parts of social life and mass media (Engin, 2017). In this study, a QR code was created randomly from the ready internet site and introduced to the MIT APP 2 Inventor program. In addition, arduino uno microcontroller development board, which is widely used today and preferred in control purposes, has been used. Servo motor and hc05 bluetooth module were used as electronic material in the system. The software of the system is MIT APP2 Inventor for android, Arduino ide program is used to activate the servo motor. In this way, the system is aimed to be used at low cost and widely.

### **HC-05 Bluetooth Modul**

They are communication modules that use the 2.4 to 2.48Ghz range developed for Bluetooth indoor communications. The average barrier-free distance range between bluetooth modules is approximately 15 meters. Although these distances have been increased in new generation bluetooth modules, they are not yet compatible with arduino. In Arduino applications, HC05 and HC06 bluetooth modules are preferred.

HC05 and HC06 bluetooth cards are similar in physical type. But HC05 bluetooth module has 6 pins and HC06 module has 4 pins. The only difference between them as a feature is that the HC05 module can connect to other bluetooth devices while responding to the requests it receives. On the other hand, HC06 can only accept incoming requests, but it cannot send a request to connect to another bluetooth card.

One can call the working type of the HC05 Bluetooth module as Master-Slave mode. The type of HC06 module is Slave mode.

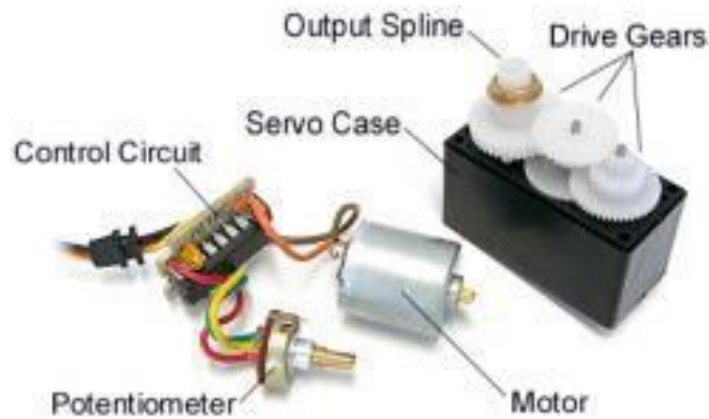
- Bluetooth Protocol: Bluetooth 2.0+EDR(Enhanced Data Rate)
- 2.4GHz communication frequency - 10 meters communication distance
- Sensitivity: -80 dBm
- Output Power: +4 dBm
- Asynchronous Speed: 2.1 MBps/160 KBps
- Sync Speed: 1MBps/1MBps
- Security: Authentication and Encryption
- Operating Voltage: 1.8-3.6V(Recommended 3.3V)
- Current: 50 mA
- Dimensions: 43x16x7mm (Robotus.net,2021). The screenshot of the hc05 bluetooth module is shown in figure 2.



**Şekil 2.** HC05 bluetooth modul görüntüsü

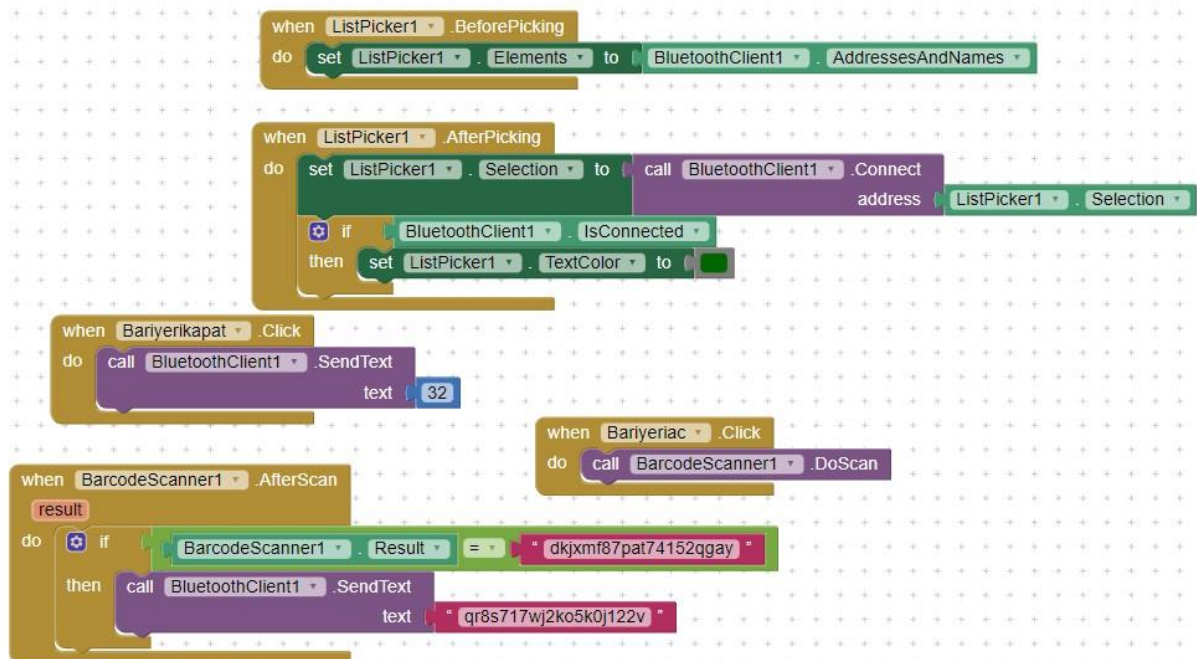
### **Servo Motor**

Servo is defined as a drive system that performs angular-linear position, speed and acceleration control in mechanisms without error. In other words, it is a motion control mechanism. Servo motors are the most used motor type in robot technologies, but they are also used in RC (Radio Control) applications. RC Servo Motors were first used in remote control model vehicles. Servos are designed to take the desired position and not change their position unless a new command is received. There is a DC motor inside the servo motors that provides the movement of the motor. Apart from this motor, there is a gear mechanism, potentiometer and a motor driver circuit. The potentiometer measures the amount of rotation of the motor shaft. As the DC motor in the servo moves, the potentiometer rotates and the control circuit compares the position of the motor with the desired position and drives the motor. That is, servos work without the need for an external motor driver like other motors. Usually the operating angles are limited to 180 degrees, but there are also special-purpose servo motors with a 360-degree operating angle. Servos generally work with 4.8-6V voltage. There are also servos operating with 7.4V and higher voltage. Servo motors work with PWM (Signal Width Modulation) signal. These PWM signals can be provided from a microcontroller or remote control. The servo reads a pulse value every 20 ms. Pulse length determines the rotation of the motor (Robotistan, 2020). Servo motor internal structure is shown in figure 3.



**Figure 3.** Servo motor internal structure

In this study, an android-based car park prototype, which can be used by individual areas in car parks and not found in the literature, has been realized with QR code technology. There are sections reserved for individuals in the car parks located in private places. QR Code signage will be placed in these sections in the parking lots in order to prevent the parking of someone's vehicle other than the person's vehicle in these sections. An Android application has been developed with the MIT App Inventor application so that the QR Code in the parking lots can be read and data can be transmitted to the arduino uno microcontroller development board. The image of the code made in the MIT App Inventor program is shown in Figure 4.



**Figure 4.** MIT APP Inventor screenshot

A button for bluetooth connection has been placed in the designed android software. When the button is clicked, the android device connects to the bluetooth and the bluetooth address of the created parking lot is displayed. When the open barrier button is pressed, the camera on the android device is activated and the QR code reading screen becomes active. If the QR code information previously entered into the software matches the QR code reader, the servo motor becomes active and the barrier opens. With the close barrier button, the servo motor



comes to the 0 position and the barrier is closed. The image of the created software is shown in Figure 5.

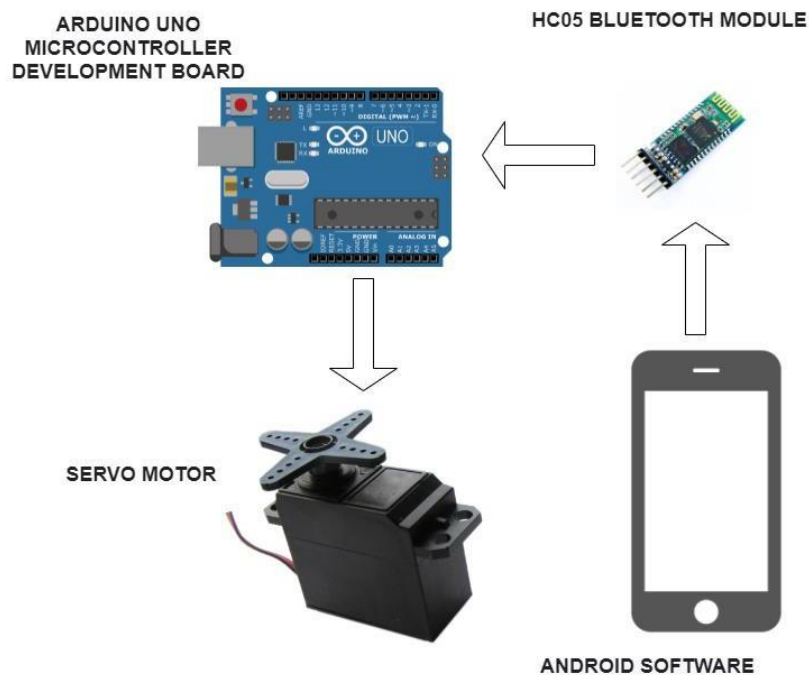


**Figure 5.** Screenshot of Android software

With the help of the developed application, the QR Code is read with the help of the QR Code Barcode Reader application specially created for parking spaces, and then the data is transferred to the Arduino microcontroller development board via the bluetooth module. The servo motor starts and then the door is opened and the vehicle owner enters the parking lot. With this application, data matrix will be generated for the person and only that person's vehicle will be parked. As a result, another individual will be prevented from accessing the parking spaces.

Arduino microcontroller development board, Servo motor and HC05 bluetooth module are used in the designed prototype. The block diagram of the system is shown in figure 6.





Şekil 6. Sistemin blok şeması

## RESULTS

With the increasing population density in the world, the increasing number of vehicles causes traffic and parking problems. With this study, an automatic barrier system that works with personal data matrix and bluetooth technology has been designed to prevent parking spaces in car parks and different vehicle users from parking in the parking lot of the person. This system, designed as a prototype, aims to facilitate the lives of users by enabling them to use their own car parks and to eliminate the parking problem and violation of rights. Individuals who want to use the person's private car park will open the door by reading the QR code on the doors of the car parks with the application on their phones and providing a Bluetooth connection. After entering the parking lot, they close the door with the same application. However, non-user citizens cannot open the door and are prevented from using the car park, as this application does not match the QR code on their phones. As a result, this system facilitates the lives of individuals who drive by enabling them to use their own car parks. An android application was created with MIT App Inventor to use with the phone. The circuit was created in Arduino and the system was designed.

## DISCUSSION

Considering this study, it has been a study that will lead other studies. The system worked with a single QR code and was created based on android device. It can also be done with the IOS operating system for the system to be used more widely. More QR codes can be introduced into the system and used for large parking spaces.

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<https://www.robotus.net/>

<https://maker.robotistan.com/>

## AN INTERSPECIES MENTOR GRAFTING METHOD FOR COTTON (*GOSSYPIUM* L.)

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### Abstract

Plant grafting is a widely utilized type of asexual hybridization in which heritable genetic and epigenetic transformation may occur. In one of our previous study, different types of seedling-grafting methods were developed and their suitability in cotton was assessed. In this study, we focused on another type of grafting called mentor grafting which was assessed in two different cotton species represented by *Gossypium hirsutum* accession TM-1 and *G. barbadense* accession Pima 3-79. There are two types of mentor-grafting approaches, they are named depending on the borrowing/lending properties, which could come from stock or scion. In the present study, we reported a Mentor rootstock grafting method and tested it in Pima and Upland cotton species in a greenhouse condition. Fourteen-month-old accessions were used as mentor rootstocks and 14 days-old-seedlings were used as scions. Results clearly revealed that both cotton species could be successfully used as mentor rootstocks. Both mentors required to contain a few leaves attached to main stem or branches at the time of grafting and 15 days after grafting. We noted that humidity and temperature of the greenhouse were most influencing factors in mentor grafting. There were not apparent alterations in flower and plant characteristics, but further research required to confirm absence or presence of graft induced genetic and epigenetic changes in the scion of mentor grafts.

**Keywords:** *interspecies grafting, Pima cotton, rootstock, scion, Upland cotton*

### INTRODUCTION

Grafting is an asexual/vegetative propagation method defined as the art of combining two living plant tissues, in which the shoot part of one plant is attached to the root or stem part of another plant. In a graft, the rooted stem part of a plant is named rootstock while the shoot part of another plant is named scion. Plant grafting is a well-recognized means of vegetative propagation that it is not uncommon in natural populations. Grafting occurs between shoots, between roots, and between shoot and root within the same tree (autografting) or between adjacent trees (Goldschmidt, 2014). Figure 1 showed a spontaneous shoot to root grafting of *Ficus macrophylla* grown at Akdeniz University campus.

Grafting has found its place in modern agriculture for its utility in conferring rapid adaptation to biotic and abiotic stresses, boosting yield, and ensuring that farmers are obtaining maximum output from the crops that they plant. Traditional breeding methods aim at identifying individual genotypes that exhibit optimal performance within environmental contexts, but they utilize large breeding cycles and progress slowly. On the other hand, a grafting technique requires an evaluation of genome x genome interactions, in the form of rootstock x scion combinations to gain tolerance or resistance to various environmental stresses such as drought or produce higher and marketable yield such as increased vitamins, total soluble salts or sugar levels (Goldschmidt, 2014; Devi et al., 2021; Koukounaras, 2021; Williams et al., 2021).

The use of grafting in agriculture is not new. There are number of studies indicating the origins of grafting. Most agree that grafting has been utilized since ancient times. It is usage in plants began in fruit trees (Melnyk and Meyerowitz, 2015; Edelstein et al., 2017). Over the last 100 years, there has been a substantial expansion in grafting applications in both annual and perennial crop improvement (Koukounaras, 2021). It is generally thought that grafting does not change or edit the genome of recipient stock and/or donor scion or their offspring (Karaca et al., 2020). Genetic change or edit in this case refers to nuclear and cytoplasmic DNA and differs from epigenetic variation, which refers to reversible heritable changes in genome function that occur without a change in the DNA sequence (Rapp and Wendel, 2005; Fossey, 2009; Williams et al., 2021).



**Figure 1.** An example of natural graft as illustrated with *Ficus macrophylla* grown at Akdeniz University campus, Antalya, Turkey. (a) shows a tree of *Ficus macrophylla*, (b) shows several stems spontaneously grafted to roots and (c) shows a spontaneous stem to root grafting

Graft-directed genetic variations in several plant species and their offspring have been reported. However, there is no direct evidence that genetic variation can be induced by the transmission of nuclear DNA by induced grafting. However, recent findings demonstrate plastid and nuclear genome transfer between different *Nicotiana* species. Since biomolecules transfer between scion and rootstock, it is possible that DNA/RNA molecules could be transferred. Because grafting involves direct contact between heterologous cells at junction of stock and scion, cells of the scion and stock species are linked to each other by plasmodesma, and that genetic material can be transported via plasmodesma (Fuentes et al., 2014; Zhao et al., 2018; Chilukamarri et al., 2021).

Grafting induced heritable changes has been historically controversial. Darwin was the first person coined ‘graft hybrid’ concept. It means that combination of different plant species may generate products that contain features of both grafting partners. Circumstantial evidence demonstrated heritable phenotypic alterations in diverse grafted plants. However, it did not gain full credential due to lack of concrete mechanistic underpinnings (Takeda and

Paszkowski, 2006; Brosnan et al., 2007; Molnar et al., 2010; Calcaro et al., 2012).

It is generally accepted that graft induced transformations could occur only under ‘Mentor grafting’ conditions. Differing from other types of grafting methods, it uses very young seedling as scion and mature plant as rootstock. Very different physiological and anatomical condition presumably enforce the transfer of genetic material from stock to scion (Ueki and Citovski, 2005; Mudge et al., 2009; Devi et al., 2021).

The aim of this study was to develop a mentor grafting method suitable for interspecies and intraspecies grafting in cottons. Two cotton species, which have different agronomical, and fiber technological properties were used to confirm the established protocol. DNA testing for genetic or epigenetic transformation are under investigation.

## **MATERIALS AND METHODS**

### **Materials**

Seeds and mature plants used in this study consisted of fourteen month old mature cotton plants used as Mentor rootstocks grown in a greenhouse. Mentor rootstocks were Texas Marker-1” (TM-1), belongs to *Gossypium hirsutum* L. and “Pima 3–79”, belongs to *G. barbadense* L. Seeds of TM-1 and Pima 3-79 were sown in small pots (0.35 L) and were grown for two weeks in a greenhouse where mature plants were grown, located in Antalya, Mediterranean coast of Turkey, in 2019.

### **Methods**

A total of forty-eight grafts consisting of 24 TM-1 and 24 Pima 3-79 mentor rootstocks were made. Half of the mentor rootstocks contained shoots with leaves below the cut site or branches with leaves above or below the cut site on main stem while the other half did not contain any shoot attached leaves. Stems parts of seedlings of TM-1 and Pima 3-79 were prepared to be used as scions.

#### ***Scion Preparation***

Two weeks old seedlings were cut 3-4 cm below the terminal apex. The cut end of the scion was prepared making a deep V-shape cut on the exposed end of shoot apex. Prepared scions were immediately placed in a Petri dish containing enough sterile water to prevent drying the cut site of stem.

#### ***Mentor Rootstock Preparation***

Mature stems were prepared by a full horizontally cut on stems and barks of cut stems were cut vertically downward to a depth of 3–4 cm to have a deep narrow V-shape so the cut end of scion would fit well.

#### ***Grafting***

Prepared scion was inserted onto a mentor rootstock until it fit securely. The graft region was secured using wrapping with Parafilm M, (Bemis Company, Inc, Neenah, WI). After grafting experiment, grafts were immediately sprayed with sterile water so that humidity of scions were maintained. Spraying in every two hours continued during the first three days. After three days, four spraying per day continued for one week. During the second week of grafting, two sprays per days continued. Grafts were grown using fertilizers and pest management described in Karaca et al. (2020).



### **Statistical Analysis**

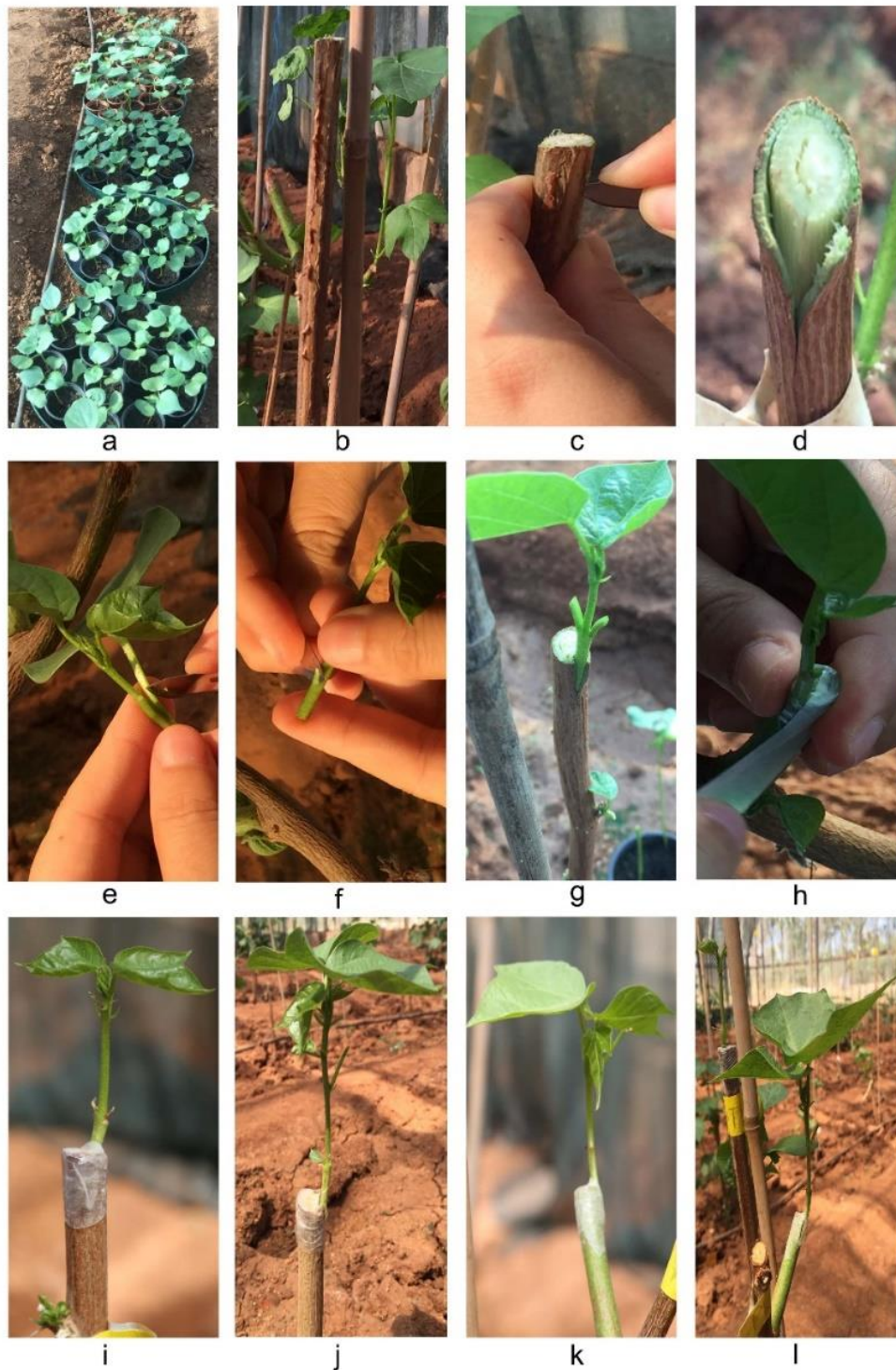
Experiments were designed as completely randomized plots with two replications. Each plot contained two grafts or controls. Success of grafting was assessed using analysis of variance (ANOVA) and means were analyzed Tukey–Kramer HSD test utilizing JMP Statistical Discovery Software Version 8.0 (SAS, Cary, NC, USA). Statistically significant differences due to grafting were assessed at the  $p < 0.05$  significant level.

### **RESULTS**

There are different type of grafting techniques, some of which are called side, tongue, cleft, bark, and splice grafting methods. Cleft grafting also known as wedge grafting is the most commonly used method. A modified cleft grafting method was developed by us for cotton (Karaca et al., 2020). This method is suitable for interspecies and intraspecies grafting in cotton. In this study, we reported another grafting method, which was called as cotton Mentor grafting method.

Seedlings that were used as scions had one or two leaves above the cotyledons (Figure 2a). The growth rate of seedlings vary depending on the humidity and temperature. In our experiments, seedling growth took 14-18 days to reach two leaf stage in a greenhouse. Rootstocks were cut at varying height with and without shoots with attached leaves (Figure 2b). After cutting the Mentor stem, a narrow but deep V-shape cut made using a razor blade (Figure 2c and d). Scions were prepared (Figure 2e and f) as described in method section of this paper. Prepared Mentor stem was inserted with the prepared scion and secured with using Parafilm (Figure 2g-l). We noted that in the greenhouse condition, it was better to cut rootstock more than 20 cm above the ground so that buds on the stems of rootstock could have leaves. This would help keeping the rootstocks alive in case of unsuccessful grafting.

Mentor rootstocks and scions of *G. barbadense* and *G. hirsutum* received the same method of grafting. Pima 3-79 requires higher heat and sunlight in comparison to TM-1. Keeping these two species in the same greenhouse caused Pima 3-79 grow taller than TM-1. Experiments performed during summers in greenhouse should consider the effects of heat and sunlight on grafted plants. In this study, avoidance of sunlight was performed using shading for first two weeks, and then the shading of light was gradually reduced.

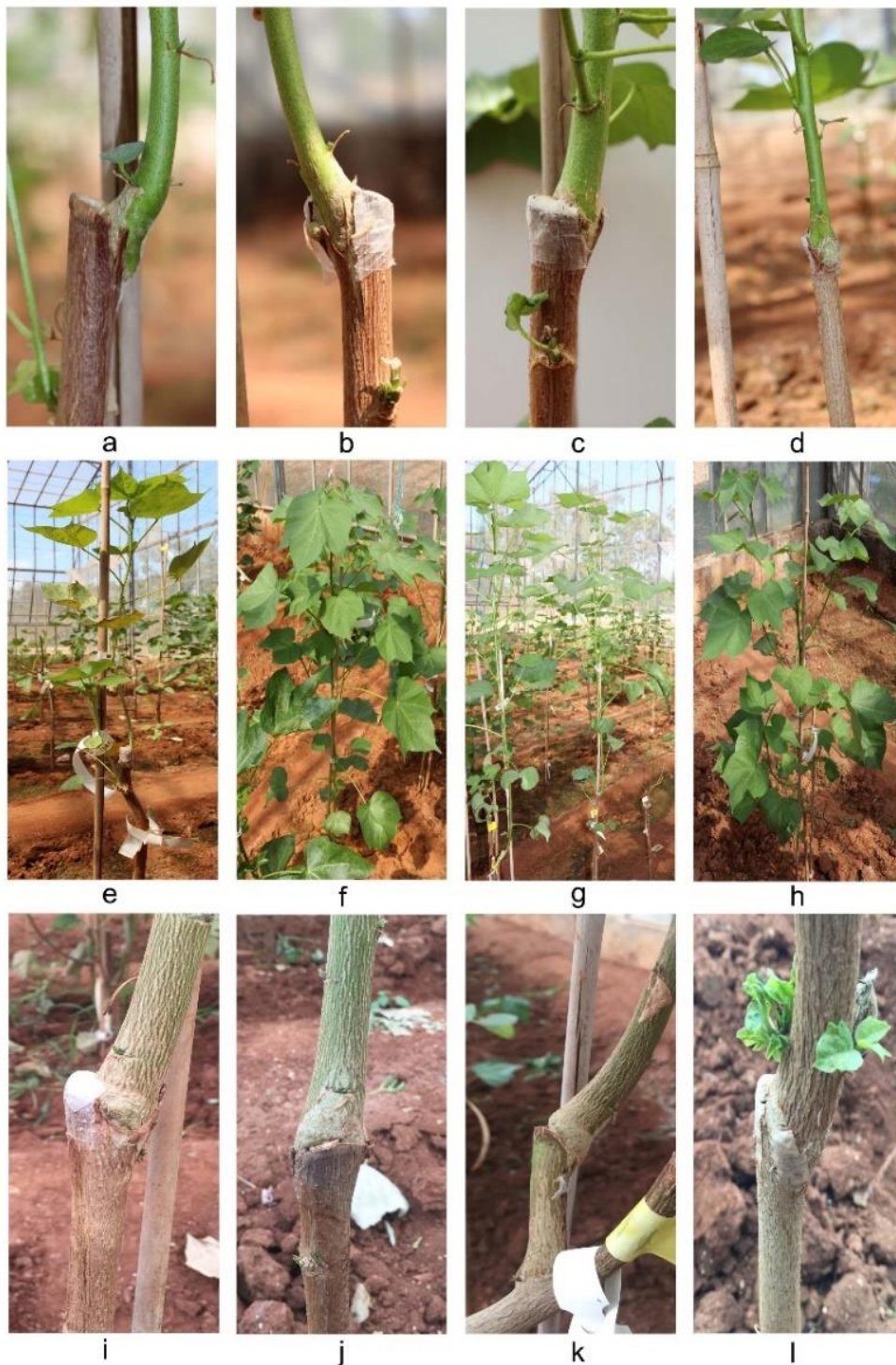


**Figure 2.** Mentor grafting of cotton. Panel (a) represents seedlings ready to be used as scions. Panels (b, c and d) represent Mentor rootstock preparation. Panels (e and f) represent preparation of seedling scions. Panels (g to l) represent method of grafting and grafts after grafting experiments performed.

Although the number of grafts were low (48) results indicated that Mentor Pima 3-79 with attached leaves served as better Mentor rootstock in comparison to TM-1 with no leaf or shoot attached leaves. Grafts were viewed one, two and three months after grafting experiments (Figure 3). We noted that scions continued expanding their stems until their diameters were equal to that of Mentor rootstocks. During the second year after grafting both stems (scion



and rootstock) kept growing indicating succes of Mentor grafting in cotton.



**Figure 3.** Representative photographs of Mentor grafts after one-, two-, and three-months grafting experiments. Panels (a-d) show Mentor Pima 3-79 (a and c) and Mentor TM-1 (b and d) with scions TM-1 after one month of grafting. Panels (e-h) show Mentor TM-1 (e and g) and Mentor Pima 3-79 (f and h) with scion TM-1 after two months of grafting. Panels (l) show Mentor Pima 3-79 and TM-1 carrying scions of TM-1 and Pima 3-79 after three months of grafting. Panel (i): Mentor TM-1 with Pima 3-79, (j): Mentor TM-1 with Pima 3-79, (k): Mentor 3-79 with Pima 3-79 (branch grafting), and (l): Mentor TM-1 with Pima 3-79.

## DISCUSSION

This study was conducted based on the initial report of Michurin (1949) stating that genes can move between rootstock and scion. Later Ohta (1991) presented histological evidence that masses of chromatin are moving via the vascular system from the older rootstock across the graft union to the apical primordia or flower buds of the younger scion. Plasmodesmatal macromolecular transport toward apical meristems strengthen the belief of Michurin (1949). According to this concept, Mentor grafting could cause leading to heritable changes in the scion. The scion acquired certain heritable traits from the rootstock is regarded as a 'graft hybrid.' As far as our knowledge, there is no report on Mentor grafting in cotton using two different species. Compared to seedling grafting and micro-grafting, both of which require the use of physiologically similar scions and rootstocks for successful grafting, on the other hand, Mentor grafting uses physiologically different rootstocks and scions. Therefore, it is difficult to get effective symbiosis between scions and rootstock in Mentor grafting. When symbiosis is not gained after grafting, it may lead to lack of affinity and severe disorders between the graft components, known as graft-incompatibility. Incompatibility worsened with the presence of non-structural carbohydrates such as soluble sugars and starch, phenolic compounds, antioxidant activity and activities of enzymes such as peroxidase, the phenylalanine ammonia lyase and polyphenol oxidase (Zarrouk et al., 2010; Pina et al., 2017). Physiological differences between Mentor rootstocks and scions in our study did not cause any incompatibility. Indeed, metabolic substances including those that may produce large biological effects, such as hormones, proteins, and signal molecules, could be more efficiently transferred from Mentor rootstock to scion in greenhouse condition (Flores-Leon et al., 2021).

Development of Mentor grafting in cotton aimed to generate scions with altered genetic structure. Pima 3-79 has superior fiber quality properties such as fiber length, fiber strength, and fiber fineness, while TM-1 is characterized by its high fiber yield and wider adaptability (Liu et al., 2011; Wu et al., 2013; Karaca et al., 2020). We are in the process of comparison of fiber properties of Mentor grafts. However, we did not test the genetic alteration on Mentor-grafted scions. Instead, Mentor grafts were compared for leaf shape, flower and pollen color, petal spot and seed fuzz. Results clearly showed that scions of Pima 3-79 cotton presented sub-okra while Upland had normal leaf shape. All Pima 3-79 scions had yellow pollen and flower while TM-1 had flower and pollen with cream color. Petal spot and no fuzz were specific to Pima 3-79 cotton. Based on these observations we detected no phenotypic variations due to Mentor grafting. Further studies using DNA markers and sequencing would identify whether Mentor grafting caused any alteration in genome.

## CONCLUSIONS

This study reported an established Mentor grafting method for cotton. Established method was confirmed using two accession representing Upland cotton, *G. hirsutum*, which is the main textile cotton producing 95% of world' cotton production, and Pima cotton, *G. barbadense*, which ranks the second after Upland cotton. The use of grafting in cotton is very limited, therefore, established protocol could be very useful in further cotton grafting and breeding studies. Since plant grafting is a widely utilized type of asexual hybridization in which heritable genetic and epigenetic transfers may be induced by Mentor grafting, established method of grafting could be used in studies of genetic alteration of scion genotype, long-distance translocation of proteins and RNA in the phloem or xylem in cotton.

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## **THE MECHANISM OF INFLUENCE ON THE ECONOMIC DEVELOPMENT OF THE RELATIONSHIP BETWEEN THE DYNAMICS OF THE WORLD FINANCIAL EXCHANGE RATE AND THE FINANCIAL STABILITY OF THE REPUBLIC OF AZERBAIJAN**

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### **Summary**

The article examines the relationship between the dynamics of the world financial exchange rate and the financial stability of the Republic of Azerbaijan, as well as the impact of a number of macroeconomic factors and government indicators. At the same time, the article notes the factors that make it difficult to make accurate predictions. It is noted that in the dynamics of financial markets against the US dollar and the euro, the movement of the nominal manat and the determination of equilibrium values of external factors are observed only on the medium-term horizon, which makes it difficult to accurately predict short-term fluctuations. However, it risks buying or selling foreign exchange assets at unbalanced prices.

At the same time, the article emphasizes that in the period of technological development, macroeconomic problems need to be re-examined in order to solve macroeconomic problems, succeed in the economic sphere and take advantage of existing opportunities, and this problem will be relevant in the near future. At the end of the article, suggestions and recommendations on the topic are given.

**Keywords.** financial market, balanced exchange rate, currency risk, exchange rate regime, floating exchange rate mechanism, regulated or fixed exchange rate mechanism.

### **Introduction**

Today, the most important factors in the development of the world economy are the internationalization and globalization of the modern economy, the deepening of integration processes, the growing interconnectedness and interdependence of national economies. In this context, the role of the world financial exchange rate as an instrument of state economic policy is growing. By influencing the level and dynamics of the world financial exchange rate, the state is trying to solve major macroeconomic problems.

In the era of rapid technological development, the need to re-examine what skills are needed to solve macroeconomic problems, to succeed in the economic sphere and to take advantage of existing opportunities will remain relevant in the near future. It is the level of the world financial exchange rate, the need to increase the importance of developing appropriate maneuvers in the economy and, most importantly, the provision of incentives that can stimulate economic development.

For economic development, the study of the changing dynamics of the world financial exchange rate has become one of the most pressing issues in modern times. In modern times, it has become necessary to study the changing dynamics of the world financial exchange rate and pay special attention to determining the mechanism of its impact. As a driving force of the economic development of the Republic of Azerbaijan, it is considered one of the most pressing issues in terms of maintaining financial stability.

Despite the large number of research materials written in this area, the urgency of the topic suggests that the impact of the changing dynamics of the global financial exchange rate in all sectors of the economy should be taken into account. When studying the relationship between the dynamics of the world financial exchange rate and the financial stability of the Republic of Azerbaijan, it is important to reconsider international experience. It should be borne in mind that all this is important in solving macroeconomic problems, as well as a key factor in preventing many problems that may arise in the future. From this point of view, for the development of the economy in the Republic of Azerbaijan, it is very important to maintain macroeconomic stability, reconsider the mechanism of influence of the changing dynamics of the world financial exchange rate and use the existing opportunities.

The national exchange rate is one of the main macroeconomic variables that affect the general conditions and development prospects of the national economy as a whole and the results of the implementation of economic plans and operations of individual economic agents. Changes in the exchange rate of the national currency affect the competitiveness of producers of goods sold in domestic and foreign markets, the weight of the debt burden of borrowers using foreign currency financing and the welfare of those who place part of their deposits abroad. It is from this point of view that it is very important to maintain macroeconomic stability in the Republic of Azerbaijan.

Despite changes in the priorities of the Central Bank of Azerbaijan to target inflation and interest rates, the exchange rate of the manat remains one of the main parameters regulated in the implementation of monetary policy. All this creates the main factors that determine the dynamics of the manat exchange rate, the risks associated with their change and the ability to predict the dynamics of the exchange rate in the short and medium term. The real and equilibrium, which can be taken as a signal for the US dollar and the euro, is aimed at identifying possible discrepancies between real exchange rates, as well as testing a number of assumptions about this possibility.

The establishment of a seasonally adjusted production index for the main economic activities that affect the prices of non-oil products in the economy of the Republic of Azerbaijan and allow to reflect changes in the level of productivity of the economy should be taken as a basis. Goods for sale here, the real exchange rate and, consequently, the nominal exchange rate, interbank loans, which reflect the investment attractiveness of bank assets, interest rates in the domestic market, can be considered an indicator of instability in the financial market of the Republic of Azerbaijan.

### **Modern trends in the development of the financial market of the Republic of Azerbaijan.**

Economy is not possible without interaction. For normal economic development, modern trends in the development of financial markets must be taken into account. It should be borne in mind that the key to the successful operation of the state economy is the efficient operation of the public financial system, which ensures the movement of funds between economic entities. These processes are carried out in the financial market.

The financial market is an important part of any economy. The normal development of the economy always requires the mobilization of temporary free funds of individuals and legal entities, their distribution and redistribution on a commercial basis between different sectors of the economy. In an efficient economy, this process takes place in the financial markets. It facilitates the mobilization of temporary free funds and their efficient distribution among these economic sectors, and the agents in need, thus contributing to the development of the economy as a whole. Modern trends in the development of the financial market of the Republic of Azerbaijan have been considered by various scientists. However, despite

extensive research in this area, the study of current trends in the development of the financial market of the Republic of Azerbaijan remains relevant and requires additional research and development. From this point of view, the study of modern trends in the development of the financial market of the Republic of Azerbaijan is one of the most relevant areas. In order to study the current trends in the development of the financial market, it is advisable to address the following issues:

- To study the history of development of the Azerbaijani financial market,
- the concept should be defined and the main participants of the financial market should be indicated;
- to consider the main functions of financial markets;
- to characterize the structure of the financial market;
- To analyze the state of the financial market in the Republic of Azerbaijan;
- To identify problems of financial market development in the Republic of Azerbaijan;
- Priority areas for the development of the financial market in the Republic of Azerbaijan must be identified.

Socio-economic processes arising in the process of formation and development of the financial market of the Republic of Azerbaijan are considered important for forecasts for future development. For this, first of all, the current state of the financial market of the Republic of Azerbaijan must be analyzed, the mechanism of influence on the development of economic spheres must be studied.

### **History and current state of development of the financial market of the Republic of Azerbaijan**

With the collapse of the Soviet Union, the Republic of Azerbaijan, which gained its independence, moved from a planned economy to a market economy and formed a new economic system in accordance with the conditions of a market economy. Azerbaijan has adopted laws on banks and banking, the National Bank, securities, insurance and investment funds.

It should be noted that many features in the formation of financial markets in the Republic of Azerbaijan are associated with the establishment of financial institutions and are implemented without an improved legislative framework. Thus, the activities of many financial institutions are regulated by presidential decrees, decisions, instructions of the government and instructions of individual ministries. World experience shows that in order for the financial market to effectively serve the economy, it must operate on the basis of completely free principles. The creation of an appropriate regulatory framework and a favorable macroeconomic environment is an important factor in the formation of a financial market that meets the requirements of the new economic system. The development of the financial market depends on the legal framework created for it. As mentioned above, despite the adoption of certain legislative acts in this area, there are some shortcomings in this area. The main reason for this is that the financial legislation of the Republic of Azerbaijan is based on the study of realities and incorrect assessment, the application of the template of the relevant laws of developed countries. As a scientific basis, there is a need to adopt a law that first determines the functioning of the financial market. [1]

After 1991, Azerbaijan moved to a two-tier banking system and created a legal framework for commercial banks. After that, the number of new banks increased. Currently, there are 25 commercial banks in the Republic of Azerbaijan.

The Baku Stock Exchange was established in 2000 as a commercial organization to form an organized stock market in the country. Today, the Baku Stock Exchange is the only

organizer of organized securities trading in Azerbaijan. Baku Stock Exchange has 20 shareholders. [2]

Cədvəl 1

The main shareholders of the Baku Stock Exchange are as follows [5]

1.	-Kapital Bank   ASC
2.	-Borsa İstanbul A.Ş
3.	-Unicapital İnvestisiya Şirkəti   ASC
4.	-Plato Capital and Co. İnvestisiya Şirkəti   ASC
5	—Dəmir İnvestisiya Şirkəti   QSC
6	-İnvest-AZ İnvestisiya Şirkəti   QSC
7	-Azərbaycan Sənaye Bankı   ASC
8	-Azər-Türk Bank  ASC
9	-Kapital Partners   MMC
10	-Respublika İnvest   MMC
11	-Xalq Kapital   MMC
13	-Brokdil-Az   MMC
14	-Caspian Financial LTD
15	-Mars İnvestment   MMC
16	"Global Menkul Değerler A.Ş."
17	-Yapı kredi İnvest   MMC
18	-Yunayted Kredit Bank ASC
19	-Azərbaycan Beynəlxalq Bankı   ASC
20	"InvestAz" Yatırım Menkul Değerler

It should be borne in mind that all this is important in solving the macroeconomic problems of the Republic of Azerbaijan, as well as important factors for the development of the economy. The process of large-scale socio-economic construction in Azerbaijan over the past twenty years has had an impact on socio-economic well-being. During these years, our country has achieved the development of the national economy, raising its position in international rankings on the necessary infrastructure and institutional development indicators. Despite all the progress, the decline in potential economic growth rates in the world economy in recent years, the increase in the elasticity of global financial stability has had an impact on the economy of Azerbaijan. One reason for this is the global coronavirus pandemic, which began in early 2019. This problem has created new urgent issues in the face of limited socio-economic activity in the countries.

Table 2  
Key macroeconomic indicators. [6]

Year, month	Gross Domestic Product (GDP)		ÜDM-in deflyatoru	Non-oil GDP*		Fixed capital investment		Nominal incomes of the population		Nominal average monthly salary		Consumer price index	
	Total, mln. Manat	Growth rate,%		Total, mln. Manat	Growth rate,%	Total, mln. Manat	Growth rate,%	Total, mln. Manat	Growth rate,%	Total, mln. Manat	Growth rate,%	Total, mln. Manat	Growth rate,%
2011	5208,2	100,1	117,8	2197,4		1279,9	127,3	30524,6	119,6	364,2	108,7	0,7	7,9
2012	5474,3	102,2	101,5	2616,5	109,7	1279,9	118,0	34769,5	113,8	364,2	108,7	0,7	1,1
2013	5818,2	105,8	99,6	2998,2	109,9	1279,9	115,1	37562,0	108,0	364,2	108,7	0,7	2,4
2014	5901,4	102,8	98,7	3303,8	107,0	1279,9	98,3	39472,2	104,8	364,2	108,7	0,7	1,4
2015	5438,0	101,1	91,1	3450,0	101,1	1279,9	88,9	41744,8	105,7	364,2	108,7	0,7	4,0
2016	6042,5	96,9	114,7	2565,9	95,6	1279,9	73,9	45395,1	108,7	364,2	108,7	0,7	12,4
2017	7033,7	100,1	116,0	2910,7	102,8	1279,9	97,4	49187,9	108,3	364,2	108,7	0,7	12,9
2018	8009,2	101,4	111,5	3255,5	102,0	1279,9	95,6	53103,7	109,2	364,2	108,7	0,7	2,3
2019	8189,6	102,5	100,2	3282,1	104,0	1279,9	97,7	57035,0	107,4	364,2	108,7	0,7	2,6
2020	7243,2	95,7	92,4	3308,6	97,4	1279,9	91,7	55726,1	98,2	364,2	108,7	0,7	2,8
2021				3335,1		1279,9				364,2	108,7	0,7	
01	6256,8	97,5	96,5	3361,6	100,1	1279,9	72,5	4011,2	98,7	364,2	108,7	0,7	3,3
02	1201,9	96,8	99,3	3388,2	99,6	1279,9	68,0	7979,9	95,8	364,2	108,7	0,7	3,7
03	1892,1	98,7	106,9	3414,7	102,1	1279,9	80,6	13455,9	98,9	364,2	108,7	0,7	3,9
04	2507,8	99,8	110,8	3441,2	104,1	1279,9	91,3	17037,9	98,9	364,2	108,7	0,7	4,0
05	3153,2	100,8	113,1	3467,7	104,5	1279,9	94,7	22090,0	99,2	364,2	108,7	0,7	4,2
06	3991,5	102,1	113,7	3494,3	105,1	1279,9	92,4	27580,7	100,4	364,2	108,7	0,7	4,3
07	4726,2	102,7	114,1	3520,8	105,3	1279,9	87,9	32321,0	100,6	364,2	108,7	0,7	4,5
08	5473,0	103,6	114,6	3547,3	109,4	1279,9	89,9	37170,4	101,2	364,2	108,7	0,7	4,8



\* Excluding net taxes

As can be seen from the table, we see that GDP in 2020 decreased by 4.4% compared to 2011. Fixed capital investment in 2020 decreased by 35.6% compared to 2011. This effect was also reflected in the first financial market. It is impossible to solve all the problems at once. These problems can be eliminated only gradually. Thus, in order to strengthen the international competitiveness of our national economy and maintain macroeconomic and financial stability in the country, the state takes many measures by minimizing the dependence of the economy on oil revenues. Thus, the Central Bank of the Republic of Azerbaijan tries to identify the most pressing problems of the financial market and suggest solutions. The Central Bank is looking for ways out of the crisis in the interaction of the three parties, the population and the financial industry, the financial market, for the development of the financial market, which is the cornerstone of the Azerbaijani economy, population and financial industry. Here, the Central Bank of the Republic of Azerbaijan is seen as a full-fledged financial mega-regulator, planning control measures in all sectors of the market, from banking and insurance to the securities market, to joint-stock companies.

The project of the main directions of development and stability of the financial market of the Republic of Azerbaijan should propose not only the existing problems, but also measures to eliminate them, which are effective in the short and medium term. Indeed, the Central Bank of Azerbaijan defines both goals and main directions for the development of the financial market of the Republic of Azerbaijan. The three main objectives of market development proposed by the Central Bank of the Republic of Azerbaijan are to improve the living standards of citizens through the use of financial market instruments, to promote economic growth or to create conditions for the growth of the financial industry by providing competitive access to debt and capital financing.

As a result, it should be noted that the impact of the dynamics of the world financial exchange rate on the financial market of the Republic of Azerbaijan is not insignificant in the development of the domestic market and maintaining the stability of financial flows to the country. It is possible to reduce the effect, not to eliminate it. To this end, financial market regulation, including ensuring the protection of consumers of financial services, preventing unfair treatment in the financial market, increasing the attractiveness of capital financing of open companies for investors through the introduction of modern corporate governance, optimization of the regulatory burden on financial market participants it would be expedient to achieve improvement. Achieving the improvement of electronic interaction mechanisms in the financial market will simplify the services of both financial institutions and ordinary financial consumers.

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**ECONOMIC ASSESSMENT OF THE IMPACT OF THE COVID-19  
PANDEMIC ON HEALTH TOURISM  
COVID-19 PANDEMIYASININ SAĞLAMLIQ TURIZMINƏ TƏSİRİNİN  
İQTISADI QIYMƏTLƏNDİRİLMƏSİ**

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**Abstract**

The article is devoted to the study of the current state and development of health tourism in the world, which is an important type of recreational and medical activities. According to the World Tourism Organization, the decline in tourist travel around the world has led to huge losses in the tourism industry, as well as in other areas.

In addition, the author looks at the statistics of the WTO. The World Tourism Organization (WTO) has tried to review the COVID 19 plan to reduce the damage it has done to tourism, and in particular to health tourism. At the same time, suggestions and recommendations were made for the revival and development of this area after the damage caused by the pandemic.

It is a fact that the people most affected by the economic and social consequences of the recession in tourism has been the most vulnerable members of our societies.

**Key words:** tourism, COVID-19, tourism spaces, crisis, security, economic consequences, health tourism, sustainable development goals, world economy, globalization, world market, tourism sector, economic consequences of the crisis.

Məqalə, istirahət və müalicə fəaliyyətinin vacib bir növü olan, sağlamlıq-müalicə turizminin son dövrlərdə dünyada mövcud vəziyyətini və inkişaf xüsusiyyətlərini öyrənməyə həsr edilmişdir. Ümumdünya Turizm Təşkilatına görə, dünyaya turist səfərlərinin azalması digər sahələrdə olduğu kimi turizm sənayesində də çox böyük itkilərə gətirmişdir.

Bununla yanaşı müəllif, ÜTT – nin statistik rəqəmlərinə nəzər yetirilmişdir. Ümumdünya Turizm Təşkilatının COVID 19 turizm sahəsinə və xüsusən sağlamlıq – müalicə turizminə vurduğu ziyanın azaldılması üçün gördüyü tədbirlər planını incələməyə çalışmışdır. Eyni zamanda bu sahənin pandemiyanın vurduğu zərərdən sonra yenidən dirçəlməsi və inkişafı üçün təklif və tövsiyələr verilmişdir.

Bu bir həqiqətdir ki, turizmdə durğunluğun iqtisadi və sosial nəticələrindən ən çox təsirlənən insanlar cəmiyyətlərimizin ən həssas üzvləri olmuşlar.

**Açar sözlər:** Turizm, COVID-19, turizm məkanları, böhran, təhlükəsizlik, iqtisadi nəticələr, sağlamlıq turizmi, davamlı inkişaf hədəfləri, dünya iqtisadiyyatı, qloballaşma, dünya bazarı, turizm sektoru, böhranın iqtisadi nəticələri.

**Giriş**

COVID-19, bütün dünyanı təcrid vəziyyətinə salmışdır. Dünya Turizm Təşkilatının yeni araşdırmasına görə 2020 ci il may ayına 100% dünya turizm məkanlarında səyahət

məhdudiyətlərinə davam edildiyi və məkanların 72% -nin beynəlxalq turizmlə sərhədlərini tamamilə bağlı olduğu görünür.

Dünyadakı bütün - 217 turizm istiqamətindən 156 - sı (72%) 27 aprel 2020-ci il tarixinə qədər toplanmış məlumatlara görə beynəlxalq turizmə tam bir maneə qoymuşdur. İstiqamətlərin 25% - də, ən azı üç ay müddətində məhdudiyətlər olmaqla, 40%-ində, məhdudiyətlər ən azı iki ay əvvəl tətbiq edilmişdir. Həmçinin, araşdırma da müəyyən etdi ki, heç bir turizm məkanı bu günə qədər səyahət məhdudiyətlərini tam olaraq ləğv etməmişdir.

Ümumdünya Turizm Təşkilatı hökumətləri məhdudiyətlərin azaldılması və aradan qaldırılması üçün təhlükəsiz hesab edildiyi zamanda məsuliyyətli şəkildə birlikdə işləməyə çağırış etmişdir. Turizm xüsusilə inkişaf etməkdə olan dünyada milyonlarla insanın həyat yolu və əsas gəlir mənbəyidir. Dünyanı yenidən turizmə açmaq iş yerlərini xilas etməklə insanların rifahlarını qoruyacaq və sektorun davamlı inkişafa aparan vacib rolunu bərpa etməyə imkan verəcəkdir.

Tədqiqatı bölgələrə ayıran Ümumdünya Turizm Təşkilatı, Avropadakı istiqamətlərin 83% -nin beynəlxalq turizm üçün sərhədlərin tam bağlandığını qeyd etdi. Amerikada bu göstərici 80%, Asiya və Sakit Okeanda 70%, Orta Şərqdə 62%, Afrikada isə 57% təşkil etmişdir. [1]

Həm yerli, həm də qlobal səviyyədə bir arada qarşılaşdığımız böhran, doğru zamanda doğru qərarlar qəbul etməyin vacibliyini tələb edir. Bu böhran bütün sektora təsir etsə də mütəxəssislər bundan çıxış yolunu həmrəylik və əməkdaşlıqda görürlər. Bu dövr ərzində artıq dünyanın bir neçə ölkəsi bərpa üçün zəruri olan səyahət məhdudiyətlərini yüngülləşdirməyə başlamış, hökumətlər və özəl sektor güvənin qurulması və etibarın bərpası üçün birlikdə çalışmışlar.

Qlobal Turizm Böhran Komitəsinin 28 May 2020-ci il tarixində keçirilən beşinci iclasının da turizmi yenidən başlatmaq üçün Ümumdünya Turizm Təşkilatı Qlobal Təlimatlarını hazırlamışdır. Bu sənəd yol xəritəsi və qarşıdakı çətin aylarda sektor üçün prioritetləri, həssas müəssisələrin likvidliyini təmin etməkdən sərhədlərin açılmasına və yeni sağlamlıq protokolları və prosedurlarının əlaqələndirilməsinə qədər hər şeyi əhatə edir. [2]

Davamlılıq artıq turizmin nişə hissəsi olmamalı, sektorumuzun hər bir hissəsi üçün yeni norma olmalıdır. Əslində pandemiya vəziyyətindən çıxmaq davamlılıq üçün dönüş nöqtəsi də ola bilər. Turizm Sektorunun Məsuliyyətli Bərpası üçün Bir Planet Vizyonu insanlar, planet və firavanlıq üçün məsul turizmin bərpası, yəni ictimai sağlamlıq, sosial inteqrasiya, biomüxtəlifliyin qorunması, iqlim hərəkəti, dairəvi iqtisadiyyat və idarəetmə və maliyyə baxımından məsuliyyət daşıyan fəaliyyət xətti ətrafında qurulmuşdur.

Bir Planet Davamlı Turizm Proqramı, 2030-cu ilədək turizm sektorunun dayanıqlı inkişaf təsirlərini təbii ehtiyatlardan səmərəli istifadəni artıran davamlı istehlak və istehsal təcrübələrini inkişaf etdirmək, təbliğ etmək və genişləndirməklə daha az tullantı istehsal edərək iqlim problemlərini həll etmək məqsədi ilə artırmaq məqsədi daşıyır. Bir Planet Davamlı Turizm Proqramı Ümumdünya Turizm Təşkilatı tərəfindən, Fransa və İspaniya hökumətləri və Birləşmiş Millətlər Ətraf Mühit Proqramı (UNEP) ilə birlikdə aparılmışdır. [3]

Cəmiyyətlərimizin ən həssas üzvlərinin qorunmasında turizm sektorunun rolu danılmazdır. Səyahət azalıb, qorxu coxalıb, gələcək qeyri-müəyyən hala gəlmişdir. Dünya COVID-19 pandemiyasının dağıdıcı nəticələri ilə üzləşdikcə turizm sektoru da ən çox təsirlənənlər arasındadır. Turizm 2030 Dayanıqlı İnkişaf Gündəliyinin vacib sütunu hesab edilir. Bir çoxlarının dolanışığı, xüsusən qadınlar, o cümlədən turizmin inkişaf etdiyi Kiçik

Ada Dövlətləri və bəzi İnkişaf Etməkdə olan Ölkələrin iqtisadiyyatı turizmdən aslıdır.

Həmçinin, dünyanın bir çox yerində biomüxtəlifliyin qorunması, qorunmaqdan bu səylər nəticəsində əldə olunan gəlirlərə qədər turizm sektoru ilə əlaqəlidir və dünya iqtisadiyyatının

belə bir çətin dövrdə, insanları bir araya gətirməklə, turizm pandemiyasının aradan qaldırılması üçün bir platforma olaraq, turizm həmrəyliyi və etimadı təşviq edə bilər. [4]

Dünya Səhiyyə Təşkilatının COVID-19 pandemiyasını elan etməsindən müəyyən zaman keçsə də, Böhran turizmdə və digər sektorlarda iş yerlərini və insanların maddi rifahlarını təhdid etməkdə davam etmişdir. [5]

Turizmin yenidən dirçəlməsi, həmçinin dünyada milyonlarla insan üçün ümid və fürsətin qaytarılması deməkdir. Artıq Avropada turizmin məsuliyyətli formada yenidən canlanması davam edir. Ancaq artan turistlərin sərhədləri keçməsi və iş yerlərinin yenidən açılması halı, tam vəziyyətin düzəlməsi deyildir. 2020-ci ilin ortasında da Avropa turizmi yenidən başlatmaqda lider olmuşdur. Xüsusən Şengen zonası turizm məkanları xüsusən daxili bazara və regiona açılmışdır. Sərhədlərin açılması iqtisadiyyatlara və dolanışıqlara dərhal və əhəmiyyətli dərəcədə təsir göstərmişdir.

Bu böhran sona çatmır. Dövlətlərin ehtiyatlı və tədbirli olmaq zərurəti yaranmışdır. Dünyanın bir çox bölgələrində sərhədlər turizm üçün bağlı olaraq qalır və COVID-19 pandemiyası hal hazırda da yayılmaqda davam edir. İnsan itkisi, iqtisadi dəyəri və sosial təsiri hələ də artmaqdadır. Ən çətin dövrün keçdiyi görünsə də, pandemiyanın qayıdış təhlükəsi, məsuliyyətlə hərəkət etməyi və ictimai sağlamlığı prioritet edir. Turizmin yenidən lakin daha məsuliyyətli başlaması, əvvəlki qeyri-müəyyənliyə son qoymaq və onu yeni bir inam hissi ilə əvəz etmək üçün bir addım ola bilər. [6]

Ümumdünya Turizm Təşkilatı turizmin qayıdışının təhlükəsiz və məsuliyyətlə idarə oluna biləcəyini göstərə bildi. Sağlamlığı prioritet etmək, eyni zamanda iş yerlərini qorumaq və iqtisadi yaxşılaşmanı təşviq etməyin həm mümkün həm də zəruri olması bəyan edildi. [7]

Beynəlxalq turizmə COVID-19 pandemiyasının iqtisadi təsiri ilə bağlı, Birləşmiş Millətlər Təşkilatının ixtisaslaşmış agentliyi, dünyada səyahət məhdudiyyətləri ilə həm turist sayı, həm də itirilən gəlirlərdəki təsiri haqqında ilk geniş məlumat vermişdir.

Ümumdünya Turizm Təşkilatı Dünya Turizm Barometrinin son nəşri, pandemiya cavab olaraq tətbiq olunan qapanma, 2019-cu illə müqayisədə May ayında beynəlxalq turist sayının 98 faiz azalmasına səbəb olduğunu göstərmişdir. Həmçinin Yanvar-May aylarında turistlərin gəlişində 56% illik azalma müşahidə olundu. Bu, 300 milyon turistin azalması və beynəlxalq turizm daxilolmalarında 320 milyard ABŞ dolları itki deməkdir. 2009-cu il Qlobal İqtisadi Böhran dövrü ilə müqayisə etsək bu göstərici üç qat daha çox itkiyə səbəb olmuşdur.

Cədvəl 1

2019 -cu ildə qlobal bazarda xidmət sektorlarının artım dinamikası [1]

Sektor	2019 -cu ildə ÜDM dinamikası
Məlumat - rabitə xidmətləri	+ 4.8%
Səyahət və turizm	+ 3.9%
Səhiyyə	+ 3.7%
Maliyyə xidmətləri	+ 3.5%
Pərakəndə və topdan satış	+ 2.4%

Belə bir dövrdə hər bir dövlətin ikili məsuliyyəti vardır: iş yerlərini və biznesi qorumaq və ictimai sağlamlığı prioritetləşdirmək. Bu son məlumatlar, təhlükəsizliyi təmin edən kimi turizmi yenidən başlamağın vacibliyini açıq şəkildə göstərir. Beynəlxalq turizmdə kəskin azalma, inkişaf etməkdə olan ölkələr də daxil olmaqla, milyonlarla iş yerlərini risk altına almışdır.

Turizm bəzi istiqamətlərdə yavaş-yavaş geri dönsə də, Ümumdünya Turizm Təşkilatı Güvən İndeksi, həm 2020-ci ilin Yanvar-Aprel dövrlərini, həm də May-Avqust perspektivlərini qiymətləndirmək üçün ən aşağı səviyyəyə enmişdir. Ümumdünya Turizm Təşkilatı Turizm Mütəxəssisləri Panelinin üzvlərinin əksəriyyəti beynəlxalq turizmin bərpasının 2021-ci ilin ikinci yarısına qədər davam edəcəyini proqnozlaşdırırlar.

Cədvəl 2

2019 -cu ildə sağlamlıq turizmi sektorunun ÜDM -ə və məşğulluğa töhfəsinin qiymətləndirilməsi [1]

2019 -cu ildə sağlamlıq turizminin ÜDM -ə və məşğulluğa töhfəsinin qiymətləndirilməsi	Sənayenin ÜDM -ə töhfəsi	Sənayenin Məşğulluğa Töhfəsi
Maldiv adaları	33%	13%
Seyşel adaları	28%	27%
Bahamalar	20%	28%
Filippin	13%	13%
Tayland	10%	9%
İslandiya	9%	5%
Yunanıstan	8%	10%
Avstriya	7%	9%

Şəkil. 2. Beynəlxalq sağlamlıq turizmindən daxilolmaların dinamikası

Qlobal ekspertlər qrupu, əksər istiqamətlərdə hələ də davam edən səyahət məhdudiyyətləri və sərhədlərin bağlanması, ABŞ və Çin kimi böyük xarici bazarların durğun olması, səyahətlə əlaqəli təhlükəsizlik narahatlıqları müşahidə edir. Bundan əlavə, etibarlı məlumatın olmaması və iqtisadi mühitin pisləşməsi ilə bağlı narahatlıqlar istehlakçı güvəninə təsir etmişdir. [8]

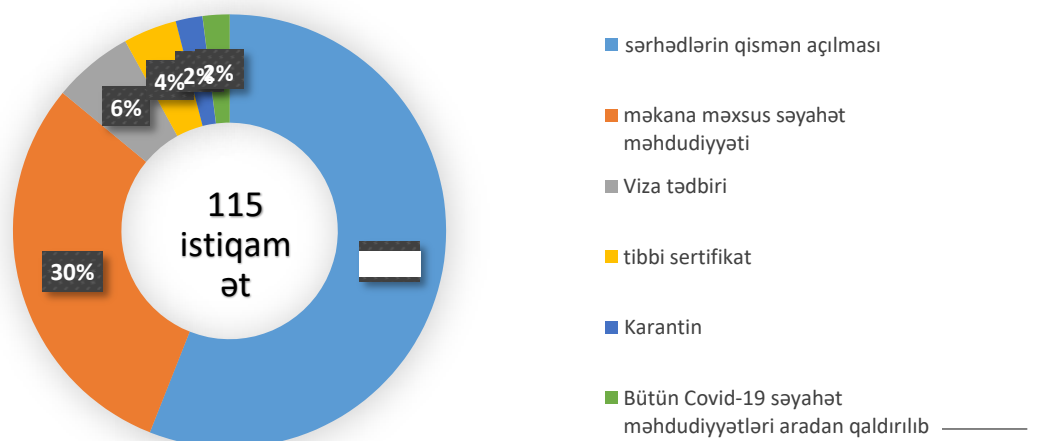
Dünyada turizmin məsuliyyətli yenidən başlanması ilə paralel olaraq turizm məkanları COVID-19 ilə əlaqəli səyahət məhdudiyyətlərini azaldır və yeni reallığa uyğunlaşdırırlar. Ümumdünya Turizm Təşkilatının (UNWTO) son təhlillərinə görə, (2020 ci il iyul ayında) dünyada bütün istiqamətlərin 40% -i COVID-19-a cavab olaraq beynəlxalq turizmə qoyduqları məhdudiyyətləri yumşaltmışlar.

Birləşmiş Millətlər Təşkilatının turizm üzrə ixtisaslaşmış agentliyi böhranın başlanğıcından bəri pandemiya qlobal reaksiyaların monitorinqini aparmışdır. İyulun 19-da qeydə alınan müşahidə göstərdi ki, 15 iyun tarixinə qədər istiqamətlərin 22% -i və 15 may tarixində əvvəllər müşahidə edilən 3% -i səyahət məhdudiyyətlərini aradan qaldırmışdır. Beynəlxalq turizmin yavaş, lakin davamlı bir uyğunlaşma və məsuliyyətli yenidən başlama tendensiyasını davam etmişdir.

Bununla yanaşı, həmin dövrdə (19 iyul 2020ci il) səyahət məhdudiyyətlərini yalnız 87 istiqamət üzrə yumşaltması qeydə alınmışdır. Ümumdünya Turizm Təşkilatı səyahət məhdudiyyətləri haqqında hesabatın bu son nəşrində 1 sentyabr 2020 ci il tarixinə olan məlumata əsasən dünyada 115 istiqamət (dünyanın bütün istiqamətlərinin 53% -i) səyahət məhdudiyyətlərini yumşaltmaqla beynəlxalq turizmin bərpası meyllərini bir daha göstərmişdir.

#### Şəkil 1.

İstiqamətlər üzrə COVID-19 la əlaqədar yumşaldılan səyahət məhdudiyyətləri kateqoriyası



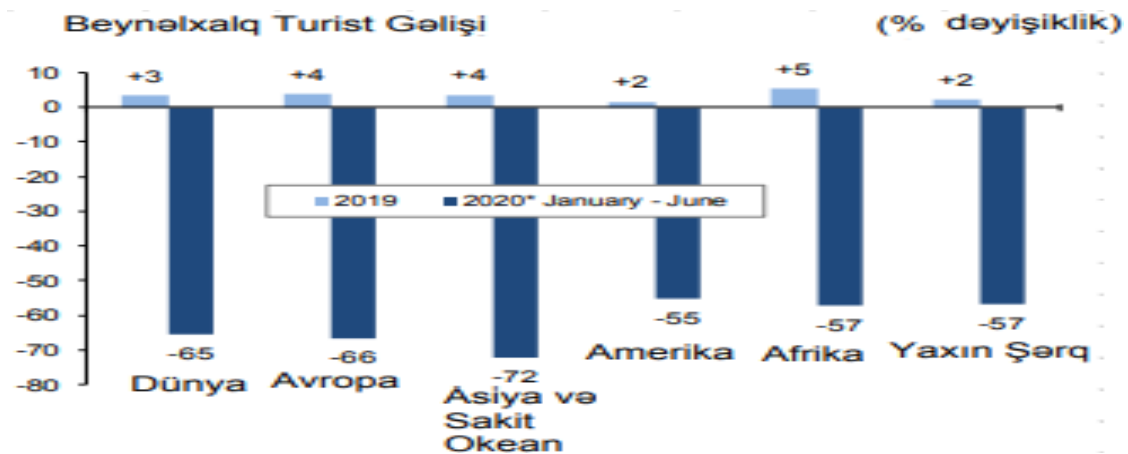


**Mənbə:** 1 Sentyabr 2020 ci il tarixinə ÜTT tərəfindən toplanan məlumatlar

Bununla qlobal turizm, qarşımıza çıxan yeni reallığa uyğunlaşmaq üçün birlikdə çalışdığımız zaman insanların inamını qazanmağa zəruri əsas yaradır. Ümumdünya Turizm Təşkilatı baş katibi Zurab Pololikashvilinin sözlərinə görə Turizmin yenidən başlaması, məsuliyyətli və cəmiyyət sağlamlığını qorumaqla yanaşı, həm də biznes və dolanışığı təmin etməklə həyata keçirilə bilər. İstiqamətlər səyahətə qoyulan məhdudiyyətləri yüngülləşdirməyə davam etdikcə, beynəlxalq əməkdaşlıq mühüm əhəmiyyət kəsb edir.

Ümumdünya Turizm Təşkilatının hesabatına görə, turizmdən daha çox asanlıq olan məkanlar səyahət məhdudiyyətlərini daha çox asanlaşdırır. 1 Sentyabr 2020 ci il tarixinə olan məlumata əsasən məhdudiyyətləri yüngülləşdirən 115 istiqamətdən 44-ü Avropa (26 Şengen ölkəsindən 25-i olmaqla), 27 –si Amerika, 26 Afrika, 13-ü Asiya və Sakit Okean, 5-i isə Orta Şərqi istiqaməti olmuşdur. Avropa daha çox (81%) səyahət məhdudiyyəti aradan qaldıran turizm istiqaməti olmuşdur. Burada ən aşağı göstərici (28%) isə Asiya və Sakit Okeanda olmuşdur.

Bir çox istiqamət hələ uzunmüddətli qapanma vəziyyətindədir. Sərhədlərini beynəlxalq turizm üçün hələ də 93 məkan (Dünya turizm məkanlarının 43%-i) bağlamaqda davam etmişdir. COVID-19-a cavab olaraq tətbiq olunan səyahət məhdudiyyətləri ilə əlaqəli zərər dəyəri 2020-ci ilin ilk yarısına qədər 460 milyard ABŞ dollar olmaqla tarixi ölçülərə malikdir. [9] Beynəlxalq turist gəlmələri (gecələnən səyahətçilər) 2020-ci ilin ilk yarısında, əvvəlki müvafiq dövrlə müqayisədə 65% azalmışdır.



**Mənbə:** Ümumdünya Turizm Təşkilatı (UNWTO)

2020-ci il iyul (-85%) və avqust (-80%) geriləməni nəzərə alsaq, yanvar- avqust aylarında beynəlxalq turizm tələbi 70% azalmış, 705 milyon insanın daha az səyahətinə səbəb olmuşdur ki, bu da 730 milyard ABŞ dollar turizm ixrac gəlirinə bərabər olmuşdur. Bu göstərici 2009-cu il böhranında olan gəlir itkisindən 8 dəfə daha çoxdur.

2020 ci il Yanvar-may ayları arasında turist gəlişlərinin qəfil və sürətli azalmışdır. Sərhədlərin yenidən təcridən açılması turizm sektorundan aslı olan milyonlarla insan üçün xoş xəbər olsa da bu, tədbirlər baxımından kifayət deyil.

Bu qeyri-müəyyən vaxtlarda, dünyada turizmin əhəmiyyəti iqtisadiyyat və iş yaratma baxımından danılmazdır. İndi insanların yenidən səyahət etmələri, yeni reallığın bir hissəsi olan bütün protokolları izləyib icra etmələri üçün əllərindən gələni etməlidirlər.

Ümumdünya Turizm Təşkilatı, bu böhranın başlanğıcından etibarən, vətəndaşların sağlamlığını vacib hesab edir. Bununla yanaşı, iş yerlərini və dolanışıklarını qorumaq üçün də insanlar bir məsuliyyət daşıyırlar. Lakin burada sağlamlığı qorumaqla ikincini unutmamaq olmaz. Bir sektor olaraq turizm uzun müddət uyğunlaşma və baş verən problemlərə cavab vermə gücünə malikdir.

Son zamanlar qlobal turizm, yeni gerçəkliyə uyğunlaşmağımıza kömək edəcək həll yollarını tapmağa çalışmış və tətbiq etməkdədir. Limanlarda və hava limanlarında sürətli, lakin ciddi testlər və izləmə tətbiqetmələri, yerlərdə müxtəlif prosedur və qaydalar turizmin yenidən təhlükəsiz bərpası üçün müəyyən imkanlar yaratmışdır. Bu həllər tam şəkildə qəbul edilməli və tətbiq edilməlidir. Şübhəsiz ki, turizmdə durğunluğun iqtisadi və sosial nəticələrindən ən çox təsirlənən insanlar cəmiyyətlərimizin ən həssas üzvləri olmuşlar.

Qısamüddətli birtərəfli tədbirlər və məhdudsiyyətlər uzun müddətdə dağıdıcı nəticələrə səbəb ola bilər. Yaranmış vəziyyətlə əlqədar, insanlar məsuliyyətli davranmağı öyrəndilər. Müəssisələr və xidmətlər protokolları yaradıb fəaliyyətlərini ona uyğunlaşdırdılar. [10]

Ümumdünya Turizm Təşkilatının (UNWTO) son məlumatlarına əsasən, 100 milyona qədər birbaşa turizm sahəsində iş yeri risk altında düşmüş və turizmdən gələn ixrac gəlirlərinin azalması qlobal ÜDM-i 2,8% azaltmışdır. COVID-19 təsirindən səyahət məhdudsiyyətləri tətbiq olunmuş, istehlakçı tələbi kəskin düşməklə beynəlxalq turistlərin sayı görünməmiş dərəcədə azalmışdır.

Turizmin layiqli iş, sabit gəlir və mədəni və təbii irsimizin qorunması təminatçısı kimi mövqeyini bərpa etməsini təmin etmək üçün turizm sektoruna dövlətlərin dəstək olması vacibdir. Turizm cəmiyyətlərimizin demək olar ki, hər təbəqəsinə toxunur və həm inkişaf etmiş həm də inkişaf etməkdə olan ölkələrdə böyümə və məşğulluğu ciddi stimullaşdırır.

Qeyri-rəsmi iqtisadiyyatda qadınlar, gənclər və işçilər turizm sektorunda iş yerlərinin itirilməsi və iş yerlərinin bağlanması riskinə daha çox məruz qalırlar. Bu kütləvi təsirləri azaltmaq üçün sektora güclü dəstək çağırışına əlavə olaraq, bu böhranın, turizmi yenidən düşünmək üçün bir fürsət olduğu vurğulanır. Bu məqsədlə, turizmin yenidən başlamasına dair prioritetlər təqdim edilir. [11]

2020 ci il avqust ayında Birləşmiş Millətlər Təşkilatının Baş Katibliyi, Ümumdünya Turizm Təşkilatının hazırlamaqda lider rolunu öz üzərinə götürdüyü –COVID-19 və Transforming Turizm Siyasət Bülletenini hazırlamışdır. Bu əlamətdar hesabat, təhlükədə olanları açıq şəkildə göstərir: on milyonlarla birbaşa turizm işini itirmə təhlükəsi, həssas əhali və turizmdən ən çox fayda götürən icmalar üçün fürsət itkisi və qorunmaq üçün həyati qaynaqları itirməyin real riski. Turizmin inkişaf etməsi üçün səyahət məhdudsiyyətlərinin vaxtında və məsuliyyətli bir şəkildə aradan qaldırılması lazımdır. –COVID-19 və Transforming Turizm, sektorun hamı üçün ümid və fürsət mənbəyi kimi özünəməxsus statusunu bərpa etməsi üçün yol xəritəsində daha bir elementdir. Bu, həm inkişaf etməkdə olan həm də inkişaf etmiş ölkələr üçün doğrudur və bütün hökumətlərin və beynəlxalq təşkilatların turizmi dəstəkləməkdə payları var. Avropadakı istiqamətlərə səfərlərin arxasında Ümumdünya Turizm Təşkilatı nümayəndə heyətləri indi Yaxın Şərqi turizmi etibarlı və məsuliyyətlə yenidən başlamağa necə hazır olduğunu müşahidə etmişlər. [12]

Birləşmiş Millətlər Təşkilatının turizm üzrə ixtisaslaşmış agentliyi tərəfindən aparılan 1 sentyabr tarixinə qədər olan məhdudsiyyətləri təhlil edərək, ümumilikdə 115 məkanda (dünya turizm məkanlarının 53% -i) səyahət məhdudsiyyətlərinin azaldıldığı aşkar edilmişdir. Bunlardan ikisi bütün məhdudsiyyətləri ləğv etmiş (Albaniya, Maldiv), qalan 113-ü isə müəyyən məhdudlaşdırıcı tədbirləri davam etdirmişdir. Ümumdünya Turizm Təşkilatının baş katibi Zurab Pololikaşvili sözlərinə görə: –Hökumətlər arasında koordinasiya rəhbərlik və genişləndirilmiş əməkdaşlıq dünyanın bir çox yerində turizmin yavaş-yavaş, lakin davamlı şəkildə yenidən başlaması deməkdir. Səyahət məhdudsiyyətlərini azaltmağa başlamaq, turizmin sosial və iqtisadi faydalarının geri qayıtması üçün də qapılar açır. Ayıq və ehtiyatlı olmağımıza baxmayaraq, davamlı tam səyahət məhdudsiyyətləri olan yerlərdən, xüsusən turizmin əsas gəlir mənbəyi olduğu və iqtisadi və sosial inkişafın təhlükə altında olduğu yerlərdən narahat oluruq. Hökumətlər arasında koordinasiya və inkişaf etmiş əməkdaşlıq dünyanın bir çox yerində turizmin yavaş-yavaş, lakin davamlı şəkildə yenidən başladığını



ÜTT- nin Dünya Turizm Barometr avqust/sentyabr 2020 hesabatında beynəlxalq turizmin bərpası ssenarisi göstərilməklə, dünyada turizmin 2019 cu il səviyyəsinə 2 il yarımından 4 ilədək zaman tələb olunduğu qeyd edilir. Bunun bir sıra faktorlara bağlılığı göstərilir: 1) pandemiya şəraitində təhlükəsizliklə əəqədar səyahətçilərin inam səviyyəsi, 2) səyahət məhdudiyyətlərinin tədricən aradan qalxması, 3) mövcud iqtisadi şərtlər. İlk iki faktor bərpanı dəstəkləsə də iqtisadi mühitin pisləşməsi bərpa prosesinə əngəl ola bilər.

Bütün ssenarilərdə 2021-2024 cu illər bərpa dövründə 2021-ci ilin ortasından başlayaraq səyahətçilərin güvəninə artmasını və bir çox səyahət məhdudiyyətlərinin aradan qalxacağını güman etməyə əsas verir. Göstərilən irəliləyişlərə baxmayaraq növbəti iki ildə beynəlxalq səyahətlərin 2019-cu il səviyyəsindən az olacağı proqnozlaşdırılır. Turizmin yenidən bərpası üçün məsuliyyətli, təhlükəsiz və koordinasiyalı olmaqla səyahət məhdudiyyətlərinin aradan qaldırılması tələb olunur. Sektorda güvən və inamın tam təmin olunması vacib əhəmiyyət daşıyır [14]

### **Nəticə**

Mövcud vəziyyət nəticəsində ərazilərin sonradan bağlanması təkcə təbiətin özünə deyil, həm də bu əraziləri qoruyan cəmiyyətə dağıdıcı təsir göstərmişdir. Son vaxtlar bəzi mühafizə olunan parklarda və sağlamlıq müəssisələrinə yaxın ərazilərdə brakonyerlik və soyğunçuluq halları daha çox müşahidə olunur. Buna həm turistlərin, həm də tibb və tibb işçilərinin sayının azalması səbəb oldu. Məsələn, Keniyada təxminən 50 oyunçu Məryəm Nabiskonun ehtiyat hissəsində maaşlarını itirdi.

Bundan başqa bölgədəki digər turizm infrastrukturunun bağlanması, 600 -dən çox Masai ailəsinin dolanışıqlarının itirilməsi, bəzi Afrika ölkələrində iqtisadi itkilər və biomüxtəlifliyin itirilməsi ilə nəticələndi. İkincisi təbiət turizmi qitəsinin bir növ "özəyini" təşkil edir. Bunun səbəbi, Keniyanın Vəhşi Təbiət Xidməti büdcəsinin təxminən 70% -i turizm fəaliyyətləri hesabına maliyyələşdirilir<sup>2</sup>. Bu səbəbdən turizm gəlirlərinin və milli parklara ayrılan büdcələrin azalması qorunan ərazilər üçün problemlər yaradır.

Müxtəlif tibb və tibb müəssisələrini ziyarət edən müasir turistlərin, bir qayda olaraq, şəfa prosesinə müsbət təsir edən yeni duyğular əldə etmək üçün mədəni irs obyektlərini ziyarət etdiklərini də qeyd etmək lazımdır. Bununla birlikdə, dünya muzeylərinin təxminən 90% -i pandemiya qarşısında mədəni irs obyektlərini bağladı və təxminən 10% -i yenidən açılmaya bilər<sup>3</sup>. Avropa Muzey Təşkilatları Şəbəkəsi, Avropanın turizm bölgələrindəki muzeylər üçün gəlir itkisinin təxminən 80% olduğunu təxmin edir.

Yeni sağlamlıq və təhlükəsizlik protokollarını əks etdirmək üçün Dünya İrsi xüsusiyyətlərinin tədricən yenilənməsinə baxmayaraq, 2021 -ci ildə ziyarətçi sayında əhəmiyyətli bir azalma proqnozlaşdırılır. Beləliklə, COVID-19 böhranından əvvəl turizm sənayesinin bir hissəsi olan mədəniyyət sənayesinin qlobal gəliri təxminən 2,3 milyard dollar, ixracatı isə 250 milyard dollar idi. 2021-ci ildə COVID-19 pandemiyasının artım tempi mədəniyyət sənayesinin gəlirlərinin 2022-ci ildə bu səviyyəyə çatmayacağını göstərir.

Beləliklə, tibbi və sağlamlıq turizminin qlobal iqtisadiyyata təsiri daha aydın görünür. Beynəlxalq xarici iqtisadi əlaqələrdə turizmin xüsusi yeri olduğu və iqtisadiyyatın müasir qeyri-resurs sektoru olduğu üçün bu sektorun "sağlam" olması son dərəcə vacibdir. Bununla belə, indiki görünməmiş vəziyyətdə əsaslı yeni yanaşmalara və dövlət dəstəyinin qəti çox səviyyəli tədbirlərinə ehtiyac var. Dövlət sağlamlıq turizmini iqtisadi siyasətinin prioritetlərindən biri kimi qəbul etməyə başlamalıdır. Turizmin davamlı işləməsi üçün əlverişli şəraitin yaradılması, cazibədarlıq baxımından turizm sənayesinin inkişafına təkən verəcəkdir. Bu bir aksioma olaraq bütün dünyada qəbul olunmalıdır.

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## DEVELOPMENT OF PHOTOCATALYTIC REACTORS

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### **Abstract**

Eco-friendly wastewater treatment technologies are to be focused for balancing technical efficiency and economic feasibility. Photocatalysis is one among the technologies known so far because of the scope for complete degradation of toxic organics in wastewater and zero end residues. In the process of photocatalysis, three components are involved such as pollutant - fluid, catalyst – solid and light photons - massless particles. Photons when incident on the photocatalyst, gets activated to generate hydroxyl radicals and these radicals oxidize the organics in wastewater. Oxidation of organics reduces the total organic carbon in the wastewater and formation of carbon-dioxide as the end product. The heterogeneity of photocatalysis makes the reactor design highly inter-disciplinary involving the knowledge of chemical, mechanical and environmental engineering concepts. So far literatures have focused on optimizing process parameters for specific pollutants, but the holistic approach involving the criteria for designing a photocatalytic reactor has been unclear. This study reviews about all types of photocatalytic reactors and compares them with calculated five benchmarks: Apparent reaction rate constant ( $k \sim 0.2 - 6 \times 10^6 \text{ d}^{-1}$ ), Space time yield (STY  $\sim 0 - 869000 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d}$ ), Photocatalytic space time yield (PSTY  $\sim 0 - 0.63 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d/kW}$ ), Specific removal rate (SRR  $\sim 0.02 - 165 \times 10^4 \text{ mg/g/h}$ ), Electrical energy consumption (EEC  $\sim 0.004 - 8 \times 10^6 \text{ kWh/m}^3$ ). Two important parameters: STY tells about how efficient the process is and PSTY tells about how much less power is needed to attain the efficiency. Conventional annular reactors have low illumination efficiency (PSTY =  $0.0012 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d/kW}$ ) and low mass transfer rate (STY =  $0.013 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d}$ ). On the other hand, advanced micro-reactors have high mass transfer rate (STY =  $869000 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d}$ ) and moderate illumination efficiency (PSTY =  $0.011 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d/kW}$ ). Hence the study throws light on future design principles that could focus on micro-depth reactors with high throughput and scalability, which comes as transitional design between both conventional and advanced reactors, having high STY ( $171 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d}$ ) and high PSTY ( $0.63 \text{ m}^3 \text{ pollutant/m}^3 \text{ reactor/d/kW}$ ).

**Keywords:** Heterogeneous photocatalysis, Photocatalytic reactor design, Wastewater treatment

## **DESIGNING A TOOL TO FACILITATE TUBE AND PIPE NOTCHING PROCESS**

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### **Abstract**

The goal of this proposed project is to design a tool that can help to make tube and pipe notching process to be more efficient. Majority welders find it difficult to weld tubes and pipes properly due to the precision required to attain a desired outcome. It is essential to precisely weld tubes into an outcome that meets the standard safety and criteria of a well-functioning frames of connected tubes and pipes. Hence, this tool was designed to offer the supporting platform for welders to hold the tubes together during the welding process which reduces the amount of physical energy and concentration that welders need to maintain the positions of the tubes during the welding process. This enables them to concentrate more on welding the tubes according to the expected precision. This tool will be tested at a workstation where a group of individuals specialized in welding technology will evaluate and examine this tool and provide their feedback through a questionnaire. This tool can potentially increase the efficiency of the welding process that welders are expected to do and create a much more safer work environment.

**Keywords:** notching, welding, tubes, pipes.



## AN EFFICIENT MICROWAVE-ASSISTED SYNTHESIS OF SOME NEW PYRIDYL PYRAZOLINE SUBSTITUTED COUMARINS, ITS CHARACTERIZATION AND BIOLOGICAL EVALUATION

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### **Abstract**

The coumarin (2H-1-benzopyran-2-one) derivatives are quite interesting objects for both synthesis and pharmacological screening. A variety of synthesized coumarin derivatives have been experimentally shown to exert various pharmacological activities including antimicrobial, anti-inflammatory, CNS depressant, antioxidant, anticancer activities etc. In most cases, hetero aryl substituent is introduced at the position 3 or 4 of coumarin ring which are reported to exhibit significant biological properties such as antimicrobial, antitumor, anti-HIV, anticancer etc. Now a day, the development of simple, mild, practicable, eco-benign method for the synthesis of heterocycles has grabbed the attention of researchers. Microwave Irradiation (MWI) has emerged as a new lead not only as a powerful tool for rapid and efficient synthesis of a variety of compounds but also for the quality of product, improvement in the yield, wider usable range of temperature and selectivity, decrease in reaction time and formation of hazardous by-products. In view of this, microwave assisted synthesis of some newer 3-[1-acetyl/propionyl-5-(pyridine-3-yl)-4,5-dihydro-1H-pyrazol-3-yl]coumarins, 3-[1-acetyl/propionyl-5-(pyridine-4-yl)-4,5-dihydro-1H-pyrazol-3-yl]coumarins, 3-[1-aryl-5-(pyridine-3-yl)-4,5-dihydro-1H-pyrazol-3-yl]coumarins and 3-[1-aryl-5-(pyridine-4-yl)-4,5-dihydro-1H-pyrazol-3-yl]coumarins has been carried out by reacting various 1-(coumarin-3-yl)-3-(pyridine-3-yl)-prop-2-ene-1-ones and 1-(coumarin-3-yl)-3-(pyridine-4-yl)-prop-2-ene-1-ones (coumarin chalcones) with hydrazine hydrate in acetic acid or propionic acid and phenyl hydrazine derivatives in acetic acid respectively under MWI. The structures of synthesized compounds were assigned on the basis of IR, <sup>1</sup>H-NMR, <sup>13</sup>C-APT and some selected mass spectral data. In addition to that, all synthesized compounds were screened for their in vitro antimicrobial activity against selected bacterial (*Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhi*) and fungal (*Aspergillus niger*, *Candida albicans*) pathogens.

**Keywords:** Coumarin, Pyrazoline, Microwave irradiation, Spectral data,  
Antimicrobial screening

## **STUDY ON STRUCTURAL TRANSFORMATIONS OCCURRING IN THE THERMAL OXIDATION OF BAMBOO PRECURSOR FIBER PRIOR TO CARBONIZATION AND ACTIVATION**

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### **ABSTRACT**

A study on the influence of DAP, urea, and sodium metasilicate (shortly DUS) pretreatment in the oxidative thermal stabilization process of bamboo fiber was carried out prior to the carbonization and activation stages. The oxidation process of the bamboo fibers was executed in the air atmosphere employing a multistep approach at temperatures up to 245 °C for variable oxidation durations. Physical, mechanical, structural, and thermal characterization of the original, and DUS treated and oxidized bamboo fiber samples were executed by a set of tests, including linear density, volume density, tensile strength, Fourier transform infrared (FT-IR) spectroscopy, and differential scanning calorimetry (DSC) analysis. The outcomes attained from FT-IR spectroscopy represented the improvement of dehydration and dehydrogenation reactions that occurred in the oxidized bamboo samples. The DSC findings showed that the DUS treated bamboo fibers oxidized at 245 °C for 120 minutes possess high thermal stability as a result of the greater number of aromatic substance containing ladder-like structure formation, and the samples are completely set for the succeeding carbonization and activation stages.

**KEYWORDS:** Bamboo fiber, Oxidation, DSC, FT-IR, Carbonization, Activation.

### **INTRODUCTION**

The growth in industrialization and awareness of hazardous waste contaminated water becomes a major concern for the ecological system; initiatives are taken to remove harmful components from contaminated water before its release [1–5]. The demand for the cheapest and most effective means to avoid pollutants before the waste water is released is thus increased. Many types of method are utilized and adsorption by active carbon is one of the best [6–8]. Activated carbon holds different surface functional groups having attraction towards various adsorbents, validating the great usage of them in the industrial effluent treatment. The surfaces are broad and they are highly porous. It is also beneficial since it can be manufactured on a big scale. There are four types with activated carbon: granular activated carbon, powdered activated carbon, activated carbon pellet and activated carbon fiber. Of these four types, activated carbon fibers (ACFs) have the benefit of being formed fibrously from fibers; it is simpler to create entanglement with each other creating web and no post-treatment need [9–13]. Commercial ACFs are made of materials including bananas, rice husks, palm tree cobs, hemp, jute, vetiver roots, flax, coconut, pitch base precursor, PAN fiber, biofuels, and farm waste [14–17]. As the cost of manufacturing of the synthetic precursor is expensive and the interest for activated carbon fibers rises, inexpensive natural



resources need to be sought specifically waste for the creation of activated carbon fibers [14, 15].

The objective of the current study was to explore the influence of DAP, urea, and sodium metasilicate pretreatment on the stabilization of bamboo fibers at temperatures up to 245 °C for different stabilization times. Physical, mechanical, structural, and thermal characterization of the original, and DUS treated and oxidized bamboo samples were performed by a set of tests, including linear density, volume density, tensile strength, Fourier transform infrared (FT-IR) spectroscopy, and differential scanning calorimetry (DSC) analysis.

## EXPERIMENTAL DETAILS

The bamboo specimens were pretreated with an aqueous solution of 3% di-ammonium phosphate, 3% urea, and 0.5% sodium metasilicate for twenty-four hours at room temperature. After finishing the chemical pretreatment, the bamboo samples were dried at 80 °C for five hours. Afterward, the thermal stabilization was executed in the air atmosphere at 245 °C, for stabilization periods of 40, 60, 80, 100, and 120 min.

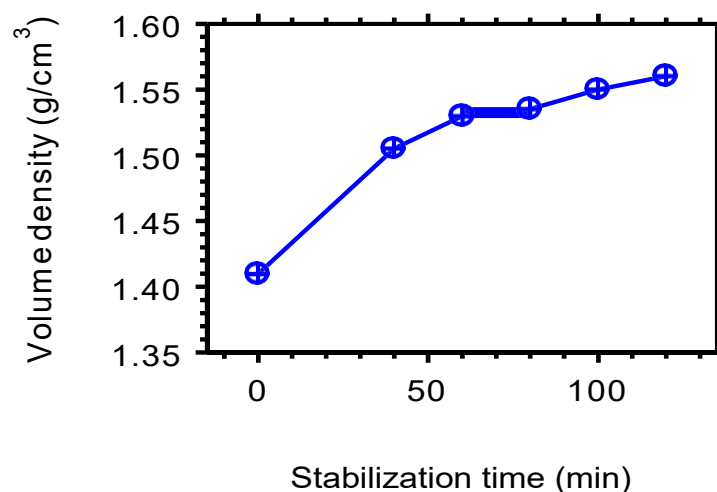
The differential scanning calorimetry (DSC) study was done using a Perkin Elmer Diamond DSC system. Usual sample weights used were around 5 mg. The heating rate of 10 °C/min and an maximum temperature range of 350 °C were utilized. Indium was used for calibrating heatflow. Indium and zinc standards were utilized for calibrating temperature.

Perkin–Elmer 400 infrared spectrometer was used for the IR investigations. Fifty interferograms of each specimen were averaged. Every specimen spectrum was rationed with an equivalent number of background scans employing the similar machine adjustments. Lastly, all the bands were evaluated utilizing the OMNIC program [18–21].

## RESULTS AND DISCUSSION

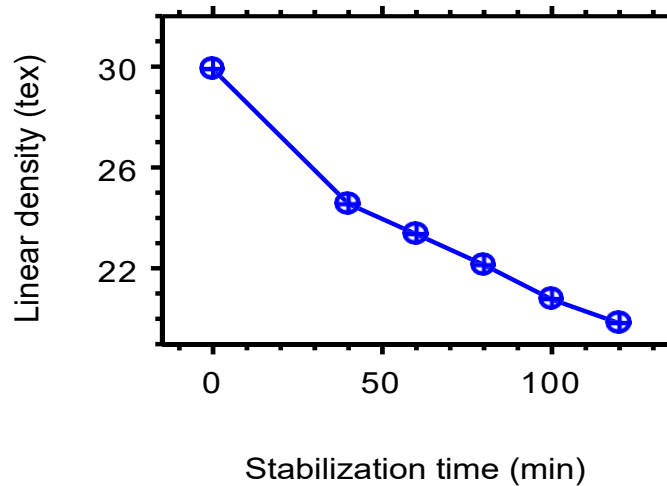
### PHYSICAL AND MECHANICAL PROPERTIES ANALYSIS

With increasing stabilization period, volume density improved steadily from 1.41 g/cm<sup>3</sup> for raw bamboo fiber to 1.56 g/cm<sup>3</sup> for the DUS integrated and 120 min stabilized samples. Conversely, a sudden growth in volume density value was detected in just 40 min of stabilization and reached 1.505 g/cm<sup>3</sup>.



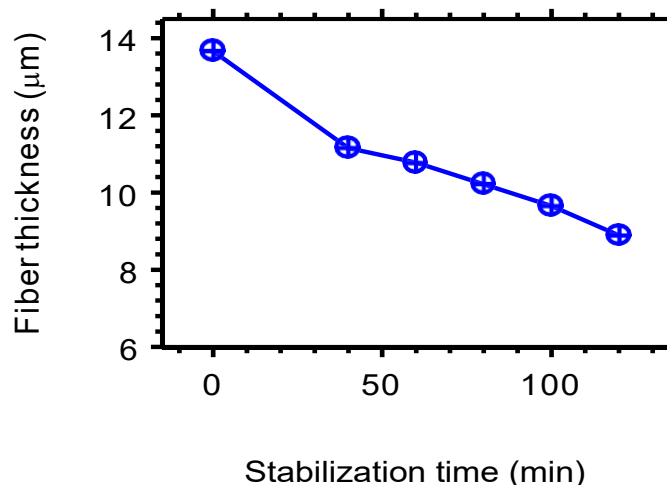
**Figure 1** Volume density of the raw and stabilized bamboo fibers.

Linear density represented a descending tendency all over the whole stabilization time. The linear density of raw bamboo yarns was 29.89 tex. In the 40 min stabilized specimens, this was degraded by 17.80%, and reached 24.57 tex. For the 120 min stabilized bamboo specimens, the linear density was 19.83 tex.



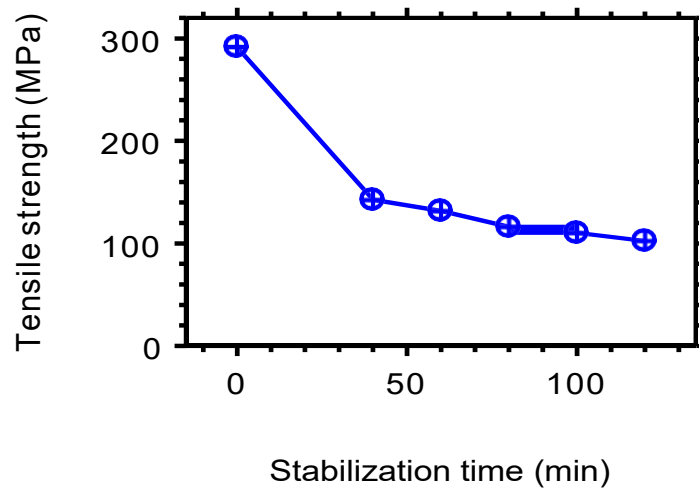
**Figure 2** Linear density of the raw and stabilized bamboo fibers.

The raw bamboo fibers had a fiber thickness of 13.66  $\mu\text{m}$ . The fiber thickness increased suddenly by 18.37% after 40 min of stabilization, and the lessening sustained with increasing stabilization period. The fiber thickness of bamboo fiber reached 8.89  $\mu\text{m}$  after 120 min of stabilization at 245°C, demonstrating the maximum loss.



**Figure 3** Fiber thickness of the raw and stabilized bamboo fibers.

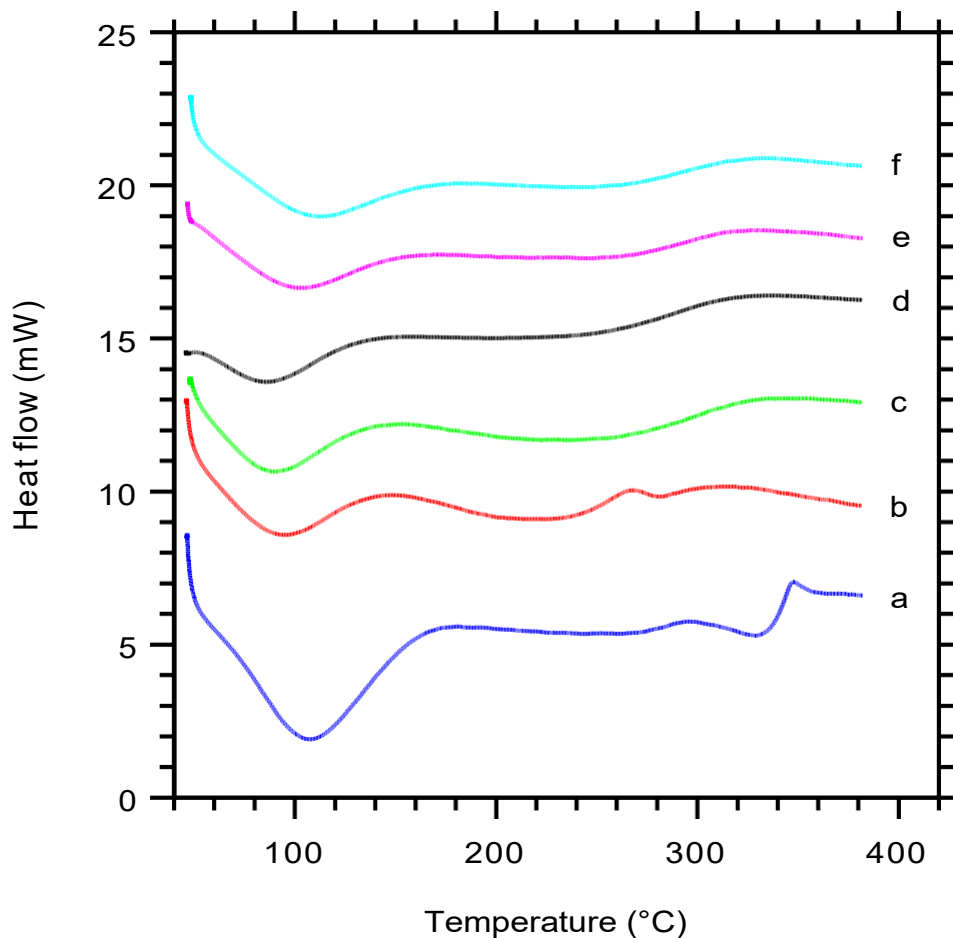
The tensile strength of the raw bamboo yarn was 291.37 MPa. For 40 min of thermal stabilization, the tensile strength deteriorated cuttingly to 142.51 MPa. Then, the lessening tracked an inclination of steady loss with increasing stabilization time.



**Figure 4** Tensile strength of the raw and stabilized bamboo fibers.

#### **Differential Scanning Calorimetry (DSC)**

DSC was used to observe the structural changes occur in the stabilization of DUS pretreated bamboo fibers for different stabilization times. The DSC profile of raw bamboo fiber represented in Figure 5a indicates a broad endotherm near 100 °C from absorbed moisture. This endotherm is followed by a robust and wider endotherm between 280 and 340 °C with a peak temperature of 328 °C produced by the depolymerization and decomposition process of cellulose[22]. DUS incorporation and thermal stabilization in the air appeared to have a noteworthy influence on the DSC traces of stabilized bamboo fibers as showed in Figure 5 (b–f). The DSC traces of the 40 min stabilized sample at 245 °C moved to 280 °C owing to the depolymerization process of remaining cellulose, hemicellulose, and lignin.

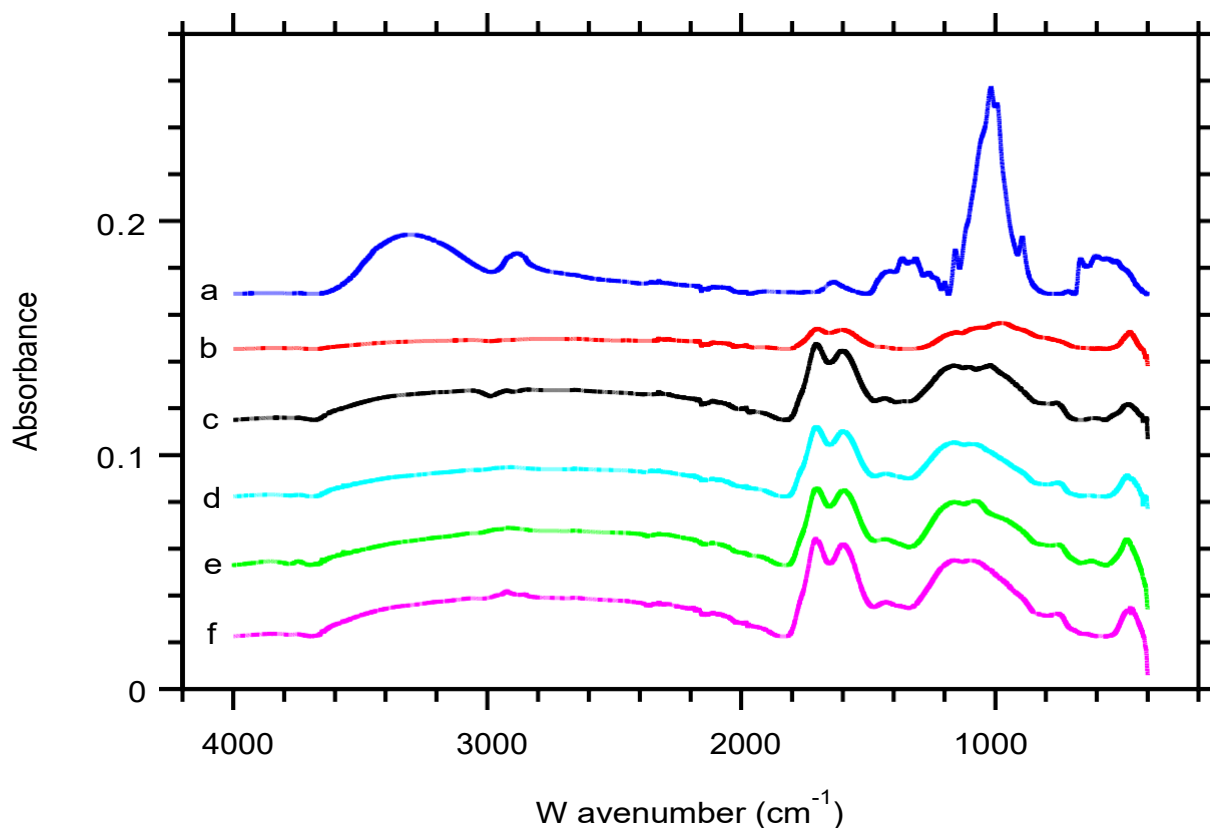


**Figure 5 DSC thermograms of raw (a) and DUS integrated and stabilized bamboo fibers for different stabilization times. (b) 40 min; (c) 60 min; (d) 80 min; (e) 100 min; (f) 120 min.**

After 40 min of stabilization at 245 °C, the zone concerning to the decomposition endotherm has diminished and disappeared. The vanishing of the endotherm designates that the depolymerization processes are inhibited, and the production of levoglucosan is terminated. This propensity may cause greater carbon yields and extended stabilization periods after DUS impregnation. The vanishing of the decomposition endotherm for 40 min stabilization period and more also specifies the development of high thermal resistant and thermally stabilized structural units.

### **Infrared (IR) Analysis**

The infrared spectra of the raw and stabilized bamboo fibers were evaluated in the area from 4000 to 400  $\text{cm}^{-1}$  for variable stabilization time illustrated in Figure 6. The area from 4000 to 3000  $\text{cm}^{-1}$  is allotted to bands of free, intermolecular, and intramolecular hydrogen bonded OH groups [23, 24]. Methine (CH) stretching bands are noticed in the region between 3000 and 2800  $\text{cm}^{-1}$ . The area between 1500 and 1200  $\text{cm}^{-1}$  is accredited to methylene bonds. The spectra situated at 1420, 1160, 1102, and 895  $\text{cm}^{-1}$  are recognized as crystallinity bands.



**Figure 6 IR bands in the zone of 4000 to 400  $\text{cm}^{-1}$  of raw (a) and DUS integrated and stabilized bamboo fibers for different stabilization times. (b) 40 min; (c) 60 min; (d) 80 min; (e) 100 min; (f) 120 min.**

The spectrum located at  $2900 \text{ cm}^{-1}$  is accredited to methyl and methylene bands (Figure 6). This band has also been employed as an internal standard because of the invariable comparative intensity in the current analysis, as it is established and noticeable band in raw bamboo fiber. The practice of standard internal band makes it stress-free to make assessments between diverse samples for different stabilization periods. The band at  $3300 \text{ cm}^{-1}$  for OH stretching band is also taken into attention throughout the quantitative investigation. The band assignments are based on available literature [25–27].

## CONCLUSIONS

The influence of DUS pretreatment and stabilization on the structure and properties of bamboo fibers were explored at temperatures up to  $245 \text{ }^\circ\text{C}$ . Volume density, linear density, fiber thickness, tensile strength, thermal analysis (DSC), and infrared spectroscopy outcomes showed that stabilization time had a significant influence on the structure and properties of oxidized bamboo fibers before carbonization and activation stages. The DSC results revealed that there was an enhancement in thermal stability of the samples. Infrared measurements also indicated the development of C=C bonds credited to the creation of a crosslinked ladder-like structure.

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## **DEVELOPMENT OF THE SOURCE OF RAW MATERIALS FROM FISH FAT FOR PRODUCING BIODIESEL FOR THE DIESEL ENGINE FUEL OF THE FISHING VESSELS**

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### **Abstract**

Biodiesel for diesel engines to limit pollution and reduce dependence on petroleum-based fuels has been used in many countries worldwide because they are environmentally friendly and renewable. Therefore, the source of raw materials for biodiesel production needs to be developed. Vietnam is a country that has advantages in natural conditions in aquaculture, especially catfish (Shutchi catfish, Yellowtail catfish) in the Mekong Delta (southern of Vietnam). According to the International Trade Center (ITC) statistics, Vietnamese Shutchi catfish and Yellowtail catfish dominate the global catfish market almost entirely. Therefore, excess fish fat is relatively abundant and is considered one of the primary raw materials for biodiesel production. In this study, the paper presents the application of biodiesel derived from fish fat on 6CHE Yanmar engines of fishing boats by experimental methods. The results show that the soot emissions of the diesel engine when using biodiesel (B10) are much lower than when using traditional fuel (DO).

**Keywords:** Biodiesel, soot emissions, diesel oil, catfish fats, diesel engine.

### **1. INTRODUCTION**

Faced with the challenges of environmental protection and the increasingly depleted petroleum fuel resources, the production and application of biodiesel for engines are necessary. According to the International Energy Agency (IEA) projections, the energy development trend in the world until 2050 will use 23% of fuel from petroleum, 27% of biofuels, the rest are other forms of fuels supplied to internal combustion engines [3].

Biofuels can be produced from vegetable oils or animal fats. Compared with traditional petroleum fuels (Diesel Oil - DO), they have many outstanding advantages such as:

- Environmental friendliness

- The fuel source is renewable from production and farming activities, thus reducing dependence on traditional non-renewable fuel sources.

Currently, animal fats as fuel for diesel engines are mainly chemically treated to have properties equivalent to DO. Therefore, the product after processing is called biodiesel. Through the actual survey in the Mekong Delta region of Vietnam, the farming, processing, and exporting of catfish is very developed, according to data from the Vietnam Association of Seafood Exporters and Producers. The amount of catfish harvested is over 1.2 million tons/year, and catfish fat is about 150,000 tons/year. Biodiesel B100 is derived from catfish fat, has been researched and produced by some Vietnamese enterprises, meeting the standards of TCVN 7717, ASTM D 6751 of the US, and EN 14214 of the EU, exported to markets such as Singapore, Japan [9].

Thus, using biodiesel fuel produced from catfish fat for fishing vessels will limit

environmental pollution because the number of ships mentioned above is enormous. With Yanmar engine is commonly used, as shown in figure 2a [1].

## 2. MATERIALS AND METHODS

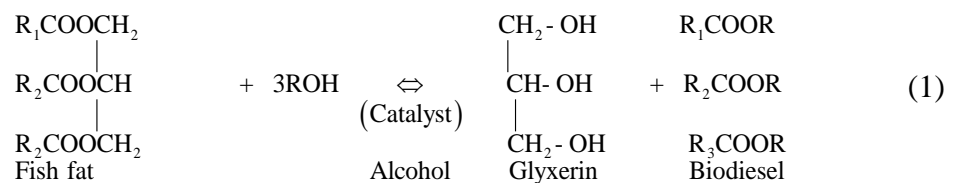
### 2.1. Research on biodiesel fuel derived from fish fat

Biofuels have great potential as a fuel to replace traditional fuels. In addition to its function as an additive, enhancing oxygen for the combustion process, reducing harmful emissions in engine exhaust such as SO<sub>x</sub>, HC, CO, Soot. Biofuels are also easy to blend with traditional fuels, without high requirements on equipment and usage capacity.

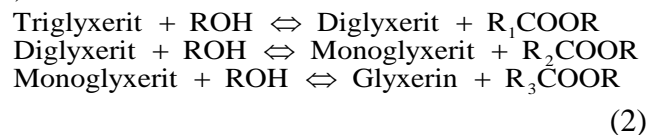
In Vietnam, with more than 3.260 km of coastline and the vast Mekong River Delta region is the outstanding advantage of excess products from catfish fat, etc., collectively known as catfish fat compared to many other countries in the world. It is a rich source of raw materials for biodiesel production [1].

Chemically, biodiesel is methyl ester (or ethyl ester) of fatty acids in animal fat (fish fat) when esterified by methanol or ethanol, in which methanol is more commonly used [5], [7].

Methyl ester synthesis reaction uses methanol and base catalysts. The ester exchange process is also known as alcoholization. From one molecule of triglyceride exchange, the ester with three molecules of straight-chain alcohol separate glycerin and produces alkyl esters according to the reaction (1) [1], [2], [6]:



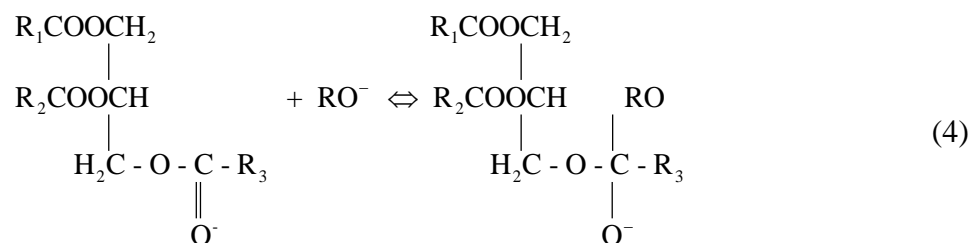
In essence, the above conversion process is a series of reversible reactions in succession. That is, triglyceride is gradually converted into diglycerite, then from diglycerite, it is converted into monoglyceride and finally glycerin as (2):



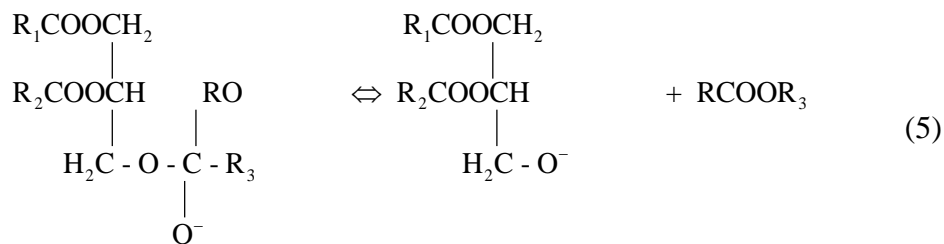
The mechanism of the ester exchange reaction using base catalysis is described as follows:



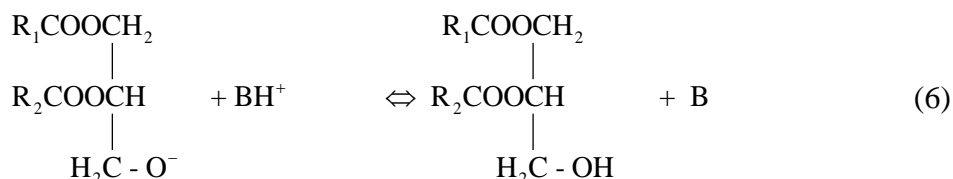
Then, the RO<sup>-</sup> radical continues to react with triglyceride molecules to form an intermediate compound:



This intermediate is unstable, further forming an anion and an alkyl ester, respectively:



The last is the catalytic reduction according to the equation:



Catalyst B reacts with diglycerides and monoglycerides and producing alkyl esters and glycerol.

The long branched molecular structures of fish fat converted to shorter linear molecular structures, called methyl esters or ethyl esters like the components of DO fuel. Based on ester metabolisms, the biodiesel production process from fish fat is shown in Figure 1. In there, glycerine is separated from the ester and used in other industries [6]. Biodiesel B100 has standards as shown in table 1, biodiesel B10 (10% B100 and 90% DO) has physicochemical properties as shown in Table 2.

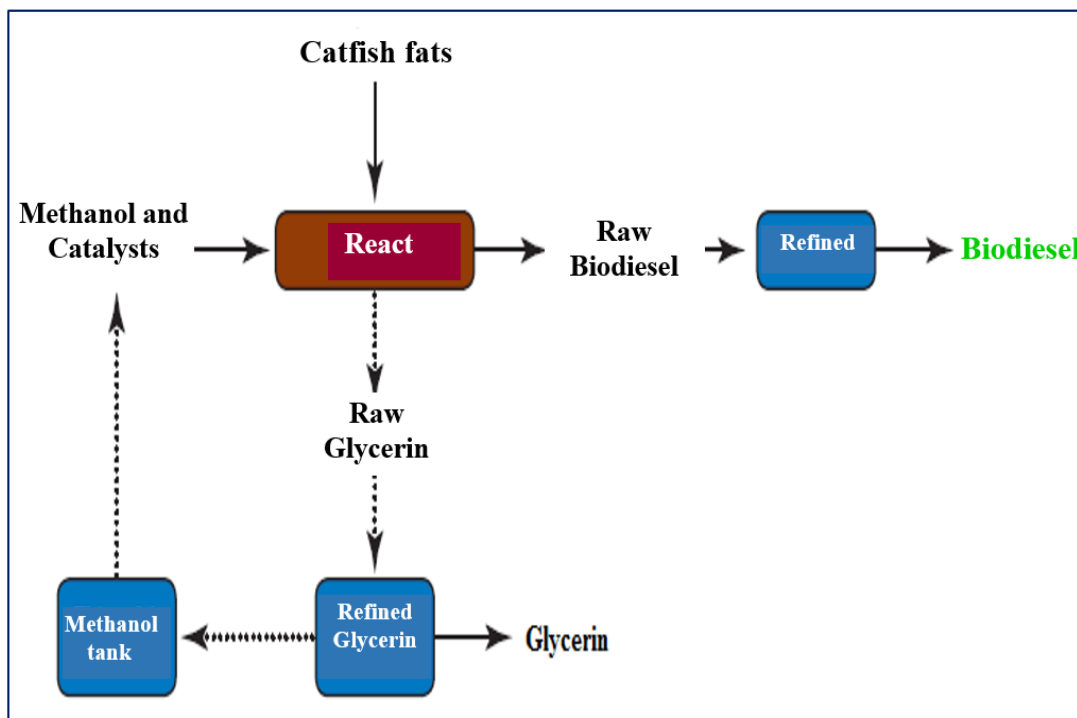


Fig 1. The basic process of producing biodiesel from fish fat

Fig 1. The basic process of producing biodiesel from fish fat

**Table 1.** Physicochemical properties of biodiesel B100 (TCVN 7717: 2007) [9]

TT	Indicators	units	Limit	Measurement method
1	Este mass	% mass	> 96,5	EN 14103
2	Density at 15 <sup>0</sup> C	kg/m <sup>3</sup>	860 - 900	TCVN 6594 (ASTM D1298)
3	Fire point	<sup>0</sup> C	130	TCVN 2693 (ASTM D93)
4	Water and dregs	% volume	< 0,050	TCVN 7757 (ASTM D445)
5	Kinematic viscosity at 40 <sup>0</sup> C	mm <sup>2</sup> /s	1,9 – 6,0A	TCVN 3171 (ASTM 445)
6	Ash sulphate	% mass	≤ 0,020	TCVN 2689 (ASTM D874)
7	Sulfur	% mass (ppm)	≤ 0,05(≤ 500)	TCVN 6701 (ASTM D2622)
8	Copper Corrosion	type	No1	TCVN 2694 (ASTM D130)
9	Cetane number		≥ 47	TCVN 7630 (ASTM D613)
10	Dregs of biodiesel	% mass	≤ 0,050	ASTM D4530
11	Acid number	mg KOH/g	≤ 0,05	TCVN 6325 (ASTM D664)
12	Iodine index	g Iodine /100 g	≤ 200	TCVN 6122 (EN 14111)
13	Oxidation stability at 110 <sup>0</sup> C	hour	≥ 6	EN 14112
14	Free glycerin	% mass	≤ 0,020	ASTM D6584
15	Total glycerin	% mass	≤ 0,240	ASTM D6584
16	Phosphorus	% mass	≤ 0,001	ASTM D4951
17	Distillation temperature, 90% recovery	<sup>0</sup> C	≤ 0,360	ASTM D1160
18	Na and Ka	mg/kg	≤ 5,0	EN 14108, EN 14109
19	External inspection	There is no free water, dregs and impurities hovering		Observe by naked eyes

**Table 2.** Physicochemical properties of B10 and DO fuel [1]

Indicators	Fuel	
	B10	DO
Calorific value, MJ/kg	45.40	45.69
Kinematic viscosity at 40 <sup>0</sup> C, mm/s <sup>2</sup>	2,85	2,42
Density at 15 <sup>0</sup> C (g/cm <sup>3</sup> )	0,839	0,830
Cetane number	52,5	52,1
Flash point, <sup>0</sup> C	63	57
Carbon dregs at 10% distillation dregs	0,15	0,17
Ash mass, % mass	< 0,001	< 0,001
Water mass, mmg/kg	185	85
Distillation temperature, 90% volume	345	334

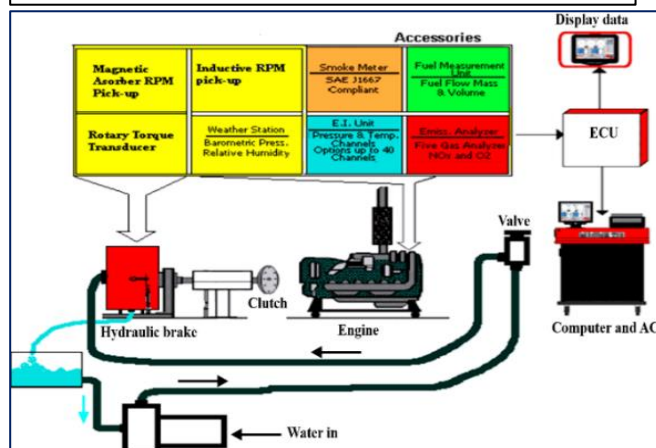
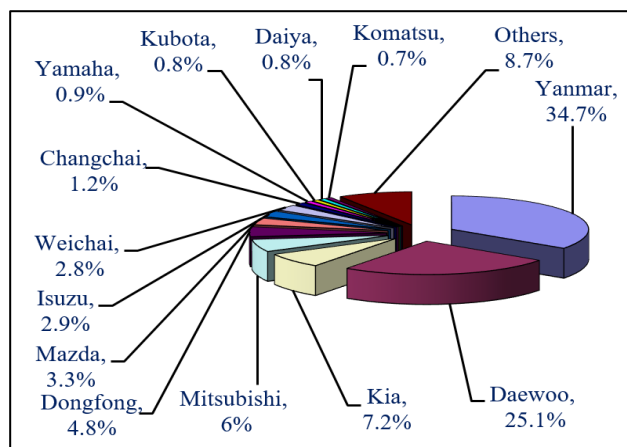
## 2.2. Experimental study on Biodiesel on 6CHE Yanmar engines of fishing vessels



In this content, the article presents an experimental research method, application of biodiesel (B10) on the 6CHE Yanmar engine of fishing vessels, this engine with technical parameters as shown in Table 3, layout diagram experiment as shown in Figure 2b.

**Table 3.** Technical specifications of the 6CHE Yanmar [8]

Model	Unit	Value
Type		Vertical 4-cycle, water-cooled diesel engine
Combustion type		Direct injection
Number of cylinders		6
Bore x stroke	mm (in)	105x125(4.13x4.92)
Displacement	l (cu.in)	6494 (396.3)
Contionuous rating output	HP/rpm	105/2300
Compression ratio		16.4
Firing order (viewed from heat exchanger side)		1-4-2-6-3-5
Maximum explosion pressure	Kg/cm <sup>2</sup>	85
	Injection timing	18 <sup>0</sup> BTDC
	Injection pressure kg/cm <sup>2</sup>	210

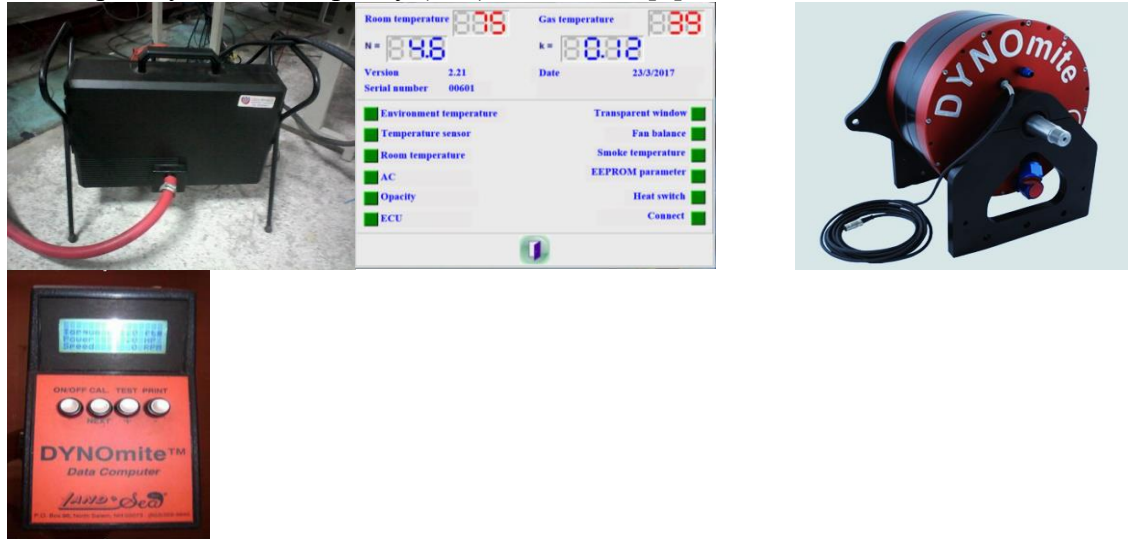


a)

b)

**Fig 2.** Types of engines used on fishing vessels (a) and schematic diagram of experimental set up (b) - The MSA-PC-SE.NR 00601 instrument of Beissbarth - Germany, and measurement program interface (Figure 3a), used to measure soot emissions through the exhaust smoke opacity. The MSA-PC uses local flow measurement technology to directly and continuously measure the

supplied exhaust gas samples. The measurement technique is based on the coverage of the exhaust sample in the measurement range, from transparent to completely dark. The transparency level is recognized as no smoke in the sample tube, the dark level is recognized as completely covered. Opacity (N%): 0 ÷ 99.9% [4].



a) b)

**Fig 3.** The smoke meter MSA-PC-SE.NR 00601(a) and the hydraulic brake dynamite 13 dual-rotor (b)

- The hydraulic brake dynamite 13 of Land Sea company - the USA and attached measuring device (Figure 3b), used to cause load and measure torque (load), power. Loading the engine is done through torque adjustment in the hydraulic brake ( $M_b$ ):

$$M_b = G_w \cdot C \cdot (T_{in} - T_{out}) \quad (\text{N.m}) \quad (7)$$

- The engine torque ( $M_e$ ) will be equal to the sum of the torque calculated on the dynamometer and the torque in the hydraulic brake:

$$M_e = M_b + p \cdot l \quad (\text{N.m}) \quad (8)$$

- Engine power is determined:

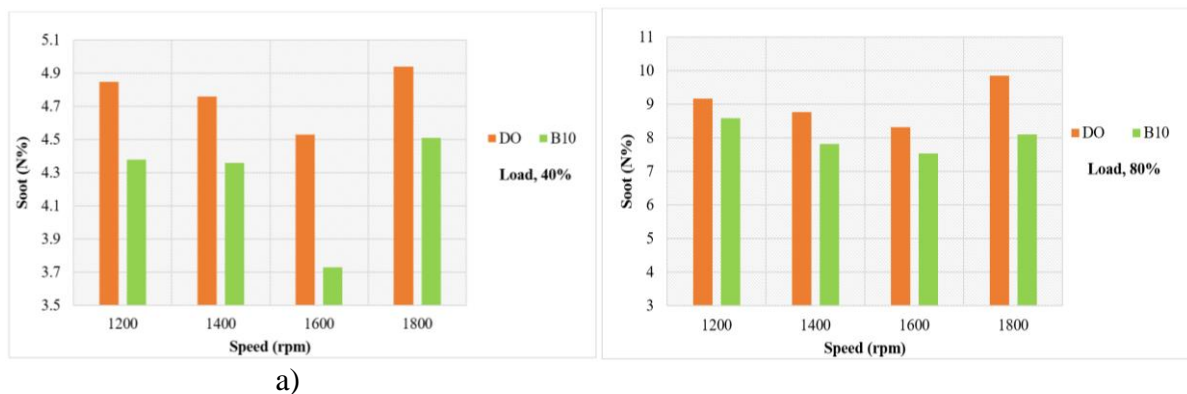
$$N_e = n \cdot M_e / 9550 \quad (\text{kW/h}) \quad (9)$$

In the above formulas:  $G_w$ - the amount of water required for the brake to work;  $C$  - the specific water heat;  $T_{in}$ ,  $T_{out}$ , the temperature at inlet and exit brake;  $p$ , dynamometer;  $l$ , swing arm length;  $n$ , the test engine speed.

### 3. RESULTS AND DISCUSSION

The data from Table 2 show that the parameters with the difference between B10 and DO, which directly affect the fuel injection and combustion process in the 6CHE Yanmar diesel engine, are: Viscosity, Specific gravity, calorific value, cetane index, thereby directly affecting exhaust emissions. When tested at speeds: 1200 rpm, 1400 rpm, 1600 rpm, 1800 rpm with 40% and 80% of the load, soot emissions in the exhaust gas of engines using B10 fuel are lower than when using DO (Figure 4a, Figure 4b). The above reason is that B10 has a lower carbon/hydrogen ratio and sulfur content than

DO, and B10 has an oxygen component while DO is absent.



**Fig 4.** Tested according to speed characteristic at 40% and 80% of load

At engine speed 1200 rpm, the soot emissions of both fuels are significant. At this speed, the average piston velocity is low, making the interaction between the vortex gas at the end of the compression stroke incomplete and the fuel jet in the cylinder, increasing soot formation. As the speed increases at 1400 rpm and 1600 rpm, soot emissions in the exhaust gas are reduced sharply for both fuels. Because the average piston speed increases, increasing phase interaction between liquid and gas, reducing soot formation during combustion mixture formation. Besides, the high combustion temperature also increases the soot oxidation process, causing soot in the exhaust gas to decrease. The amount of soot formed and soot oxidized (burned by high temperature) are different in the combustion chamber. However, at 1800 rpm mode, the number of soot emissions increased. Because in this mode, the combustion process takes place faster, a part of the unburnt fuel has entered the expansion phase, increasing the amount of soot in the engine's exhaust gas. Experimental results when the engine uses B10 derived from fish fat and when using DO are compared in Table 4.

**Table 4.** Soot reduction of B10 compared to DO

Speed (rpm)	Soot emission (N%) at 40% load			Soot emission (N%) at 80% load		
	DO	B10	Soot reduction level of B10 compared to DO (%)	DO	B10	Soot reduction level of B10 compared to DO (%)
1200	4.85	4.38	-9.69	9.17	8.58	-6.43
1400	4.76	4.36	-8.40	8.76	7.82	-10.73
1600	4.43	3.93	-17.66	8.32	7.43	-9.49
1800	4.94	4.51	-8.704	9.85	8.12	-17.86

#### 4. CONCLUSION

Experimental results in Table 4 show that applying the biodiesel (B10) derived from catfish fat on the 6CHE Yanmar diesel engine gives much lower soot emissions than traditional fuels (DO). Therefore, developing raw materials from catfish fat to produce biodiesel as a fuel for diesel engines of fishing vessels will reduce environmental pollutions and limit dependence on non-renewable fuels.

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## ACCURATE BANDWIDTH ESTIMATION AND PREDICTION FOR IEEE 802.11-BASED MOBILE AD HOC NETWORKS

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### Abstract

The standard IEEE 802.11 allows realizing the affordable Mobile Ad hoc Networks (MANETs), which are in growing use. Several concepts are adopted in such networks for quality of service (QoS) guarantees, including solutions like admission control based-on bandwidth. Such concepts are strongly related to the ability of MANETs to quantify their available resources and to predict the amount of resources that would be consumed by applications. However, no measurement strategy has been standardized to the present day, given that measurement activity becomes even more difficult in such networks. Consequently, a great interest is brought to this issue, where the measurements remain always one of the main challenges open in research. In this paper, we discuss the failures of the existing measurement strategies in literature as well as their main shortcomings. Thus, we present a novel measurement strategy: ABAM (Available Bandwidth, the Accurate Measurements) in order to improve the bandwidth measurements and predictions in such networks. For evaluation's purposes, a comparative study is presented between ABAM and some well-known approaches through mathematical analysis and simulation results. The obtained results testify the improvement brought by our proposed approach ABAM.

**Keywords:** MANETs, QoS, Measurement, Available Bandwidth, Admission Control, ABAM.



## DEPLOYED RSUS BASED ON ORSD ALGORITHM IN VEHICULAR AD HOC NETWORK

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### Abstract

A vehicular ad hoc network is a particular type of ad hoc mobile network. It is characterized by high mobility and frequent disconnection between vehicles. For this, the RSUs deployment permits to enhance the network connectivity. The objective of this work is to provide an optimized RSUs placement for reducing the deployment cost and maximizing the accident coverage. In this paper, we propose our algorithm called ORSD. ORSD is a two-steps algorithm, in the first step, ORSD finds the RSUs candidate locations based on network density and connectivity. In the second step, ORSD selects the optimally deployed RSUs using the objective function to maximize accident cover. We show the effectiveness of our solution for different scenarios in terms of cost and accident cover.

**Keywords:** vehicular ad hoc network, RoadSide unit, deployment, optimization.

### Introduction

With the rapid progress in the field of intelligent transportation systems [1], the concept of vehicular ad hoc network (VANET) [2] is created. VANET permit to exchange the different type of information on roads using smart vehicles [3]. The VANET topology is frequently dynamic with not steady connectivity. So, the establishment of the stable route between vehicles, vehicle to vehicle communication (V to V), is challenge due the high mobility of vehicles. Therefore, the vehicle to Infrastructure (V to I) is necessary to enhance the connectivity and coverage of VANET network. The v to I communication is assured by deployment the RSUs in the network. The RSUs represents wireless access point. Due their deployment cost, the RSUs placement must be optimal [4]. Therefore, the main objective of this work is to provide an optimized RSUs position to enhance network connectivity and coverage accident area.

In this paper, we propose a novel approach called ORSD (Optimized RoadSide Units Deployment). ORSD is a solution that optimizes RSUs deployment for vehicular ad hoc network improving the accident area coverage where there is low connectivity.

In the first step, we calculate the probability of connectivity in each segment using the traffic information (arrival rate, density, speed). The second step, we select RSUs candidate positions in segments with low connectivity probability because with high connectivity probability the information is circulated using V to V communication. Then, we select the optimal RSUs positions for final installation based on accident area. For that, we use the

objective function to maximize both network connectivity and accident area as detailed in section 4.

The rest of the paper is organized as follows. Section 2 present and discusses the important related work on Road-side units deployment. In section 3, we give the system model. Section 4 details ORSD algorithm. Finally, Section 5 presents simulation results before concluding in section 6.

## 1. Related Works

In order to improve the deployment of RoadSide Units (RSUs), numerous works have been developed by the academic community. In [5], the authors were addicted to finding the optimal positions to maximize the coverage area, in order to improve connectivity and reduce the delay. transmission of messages. They consider intersections to be candidate positions for urban scenarios. They use two optimization methods: Analytical Binary Integer Programming (BIP) and Balloon Expansion Heuristic (BEH), but they only consider urban environments without considering the density of vehicles. The authors in [6], proposes to distribute the RSUs along the route, equidistantly. The objective is to study the differences between (RSU) to improve the collection and delivery of data on highway. They only use V2I communication. In the article [7] for Delay-Sensitive Applications in Vehicular Network, the authors propose using genetic algorithms to find best positions in order to minimize the transmission delay of safety messages. They use both types of V2X communication. In [8] use the genetic algorithm to optimize RSUs placement to enhance the reception of basic safety message (BSM) delivered from the vehicles.

The authors of the paper [9] concluded that putting RSUs in intersections does not improve the connectivity of isolated vehicles.

Table 1 presents a comparative study between the different approaches.

Table 1. Comparative study

study	Scenar io	Connex ion mode	RSU conn ectiv ity	Initial localisat ion
[4]	Urban	V2I	yes	Intersect ion
[5]	highw ay	V2I	yes	equidist ant
[6]	Urban	V2I	yes	Intersect ion
[7]	Urban & highw ay	V2X	yes	Intersect ion, random or uniform

## 2. System Model

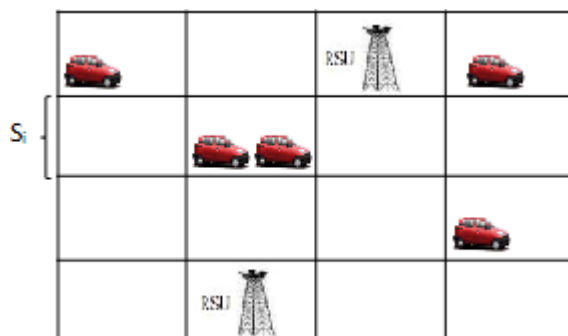


Figure. 1 System model

In our system model, as shown in figure 1, we consider a set of road segments in the studied area  $S_i = \{S_1, S_2, \dots, S_N\}$  where each Segment  $S_i$  is characterized by density  $D_i$ , speed  $V_i$  and number of accidents  $AC_i$ . Each segment has a length equal  $2*r$  where  $r$  represents the radio range of vehicle. Also,  $P_z$  represent the population size in the studied area.

Let  $CP = \{1, \dots, m\}$  be the set of candidate positions to install RSUs,  
These variables are summarized in Table 2.

Table 2. Notation

Variable	Notation
Segment i	$S_i$
Density in segment i	$D_i$
Speed in segment i	$V_i$
Length of segment	$L$
Radio range of vehicle	$r$
Population size	$P_z$
Number of accidents in segment i	$AC_i$
Decision variable to use or not the $RSU_i$	$y_i$
The number of RSU candidate positions	$m$
The number of road segments	$n$
Number of RSUs to deploy	$N_{RSU}$

In our system, we take into account V2X communication. We assume that all RSUs are connected through wired links. We detail in the following the different steps of RSD Algorithm.

### 3. ORSD Steps

The aim of paper is to find the best RSUs locations in urban and highway scenarios. The challenges consist to ensure maximum accidents coverage in the segments with low connectivity. In fact, our objective is to find the best RSUs placement and to enhance the connectivity of the system while minimizing the number of RSUs.

#### 4.1 Problem modelling

We model our problem by the objective function to maximize the accidents coverage and connectivity of the system. So, we use equation (1) to (6) to represent our problem modelling. Equation (1) represents the objective function to maximize.

$$(1)$$

Where  $w_1$  and  $w_2$  represent the weight of each sub-function. We choose the connectivity constraint (F1) as the most important.

It is a weighted function composed of two sub-functions: the first  $F1$  representing the system connectivity i.e. the connectivity average in all segments

$$\Sigma \quad (2)$$

$$\Sigma \quad (3)$$

Where  $Pc_i$  is connectivity probability will be detailed in section 4.2.

and the second function F2 representing the accidents coverage.

$$\Sigma \quad (4)$$

$$\Sigma \quad (5)$$

The solution feasibility must respect the constraints given by equations (4) and (5) to ensure that the number of RSU used is lower than a given RSUs threshold (NRSU). is the variable that indicates if the RSU I is deployed or not.

$$\{ \} \quad (6)$$

In our work, the objective is to find the optimal positions to deployed RSUs. To do That, we propose two processing steps as depicted in figure 2.

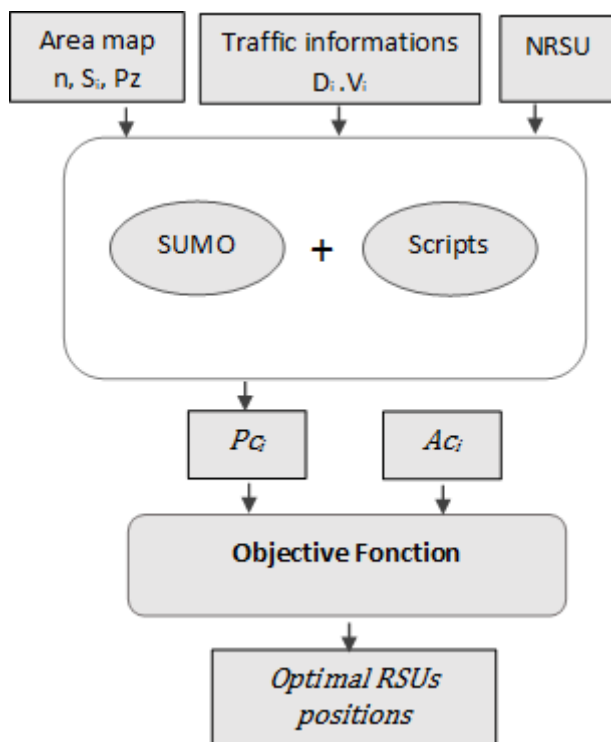


Figure. 2 RSD solution

#### 4.2 First Step: Calculate the connectivity probability

To apply RSD, we need to calculate the connectivity probability  $Pc$  used by equation (2).  $Pc$  is the probability that there is a sequence of connected nodes in the road segment. So, we use the Simulation of Urban Mobility (SUMO)[10] for extracting information about density, speed and travel time in each segment to calculate vehicle arrival rate named  $\lambda_i$ . Then, we use

the formula (7) [11] to calculate connectivity probability for each segment. For more details about this formula the reader can refer to [11]:

$$\sum_{\{ \dots \}}^{* \ddagger} ( ) \quad \sum \quad \sum_{\dots}^{* \ddagger} ( )$$

### 4.3 Second Step: RSUs candidate positions and optimal positions

In the first, we choose the candidate positions based on information of connectivity probability. We use the equations (2), (3) to maximize the system connectivity probability where the system connectivity probability is average of connectivity probability (eq. 8) of all segments in the area studied.

So, the result is the set of candidate positions  $m$ . then, we use the equations (4) and (5) to select optimal positions among candidate positions. We choose the segment with higher accident number as best optimal positions.

## 4. Results and Performance

In this section, we present simulation results of ORSD with different scenarios. we use the simulator of urban MObility (SUMO) [ ] for generating different traffic scenarios. We develop scripts to extract different information as density, speed and travel time in each segment. Then, we develop ORSD algorithm to calculate connectivity probability for each segment and selects optimal RSUs positions using C++ programming language. Table 2 gives the simulation parameters.

Table 2. Simulation parameters

Variable	Value
Number of segments	100
Segment density (vehicle/km)	1-25
Average Speed	15-70
segment Length	500
Radio range of vehicle	250
Population size	20000
Number of accidents in segment	1-20
The number of RSU candidate	$m$
Threshold of connectivity probability	0.1-0.9

To evaluate our solution's performances, we valuate two criteria:

- The number of necessary RSUs to guarantee threshold of connectivity probability,
- The coverage rate of accident area.



Our objective, we do not need to cover the all area studied but we use only some RSUs candidates. In Fig. 3, we plot RSUs candidates positions depending on the threshold of connectivity probability average (PS) in the all area. To get  $PS = \{0.1, 0.2\}$  we do not need any RSUs. By cons, to get  $PS=0.7$ , there are 17 RSUs candidates positions by applying the equation (2). We remarque to obtain high connectivity probability, we must use more RSUs. Then, we introduce the accident in each segment to compare between RSUs candidates positions and optimal positions as figure 4 shows. We note that among 11 positions candidates we use only 7 as optimal positions i.e. to coverage max accident area in the segment with low connectivity, we use 7 RSUs Positions as optimal positions among 11 candidates positions.

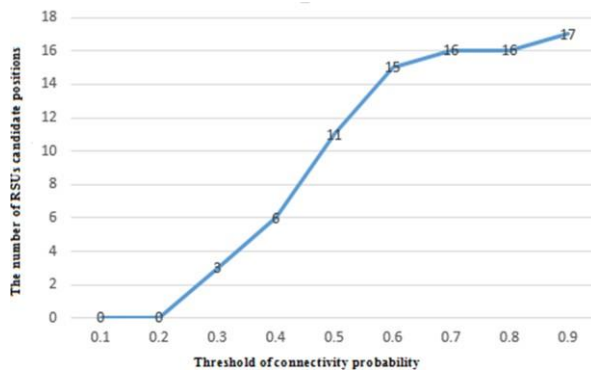


Figure. 3 Connectivity probability VS. RSUs candidates positions

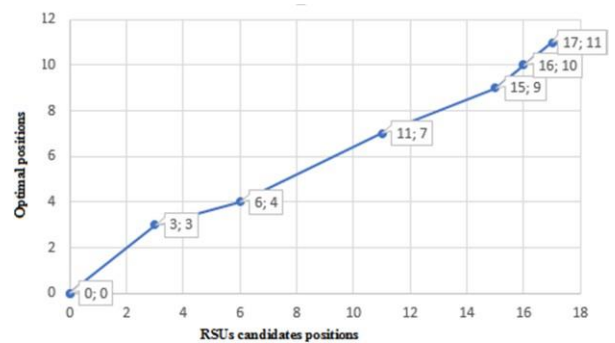


Figure. 4 RSUs candidates positions VS. Optimal positions

In this paper, our objective is to find better coverage accident area in segment with low connectivity for a given number of RSUs.

## 5. Conclusion

In this work, we aim to maximize the coverage accident in isolated segments. To do that, we propose a mathematical modelling of system and we propose ORSD approach. ORSD calculate the connectivity probability for each segment based on the traffic information in the studied area. It chooses the RSUs candidates positions. Then, ORSD optimizes the final RSUs placements using the objective function. In contrast of related work that deploy RSUs without considering both accident and connectivity. ORSD could be applied in different scenarios urban or highway. As a future work, we plan to compare our solution with other approach and to execute ORSD on real area.

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## THE STRATEGIES TO PREVENT THE COVID-19 PANDEMIC IN SOUTH EAST ASIA COUNTRIES BASED ON SCIENTIFIC DATA: A COMPARATIVE PERSPECTIVE.

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### Abstract

An outbreak of coronavirus (COVID-19) that began in Wuhan, China, spread rapidly across several continents, turning into a pandemic, then a health crisis, disrupting global economy and society. In the absence of medications or vaccines for this virus, preventative methods are an alternative for relieving serious symptoms and complications associated with the COVID-19. Hence, this study aims to make statistics and provide effective methods to prevent the COVID-19 pandemic in some countries. The objective of the research was to determine the knowledge, attitudes and behaviour of the community in relation to the prevention of COVID-19 transmission, thereby compare strategies of prevention among ASEAN countries and show experienced lessons through a systematic review approach.

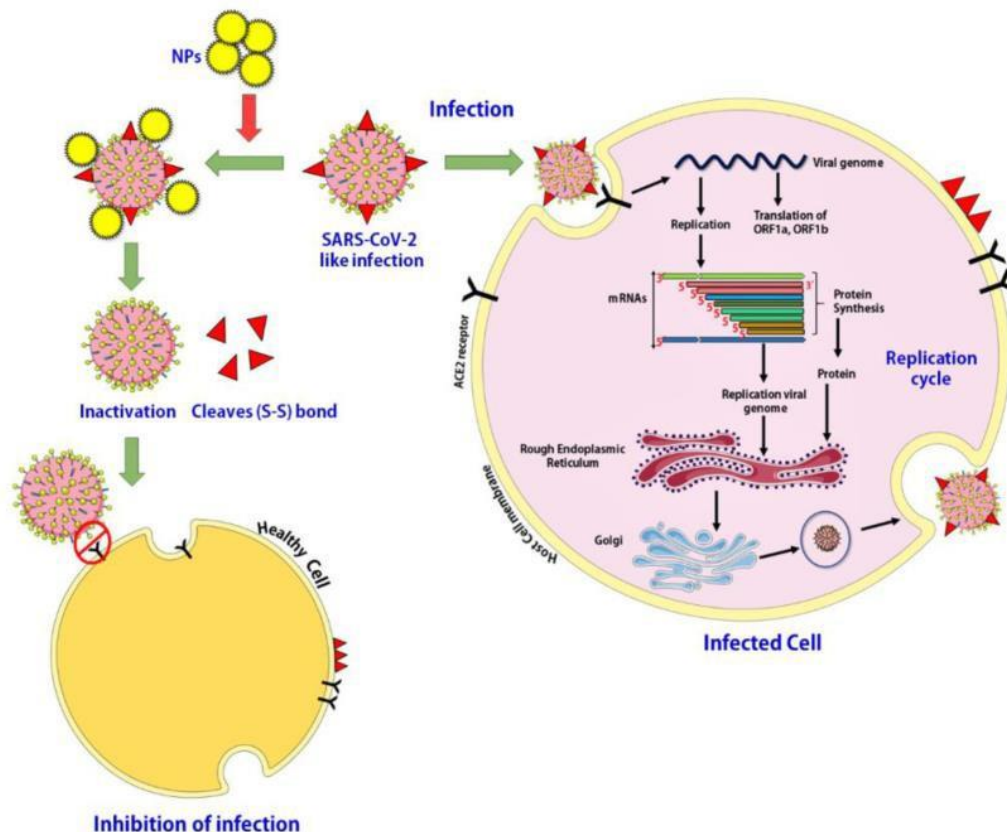
**Keywords:** COVID-19, SOUTHEAST ASIA, PREVENTION METHODS.

### 1. INTRODUCTION

The term "Corona" was originally used in Latin to describe the crown structure of the coronavirus as seen under electron transmission microscopy. (SR Weiss et al., 2005). Coronaviruses are members of the Coronaviridae family in the Nidovirales order. The term coronavirus is based on the shape of the virus' outer surface, which is shaped like a crown. As a RNA virus, its subfamily (Figure 1.) can be divided into four groups ( $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\delta$ ) with single-stranded RNA as its genetic material and a capsid, a virus genome, and club-shaped protein spikes on its surface. This  $\beta$  class of coronavirus has been known for a long time, and it belongs to the same family of coronaviruses associated with previous outbreaks, such as the severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS) (Al-Qahtani, 2020).

Originally discovered in the 1960s, Coronaviruses have been discovered in birds and mammals, including bats, cats, camels, and rats (PCY Woo et al., 2012). SARS-CoV was believed to only affect animals before Guangdong, China, 2002 experienced an outbreak of severe acute respiratory syndrome caused by SARS-CoV (MA Shereen et al., 2020). A person infected with SARS-CoV-2 can spread the virus through contact with surfaces, air droplets, and contact with their eyes, noses, and mouths. There is a lengthy incubation period of approximately 14 days and early symptoms show similarities to typical seasonal infection symptoms like fever, dry cough, fatigue, and breathing difficulties. The infection, however, can cause severe pneumonia, result in a fibrosis of the lungs, and result in respiratory failure

from insufficient gas exchange in the body as it spreads. When artificial oxygen is not provided on time, this can lead to multiple critical organ failures including heart, kidney, liver, gastrointestinal tract, and brain (Chauhan et al., 2020). MERS-CoV was first detected in Saudi Arabia in 2012, when 2,494 cases, including 858 deaths, were reported. According to government estimates, 8,000 people have been injured and 774 have died from subtypes of beta volatile organic compounds in Guangdong since 2002 (Hadi et al., 2020).



**Figure 1. A brief description of how nanomedicine can neutralize viral infections, such as SARS-CoV-2. (JN Wankar et al., 2020)**

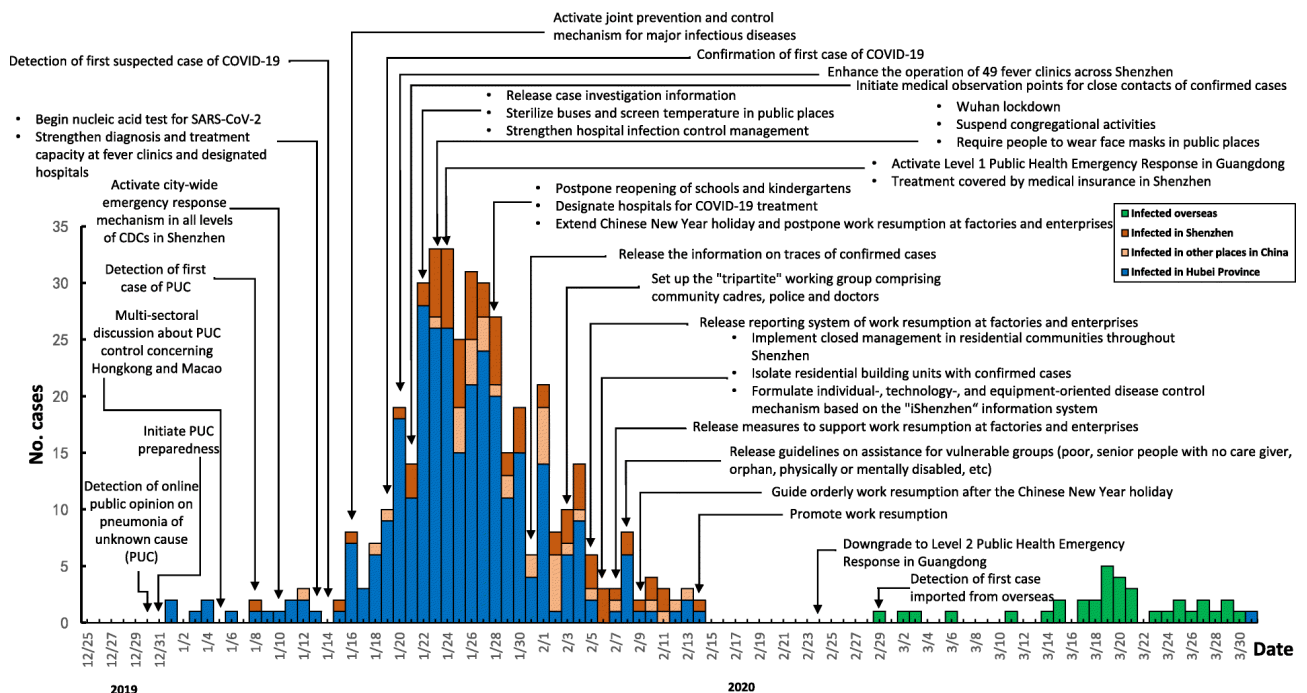
## 2. LITERATURE REVIEW

### 2.1. Covid-19 pandemic and prevention strategies in the world

To date, 220 nations and territories have reported 82,408,491 cases and 1,798,511 COVID-19 deaths. With 19,977,704 cases and 346,579 deaths, the United States is the world's highest-incidence country, having reported the first case of a new strain of the SARS-CoV-2 virus in Colorado on December 29. On December 29, India, the world's second-largest country in terms of cases (with 10,224,797 infections and 148,190 fatalities), discovered the first six positive cases of the new sars-CoV-2 virus. Brazil came in third with 192,716 deaths out of 7,564,117 cases. Obviously, different minds lead to different decisions just as in a similar scenario, each country selects different approaches based on its socio-economic setting, taking into account the fact that this infection is a major catastrophe. Everybody's first phase was to shut down the nationwide interaction in order to reduce the continent's standard and

prevent its reunification, using shutdowns across all countries. According to studies, those who transmit this virus can spread it to four people within two days, and can infect 3,000 people within a 15-day period. The most effected countries like the USA, China, the UK and India have taken many measures (M Cascella et al., 2020).

Despite the lack of specific treatment and prevention options for COVID-19 (i.e., targeted antiviral drugs and vaccines), China focused on traditional public health outbreak response strategies such as isolation, quarantine, social distancing, and community containment. China, a global hub for information technology (IT) and home to leading analytics firms, incorporated mobile technology, big data, and artificial intelligence into its COVID-19 response. China's experience in successfully managing the COVID-19 outbreak may be of use to other countries and regions currently suffering from rapid spread of the virus (Figure 2.) (H Zou et al., 2020).



**Figure 2.** Response to COVID-19 in Shenzhen, China (H Zou et al., 2020).

The 24th of March, 2020, was the date on which India imposed one of the strictest lockdowns in the world. Furthermore, during the week of March 31 and the first week of April 2020, individuals were informed about distancing and hygiene through television, radio, public signs, the local government, and even a short jingle accompanying incoming mobile calls (A Banerjee et al., 2020).

As a result of President Donald Trump's declaration of a national emergency in March, schools, bars, cinemas, and restaurants were closed, as well as public gatherings and cultural events. More than 50 people were discouraged from gathering in large groups. Furthermore, an increasing number of businesses and companies are encouraging their employees to work from home. Distancing social practices are reducing the spread of the diseases and, as a consequence, risk of death for the most vulnerable populations (G Chowell et al., 2020).

A recent article in the Lancet Public Health by Nicholas Davies and colleagues contributes important insights into the COVID-19 policy in the UK and the need for a lockdown. These articles provide detailed yet concise assessments of a number of physical distancing interventions, both alone and in combination, as well as lockdown measures that restrict movement and contact outside of the house. Researchers found that lockdown periods could



suppress the epidemic and prevent peaks of cases that could overwhelm hospitals and intensive care units (ICUs). This subsequently resulted in hundreds of thousands of deaths (T Colbourn et al., 2020).

## 2.2. Covid-19 pandemic and prevention strategies in Southeast Asian countries

Over the past time, the COVID-19 (sao không thống nhất 1 cách viết gì hết đa, e sửa lại in hoa hết cho thống nhất đĩ nha) pandemic has seriously impacted the world in general and ASEAN countries in particular. The COVID-19 pandemic originated in Wuhan (China) and then spread to neighboring countries and the whole world, spreading rapidly in a short time with tremendous devastation that caused a lot of damage. In general, Southeast Asian countries have taken their own measures to prevent COVID-19 with high efficiency.

Since the first cases appeared, these countries have taken many similar measures to prevent the spread of virus. In Southeast Asian countries, Thailand is the first country that reported a case of coronavirus disease 2019 (COVID-19) outside of China (Sinsuda Dechsupa et al, 2020). As of early of September, Southeast Asia is still a hot spot in Asia with more than 70,000 new cases per day. For example, Vietnam is facing with the biggest pandemic from April 2021 to now. Many agencies have been established to combat with the pandemic such as the Center for Diseases Control (CDC) in Vietnam (Huy Van Nguyen et al, 2020), the Committe for Coronavirus Disease 19 in Myanmar, National Taskforce Committee for COVID-19 Prevention and Control in Laos (Riyanti Djalante et al, 2020), etc. The government has encouraged people to take public health measures such as wearing mask, social distancing, washing hands, etc. Many companies, businesses, schools, etc had to temporarily close. The Ministry of Health cooperates with the media and technology applications to provide accurate information and raise people's awarness. In Thailand, The Ministry of Health has focused on using mobile technology such as Self-Screening Application (SSA), Self-health check (SHC), Chiang Mai COVID-19 hospital information system, etc; in the management and control of the pandemic, contributing to reducing the burden on hospitals and medical staffs. Their use of digital technology and the incorporation of self-assessment and self-health checking proved most efficient, rapid and easily accessible (Kannikar Intawong et al, 2020). To illustrate this, you can see the appearances of official presses were Vietnam Government Portal and Health and Lifestyle, etc. Zalo provide additional room for the government, particularly the Ministry of Health, to communicate coronavirus-related information to its citizens in a timely manner (Viet Phuong La, 2020). Moreover, the COVID-19 pandemic has severely affected the national economy, the governments of each country have their own solution to help businesses and individuals overcome this time.

Besides, each country has it own unique measures and challenges in the face of the pandemic. In Thailand, the government has issued an educational video set on antiseptic, proper hand washing to raise awareness of epidemic prevention in the population. Thanks to a combination of health education and social distancing, the number of Covid-19 cases has decreased significantly. In Vietnam, the 5K messages, which stands for **„Khẩu trang“** (face masks), **„Khử khuẩn“** (disinfection), **„Khoảng cách“** (distance), **„Không tụ tập“** (no gathering) and **„Khai báo y tế“** (health declaration), is short, easy to remember, easy to implement, and has been effective during the past anti-epidemic peroid, up to now. During the time when people had to stay at home because of lockdown, many advocacy movements of Vietnamese people have appeared on social medias and become popular around the world. For instance, they are new lyrics, **„Ghen Co Vy“** (Jealous Coronavirus) and the **#Onhavanvui** (**#StayHomeIsFun**) campaign on TikTok. Early preparedness and proactive coordinated responses encompassing early border closure, physical distancing, face masks, targeted

lockdown, contact tracing, isolation and pooled testing coupled with innovative communication and the engagement of the whole society have been keys to the success of SARS-CoV-2 control in Vietnam (Nguyen Van Vinh Chau et al, 2021).

In Myanmar, people who are at high risk of infected Sars-CoV-2 such as drivers, health workers, volunteers, polices,etc are regularly tested for COVID-19. To reduce the burden on hospitals, the government only began exploring for private facilities to treat COVID-19 in October (Kyaw San Wai et al, 2021). A challenge for Myanmar is the geographical location that causes the number of infections to increase. Bangladesh is home to the world's largest refugee camp and some of the refugees who returned to Myanmar tested positive for the virus (A Win et al, 2020). In addition, the unstable political, military and social situation increases the risk of a pandemic outbreak. After the appearance of COVID-19 first cases in Laos, the Ministry of Labour and Social Welfare (MoLSW) and the International Organization for Migration (IOM) officially launched a campaign of bus operation to prevent the spread of COVID-19 disease on public transport (Sisalermkiat Phandanouvong et al, 2021). They prefer using private vehicles to public transports as before. Laos has developed a range of different training courses, especially in the field of infection detection, management and controlling.

After experiencing the Sars epidemic in 2003 and the Avian Flu in 2004, Cambodia has learned lessons and made investments in the health system to promptly respond to upcoming pandemics. The lockdown has affected more than 300,000 people in Cambodia, forcing them not to go out except emergencies, vaccinations or COVID-19 test. Many people, especially vulnerable people, are in food shortages, they can't earn money to take care of their families. Because the government didn't anticipate these situations, many people are hopeless. Finally, the government has announced an end to highly restrictive COVID-19 measures that had left thousands in the country at breaking point (Megan Tatum 2021). Timor-Leste also agrees with Cambodia, which has prioritized upgrading its healthcare system, which is becoming more and more advanced to ensure the safety of patients and doctors. The COVID-19 pandemic is rating throughout the country, including Timor-Leste, a small and young island nation with a fragile health-care system that is a challenging context in which to provide care during the current pandemic. The government also hope that by prioritising urgent care, we can enable health-care systems to function in the face of the growing pandemic and prevent them from becoming overloaded with COVID-19 patients. Thanks to effective policies, Timor-Leste has good control over the pandemic.

By the end of 2020, Brunei had navigated the pandemic storm successfully by keeping its social compact intact, achieving a relatively buoyant economy, exhibiting a balanced foreign policy through strategic hedging, and keeping the country secure through defense diplomacy. Ending 2020 in great shape places Brunei in good stead for assuming the chairmanship of ASEAN and future royal succession (Izzuddin et al, 2021). We found a marked decline in ILI (influenza-like illnesses) in Singapore after the implementation of public health measures for COVID-19. Our findings suggest that such measures are effective in reducing spread of viral respiratory diseases and could mitigate the impact of the COVID-19 pandemic (Soo et al, 2020). In Philipines, the house has conducted school health education through seminars, activities at the school that mistakenly propagate effectively and provide the right source of knowledge and behavior for the COVID-19 pandemic for students (Santiago et al, 2020).

Psychological stress due to the effects of the epidemic in Malaysia, people have different psychological reactions to the current epidemic situation. Fear, anxiety, stress lead to depression. The Malaysian government offers tips to help avoid such cases as reading, listening to music, watching movies, relaxing,etc. In addition, according to environmental research that has a very important effect on the development of the virus. The colder the environment is, the longer the virus survives, so countries with warm climates will be given the upper edge and fewer infections and deaths than countries with cold climates. So Malaysia

has a climate of 40 degrees Celsius, limiting the existence of the virus. Indonesia also has separate measures to prevent the pandemic. The Indonesian government has introduced policies to prevent COVID-19 and achieve high efficiency, ensuring the supply of medicines, personal protective equipment (PPE), human resources necessary to face the global outbreak, and preparing the Indonesian National Armed Forces to successfully carry out voluntary and mandatory quarantine work. Doctors need to be equipped with personal protective equipment to ensure health and safety. Masks and personal protective equipment should also be provided to officers. Additional medical staff, masks and hand sanitizer are distributed rapidly as demand continues to grow. Protective equipment is also transferred to care homes (Setiati, S., & Azwar, M. K et al, 2020).

### **3. RESEACH METHODS & RESULTS**

#### **3.1. Methodology**

In this study, a systematic review was conducted as defined by the preferred reporting items for systematic reviews and meta-analyses (PRISMA) protocol (L Shamseer et al.,2015). The PRISMA protocol is used to identify research articles relevant to the situation of the COVID-19 pandemic in the world and Southeast Asian nations and transmission prevention strategies. The article search process is accessed on two electronic databases, namely PLOS ONE and Google Scholar. Keywords used in journal article searches are COVID-19 prevention, Southeast Asian, prevention strategies, and COVID-19 transmission.

#### **3.2. Results**

In general, most countries in Southeast Asia have had highly effective coronavirus prevention strategies, most of which have been applying social isolation over a period of time (Thailand, Vietnam, Laos, Myanmar, Cambodia, Malaysia, Indonesia, Philippines, Singapore,) which is also a safe and highly effective epidemic prevention strategy. Because COVID-19 is an infectious disease caused by the Sars-CoV2 virus, most patients infected with the virus show mild to moderate symptoms and become severe, but there will also be a few cases where there will be no particular symptoms, which can lead to death, Medical assistance is needed. The virus is spread through the respiratory tract, through tiny droplets from the time we come into contact with each other. Therefore, social distancing, freezing infected areas, keeping a safe distance between people is the most effective measure, should be widely applied globally. Besides, there are very separate, effective measures that have been applied in different countries.

### **4. CONCLUSION**

For the strategy to be most effective, the right leadership from the governments and the personal sense of the people is needed, and the right opinions and opinions are needed. However, there are still many difficulties when applying COVID-19 prevention policies, especially social distancing measures. Fortunately, Southeast Asian countries have similar anti-pandemic measures such as lockdown, social distancing, public health measures,etc and their own measures which are suitable to each country's situation. They can learn from each other about anti-epidemic lessons to apply to their specific circumstances.

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## A SURVEY ON GEOGRAPHIC ROUTING PROTOCOLS FOR VEHICULAR AD HOC NETWORKS

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### Abstract

As a specific instance of mobile ad hoc networks (MANETs), VANETs, defined as a pillar of intelligent transport systems (ITS), have become an increasingly attractive communication technology, offering increased safety and convenience to vehicle users. Furthermore, the design of efficient routing protocols for VANETs is one of the biggest challenges to enjoy the road safety benefits provided by these networks in our daily life on the one hand and to improve their deficits for a more reliable and intelligent communication on the other hand. In the last decade, a non-exhaustive panel of routing protocols has been proposed for vehicular ad hoc networks (VANETs). However, according to several performance studies, geographic routing protocols (GRPs), called position-based routing protocols (PBRs), have proven to be the most predominant, efficient and suitable for VANETs compared to other routing classes due to their robustness to the specific characteristics of VANETs such as highly dynamic changes in the network topology and high mobility of vehicles . In this paper, we present a state of the art of existing vehicle location-based routing protocols and describe their evolution through recently developed improvements. We also discuss the advantages and disadvantages of these protocols by exploring the motivation behind their design. We conclude with a comparative study in the form of tabulated analysis grouping the various protocols in this same category.

**Keywords:** ITS, VANET , Geographic routing protocols, position-based routing , survey.

### I. INTRODUCTION

Thanks to advances in wireless communication technologies and the automotive industry, VANETs have revolutionized intelligent transportation systems (ITS). They are receiving increased attention from manufacturers and researchers (Berradj,2014).

The main goal of VANET is not only to optimize road safety in the face of today's high accident rate, but also to provide forged driving assistance and entertainment services to vehicle users making their travel more comfortable.

In VANET, vehicles collect, process and transmit information using two types of communications: Vehicle-to-Vehicle (V2V), which is a direct inter-vehicle communication, and Vehicle-to-Infrastructure (V2I), which relies on RSUs (Road Side Units) deployed on the roadside.

To establish these communications on the IEEE 802.11p wireless radio platform, VANETs require an adequate routing service, responsible for routing data and control packets from the source vehicle to the destination vehicle via the most appropriate path, taking into account the high mobility, road pattern restrictions and highly dynamic topology (Bijan et al.,2012) (Lee et al.,2013) that exclusively characterize these networks (VANETs). In this context, several routing protocols adapted to these networks have been implemented namely; five categories: Topology-based routing protocols, Geographic location-based protocols, Cluster-based routing protocols, Multicast-based routing protocols and Broadcast-based routing protocols. However, according to several research it



has been found that location-based routing (PBR) protocols also called geographic routing protocols (GRP) tend to be predominant due to their robustness against VANET specific characteristics and through which crash control applications are served with high packet delivery ratio in dense and sparse scenario, with low routing overheads and reduced end-to-end delay as compared to other VANET routing classes (Srivastava et al.,2020).

In this paper, we expose a set (open list) of existing geographic routing protocols dedicated to vehicular ad hoc networks. Based on a main analysis of these protocols and according to the literature, Position-Based Routing can be divided into three categories: Non-Delay Tolerant Vehicular Ad hoc NETWORKS (Non-DTN<sub>VANETS</sub>), Delay Tolerant Vehicular Ad hoc NETWORKS (DTN<sub>VANETS</sub>), and Hybrid. The Non-DTN<sub>VANETS</sub> protocols do not consider intermittent connectivity and are only practical in densely populated VANETS while the DTN<sub>VANETS</sub> protocols do not consider disconnectivity and are designed from the perspective that networks are disconnected by default. Hybrid types combine the Non-DTN<sub>VANETS</sub> and the DTN<sub>VANETS</sub> to exploit partial network connectivity.

The rest of the paper is structured as follows: Section 2, presents the main challenges to consider for position-based routing in VANETS. In Section 3, we present the reasons for preferring geographic routing over other routing categories in VANETS. Section 4 presents a state of the art through which we survey some geographic protocols proposed so far to overcome these challenges. Finally, section 5 concludes our paper with a comparative table.

## II. DESIGN CHALLENGES OF VANET ROUTING PROTOCOLS

Although VANETS are derived from mobile ad hoc networks, the main difference between their protocols is in the design requirements. VANETS have some unique characteristics. These must be considered when designing protocols for VANETS, including:

- **Highly dynamic topology:** VANETS are characterized by a highly dynamic network situation due to the mobility of high-speed vehicles, which causes the network topology to change constantly, making it very difficult to establish communication between two vehicles moving away from each other at a speed of (90km/h).
- **Frequently disconnected network:** as vehicles move at very high speed, the density of the network varies, if the density is low, a frequent disconnection of the network is caused; this is called "intermittent connectivity".
- **Communication environment:** Contrary to environments of MANETS VANETS are characterized by the great diversity of their environments which are deployed in nature on a large scale. We go from an urban environment with many junctions/intersections and obstacles (buildings, trees) that can reduce the quality of the radio transmission, to a highway environment affected mainly by very high vehicle speeds (Moghraoui, 2015)
- **Delay constraints:** in some VANET applications, the network does not need high data rates but must meet strict delay constraints. in particular, safety alert applications must have a minimum end-to-end delay, because if an alert message is received at a destination with a high delay, this message could not be useful to prevent or avoid a car accident.
- **Unlimited battery power and storage:** Unlike sensor networks that suffer from severe power and storage problems, VANET nodes are endowed with unlimited energy produced by the vehicles, which allows them to have a high storage capacity. (Hajlaoui, 2018) (Tanuja et al.,2015)
- **Mobility Modeling and Prediction:** mobility modeling and prediction in VANETS is based on the availability of predefined route models including: traffic environment, vehicle speed and direction, driver behavior, etc. These are of paramount importance for reliable routing protocol design and hence efficient network performance. (Ammar, 2019)
- **Available location information:** Currently, most new vehicles are equipped with a satellite geolocation system such as GPS. For almost no cost, this system allows to obtain the geographical position of the vehicle, as well as its direction. This information is used in particular for ad hoc

geographic protocols and to services offered to passengers where location is essential. (Harbouche, 2012)

- **Quality of Service (QoS):** it is defined as a set of service requirements that must be satisfied by the network when transporting a packet from a source to its destination. Supporting QoS in VANETs remains a challenge due to the various factors we discussed earlier. Since each application has its own QoS requirements, we need to develop QoS adaptive routing approaches that can quickly and efficiently establish new routes when current routing paths are no longer available. (Boussoufa-Lahlah et al., 2018)

### III. WHY POSITION BASED ROUTING?

Several reasons elect location-based routing as the most preferred over all other routing categories in VANET. We discuss the most common ones in the following:

First, contrary to topology-based routing which suffers from route instability due to frequent changes in vehicle position resulting in high packet loss; geographic routing has high resilience to high vehicle mobility. Second, in contrast to ad hoc routing that requires path establishment and maintenance resulting in high transmission delay and overhead, position-based routing (PBR) does not need to establish or maintain the route, or even update the routing table (Patel, 2016). Third, PBR performs all its activities using location tracking by relying on the Global Positioning System (GPS) to determine the exact position of the source node, neighboring node(s), and final destination node to send and receive messages periodically, thus reducing link breakage (Dutta et al., 2017) (Abu Taleb, 2018). Fourth, it uses only the geographical position of the vehicles to decide to which optimal next hop a data packet should be routed first by taking into account the bandwidth, link numbers. Generally, this decision is based on a geometric heuristic technique that selects the closest direct neighbor to the destination and is called greedy forwarding (Srivastava et al.,2020) unlike the rest of the categories that uses Wireless multi hop Forwarding, the latter requires an overview of the relay nodes (direct and non-direct) that form the eternity to the destination but risks being quickly interrupted because at the time of transmitting the packets these nodes may not be present at the position previously captured at the time of the establishment of the path . Fifth, position-based routing can be applied in both urban and highway environments while the other routing classes only work on one of them.. Finally, in opposition to all other classes, geographic routing is the most scalable (Sharef et al.,2014). Indeed, For the above reasons, research approves that the deployment of geographic routing protocols, tends to be the most predominant one to give satisfactory performance according to the VANET characteristics described in the previous section.

**Table 1:** Comparison of Category Routing Protocols in VANET

Protocol Category	Forwarding technique	Realistic Traffic Flow	Scenario	Advantages	Disadvantages
Topology Or adhoc based	Wireless multi hop forwarding	yes	Urban	<ul style="list-style-type: none"> <li>• Beaconless</li> <li>• Suitable for many communication types</li> </ul>	<ul style="list-style-type: none"> <li>• Fail to discover complete path</li> <li>• High overhead</li> </ul>
Position based	Heuristic Technique	Yes	Urban / Highway	<ul style="list-style-type: none"> <li>• supports highly dynamic topologies.</li> <li>• Route discovery &amp; management is not</li> </ul>	<ul style="list-style-type: none"> <li>• GPS device doesn't work in tunnel because satellite signal is absent there</li> </ul>

				required.	
				<ul style="list-style-type: none"> <li>• High Scalability.</li> <li>• High packet delivery</li> <li>• Suitable for high node mobility pattern</li> </ul>	
<b>Cluster based</b>	Wireless multi hop forwarding	No	Urban	<ul style="list-style-type: none"> <li>• Reliable and rapid data transfer.</li> <li>• Link stability problem solve in VANET.</li> </ul>	<ul style="list-style-type: none"> <li>• Clustering overhead</li> <li>• This protocol doesn't consider velocity and direction which is important parameter for VANET</li> </ul>
<b>Geocast based</b>	Wireless multi hop forwarding	Yes	Highway	<ul style="list-style-type: none"> <li>• Acceptable control overhead.</li> <li>• Beaconless and supports scalability and highly dynamic topologies</li> </ul>	<ul style="list-style-type: none"> <li>• Control Packet overhead is high</li> <li>• No of retransmission high</li> </ul>
<b>Broadcast based</b>	Wireless multi hop forwarding	Yes	Highway	<ul style="list-style-type: none"> <li>• Reliable</li> <li>• High packet delivery ratio</li> </ul>	<ul style="list-style-type: none"> <li>• Consumes bandwidth and high congestion</li> <li>• High delay of data transmission.</li> </ul>

#### IV. OVERVIEW OF GEOGRAPHIC ROUTING PROTOCOLS FOR VANETS

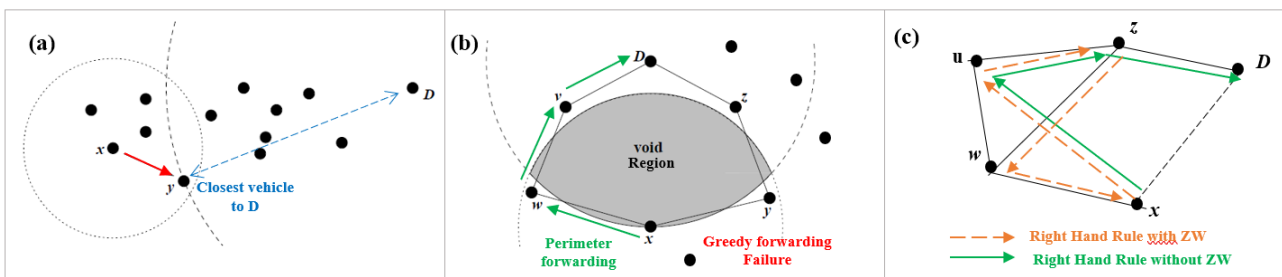
In the literature, a non-exhaustive set of geographic routing protocols have been proposed for VANETs to address the challenges described above. According to some researches, these protocols are mainly classified into three categories, namely: Non-DTN<sub>VANETs</sub>, DTN<sub>VANETs</sub> et Hybrid.

##### IV.1. Non-DTN<sub>VANETs</sub> position-based routing protocols

The Non-Delay Tolerant Vehicular Ad hoc NETWORKS (Non-DTN<sub>VANETs</sub>) protocols geographic routing protocols do not take intermittent connectivity into consideration. it works under the assumption that there are always a sufficient number of vehicles to make a pair communication; therefore, this type of protocols is suitable for high density network only (urban environments) and use the greedy strategy to forward the data packets. However, when packet reaches a local optimal, greedy forwarding fail. To deal with such situation, protocols switch to recovery methods. This category includes:

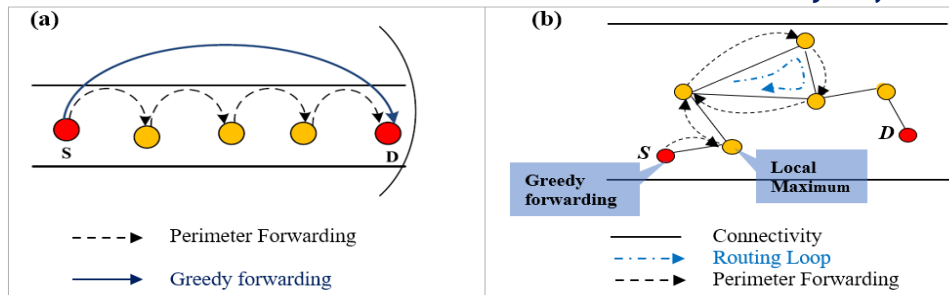
**Greedy Perimeter Stateless Routing (GPSR)** (Karp et al., 2014)– represents the most well known position-based routing protocol. It consists of a greedy forwarding mode and a recovery method called perimeter forwarding mode used in the cases where a local optimum occurs. A simple example of greedy forwarding appears in **Figure 1.(a)**. Here, x wants to send a packet to D or receives a packet destined for D. x forwards the packet to y, as the distance between y and D is less than that between D and any of x's other neighbors. This greedy forwarding process is repeated until the packet reaches D. When a local optimum occurs, the perimeter forwarding of GPSR uses the long-known right-hand rule for crossing a graph. As shown in **Figure 1.(b)**, x is closer to D than its neighbors w and y. The dotted arc on D has a radius equal to the distance between x and D. If two paths, (x → y → z → D) and (x → w → v → D), exist at D, then x will not choose to transmit to w or y using the greedy approach. x is a local optimum in its proximity to D. Hence, the right hand rule tries to bypasses this local optimum by browsing a virtual arc (that connects the node of the

local optimum to the destination node) in the opposite di-rection of a clock hand to search a node that is the closest to the destination D than the node of the local optimum. In this case, the node w will be the candidate and the packet will be transmitted on the path  $(x \rightarrow w \rightarrow v \rightarrow D)$ . However, for obvious reasons, the right-hand rule requires that all the edges are not crossing (the graph must be planar). Taking the example of the **Figure 1.(c)** a packet is destined for D , but at x there occurs a local optimum . so the vehicle x first originates the packet to u. The application of the right hand rule results in the tour:  $(x \rightarrow u \rightarrow z \rightarrow w \rightarrow x)$ . So, on graphs with edges that cross (non-planar graphs), right-hand rule may not tour enclosed face boundary. However, by deleting the edge  $(w, z)$ , the path will be:  $(x \rightarrow u \rightarrow z \rightarrow D)$ . Since GPSR works on an unobstructed plane, the authors propose an approach to obtain a planar graph without crossing the network. However, this leads to an overhead of the network. So, this method of recovery is much more state-full than stateless. Further, planarization of the neighborhood in an urban environ-ment surrounded frequently by obstacles (partitioned another connected graph) can lead to network disconnections and thus, can force GPSR to run in the recovery mode frequently, which deteriorate its performances.



**Figure 1.** GPSR protocol:(a) Greedy forwarding and, (b)Perimeter mode , (c) Non planar graph .

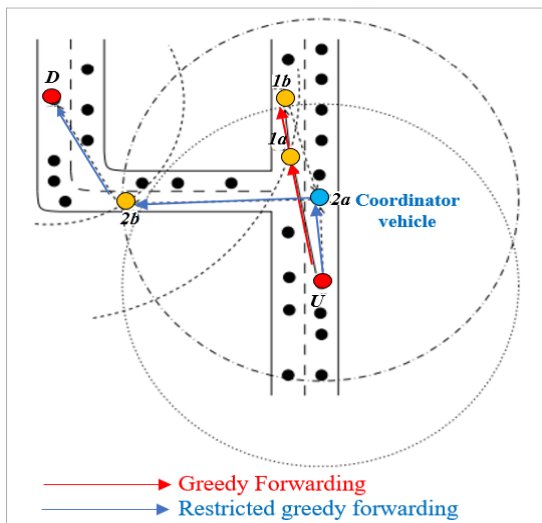
**Geographic Source Routing (GSR)** (Lochert et al., 2003) – is the first protocol designed to overcome the limitations of GPSR in the presence of radio obstacles (buildings, trees, etc.) and void areas as is the case for urban scenarios; for examples in GPSR : (i) when working in perimeter mode along a single street, unnecessarily, many more vehicles have to be traversed as shown in **Figure 2.(a)**. This increases delay and number of hop counts. (ii) The packet may also encounter wrong directional transmission and routing loop in some situations as represented in **Figure 2.(b)**. GSR combines greedy routing and topology knowledge of the road to ensure a promising route in the presence of radio obstacles and uses back to greedy mode as local recovery method. In GSR, when a source node wants to send a data packet to a destination, it calculates the shortest path to the destination (using the Dijkstra algorithm) and based on the information of the map-street, the source node selects on this path the sequence of junctions through which the data packet must pass. So, the packet travels greedily along the shortest path intersection by intersection to reach the destination. However, the shortest path may not be sufficiently dense to route the data packet and this will certainly cause a significant de-liverance delay of the data packets and will lead to a high rate of packets' loss. Besides this, to avoid extensive flooding for getting the location of desired communication partner, the pro-tocol uses reactive location service (RLS) i.e. availability of location information only on request, not on periodic basis. However, GSR has a limitation that it does not consider the fact that whether there is enough vehicular connectivity on the selected street or not .



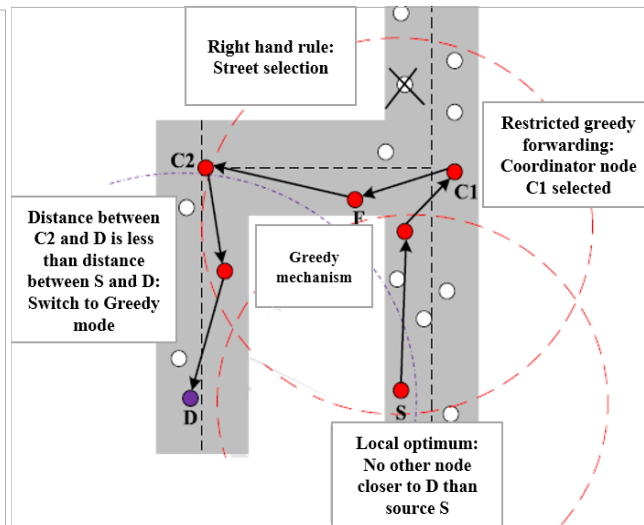
**Figure 2.** GPSR protocol limits :(a) Perimeter forwarding Vs greedy forwarding, (b) Routing loop in perimeter mode.

**Greedy Perimeter Coordinator Routing (GPCR)** (Lochert et al.,2005)– aims at improving the performance of GPSR and GSR protocols. The main idea of GPCR is to take advantage of the fact that streets and junctions form a natural planar graph . This indicates that there is no need of any graph planarization algorithms which are very expensive in terms of overhead . GPCR contains two forwarding mode: restricted greedy forwarding and repair strategy. In re-restricted greedy forwarding, among all the neighbors within the vicinity of forwarder, primarily the junction vehicles are preferred. These vehicles are termed as coordinator vehicle. However, when a vehicle gets stuck in local optimum the protocol enters into repair strategy, where restricted greedy mechanism is applied until a vehicle at a junction is reached. A coordinator vehicle is always preferred for carrying data packets among all the available neighbors even if it is not the closest to the destination. This is because at junction, a better forwarding decision can be taken, as junction vehicle can hear neighbors from all connected roads in its neighbor. As it is illustrated in **Figure 3**, where the node u wants to forward a data packet to the destination node D, by using the usual greedy forwarding, it forwards the packet to the node 1a. Then, the node 1a forwards the packet to the node 1b where a local optimum occurs because the node 1b has no neighbor closest to the destination D than it self. but by using Restricted greedy forwarding the packet will be transmitted to node 2a (which is a coordinator node), an alternative path to the destination node can be found without getting stuck in a local optimum at node 1b. In addition, If more than one coordinator exists, then any one of them is randomly selected. Upon arrival of junction vehicle, the packet is forwarded towards the next best hop on most efficient street by using right hand rule. As depicted in **Figure 4**. Wich have two coordinator nodes (C1 and C2). GPCR improves routing performance by solving the inaccuracy problems of the node topology planarization and signal none-line-of-sight (NLOS) transmission. however, GPCR assumes that coordinator vehicles are always present at the junctions, but in reality, this is not the case . The absence of junction vehicle may increase the possibility of packet getting stuck in the routing loop, causing significant packet loss or collisions.





**Figure 3.** Greedy vs Restricted greedy forwarding.



**Figure 4.** restricted greedy forwarding and repair strategy of GPCR.

**Connectivity Aware Routing Protocols (CAR)** (Naumov et al., 2007)– is a routing protocol that finds connected path to destination dynamically. it has unique characteristics that it maintains the cache of successful route between various source and destination pairs. It also predicts the position of destination vehicle repairs route as the position changes . Once the source node has found the destination location and anchor path, data packets are forwarded greedily to the destination through the set of anchors. Instead of forwarding a packet to a node closer to the destination, the packet is forwarded to a node closer to the next anchor. The path is maintained with the help of guards. These are an entry in the nodes' periodic Hello beacon and are maintained by the destination's neighboring nodes whenever the location of the destination changes. Routing errors may occur due to communication gap between anchor points or due to guards. To overcome the local optimum, the authors propose two recovery methods: time-out with active waiting cycle, and walk-around error recovery. In the first method, the node of the local optimum buffers the packet and periodically checks for a possible forwarder. In the second one, the node of the local optimum buffers the packet, in-forms the source node about the error and starts a local discovery for another route. CAR shows a high rate in packet delivery and a low average data packet delays than GPSR and GPSR+AGF. However, a high overhead is generated by the path discovery phase.

**Junction-Based Routing (JBR)** (Tsiachris et al., 2013)– assumes that every vehicle is equipped with a GPS device specifying its position. It also considers that every vehicle is equipped with a digital map of the city streets where it moves. The combination of these two assumptions can offer information regarding whether a vehicle is at a junction (and thus is a coordinator vehicle) or is placed in the middle of a road (and thus is a simple vehicle). As a result, there is no need for extra beacon messages, like in GPCR, to indicate that a vehicle acts as a coordinator. This is a great improvement over GPCR. The JBR protocol makes use of selective greedy forwarding up to the vehicle that is located at a junction and which is closer to the destination. The source uses selective greedy forwarding and forwards the packet to the neighbor that is selected as a next hop. The process continues until the packet reaches its destination. If a local optimum is reached, a recovery strategy is applied. This latter is based on the minimum angle method for determining the appropriate next hop while being at a recovery mode, which provides an accurate and a safe solution that can be applicable in all cases regardless of the relative position of the source, the

destination and the intermediate vehicles. JBR presents interesting results in terms of the end-to-end delay, the delay distribution and the packet delivery ratio which outperforming the GPCR routing algorithm. However, the better performance is achieved only with the higher transmission ranges.

**Maxduration-Minangle based-GPSR (MM-GPSR)** (Yang et al., 2018)– is a protocol which aims to improve both the instability of nodes in greedy forwarding and the redundancy of paths in perimeter forwarding of GPSR protocol. In greedy forwarding, the current node first determines the allowed communication area, then calculates and compares the cumulative communication times of the neighboring nodes and finally selects the neighbor with the maximum time as the next hop. As for perimeter forwarding, if greedy forwarding fails, the concept of minimum angle is introduced as the criterion for the optimal next hop; thus, the current node calculates and compares the angles formed between the neighboring nodes and the destination, and then selects the neighboring node with a minimum angle as the next hop to forward packets. Simulation results show that, compared to GPSR, MM-GPSR has obvious improvements in packet loss rate reduction, end-to-end delay reduction and throughput increase.

**Position Predictive with Threshold-GPSR (PPT-GPSR)** – In our recently proposed work (Cherifi et al.,2021) an improved version of the traditional GPSR protocol has been designed. It is a link failure tolerant GPSR protocol. It is based on the prediction of the future position of each vehicle and a minimum threshold of the neighbor coverage area. PPT-GPSR was primarily designed to ensure the selection of the nearest potential neighbor, expressed in predictive distance and its location with respect to the threshold that delimits the output of the communication radius. Hence the assurance of selecting the shortest path between a source and a destination while avoiding disconnection and link breakage. Our routing strategy is based on two processes. (i) Preselection process: Unlike basic GPSR, we have integrated a pre-selection procedure that helps to better identify the neighborhood for better decision making. It is summarized in three basic steps: the current node maintains the history of received Beacon messages and computes the predictive position of its neighbors and then compares it to the threshold in order to draw the set of pre-selected nodes with a predictive position smaller than the given threshold. (ii) Selection process: if the received data packet is marked in Greedy forwarding mode the current node immediately calculates the future distance between its preselected neighbors and the destination based on the predicted position and then selects the neighboring node with minimum distance as the next hop to elect the packets. But if the data packet is transmitted in perimeter forwarding mode it first tries to switch to greedy mode otherwise it will be transmitted to the first hop that is counter-clockwise (application of the so-called right-hand rule) to reach the next hop. Results under several scenarios showed that the PPT-GPSR solution offers better performance than conventional GPSR.

#### **IV.2. DTN<sub>VANETS</sub> position-based routing protocols**

The Delay Tolerant Vehicular Ad hoc NETWORKS (DTN<sub>VANETS</sub>) **protocols** are considered to be an effective solution for a low density of vehicles environment , such as in rural highway conditions, night conditions in cities and even in urban environments with sparse sub networks scenarios, owing to the high mobility and insufficient number of vehicles , which leads to frequent disconnections. this type of protocols aims to support a class of vehicular network applications characterized by the delay tolerance and the asynchronous data traffic. It uses opportunistic strategies to overcome frequent disconnections of the network notably A carry-and-forward strategy which fill in the radio gaps between vehicles, by buffering the packet in case there is no appropriate node to forward the packet and carry the packet to another area until an opportunity arises to communicate with an appropriate node to forward that packet . A set of routing protocols that rely on a carry-and-forwarding strategy are described below:

**Vehicle Assisted Data delivery Routing Protocol (VADD)** (Zhao et al.,2008) – is a vehicular routing protocol that aims to minimize end-to-end delivery delays from a moving vehicle to a static destination in sparse vehicular networks by using the idea of carry-and-forward strategy. VADD is based on the use of a predictable vehicle mobility which is limited by the traffic pattern and the road layout. In VADD node creates a decision at an intersection then selects the next forwarding path with the insignificant packet delivery delay. The best path of the packet forwarding is selected by exchanging between three packet modes (intersection, straight way, and destination). Simulation results shown that VADD outperforms existing solutions in terms of packet delivery ratio, data packet delay, and traffic overhead. However, it cannot permanently ensure multi-hop connectivity; especially, if unexpected changes in the distribution of road traffic flows occur.

**The Reliable Routing Protocol (RRP)** (Kim et al., 2011)– the main purpose of RRP to identify the more reliable paths by predicting the existence of the candidate relay nodes when the Link Expiration Time (LET) expires. This protocol assumes that the Road Side Unit (RSU) called anchor node is installed at the intersections of the road segments (blocks) and selects the blocks through which the data packets should be passed in order to reach the destination node. Specifically, the shortest path from the source node to the destination node is selected among the paths on which there are no routing holes. When ever an anchor node receives a data packet, it uses its digital map and selects the block closest to the destination, in order to establish the shortest path to the destination node and then forwards the packet to a vehicle on the block. If the anchor node finds that the selected block has a routing hole, it selects the next block closest to the destination. The simulation results show the high efficiency of the protocol in terms of low route failure frequency, reduced routing overhead, and high throughput compared to LET-based routing and GPSR.

**Reactive Pseudo-suboptimal-path Selection routing protocol (RPS)** (Wang et al., 2013)– is an anchor-based routing protocol for intermittent connectivity scenarios in VANETs. Its objective is to select a radio routing path as much as possible by giving the opportunity to the recently passed intersection to renew a path selection instead of using the carry-and-forward solution when a local optimum occurs in order to improve the probability of transmission through the wireless channels. RPS is composed of three modes Intersection mode, Segment mode and RPS mode. In the Intersection mode, the packet is delivered along the road segment which is dynamically selected one by one with the highest weight as the optimal path. The weight considers the connectivity of the segment and the distance between the segment midpoint and the destination node. After that, the packet is transmitted, in the Segment mode, greedily along the selected segment. The RPS mode is activated when a local optimum occurs. Thus, the current node sends a special packet to the nearest intersection where the data packet is already traversed to inform the node at the intersection that a local optimum has occurred. So, it selects another more appropriate path. But, the path selected as the next segment may not be the real optimal one and the suboptimal is pseudo. Therefore, if we give the intersection a chance to renew a path selection, the probability of successful transmission will increase. The simulation results demonstrate that in intermittent connectivity scenarios the delivery ratio of RPS is about 20% higher and the end-to-end delay is 0.1s lower than that of GyTAR, though its overhead is about 10% higher.

**Geographical Opportunistic Routing (GeOpps)** (Leontiadis et al., 2007)– is a forwarding protocol which exploits both the opportunistic nature and the inherent characteristics of the vehicular network in terms of mobility patterns and encounters, and the geographical information present in navigator systems of vehicles. This protocol consider all nodes recognize their own locations and their neighbor node geographic locations through position-pointing devices such as GPS. It applies a delay tolerant technique that the vehicles store the packets till the suitable condition for it to be forwarded. Its process for selecting the next node is summarized as follows:

Neighbour vehicles that follow suggested routes to their driver's destination calculate the nearest point that they will get to the destination of the packet. After that they use the nearest point and their map in a utility function that expresses the minimum estimated time that this packet would need in order to reach its destination; The vehicle that can deliver the packet quicker/closer to its destination becomes the next packet carrier. GeOpp calculates the straight distance from the destination of packets to the nearest point (NP) of the vehicles' path and estimates the arrival time of a packet at the target node. It has a high delivery ratio that relies on the mobility patterns. This protocol is for delay tolerant data but its performance rely on exact the trajectory information. Therefore, if the node did not follow the GPS path the routing decision may be will be mistaken .

**Geographic Spray routing protocol (GeoSpray)** (Soares et al., 2014)– is a multiple-copy geographic routing protocol intended to be used on sparse vehicular scenarios where communication opportunities are based on sporadic and intermittent contacts, frequent link disconnections and reconnections occur, and the probability of forming a contemporaneous multi-hop path between the source and the destination is negligible. GeoSpray is inspired in the general guidelines of GeOpps geographic forwarding routing protocol described previously . However, contrary to GeOpps that maintains at most one copy of a bundle in the network, GeoSpray combines selected replication and forwarding with explicit delivery acknowledgment. GeoSpray employs the concept of “spray phase” from binary Spray and Wait , where a small/fixed number of bundle copies are distributed to distinct nodes in the network. However, instead of doing blind replication (as proposed in Spray and Wait), GeoSpray guarantees that bundle copies are only spread to network nodes that go closer (and/or arrive sooner) to the bundle's destination. Furthermore, instead of waiting until one of these network nodes meets the destination and delivers its bundle copy (as proposed in the Spray and Wait “wait phase”). GeoSpray allows each node to forward its bundle copy further to another node that can take the data closer to the destination (or sooner in time). GeoSpray provides robustness by allowing a limited number of copies of the same bundle to be routed independently. Simulation results shown that the proposed GeoSpray routing improves the delivery probability and reduces the delivery delay compared to other routing schemes. In addition, it has a lower dropped packet rate and a lower overhead rate compared to other popular multicopy routing protocols evaluated.

**Opportunistic routing based on Symmetrical Traffic Distribution (OSTD)** (Mirjazaee et al., 2015)– is an intersection-based multi-hop routing protocol that is capable of finding optimal routes by taking vehicular traffic condition and vehicles' driving path into consideration. This protocol is composed of two phases: intersection and next hop selection phases. An utility function is used in this protocol for the selection of next intersections in the path between the source and the destination. symmetry value of the vehicular distribution is considered to calculate this utility function. Vehicles' driving path predictability is also used in the algorithm to forward the packet to a more suitable next hop since the vehicular mobility is a reflection of the human social activity. OSTD considers all of these factors simultaneously and gives a more importance to the vehicular density and the distribution in comparison with the Euclidean distance. Simulation results shown that OSTD achieves a higher delivery ratio, and a lower end-to-end delay and packet loss compared to other well-known protocols.

**Delay-Aware Grid-Based Geographic Routing (DGGR)** (Chen et al., 2019)– is delay-based geographic routing protocol for VANETs. This protocol exhaustively exploits real-time traffic information in the case of a connected link and historical traffic information if the link is disconnected, in order to make a judicious route selection for data packet transmission. In fact, DGGR uses a Route Weight Evaluation (RWE) algorithm to evaluate route segments. Due to the enormous size of modern cities, the author opts to divide the road map into a series of Grid Zones (GZ). Depending on the position of the destination, packets can be transmitted between different



GZs instead of the entire city map to reduce the computational complexity, where the best path with the lowest delay in each GZ is determined. Extensive simulations reveal that compared with some classic routing protocols, DGGR performs best in terms of average transmission delay and packet delivery ratio by varying the packet generating speed and density.

#### **QoE aware geographic routing protocol for video streaming over VANETs (GeoQoE-Vanet)** (Benmir et al., 2020)–

relies on a selection process of the next relay vehicle based on a correlated formula of quality and experience factors namely: position, direction, speed and link expiration time. The information used in the selection decision is collected by the vehicles where each vehicle records its status information, stores it locally and broadcasts it in Hello messages to neighboring vehicles. When a vehicle decides to send a video to a destination, it first selects the best routing vehicle based on the information stored in its neighbors' table, and then transmits it. This process is repeated successively until the destination is reached. The simulation results show that the proposed GeoQoE-Vanet outperforms both GPSR and GPSR-2P protocols in providing the best end-user QoE of video streaming service. However, GeoQoE-Vanet is only suitable for non-real-time and non-safety applications such as advertising and entertainment.

#### **IV.3. Hybrid position-based routing protocols**

Hybrid types combine the **Non-DTN**<sub>VANETs</sub> and the **DTN**<sub>VANETs</sub> to exploit the partial network connectivity. When the network is dense, the greedy strategy is used for forwarding the data packets and when a disconnection occurs, the mobility of the vehicle is exploited by carrying the packet until an eligible neighbor appears or it reaches itself the destination. Among these protocols, we cite:

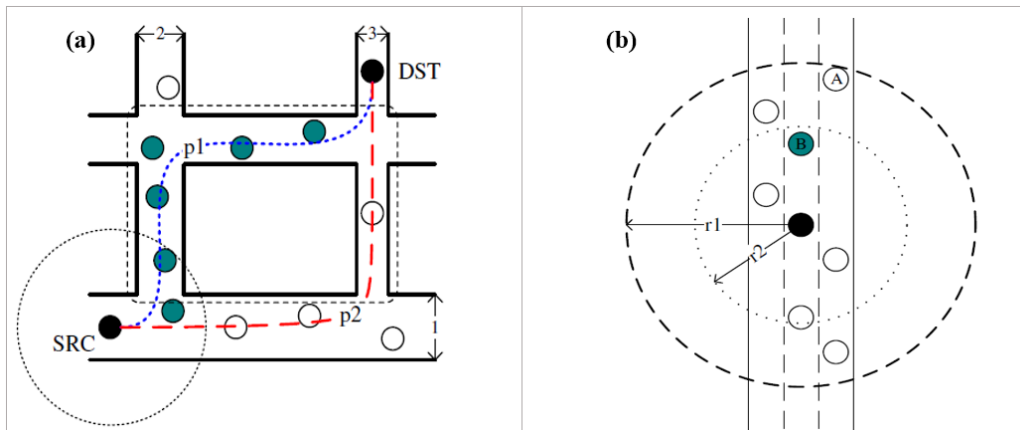
**Hybrid Geographic and DTN Routing with Navigation Assistance (GeoDTN+Nav)** (Cheng et al., 2008)– is a combination of DTN & Non-DTN mode which includes a greedy mode, a perimeter mode and a DTN mode. It can switch from Non-DTN to DTN mode. The packets are first forwarded in greedy mode and then, by the perimeter mode when a packet hits a local optimum. If the perimeter mode also fails, it finally switches to the Delay Tolerant vehicular Network mode and bases on the mobility to deliver the packets. The default greedy forwarding strategy is the same as the restrictive greedy forwarding strategy of GPCR, where packets are always forwarded between junction nodes since junctions are the only places where a node can make significant routing decisions. If a local optimum is reached, the recovery mode, called the perimeter forwarding, is used. For switching to DTN mode three things are considered: network disconnection, the delivery quality of vehicle storing the packet and its direction. Based on these three parameters weight is assigned to the packet carrying vehicle. The base of this network disconnection estimation lies in the increasing hop count in perimeter mode. If the packet has been forwarded more than the hop count limit then the network is assumed to be disconnected. Now further for the delivery quality means that the vehicles path should be toward the destination. The delivery quality of neighbors is obtained through the Virtual Navigation Interface (VNI). The authors assume that every vehicle is equipped with a Virtual Navigation Interface (VNI); They classify vehicles based on the traffic pattern into four broad categories: Deterministic (Fixed) Route, Deterministic (Fixed) Destination, Probabilistic (Expected) Route/Destination and Unknown route. GeoDTN+Nav has produced significantly better results than GPCR and GPSR in terms of packet delivery ratio as it improves the graph teachability by using the delay tolerant store-carry-forward solution to mitigate the impact of the intermittent connectivity. However, in the sparsely connected network, this protocol frequently switches to the DTN mode. This increases the latency and decreases the packet delivery ratio.

**Connectivity-aware Minimum-delay Geographic Routing protocol (CMGR)** (Shafiee et al., 2001) – CMGR protocol considers the road-connectivity to maximise the chance of packet



acceptance and to minimise the delay. Non-congested roads are selected in sparsely connected network scenario. Non-congested roads are considered to have sufficient level of connectivity. Gate-Ways (GWs), which represent attachment points to the backhaul network, are arbitrarily distributed along the roadsides and, any vehicle that wants to set up a route to any GW, generates a Route Discovery (RD) message and broadcasts it in the network. Between all the RDs received at a GW for the same query but coming from different routes. After that, a GW generates a route reply (RR) message. The RR is sent back greedily to the target vehicle along the selected route or it will be carried using the carry-and-forward approach if a local optimum occurs. When the RR is returned back to the target vehicle, and if this latter has moved away from its initial position, a mechanism to track it is proposed where the target vehicle has to broadcast its new velocity vector in its beacon packet before moving. The simulation results shown that the packet delivery ratio of CMGR is approximately of 25% better than VADD and A-STAR for the high vehicle densities and goes up to 90% better for the low vehicle densities. However, the tracking mechanism proposed for a moving destination will certainly fail if the target vehicle is in a sparse area because no traces of such vehicle will be found. On the other hand, vehicle density can be utilized in the selection decision to increase the probability of selecting the border nodes, instead of close-to-destination ones, based on the link stability.

**Geographic Stateless Routing (GeoSVR)** (Xiang et al., 2013)– GeoSVR is stateless VANET routing combined with node location and digital map. Two core algorithms comprise GeoSVR: optimal forwarding path algorithm and restricted forwarding algorithm. The former aims to eliminate the local maximum and sparse connectivity, while the latter alleviates the impact of unreliable wireless channel problems. Optimal forwarding path calculates a path, which the packet has to traverse along, towards the destination based on node location and digital map by providing a global directive to eliminate local maximum. In addition, optimal forwarding path considers the vehicle density on every road to avoid sparse connectivity. The optimal path is the shortest connected path associated with high number of vehicles between source and destination, and for this road type is assigned to each road in the map on the basis of its width. In such case, the digital map is converted into weighted graph. As shown in **Figure 5.(a)**, the assigned weight for path P1 is 2 according to the road type whereas weight for path P2 is 4 (i.e. sum of 3 and 1). Hence, according to the algorithm the optimal path is P1. In the proposed work, for the given source and destination, only the path within the rectangle is considered to reduce computational complexity. The dimension of this rectangle is calculated based on the position of source and destination. After selection of an optimal path, restricted forwarding algorithm selects next-hops within a restrained range in an effort to minimize packet loss because of large distant wireless communication attempts, As shown in **Figure 5.(b)**. Nevertheless, it is not necessary that the selected road on the basis of width always contains sufficient number of vehicles. Hence, road width is not a right indication of real-time traffic status.



**Figure 5.** GeoSVR protocol: (a) Algorithm of optimal forwarding path, (b) Restricted forwarding algorithm.

**Roadside Units as message routers in VANETs (ROAMER)** (Mershad et al., 2012)– uses the presence of roadside units (RSUs) to route packets to remote locations in VANETs without necessarily knowing their positions. ROAMER is based on the fact that RSUs can form a backbone network either through wired connections or can communicate via an Internet connection, or both. Furthermore, in order to preserve their privacy, vehicles use a pseudonym, instead of their real identity when communicating. Therefore, a vehicle S requesting to send a packet P to a remote vehicle D can send the packet to the nearest RSU (R1) (using the shortest path algorithm if R1 is not in its transmission range), which in turn sends P to the nearest RSU (R2) via the backbone. R2 can then send the packet to D using a multi-hop technique. The latter combines position-based routing with transport and forwarding strategy to opportunistically route messages to and from the RSU under dense and sparse network conditions. ROAMER's fundamental motivation for using RSUs is that RSUs are a fixed infrastructure. It is much easier to send a packet to a nearby fixed target than to a distant moving object. Moreover, the delay in sending a packet through the fixed RSU network will be much less than through a VANET network, notably because of the high mobility of VANETs which can delay the packet at intermediate nodes or even cause it to be dropped.

**Hybrid opportunistic and position-based routing protocol (OPBR)** (Ghaffari, 2019)– In the proposed scheme, the source vehicle selects several candidate vehicles from its neighbors to assign them an appropriate fitness value. The fitness value is measured based on the distance to the destination, the link quality, and the density of vehicles in the neighborhood. The proposed protocol includes four stages: link quality estimation, a mechanism for selecting the set of candidate relay nodes, an algorithm for prioritizing vehicles and a mechanism for removing expired links. In OPBR different vehicle nodes carry out the four operations: (i) Source node When each source node wants to transmit data to the destination, in case the target is within its neighborhood, then, it directly delivers packet to the target. Otherwise, based on the information obtained from the Hello messages, the stages 1–4, are carried out for selecting the best candidate node. (ii) Neighboring node Each neighboring node registers and records its own information such as geographical coordinates (x, y), speed, direction of movement, etc., in Hello messages. Then, they broadcast this information within their own radio range. Also, upon receiving data packet from a source node, each neighboring node repeats the stages 1 to 4 for selecting the relay node. (iii) Intermediate nodes The intermediate nodes include the nodes between the source node and the destination node. Hence, as intermediate nodes receive a data packet, they carry out stages 1 to 4 so as to select the node for the next hop towards the destination. The intermediate nodes continue doing this procedure until a

data packet is delivered to the target. (iiii) Destination node Based on using query messages, each destination node periodically broadcasts its geographical information (x, y), in the network so that source nodes can use this information. Based on the prioritization algorithm, the highest priority vehicle transmits first and the lowest priority vehicles set a timer. When the timer expires and at that time, if the vehicle with the highest priority does not transmit, the other vehicle will start relaying the data packet.

**Fuzzy assisted Position Based routing Protocol with DTN capability (FPBR-DTN)** (Rahimi et al., 2019)– is a hybrid protocol that combines assisted fuzzy logic and geographic position derived from the well-known GPSR protocol. Similar to GPSR routing protocol, the proposed FPBR-DTN protocol includes both greedy and perimeter modes. Furthermore, DTN forwarding mode was added to the protocol so that the protocol switch to this mode in case the perimeter mode fails. In the proposed routing protocol, data packets are marked by the source node and with the position of the source node. For selecting the next forwarding node in the greedy mode, each source node uses the information obtained from Hello packets and fuzzy logic for measuring the chance of all of its neighboring nodes for being selected. Then, the node with the highest chance is selected for transmitting data packets. The nodes' chances are determined based on four parameters, i.e. the number of neighbors, distance to destination, moving speed and moving direction. In case the chance of source node is higher than those of other neighboring nodes, greedy forwarding will fail. Accordingly, the proposed protocol switch to the perimeter mode and tries to find a path via the right-hand rule. If there is no node in the neighborhood of the forwarding node, the perimeter mode will also fail; consequently, the protocol will switch to DTN forwarding mode and will deliver packets by using the mobility of vehicles. As a result of the simulation experiments carried out in this work, the authors claim that the results obtained are better than the GPSR, GPSR-DTN and LSGO protocols in terms of packet delivery rate and end-to-end delay.

## CONCLUSION

In this paper, we discussed the challenges of designing routing protocols for VANETs and surveyed several geographic routing protocols dedicated for this kind of networks. Table 2 summarizes the characteristics of the above reviewed location based routing protocols in VANET and compare their on the basis of their their requirements (GPS or no), their forwarding and recovery strategies, their performances ( scalability, packet delivery ratio, delay, Overhead...), the architecture (V2V or V2I), the type of applications where they are most practical (delay tolerant or not, Hybrid) and how they are evaluated (mobility model, network simulators, simulation scenario) , etc.

As we can see in this table , all geographic routing protocols require the use of a positioning system (e.g., GPS), as this is their main distinction from other ad hoc networks where geographic position is used to make the handover decision. We also observe from Table 2 that all geographic routing protocols use the same forwarding strategy, i.e. the greedy approach. However, the recovery strategy varies from one category to another. Indeed, the Non-DTNvanet protocols use perimeter forwarding based on the well known algorithm "the right hand rule", however the protocols of the DTNvanet class use rather carry-and-forward strategy, as for the hybrid protocols, they combine them according to the senario, the density and the model of mobility and the cases encountered.

Thus, surveying existing geographic routing protocols for VANETs and comparing their characteristics is a crucial step to help future research focus on designing protocols that take into account the cited limitations and not only provide reliable packet transfer with minimum delay, maximum throughput, and low communication overhead, but they should also interact with other layers to have robust routing protocols.

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**Table2:** Comparison of various Geographic routing protocols for VANETs.

Protocols	Year	Geographic	Mobile	Forward Strategy	Recovery Strategy	Deployment	Mobility Model	Architecture	Network Simulation	Scenarios	Scalability	Performance analysis
<b>GPSR</b>	2000	yes	No	greedy	right-hand rule	no	Random waypoint	v2	Ns-2	Urban	Average	packet delivery success rate, overheads, path length
<b>GSR</b>	2003	yes	yes	greedy along the shortest path,	Switches back to greedy mode	no	DaimlerChrysler's Videlio	v2	Ns-2	Urban	Average	packet delivery ratio, latency, average total bandwidth, average number of hops
<b>GPCR</b>	2005	yes	No	restricted greedy	right-hand rule	no	DaimlerChrysler's Videlio	v2	Ns-2	Urban	Poor	average delivery rate, average number of hops
<b>CAR</b>	2007	yes	No	greedy	Waiting cycle and walk-arounder	no	Drivers' behavior of Switzerland	v2	Ns-2	Urban/highway	Good	delivery ratio, end to end delay, throughput
<b>JBR</b>	2013	yes	yes	Selective greedy	Angle method	no	Vane tMob iSim				Average	Packet delivery ratio, Average number of hops, Average end to end delay
<b>MM-GPSR</b>	2018	yes	No	enhanced greedy (delay-based)	Minimum Angle Concept	no	Vane tMob iSim	v2	Ns-2	highway	Good	Packet loss rate, end to end delay, throughput
<b>PPT-GPSR</b>	2021	yes	No	enhanced greedy (prediction-based)	right-hand rule	no	random	v2	Ns-2	Urban	Good	Packet delivery ratio, end to end Delay, Routing overhead, Average path length, Packet



												loss rate
<b>VAD</b>	2	y	y	greedy	The	ye	unkn	v2	Ns-	urb	Po	Delivery
<b>D</b>	0	e	e	along the	use of	s	own	v	2	an	or	Ratio, Delay,
	0	s	s	shortest	predicta							Data Traffic
	8			path,	ble							Overhead
					vehicle							
					mobility							
<b>RRP</b>	2	y	y	greedy	Reroutes	ye	unkn	c+	Ns-	urb	Go	route failures,
	0	e	e	along the	the data	s	own	+	2	an	od	average hop-
	1	s	s	shortest	packets							count, packet
	1			path,	to a							drop ratio, and
					different							routing
					block							overhead
					carry-							
					and-							
					forward							
<b>RPS</b>	2	y	y	The	Recalcul	ye	Vane	v2	Ns-	urb	Go	delivery ratio,
	0	e	e	selected	ate a	s	tMob	v	2	an	od	end to end
	1	s	s	segment	new path		iSim					delay,
	3											overheads [
<b>Geo</b>	2	y	Y	Store-	carry-	ye	rand	v2	OM	hig	Av	Delivery ratio,
<b>pps</b>	0	e	e	and-	and-	s	om	v	Net	hw	era	Average
	1	s	s	forward	forward				++	ay	ge	delay, hop-
	3			utility								count,
				function								Delivery ratio
												through time
<b>Geo</b>	2	y	y	Spray-	carry-	ye	unkn	un	Ns-	urb	Av	Number of
<b>Spra</b>	0	e	e	and-wait	and-	s	own	kn	2	an	era	bundles
<b>y</b>	1	s	s	utility	forward			o			ge	dropped,
	4			function				w				Bundle
								n				delivery
												probability,
												Overhead
												ratio
<b>OST</b>	2	y	y	Driving	carry-	ye	SUM	v2	Ns-	urb	Go	packet
<b>D</b>	0	e	e	path	and-	s	O	v	2	an	od	delivery ratio,
	1	s	s	prediction	forward							end to end
	5											delay, lost
												packet .
<b>DG</b>	2	y	Y	best path	carry-	ye	Vane	v2	Ns-	urb	Go	Average
<b>GR</b>	0	e	e	based the	and-	s	tMob	v	2	an	od	transmission
	1	s	s	lowest	forward		iSim					delay,
	9			delay	mechani		IDM					delivery ratio,
					sm		_LC					Control
												overheads
<b>Geo</b>	2	y	Y	Enhanced	carry-	ye	SUM	v2	Ns-	Ur	Po	PSNR &
<b>Qoe</b>	0	e	e	greedy	and-	s	O	v	2	ban	or	SSIM of
<b>E</b>	2	s	s	(correlate	forward		and					received video
<b>vane</b>	0			d			Open					frames, Frame
<b>t</b>				formula-			Stree					loss
				based)			tMap					percentage.
<b>Geo</b>	2	y	Y	a	right-	H	Vane	qu	Ns-	Ur	Po	packet
<b>DTN</b>	0	e	e	restricted	hand	yb	tMob	al	2	ban	or	delivery ratio,
<b>+Na</b>	0	s	s	greedy	rule+	rid	iSim	ne				latency,
<b>v</b>	8				carry-			t				number of

					and- forward							hops
<b>CM</b>	2	y	Y	greedy	carry-	H	SUM	v2	Ns-	Ur		Packet
<b>GR</b>	0	e	e		and-	yb	O	i	2	ban		delivery ratio,
	1	s	s		forward	rid				/hi		Packet
	1									gh		delivery
										wa		delay, Ratio
										y		of dropped
												data packets
<b>Geo</b>	2	y	Y	optimal	Rang	H	Reali	v2	Ns-	Ur	Po	packet
<b>SVR</b>	0	e	e	forwardin	method	yb	stic	v	2	ban	or	delivery ratio,
	1	s	s	g path-		rid						latency
	2			and-								
				restricted								
				greedy								
				forwardin								
				g								
<b>ROA</b>	2	y	Y	greedy	carry-	H	SUM	v2	Ns-	Ur	Av	Delivery
<b>ME</b>	0	e	e	along the	and-	yb	O	i	2	ban	era	Ratio, Delay,
<b>R</b>	1	s	s	shortest	forward	rid				/hi	ge	Average Node
	2			path,						gh		Traffic
										wa		
										y		
<b>OPB</b>	2	y	Y	Enhanced	carry-	H	unkn	v2	Ns-	Ur	Go	Packet
<b>R</b>	0	e	e	greedy	and-	yb	own	i	2	ban	od	delivery ratio,
	1	s	s	(fitness	forward	rid				/hi		end to end
	9			value-						gh		Delay,
				based)						wa		throughput
										y		
<b>FPB</b>	2	y	Y	Enhanced	right-	H	MO	v2	Ns-	Ur	Go	Packet
<b>R-</b>	0	e	e	greedy	hand	yb	VE+	v	2	ban	od	delivery ratio,
<b>DTN</b>	1	s	s	(fuzzy	rule+	rid	SUM			/hi		end to end
	9			logic-	carry-		O			gh		Delay,
				based)	and-					wa		Routing
					forward					y		overhead

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## INFORMAL PAYMENT AND SALE GROWTH. THE CASE OF SMALL AND MEDIUM-SIZED FIRMS IN VIETNAM

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### **Abstract**

This paper is to analyze the reality of which informal payment happens in Vietnamese small and medium-sized firms. The survey of Vietnamese SMEs carried out every two years shows that the number and percentage of SMEs paying informal fees increased dramatically through the period 2007-2015. Amongst firms with non-zero informal payment, more than 80% of SMEs are involved in informal payment at least twice. This matter is of concern as it increases the cost that firms have to burden. Many papers have different conclusions in terms of its impact. Firms can meet difficulties related to their operations and performances, and thus, informal costs can harm the firm growth. However, other papers found that informal costs help a firm grow as they can smooth the firm's transactions. Therefore, we analyze the informal payment impact on firm sale growth by using the unbalanced panel data regression during the period 2007-2015. The results show that firms engaged in paying these informal costs are likely to have low sale growth. The greater number of times firms pay informal costs, the lower sale growth they receive. In the regression of sale growth, we also find the positive and significant coefficients of total factor productivity (TFP), capital intensity, product diversification, and support from the government.

**Keywords:** informal payment, SMEs, sale growth, Vietnam.

### **Introduction**

Bribery and corruption are some of the most concerning issues in a country. Corruption can impact many different aspects of economic growth and development. Firms are likely to pay informal costs to get things done quickly and easily. Corruption can be understood as the type of expenses incurred when businesses transact with state agencies for implementing legal regulations related to business operations, such as carrying out tax and customs procedures, accessing credit, environmental problems, transportation, goods circulation, or authority inspection.

In Vietnam, informal costs are incurred at every stage of business, thus, it can hamper firm's performance and growth. Informal costs to deal with tax officials are quite common. In a report by the Vietnamese Chamber of Commerce and Industry (VCCI) in 2015, there is 55 percent of firms paying informal costs as they are afraid of being discriminated in credit access; 85 percent of firms reported that the informal costs are related to difficulties in document explanation; 66 percent of firms encountered impolite attitude of tax officials. Informal costs are considered a burden and reduce the competitiveness of firms in Vietnam. These costs are accounted into the product cost, pushing up the product price, resulting in reduced competitiveness in the market. Informal costs are the most difficult and costly problem for firms.

The impact of bribery and corruption on business performance is widely mentioned in academic literature. Corruption impact is a controversial debate. It is proved in many academic papers that corruption negatively impacts firm growth. Others find that corruption can help firms increase their efficiency.

In a paper of Goedhuys et al (2016), the authors explored the relationship between corruption, innovation and firm growth in Egypt and Tunisia. By using a conditional

recursive mixed-process model (CMP), they found that corruption negatively impacts firm innovation, thereby negatively impact firm growth. Seker and Yang (2013) investigated bribery and firm growth in the case of Latin America and the Caribbean. They concluded that bribery hampers the growth of firms. The distortion of firm growth is more severe in young firms or low-revenue firms. In the paper of Gaviria (2002), the author concluded that corruption and crime negatively impact sale growth, investment and employment growth in the case of Latin America. As a result, these problems significantly reduce firm competitiveness.

In the face of these above papers, some other papers showed that corruption and bribery can improve firm's efficiency. Ayaydin and Hayaloglu (2014) examined the corruption effect in a sample of 41 manufacturing firms in Turkey and came to the conclusion that corruption, profitability and financial leverage can increase firm growth. They explain that corruption can help firms overcome bureaucratic delays and this phenomenon can work as an incentive of avoiding some government regulations.

Corruption and informal payment have not been widely explored in the case of Vietnam. There still have some papers mentioning this subject such as Nguyen and Dijk (2012). They investigated this phenomenon in the case of Vietnam. They pointed out that corruption can reduce sale growth for firms in the private sector, but this negative effect does not happen for firms in the public sector. The reason may come from the fact that the public sector has close ties to government officials, thereby, the level and frequency of paying informal costs are not severe in this kind of firm. Rand and Tarp (2012) found that corruption in Vietnam is correlated with sunk costs, and the types of interaction with public officials.

Our paper is to analyze the effects of informal payment on firm sale growth in Vietnam. The contribution is expected to be large in the context of high bribery and corruption tendency happening in Vietnam in recent years. We analyze this effect under three kinds of corruption measurements: informal payment status, the frequency of payment and the amount of payment.

### Methodology

We use panel data regression with fixed effects to account for the unobserved individual heterogeneity. Dependent variable of sale growth (Sale\_gr) is regressed over three types of variables stating firm's paying informal fees in separate equations. We test the impact of firm's status of informal payment (Inf\_d), firm's frequency of payment (Inf\_fre), and firm's level of spending on informal transactions (Inf\_share) on sale growth. Other control variables are firm size (Size), firm's product diversification (Product\_d), firm's total factor productivity (TFP\_LP), firm's investment in R&D (RD\_d), firm's innovation (Inno\_d), and Government support (Support\_gov).

The regressions are below:

$$\begin{aligned} \text{Sale\_gr}_{it} = & \alpha_i + \beta_0 + \beta_1 \text{Inf\_d}_{it} + \beta_2 \text{K\_intensity}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{Product\_d}_{it} \\ & + \beta_5 \text{TFP\_LP}_{it} \\ & + \beta_6 \text{RD\_d}_{it} + \beta_7 \text{Inno\_d}_{it} + \beta_8 \text{Support\_gov}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Sale\_gr}_{it} = & \alpha_i + \beta_0 + \beta_1 \text{Inf\_fre}_{it} + \beta_2 \text{K\_intensity}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{Product\_d}_{it} \\ & + \beta_5 \text{TFP\_LP}_{it} \\ & + \beta_6 \text{RD\_d}_{it} + \beta_7 \text{Inno\_d}_{it} + \beta_8 \text{Support\_gov}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Sale\_gr}_{it} = & \alpha_i + \beta_0 + \beta_1 \text{Inf\_share}_{it} + \beta_2 \text{K\_intensity}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{Product\_d}_{it} + \\ & \beta_5 \text{TFP\_LP}_{it} + \beta_6 \text{RD\_d}_{it} + \beta_7 \text{Inno\_d}_{it} + \beta_8 \text{Support\_gov}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

where  $\alpha_i$  denotes individual effect,  $\varepsilon_{it}$  denotes error terms.

Sector dummies are included in all regressions. Firms are classified into seven categories of the manufacturing sector: Food and Beverages; Wood; Basic metals and Fabricated metal products; Furniture; Rubber; Apparel; and others.



### **Data and variable measurement**

We use the dataset of small and medium-sized firms survey which was carried out every two years. Around 2,500 firms have been selected for each survey. Stratified sampling was used over nine provinces in Vietnam. We employ five surveys in the years 2007, 2009, 2011, 2013 and 2015 to form an unbalanced panel data with 12,970 observations.

Variable measurement can be seen in table 1. In this paper, we measure firm sale growth (Sale\_gr) as the annual change in firm sale divided by lagged firm sale. Informal payment was calculated by three types: dummy variable (Inf\_d) stating that if a firm paid informal fees in that year; variable (Inf\_fre) represents the number of times a firm paid informal fees in that year; and (Inf\_share) denoting the share of informal payment amount in the firm sale.

**Table 1.** Variable measurement used in the regression

Variable	Description
Sale_gr	Firm's sale growth, annual change in firm's sale divided by lagged firm's sale
Inf_d	Dummy variable, receiving value 1 if firms pay informal fees; 0 otherwise
Inf_fre	Informal payment frequency
Inf_share	Informal payment share, the ratio of informal payment amount to firm's sale
K_intensity	Capital intensity, total fixed asset to total labor
Size	Firm total labor
Product_d	Dummy variable, receiving value 1 if firms produce more than one product; 0 otherwise
TFP_LP	Total Factor Productivity, measured by Levinsohn and Petrin (2003) methodology
RD_d	Dummy variable, receiving value 1 if firms invest in R&D; 0 otherwise.
Inno_d	Dummy variable, receiving value 1 if firms have innovation in production technology or product improvement; 0 otherwise.
Support_gov	Dummy variable, receiving value 1 if firms have Government support; 0 otherwise.

We measure total factor productivity (TFP\_LP) by employing Levinsohn and Petrin (2003) approach. This approach can deal with the problem of endogeneity caused by the correlation between the input demand and the unobserved productivity shock. The size of firm (Size) is proxied by the total number of labor. We also add the dummy variables to capture the heterogeneity of firms related to firm innovation (Inno\_d), firm investment in R&D (RD\_d), firm product diversification (Product\_d), and Government support for firms (Support\_gov). The description of variables is mentioned in table 2.

**Table 2.** Variable description

Variable	Obs	Mean	Std. Dev.	Min	Max
Sale_gr	8358	102.116	720.409	-100	38461.164
Inf_d	1296 9	0.396	0.489	0	1
Inf_fre	1297 0	0.798	1.126	0	9
Inf_share	1297 0	0.119	0.547	0	36.425
K_intensity	1286 1	38880.987	340958.99	0.2	28694826
Size	1297 0	17.422	48.078	1	2561
Product_d	1297 0	0.117	0.322	0	1
TFP_LP	1296 1	3.445	0.986	-4.23	8.532

RD_d	1297 0	0.016	0.126	0	1
Inno_d	1297 0	0.381	0.486	0	1
Support_gov	1296 6	0.133	0.339	0	1

### Results and Discussion

Bribery and corruption have become stressful problems in Vietnam. Based on the SMEs survey, in the period 2007-2015, the number of firms engaged in informal payment is increasing. In 2007, 27.3 percent of SMEs in the survey paid informal fees at least one time. This number increased to 43.1 percent in 2015 (Figure 1).

**Figure 1.** Informal payment status in Vietnamese SMEs

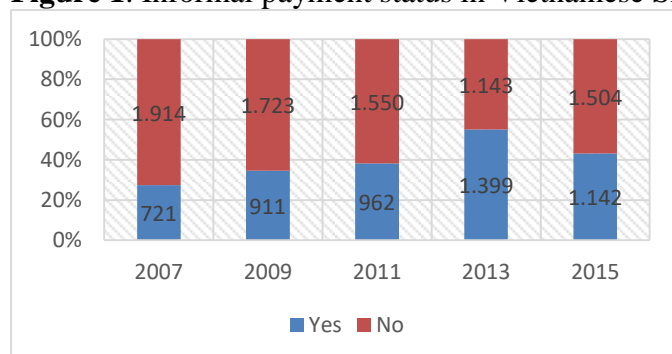


Table 3 shows the number of times of which SMEs paid informal fees in a year. Only 14 percent of firms are involved in only one informal payment. Majority of firms pay informal fees at least twice, and some firms even pay informal fees nine times a year.

**Table 3.** Frequency of informal payment

Frequency of informal payment	Number of firms	Percentage
1	687	14.08
2	3,248	66.57
3	628	12.87
4	311	6.37
9	5	0.1
Total	4,879	100

In the survey, firms were asked to give the reasons for which they decided to pay informal fees. Majority of firms decided to pay extra fees for easily connecting to public services and dealing with taxes and tax collection. Firms also paid to get licenses or to gain government contracts, public procurement. Informal fees were also used for dealing with customs, or some activities related to foreign trade such as imports or exports (Figure 2).

**Figure 2.** Reasons for informal payment

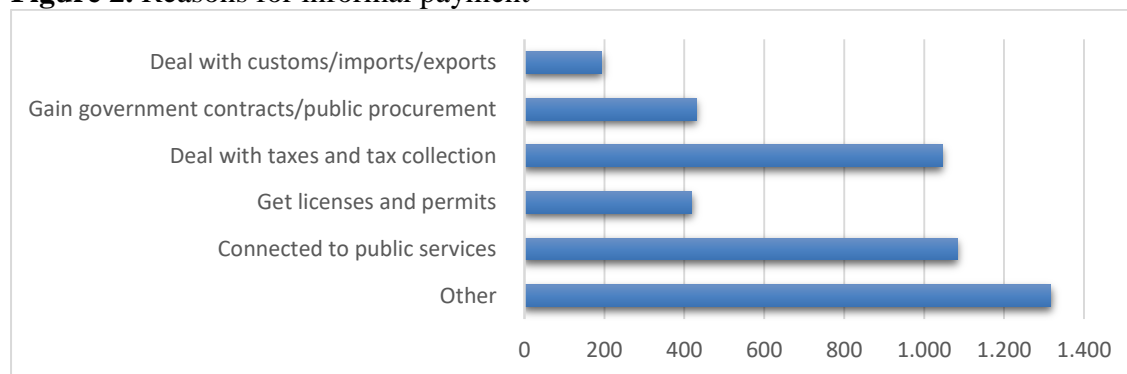


Table 4 shows the results of panel data regression. Columns (1), (2), and (3) represent the results of which informal payment is proxied by a binary variable, the number of times of paying, and the share of spending over annual sales respectively.

**Table 5.** Results of regressions

Dependent variable: Firm's sale growth			
	(1)	(2)	(3)
inf_d	-53.401**		
	(20.52)		
inf_fre		-18.945*	
		(10.656)	
inf_share			-50.135
			(30.603)
K_intensity	0.04*	0.04*	0.04*
	(0.022)	(0.022)	(0.022)
Size	0.25	0.25	0.237
	(0.277)	(0.277)	(0.277)
product_d	116.323**	118.836*	119.031*
	(38.006)	(38.005)	(38.007)
TFP_LP	323.602**	323.641*	320.778*
	(18.1)	(18.15)	(18.07)
RD_d	-8.495	-9.362	-8.89
	(84.596)	(84.626)	(84.627)
inno_d	7.639	9.595	10.232
	(22.584)	(22.577)	(22.582)
support_gov	62.326**	62.664**	62.884**
	(28.577)	(28.571)	(28.574)
_cons	1019.456**	1031.541	1030.81*
	(86.185)	(86.013)	(86.031)
Observations	8247	8248	8248
Standard errors are in parentheses			
** p<.05, * p<.1			

As column (1) shown, the coefficient of binary variable (Inf\_d) is negatively significant. Firms pay informal fees to public officials to smooth transactions and get things done easily. However, this action negatively impacts on firm's performance. Firms paying informal fees have lower firm sale growth compared to ones that do not. Moreover, looking at column (2) we can see that the higher frequency that firms pay informal fees, the lower sale growth firms receive. In column (3), although the coefficient of (Inf\_amount) is not significant, the negative sign reveals that firms spending higher amount paying informal fees are likely to have lower sale growth.

Among the control variables, in all regressions, coefficients of firm's capital intensity, firm's total factor productivity and firms receiving government support positively impact firm sale growth. Firms having product diversification can help firms improve sale growth as well. We do not see the statistical significance of firm's size, investment in R&D or innovation on firm sale growth.

## Conclusions

The nexus between corruption and firm growth is a controversial issue. In Vietnam, SMEs have difficulties in finding and approaching potential customers as well as difficulties in legal procedures. The size of the enterprise is still small, with limited experience and capabilities, the information quality of these enterprises is still low. Large-sized firms in Vietnam enjoy many priorities compared to SMEs. Therefore, SMEs are engaged in informal payment for creating the connections with government officials to get things done in a smooth way. In this paper, first, we bring the general picture of informal payment in SMEs and second, we explore the impact of informal payment on firm sale growth. Our results show that informal payment has been increasing in Vietnam and has become a stressful problem in recent years. The number of firms that are engaged in informal fees increased. The average amount of spending and the frequency of this payment enlarged over time.

To examine the relationship between informal payment and firm sale growth, we employ panel data regression for a database of five-year SMEs survey. We conclude that informal payment negatively impacts firm sale growth. Thus, firms are in trouble if they do not pay informal fees for creating a close connection with government officials. However, when paying informal fees, firms receive lower sale growth. This study offers significant implications for the Vietnamese government. In the future, corporate governance should be put under strict management to get equal environments for firms with different ownerships and different firm sizes. Moreover, the punishment of corruption and bribery should be more strict and stronger to reduce this kind of transaction.

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## **ART IN CONTEXT: WOMEN LEADERSHIP IMPACTING WORKPLACES**

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### **Abstract**

Research has shown that women's leadership is a critical element in the millennial workplace where local, regional, and international organizations vie marketplaces amidst the COVID-19 pandemic. In many cases, women's leadership seems to have securely carved its niche shaped by key attributes visible in the work context as women interact with multiple stakeholders in micro and macro environments. Studies have shown that women's leadership attributes are vital to the productivity, health, and wellbeing of the organization and to its distinctive competitive advantage. This research study explores whether the role of aptitude (A), resilience (R), and authenticity (T), three pivotal women leadership attributes, shape the internal context of local organizations and positively impact it. Even though research studies may have explored the role of any one of these attributes, this research explores three attributes at a singular transformational period within the chaotic competitive pandemic context where leadership may be perceived by its behavior within its hierarchy horizontally, diagonally, vertically. Four research questions explored (1) whether women leadership attributes reflected aptitude in the work context; (2) whether women leadership attributes reflected resilience in the work context (3) whether women leadership attributes reflected authenticity in the work context and (4) whether aptitude, resilience, and authenticity reflected by women leadership attributes positively impacted the work context. Through a survey, descriptive data was collected from a sample of a 100 diversified employed nationals. Based on the results, it is recommended that further context-based research is needed to better understand "ART in context" as women's leadership attributes are at play inside the local business context in a developing county in the Middle East and North African workplace.

**KeyWords:** Women's Leadership; Aptitude, Resilience, Authenticity; Positive Business Context; Middle East and North Africa

## INNOVATION THROUGH CROWDSOURCING: CASES OF OPEN COLLECTIVE INNOVATION

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### **Abstract**

Innovation, which is expressed as the process of creating value from ideas, has many sources. An important source that forms the basis of innovation is the use of crowds, that is, the use of crowdsourcing. The term crowdsourcing, first coined by journalist Jeff Howe in his book ‘The Power of Crowds’ in 2006, refers to a place where an organization makes an open call to a large network to provide some voluntary input or to perform some function. The basic requirements for crowdsourcing are that the call is open and the network is large enough, “crowd”. In this context, the use of crowdsourcing, that is, the use of different perspectives and ideas of the crowd through the internet and various information processing and communication technologies, constitutes an important source of innovation. Thus, emergence of innovation through the use of crowdsourcing is possible in a number of ways such as innovation contests, innovation markets, and innovation communities. For innovation, it is necessary to increase not only the volume of ideas, but also their diversity. In this respect, the use of crowd constitutes one of the main sources of innovation by providing the basis for increasing the diversity of ideas required for innovation. For example, in some public sector applications in many countries, innovation emerges as ‘citizen-sourcing’ and in this context, citizens play an active role as user-innovators in the development and innovation of the services they consume. Another source of innovation through crowdsourcing is innovation markets. In this regard, businesses seek “solvers” to offer ideas and solutions to the problems and challenges that the businesses have failed to solve through innovation market platforms such as [innocentive.com](http://innocentive.com). Another source of innovation through crowdsourcing is innovation contests. Businesses that organize innovation contests give monetary awards to those who develop innovative ideas and models on various topics. In innovation communities, which lead to another generation of innovation through crowdsourcing, there is co-creation by using the ideas, experience and insights of many people across a community. When the relevant literature is examined, it is seen that there are few number of studies that shed light on innovation through crowdsourcing whilst it is seen that most of these studies do not explain how innovation can be generated through crowdsourcing. To fill this gap in the literature in this study, innovation through crowdsourcing is presented by explaining with examples and case studies. Thus, it is expected that this study will contribute to the related literature both theoretically and in practice in the context of shedding light on the innovation studies of organizations through the use of crowdsourcing.

**Keywords:** The Power of Crowds, Innovation through Crowdsourcing, Innovation Contests, Innovation Markets, Innovation Communities, Open Collective Innovation

**Jel Classification:** M10, O30, O31, O32

## Özet

Fikirlerden değer yaratma süreci olarak ifade edilen inovasyonun birçok kaynağı vardır. İnovasyona temel teşkil eden önemli bir kaynak da kalabalık kullanımı yani kitle kaynak kullanımınıdır. İlk kez 2006 yılında gazeteci Jeff Howe'un "Kitlelerin Gücü" adlı kitabında ortaya attığı kitle kaynak kullanımı terimi, bir kuruluşun bazı gönüllü girdiler sağlamak veya bazı işlevleri yerine getirmek için büyük bir ağa açık çağrı yaptığı yeri ifade etmektedir. Kitle kaynak kullanımındaki temel gereksinimler, çağrının açık olması ve ağın yeterince büyük, yani "kalabalık" olmasıdır. Bu bağlamda, kitle kaynak kullanımı ile yani kalabalığın farklı bakış açılarının ve fikirlerinin internet ve çeşitli bilgi işleme ve iletişim teknolojileri vasıtasıyla kullanımı inovasyon için önemli bir kaynak oluşturmaktadır. Böylelikle inovasyonun kitle kaynak kullanımı yoluyla gerçekleşmesi inovasyon yarışmaları, inovasyon pazarları, inovasyon toplulukları gibi bir dizi yolla mümkün olabilmektedir. İnovasyon için sadece fikirlerin hacminin değil çeşitliliğinin de artırılması gerekmektedir. Bu bakımdan kalabalık kullanımı inovasyon için gerekli fikirlerin çeşitliliğinin artmasına temel teşkil ederek ana inovasyon kaynaklarından birini oluşturmaktadır. Örneğin, birçok ülkede bazı kamu sektörü uygulamalarında inovasyon "vatandaş kaynaklı" ortaya çıkmakta ve bu çerçevede vatandaşlar tükettikleri hizmetlerin geliştirilmesinde, inovasyonunda kullanıcı-yenilikçiler olarak aktif rol oynamaktadırlar. Bir diğer kitle kaynak kullanımı yoluyla inovasyon kaynağı, inovasyon pazarlarıdır. Bu hususta işletmeler, inovasyon pazar platformları aracılığıyla örneğin innocentive.com gibi çözmekte başarısız oldukları sorunlarla ilgili ortaya koydukları zorluklara "çözümçülerin" fikirler sunmasını aramaktadırlar. Başka bir kitle kaynak kullanımı yoluyla inovasyon kaynağı da inovasyon yarışmalarıdır. İnovasyon yarışmalarını düzenleyen işletmeler çeşitli konularla ilgili inovatif fikir ve model geliştirenlere para ödülleri vermektedir. Bir diğer kitle kaynak kullanımı yoluyla inovasyonun gerçekleşmesine öncülük eden inovasyon topluluklarında ise birçok insanın fikirlerini, deneyimini ve içgörülerini kullanarak birlikte yaratma söz konusu olmaktadır. İlgili yazın incelendiğinde kitle kaynak kullanımı yoluyla inovasyonu konu edinen az sayıda çalışmanın yer aldığı görülmekle birlikte bu çalışmaların çoğunluğunda kitle kaynak kullanımında inovasyonun nasıl gerçekleştirilebileceğinin açıklanmadığı görülmektedir. Yazındaki bu boşluktan hareketle, bu çalışmada kitle kaynak kullanımı yoluyla inovasyon örnekler ve vak'a analiziyle açıklanarak ortaya koyulmaktadır. Böylelikle bu çalışmanın hem kuramsal olarak ilgili yazına hem de örgütlerin kitle kaynak kullanımı yoluyla inovasyon çalışmalarına ışık tutması bağlamında pratikte katkı yapması beklenmektedir.

**Anahtar Kelimeler:** Kitlelerin Gücü, Kitle Kaynak Kullanımı Yoluyla İnovasyon, İnovasyon Yarışmaları, İnovasyon Pazarları, İnovasyon Toplulukları, Açık Kolektif İnovasyon

**Jel kodları:** M10, O30, O31, O32

## **THE MODERATING ROLE OF RELATIONAL SELF-PERCEPTION IN THE EFFECT OF LEADERSHIP STYLES ON RESISTANCE TO CHANGE**

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### **Abstract**

Organizations desire to be able to adapt to environmental changes in the face of sudden changes in the world and to reach their determined goals. Although an increasing number of organizational change efforts are taking place, these efforts are often fruitless in achieving their goals. It is seen that the reason why these efforts of organizations to change are mostly unsuccessful is generally due to the resistance developed against change. It is stated that the most important factor in overcoming resistance to change is motivating employees in the change process and giving them a vision. Change processes are perhaps the times when individuals need motivation and support the most. In this process, especially leaders have important duties, and the leadership style followed can significantly affect the course of change, the participation of individuals in change and the effectiveness of the process. Individuals' reactions to change and their adaptation to the change process should not be associated with leadership styles alone. Leaders are individuals in the organization just like their followers, and emotional bonds can be established between leaders and followers, and some cognitive and intellectual partnerships can be developed between them. Based on this information, the related study seeks answers to the questions of how individuals' resistance to change relates to their managers' leadership styles, and how individuals' relational self to their managers affect the severity of this relationship. In this sense, the research has two aims. The first is to determine how the leadership styles (task-oriented, employee-oriented and transformational) that will be applied to them by their managers in the face of individuals' resistance to change will have an effect on individuals' resistance to change. The second is to investigate how individuals' relational self-perceptions towards their managers have a role in the effect of the manager's leadership style on individuals' resistance to change. With this research, it is thought that the cognitive and/or emotional reactions of individuals to change and the relational self to the managers may be an important element for the change process, and some solution suggestions can be offered for the effective management of the change.

**Keywords:** Resistance to Change, Relational Self-Perception, Task-Oriented Leadership, Employee-Oriented Leadership, Transformational Leadership

## THE IMPACT OF WORK FROM HOME ON EMPLOYEE PRODUCTIVITY AND ENGAGEMENT

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### Abstract

COVID-19 has left the world in a condition of uncertainty. Physical as well as the human resources (HR) of an organization were adversely affected during the lockdown. To mitigate the COVID-19's consequences many organisations accepted the challenges and developed a new remote work modality on an emergency basis, to enhance employee productivity and engagement. The objective of the current study is to examine the impact of "Work from Home" (WFH) on Employees Productivity (EP) and Employee Engagement (EE). Questionnaires were collected from Multi-National Companies in India with a sample size of 110. SPSS analyses were conducted to test the proposed hypotheses. Results revealed that WFH has implications on employee's productivity and engagement. This current study has provided suggestions and practical implications for further developing employee's productivity and engagement. The findings also suggest key issues for organizations that need to adapt to the changing business environment, employee engagement, and hybrid work arrangements. The current study contributes to the extant literature of organizational behaviour body of knowledge.

**Keywords:** COVID-19, Work from Home, Employee Productivity, Employee Engagement.

### Introduction

The world is witnessing a new normal and the start of the year 2020 has been miserable in walks of life. From illness to deaths, from business losses to business shut-down, from denying bonuses to layoffs, everyone has witnessed one or all these experiences (Schuster et al., 2020). The catastrophic intrusion of COVID-19 significantly affected the corporate world. Incurring huge losses, denying payments, pausing production and deferring business plans are few vibrations felt by corporate houses with the thunderous entry of Coronavirus (Parker and Griffin, 2011). Their job losses, delayed salary and denied bonuses left employees unhealthy as well as un-wealthy (Stevens, 2019). Where small organization had to face complete breakdown, big organization are compromising with reduced employee productivity and engagement. To keep employees highly motivated in this time of confusion and turbulence of the pandemic, management need to revisit their employee productivity and engagement strategies with a new perspective (Sharma, 2020).

Organisation need to find new ways to establish efficient cooperation, foster information flow, and prevent team members from social isolation (Caputo & Hyland, 2020). Although employing workers at least partially in home office has been a widespread practice for a long time. To enhance the employee productivity and engagement setting a home office is a need to progress (Anand et al., 2020). This article provides a ready reference list of variables to management to enhance employee productivity and engagement level during COVID-19 and post lockdown (Yang, 2020). This article suggests key ergonomic concepts can be summed



up with one word: NEW (N—Neutral Posture, E—Eye and Elbow Height, and W—Work Area). Remembering this acronym will help people working at an office or home maintains productivity and more importantly, reduces injury risk (Anand et al., 2020).

Daniel, G. (2020), said that “The extended use of home office will certainly provide an opportunity to establish new, economically more sustainable and more “user-friendly” working methods for each involved and create new platforms for work in the 21st century”.

In many organizations in recent decades the prime importance is shifting towards the employee engagement. The initiation of the year 2020 brought an even grave requirement for reinforcing the engagement level of employees attributable to COVID-19 emergency and lockdown overall rich (Stevens, 2019). The whole globe is under the grasp of COVID-19 emergency. Its effect can be felt on the soundness of a person as well as on the general strength of an organization. Where numerous organization needed to embrace the excusal of employees existing employees are portraying lower level of employee engagement (Caputo and Hyland, 2020). Such unprecedented situation has made anxiety among the workforce identified with their professional stability, rewards, and performance appraisals, etc. Subsequently, their diminished engagement level is apparent. As indicated by Daniel, (2020):

[...] What seemed hardly imaginable some months ago suddenly became reality due to the COVID-19 pandemic: Sizeable teams had to switch to remote working within a few days and have been working remotely for weeks now.

On the opposite side, the need to look at how WFH, as 'another method of working' has influenced the well-being and productivity of employees with no earlier remote work insight and to distinguish explicit work conditions influencing remote work during the COVID-19 crisis (Morikawa, 2021). As the world is getting to know this 'new typical' there is a grave need to change the framework and procedure to receive the reward of the circumstance. This article fills such need of returning to, rethinking and carrying out employee engagement strategies to restore the organization once again.

### **Research questions:**

- Does the work from home influence employee productivity and employee engagement?
- Does the work from home negatively impact employee engagement?
- Does the work from home negatively impact on employee productivity?

### **Literature Review**

#### **Work from Home**

Many organizations have effectively been practicing WFH even before the incident of COVID-19 which offered adaptability and flexibility to their employees. There isn't anything unusual with regards to WFH (Deorah, 2020). WFH is characterized as the most common way of working outside of actual space, empowered by innovation that decreases commuting time and further develops proficiency. WFH offers different advantages to employees including adaptability, independence and the solace of working in your own space (O'Hara, 2014). The COVID-19 pandemic has changed the manner in which organisations used to contemplate the WFH and its adequacy. Because of the COVID-19 and present status of crisis in numerous organisations, employers have started new policy for employees to work from home.

Work office presents difficulties to both employees and employers (Lyons and Adam, 2020). Organizations need to discover better approaches to set up proficient collaboration, encourage data stream, and forestall colleagues from social isolation (Ley and Shreya

Biswas,2020). Daniel, G. (2020), has contended that a few components to be considered in setting work office at home that assume a vital part in adjusting another ordinary. They are legitimate idea: work environment, work wellbeing, working time, and protection and control (Morikawa, 2021).

Employees make sure that the work space at home is "fit for reason" (for example it is consistent with wellbeing and security law prerequisites), as it is the employees commitment to give a protected working environment (Gajendran and Harrison, 2007). Managers and employers are needed to actually take a look at the work environment and approve its utilization ahead of time (Choudhury, Foroughi and Larson, 2020; Moreno, 2020).

[...] Anand S. et al., (2020), "With more employees working at home offices because of COVID-19, it's important to implement these ergonomics best practices".

### **Work Engagement**

"When employees are in a state of engagement, they employ and combine shifting levels of their cognitive and emotional traits as they regulate their work tasks and specific activities into meaningful achievement" (Byrne, 2015, p. 17). Employee engagements progress sense of belongingness to the organisation which develops positive emotions that motivate employees to play out the task better (Parker and Griffin, 2011). They display vigour, participation, efficiency, enthusiasm and interest (Men, 2015). Engagement develops positive emotions in employees that assist them with more focussed and absorbed in their job (Shantz et al., 2013). Thus, engaged employees "work with greater intensity on their tasks for longer periods of time, they pay more attention to and are more focused on responsibilities, and they are more emotionally connected to the tasks that constitute their role" (Rich et al., 2010, p. 620).

Fredrickson (2001) broaden-and-build theory might be utilized to comprehend this relationship. As indicated by this hypothesis, employees who are engaged have positive feelings that widen their "thought-action process" bringing about more elevated levels of absorption, retention, and motivation for work (Parker and Griffin, 2011). Henceforth, task execution goes up. Additionally, Bakker and Bal (2010) contend that these engaged employees move their engagement and commitment to others making a chain impact on employee productivity of other employees as well. Past investigations additionally show that better employee engagement leads to enhance individual performance (Rich et al., 2010; Christian et al., 2011; Friesenbichler, 2017). Therefore, we hypothesize that:

### **Employee Productivity**

Productivity describes a result of individual, group, and organisation performance – the amount of yield that outcomes from execution practices just as external contextual and opportunity factors (Zhang et al., 2020, pp. 1927–1928). As indicated by Wanyama and Mutsotso (2010, p. 73):

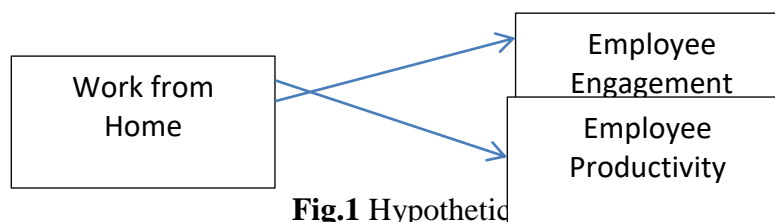
[...] employee productivity depends on the amount of time an individual is physically present at a job and also the degree to which he or she is "mentally present" or efficiently functioning while present at a job.

Different terms have been used to depict employee productivity such as organizational (Farooq, 2014), corporate performance (Dana et al., 2021) and employee performance (Anitha, 2014; Luthans et al., 2008). Employee performance demonstrates the monetary and non-monetary result of the employees that straightforwardly influences the performance of an organization (Anitha, 2014). Further Improving employee productivity is one of the significant goals of the organisations in light of the fact that more elevated levels of employee productivity can be beneficial to both individual and organisation (Hanaysha, 2016).

As per Desyatnikov (2020), "many individuals previously telecommuted before the pandemic hit, yet the manner in which we measure employee productivity has been advancing for quite a long time." Bendor-Samuel (2020) suggests that before an organisation attempts to work on its usefulness (even in the WFH model), it ought to see how to quantify and screen usefulness on a continuous premise. Coronavirus pandemic has changed the manner in which organisations used to ponder telecommuters. Working distantly presents new difficulties for remaining useful, associated and locked in.

Notwithstanding, organisations can further develop employee productivity by motivating their employees to foster an information sharing arrangement, utilize the right correspondence channel for their message, keep up with social connection and measure employee productivity not hours (Ludema and Johnson, 2020). Bendor-Samuel (2020) presumes that comprehend that numerous things influence and drive employee productivity including correspondences to the tech stack, hybrid work force ability and individual decision rights.

**H1.** Work from Home has a negative impact on employee engagement and employee productivity.



## Methodology

### Participants

The sample size of the current study (N = 25) included survey data collected from the multi-national companies India. Simple random sampling technique has been used to collect the data. The pilot study has been conducted for the selected questionnaires that are used for data collection was pre-tested on.... respondents. No issues and concerns were raised by the individual respondents during the pilot study. **Cronbach's Alpha is a method for determining a variable's consistency and reliability. The result is 0.864, valid 21 items were taken, which in itself is satisfactory, and the scale is reliable (Table 1).** A total of 55 surveys (questionnaire) were mailed to the interested respondents, Out of 25 Questionnaires were returned to the researcher. Finally after excluding incomplete questionnaire we used remaining to compute the results by using SPSS.

**Table. 1** Case Processing Summary and Cronbach's Alpha

		N	%
Cases	Valid	21	91.3
	Excluded <sup>a</sup>	2	8.7
	Total	23	100.0

Cronbach's Alpha	N of Items
.864	25

Cronbach alpha helps to determine the internal consistency of the variable. Based on the variables total valid sample was taken into consideration. And from the number of items 25 taken, it is evident that the obtained result (0.864) is more significant than 0.70. Therefore, the value arrived is better, and it is highly reliable.

### Measures

WFH was measured with a 9 -item scale adapted from Thompson et al.'s (1999). Answer alternatives ranged from "totally disagree" (1) to "totally agree" (5). Utrecht Work Engagement Scale (UWES) was used to measure employee engagement with 7 items (2004). The following 17 statements are about how you feel at work. The responses for this questionnaire were recorded on a 7-point Likert scale ranging from Never, Almost Never, Rarely, Sometimes Often, Very Often and Always 0 1 2 3 4 5 6. Employee productivity was measured with a five-item scale developed by Van der Vegt et al. (2000). The responses for the two questionnaires were recorded on a 5-point Likert scale ranging from 1 to 5, "strongly disagree" to "strongly agree". All five items were modified according to the need of the study. Items modified include, "I have a high work performance" to "I have a high work performance during this pandemic".

### Data Analysis and Results

Mean, standard deviation, variance, skewness, and kurtosis are included with the questionnaire responses. The skewness and kurtosis tests can be used to determine whether or not something is normal. The skewness score is smaller than -1, indicating that the distribution is skewed to the left. All of the factors were skewed adversely in this case. The majority of the value obtained in kurtosis is less than -1.0, indicating that the distribution is platykurtic, with less kurtosis than typical.

### Correlation

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Q1	1																								
Q2	0.72	1																							
Q3	0.36	0.5	1																						
Q4	0.46	0.63	0.66	1																					
Q5	0.46	0.69	0.65	0.57	1																				
Q6	0.57	0.48	0.38	0.45	0.61	1																			
Q7	0.44	0.18	0	0.11	0.38	0.68	1																		
Q8	0.53	0.36	0.23	0.33	0.52	0.92	0.76	1																	
Q9	0.64	0.41	0.33	0.57	0.47	0.71	0.48	0.69	1																
Q10	0.11	0.01	0.06	0.3	-0.1	-0.14	-0	-0.1	0.063	1															
Q11	-0.1	-0	-0	0.15	-0	-0.37	-0.2	-0.3	-0.14	0.52	1														
Q12	0	0	0.19	0.28	-0.2	-0.2	-0.4	-0.3	0.031	0.5	0.51	1													
Q13	-0.2	-0.3	-0.2	0.15	-0.2	-0.2	-0	-0.1	0.04	0.37	0.34	0.16	1												
Q14	0.05	-0	0.03	0.32	-0.2	-0.14	-0.2	-0.1	-0.02	0.51	0.61	0.63	0.26	1											
Q15	-0.3	-0.2	0.03	-0.3	-0.2	-0.19	-0.2	-0.3	-0.19	-0.57	-0.43	-0.08	-0.11	-0.51	1										
Q16	0.23	0.28	0.36	0.22	0.64	0.62	0.62	0.64	0.397	-0.24	-0.03	-0.41	-0.02	-0.17	-0.2	1									
Q17	0.19	0.07	0.26	0.22	0.52	0.55	0.62	0.54	0.397	-0.34	-0.06	-0.45	0.12	-0.17	-0.15	0.87	1								
Q18	0.17	0.02	0.12	0	0.37	0.5	0.62	0.46	0.258	-0.37	-0.18	-0.46	0.06	-0.28	-0.11	0.83	0.93	1							
Q19	0.41	0.27	0.2	0.21	0.54	0.6	0.74	0.59	0.454	-0.17	0.02	-0.37	0.04	-0.12	-0.25	0.85	0.88	0.87	1						
Q20	0.18	0.18	0.39	0.35	0.33	0.25	0.28	0.25	0.224	-0.25	-0.11	-0.29	0.15	-0.03	0.065	0.57	0.67	0.63	0.55	1					
Q21	0.23	-0.1	-0.1	0.02	0.09	0.36	0.67	0.49	0.303	0.02	0.12	-0.28	0.23	0	-0.32	0.51	0.65	0.66	0.73	0.362	1				
Q22	0.23	0.07	0.02	0.05	0.27	0.44	0.52	0.46	0.382	-0.07	-0.02	-0.37	0.13	-0.18	-0.33	0.73	0.73	0.79	0.77	0.342	0.77	1			
Q23	-0.1	0.06	0.23	0.17	0.08	-0.01	0.13	-0	-0.11	-0.2	-0.01	-0.31	0.22	-0.08	0.11	0.4	0.52	0.53	0.44	0.745	0.429	0.41	1		
Q24	0.02	0.07	0.06	-0.1	0.25	0.25	0.25	0.24	0.046	-0.26	-0	-0.47	0.05	-0.27	-0.21	0.68	0.65	0.76	0.66	0.439	0.569	0.84	0.58	1	
Q25	0.43	0.36	0.54	0.66	0.43	0.47	0.28	0.44	0.585	0.5	0.12	0.13	0.06	0.23	-0.42	0.39	0.33	0.27	0.44	0.457	0.334	0.41	0.33	0.3	1

The above correlation table clearly shows the correlation among variables. The correlation will range between -1 to +1. Therefore, from Q1 to Q 25, there is no missing value this shows all the values used in the correlation are according to the observation received. Here most of the values are positively correlated ( i.e.) value arrived is a perfectly positive correlation. And the negative value indicates when one value decreases, another value increases. Most of the values that came in the analysis lie between 0.50 and +1; this shows a strong correlation among them.

### Regression analysis

#### Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.661 <sup>a</sup>	.437	.305		.954

#### Interpretation

The model summary helps to analyse how many models are being reported. R value= 0.661 is a root square that will help obtain a correlation between observed and predicted variables. The R Square value of 43.7% indicates variance expected from the overall strength



of association between employee engagement and employee productivity. The value arrived is not mainly for any variable. The value of adjusted R Square is 30.5% this attempt to obtain honest value from the population. The standard error of the estimated value arrived is 0.954, which is also the root mean square error.

### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.029	4	3.007	3.305	.036 <sup>b</sup>
	Residual	15.471	17	.910		
	Total	27.500	21			

### Interpretation

ANOVA table shows us variables, Regression, Residual and total. The total variable shows the independent variable and also residual. The sum of the square is obtained from the source of variance, and the total sum of the square arrives from the Regression Sum of the square and the Residual sum of the square ( $12.029+15.471=27.500$ ). DF is associated with the variance if the total independent value taken is five, then the degree of freedom is  $5-1=4$ . (k-1) from the regression DF residual can be calculated by subtracting with total ( $21-4=17$ ). Mean square is calculated from dividing SS AND DF, Mean regression is  $12.029/4=3.007$ , and for mean residual is  $15.471/17=0.910$  with the help of this mean regression, and residual F value is calculated ( $F= 3.007/0.910 =3.305$ ). The P-value arrived is 0.036, which is less than 0.05; the value arrived is statistically significant.

### Discussion

At home, the presence of accomplices and youngsters (particularly if still in their adolescence) occupied with work and school exercises, the interruption of kid care and instruction administrations saw during the pandemic, and contributing towards family tasks enormously influenced remote workers (Ismail et al., 2019). For instance, employees need to prepare three times each day (breakfast, lunch, and supper) for the entire family, helping kids to associate with their internet based distance educating in the first part of the day, helping with their schoolwork in the early evening, and investing some quality energy with them when their schoolwork is finished (Anitha, 2014; Luthans et al., 2008). Subsequently, employees need to work with more noteworthy family-work struggle, which we accept contrarily influences their productivity and work engagement.

Engaged employees are more dedicated and committed towards their organization goals and objectives (Selvarasu and Sastry, 2014; Truss et al., 2013) hence, have higher levels of vigilance, focus on the tasks, undeniable degrees of enthusiasm, and faithful to the undertaking as contrasted with low level of engagement (Ismail et al., 2019). Results of the study support that WFM has negative influence on employee productivity and engagement. Work environment disengagement is one more significant key component of WFH during the pandemic (Ludema and Johnson, 2020). Although past research featured that social confinement is one of the primary downsides of remote work, its rate has definitely expanded during this period.

The pandemic has presented individuals to social control and in this way more elevated levels of loneliness, which might connect with declining work satisfaction and

performance just as stress enhancement Desyatnikov (2020),. Ergonomics is tied in with fitting the undertakings being performed to the abilities of the human performing them. To this end, key ergonomic ideas can be summarized with single word: NEW (N—Neutral Posture, E—Eye and Elbow Height, and W—Work Area). The vital parts in any office arrangement, regardless of whether at home or in a business office, incorporate seating, the work surface (table or work area), and additional things like keyboards, mice, monitors and other peripherals (Anand et al., 2020). Nonetheless, the COVID-19 flare-up has significantly constrained most organisation to take on this method of working, regularly without giving employees the vital abilities needed for remote work.

### **Conclusion**

Our study has investigated the relationship among work from home, employee engagement and employee productivity. The study has also contributed to our understanding towards the concept of the linkage among work from home, employee engagement and employee productivity. Through our finding it reveals that engaged employees are more productive, it leaves the space for research for categorizing and identifying more such variables that may enrich the theory. An additional contribution of this current study to the literature is that work engagement plays a facilitating role in engagement level influencing employee productivity. Usually, adopting this flexible way of working has been presented as a planned choice that requires a period of design, preparation, and adaptation to allow organizations to effectively support employees' productivity and ensure them better work-life balance.

### **Limitations and Future research**

The Current study has some limitations which can be addressed in future. The current study utilizes cross-sectional information and limits to specific geographical regions. Hence, longitudinal information might be more proper and might give accurate results in this pandemic COVID-19. Future investigation ought to investigate demographic factors to see how WFH is more distinctive for not only for employees but also individual's those who are working in firms, business enclaves, and institutions these sectors findings might varies across the globe. Further research should explore mediating and moderating variables to understand the strong effect of WFH on employee engagement and productivity.

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## **INTANGIBLE CAPITAL AND THE FIRM – STATE OF THE ART AND PERSPECTIVES**

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### **Abstract**

Over the last two decades, intangible capital is increasingly capturing the attention of scholars since it drives innovation and economic growth of companies and nations. A plethora of theoretical studies and a broad corpus of empirical work address this issue on a microeconomic level. The present paper aims to provide a global picture of the extant literature on the intellectual capital of the companies and to reflect on the current and future evolution of this vibrant topic. To achieve these objectives, articles and reviews indexed in Scopus and Web of Science databases, published between the period of 1994 and 2020, are analyzed using the Bibliometrix - R package tool with an inbuilt utility Biblioshiny. Following the merge of the metadata of the two databases and the removal of duplicates, the resultant sample consists of 2,193 documents. Using bibliometric techniques and thematic trend analysis, we scrutinize the annual scientific production, the trend of scientific publication, the authors' dominance ranking, most relevant sources, most prolific authors, most prominent documents, most frequent author keywords, the topic dendrogram, the trend topics graph, the factorial map of the document with the highest contributes and the country collaboration map. The results show that the intellectual capital of the firm is a burgeoning field of research as the annual scientific production experienced a significant increase in the last decade. As expected, the Journal of Intellectual Capital is the most relevant and most cited source. To gain a deeper insight into the evolution of the field, we further generate a three-field plot. We conclude that intellectual capital is a solid and interdisciplinary field of research, with a remarkable evolution and interesting avenues for future research.

**Keywords:** intellectual capital, IC research, thematic trend analysis, bibliometric analysis, Bibliometrix.

## **PERFORMANCE MANAGEMENT IN UNIVERSITIES: CASE OF ADIYAMAN UNIVERSITY**

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### **Abstract**

Today, public organizations as well as private enterprises are expected to attach importance to efficiency, economy and performance indicators in management processes. Universities, like other institutions, should measure the extent to which they have achieved their strategic goals and plan their management processes according to their performance results. These measurements can only be made with performance management models.

With the Balanced Scorecard, which is one of the most widely used performance management models, universities can measure their performance from four dimensions: financial (resources), customer (public), internal processes, learning and growth (development). The Balanced Scorecard uses two tools; One of the tools is the strategy map. The strategy map is a diagram that graphically depicts managers' views on the organization's strategy and the cause-effect relationship between objectives in terms of four outcome cards. The second tool is the result cards for each objective in the strategy map, which include measurement, target and current performance data.

In this study, it is explained how to develop the Balanced Scorecard, how to apply it to universities based on the example of Adiyaman University in Turkey and explains the application results. Thus, the aim of the study is to provide a performance model that can help management activities in universities.

In this respect, hypothesis of this study is that “performance management implementation in universities will facilitate participation, transparency and accountability”. To reach the necessary scientific data, indirect research method is employed in the study. The most important result achieved from the study is that “utilizing performance management models increases institutional effectiveness and productivity, and consequently institutional performance in a university.”

**Keywords:** Performance Management, Balanced Scorecard, Performance Management in Universities



## **STUDY ON THE EFFECTIVENESS OF DIGITAL MEDIA MARKETING OF AL FOAH, AL AIN, ABU ADHABI, UAE**

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### **Abstract**

The main purpose of this research is to evaluate the effectiveness of digital media marketing of Al Foah Company. The implementation of digital media marketing will be analyzed along with the utilization of marketing tools and techniques of the company. This research study proposed new marketing techniques for the company as they are utilizing obsolete mediums to deliver their products or services. For this purpose, the research has based on primary qualitative method in order to collect the data. The sample size of the study is 10 general people of the UAE. Questionnaire has been designed to get the opinions and perceptions of the people of UAE towards the effectiveness of digital media marketing. The researcher has conducted interviews from the participants and analyzed it by utilizing thematic analysis as the tool of data analysis. However, from the study it has been found out that digital media marketing plays a significant role in today's dynamic world, the mediums of digital media marketing are considered as important towards the effective marketing as it enhances the value of brand by giving them efficient products or services. It has also been identified that there is a significant positive impact of digital media marketing on Al Foah Company.

**Keywords:** Digital media, effective marketing, Al Foah Company, United Arab Emirates.

## WOMEN AND POLITICS: VISIONS AND REVISIONS

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It is believed that the true meaning of Democracy could be found only when the rule-makers of the nation are chosen by the politically aware people. According to Aristotle, democracy is the worst form of government, because it is the rule of the illiterate and unaware people. It implies that for the successful running of a democratic set-up, the spread of education and consciousness are the basic crucial requirements. In this regard we may remember the observations of Lord Bryce, that the gift of the suffrage, creates the will to use it, and the gift of knowledge creates the capacity to use this right in a proper way. Taking into account this view, the issue of the participation of women into politics has become imperative in the present global situation. This issue is intricately related to the increasing consciousness about eradicating inequalities, especially gender inequality, to cater to equal opportunities regarding sharing the resources and in the policy-making processes, which are the demands of the day. Within this paper I intend to study into the reality of women's participation and the probable factors that withheld them from being actively involved into politics.

**Keywords:** Democracy, Women's participation, Gender inequality, Indian politics, Socialization of politics

## A MACRO-FINANCE MODEL OF GOVERNMENT BONDS YIELDS IN VIETNAM

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### **Abstract**

We characterize a macro-finance model of government bonds yields in Vietnam. The evidence is based on a time-varying-coefficient structural vector autoregression (TVC-VAR) model with a monthly sample from 02/2012 to 10/2018. The bonds yields serve as effective indicators for the macroeconomic variables. For the two-month horizon of forecasting, the model tends to forecast the inflation more effectively than the economic growth and exchange rate's change. Moreover, the macroeconomic fundamentals also drive the bonds yields curve: the output growth move closely with the long-run value of curve, the depreciation rate of domestic currency is consistent with the medium-run of curve, and the inflation rate goes in line with the short-run of curve.

**Keywords:** Government Bonds; Vector Autoregression; Macro-Finance.

### **INTRODUCTION**

The world economy is characterized by the safe assets scarcity (Caballero, Farhi and Gourinchas, 2016). This scarcity, in turn, can underline the mechanism for economic crisis (Bernanke, 2010), for the global secular stagnation (Caballero, Farhi and Gourinchas, 2017) and for the pattern of cross-border capital flows (Hung and Hoan, 2020). We, however, understand quite little about the safe assets in developing economies. These economies play crucial role on international monetary system as main driver of international capital flows (Couedacier, Guilbaud and Jin, 2015). And they usually employ the controlled floating exchange rate regime on facing the policy Triffin trilemma. Our paper aims to fill in this research gap.

Our paper characterizes a macro-finance model of government bonds yields in Vietnam. The government bonds are the safe assets since their rate of return is known at the time of being issued (Caballero, Farhi and Gourinchas, 2016). Then, the model covers the macroeconomic fundamentals (inflation, output growth and exchange rate) with three components of bonds yields curve (level, slope and curvature). Then, a time-varying structural vector autoregression (TVC-VAR) model is employed over a monthly sample from 02/2012 to 10/2018.

The evidence shows that the macroeconomic fundamentals drive the bonds yields. In particular, the level of yields curve, which reflects the long-run value of yields, move closely with the output growth rate. The slope of yields curve, reflecting the short-run value of yields, is consistent with the depreciation rate of domestic currency (VND). And the curvature of yields curve, which illustrates the medium-run value of yields, goes in line with the inflation rate. More importantly, the bonds yields components serve as effective indicators for the macroeconomic variables. For the two-month horizon of forecasting, the model tends to forecast the inflation more effectively than the economic growth and exchange rate's change.

The paper belongs to the literature on the safe assets (see a recent survey on Gorton (2017)). When an asset becomes safer, its interest rate goes down, since the investor increases their

holding of safe assets as the store of wealth (Caballero, Farhi and Gourinchas, 2008). The safety of assets, in turn, is driven by the soundness of macroeconomic fundamental (He, Krishnamurthy and Milbaudt, 2019). When the fundamental of an economy is stronger than the rest of world, so that it has a huge capacity to float their issued assets, the assets tend to be safer. Moreover, the safety of assets is also determined by the supply of assets (Farhi and Maggiori, 2018), or by the income per capita (Hung, 2020).

Following Cabllero, Farhi and Gourinchas (2017), we consider the government bonds as the safe assets since its interest rate is known at time of being issued, then, is neutral to the uncertainty. Then, the safety of bonds is illustrated by the bonds yields. Recently, this approach is also employed on Habib, Stracca and Venditti (2020) to analyze the effect of global risk on the fundamentals of safe assets.

Our paper complements to these aforementioned papers. We also employ the bonds yields, but decomposes the yields curve into three components which reflecting the timing of short-run, medium-run and long-run. Then, we indicates the relationship between these components with the macroeconomic fundamentals. Our results show that the bonds tend to be safer, i.e, its yields is lower, in the short-run for a lower inflation rate, and in the medium-run for an appreciation of domestic currency.

Our paper differs these aforementioned papers by three key features. First, we focus on the safety of assets, through their rate of return, rather than the macroeconomic impact of safe assets supply. Second, we decompose the timing of macroeconomic impact on the safety of assets by short-run, medium-run and long-run. And third, we also analyze the two-way interaction between the safe assets and macroeconomic fundamentals.

The paper is closely related to the literature on the bonds yields (see a survey on Diebold, Piazzesi and Rudebusch (2005), and a recent survey on Duffee (2013). The bonds yields are intensively analyzed for case of United States. Nelson and Siegel (1987) decompose yields curve into level (long-run equilibrium), slope (medium-run equilibrium) and curvature (short-run equilibrium). Then, Diebold and Li (2006) modify the Nelson-Siegel (1987) model and extend it to become a dynamic model for time series data sample. Diebold, Rudebusch and Aruoba (2006) add the macroeconomic fundamentals in Diebold and Li (2006). With three macroeconomic variables, including the inflation rate, economic growth and monetary supply, they show that these variables affects the bonds yields components more than the vice-verso impact.

A common feature of these papers is the lack of the role of exchange rate regime on determining bonds yields, which is important for an economy to absorb the shocks from the world economy (Obstfeld, Ostry and Qureshi (2017)). We fill in this research gap. In particular, we show that the depreciation rate of domestic currency is important for the medium-run value of bonds yields. Moreover, our evidence also uncovers that the bonds yields curve's component can serve as effective indicators for the macroeconomic variables. The reason is that the effect of bonds yields on the macroeconomy is greater than that of macroeconomy on the yields.

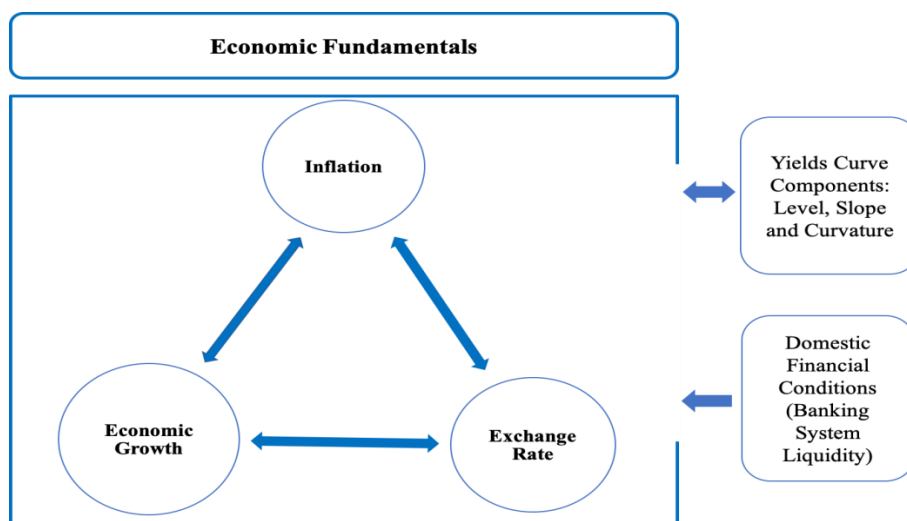
The paper is structured as follows. After the Introduction section, the Framework section presents empirical model, estimation method and data sample. Then, the Evidence section analyzes the bonds yields curve and macroeconomic fundamental interaction. Finally, the Conclusion closes the paper with the policy recommendation.

## FRAMEWORK

We first describe the empirical model to characterize the Vietnam economy. Then, we present the method of regression, and data sample.

### Macro-Finance Model

Figure 1: Bonds Yields at Financial Integration



The model captures the role of macroeconomic fundamentals on determining the bonds yields curve. The fundamental is based on the interaction of three variables, including the inflation, economic growth and exchange rate. The addition of exchange rate is important to capture the case of Vietnam as a small open economy with controlled floating exchange rate regime. Then, these fundamental variables interacts with three components of bonds yields curve, including the level, slope and curvature. The level reflects the long-run value of yields, the slope shows the short-run value of yields and the curvature illustrates the medium-run value of yields. The system of six endogenous variables is under impact of the domestic financial conditions. We employ the credit supply growth rate which is used by the State Bank of Vietnam to stabilize the macroeconomy.

The Time-Varying-Coefficient Bayesian Vector Autoregressive (TVC-VAR) model can be expressed as:

$$y_t = A_{1,t} \cdot y_{t-1} + Cx_t + \varepsilon_t \quad (1)$$

Whereby,

- $y_t = (Dlevel_t, Dslope_t, Dcurvature_t, mcpi_t, mGip_t, mGbankrate_t)$ , is a vector (6x1) of 4 endogenous variables including three components of bonds yields curve being the level (Dlevel), the slope (Dslope) and the curvature (Dcurvature), and 3 macroeconomic variables including the inflation rate (mcpi), the output growth rate (mGip), and the VND depreciation rate (mGbankrate).
- $A_{1,t}$  is matrix (6x6) containing estimated coefficients, each of which is varying over time.
- $C$ , is a matrix (6x1) containing estimated constant coefficients.
- $\varepsilon_t$  is a vector of residuals assumed with multivariate normal distribution as

$$\varepsilon_t \sim \mathcal{N}(0, \Sigma)$$



$\varepsilon_t$  is assumed to be non-autocorrelated, thus, the unconditional expectation satisfies  $E(\varepsilon_t, \varepsilon_t') = \Sigma$ , and  $E(\varepsilon_t, \varepsilon_s') = 0$ , for  $t \neq s$ . Moreover,  $\Sigma$  is a symmetric positive definite variance-covariance matrix, with variance being at diagonal and covariance being off diagonal.

The VAR coefficients are assumed to follow the autoregressive process:

$$\beta_t = \beta_{t-1} + v_t, v_t \sim N(0, \Omega)$$

The covariance matrix  $\Omega$  is assumed to be a random variable endogenously determined by the model.

The parameters of interest to be estimated include the VAR coefficients  $\beta = (\beta_1, \beta_2, \dots, \beta_T)$ , the covariance matrix  $\Omega$  for the shocks on the dynamic process, and the residual covariance matrix  $\Sigma$ . The estimation is based on the Bayesian Estimation, Analysis and Regression toolbox (BEAR), developed by Dieppe, Legrand, and Van Roye (2016).

### **Estimation Method**

We employ two-step approach. On the first step, we decompose the yields curve into three components: level, slope and curvature, employing the modified Nelson-Siegel (1987) strategy as on Diebold and Li (2016). Then, on the second step, we run the Time-Varying-Coefficient Bayesian Vector Autoregressive (TVC-BVAR) regression to investigate the interaction between the bonds yields curve and macroeconomic fundamentals, under the impact of credit growth rate. Recently, Hung (2019) also employ the same method to analyze the trade-off between the output growth and inflation in Vietnam.

The method is closed related to one-step regression implemented by linear state space model on Diebold, Rudebusch and Aruoba (2006). Compared with Diebold, Rudebusch and Aruoba (2006), our model takes Bayesian approach with time-varying coefficient estimation, which is effective on capturing the key features of Vietnam economy. In particular, the data sample size is small, which is due to historical reason, embedded with developing financial system. Since the Bayesian method consider the sample to be fixed, it is suitable to overcome this small size. Moreover, the pattern of economic fundamentals is time varying. Both inflation and VND depreciation rate reduces their mean and standard deviation since 2016. The reason can rely on the changing of exchange rate regime from fixed exchange rate to controlled floating regime in 01/2016.

### **Data Description**

The dataset is one monthly time series sample for Vietnam, with 81 observations covering from 01/2012 to 10/2018. The daily bond yields of different tenors, from 1 to 5 years, are collected from Vietnam Bonds Market Association (VBMA). Then, we translated this daily data into monthly data by taking the mean over each month. Next, the monthly inflation rate (month on month, %), is from Reuters database.

Moreover, the monthly industrial production index is from General Statistics Officer of Vietnam. Then, we use this index to compute the monthly output growth rate (month on month, %). Finally, the daily exchange rate (VND/USD), being close rate in Vietnam interbank market, is from Reuters database. We convert this daily data into monthly data by taking average over each month. Then, we use this data to compute the month depreciation rate of VND (month on month, %).

**Table 1:** Descriptive Statistics

Variables	Obs	Means	Std.Dev.	Min	Max
Inflation (mcpi,%)	81	0.3041716	0.4360749	-0.53	2.2
Economic Growth (mGip,%)	81	2.024965	8.321543	-22.3	31.9
Exchange Rate (mGbankrate,%)	81	0.1331549	0.3918055	-0.6079317	1.526982
Credit Growth (mGcredit,%)	81	1.176086	0.8960105	-0.6574514	3.987697
Level of Yields Curve (Dlevel)	81	-0.0880794	0.4471162	-1.391682	1.021508
Slope of Yields Curve (Dslope)	81	-0.0296335	0.4495609	-1.580027	1.204976
Curvature of Yields Curve (Dcurvature)	81	-0.0020736	1.495688	-4.331835	4.396483

Table (1) shows the descriptive statistics of the data sample. For the macroeconomic fundamentals, the inflation rate has a mean at 0.3% and associated standard deviation at 0.43%. Compared with this variable, the output growth rate has a higher mean at 2.02% and greater deviation at 8.3%, while the depreciation rate of VND has a lower mean at 0.13% and lower deviation at 0.39%. For the bonds yields curve, the first difference of level has a mean at -0.08 and standard deviation at 0.44. In comparison with this variable, the first difference of slope has higher mean and similar deviation while that of curvature has lower mean but much higher deviation. The growth rate of credit supply also shows great standard deviation. In brief, the data offers a rich variation for analyzing the interaction between bonds yields curve and macroeconomic fundamentals.

## EVIDENCE

We first decompose the bonds yields, then, analyze the interaction of these components with the macroeconomic variables. We also use the model to forecast both the bonds yields and macroeconomy.

### Yields Decomposition

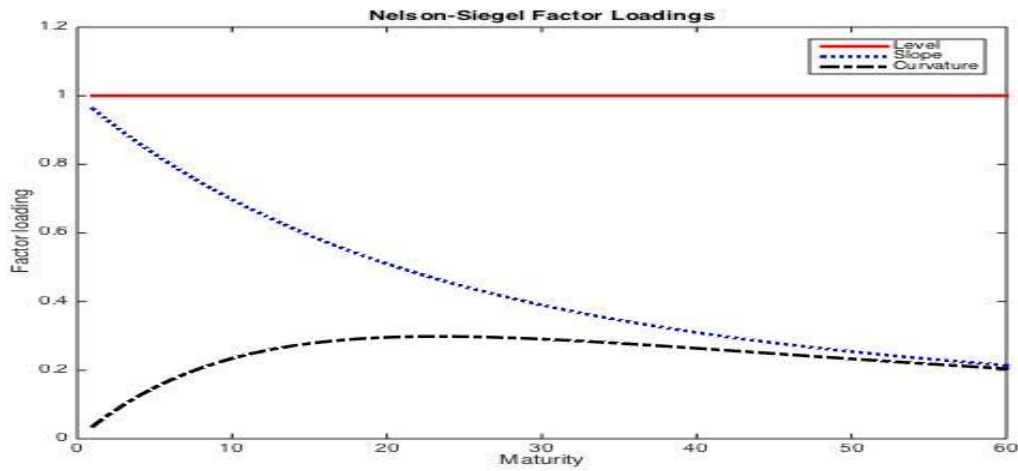
Figure (2) shows the decomposition of bonds yields curve. On Panel A, there are three components: level, slope and curvature. On Panel B, the level corresponds to long term yield, proxy by 5-year bond yield. The slope corresponds to median term yield, proxy by 5-year yield subtracting 1-year yield. And the curvature corresponds to short term yield, proxy by 2 x 2-year yield - (5-year yield+1-year yield).

Figure (3) shows the correlation of bonds yields and macroeconomic fundamentals. In Panel A, the level, illustrating the long-run value of bond yield, has a low correlation with the

output growth rate. In Panel B, the curvature, the medium term value of bond yield, is highly correlated with the depreciation rate of domestic currency (VND). And in Panel C, the slope, showing short term bond yield, has a high correlation with the inflation rate. In brief, the bonds yields are correlated with the macroeconomic fundamental in Vietnam.

**Figure 2: Bonds Yields Curve Decomposition: Model**

Panel A



Panel B

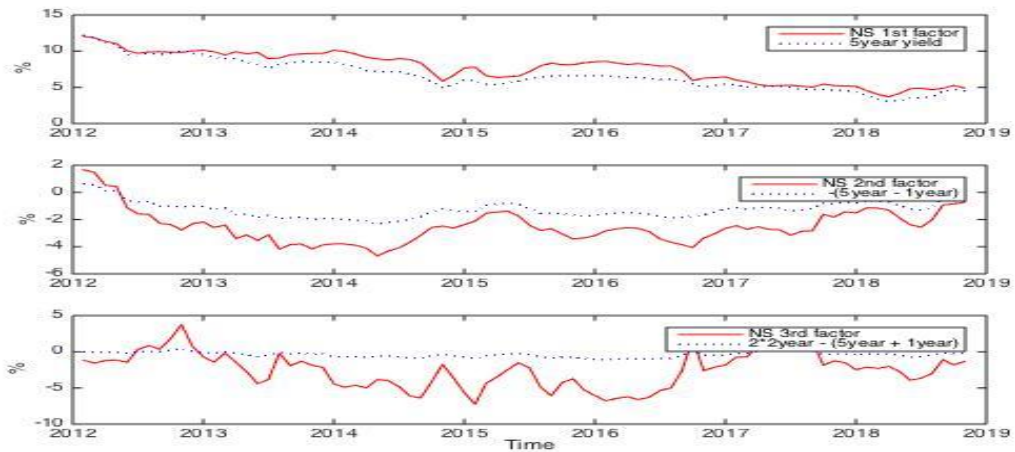
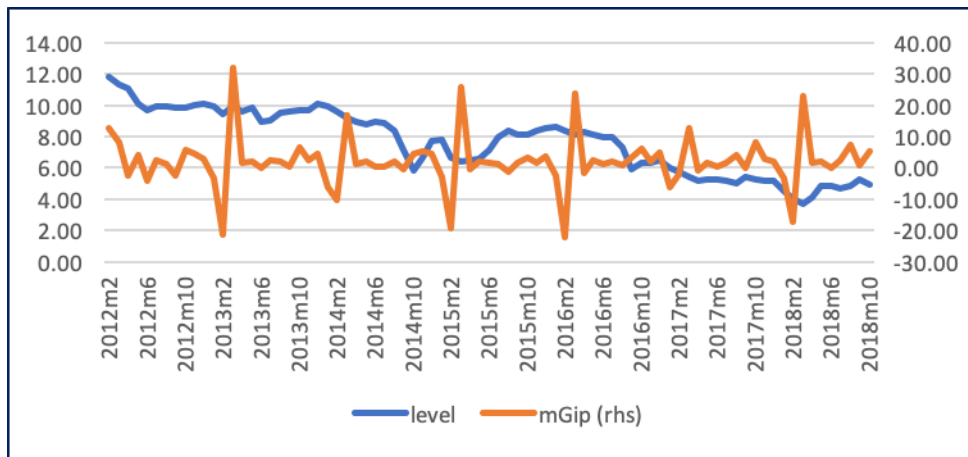
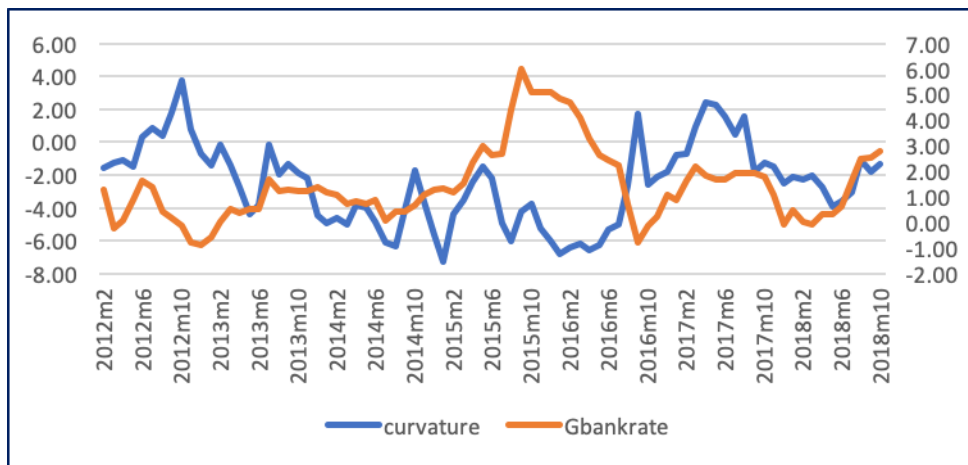


Figure 3: Bonds Yields and Macroeconomic Fundamentals

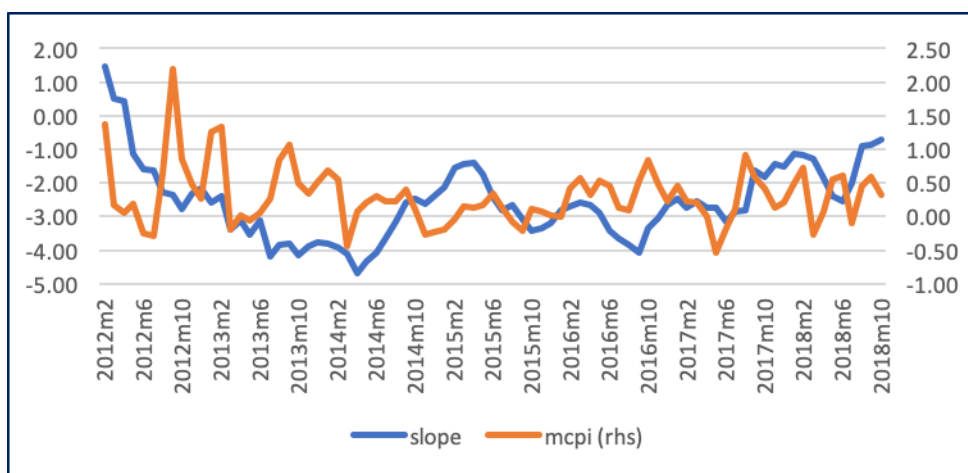
Panel A: Level and Output Growth Rate



Panel B: Curvature and Exchange Rate



Panel C: Slope and Inflation Rate



### **Macroeconomic and Yields Interaction**

Overall, the estimated model satisfies the stability condition with no roots lie outside the unit circle. And the parameter estimates are significant, with small associated standard deviation.

#### ***Impulse Response Functions***

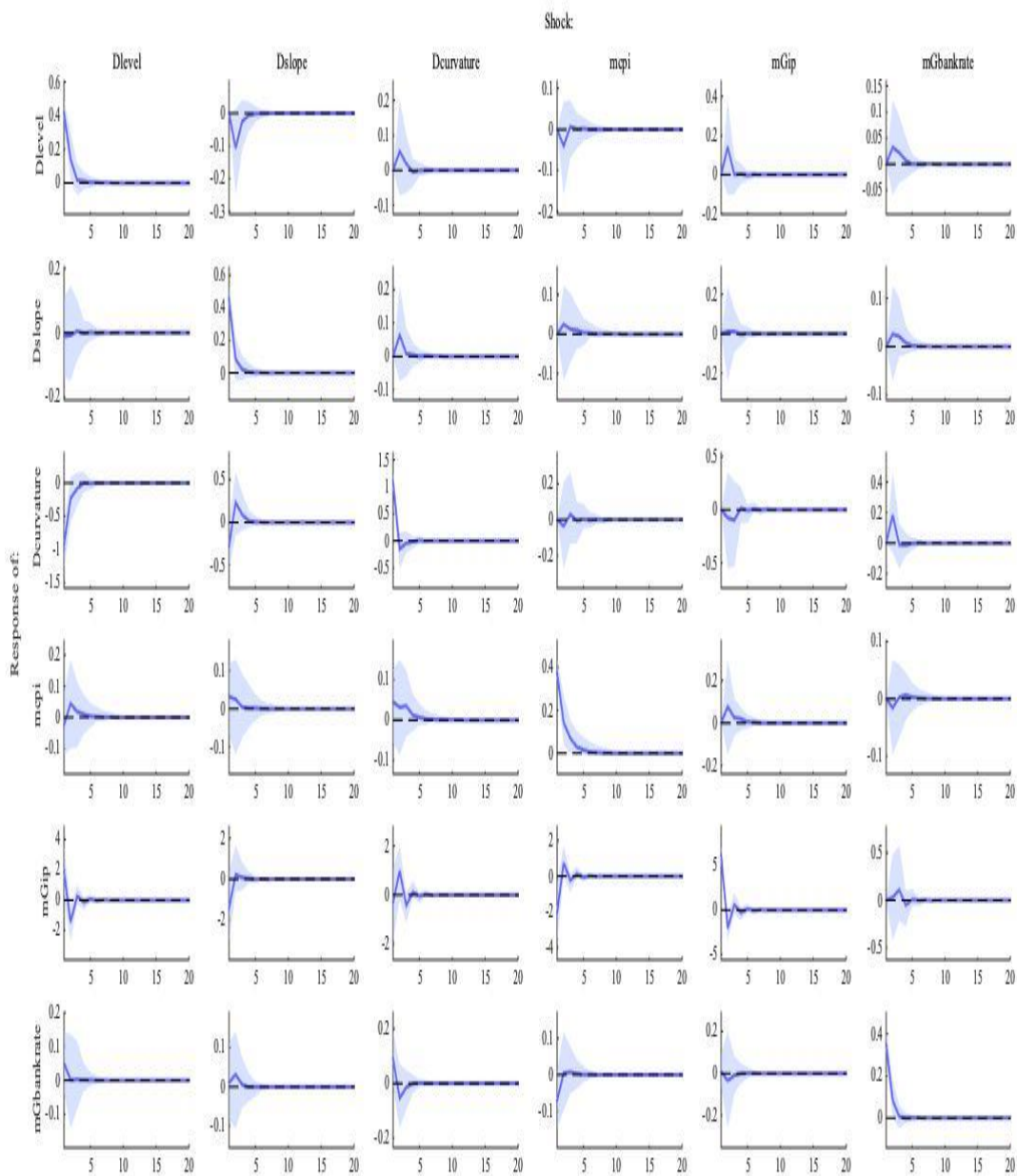
Figure (4) illustrates the impulse response functions. For the responses of the macro variables to macro shocks, the response match the typical impulse response produced common macro models. In particular, the inflation raises for a higher economic growth; the output growth rate increases for more depreciation rate of domestic currency; and domestic currency appreciates for a higher economic growth rate. Moreover, the macro variables all show significant transition rather than persistence. The effect of macro shocks only dies out usually after 5 months.

For the response of the yield curve components to the macro variables, the macro shocks seems to have transitional effect on the bonds yields when the effect of macro shocks only dies out usually after 5 months. Moreover, the evidence also uncovers that the level component is increasing on the economic growth; the slope is increasing on the inflation rate; and the curvature is increasing on the depreciation rate of VND. This result is consistent to the recorded pattern in Figure (3).

For the response of the macro variables to the yield curve components, the yield shocks only have transitional effect, which dies out after at maximum of 5 months, on the macro variables. Moreover, the inflation rate is increasing on all three components of yields; the output growth rate is affected positively by the curvature; and the exchange rate is affected positively by the slope.



Figure 4: Impulse Response Function



In sum, the impulse response function confirms that the yields-macro model provides similar evidence as the macroeconomic model. Moreover, there exist the two-way impact between macroeconomic fundamental and bonds yields curve's components. And the impact is transitional, usually dies out after 5 months.

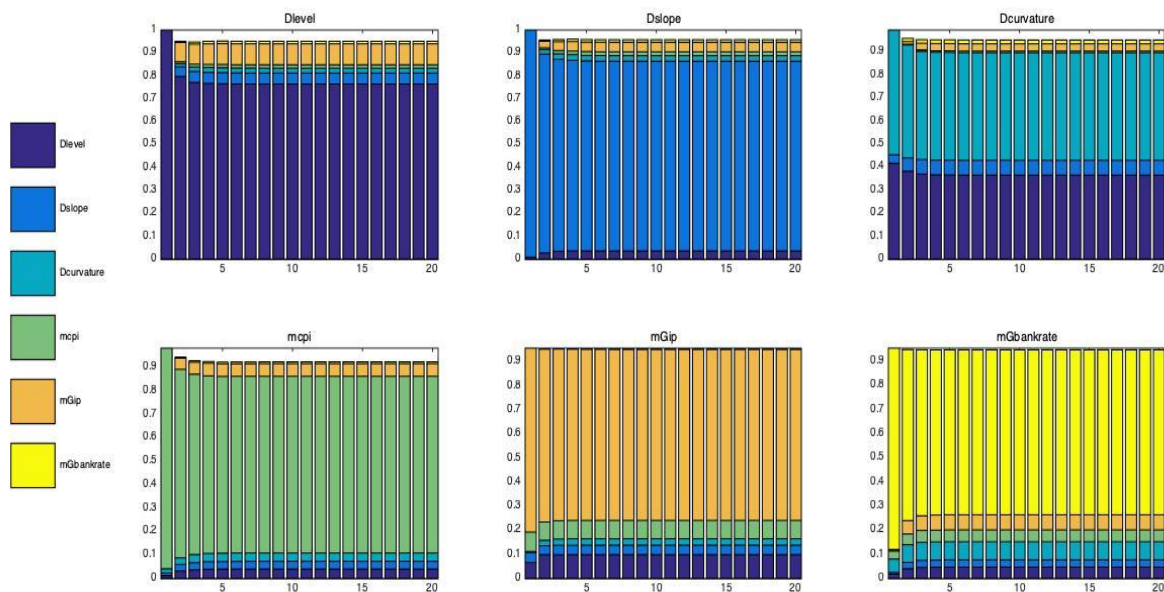
### ***Variance Decomposition***

The variance decomposition provides an additional evidence for the macro and yield curve interaction. Figure (5) shows the variance decomposition at forecast horizons of 20 months.

For the yields curve's components, at a 1-month horizon, their variations are driven mostly by themselves. Thus, a large amount of short-term idiosyncratic variation in the yield curve is unrelated to macroeconomic fundamentals. And the fraction accounted by macroeconomic variables stay stable since the second month.

Moreover, for the macro variables, the yields curve components account for much higher fraction on the macro variables than the fraction that the macro variable accounts for the yields curve. Among them, the level has highest fraction on the economic growth, the slope has similar fraction on three macro variables, while the curvature accounts for largest fraction on the VND depreciation rate.

Figure 5: Forecast Variance Decomposition



In brief, the variance decomposition suggest that the impacts of the yield curve on the macro variables are more important than the impacts of the macro variables on the yield curve.

### ***Macroeconomic and Yields Forecasting***

The yields-macro model can be applied on forecasting both the yields and macroeconomic variables. Table (3) shows the forecast evaluation conducted for two periods, 09/2018 and 10/2018.

Table 2: Forecast Evaluation

Endogenous: Dlevel			Endogenous: mcpi		
	2018m9	2018m10		2018m9	2018m10
RMSE:	0.204	0.208	RMSE:	0.003	0.149
MAE:	0.204	0.208	MAE:	0.003	0.106
MAPE:	53.997	58.689	MAPE:	0.442	32.094
Theil's U:	0.370	0.410	Theil's U:	0.002	0.143
CRPS:	0.112	0.135	CRPS:	0.110	0.120
Endogenous: Dslope			Endogenous: mGip		
	2018m9	2018m10		2018m9	2018m10
RMSE:	0.344	0.245	RMSE:	0.035	2.532
MAE:	0.344	0.188	MAE:	0.035	1.807
MAPE:	472.649	249.537	MAPE:	4.318	35.934
Theil's U:	0.703	0.608	Theil's U:	0.021	0.492
CRPS:	0.141	0.126	CRPS:	1.560	1.941
Endogenous: Dcurvature			Endogenous: mGbankrate		
	2018m9	2018m10		2018m9	2018m10
RMSE:	0.832	0.650	RMSE:	0.074	0.069
MAE:	0.832	0.611	MAE:	0.074	0.069
MAPE:	114.115	96.964	MAPE:	162.652	100.623
Theil's U:	1.000	0.901	Theil's U:	0.449	0.298
CRPS:	0.407	0.355	CRPS:	0.111	0.105

The value of Theil's U reflects the effectiveness of forecasting. Overall, it is small, and always less than 1, for most of variables. Among the bonds yields' components, the model forecasts the level most effectively, with the value of Theil's U is less than 0.57. The forecast of macroeconomic variables is more effective than that of bonds yields. The Theil's U is always smaller than 0.57. Especially, the Theil's U value in forecasting the inflation is very small, almost less than 0.07. And even in case of exchange rate, the Theil's U value reduces for further horizon of forecasting.

In brief, the model is effective on forecasting both the bonds yields and macroeconomic fundamentals.

## CONCLUSION

The paper characterizes a macro-finance model of government bonds yields in Vietnam. The model covers the macroeconomic fundamentals (inflation, output growth and exchange rate) with three components of bonds yields curve (level, slope and curvature). Then, a time-varying structural vector autoregression (TVC-VAR) model is employed over a monthly sample from 02/2012 to 10/2018. The evidence shows that the macroeconomic fundamentals drives the bonds yields, while the yields components serve as effective indicators for the macroeconomic variables.

The result provides important policy recommendation. Stabilizing the macroeconomy needs to account for the fluctuations of government bonds yields, since the yields affect and also forecast the change of macroeconomic variables. Thus, the paper recommends a macro-finance approach for the policy for a government to adjust the macroeconomic fluctuations.

On the future research avenue, the empirical model can be extended to include the no-arbitrage condition in the international financial market. This feature is important for the stability of macroeconomy under the trilemma in the international finance.

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## **ECONOMIC POTENTIAL OF MOUNTAIN AND SKI RESORTS OF GEORGIA**

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### **Abstract**

According to various studies, Georgia's ski resorts have the potential to generate more than \$300 million in tourism revenue [1]. In the years 2011/2012 - 2017/2018, the number of tourists increased by 491% at Gudauri, Bakuriani, Goderdzi and Mestia [2]. In 2016, the country set a record - 6.3 million tourists, revenues from tourism exceeded \$2 billion” [1]. The statistical data of the Georgian Mountain Resorts Agency 2019 confirms the popularity of snow tourism in Georgia [3]. However, sustainable development is hindered by a number of problems identified beyond the devastating impact of the global COVID-19 pandemic. The article exposes innovative projects implemented, offers the analysis of the existing data and proposes recommendations. Worldwide popular Mountain-skiing tourism of Georgia ranked high and resulted in the country to host the 2023 Freestyle Ski and Snowboard World Championship. The project benefits comprise of raising awareness along with involvement of Georgia’s young people in sports activities and improving infrastructure, which is a huge incentive to respond to the challenge adequately in accordance with accepted international standards [4].

**Key Words:** Mountain and Skiing Tourism, ski resorts, Georgia

### **Introduction**

Tourism is one of the largest industries in the world, the advancement of which is considerably stipulated by internal stability, safe environment and level of economic development. Georgia has the greatest tourist and resort potential. Therefore, it is important to evaluate the country's tourism-recreational resources and search for the ways to solve existing problems. Three-quarters of the country is mountainous terrain and it also includes highland areas where a solid snow cover is maintained for a long period of time, which is a prerequisite for the enhancement of mountain-skiing tourism.

Georgia counts top 4 and several relatively small and young ski resorts located in 5 different regions of the country. Each differs in size, season length, snow quality, and infrastructure and has its advantages and disadvantages. However, all of them attract more and more visitors every year during the winter season. Consequently, the number of these resorts is growing and the infrastructure is becoming more sophisticated (See picture 1).



**Picture 1**



[5] According to the Mountain Resorts Development Company total statistics for the 2021 ski season for all four resorts looks as follows:

- Number of visitors to the ski areas - 134 183 guests
- Number of sold tickets (all categories) - 78 462
- The number of visitors by ski areas:
- Gudauri - 83 055
- Bakuriani - 35 166
- Mestia (Hatsvali-Tetnuldi) - 8 700
- Goderdzi - 7 262

**Projects implemented:** Gudauri faced major transformation in recent years. The young and rapid developing winter sports resort is set at Kazbegi region, 120 km from Tbilisi, at the height of 2,196 near the Cross Pass [6]. The mountains offering heli-skiing are well over 4000 meters high. Off-slope facilities are good and the climate favorable, being on the same latitude as Southern Italy. For skiing and snowboarding, there are 34.8 km of easy, intermediate and difficult level slopes (FIS certified) available. 15 lifts transport the guests with total capacity of 26880 passengers per hour with total lift length of 20.1 km. The winter sports area is situated between the elevations of 1,993 and 3,276 m. 29 snow cannons make snow artificially. 15 % of the runs have snow-making capabilities. Cat skiing, night skiing, cross-country trails, ski tours and snow tubing are offered [7].

A new Kobi-Gudauri 1 10 pers Gondola lift (monocable ropeway – see picture 2) with carrying capacity of 2 800 people per hour was manufactured by Poma in 2018. Its speed is 6 meters per second with transite time of approximately 6-10 minutes. Base station is on 2701 m ending with a top station on 2946 m [8].

**Picture 2**



Gudauri accounts for more than a half of MRDC income, and more than third of skier visits. An innovative ski pass with multiple services – Multi.ski cluster (ski rent, Hotel key, Event ticket, Payment Card ski pass on mobile phone ID card smart watch) is available [9].

Growing tourism interest towards Gudauri makes its expansion inevitable. Georgia's Ministry of Infrastructure has created a Land Use Plan for Gudauri. Its main goal is to make the resort into four-season touristic destination. The plan includes: turning Gudauri into a four-season resort; determination of the campitable areas and the regimes for growth, the development of sewerage and water supply systems [10].

The historic Borjomi-Bakuriani train was renewed. Mitarbi (see picture 5) Resort opened for the first time after a 30-year hiatus. The first toboggan or mountain sledge in the Transcaucasia was installed on Didveli. Construction of biathlon springboard and hockey infrastructure was planned in Bakuriani. Resorts Gudauri, Bakuriani (Kokhta, Didveli, Mitarbi), Goderdzi; Svaneti (Hatsvali, Tetnuldi) joined the unified subscription system. The ski patrol started operating at the resorts (See picture 3) [11].

In Svaneti, small ski lifts were built in the highland villages of Mestia -Ushkhvanari, Mazeri, Etseri and Ushguli, as well as in the small town of Lentekhi, in order to promote skiing and the involvement of young people in it. Goderdzi (see picture 6) gained 2 new, kids and training areas - for skiing and skating. Specialists from Germany, Switzerland and Austria conducted a two-week training course for instructors from all over Georgia. For the first time in the history of Bakuriani (see picture 4), the Kokhta-Mitarbi ski road was built [11].

The National Tourism Administration held various marketing events in 16 countries. An image video of Georgia was prepared, entitled "Winter in Georgia". The clip was broadcast on Euronews and CNN. Journalists prepared more than 20 stories about various tourist attractions of Georgia, including winter resorts. The reports were seen by millions of viewers around the world [12].

The bike park and bike paths were expanded, training was provided for mountain managers, snow-compacted car service personnel and rescuers [4].

The Austrian company "Skidata" installed contactless checkpoints, which allow accurate counting of the number of visitors. The system operates in four leading ski resorts of Georgia [2].

**Picture 3**



A tourism adventure school was established to bring to the market qualified, certified, local specialists to provide services and enhance quality. A new building was built for the Tourism Adventure School in Gudauri, at 2800 meters above sea level. The school is the highest in Europe [12].

To support the development of a new type of mountain tourism in Georgia, Kazbegi Trophy - the first ski tour race in Georgia took a start from Gergeti Trinity church parking, on the 24th of April this year. Among the participants were the employees of the Mountain Resorts Development Company from all four ski resorts, who competed for the championship on behalf of Gudauri, Bakuriani, Hatsvali-Tetnuldi and Goderdzi [5].

Bakuriani hosted the World Cup in Ski and Snowboard Cross for the first time this year. According to the International Ski Federation (FIS), participating athletes, Eurosport journalists and event organizers, the 2023 World Cup test competitions were the best. After the successful Ski Cross World Cup stage, the preparations for the 2023 Freestyle Ski and Snowboard World Championships are embarked on [5].

The ski lifts in all four mountain resorts of Georgia are functioning fully in compliance with epidemiological standards and regulations: the number of people per cable car is determined, the access corridors to the cableways are arranged through nets, the flows are controlled by security police. No users will be allowed in the lifts without a mask. The staff of the Mountain Resorts Development Company and the Security Police do their best to ensure the epidemiological standards and regulations required for the mountain resorts, which are necessary for the full functioning of the ski lifts at the resorts. In case of non-compliance with the regulations, the resorts will cease to operate [5].



**Picture 4**



**Problems:** Snow tourism in general faces difficulties such as less snow due to climate change and the subsequent need for resorts to produce artificial snow, the considerable increase in costs, and the reduction in energy and water efficiency, so operating companies need to be on average economically sustainable. The negative effects of climate change, shortening the ski season and increasing the need for artificial snow, will force ski resorts to further implement these systems in the future in the expectation of more positive effects. The smaller resorts are not only profitable for themselves, but also have influence in the surrounding territory. They promote the profitability of other local businesses, such as restaurants, commerce, hotels, training companies, and complementary activities (which exist if the winter season is long and allows the practice of winter sports), generating jobs and acting as economic engines. However, if tourism activities harm the primary sector, natural resources will be lost, leading to the degradation of the landscape. [13].

The local study carried out in 2019 surveyed different age 100 respondents regularly visiting Gudauri and Bakuriani. The gained results reveal the motives of the participants to pick up the presented resorts: the location is acceptable for 71.6%; transportation availability is a plus for 34%; the possibility of hiring ski equipment is an advantage for 22.2% and safety matters for 17% of the surveyed. The problems stated include: disorders of access roads and sidewalks; inefficient snow cleaning; lack of adaptation for physically challenged people; public parking; chaotic development of construction; heating problem; tree felling; traffic pressure; rocky migration; vulnerability to construction; problems with communal and social infrastructure, environmental pollution and misbehavior, seasonal employment, lack of entertainment facilities [3].

**Picture 5**



**Recommendations:** Sustainability is certain from economic point of view and uncertain from the environmental perspective. Therefore, public administrations should evaluate sustainability and implement strategies to diversify the products and services on offer by creating adventure parks or facilities for specific indoor and outdoor sports, for example [13].

**Picture 6**



Drawing up a master plan and adoption of a regulation can solve the problem of chaotic development of construction. To eliminate the problem of environmental pollution, it is necessary to install separated waste bins and arrange a landfill to meet modern standards. Recycle solid waste that is not degradable in the short term.

The regulation of communal infrastructure is a state strategy, which should be presented in the general plan and one of the points should be its arrangement. To terminate the shortage of social infrastructure, it is essential to build medical points at the resorts, where the injured will be served urgently. In order to overcome the scarcity of entertainment facilities, it is substantial to additionally create new entertainment and food facilities. Strict regulation and monitoring is required to stop illegal or deliberate tree felling [3].

### **Conclusion**

Mountains cover 65-70% of Georgia's territory, so the advancement of winter sports and their inclusion in the education and physical education system is an important priority of the Georgian government and tourism sector [4]. Advantages like a charming landscape; high quality of tracks and discounted prices; the cheapest ski lift tickets; food and accommodation of the average price, convenience of Tbilisi, Batumi and Kutaisi airports are beneficial and contribute to coherent marketing when planned and organized properly [11]. Winter resorts are becoming a component of Georgia's sustainable development, providing employment opportunities and additional income for each Georgian family. In addition, the expansion of winter resorts will have a favorable impact on a number of tourism-related sectors, such as agriculture, transport, services and communications. Georgia's mountain-skiing resorts possess the potential to be sustainable in terms of development. However the identified barriers hampering enhancement need to be eradicated.



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## **THE IMPACT OF THE LAW “THE PLOWERS HAVE LAND” OF THE GOVERNMENT OF THE REPUBLIC OF VIETNAM ON THE SOCIO- ECONOMIC IN THE MEKONG DELTA (1970 – 1975)**

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### **Abstract**

The Law on “The Plowers have land” (also known as Law 003/70) is the content of the land reform program promulgated by President Nguyen Van Thieu of the Republic of Vietnam on March 26, 1970. This is an important content in the study of modern Vietnamese history. The implementation of Law 003/70 has had a strong impact on the socio-economic conditions of the Mekong Delta. In terms of land ownership, this Law has made a fundamental change in the confirmation of land ownership for farmers, thereby forming many middle-income farmers in rural areas. From the economic point of view, the process of certifying and transferring ownership rights to the means of production of farmers has created a motivation for the strong development of agricultural production activities. At the same time, it is the process of capitalizing with the landlord class from a rental economy to a commodity economy concentrated in urban areas. This has created the exchange of goods between urban and rural areas. In social terms, this Law both affects the ownership of the means of production in agricultural areas and promotes the penetration of the capitalist economy into the countryside, which has created a great transformation of middle-class farmers in the Mekong Delta of Vietnam from 1970 to 1975. The purpose of this study is to analyze the impacts of the Law on "The Plowers have land" on the socio-economic conditions in the Mekong Delta under the Republic of Vietnam regime from 1970 to 1975. This research result not only contributes to the socio-economic history of the Mekong Delta, but also provides a reference source for history research and teaching activities at Can Tho University.

**Keywords:** Law on The Plowers have land, economy – society, Mekong Delta, historical research, Republic of Vietnam

### **INTRODUCTION**

The Mekong Delta in Vietnam was a strategically crucial territory to the government of the Republic of Vietnam for the period 1970 – 1975 for its socio-economics aspect. The total land area of South Vietnam is approximately 17 million hectares, of which agriculture land is about 6 million hectares concentrated mainly in the Mekong Delta. The arable land which is suitable for the development of a variety of crops such as rice, rubber, coffee, tea, pepper and e.t.c., makes the area a vital agricultural economic region of the whole South Vietnam. According to Giao (1966), agriculture in the Republic of Vietnam was very developed because of the advantages of natural geography, climate, soil, dense system of rivers and canals providing abundant water and fertile alluvial source, less prone to flooding. In

addition, the climate was stable and regulated with two distinctly divided dry and rainy seasons. This was favorable for agricultural production in wet rice cultivation.

The population of South Vietnam within 20 years (1955 – 1975) increased from 13 million to 23 million people, of which the peasant force accounted for a large number in the Mekong Delta. This was both favourable in increasing labor resource for the socio-economy and disadvantageous as it posed a considerable pressure on food and social security issues. In such situation, it is required for the government of the Republic of Vietnam to reform their policies to solve economic and social problems in order to gain the support of the people of the South, particularly farmers in the Mekong Delta, as a solid mainstay for the existence of the government of the Republic of Vietnam (1970-1975).

Stemming from that practical requirement, President Nguyen Van Thieu of the Republic of Vietnam promulgated the “Land to the Tiller” Act 003/70 on March 26, 1970 in Can Tho. The implementation of 003/70 Act had profound impact on socio-economic factors of the Mekong Delta.

### **LITERATURE REVIEW**

Phuong's research (1968), *The Land Revolution in Vietnam* summarized the history of the land ownership regime and the land revolutions in both the North and the South of Vietnam. These analyzes were very insightful about the picture of Vietnam's land and agrarian society during the war years. At the same time, the study also provided new insights and some important experiences that were drawn from the organization and management of land, agriculture and rural areas in Vietnamese history.

With Tho's thesis (1970), he studied the influence of the Law "Land to the Tiller" and was defended at the National Academy of Public Administration in Saigon, the 15th Executive Board, in which he proposed many issues of land reform through historical periods. One of the highlights of this study was the comparison of land reform in Vietnam with a number of other countries in Asia. In addition, the author also analyzed the effects of the land reform on the national administration at that time and he commented on this policy.

Research by Giang (1972), *Land reform in the Republic of Vietnam* of the National Defense College presented an overview of the trends of land reform as well as mentioned the land reform in Vietnam through historical periods.

Vinh's research (1972), *Research and commentary on the Law "Land to the Tiller" of the Saigon National Academy of Public Administration, 15th Executive Board*, detailed the reasons for promulgating this law. At the same time, the author also presented comments on the application of this law in the South of Vietnam.

According to Luong (1976), the study of land policy of the US - RVN analyzed the land reform program of Ngo Dinh Diem, followed by Nguyen Van Thieu, these policies were actually reactionary, deceptive, venomous. Those programs, along with many other policies, made Southern agriculture-farmers heavily dependent on American aid.

According to research by Nhat (1983) on the land policies of Ngo Dinh Diem, Nguyen Van Thieu and other land policies of the opposing revolutionary forces in the South, these policies changed the class structure and agricultural economic structure. At the same time, it also showed the development and transformation of the economic structure of the middle peasant class in South Vietnam and especially the Mekong Delta before 1975.

Huyen's study of the Land Revolution in South Vietnam (1997) gave an overview of the land situation in South Vietnam in the period after 1945, and at the same time, this study presented the practical situation of the process implementing the land policy of the revolutionary government towards the southern countryside, especially the Mekong Delta countryside with many initial achievements. Thereby, the study also analyzed the content and critiques the

land policies issued and implemented by the government of the Republic of Vietnam during the period from 1955 to 1975 in South Vietnam.

Sen's (2005) study on the Development of Capitalism in South Vietnam (1954-1975) approached the socio-economic structure of South Vietnam in the period from 1954 to 1975, surveyed the formation and development of capitalist commodity production in all economic fields of South Vietnam. Accordingly, the study also analyzed the initial development of capitalism in agriculture and rural areas in the South (1954-1975) from the process of abolishing feudal production relations, the process of central agrarianization, the process of peasant differentiation, the initial formation of capitalist production relations in agriculture... This change was the result of rural programs and land policies issued by the government of the Republic of Vietnam and implementation over time.

According to Ha (2017), research on the economy of the Republic of Vietnam under the impact of US aid (1955-1975). Accordingly, the author presented the position of South Vietnam in the US aid policy after World War II and this aid affected all economic, political, and military fields. , society ... of the Republic of Vietnam. In addition, this study also addressed the land issue in terms of land ownership and the impact of agricultural mechanization programs, which contributed to changing the face of rural South Vietnam and especially the Mekong Delta.

The above research results provide useful and valuable resources, suggestions for inheritance and selection of research content in the process of implementing this research topic.

### **RESEARCH METHODOLOGY**

This study is carried out according to the following steps:

Step 1: Extract research documents at National Archives Center II, Ho Chi Minh City. This is a place to store documents with legal authenticity and high quality scientific value.

Step 2: Select documents related to the research issues from the collected documents. According to Hang et al. (2018), historical data selection is an important step in processing the necessary information for research. On that basis, analyze external factors for historical documents such as determining information about the origin, author, time and space of historical data formation.

Step 3: Conduct an internal analysis for historical document content such as determining historical content elements, considering the value of information and the position of historical documents in the event. et al., 2018).

This research is carried out through a combination of historical method and logical method to clarify the research questions posed:

Historical research method is a typical research method of historical research topic. According to Hang et al. (2018), on the basis of historical sources to study the value of this historical source. From here, classify, collect, select and decipher information in historical documents, and at the same time determine the authenticity of historical documents and the reliability of information that historical documents reflect. Accordingly, based on authentic national archives and locally exploited documents in Vietnam, this study applied historical methods to reconstruct the contents of the "Land to the Tiller" Act (also known as 003/70 Act). Thereby showing its impacted on agriculture in the Mekong Delta from 1970 to 1975.

Logical method is applied to systematize and link interrelated matters (Tao, 1995). On that basis, the study provides scientific comments and assessments on the impacts of "Land to the Tiller" Act 003/07 on the socio-economic situation in the Mekong Delta from 1970 to 1975.

Research techniques: this study is applied historical document analysis techniques to systematize documents and identify the core contents of historical issues to be studied. According to Holsti (1968), technique that made inferences by systematically and objectively

identifying distinctive features of a message. Accordingly, technical evaluation and analysis of historical documents were conducted. According to Hang et al. (2018), criticizing the elements constituting historical documents was analyzing and determining the authenticity and reliability of each element of historical documents such as information carriers, authors, dates, and locations and content of information in history.

## **RESEARCH RESULTS AND DISCUSSION**

Since the 1968 Tet offensive, the United States had to de-escalate and switch to Vietnamization strategy. The National Liberation Front of South Vietnam had prevailed in control of the vast countryside in the Mekong Delta, which forced the governments of the United States and the Republic of Vietnam to change their plans to regain control of land in the countryside. Subsequent to many agendas among the parties, Nguyen Van Thieu – the President in power of the Republic of Vietnam – signed Decree no. 003/70 on 26/03/1970 in Can Tho about the promulgation of “Land to the Tiller” Act. The Act includes 6 chapters and 22 articles. It revolved around issues such as privatizing farmers, creating equal promotion opportunities for all citizens, expropriating land with compensation that was not directly cultivated by landlords, and granting those lands free of charge to farmers, abolished the farming system and decentralized public land.

Accordingly, the basic content of this Act is:

Lands not directly cultivated by landlords would be expropriated and adequately compensated at reasonable prices. Land owners were compensated 20% in cash, the remaining 80% were paid in bonds with an interest rate of 10%/8 years. The value of the field was specified at 2.5 times the value of the yield of rice harvested from that field.

+ The expropriated land was prioritized and allocated free of charge to tenant farmers (this law stipulates 3 ha in the Mekong Delta and 1 ha in the Central Coastal Highlands). Landowners directly cultivating could only keep a maximum of 15 hectares in the Mekong Delta or 5 hectares in the Central region.

+ This Act did not apply to land owned by religious organizations and family-owned land. The aim was to grant 1,500,000 ha of farmland free of charge to 80,000 households and issue certificates of land ownership to farmers.

+ The Act also stipulated that the person who received land under the “Land to the Tiller” should not transfer or re-sell that land for 15 years.

There are also three new clauses in this Act:

+ Landlords should not force tenant-farmers to pay rent of the years prior to 1970.

+ Farmers received land granted by the Southern National Liberation Front would also be exempted from tax for a period.

+ Farmers received land granted by the Southern National Liberation Front would receive a contract to officially own the land.

Basically, “Land to the Tiller” Act issued by the government of the Republic of Vietnam (1970-1975) contributed to the transformation of the economy and rural society of the Mekong Delta:

+ Compared with the previous land reform program of President Ngo Dinh Diem (1955 - 1963), the Act on Land to the Tiller abolished the farming system, abolished feudal production relations and the method of land rent exploitation. Furthermore, this Act allowed for the issuance of certificates of land ownership by farmers legally. According to the report of the Ministry of Civil Affairs and Chieu Hoi (1975), 1,119,703 farmers were allocated with a land area of 1,304,522 acres, of which 1,049,359 land certificates, equivalent to 1,169,654 soil samples, as of March 1975. Thereby, the Act "Land to the Tiller" promulgated by President Nguyen Van Thieu has made significant progress, such as the free allocation of land to farmers, the issuance of securities certificates to affirm the private ownership of the



land of the farmers. farmer. This contributed to the elimination of subsistence farming and intermediaries and has the effect of promoting the return of agriculture (Truong, 2020).

+ The importance of this Act created a class of small farmers in the Mekong Delta with a large number and a reasonable farming scale, in which the family farm was considered the basic business unit. Through the strategy of solving the land problem satisfactorily for farmers in relation to landlords, the government of the Republic of Vietnam under President Nguyen Van Thieu hoped to exert a great influence on the people of South Vietnam. South, especially farmers in the Mekong Delta. According to Lang (1972), the purpose of this program was to create a stable situation in the countryside, which was a condition for democracy building while eliminating all exploitation of the peasantry from the Communist side.

+ By promulgating “Land to the Tiller” Act, President Nguyen Van Thieu accelerated the process of developing the middle-peasant class associated with the abolition of the landlord class and the farmer-tenant system, along with the substantial removal of feudal rent. On that basis, the government in power constructed a middle-peasant class that played the determined role in agricultural production. According to Nhat (1983), the process of formation and change of the middle peasant class in the South was associated with the change in land and social structure in the southern countryside.

According to Tran (1991), survey data from the Southern Agricultural Reclamation Board conducted in 1978 showed that in the Mekong Delta: middle farmers accounted for 70% of the rural population, 74.5% of the labor force, 80% of the land, 60% of total mechanical energy, over 70% of small mechanical machines, and 93% of cattle pulling power.

+ The implementation of the "Land to the Tiller" Act together with rural modernization policies in the early 1970s of the 20th century contributed to building a new development in the agricultural economy of the Mekong Delta. At the same time, this law improved rice productivity and output, and farmers' lives are markedly improved. To made this argument effective, President Nguyen Van Thieu implemented a policy of importing high yielding rice varieties such as IR-5, IR-8, IR-20... This not only improved productivity in agriculture but also a solution to help reduce pressure on rice imports for Vietnam. According to the survey results in Long An by Callison (1976), after two years of implementing the Act "Land to the Tiller", the rice production increased by 27%, the selling price of agricultural products increased by 141%.

**Table 1.** Rice Production situation (1969 – 1975)

YEAR	THAN NONG SEEDS (IR)			TRADITINONAL SEEDS			TOTAL	
	Area (1000ha)	Production (1000 ton rice)	Productivity (ton/ha)	Area (1000ha)	Production (1000 ton rice)	Productivity (tán/ha)	Area (1000ha)	Production (1000 ton rice)
1970	519	2100	4,5	1992	1329	0,66	2511	3429
1971	674	1578	2,3	1951	2216	1,13	2625	3794
1972	835	1859	2,2	1865	1950	1,04	2700	3809
1973	890	1914	2,1	1940	2301	1,18	2830	4212
1974	964	2102	2,1	1939	2169	1,11	2907	4271
1975	1900	2625	1,1	1100	2055	1,87	3000	4600

Source: compiled by the authors

The rice trade deficit reflected the urgent situation of food security, President Nguyen Van Thieu focused all his efforts to restore and develop agricultural production through the program "Land to the Tiller", and combine with the support of the US government in programs such as import of new rice varieties, fertilizers, mechanization, to improve the appearance of the countryside in the South. According to Phong (2004), said that in 1967,

agronomist Chu Tam Luan had tested IR-5 rice in some places in the southern delta of Vietnam, with very positive results. These rice varieties had high yield, short growing cycle, contributing to the promotion of intensive farming, increasing the crop and increasing the rice production. Indeed, the number of rice imports in South Vietnam decreased compared to previous years. According to Huong's research (2017), the impact of US aid policies, improvements in farming techniques, mechanization in agriculture, large quantities of fertilizers, pesticides, new rice varieties, contributed to improve agricultural production in the South of Vietnam.

According to the research of Dinh (1991), the implementation of the green revolution with the introduction of new varieties into agriculture starting in 1969 contributed decisively to the change in the thinking of farmers in the Mekong Delta. In 1968, the cultivated area of rice fields was 41,000 hectares, by 1973 it had increased to 830,000 hectares. The Southern rural area, especially the Mekong River Delta, formed a credit banking system that included both government and private investment in agriculture.

It can be said that before 1975, the rural appearance of the Mekong Delta really changed under the strong impact of the Act "Land to the Tiller". Specifically, the middle peasant class became the central figure, not only accounting for a large proportion of the number, labor force, and land ownership scale, but also a model for new production methods in the countryside. It even played a leading role in agricultural and commodity production. According to Trong (2020), the growth of the middle peasant class was one of the determining factors in the change in production methods and occupation structure in agriculture and rural areas in the Mekong Delta before 1975.

However, the land policy promulgated under President Nguyen Van Thieu also had many limitations in the implementation of this Act. In fact, the decentralization of land to farmers still had many obstacles due to the overlapping of land control rights between two opposing forces: the Government of the Republic of Vietnam and the Provisional Revolutionary Government of the Republic of the South. Vietnam.

According to research by Lang (1972), in terms of society, the program "Land to the Tiller" changed the concept of land ownership, but it caused many social injustices. From an economic point of view, this program did not clearly and specifically define the economic goals of the country that would be achieved after implementing the program. In terms of politics, the limitations and social inequality of this program created an opportunity for political attack from the Communists.

## CONCLUSION

In conclusion, "Land to the Tiller" Act promulgated by the government of the Republic of Vietnam in 1970 posed an impact on the socio-economic life in the Mekong delta. In terms of land ownership, this Act made a fundamental change in the confirmation of land ownership for farmers, thereby promoting the phenomenon of rural centralization. In terms of economy, the acknowledgement and transferring of ownership of production materials to farmers contributed to the solid development of agricultural production. At the same time, it was that capitalization process with the landlord class from the traditional rental economy to the commodity economy activities concentrated in the cities, which created the exchange of goods between the cities. developed urban and rural areas. In terms of society, this Act not only affected the ownership of the means of production of agricultural areas, but also accelerated the process of capitalist economic penetration into the countryside. That created a great transformation of the middle class peasants in the Mekong Delta region of Vietnam from 1970 to 1975. This study's result leaves some critical historical experience for the sustainable development strategy of agriculture, countryside and farmers in the Mekong delta: adequately solving land problems for farmers, building agricultural economic

development in adapting to the periodical crisis, applying scientific and technological achievements creatively in both theoretical and practical way in order to promote in agricultural production in Vietnam in the international integration period.

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## FOREIGN DIRECT INVESTMENTS AND SYRIAN REFUGEE ENTREPRENEURS IN TURKEY

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### **Abstract**

This study was carried out in the time period between March and May, 2021 on 38 companies that have directly made investments and also that operate in the city with their Syrian and refugee identities. The aim of the study is to measure the effect of war, violence and migration waves, all of which have dominated the Middle East, especially after the Arab Spring, on direct foreign investments in Gaziantep. In the study, it has been aimed to understand this measurement from the investors' own perspectives. However; while doing this, it has also been aimed to contribute to the determination of what must definitely be done and what can possibly be done about the issue based on the assessment of it as the host country. Therefore, the study holds importance in terms of being among the rare studies that have targeted direct foreign investors by considering only refugee identity. The questions that have been prepared for this purpose, have been sent to twenty-seven limited liability companies, four joint-stock companies, two ordinary companies, one open company, and one business partnership through Google form by using survey technique. According to data obtained from the FDI (Foreign Direct Investment) companies, it has been noticed that the situations that scare investors, most are, in turn, the lack of funding, the lack of social support and the lack of motivation. Additionally, some other situations that Syrian refugee entrepreneurs consider primarily important are, in turn, avoiding risks, the lack of information and experience about the system (bureaucracy, financial, political), the lack of good idea, other problems (health, age, children) and finally the lack of confidence. They have stated that there aren't many problems regarding ethnicity, religion, nationality or culture, adding that they have problems only in language. It has been determined that they view refugee policies positively as foreign investors but they have emphasized that they have hesitations and worries, especially in the field economy, due to some systemic problems.

**Keywords:** Foreign Direct Investment (FDI), strategic determinants, Turkey, Refugee, Syrian, Driving-forces

### **INTRODUCTION**

One of the most important sources of investment in the world is foreign investment and on the other hand, one of the biggest problem is refugees. Turkey is at the center of that situation. The aim of the study is to measure the effect of war, violence and migration waves on direct foreign investments in Gaziantep.

In the study, it has been aimed to understand at this measurement from investors' own perspectives and the target group is Syrian direct foreign investors. However; while doing this, it has also been aimed to contribute to the determination of what must definitely be done and what can possibly be done about the issue based on the assessment of it as the host country. Therefore, the study holds importance in terms of being among the rare studies that have targeted direct foreign investors by considering only refugee identity.

Developing countries take the first place and developed countries take the second place among those making direct investments around the world (UNCTAD, United Nation Conference on Trade and Development, 2021a). The importance of foreign direct investment

(FDI) was emphasized by Dunning for the first time and started to be discussed from different perspectives (Dunning J. , 2002).

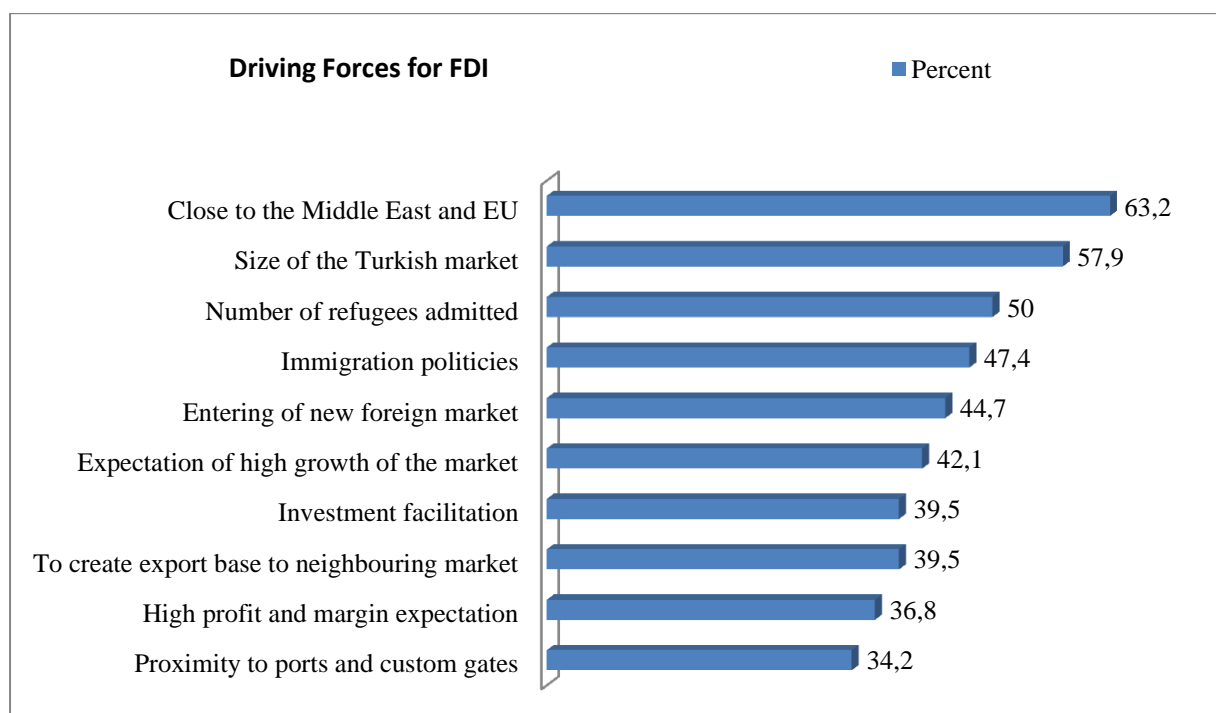
According to the Institute of the European Cooperation Economic Research Association, market size, geographical location, skilled and educated workforce, proximity to the EU are considered attractive factors for FDI. For FDI, manufacturing, tourism, energy, food, telecom, IT, R&D, agriculture are the key attractive sectors, respectively, while EU accession, political stability, low cost advantage, legislation and economic growth are seen as opportunities (Loewendahl & Ertugal- Loewendahl, 2001, p. 40).

## MATERIAL AND METHODS

This study was carried out in the time period between March and May, 2021 on 38 companies that have directly made investments and also that operate in the city with their Syrian and refugee identities. The study question is what driving forces are for the Syrian refugees investors and descriptive analysis was used in the study. A survey that has been prepared for this purpose, has been sent to twenty-seven limited liability companies, four joint-stock companies, two ordinary companies, one open company and one business partnership through Google form by using survey technique.

## RESULTS

The results of the research that was collected from 38 Syrian businesses that operate in Gaziantep which make direct investments are shown below. The driving-forces and motivator factors from the perspective of entrepreneurs have been studied and the findings of the analysis are shown below. Acceptance of motivator factors is shown in the Figure 1.

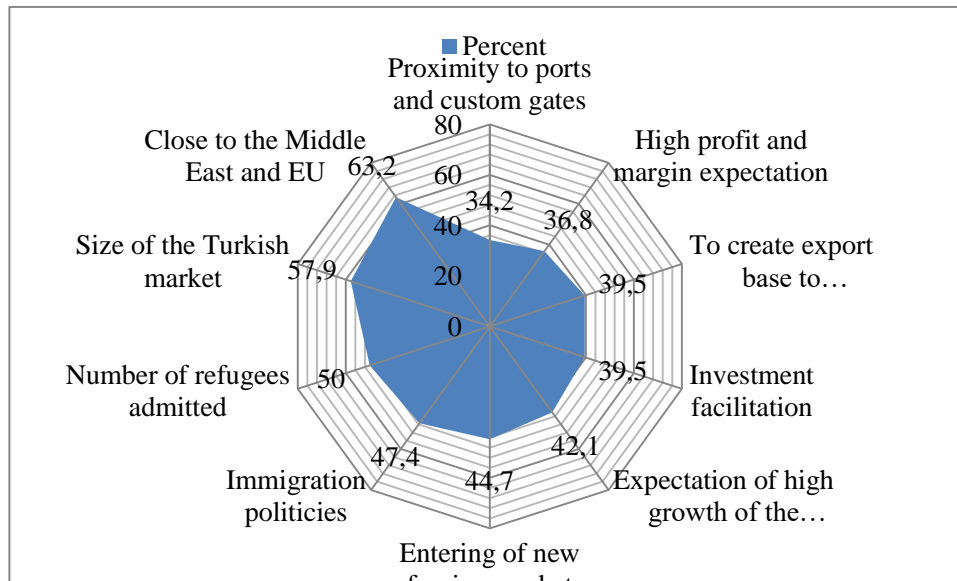


**Figure 1. Driving Forces for Syrian Investor in Gaziantep, Turkey**

The top ten driving forces and motivators are close to the Middle East and EU, size of the Turkish market, number of refugees admitted, immigration politicizes, entering of new foreign market, expectation of high growth of the market, investment facilitation, to create export base to neighbouring market, high profit and margin expectation, proximity to ports and custom gates. That result is also supported by literature, both domestic and international.

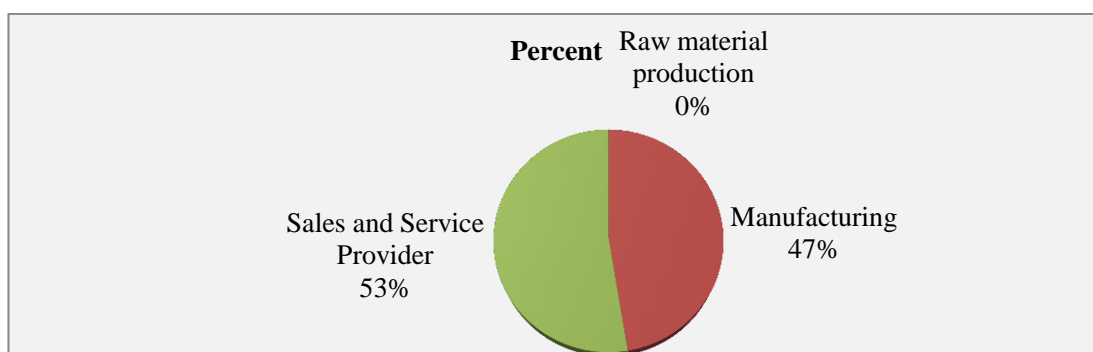


Turkey is a prominent center of attraction for Syrian investor as many other FDI countries that invest to Turkey because of strategic location, rapid economic growth, support a developing domestic market and growing local demand, investor-friendly environment which facilitates and enables the development (Presidency of The Republic of Turkey Investment Office, 2021). Governmental policymakers at the national and regional levels about the number of refugees admitted and immigration policies have an important role in targeted Syrian foreign direct investment as other host countries (Fallon & Cook, 2010, pp. 337-338; Thomsen, Investment Patterns in a Longer-Term Perspective”, OECD Working Papers on International Investment, 2000/02, OECD Publishing, 2000, p. 17; Dumludağ, Saridogan, & Kurt, 2007, p. 2; Bitzenis & Papadimitriou, 2011, p. 351).



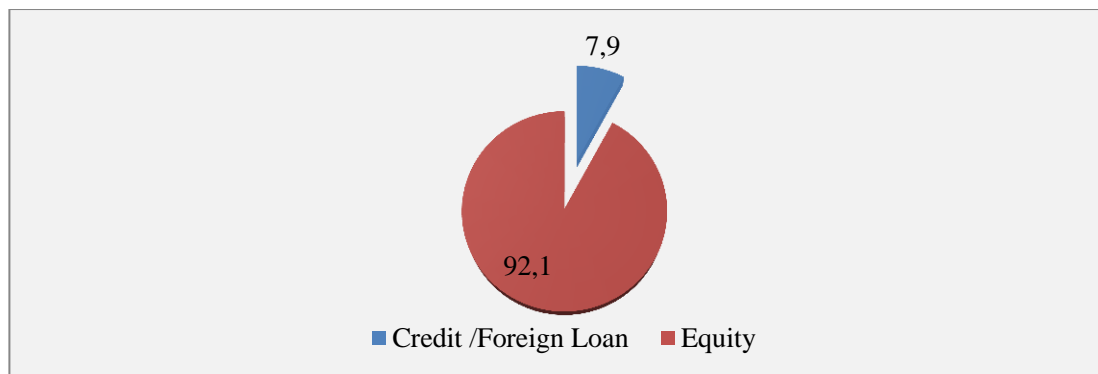
**Figure 2. Survey Outputs for Syrian FDI Investor in Gaziantep, Turkey**

The Figure 2 shows that all of the percent of each driving force and motivator factors Syrian refugees entrepreneurs the most important is close to the EU and Middle East while the last tenth one is proximity to ports and custom gates.



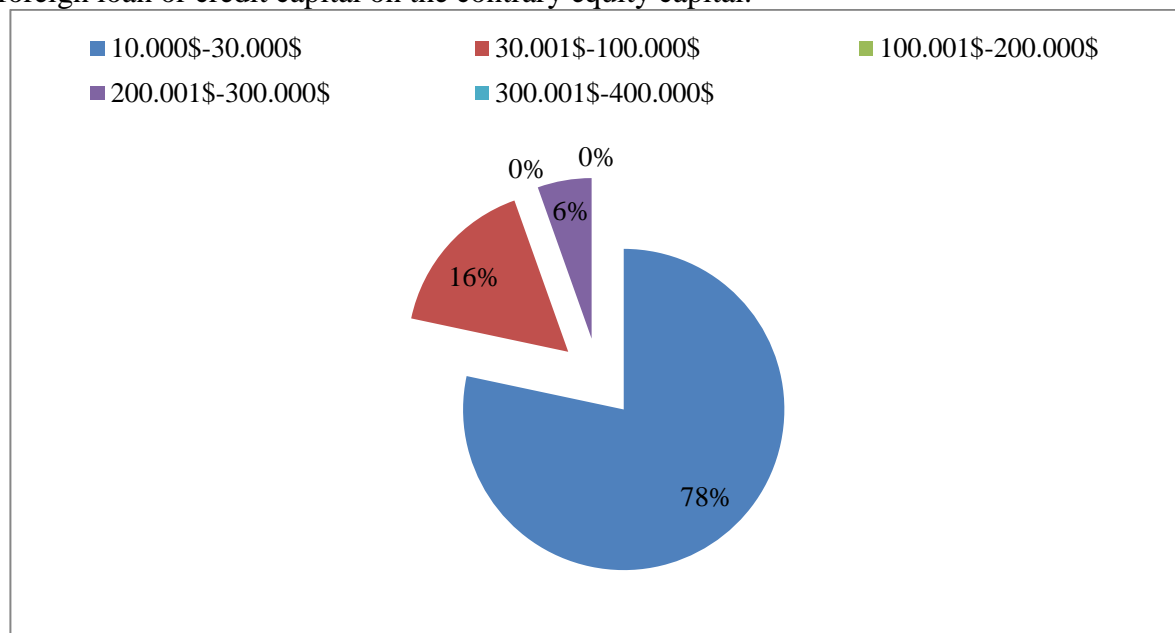
**Figure 2. Invested Sectors of Syrian Refugees Investor in Gaziantep, Turkey**

As can be seen in the Figure 2 the Syrian investors are whom preference sales and service provider rate is fifty three percent, manufacturing rate is forty seven percent.



**Figure 3. Syrian Investment Financing Type in Gaziantep, Turkey**

Figure 3 shows that the Syrian enterprises the most used investment financing type is not foreign loan or credit capital on the contrary equity capital.



**Figure 4. Syrian Investors' Annual Earning in Gaziantep, Turkey**

Enterprises that can be seen in the Figure 4 shows that the most annual earnings for 2021 between ten thousand dollars and thirty thousand dollars.

## DISCUSSION

In this study results are similar to literature. According to the study, the strongest driving force/motivator factor is “close to the Middle East and EU” like literature (Thomsen, 2000, p. 15) so the doors of Europe should be opened to refugees investors at least as much as Turkey. On the other hand, Turkish Government can make new regulations or law for refugees to attractive or sending to many other countries up to its own strategy and according to its benefits (Agwu, 2014, p. 318; Tan, Foreign direct investment, a movement toward investors' centricity, a behavioral perspective. (2018). Dissertations and , 2018, s. 23). Second attractive FDI(Foreign Direct Investment) force is the Turkish market size so European and Central Asia can be the other opportunity or choice for refugee entrepreneurs (Fallon & Cook, 2010, p. 21; Dumludağ, Saridogan, & Kurt, 2007, p. 13; Kahouli & Maktouf, 2015, p. 358; Morisset, 2000, p. 107). Number of refugees admitted by country is the third one and enterprises that do not make a high profit and receive cash support can be provided with training and consultancy services to increase performance by government. The government

new strategies for future should have and create high-quality jobs by maintaining Turkey's central and competitive position also should help against from its region that probability to new refuegues wave (Choi, Lee, & Shoham, 2016, p. 114; Young, Hood, & Wilson, 1994, p. 143; Agwu, 2014, p. 318). The last thing about the study is proximity to port and customs gates' importance. Study shows similar result to literature that the port and gates are attractive but not as attractive the other determinants for FDI (Thomsen, Investment Patterns in a Longer-Term Perspective", OECD Working Papers on International Investment, 2000/02, OECD Publishing, 2000, p. 5).

## CONCLUSIONS

Turkey is a prominent center of attraction for Syrian investors as other many countries' investors. The most attractive driving factors for refugee entrepreneurs to Turkey is close to Europe and size of the market. The Syrian investors are more willing to sales and provider than manufacturing. On the other hand, there is no preference about raw material production. They benefited from international organizations like the European Union(EU), Small and Medium Enterprises Development Organization (KOSGEB) with the Republic of Turkey Ministry of Industry and Technology as an investor who received support or incentives via cash, consultant. However, the annual earnings of businesses as earnings are not known to be a high scale range.

It is known that enterprises generally invest in developing countries from developed countries in order to increase their profitability (Tan, 2018, p. 7). On the other hand, making direct investments in border countries is cultural, but the situation of Syrian entrepreneurs in Turkey is different because these investors consist of entrepreneurs who have to migrate from a war-torn country and have to make direct investments due to the struggle for security and survival.

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## THE IMPACT OF MODERN TRENDS IN SCIENTIFIC RESEARCH ON THE DEVELOPMENT OF THE KNOWLEDGE ECONOMY

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### Xülasə

Məqalədə elmi tədqiqatların inkişafındakı müasir tendensiyaalarının bilik iqtisadiyyatının inkişafına təsiri, elmi tədqiqatların inkişafı haqqında geniş məlumat verilir. Məqalədə eyni zamanda, elmi tədqiqatların inkişafındakı müasir tendensiyalar tədqiq edilərək, bilik iqtisadiyyatının inkişafına təsir edən amillər sadalanır və müasir dövrdə yaranan yeni tədqiqat sahələrinin əhəmiyyəti göstərilməklə, yeni ixtisas sahələrinin əhəmiyyəti qeyd edilir. Eyni zamanda məqalədə, Azərbaycan Respublikasının qabaqcıl ölkələrin inkişaf tendensiyalarına uyğun, bilik iqtisadiyyatının inkişafı üzrə qəbul olunan konsepsiyalardan bəhs olunmuşdur.

Elmi tədqiqatların inkişafındakı müasir tendensiyaların təsvirinin aydınlığı, sadəliyi bilik iqtisadiyyatında ilkin texniki tapşırığın işlənilib hazırlanmasına və resurs idarəetmə sisteminin təşkil olunmasına səbəb olur. Elmi tədqiqatların yüksək səviyyədə aparılması və təcrübələrin istehsalata tətbiq olunması, bilik iqtisadiyyatı modelinin dəyişikliklərə uğramasına və rəqabət qabiliyyətli idarəetmə sisteminin təkmilləşdirilməsinə imkan verir. Bu baxımdan məqalədə, bilik iqtisadiyyatının formalaşmasında idarəetmə sisteminin təkmilləşdirilməsini aktivləşdirməklə, elmi tədqiqatların səmərəliliyin müəyyənləşdirilməsi yolları göstərilmişdir. Bilik iqtisadiyyatının formalaşmasında elmi tədqiqatların səmərəliliyin müəyyənləşdirilməsi yolları, istifadənin səmərəliliyini təmin etmək üçün, milli idarəetmə modelinin yaradılmasına ehtiyac olduğu vurğulanmışdır.

Məqalədə, elmi tədqiqatların inkişafındakı müasir tendensiyalar və bilik iqtisadiyyatının inkişafına təsiri, yeni tələblər səviyyəsi aydınlaşdırılaraq, mövzunun aktuallığı əsaslandırılmışdır. Elmi tədqiqatların inkişafındakı müasir tendensiyaların təsviri, konseptual modelləşdirmənin nəticələri təqdim olunmuş, bilik iqtisadiyyatının inkişafının dünya iqtisadiyyatına təsiri göstərilmişdir.

Bilik iqtisadiyyatının nəzəri əsaslarının inkişafı və onun sistem qurma xüsusiyyətlərinin öyrənilməsi müasir iqtisad elmində ən vacib tədqiqat sahələrindən biridir və onun formalaşması məsələlərinin praktiki əhəmiyyəti bir sıra düzəltməyin məqsədəuyğunluğunu müəyyən edir.

Məqalədə, bilik iqtisadiyyatının inkişafında elmi – tədqiqat sahələrin əhəmiyyətini qeyd etməklə, bilik iqtisadiyyatının inkişafında elmi tədqiqatların düzgün seçilməsinin əhəmiyyətini vurğulanaraq, yarana biləcək problemlər göstərilir və bilik iqtisadiyyatının inkişafında qarşıya çıxan bəzi problemlərin aradan qaldırılması üçün, Azərbaycan Respublikasında bilik iqtisadiyyatının inkişafında elmi tədqiqatların müasir tələblər səviyyəsində qurulması üçün təklif və tövsiyələr irəli sürmüşdür.

**Açar sözlər:** Bilik iqtisadiyyatı, elmi tədqiqatlar, dünya iqtisadiyyatı, rəqabət qabiliyyətli iqtisadiyyat, idarəetmə mexanizmi.

## BİLİMSEL ARAŞTIRMALARDAKİ MODERN EĞİLİMLERİN BİLGİ EKONOMİSİNİN GELİŞİMİ ÜZERİNDEKİ ETKİSİ

### Özet

Makale, bilimsel araştırmanın geliştirilmesindeki modern eğilimlerin bilgi ekonomisinin gelişimi, bilimsel araştırmanın gelişimi üzerindeki etkisi hakkında kapsamlı bilgiler sunmaktadır. Makale ayrıca bilimsel araştırmanın gelişimindeki mevcut eğilimleri inceler, bilgi ekonomisinin gelişimini etkileyen faktörleri listeler ve modern zamanlarda yeni araştırma alanlarının önemini vurgulayarak yeni araştırma alanlarının önemini vurgular. Aynı zamanda makale, Azerbaycan Cumhuriyeti'nin ileri ülkelerin gelişme eğilimlerine uygun olarak bilgi ekonomisinin gelişimi için benimsediği kavramları tartışmaktadır.

Bilimsel araştırmanın geliştirilmesindeki modern eğilimlerin tanımının netliği ve basitliği, bilgi ekonomisindeki ilk teknik görevin ve kaynak yönetim sisteminin organizasyonunun geliştirilmesine yol açar. Üretimde yüksek düzeyde bilimsel araştırma ve deneyim uygulaması yürütmek, bilgi ekonomisi modelinin rekabetçi yönetim sistemini değiştirmesine ve iyileştirmesine izin verir. Bu bağlamda makale, bilgi ekonomisinin oluşumunda yönetim sisteminin iyileştirilmesini etkinleştirerek bilimsel araştırmanın etkinliğini belirlemenin yollarını göstermektedir. Bilgi ekonomisinin oluşumunda bilimsel araştırmaların etkinliğini belirlemenin yolları, kullanım verimliliğini sağlamak için ulusal bir yönetim modeli oluşturma ihtiyacı vardır.

Makale, bilimsel araştırmanın geliştirilmesindeki mevcut eğilimleri ve bunun bilgi ekonomisinin gelişimi üzerindeki etkisini, yeni gereksinimlerin seviyesini açıklığa kavuşturmakta ve konunun alaka düzeyini doğrulamaktadır. Bilimsel araştırmanın gelişimindeki modern eğilimlerin tanımı, kavramsal modellemenin sonuçları, bilgi ekonomisinin gelişiminin dünya ekonomisi üzerindeki etkisi sunulmaktadır.

Bilgi ekonomisinin teorik temellerinin geliştirilmesi ve sistemik özelliklerinin incelenmesi, modern ekonominin en önemli araştırma alanlarından biridir ve oluşumuyla ilgili konuların pratik önemi, bir dizi uygunluğu belirler.

Makale, bilgi ekonomisinin gelişmesinde bilimsel araştırmanın önemini vurgulamakta, bilgi ekonomisinin gelişmesinde bilimsel araştırmaların doğru seçilmesinin ve Azerbaycan Cumhuriyetinin bilgi ekonomisinin gelişmesinde modern araştırmaların kurulmasının önemini vurgulamak için öneri ve tavsiyelerde bulundu.

**Anahtar Kelimeler:** Bilgi ekonomisi, bilimsel araştırma, dünya ekonomisi, rekabetçi ekonomi, yönetim mekanizması.

### Summary

The article provides comprehensive information on the impact of modern trends in the development of scientific research on the development of the knowledge economy, the development of scientific research. The article also examines current trends in the development of scientific research, lists the factors affecting the development of the knowledge economy, and highlights the importance of new research areas in modern times, emphasizing the importance of new research areas. At the same time, the article discusses the concepts adopted by the Republic of Azerbaijan for the development of the knowledge economy in accordance with the development trends of the advanced countries.

The clarity and simplicity of the description of modern trends in the development of scientific research leads to the development of the first technical task in the knowledge economy and the organization of the resource management system. Carrying out a high level of scientific research and application of experience in production allows the knowledge economy model



to change and improve the competitive management system. In this context, the article shows ways to determine the effectiveness of scientific research by enabling the improvement of the management system in the formation of the knowledge economy. Ways to determine the effectiveness of scientific research in the formation of the knowledge economy, there is a need to create a national management model to ensure the efficiency of use.

The article clarifies the current trends in the development of scientific research and its impact on the development of the knowledge economy, the level of new requirements and confirms the relevance of the topic. The description of modern trends in the development of scientific research, the results of conceptual modeling, the impact of the development of the knowledge economy on the world economy are presented.

The development of the theoretical foundations of the knowledge economy and the study of its systemic properties is one of the most important research areas of modern economics, and the practical importance of the issues related to its formation determines a number of relevance.

The article emphasizes the importance of scientific research in the development of the knowledge economy, made recommendations and recommendations to emphasize the importance of the correct selection of scientific research in the development of the knowledge economy and the establishment of modern research in the development of the knowledge economy of the Republic of Azerbaijan.

**Keywords:** Knowledge economy, scientific research, world economy, competitive economy, management mechanism.

## Introduction

The knowledge economy is the highest stage of development of the innovative economy and is the main foundation of the knowledge society or information society. The main factors of the knowledge economy are knowledge and human capital. It should be noted that the term "knowledge economy" should be distinguished from innovation economy. As human capital is a key factor in the formation and development of the knowledge economy, this stage of economic development is one of its unique features that distinguishes it not only from all previous forms of economy, but also from the postindustrial economy frequently defined by the knowledge economy.

The rapid development of scientific technology in modern times increases the urgency of the problems of formation and study of the characteristics of the knowledge economy. The term "knowledge economy" or "knowledge-based economy", introduced to science by the Austrian-American scientist Fritz Machlup in the late 1990s, has become widespread in the scientific field and has entered a new stage of development.

In modern times, the transition of the world economy to a new level of information is directly related to the growing role of theoretical knowledge. In this regard, the development of high-tech industries, the process of increasing the share of the service sector (structural changes), created needs for theoretical analysis of systematic changes in micro and macro levels of economy requiring special research in the background of emergence of trends in the impact of information network technologies, new theories of modern economics (post-industrial theory, "new", global network, information economy theory).

In the modern conditions when science has become a type of economic activity, the number of people working in the field of scientific research continues to grow, and scientific activity is becoming a key factor in the creation of national wealth and moral values. As we know, scientific activity leading to the consumption of various types of resources, causes creation of economically new products and services, interaction of institutions and organizations, creation of an innovation system. The effectiveness of the innovative development of this

system does not benefit from the efficient operation of individual economic units, but from their collective activity in the process of production and use of science, their interaction with each other.

Carrying out research and development in scientific activity, implementation of research and development, provision of scientific and technical information, patent, permit and other scientific and technical services, accounting and personnel service for economic service of scientific organization, material and technical support, office service, etc. is used to divide the staff of scientific organizations by categories. For the implementation of scientific activity, the formation of the infrastructure of science requires the inclusion of information, production and economic services, logistics, social and household services in the infrastructure of science. As seen from here, we see the rapid development of modern trends in scientific research as the volume of scientific research and development changes over time. For example, fundamental research focuses on the theoretical solution of the problem, it is of a search nature, and it determines the ways and scope of applying 5-10 % fundamental research to practice. The probability of a positive result in applied research is 80%.

Based on the researches, we can say that the rapid formation of the knowledge economy, as a full-fledged subject of the world economy, is one of the factors that make it one of the main conditions for sustainable development of our country. Consequently, the formation of the knowledge economy and the features of this process are urgent both from a scientific and practical point of view, as well as in direct proportion to the development of modern trends in scientific research. Analysis in this area makes it necessary to pay attention to the theoretical aspects of this economic phenomenon on one hand and to the experience of forming a knowledge economy in countries where it is already large-scale on the other hand.

As it is known, human capital is the main productive factor in developed countries. According to the UN Human Development Report, the proportion of human capital in the United States, Germany, Finland, Japan, Switzerland and many other developed countries is 80% of their national wealth. We see the growing importance of human capital in the creation of the latest technologies, in the development of industries, in increasing efficiency, in the development of science, culture, health, security and social spheres. [2]

The issue of the impact of modern trends in scientific research on the development of the knowledge economy is an urgent issue, and there are many problems in this area that need to be addressed. Thus, the accumulation and structure of human capital, which are considered to be the main factors of the knowledge economy, the role of knowledge as a public benefit, intellectual property, management of the cognitive environment of the enterprise and other issues are subject to detailed scientific review and analysis. In practice, the main features of the knowledge economy as a systemic phenomenon are not sufficiently revealed, the terminology in this area of economic research is incomplete. Researchers believe that the theory of knowledge economy is in the stage of formation as an integral concept that describes real changes in the modern economy, and it needs to be studied systematically, requiring a comprehensive study and scientific analysis.

The XXI century is also called the century of innovation. The system of constant retraining of highly qualified personnel prevails within the organization of the innovation period. Based on this and also on the basis of the study of relevant concepts, it can be noted that it is a mechanism for the creation of intellectual capital, which can be considered the basis of the new laws of the knowledge economy. An important feature of the knowledge economy is the exponential growth of knowledge-intensive industries and markets provided with the new economic mechanism of the type of lease. The exponential increase in the amount of knowledge that forms the basis of this example is governed by Engels' law, so the increase in knowledge is proportional to the amount of data already collected:

$$dV(t) / dt = k \cdot V(t), [5]$$

here,  $V$  – amount of collected knowledge,  $k$  – proportionality coefficient,  $t$  - time.

There is an (1) exponential solution of differential equation:

$$V(t) = ekt \text{ [5]}$$

It should be noted that given the high scientific intensity of the product and its network nature, the exponential growth of production, increase in, and distribution of investment return is practically due to the activities of high-tech companies such as Microsoft, Nokia, Citrix, Symantec, Adobe Systems, Canon, Google, IBM, LG and this suggests that some laws of the knowledge economy can be extrapolated to a number of countries. The study of the characteristics of a developing economy in terms of the above institutional and rental approaches requires the identification of a knowledge economy that differs from its traditional interpretation only in terms of the impact of the economy, research, production sector and dissemination of knowledge about the economy and its quantitative indicators. [5]

Thus, the insufficient scientific development of the problem is of course of practical importance for the economy of the Republic of Azerbaijan. There is a greater need to analyze the position of scientific research in the development of the knowledge economy as a type of economy in which the production and implementation of knowledge and innovations play a crucial role in ensuring long-term sustainable development.

In this area, it is necessary to further develop theoretical views on the knowledge economy, to identify and systematize the development trends of economic relations under the increasing influence of the "knowledge" factor in the modern economy. To achieve this goal, the following tasks are required:

- to develop a theoretical and methodological approach to the study of knowledge economy, determining the place of this theory among the concepts of modern economics developed in science;
- to identify and analyze the features and internal laws of the knowledge economy within the changing system of economic relations of business subjects;
- to study the main directions of development and forms of manifestation of the knowledge economy;
- to study the impact of modern trends in scientific research on the development of the knowledge economy, based on the study and comparative analysis of data from world experience, reflecting the changes in the socio-economic practice of recent decades;
- To take into account the peculiarities of the formation of the knowledge economy in the Republic of Azerbaijan, to reveal its institutional features and to accelerate the process of formation at this stage, it is important to effectively use modern trends in scientific research.

The use of general scientific principles of understanding economic events - systematic, dialectical approaches, grouping methods, historical and logical analysis of theoretical and practical materials makes it possible to consider the studied phenomena and processes, to coordinate the main features and forms of manifestation, to identify existing contradictions. More effective results can be obtained using methods such as analysis, synthesis, deduction and induction, modeling with description of the studied processes, matching, generalization and comparison. The settlement of the set problems guarantees more effective results in the future.

### **THE IMPACT OF MODERN TRENDS OF SCIENTIFIC RESEARCHES ON DEVELOPMENT OF KNOWLEDGE ECONOMY IN AZERBAIJAN REPUBLIC**

Currently, the development of the knowledge economy is considered to be one of the most important factors affecting human capital. That is why the knowledge economy is understood as a type of economy in which the main factor of development is the knowledge concentrated in human capital and the information environment in which this capital is used. It is an

economy provided by the creation of knowledge in the form of high-tech products and services, the emergence of new researches, the dissemination and application of scientific knowledge. In a knowledge-based economy, information and knowledge that are inexhaustible by nature, interchangeable and reproducible in the process of application come to the fore, which requires the development of new concepts.

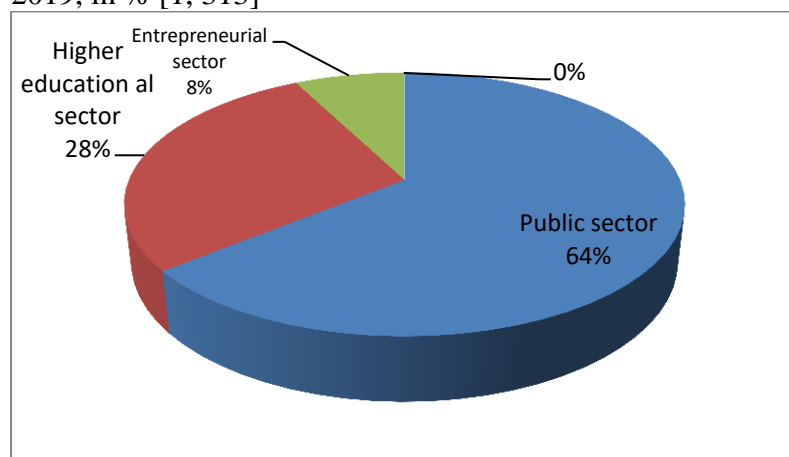
There are many factors that determine the development of the knowledge economy. The most important thing is to increase the "knowledge capacity" in various types of economic activity. The increase in the "knowledge capacity" of the economy is due to a combination of factors such as the revolution in the field of information and communication technologies and the acceleration of scientific and technological progress. Not only because of the explosive development of information and communication technologies over the past 30 years, but also because of the declining cost of computer processing of data and electronic communications, researchers around the world have been able to effectively interact, which has increased research efficiency and ensured rapid development of scientific technology and formation of new knowledge and technologies.

As a result of the reforms carried out in the Republic of Azerbaijan, the progress in the economy has led to the improvement of the socio-economic development of the regions and has become one of the main priorities of state policy. The reforms carried out in the field of science, the preservation of scientific and technical potential, the training of highly qualified personnel, the increase of the prestige of scientists in society are proof that this field is in a significant position.

At present, scientific research in the Republic of Azerbaijan is carried out in the scientific research institutions of ANAS, field research institutions under the ministries, state committees, joint-stock companies and companies, higher education institutions, departments, laboratories and research institutions of various scientific research institutions. The activities of scientific research institutions and their role in the economic development of the country are undeniable. Today, these scientific institutions, which are trying to maintain and develop their scientific potential, are really struggling in a highly competitive environment. Fighting in a competitive environment created by a market economy is both an interesting and a very difficult process.

Graphic 1

Division of organizations engaged in research and development for the sectors at the end of 2019, in % [1, 313]



Looking through the graphic, it is clear that the share of the public sector prevails. Although this is the result of a successful policy of state programs and projects, it should be noted that it is not enough in terms of demands of modern period. If we look through the experience of world countries, we see that the private sector invests more and more in scientific research

every year. It should be taken into consideration that investment in science is one of the main factors that directly or indirectly supporting the development of these areas.

According to the statistics on the scientific staff potential of the Republic of Azerbaijan and the network of scientific research institutions covering the last decade, the number of institutions conducting scientific research and development in the country decreased from 137 in 2000 to 132 in 2019. 64% of scientific activity in Azerbaijan falls on the share of the public sector, 28% on the share of higher educational institutions and 8% on the share of the private sector. [1, 326]

In the Republic of Azerbaijan which aims to constantly develop in all important scientific fields, the scientific environment necessary for the transformation of scientific research field - innovative ideas to real application fields still does not fully meet the requirements of modern times. The conducted researches show that young people's interest in fundamental and applied sciences is declining.

According to the statistic data, the current situation in the field of science in the Republic of Azerbaijan provides grounds to say that there is a need to create the necessary scientific environment for the transformation into a creative labor with a rich and multifaceted intellectual potential.

Table 1.

The number of staff engaged in research and development for the types of organizations, person at the end of year. [1, 327]

	2000	2005	2010	2015	2018	2019
Total	15 809	18 164	17 924	23 093	20 179	20 790
As well as, in scientific-research organizations	13 755	15 599	14 658	16 856	12 288	12 338
In higher educational institutions	662	1185	1917	5108	7252	7688
Other	1392	1380	1349	1129	639	764

If we look through the table, we can conclude that the dominance of scientific research institutions in the public sector, the decrease in the number of staff in the private sector shows that there is no interest in science in this area. For example, in other areas, the number of people engaged in scientific research in 2000 was 1,392, while in 2019 it was 764. This was 8.05% of the number of staff engaged in research and development in organizations in 2000, and 3.68% in 2019. The main growth in this area falls on the share of higher educational institutions. While the number of staff engaged in scientific research in higher education institutions was 662 people, in 2019 it was 7688 people. These higher education institutions accounted for 4.2% of the number of staff engaged in research and development in organizations in 2000, and 37% in 2019. [1, 327]

Thus, it should be very important to eliminate the arising problem, to update the structure and content of science in Azerbaijan in terms of existing and prospective needs of the country, to try to having the role of scientific research to take a worthy place in the economic development of the country.

Consequently, it can be said that as a result of unresolved socio-economic problems facing scientific potential, failure to establish leading scientific centers, lack of necessary measures to train highly qualified specialists, weakening of the potential of highly qualified personnel, strengthening of brain flow and professional scientific staff, strengthening of the trend of aging in science, conducting formal scientific research, etc. should be considered the most dangerous of the problems that arise.

Failure to solve these problems in time creates serious problems for the socio-economic development of the republic. Failure to eliminate the problems not only prevents the Republic



of Azerbaijan from taking a decent position among the countries of the world community, but also casts a shadow on its future success. From this point of view, it is necessary to carry out the work to be done in a short time, to develop new fundamental projects.

As a result, the following provisions may be recommended. Thus, in order to increase the impact of the realization of strategic goals, modern trends in scientific research on the development of the knowledge economy, it is important to identify the major cases creating problems. After that, it is necessary to identify the necessary areas of research, it is to say to clarify which areas in the country do not need more development. Only then will it be possible to prevent the problems that have arisen and may arise in time.

The development of science in the Republic of Azerbaijan is a key factor aimed at strengthening statehood and developing the intellectual potential of the society. For this purpose, the indicators obtained by the existing scientific research institutions in the country should be prepared in accordance with the standards of modern scientific activity, a system of indicators of scientific activity should be created.

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## THE ESSENCE OF FOREIGN TRADE POLICY

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### Abstract

**Keywords:** foreign trade policy, development model, integration, free trade zone, customs union

In general, I can say that economic integration is a free market, a customs complex, but also a common market in which the principle of free movement of labor, capital and services is preserved. The overall or single market is considered to be a qualitatively higher degree of economic integration. Research shows that in the process of economic integration, there are two tendencies: international and regional rapprochement. International rapprochement means the elimination of tariffs and non-tariff restrictions on world trade. In the case of regional rapprochement, in contrast to international rapprochement, the creation of regional economic unions harmonizes the foreign economic relations and economic policies of member countries in general. In addition, the countries of the world are getting closer politically and national policies are being coordinated. In general, we can say that the integration process begins with the liberalization of mutual trade in one way or another. This eliminates restrictions on the movement of goods, services and capital. After that, a single economic, legal and information space is gradually emerging. In conclusion, it should be noted that a new quality of international economic relations emerges from the sequence of these processes.

### РЕЗЮМЕ

**Ключевые слова:** внешнеторговая политика, модель развития, интеграция, зона свободной торговли, таможенный союз

В целом могу сказать, что экономическая интеграция - это свободный рынок, таможенный комплекс, но также и общий рынок, на котором сохраняется принцип свободного передвижения рабочей силы, капитала и услуг. Общий или единый рынок считается качественно более высокой степенью экономической интеграции. Исследования показывают, что в процессе экономической интеграции наблюдаются две тенденции: международное и региональное сближение. Международное сближение означает отмену тарифных и нетарифных ограничений в мировой торговле. В случае регионального сближения, в отличие от международного сближения, создание региональных экономических союзов гармонизирует внешнеэкономические отношения и экономическую политику стран-членов в целом. Кроме того, страны мира сближаются в политическом плане, согласовывается национальная политика. В целом можно сказать, что интеграционный процесс начинается с либерализации в той или иной мере взаимной торговли. Это снимает ограничения на движение товаров, услуг и капитала. После этого постепенно формируется единое экономическое, правовое и информационное пространство. В заключение следует отметить, что новое качество международных экономических отношений вытекает из последовательности этих процессов.

As it is known, in order to effectively enter the world economic system, first of all, it is necessary to form an adequate, scientifically based foreign trade and investment policy. The task of the foreign policy of our republic is to ensure mutually beneficial cooperation with the countries of the region and other countries of the international community. This cooperation should cover the entire geography of our country. As we know, in the context of globalization of economic processes, the development and expansion of economic relations between countries, strengthening interdependence, the difficulty of solving possible problems depends primarily on improving the national economy and developing a conceptual framework for international economic relations [16]. We can point to foreign trade relations as the main stage of economic relations. As it is known, foreign trade policy is a state policy that directly affects the trade balance of countries, regulates the purchase and sale of goods and services and import-export processes. The constant changes in economic and political factors and the impact of changes in the world market on the domestic economy force the state to constantly focus on foreign economic relations. It is very important to maintain the foreign trade balance and manage it properly. From this point of view, it is to be able to positively assess the control over the foreign trade balance in the economic management of each country. The development and strength of export-oriented policy will lead to the sustainable development of the country and an increase in the foreign trade balance. In this regard, every country that wants to develop seeks to ensure the development of foreign trade policy in the forefront and strengthens its activities, mainly export-oriented. Each country has its own domestic laws, according to which countries form foreign trade relations. This also varies depending on the economic legislation, decrees and economic measures taken in the country. The importance of foreign trade policy in the establishment and development of foreign trade relations is irreplaceable. When conducting research between countries, we can see from the statistics that the political activity of DDCs has a greater impact on trade relations. In many countries, the need for inter-agency bodies arises from the close connection of foreign economic problems with domestic economic development. Taking all this into account, based on world experience, we can say that for the effective functioning of foreign trade policy and foreign economic relations in the country should be established a committee on foreign relations of ministries, international relations cooperation. However, we cannot say that foreign trade relations should be completely monopolized by the state.

Over time, due to the transition of technology to new levels, the development of new needs occurs, the implementation of ordering and delivery processes with new technologies is gaining momentum. This, of course, leads to the establishment of close ties between the countries of the world, the growth of socio-economic, political and cultural ties, the expansion of foreign trade, the diversification of the tourism and service sectors. As a result, it is known that as foreign trade policy develops, competition accelerates. In addition, it highlights the importance of regulatory action in the region and internationally. If we look at the organization of the country's economic activity and the development of this activity, and examine it as a concept of adaptation to the world economy, we see that there is a need to study the approach from two points of view:

1. The importance of market formation and quality in order for the transition period to reach the real market stage, which is the second stage in its essence;
2. In the second stage, changes in the socio-economic essence of economic activity and the political structure of society create conditions for the functional implementation of integration into world trade and economy [8].

As a key factor in the organization of foreign trade, its security must be ensured and formed. At the same time, the main factor for strengthening the foreign trade activity of the state is the extent to which trade develops and how it is organized. Over time, the development of new technologies, the fact that the world's countries demand products that meet the

requirements of the times, requires certain changes in the country's foreign trade. If a country wants to develop in foreign trade, it is very important to determine the right path of development. For this reason, we can distinguish 3 development models in these options:

1. Development of export-oriented economy;
2. Development of production in a form that will replace imports;
3. Integration.

The application of these development models depends on the potential of each country individually. That is, each state applies and adapts these development models in its own way. Based on this, I would like to note that the export-oriented economy in the world market is changing due to the limited application of modern equipment and technology, the creation of new goods, strategies aimed at increasing production. Each of the development models requires sustainability of competitiveness. It is important to keep one issue in mind during the implementation of these strategies, as it is necessary to put an end to the import process of a number of commodity groups in order to form production that will replace imports. At the same time, each of us knows very well that it is impossible to create production of all imported products. Therefore, each country should study in which areas its domestic production capacity is more prone to development and focus on meeting the demand for that area. In order to meet domestic demand, conditions must be gradually created for investment, and the structure of foreign trade must be strengthened [8,11].

In this case, it is necessary to ensure the implementation of this process in such a way that in the end it does not lead to large losses, but to the emergence of a pro-development economic activity. Of course, just as large investments benefit the state, in some cases the loss of these investments is very harmful. Thus, large-scale investments allow to determine the structure of foreign trade of various factors of production, and even then the presence of unreasonable changes leads to a level that can not prevent the growth of losses. Based on various world experience, I can say that in the period of transition to a market economy, the creation of a sphere of production that will replace imports is not effective enough. At the same time, I would like to note that the free trade blocs created within the framework of economic integration can have a positive impact on development in the regional context. In addition to the issues I mentioned, another key issue in the development of foreign trade is to create conditions for the development of integration processes. As we know, in addition to the differences in integration itself, there are also different approaches to learning. As we all know today, economists, sociologists, political scientists, lawyers, etc. study integration. are engaged. As a rule, in the course of scientific analysis, there are several directions of integration. I would like to note that in the study of foreign trade relations, special attention is paid to such concepts as international economic integration, international division of labor, international production cooperation and integration of production. In particular, international economic integration is a process of economic and political unification of countries based on the development of deep sustainable relations and the division of labor between national economies, as well as the interaction of their reproductive structures at different levels and in different forms. With the advent of international economic integration, the national economy is in the process of reconciliation, adaptation, and thus transformation into a single system [16]. This, of course, implies the known territorial, economic, structural and technological proximity of the participants of international integration and explains its regional nature. As we know, the result of the international division of labor and international production cooperation is the international generalization of production - the internationalization of production. This is very cost-effective, and there are two main reasons for this. First of all, we can say that this tool allows you to easily and effectively use the resources of different countries, as well as, on the other hand, allows you to use the scale effect. Let's look at trade

activities for the development of mutual trade processes in the development of foreign trade relations [8,11].

**Free trade zone.** The countries participating in the free trade zone make a number of concessions on customs duties during mutual trade and agree to reduce duties. In addition, each member of the free trade zone sets personal tariffs for third parties, that is, the participants in the free trade zone eliminate mutual trade barriers, but at the same time provide complete freedom of economic relations with third parties, which can lead to the abolition of duties or new the application of duties is the conclusion of economic agreements.

**Customs union.** Here, too, the principle of free trade is maintained, but customs tariffs are applied to third countries. In this case, the foreign trade relations of its members with third countries within this integration union are determined collectively. As the third level of economic integration, the Customs Union ensures the mutual formation of political and trade activities between countries [8]. This allows us to more reliably protect and defend our common regional space and strengthen its position in the international arena.

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## NEW OPPORTUNITIES FOR COOPERATION IN THE CAUCASUS AND ITS IMPORTANCE FOR THE REGION.

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As a result of Armenia's long-term policy of aggression against Azerbaijan, the occupation of Karabakh, an integral part of Azerbaijan established by international law, has affected the economies of the region in various ways. The impact of the occupation on the country's economy must be analyzed in two ways. The first is the economic opportunities lost due to the occupation, and the second is the direct damage caused by the occupation to the country's economies.

Geographically landlocked, Armenia has isolated itself as a result of its policy of aggression.

Due to the lack of natural resources and the policy of aggression pursued by Armenia, it was left out of important transport routes, and as a result of the weakening of the economy, the population migrated. Looking at the demographic indicators of Armenia, it seems that despite all the interventions, the population has been steadily declining since 1991. Outside the last few years. However, there is no significant increase. While the population was 3,538,165 in 1990, it has fallen to 2,930,450 since 2014. At the same time, about 60,000 people migrate from the country every year. Educated Armenian youth mostly want to move to the west, while the older population moves to the north, to Russia or the former Soviet Union. In the wake of industrialization, the percentage of the urban population to the rural population is projected to be higher (the rate of urbanization in developed countries is more than 75%), while in Armenia the situation is quite the opposite. In 1990, the ratio of the urban population to the total population was 67.42%, but in 2017 it decreased to 63.1%. On the contrary, the percentage of the rural population increased from 32.58% to 36.90% in the same years.

Chart 1.1

Population, settlement and age structure of Armenia

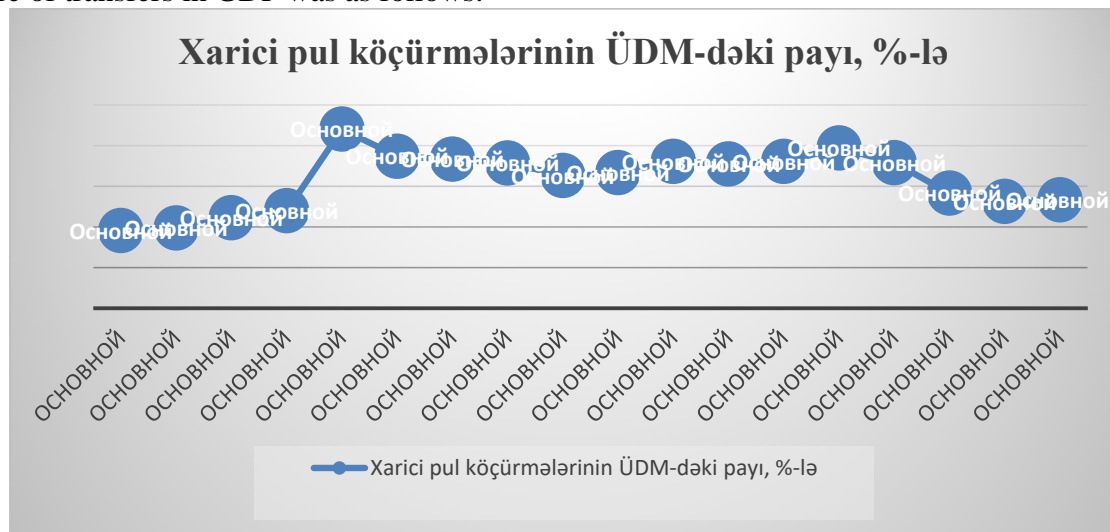
Years	Population and of change		Urban and rural settlement (in percents)		Age structure of the population (people)		
	People	%	City	Rural	0-14	15-64	65 +
1990	3 538 165		67.42	32.58	1 063 022	2 275 895	199 268
1995	3 217 342		66.06	33.94	941 309	2 006 378	269 655
2000	3 069 588		64.67	35.33	792 295	1 969 853	307 440
2005	2 981 259		63.94	36.06	639 824	1 986 674	354 761
2010	2 877 311		63.44	36.56	559 946	2 001 045	316 320
2015	2 916 950		63.09	36.92	579 856	2 019 877	318 217
2017	2 930 450		63.10	36.90	586 285	2 015 003	326 162

Source: World Bank

Along with the declining population, another important problem is the aging population. This can be clearly seen in the last columns of Chart 1.1. Thus, in 1990, the share of the population in the 0-14 age group in the total population was 30.3%, but this ratio fell to 18.7%. The World Bank's future settlement forecasts predict that GDP will decline significantly as the population ages. For Armenia, this figure is 2.8% for 2010-2050.

One of the indicators that has a special place in the GDP of Armenia is the money laundering of Armenians working abroad. This has played an important role in both post-independence

GDP growth and the stabilization of a persistent foreign trade deficit. The dynamics of the share of transfers in GDP was as follows.



As can be seen from the graph, the share of foreign remittances in the structure of GDP in the Armenian economy was 19.7% in 2013, 14.1% in 2015 and 13.3% in 2017. This figure was 13% in 2017.

The bulk of these transfers fall to the Russian Federation. Economic sanctions imposed on Russia in recent years have also affected the volume of these remittances.

When analyzing the expenditures of the Armenian state budget, social insurance, defense and administrative expenses occupy the main place in the structure of total expenditures. In 2017, an average of one-fifth of the country's budget appears to be used for defense spending. This year, defense expenditures accounted for 20% of total state budget expenditures and 5.3% of GDP. In general, the budget for military spending is higher than the budget for education and health. Even as of 2017, spending on health and education is less than total military spending. Expenditures on education decreased from 2008 to 2017. Compared to 2010, education expenditures in 2017 increased by only 1.5%. The use of the existing resources of the country, which already has a narrow economy, in this way means taking away the welfare of the Armenian people. According to the 2018 Global Militarization Index published by the Bonn International Center for Conversion, Armenia is the third most militarized country in the world. One of the important points in the economic distribution of the state budget is interest expenses. Interest expenses incurred by the government are used to repay loans borrowed geographically from local and foreign residents. In the first case, the interest expense on local debt is the redistribution of national wealth between the government and citizens, or between present and future generations. In the second case, it results in the outflow of budget resources. From 2012 to 2017, the share of interest expenditures in the total state budget doubled. In 2017, 8.1% of total budget expenditures, or \$ 254.32 million. In other words, about 3.1% of GDP is spent on foreign debt and liabilities. The sharp and steady increase in interest expenditures in this form in the budget expenditures indicates future risks. Another noteworthy point is that these interest expenses are not paid mainly on new loans, but on loans from previous years. If this trend in the state budget continues at the same pace, in 2030 interest expenditures will account for 30% of total state budget expenditures. In other words, 30% of the state budget will be mobilized to finance the debts received in previous years.

When looking at the volume of Armenia's export operations with individual countries, the Russian Federation took the first place. According to 2018 statistics, exports to the Russian Federation accounted for 27% of total export operations.

**The impact of the occupation on the Azerbaijani economy.** Expenditures and social tensions caused by the occupation of more than 1 million people as refugees and internally displaced persons, the destruction and looting of agricultural lands, areas rich in precious metals, ores and other natural resources. At the same time, the occupation of the region has caused billions in damage. Studies show that about 900 settlements, 2,389 industrial and agricultural facilities, about 131,000 houses, 1,025 schools and 798 health facilities were victims of aggression in the occupied territories. In addition, 280,000 hectares of forest, about 1 million hectares of fertile land, 1,200 km of unused irrigation system, 220,000 head of cattle were taken. Before the Karabakh war, about 35-40 percent of agricultural products produced in Azerbaijan were produced in the occupied territories. According to estimates, 927 libraries, more than 100 archeological monuments, as well as 454 historical monuments and museums, more than 40,000 museum exhibits were destroyed.

First Dynasty Mines (FDM) was engaged in the exploitation of the "Soyudlu" gold deposit in Kalbajar in the occupied territories of Azerbaijan. The gold reserves of the field are estimated at 40 tons. 73% of the field, ie 29.2 tons of gold there, falls on the occupied territory of Kalbajar. According to a number of sources, First Dynasty Mines (FDM) extracted more than 2 tons of gold from the "Soyudlu" field in 2003, 2.5 tons in 2004, 3 tons in 2005, and more than 5 tons in 2006.

In total, the damage caused by the occupation by Azerbaijan, which lost 16% of its economy, is projected at about \$ 25-60 billion.

The occupation has negatively affected other countries in the region, such as Turkey, Georgia and Iran, with numerous factors such as limited transport opportunities and the cautious approach of international investors to the region, and has weakened the region's development in general.

The liberation of Karabakh from Armenian occupation, an integral part of Azerbaijan established by international law in 2020, and the trilateral agreement signed by Azerbaijan-Russia-Armenia have created new opportunities for cooperation in the region.

These cooperation opportunities include the development of mutual economic relations, the opening of the Zangazur corridor, and so on.

The importance of the Zangazur corridor is very important from an economic, political and historical point of view. The Zangazur Corridor has the potential to be a transport and logistics line between Europe, starting from the Caspian and Mediterranean Seas, Southeast Asia and Central Asia.

The Zangazur corridor is also important for Armenia, whose economy is in crisis. Armenia's borders with Azerbaijan and Turkey have been closed, which means that more than 80% of Armenia's borders have been closed. The Armenian-Iranian border, which is only 44 kilometers long, is not so convenient due to congestion. The importance of the Zangazur corridor is growing due to the seasonal nature of Armenia's direct border with Georgia and Russia. From this point of view, the Zangazur corridor is important not only for Azerbaijan, Turkey and Iran, but also for Armenia, whose economy is stuck.

In addition, the establishment and expansion of cooperation and the termination of territorial claims, taking into account internationally recognized borders, will reduce defense and other related costs and direct these funds to the implementation of more efficient investment projects and social welfare.

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Along with the importance of the Zangazur corridor for political and regional economic integration, it is also important for increasing foreign trade between the countries of the region. Although there has been a significant increase in Azerbaijan's foreign trade relations with Russia, Turkey and Iran in recent years, it does not meet its full potential. In 2019, the trade turnover between Azerbaijan and Turkey increased by 33 percent compared to 2018 and by 73 percent compared to 2017. Nevertheless, foreign trade relations between Azerbaijan and Turkey are far below full potential due to the lack of direct transport links. The most important thing for Azerbaijan is to expand economic ties by establishing direct contacts with Nakhchivan and Turkey. Also, the increase in freight traffic from Armenia to Russia, from Armenia to Iran, from China to Russia, from Turkey to Russia and Central Asia will allow Azerbaijan to receive additional transit revenues.

The connection of the Zangazur corridor with the North-South transport route will create additional opportunities for Azerbaijan. The North-South Transport Corridor is designed to deliver cargo mainly from India and the Iranian Gulf region to Russia, Western Europe, the Baltic States and the Scandinavian countries. The main advantage of the North-South Transit Corridor compared to other routes is that the transit distance and transit time is two to three times shorter. If sea transportation takes 45-60 days to Helsinki via the Iranian Gulf and the Indian Ocean, the Suez Canal, the Mediterranean and the Baltic Sea, it takes 20-25 days with the North-South Transit Corridor. The process of creating the Azerbaijani part of the North-South transport corridor has already reached its final stage. The railway from the Azerbaijani-Russian border to the Azerbaijani-Iranian border, which is an important part of this corridor, is fully operational. Azerbaijan is also involved in financing the construction of the Astara-Rasht-Qazvin railway in Iran. Azerbaijan intends to provide a \$ 500 million loan to Iran for the construction and equipment of the Astara-Rasht railway.

As mentioned earlier, Armenia is the only country in the Caucasus that has no access to the sea, and of the three railway lines with access to foreign countries (Azerbaijan, Turkey, Georgia), only Georgia operates. Cargo transportation from Armenia to foreign countries via Georgia is possible to the ports of Batumi and Poti, and by land through the Kazbek Mountains through Russia. The existence of rising tariffs on the ports of Batumi and Poti, as well as the constant connection with the Kazbek Mountains due to natural conditions, create additional problems for Armenian exports and imports. Also, the closure of the borders with Azerbaijan and Turkey, the Georgian-Abkhazian, Georgian-Ossetian, Georgian-Russian conflicts pose a serious problem for Armenia's transport relations with Russia. Rail transportation between Russia and Armenia is inefficient. It is both seasonal and often travels by boat to the port of Poti, and from there by rail. The cost is high because it is difficult to travel by land and mountain roads. Transportation of about 20 tons of cargo costs 4,000 USD. The annual trade turnover between Armenia and Russia is \$ 2.4 billion, which is 35% of Armenia's trade turnover. There are also serious problems in transport relations with the Islamic Republic of Iran. At present, there is only a land connection with Iran, which passes through difficult terrain. An attempt to establish a railway connection with Iran was made in 2009, when Armenia and Iran signed an agreement on the construction of the "Southern

Armenia Railway", which will connect Yerevan and Tabriz via Syunik. The total length of the railway is 470 kilometers, and its construction will cost a total of \$ 3.5 billion, compared to the annual budget of Armenia. The project was not implemented due to limited financial resources and political will. In recent years, the Armenian government has sought to involve China in financing the railway project under the Belt and Road Initiative (BRI). However, these efforts have yielded no results. From this point of view, the transport of Armenia via Nakhchivan to Iran via the railway line is more efficient. All this shows that with the opening of the Zangazur corridor, Armenia will establish cheaper transport links to Iran and Russia. As the expansion of the economic crisis inside Armenia and the deteriorating social situation of the population create additional problems for the government, the development of economic relations with the opening of the transport corridor is important to address the challenges ahead.

The Zangazur corridor provides Turkey with direct access to the Caspian Sea and the Caucasus, and has direct links with Azerbaijan. This corridor will allow Turkey to operate effectively in the North-South transport project. The Zangazur corridor is also important in Turkey's relations with Russia and the Central Asian republics.

In other words, expanding cooperation in the region will reduce transport costs and increase the region's economic efficiency by entering new markets. At the same time, the expansion of cooperation and the establishment of security in the region will facilitate the inflow of foreign investment.

In addition, the establishment and expansion of cooperation and the termination of territorial claims, taking into account internationally recognized borders, will reduce defense and other related costs and direct these funds to the implementation of more efficient investment projects and social welfare.

As a result, new opportunities for cooperation in the Caucasus region provide ample opportunities for the development of foreign trade relations of the region on the basis of optimal transport routes, reducing defense, military and security costs and directing these costs to social and infrastructure projects, while making the region more attractive for foreign investment. will allow.

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## **CASE-REPORT: THE TREATMENT OF HODGKIN'S LYMPHOMA WITH A POLYCHEMOTHERAPY REGIMEN - STANFORD V**

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The results of treatment of a woman born in 1999 with a diagnosis of Hodgkin's lymphoma, nodular sclerosis, Grade II were analyzed.

After the diagnosis was established, the patient received polychemotherapy at the Institute of Hematology of the Republic according to the ABVD and BEACOPP regimens, but it was not possible to achieve a pronounced clinical effect. The disease began to progress. The patient was admitted to our clinic with a diagnosis: «Advanced-stage Hodgkin's lymphoma [Nodular sclerosis, Grade III, (with damage to the cervical-supraclavicular lymph nodes on the both sides and mediastinal lymph nodes, in places with bulky  $\geq 5$  cm)]».

It was decided to continue further treatment according to the Stanford V chemotherapy 3 monthly regimen scheme: (beginning: January 29, 2020; ending: April 15, 2020): Doxorubicin  $25 \text{ mg/m}^2$  (i.v., days 1 and 15) + Vinblastine  $6 \text{ mg/m}^2$  (i.v., days 1 and 15) + Bendamustine  $100 \text{ mg/m}^2$  (i.v., days 1) + Vincristine  $1.4 \text{ mg/m}^2$  (i.v., days 8 and 22) + Bleomycin  $5 \text{ units/m}^2$  (i.v., days 8 and 22) + Etoposide  $60 \text{ mg/m}^2$  (i.v., days 15, 16) + Prednisone  $40 \text{ mg/m}^2$  (per os, q2d); BI = 1.60.

After chemotherapy the patient (with bulky disease ( $\geq 5$  cm) must be received involved - radiation therapy to 36 Gray.

Thoracic CT native (04/20/2020): In the mediastinum, lymph nodes less than 10 mm in size are determined.

Complete cure achieved. At the present time, the patient is tolerating pregnancy normally.

**Key Words:** Hodgkin's lymphoma, nodular sclerosis, polychemotherapy regimen, ABVD, BEACOPP, Stanford V, complete cure, case report

## MICROSCOPIC AND P<sub>H</sub>YSIOLOGICAL ANALYSIS OF SOMATIC EMBRYOS UNDER IN VITRO CULTURE IN TRITICALE

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### Abstract

Somatic embryogenesis is a developmental process during which plant somatic cells, under in vitro conditions, produce embryogenic cells that develop into somatic embryos. Somatic embryogenesis is an efficient method clonal propagation in vitro of plants. Mature embryos were used as explant source for embryogenic callus formation and the callus produced compact, healthy and most mature embryos were induced embryogenic callus. Somatic embryos showed a similar morphologically to their non-somatic counterparts in their development. In a comparative study, total protein, DNSA and activities of some antioxidant enzymes including H<sub>2</sub>O<sub>2</sub>, MDA of somatic embryos of three triticale cultivar 'Tatlıcak, Alper Bey and Mikham' at embryogenic callus stages were analyzed. However; somatic embryos displayed the highest level of DNSA, MDA, H<sub>2</sub>O<sub>2</sub> and total protein in all tested cultivars. Our results showed that the triticale somatic embryo maturation process was complete within two years in vitro conditions.

**Key words:** Somatic embryos, triticale, tissue culture, enzyme activities, in vitro assay

### INTRODUCTION

Plant tissue culture is an efficient method for the in vitro regeneration of plants. Its developmental stages different in vivo development, which is a ideal material for analyzing molecular biology and physiological in callus tissues and embryogenesis (Morel et al., 2014). Somatic embryogenesis has powerful biotechnological tools which allows study of morphology, physiology, and molecular mechanisms of embryo development. Also, somatic embryos studies can provide insight into cell differentiation, totipotency, and plant regeneration (Zimmerman 1993, Egertsdotter 2019). Somatic embryogenesis can likely be induced for all plant species provided that the suitable initial cell type, culture conditions and environmental factors are employed. Several reports have displayed the process of uembryogenesis in triticale strongly influenced by factors including explant type, medium properties and genotypes. Bezirganoglu (2017) found that triticale callus cells could be regenerated through somatic embryogenesis in plant tissue culture conditions. However, pyhsiological mechanism of somatic embryogenesis process is unknown yet, but it is clear that several genes are specially activated or repressed during somatic embryogenesis. Sugars are very important energy resources and essential for embryonic development (Bartos et al., 2018), and it can involving proliferation of leaves. Sugars can adjust osmotic pressure and protect cell water loss (Iraqi and Tremblay, 2001). Many studies have indicated that the alters

in sugars contents could be used as an indicator of various somatic embryogenesis phase (Cangahuala-Inocent et al., 2014). Plants have an efficient enzymatic and non-enzymatic antioxidant mechanisms as a source of exogenous (Kasote et al., 2015). Antioxidants can be synthesized peroxidase, catalase, ascorbate peroxidase and superoxide dismutase. Energy organelles are the two essential central station and sites of reactive oxygen species production within plant cells. These organelles are also participated in maintenance of a fine balance between energy linked functions and control of ROS production. In recent years, alters in the activities of POX, APX, SOD and CAT had been indicated to be greatly linked with ROS elimination at various somatic embryos phase (Cui et al., 1999). A close relationship between callus cultures and biochemical by exogenous hormones has been previously reported in different plant species. Exogenous hormones applications modify the callus formation and structures by inducing alters in their endogenous hormones levels (Guo et al., 2017). Auxin is a group of plant hormones, which contributes to the regulation of stimulating cell elongation in stems. Moreover, auxins also acts a role in maintaining apical dominance. 2,4-Dichlorophenoxyacetic acid (2,4-D) is a synthetic phytohormones that plants cannot degrade in vivo (Wright et al., 2010). It is absorbed through the leaves and is translocated to the meristems of the plant. Endogenous plant growth regulator are strictly controlled through different pathways, such as promote cell elongation, division, degradation, transportation, and biosynthesis (Korasick et al., 2013). However, it is not clear whether the effects of exogenous hormones on plant growth are direct or whether they are connected with their effects on endogenous hormones (Szalai et al., 2011). Investigation of the physiological and microscopic changes during somatic embryogenesis could provide new knowledge about embryogenic events in Triticale. In this plant, a few physiological observations were reported for triticale callus culture (Yazıcılar et al., 2021, Bezirganoglu 2017). Physiological characteristics in the formation of somatic embryo in triticale were determined to gain a better understanding of the role of inductive produce embryogenic cells, enzymatic activity process and the energy substance, and they have functional significance in the determination of various phase of somatic embryo development. However, very little is known about the specific physiological parameters that might affect somatic embryogenesis, such as ROS and the antioxidant system. The objective of the current study was to measure the levels of sugar and the antioxidant system in triticale callus. Moreover; an overview of morphology (using SEM analysis) of embryogenic cultures was also provided.

## **MATERIAL AND METHODS**

### **Somatic embryo development medium**

In our study, three Triticale cultivars (Mikham, Alper Bey, and Tatlıcak) were used as the material for the response to somatic embryo. The callus were cultured in MS medium containing 4 mg L 2,4-dichlorophenoxyacetic acid (2,4-D) for 30 days in the growth chambers. Later only embryogenic calli were transferred to MS medium containing 2,4-D in four different doses (0, 4, 8, 12: 2,4-dichlorophenoxyacetic acid ) for 60 days and subcultured for another 30 days. All calli were kept under fluorescent light at 62  $\mu\text{mol m}^{-2}$  16-h/8-h light/dark cycle at  $26 \pm 1$  °C. The total culture duration was 2 years. Somatic embryos were obtained from embryogenic callus maintaince medium. Somatic embryos were evaluated after 2 years of 2,4-D treatment for somatic embryo development rate, accumulation of protein, total soluble sugars, and antioxidant enzyme activity.

### **Soluble Sugar Determination**

100 mg callus was homogenized with 5mL 2.5N HCl cold. It was centrifuged at 9000 rpm for 10 minutes. The pellet part was discarded and 2 mL of supernatant was taken and transferred to the glass tube and 2 mL of DNSA (3,5- dinitrosalicylic acid) was added. It was incubated in a 90 °C water bath for 20 minutes. It was kept in the ice bath until it cools. For each

sample, 100 µL per well was added in triplicate to 96 well plate. As a blank, 2 mL of DNSA (3,5- dinitrosalicylic acid) and 2 mL of 2.5N HCl were made in triplicate. Measurements were made at 550 nm at the NanoDrop.

#### **MDA (Malondialdehyde)**

Malondialdehyde was measured using the method of (Heath and Packer 1968) using liquid nitrogen. 0.4 grams of ground callus material was dispersed in 0.5% (w/v) thiobarbituric acid solution containing 20% (w/v) trichloroacetic acid. The sample was boiled at 98°C for 30 min and then quickly taken into an ice bath. The sample content was centrifuged at 3000 ×g for 10 min and the value of the supernatant was monitored at 532 and 600 nm (Heath and Packer 1968, Jaleel et al., 2007, Erdal 2012).

#### **H<sub>2</sub>O<sub>2</sub> (Hydrogen peroxide)**

H<sub>2</sub>O<sub>2</sub> (Hydrogen peroxide) content was measured using the method of Sergiev et al. (1997). 0.4 g of callus material was homogenized in 4 ml of trichloroacetic acid and centrifuged at 4°C for 15 min at 13000 rpm. 2 ml of extract was mixed with 0.8 ml of KH<sub>2</sub>PO<sub>4</sub> and 1.6 ml of KI in test tubes. The absorbance of the callus sample product was measured at 390 nm using a standard curve with H<sub>2</sub>O<sub>2</sub> solutions (Velikova et al., 2000).

#### **Scanning**

#### **Electron**

#### **Microscopy**

Somatic embryos were prefixed in 5% buffered glutaraldehyde (0.1 M phosphate buffer, pH 7.2) for 2 h at room temperature. After dehydration through a graded ethanol series, samples were dried with a

CPD (CO<sub>2</sub> critical-point drying) system, sputter-coated with gold (Jeol JFC-1100 E ion-sputtering system) and observed with a scanning electron microscope (HITACHI S-4700).

#### **Statistical Analysis**

Each experiment was repeated three times. Analysis of variance was conducted using a one-way ANOVA test using SPSS 13.0 and means were compared by Duncan test at the 0.05 confidence level.

### **RESULTS**

#### **DNSA**

Among all tested cultivars, a remarkably higher DNSA activity was determined in Tatlıcak somatic embryos (1.650 nmol g<sup>-1</sup> FW), whereas Alper Bey somatic embryos (1.366 nmol g<sup>-1</sup> FW) and Mikham somatic embryos (1.566 nmol g<sup>-1</sup> FW) exhibited a lower trend in long-term 2,4-D treatments in vitro conditions. There was a detectable difference of DNSA between control, somatic embryos and non somatic embryos in Tatlıcak and Mikham cultivars. Whereas there was no a detectable difference of DNSA between control, somatic embryos and non somatic embryos in Alper Bey cultivar (Figure 1).

#### **MDA**

The levels of activities of MDA were investigated in the 2,4-D - long terms in in vitro culture at the end of 2 years. The MDA content of triticale somatic embryo was shown to change gradually in terms of somatic embryos. The activity of MDA was the highest in Mikham somatic embryos and had similar values in all the other genotypes (Figure 2).

#### **H<sub>2</sub>O<sub>2</sub>**

The H<sub>2</sub>O<sub>2</sub> content in three of the cultivars of Triticale (Mikham, Alper Bey, and Tatlıcak) were investigated under 2,4-D treatments in vitro conditions. H<sub>2</sub>O<sub>2</sub> values showed a large range of variation among somatic embryos, non somatic embryos and control treatments for long terms cultivation, ranging from 0.0220 to 1.404 nmol g<sup>-1</sup> FW. The cultivar Alper Bey non somatic embryos (0,146 g<sup>-1</sup> FW) exhibited the highest value followed by Tatlıcak somatic embryos (0,131 g<sup>-1</sup> FW) and Mikham somatic embryos ( 0,119 g<sup>-1</sup> FW) (Figure 3).

### **Protein**

Among all tested cultivars, a remarkably lower protein activity was determined in Tatlıcak somatic embryos (0.582 nmol g<sup>-1</sup> FW), whereas Alper Bey non-somatic embryos (1.174 nmol g<sup>-1</sup> FW) and Mikham non-somatic embryos (1.274 nmol g<sup>-1</sup> FW) exhibited a higher trend in long-term 2,4-D treatments in vitro conditions. There was a detectable difference of protein between control, somatic embryos and non somatic embryos in Tatlıcak and Mikham cultivars. Whereas there was no a detectable difference of protein between control, somatic embryos and non somatic embryos in Alper Bey cultivar (Figure 4).

### **SEM**

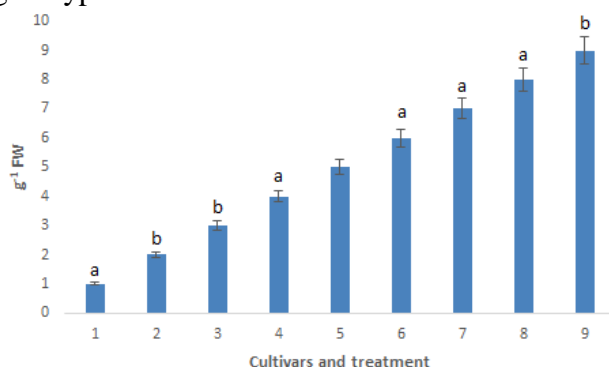
SEM analysis was conducted to verify the structures of somatic embryos, non somatic embryos and control callus, and the results are shown in Figure 5. Three Triticale cultivars, Mikham, Alper Bey, and Tatlıcak were evaluated for somatic embryos development stages in the presence of 2,4-D in various concentrations using scanning electron microscope. The analysis indicated that the somatic embryos development is easily detectable in triticale callus. Globular of callus are visible in non somatic callus. Membranous and fibril of callus are visible in somatic callus.

### **DISCUSSION**

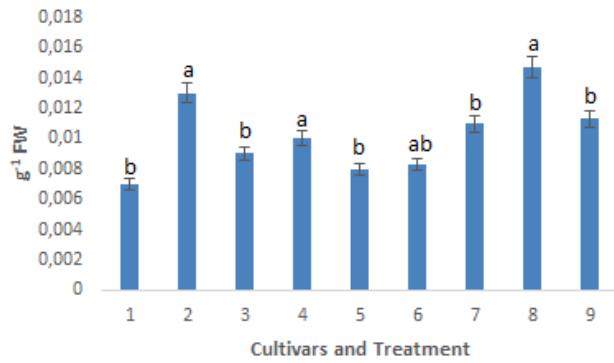
Somatic embryogenesis is a complex process, which is the outcome of a series of biochemical, physiological and molecular alters taking place in callus tissues. Somatic embryogenesis necessaries embryogenic capacities via differentiation, dedifferentiation, events of gene expression and chromatin remodeling ([Krishnan and Siril, 2017](#)). In general the somatic embryo formation contains a multiple of bilateral pathways that participates changes in the degrees of endogenous hormones and stress factors ([Mozgová et al., 2017](#)). Various reports contribute the hypothesis that the earlier stages of somatic embryogenesis are demonstrated by the formation of many genes related to different plant growth regulation and abiotic stress ([Nic-Can et al., 2016](#), [Nowak and Gaj, 2016](#)). Recent proved in wheat ([Adero et al., 2019](#)), in potato ([Kaur et al., 2018](#)), barley ([Orlowska 2021](#)), has indicated that the presence of various types of hormones plays an active role in the formation of somatic embryos. The main factor for callus tissues during the formation of somatic embryos is the presence of high auxin concentration in the culture medium. Other factors used for the formation of somatic embryos are higher pH, heat-shock exposure or treatment with different chemical substances. Under experimental analysis in our study, formation of somatic embryogenesis in the presence of 2,4-D was based on the determination of MDA (malondialdehyde), H<sub>2</sub>O<sub>2</sub> (hydrogen peroxide), DNSA and protein as well as laser scanning electron analysis. Embryogenic callus formation was the essential of somatic embryogenesis. The degrees of DNSA, MDA and H<sub>2</sub>O<sub>2</sub> were higher in embryogenic callus than non embryogenic callus, similarly to finding reported in Ormosia Henry Prain ([Wu et al., 2021](#)) alfalfa ([Martin et al., 2000](#)), since it was'nt easy for non embryogenic callus to improve into the somatic embryo. These findings indicated that the flowing of energy events was the material basis for embryogenic callus transformation into the somatic embryo. However, significant genotypic differences in DNSA, MDA and H<sub>2</sub>O<sub>2</sub> response were observed among the triticale genotypes and somatic embryo induction capacity is related to genotype. Our results exhibited an decreased accumulation of DNSA, MDA in H<sub>2</sub>O<sub>2</sub> embryogenic differentiation as compared to non embryogenic differentiation of Alper Bey genotypes (Figure 1, 2,3). This confirms us that the embryogenic callus induction of long-term callus may be gradually developmental stages of genotype. In Alper bey callus, DNSA, MDA in H<sub>2</sub>O<sub>2</sub> embryogenic differentiation was greatly decreased under 2,4-D treatments and the the effects of plant growth regulations on DNSA,MDA and H<sub>2</sub>O<sub>2</sub> accumulation are well linked to the genotype. The H<sub>2</sub>O<sub>2</sub> and MDA could trigger the stress response, play a role as a secondary messenger participated in cell signaling and improve somatic embryo formation.



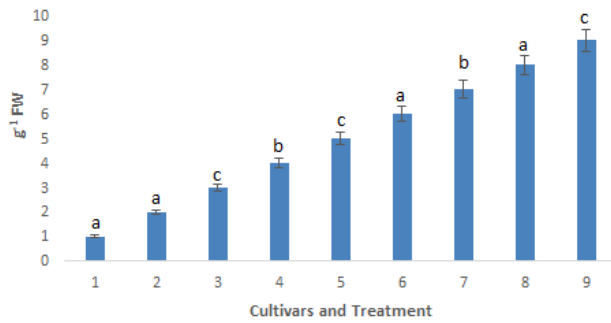
Compared with embryogenic callus, the amounts of protein were lower in somatic embryos of all tested genotypes except protein amounts of somatic embryos of Tatlıcak cultivar, protein amount between the three different Triticale cultivars, protein different significantly in somatic in Tatlıcak and Mikham somatic embryos, but a similar protein amounts was observed in somatic, non somatic embryos and control callus of Alper Bey, which may explain the embryogenic callus formation stages. The results indicate that the somatic embryos in the Alper Bey was mainly turned necrosis and extensively brown color during the culture medium. Somatic embryos could not further improve into unhealthy callus, which confirmed that the accumulation of energy substances affected the cell activity and morphogenesis. Proteins influence embryo formation, embryo differentiation, embryo maturation and cell signal transduction (Cangahuala-Inocente et al., 2014). Some studies have reported that the alters in protein amounts could be used as a marker of different somatic embryos stages (Jiménez 2001, Cangahuala-Inocente et al., 2014). In our cases, somatic embryo development was at various levels in the three triticale cultivars under the scanning electron microscopy following treatments with long-terms, including 2,4-D. The result may have verified by the microscopy studies with a SEM in which display a reduction in the formation of continuous surface in presence of somatic embryo. The first globular structures resembling embryos at the somatic embryo stage of Tatlıcak callus development (Figure 5e). In fact, the presence of somatic embryos in the three triticale cultivars, the formation of globular structures as well as some membranous and amorphous compounds were observed (Figure 5 a,c,e). SEM observations demonstrated that each genotype callus type had different callus structures in the non somatic embryos. The wrinkled and mucilage character of the callus in non-somatic embryos Tatlıcak and Mikham convert to granular-soft and compact resembles under SEM detections (Figure 5 b,d,f). Conversely, there was a continuous amorphous sphere, termed extracellular matrix, on the callus surface both somatic and non somatic embryos of Alper Bey. It was also observed that cultivars belonging to the same cultivars share mainly similar cell structure and shapes (Figure 5a,b). This confirms that Tatlıcak and Mikham cultivars has an effect on converting somatic embryos after long-terms and thus promoting antioxidant enzyme, DNSA and protein activities. It seems that this results of SEM analysis is an effective marker of somatic embryos in callus structures derived from triticale genotypes. Similar results have been reported in Triticale (Yazıcılar et al., 2021) and in *Picea sitchensis* SE (Liu 2009). In conclusion, the embryogenic callus formation and frequency of embryogenic callus transformation into a somatic embryo in triticale cultivars could be regulated and developed by adjusting the external conditions, such as the genotypes and culture durations.



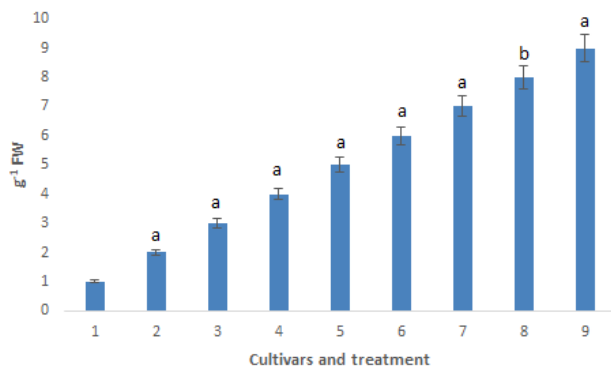
**Figure1:** DNSA analysis results(Tatlıcak ,Alper bey, Mikham 1,4,7:control,2,5,8:Somatic embryo 3,6,9:Non-somatic embryo)



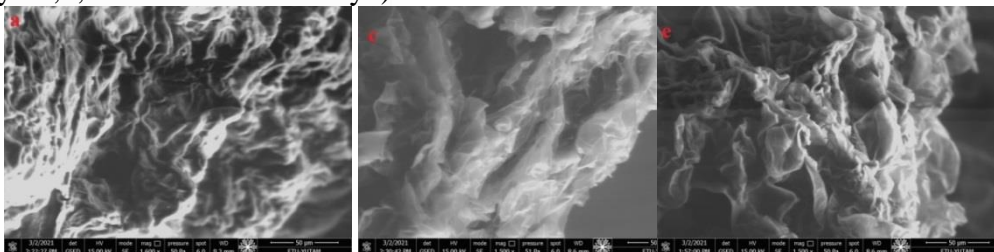
**Figure 2:**MDA analysis results(Tatlıcak ,Alper bey, Mikham 1,4,7:control,2,5,8:Somatic embryo 3,6,9:Non-somatic embryo)

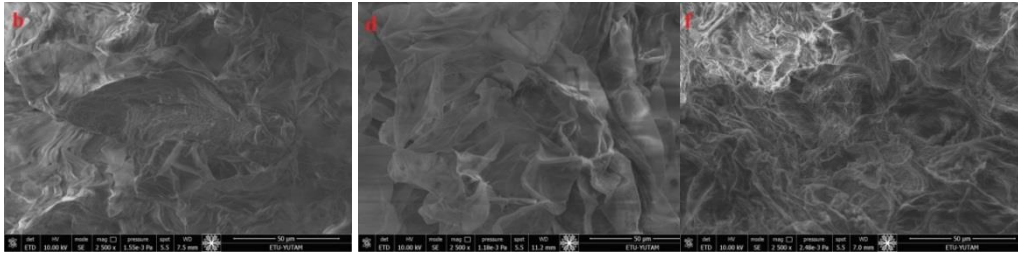


**Figure 3:** H<sub>2</sub>O<sub>2</sub> analysis results(Tatlıcak ,Alper bey, Mikham 1,4,7:control,2,5,8:Somatic embryo 3,6,9:Non-somatic embryo)



**Figure 4:** Protein analysis results(Tatlıcak ,Alper bey, Mikham 1,4,7:control,2,5,8:Somatic embryo 3,6,9:Non-somatic embryo)





**Figure 5:** Alper Bey, Mikham, Tatlıcak somatic and non-somatic embryo SEM analysis results

**a:**Alper bey somatic embryo, **b:** Alper bey non-somatic embryo, **c:**Mikham somatic embryo  
**d:**Mikham non-somatic embryo, **e:**Tatlıcak somatic embryo **f:**Tatlıcak non-somatic embryo

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## **ABOUT THE FACTORS THAT LEAD TO AGE-RELATED ENDOCRINE DISORDERS**

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### **Background**

Polycystic ovary syndrome (POS) is characterized by the development of bilateral, multiple cysts within or outside the ovaries as a result of polyendocrine disorders (dysfunction of the ovaries, thyroid and pancreas, adrenal cortex, pituitary and hypothalamus).

### **Methods**

The aim of the study was to determine the prevalence of endocrine disorders in different age groups. The study was based on a comparative laboratory analysis of the indicators of 25 patients on 30-55 age periods diagnosed with some endocrine pathologies.

### **Results**

In our research, in 15 adult females, POS is associated with chronic endocrine pathologies or inflammatory diseases of the female reproductive system.

Polycystic ovary syndrome is a hormonal change in the female body that results in the formation and proliferation of numerous small cysts on the surface of the ovaries. It can go asymptomatic and sometimes as menstrual dysfunction (oligomenorrhea), obesity. It results in miscarriage and infertility.

To be diagnosed with polycystic ovary syndrome, must have at least 2 of the following criteria:

Disorders of the menstrual cycle, anovulation (absence of ovulation) and dysfunction of the ovaries, manifested by infertility;

- Increased alopecia in females (hirsutism, skin dysfunction or destruction and hyperandrogenism with seborrhea - excessive secretion of androgens (male sex hormones) in the female body;

### **Conclusion**

Treatment of polycystic ovaries is aimed at restoring or normalizing ovulation, menstruation and reproductive function. Treatment is performed conservatively or surgically. Conservative treatment of POS is carried out with hormonal drugs: with antiandrogenic effect (restoration of the menstrual cycle, elimination of hyperandrogenism), antiestrogens, gonadotropins (stimulates ovulation).

**Keywords:** polyendocrine disorders, dysfunction of the ovaries, hormonal change



## EVALUATION OF CHANGES AND METASTASIS OF A SPECIFIC CELL LINE IN BREAST CANCER MODELS

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### Abstract

Breast cancer is the most common type of cancer among women worldwide, and metastasis is known to occur in approximately half of the recognized cases. Although it is not possible to clean the metastatic areas despite aggressive treatment attempts, morbidity and mortality are seen at a very high rate. Clinically, breast cancer can be divided into different subtypes: one of these classifications is the 4T1 cell line of breast cancer cells that is not bound to the estrogen receptor (ER). The 4T1 mouse breast tumor cell line is one of the few breast cancer models capable of effectively metastasizing to areas affected by human breast cancer. In addition, 4T1 breast carcinoma can spread from the primary tumor in the mammary gland to lymph nodes, blood, liver, lung, brain and bone, unlike most tumor models, which are highly tumorigenic and invasive. This tumor has several characteristics that make it a suitable experimental animal model for human breast cancer. In this review, it is aimed to convey the current literature information about this cell line, which has a very strong metastatic activity and is preferred to elucidate the mechanisms controlling the metastases of human breast cancer subtypes by using mouse modeling widely recently.

**Keywords:** 4T1 cell line, metastasis, breast cancer.

### GİRİŞ

Breast cancer is an important and common cancer that negatively affects women's health, and is also a leading cause of cancer-related deaths. It constitutes 23% of all cancer cases and 14% of cancer deaths (A. Jemal et al., 2011). For years, it was accepted as a fatal disease by Egyptian physicians and intensive surgical treatment was applied until the end of the 19th century (Singletary & Connolly, 2006). At the beginning of the last century, it was sufficient to know that the patient had breast malignancy and all breast cancer patients were treated with one type of treatment. Observing that patients diagnosed with the same type of cancer over time have different prognosis and the identification of different morphological variants by pathologists over the last 50 years has caused the classification of breast cancer to be controversial. In the currently known and recently published WHO tumor classification, there are many variants of breast cancer, including 20 major types and 18 minor subtypes (Tavassoli, 2003). However, some doubts have been expressed as to whether these identified

variants are biologically important. It was also thought that the identification of such a large number of variants might be a result of the pathologists' own designs. However, pathologists have already underlined for a long time that breast cancer is not a single disease, on the contrary, it is a heterogeneous disease. Today, it is clearly seen that breast cancer is a heterogeneous disease with very different histological and biological features due to genetic, epigenetic and transcriptomic changes, with different clinical findings, different responses to treatment, and multiple entities together with it. This phenotypic difference affects the diagnosis of breast cancer, the treatment to be applied according to the diagnosis, and consequently the prognosis. The basis of all this confusion seems to be the lack of specific markers and the lack of a complete understanding of the cellular development of the epithelium that forms the breast tissue (Buerger et al., 1999; Weigelt & Reis-Filho, 2009).

The 4T1 breast carcinoma cell line was originally isolated by Fred Miller and his colleagues at the Karmanos Cancer Institute (Miller, Miller, & Heppner, 1983). The 4T1 cell line is luciferase-expressing, estrogen-receptor (ER)-negative, progesterone-receptor (PR)-negative, and human epidermal growth factor-receptor 2 (HER2)-negative mouse breast cancer cells with a highly aggressive course with high ability to invade and metastasize. This tumor is an inoperable animal model of human stage 4 breast cancer due to its high metastasis ability (DuPré, Redelman, & Hunter, 2007; Serafini et al., 2004). Due to its high tendency to spread to bones and other areas, its use has increased in recent years (Yoneda et al., 2000). When introduced orthotopically, it has been shown that in 4T1 breast cancer, it can metastasize to several affected organs, including the lungs, liver, and brain and bone (Eckhardt et al., 2005). 4T1 daughter cell lines with different metastatic properties were isolated and characterized. These lines have been isolated from the same spontaneously arising BALB/c breast tumor, but have been shown to follow different pathways for acquisition of metastatic phenotypes (Tao et al., 2001).

#### **4T1 CELL INDEX METASTASES**

Unlike most tumor models, which are highly tumorigenic and invasive, 4T1 breast carcinoma can spread from the primary tumor in the mammary gland to lymph nodes, blood, liver, lung, brain and bone. The 4T1 tumor has several characteristics that make it a suitable experimental animal model for human breast cancer. First, tumor cells are easily transplanted into the mammary gland so that the primary tumor grows in the anatomically correct place as described in this section. Second, as in human breast cancer, 4T1 metastatic disease develops spontaneously from the primary tumor. Moreover, the progressive spread of 4T1 metastases by drainage to lymph nodes and other organs is very similar to human breast cancer. A protocol in this unit describes the surgical removal of the primary tumor; so that metastatic disease, primary tumor, surgically removed and metastatic foci remain intact can be studied in an animal setting comparable to the clinical situation. Another advantage of 4T1 is its resistance to 6-thioguanine. This feature enables precise quantification of the distribution of metastatic cells and at sub-microscopic levels in distant organs as described here (Olkhanud et al., 2009; Pulaski & Ostrand-Rosenberg, 2001).

Bone metastasis is one of the major causes of increased morbidity and eventual mortality in breast cancer patients. Therefore, the intervention of bone metastases is one of the important goals in breast cancer treatment. In one study, the effects of the orally administered chemotherapeutic agent UFT (a combination of tegafur and uracil in a 1:4 molar ratio) on bone metastases were investigated using an animal model of 4T1/luc mouse breast cancer (Hiraga et al., 2003). In another study, the contribution of megakaryocytes to metastatic activity was emphasized in the study with the 4T1 cell line. It has been shown by various markers that breast cancer cells injected into mice cause tumorigenic formations on the femur (Jackson et al., 2017). Again, in one of the studies conducted with mouse breast cancer

modeling, it was reported that the intravenously injected 4T1 cell line metastasized to 100% of the lungs, 85% to the spinal cord, and 20% to the bone marrow with immunohistomological markers (Okada, Kurabayashi, Akimitsu, & Furihata, 2017).

DuPre et al. carried out examinations of lung, liver, peripheral blood and spleen tissues in a study they conducted with the injection of breast cancer carcinoma 4T1 cells into mice. The spleen samples taken from the experimental groups were fragmented by mechanical lysis method, by sieving with 70-ml cell strainers from BD Biosciences (Bedford, MA, USA). Since CD11b is expressed on myeloid cells, normal cells derived from blood, spleen, bone marrow and peritoneal washes were examined with primary antibodies CD11b, Gr-1, CD11c and F4/80. CD11c was found at high levels on myeloid dendritic cells from the spleen; however, it was found at lower levels in cells in the spleen and bone marrow (Gravekamp et al., 2008).

Studies have shown that a high rate of metastasis was observed in Mage-b and Mage-a breast tumor biopsies, and mage-b expression was found in the liver, kidney, peritoneal cavity and diaphragm in mice injected with 4T1 (Ahmedin Jemal et al., 2011). In another study, 4T1 was shown to cause macro and micrometastases, especially in lung and brain tissues, according to the rate of infection (Baloch et al., 2016). However, as we know, there is no information in the literature that 4t1 metastasizes.

When we look at ovarian cancer with bowel metastasis, it was seen that the cancer stem cell was ALDH1 positive and it was seen that intestinal metastasis regressed after DOXIL and WFA treatments. In another study, it was observed that the EMT feature of C6L glioma cells was induced by  $\gamma$ -IR and it performed intestinal metastasis as well as many organs. In addition, it was observed that the expression of vimentin and E-cadherin, which are extracellular matrix elements, increased (Park et al., 2012).

## Conclusion

Metastasis is a very aggressive process not only for breast cancer types, but also for other cancer types, and it is a difficult process that causes the death of the living thing. For this reason, cancer models are very important to combat this. Breast cancer modeling also offers an in vivo study that can be easily created and metastasized, especially in mice. In this study, we aimed to provide solidity to the scientific world by examining the current literature information on the experimental examination of the 4T1 breast cancer cell line, which is one of the cancer types with very high morbidity and mortality and incurable, and to illuminate its metastatic activity.

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## EFFECT OF DELTAMETHRIN ADMINISTRATION ON GINGIVA IN RATS

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### Abstract

Since deltamethrin (DM) is hydrophobic and lipophilic, it easily accumulates in the body, causing increased ROS production and DNA damage. Therefore, mitochondrial energy depletion, DNA fragmentation and apoptosis develop in the cell. The aim of our study is to investigate the effect of deltamethrin administered to rats during pregnancy on cellular adhesion in the gingiva. It was divided into two groups as control and Delthametrin groups. The control group was fed with physiological saline, water and feed. The experimental group was given 30 mg/kg deltamethrin in 0.5 ml saline orally. After the animals were mated, vaginal smears were taken and detected on the first day of pregnancy. After the 6th day, DTM was given by oral gavage between 6-21 days. At the end of pregnancy, a gingival fragment was removed from the anterior incisors and stained with H.E after routine histological follow-up. E-cadherin antibody was used for immunohistochemistry. Significant changes in the gingival epithelium were observed in the comparison of the control group and the group administered deltamethrin. In epithelial cells close to the basement membrane, degenerative cell structure and pycnotic nuclei were found with hyperplasia. The underlying blood vessels were dilated and congested, with a marked thickening of the basement membrane. E-Cadherin expression increased in the delthametrin group in the control group, and cell adhesion was significantly affected. It is thought that deltamethrin, which is an effective insecticide by ingestion, especially used in vegetables and fruits, is a toxic substance that affects cell adhesion in the gingiva and may have a negative effect on tooth development with significant bleeding in the gingiva when contaminated during pregnancy.

**Keywords:** Deltamethrin (DM), E-cadherin antibody, H.E and immunohistochemistry, pregnancy rats.

### INTRODUCTION

Deltamethrin (DTM) [(1R,3S) [ $\alpha$ -cyano(3-phenoxyphenyl) methyl]-3-(2,2-dibromo-ethenyl)-2,2-dimethyl-cyclopropanecarboxylate] is a synthetic pyrethroid that produces plants, fruits, It is an insecticide used to protect vegetables and vegetables from pests such as ants, lice and insects. Animals and humans living in the same ecosystem are a significant hazard as it directly or indirectly causes reduced exposure and growth to this insecticide. DLM



functionally induces oxidative stress in different tissues (Dale, 2002). The LD50 values for deltamethrin to acute oral exposure ranges from 30 to 5000 mg/kg, 2.2 mg/L for 4-h inhalation in rats, and 2000 mg/kg after 72 h for dermal exposure in rabbits (Syed Abbas, Manzoor, Shahzad, Sheikh, & Tanveer, 2018).

The gingival epithelium functions in the immunity of periodontal tissues through the presence of immune cells and the production of antimicrobial peptides (Chrustek et al., 2018). The cellular component of the innate immune system found in the gingival epithelium includes cells such as dendritic cells and neutrophils (Presland & Jurevic, 2002). The gingival epithelium acts as a mechanical barrier through cell connections such as E-cadherin (Hatakeyama et al., 2006; Kandikonda, Oda, Niederman, & Sorkin, 1996). E-cadherin is a calcium-dependent homophilic cell adhesion molecule that aids cell-cell interaction. E-cadherin interaction is also thought to be important for the retention of Langerhans cells on epithelial cells (Udey, 1997).

The aim of our study is to investigate the effect of deltamethrin administered to rats during pregnancy on cellular adhesion in the gingiva.

## **Material and Methods**

### **Animals and experimental design**

Female Wistar rats, weighing 200-250 g were used in the experiments. Animals were obtained from Dicle University Faculty of Medicine Animal Care Unit, Diyarbakır, Turkey and the animals were housed at a temperature of 25°C and 45-55% humidity, with 12/12h of dark and light cycles. Animals were fed pellet diet and water ad-libitum, Principles of Laboratory Animal Care (NH publication no, 85-23, revised 1985) were followed for animal care during experiments. The experimental group was given 30 mg/kg deltamethrin in 0.5 ml saline orally. After the animals were mated, vaginal smears were taken and detected on the first day of pregnancy. After the 6th day, DTM was given by oral lavage between 6-21 days. Deltamethrin (C<sub>22</sub>H<sub>19</sub>Br<sub>2</sub>NO<sub>3</sub>) (> 99% pure) was dissolved in corn oil. The CAS chemical name is a-cyano-3-phenoxybenzyl (1R, 3R)-3-(2,2-dibromovinyl)-2,2 dimethyl cyclopropanecarboxylate. It is manufactured by a Tunisian company of fertilizers, El Afrane-1009, Elouardia, Tunisia.

Wistar rats (n:16 ) were randomly divided into two groups;

1. Control group :The control group was treated with 0.5 ml corn oil by oral gavage. (n:8 )
2. Deltamethrin(DTM) group(n:8 ) The deltamethrin were given 0.5 mL of 30 mg/kg BW undiluted ULV (a 5th of LD<sub>50</sub>) (Syed Abbas et al., 2018).

### **Histopathologic Analysis**

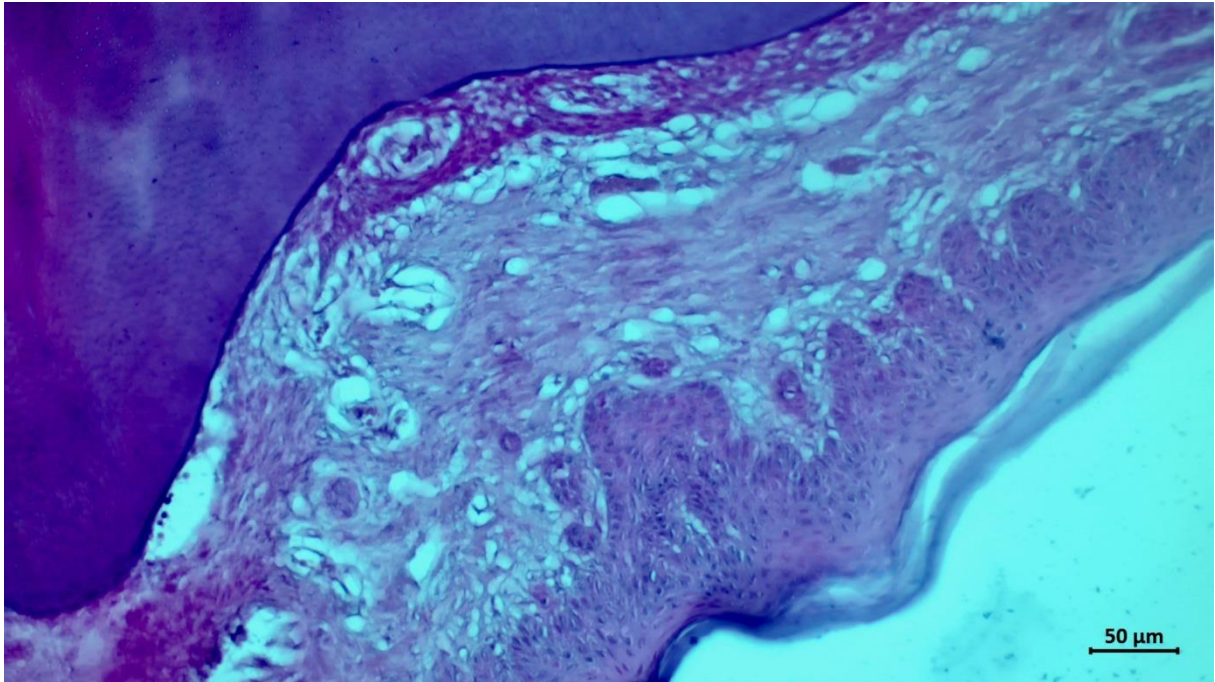
The rats were fainted with ether and the brain tissue was totally removed from the skull region. Pieces of brain cortex were placed in 10% formaldehyde at room temperature for 24 h. Then, they were dehydrated using graded ethanol and were embedded in paraffin, cut with a microtome. Sections were stained with eosin and hematoxylin. For gingiva tissue histopathological analysis light microscopy (Carl Zeiss, Germany) was used.

### **Immunohistochemical Analysis**

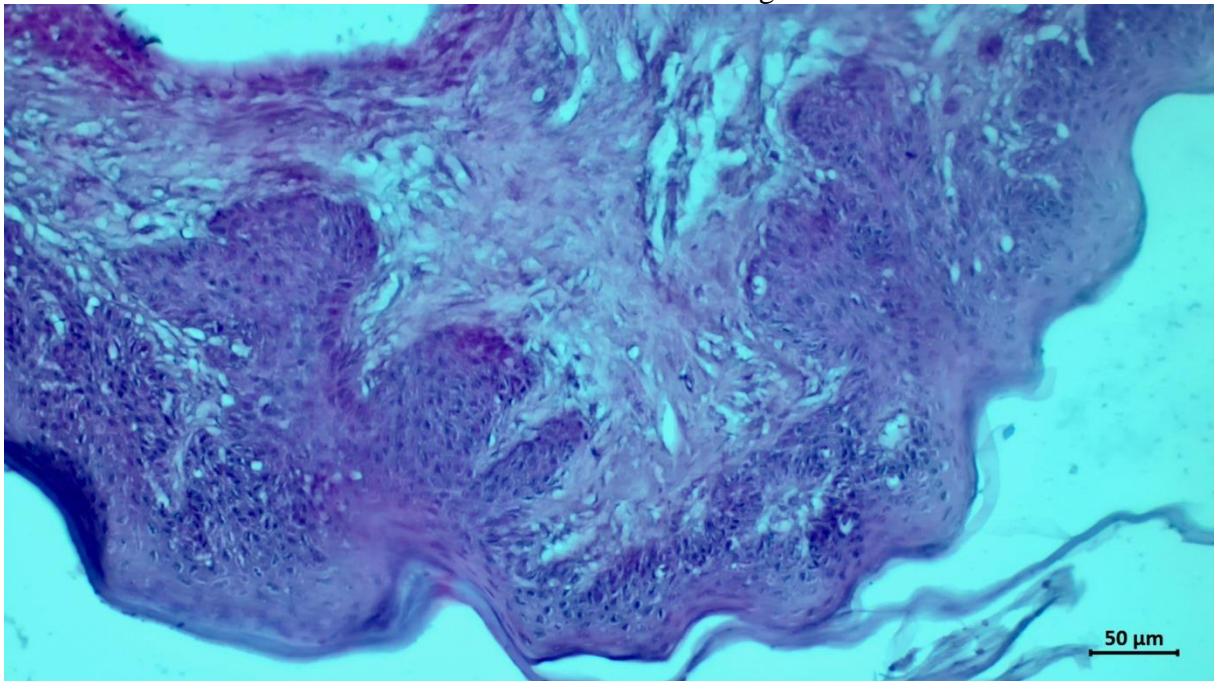
Antigen retrieval was done in microwave (Bosch®, 700 watt) for 2 min x 90 °C. They were subjected to a heating process in a microwave oven at 700 watts in a citrate buffer (pH 6) solution for proteolysis. Sections were washed in 3x 6 min PBS and incubated with hydrogen peroxide (3 ml 30 % Hydrogen peroxide (H<sub>2</sub> O<sub>2</sub> ) + 27 ml methanol) for 20 min. Sections were washed in 3x5 min PBS min and blocked with Ultra V Block for 8 min. After draining, primary antibody were directly applied to sections distinctly E-cadherin antibody. Sections were incubated and left overnight at 4C. Sections were washed in 3x5 min PBS and then incubated with Biotinylated Secondary Antibody (lot: PHL150128, Thermo Fischer,

Fremont, CA, USA) for 14 min. After washing with PBS, Streptavidin Peroxidase was applied to sections for 20 min. Sections were washed in 3x5 min PBS and DAB were applied to sections up to 15 min. Slides showing reaction was stopped in PBS. Counter staining was done with Harris's Hematoxylin for 45 s, dehydrated through ascending alcohol and cleared in xylene. Product Number: HHS32 SIGMA, Hematoxylin Solution, Slides were mounted with Entellan® and examined under light microscope

## RESULT

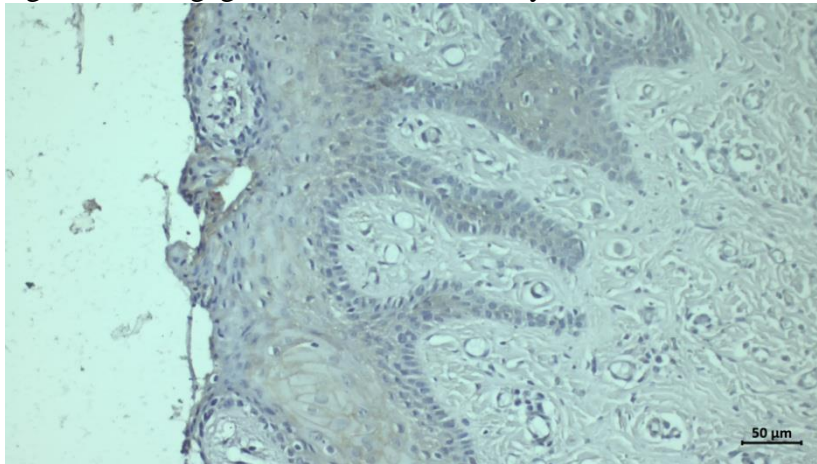


In the control group sections, it was observed that the cells were oval-shaped rich in chromatin on the luminal surface of the gingival epithelium located in the neck region in the longitudinal section of the tooth, and the secondary and microscopic papilla structures were loose connective tissue and the basement membrane was regular. tissue cells were observed.

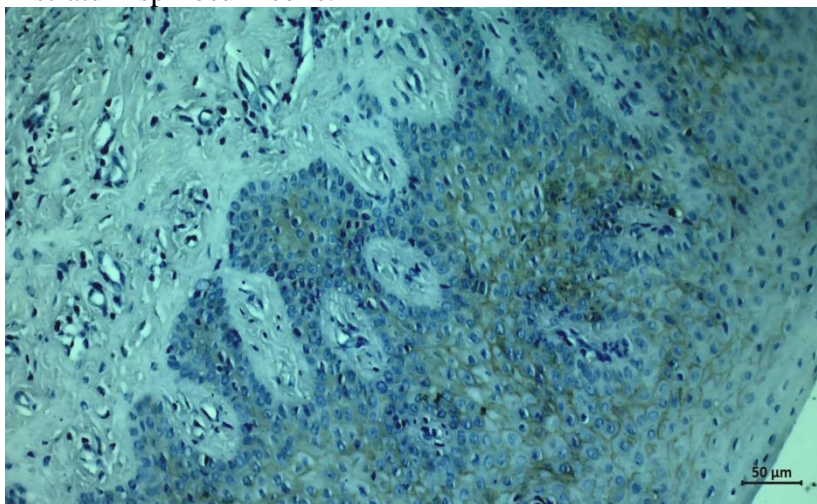




In the deltamethrin group, degenerative changes in the nuclei of the gingival epithelium towards the basement membrane region and pycnotic nuclei were observed. It was observed that there were vacuolar structures between the epithelial cells. In the microscopic papilla region, small agegat-formed inflammatory cells and dilated blood vessels were evident.



. In the control group sections, negative E-cadherin expression was observed in germinal cells located in the basement membrane, while weak E-cadherin protein expression was observed in stratum spinosum cells.



In the cross-section of the deltamethrin applied group, it was observed that E-cadherin expression increased especially at the adhesion junctions between stratum spinosum cells, and there was a significant accumulation in E-cadherin expression in degenerative and apoptotic cells and it was distributed to the surrounding area.

## DISCUSSION

Deltamethrin causes nephrotoxicity at a dose of 2 mg/kg per day administered orally for four weeks. It has been reported that kidney damage, changes in serum biochemical parameters such as urea, uric acid and creatinine. Deltamethrin also reduces acetylcholinesterase (EC 3.1.1.8, ACh) activity in the blood and has been shown to cause changes in tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ) levels. Induction of inflammation. An increase in Cox-2 and p53 protein levels and a decrease in bcl-2 levels were observed, causing apoptosis. The ethanol extract of olive oil and its phenolic compound oleuropein have been shown to have protective effects on the liver and kidneys of deltamethrin-treated rats by improving oxidative status and inhibiting inflammation and apoptosis (Maalej et al., 2017). Rats treated with high doses of insecticides showed an increase in the number of implantation sites, trophoblast cells with

vacuoles, rare cytotrophoblasts, accentuated leukocyte infiltration, vascularization of the sites, and a significant decrease in blood in the uterine lumen. Non-lethal doses of deltamethrin have been reported to cause changes in the blastocyst-endometrium interaction in female rats, thus compromising the implantation process (Lemos et al., 2011).

Although there is no study related to the application of deltamethrin on teeth and gingiva, it has been shown that deltamethrin induces cell damage by accelerating cell degeneration and apoptotic process together with the inflammatory stimulus. In our study, it was observed that degenerative cells in the gingiva and inflammation in the connective tissue and dilatation in the blood vessels also affected the cell-cell connection in the application of deltamethrin (Figure-1b). The intense distribution of E-cadherin expression in the junction range in degenerated cells, especially in the deltamethrin group, has also been shown as an important sign of cell-cell adhesion (Figure-2b). In addition, the increase in inflammation and prolongation of the apoptotic process, which are among the mechanisms that will affect the cell-cell connection, were evaluated as an inevitable result of cell adhesion being affected.

## CONCLUSION

Significant changes were observed in the gingival epithelium in the comparison of the control group and the deltamethrin administered group. Degenerative cell structure with hyperplasia, pycnotic nuclei were observed in the epithelial cells close to the basement membrane. With a significant thickening of the basement membrane, the underlying blood vessels were dilated and congested. Control of E-Cadherin expression It was observed that cell adhesion was significantly affected in the deltamethrin group.

It is thought that deltamethrin, which is an effective insecticide by ingestion, which is used especially in vegetables and fruits, is a toxic substance that affects cell adhesion in the gingiva when contaminated during pregnancy and can have significant bleeding in the gingiva and adversely affect tooth development.

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## INVESTIGATION OF THE EFFECT OF FOLIC ACID AGAINST DELTAMETRINA ADMINISTERED TO RATS DURING PREGNANCY

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### Abstract

Since deltamethrin (DM) is hydrophobic and lipophilic, it easily accumulates in the body, causing increased ROS production and DNA damage. Therefore, mitochondrial energy depletion, DNA fragmentation and apoptosis develop in the cell. The aim of our study is to investigate the effect of deltamethrin administered to rats during pregnancy on cellular adhesion in the gingiva. It was divided into two groups as control and Delthametrin groups. The control group was fed with physiological saline, water and feed. The experimental group was given 30 mg/kg deltamethrin in 0.5 ml saline orally. After the animals were mated, vaginal smears were taken and detected on the first day of pregnancy. After the 6th day, DTM was given by oral gavage between 6-21 days. At the end of pregnancy, a gingival fragment was removed from the anterior incisors and stained with H.E after routine histological follow-up. E-cadherin antibody was used for immunohistochemistry. Significant changes in the gingival epithelium were observed in the comparison of the control group and the group administered deltamethrin. In epithelial cells close to the basement membrane, degenerative cell structure and pycnotic nuclei were found with hyperplasia. The underlying blood vessels were dilated and congested, with a marked thickening of the basement membrane. E-Cadherin expression increased in the delthametrin group in the control group, and cell adhesion was significantly affected. It is thought that deltamethrin, which is an effective insecticide by ingestion, especially used in vegetables and fruits, is a toxic substance that affects cell adhesion in the gingiva and may have a negative effect on tooth development with significant bleeding in the gingiva when contaminated during pregnancy.

**Keywords:** Deltamethrin (DM), E-cadherin antibody, H.E and immunohistochemistry, pregnancy rats.

### INTRODUCTION

Deltametrin(DEL), a synthetic pyrethroid insecticide, is used as an ectoparasiticide in plant protection (McGregor, 2000). DEL administered during organogenesis reduced the mean weight of live fetuses (Bhaumik & Gupta, 1990). Compared to control mice, animals treated with DEL had an increased incidence of early embryonic death and placental weight (Abdel-Khalik, Hanafy, & Abdel-Aziz, 1993).



It has been reported that rats treated with DEL (2 mg/kg body weight) from pregnancy to lactation are dangerous for reproduction due to the increased estrogenic potency of the target organs.(Presibella, Kita, Carneiro, Andrade, & Dalsenter, 2005). Folic acid is a water-soluble B-complex vitamin. Reduced forms of folic acid are required for biochemical reactions that provide precursors for the synthesis of amino acids, purines, and DNA (Zhao et al., 2014). Both human and animal studies have shown the essential role of folate during nervous system and brain development (Schmidt et al., 2012). STAT3 is a key mediator of the response to cytokines, as well as EGF and other growth factors and is known to contribute to preparing the endometrium for implantation. Inhibition of activated STAT3 function has been shown to block implantation when applied locally to the uterus (Pedersen, Fulton, Porter, & Francis, 1995). Caspases participate in processes such as cell volume reduction (pycnosis), chromatin condensation, nuclear fragmentation (karyorexia), and formation of plasma membrane blebs (Kroemer et al., 2005). Reproduction, differentiation, and apoptosis are the three main processes by which the pregnant uterus maintains homeostasis to adapt to the growing fetus. They showed that caspase activation in mid-pregnancy coincided with the transition from uterine hyperplasia to hypertrophy in the myometrium of pregnant rats. CASP3 is transiently activated at midgestation in the rat and mouse myometrium, but this activation is not associated with biochemical or morphological features of apoptosis (Jeyasuria, Wetzel, Bradley, Subedi, & Condon, 2009; Shynlova et al., 2006). In our study, it was aimed to demonstrate the histopathological and immunohistochemical effects of deltamethrin administered during pregnancy on the uterine mucosa

## 2. Material and Methods

### 2.1. Animals and experimental design

Female Wistar rats, weighing 200-250 g were used in the experiments. Animals were obtained from Dicle University Faculty of Medicine Animal Care Unit, Diyarbakır, Turkey and the animals were housed at a temperature of 25°C and 45-55% humidity, with 12/12h of dark and light cycles. Animals were fed pellet diet and water ad-libitum, Principles of Laboratory Animal Care (NH publication no, 85-23, revised 1985) were followed for animal care during experiments.

Deltamethrin (C<sub>22</sub>H<sub>19</sub>Br<sub>2</sub>NO<sub>3</sub>) (> 99% pure) was dissolved in corn oil. The CAS chemical name is a-cyano-3-phenoxybenzyl (1R, 3R)-3-(2,2-dibromovinyl)-2,2 dimethyl cyclopropanecarboxylate. It is manufactured by a Tunisian company of fertilizers, El Afrane-1009, Elouardia, Tunisia.

Folic acid

Folic acid (Pteroylglutamic acid, Vit. B-9 or Vit. M) is a water soluble vitamin B member. It was obtained in the form of sodium folate solution; equivalent of folic acid 5 mg/ml, from El Gomhoryia Company, Egypt.

After the mating of the female animals, vaginal smear was taken and the first day of pregnancy was detected. Deltamethrin and folic acid application was made between 6-21 days after the 6th day. Immediately after birth, pup rats were taken and divided into groups. Pup Wistar rats (n:32 ) were randomly divided into four groups;

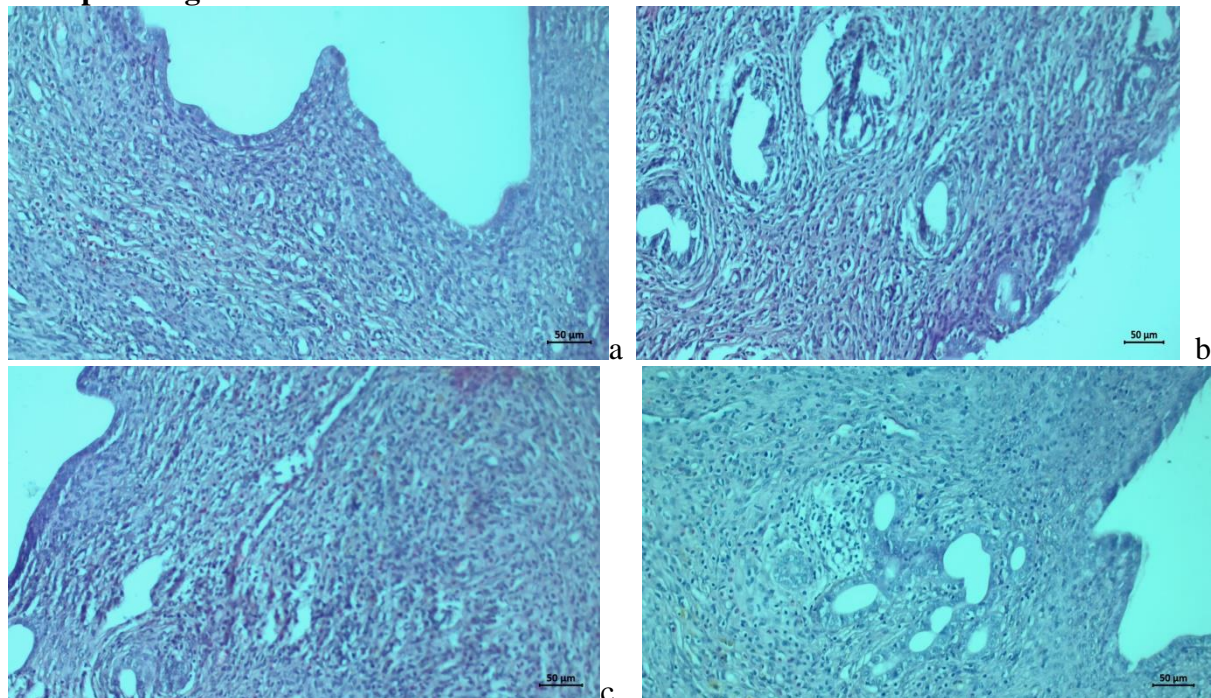
1. Control group :The control group was treated with 0.5 ml corn oil by oral gavage. (n:8 )
2. Deltamethrin(DTM) group(n:8 ) The deltamethrin were given 0.5 mL of 30 mg/kg BW undiluted ULV (a 5th of LD<sub>50</sub>) (Syed Abbas, Manzoor, Shahzad, Sheikh, & Tanveer, 2018).
- 3.Folic acid (FA) group (n: 8): The rats were fed oral gavage of 20 mg / kg / day FA dissolved in 0.5 ml 0.9% NaCl.
4. DTM and folic acid treated group (n:8 )

### Immunohistochemical Analysis

Antigen retrieval was done in microwave (Bosch®, 700 watt) for 2 min x 90 °C. They were subjected to a heating process in a microwave oven at 700 watts in a citrate buffer (pH 6) solution for proteolysis. Sections were washed in 3x 6 min PBS and incubated with hydrogen peroxide (3 ml 30 % Hydrogen peroxide (H<sub>2</sub> O<sub>2</sub> ) + 27 ml methanol) for 20 min. Sections were washed in 3x5 min PBS min and blocked with Ultra V Block for 8 min. After draining, primary antibodies were directly applied to sections distinctly PSTAT-3 and Caspase-3. Sections were incubated and left overnight at 4C. Sections were washed in 3x5 min PBS and then incubated with Biotinylated Secondary Antibody (lot: PHL150128, Thermo Fischer, Fremont, CA, USA) for 14 min. After washing with PBS, Streptavidin Peroxidase was applied to sections for 20 min. Sections were washed in 3x5 min PBS and DAB were applied to sections up to 15 min. Slides showing reaction was stopped in PBS. Counter staining was done with Harris's Hematoxylin for 45 s, dehydrated through ascending alcohol and cleared in xylene. Product Number: HHS32 SIGMA, Hematoxylin Solution, Slides were mounted with Entellan® and examined under light microscope.

## RESULT

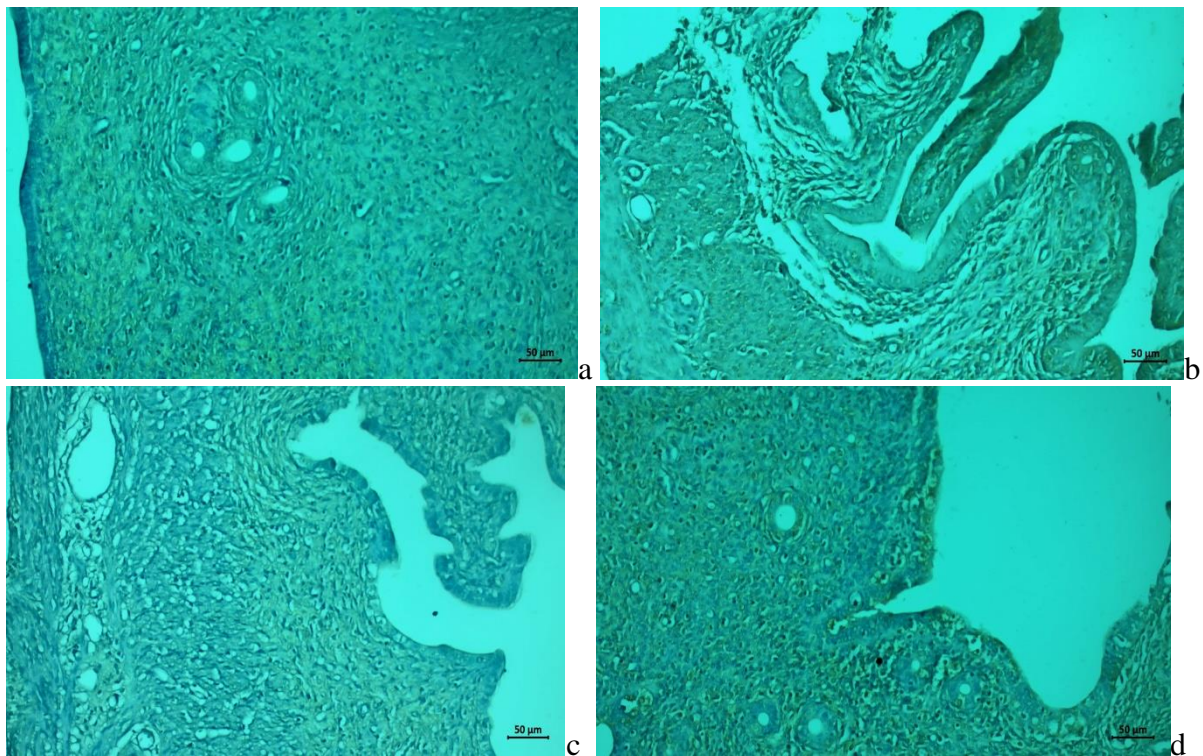
### Histopathological examination



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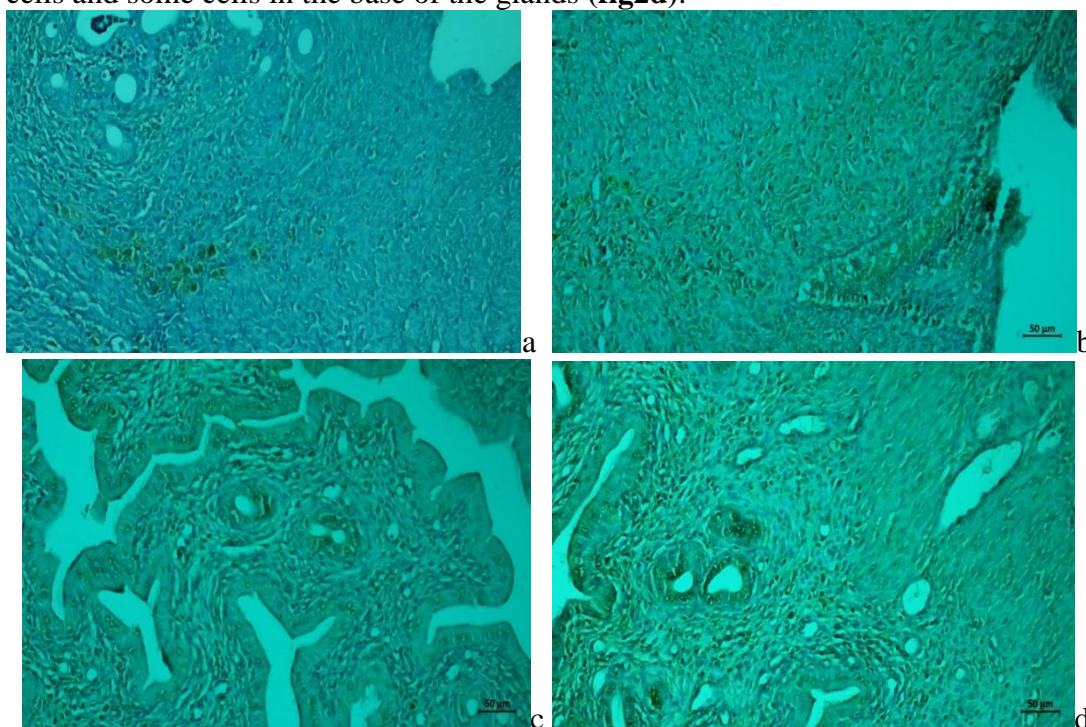
In the histological examination of the sections of the control group, it was observed that the endometrial cells had a regular prismatic appearance and the solitary fibers of the cells were located in parallel in the connective tissue layer (**fig1a**). In the deltamethrin group, degeneration of the endometrial epithelium and uterine glands, increased inflammatory cell infiltration in the connective tissue area and dilatation of blood vessels were observed. (**fig1b**). In the folic acid group, endometrial epithelial cells were seen in a prismatic regular appearance and gland structures were seen in normal appearance(**fig1c**). In the deltamethrin + folic acid group, mild degeneration of the endometrial epithelium, small-group inflammatory cell infiltration around the glands and a decrease in blood vessel dilatation were observed(**fig1d**).





**Figure-2**

In the immunohistochemical examination, caspase-3 expression in the luminal epithelium and uterine glands in the control group sections showed a negative distribution (**fig2a**). In the deltamethrin group, increased caspase-3 expression in cells due to apoptotic changes in luminal epithelium and uterine glands, and positive decaspase-3 expression in inflammatory cells and blood vessel endothelial cells were observed (**fig2b**). In the group treated with folic acid, caspase-3 expression was negative in endometrial cells and gland cells (**fig2c**). In the deltamethrin + Folic acid group, caspase-3 activity was positive in some luminal epithelial cells and some cells in the base of the glands (**fig2d**).



**Figure-3** In the sections of the control group, negative PSTAT-3 expression was observed in the luminal epithelium of the endometrium, while positive PSTAT-3 expression was observed in some small macrophage cells in the deep region of the basal layer(**fig3a**).

In the section of the deltamethrin applied group, PSTAT-3 expression was positive in the inflammatory cells in the section extending from the epithelial surface to the basal layer of the glands(**fig3b**). In the group treated with folic acid, weak PSTAT-3 expression was observed in the luminal epithelium and underlying gland cells, and PSTAT-3 expression was mild in the connective tissue area. (**fig3c**).

In the deltamethrin + Folic acid applied group, PSTAT-3 expression was positive in cells that formed aggregates around the glands in cells close to the basement membrane under the luminal epithelium, and the expression was weak in the other connective tissue area(**fig3d**).

## DISCUSSION

Deltamethrin is a synthetic pyrethroid insecticide that kills by contact and ingestion. The effects of household insecticides on the development of common and some laboratory animals are significant. It has been reported that deltamethrin has a high rate of resorption, growth retardation, hematoma, paralysis and growth retardation in the skeletal structure (Kandil, 2006).

High dose (1/10 LD50) of deltamethrin caused more damage to the tested organs than low dose (1/100 LD50) and caused histological changes in the liver and kidneys of the offspring when exposed during pregnancy and lactation.

It has been shown that DEL causes some complications such as hypertrophy of liver cells, significant increase in Kupfer cells and focal necrosis (Kolios, Valatas, & Kouroumalis, 2006). In addition, mild necrotic changes in the kidneys were seen in male albino rats treated with DEL (1.28 mg/kg daily) for 30 days. It has been reported that albino rats treated with 1/10 LD50 DEL showed loss of normal structure of hepatic cells, blood congestion, leukocyte infiltration, cytoplasmic vacuolation of hepatocytes and fatty degeneration (Lamfon, 2014). Cypermethrin has been reported to cause atresia increase in the early antral and antral stages of ovarian follicles, some detrimental effects on the ovaries indirectly by targeting tissues or changing endogenous hormones (Borgeest, Symonds, Mayer, Hoyer, & Flaws, 2002; Bretveld, Thomas, Scheepers, Zielhuis, & Roeleveld, 2006). Effects of insecticide methomyl(0.5 and 1.0 mg/kg) in combination with folic acid (1.1 mg kg) on male reproduction and was studied in rats (Shalaby, El Zorba, & Ziada, 2010) and was shown to reduce reproductive toxicity. Folate is required for metabolic processes and neural development. The necessity of folic acid supplementation before and throughout pregnancy on fetal development is known (Al-Mashhadane, Al-Mashhadane, & Taqa, 2018).

## CONCLUSION

In a study, after 4 weeks, a decrease in the length of the uterine epithelium, changes in the endometrial glands, vacuolar structures in the myometrial region and degenerative changes were observed in rats administered in a study. In our study, degeneration of the uterine epithelium of the deltamethrin administered group was observed with inflammation in the lamina propria region, dilatation and congestion in blood vessels..

Necrosis and apoptosis in trophoblasts resulted from preeclampsia. pSTAT3 may contribute to both activation of IL-6 and endothelial cells. In our study, level of TNF- $\alpha$  increased and this may lead to activation of endothelial cells. In our study, PSTAT-3 expression was found to be positive in the inflammatory cells that increased in the area extending from the epithelial surface to the basal layer of the glands in Deltamethrin application.



In folic acid administration, a decrease in PSTAT-3 activity was observed due to the decrease in inflammation and the regression of signaling. When induced by an activated death receptor or an alternative apoptotic stimulus, caspase-3 has been reported to be activated via an excess of signaling pathways of which it is a common mediator of apoptosis(30). It has been observed that cellular stress and a proinflammatory environment are stimulated by PSTAT, and the apoptotic process continues and the caspase-3 reaction increases. In our study, it was observed that proapoptotic signals developing due to deltamethrin inflammation induced apoptosis in both epithelium and gland cells. The decrease in degeneration due to the decrease in the proapoptotic effect in the folic acid group also caused a decrease in cell death. In our study, it was observed that the proapoptotic process was accelerated with the increase in inflammation in the uterus due to Deltamethrin toxicity and PSTAT-3 activity as a signal stimulus increased. It is thought that the effect of folic acid stimulates the proapoptotic signal with its anti-inflammatory effect and may prevent apoptosis.

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## THE EFFECT OF HESPERETIN AGAINST TESTICULAR TORSION IN RATS

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### Abstract

It was aimed to investigate the antioxidative effect of Hesperetin against damage to sperm development in testicular tissue in torsion-detorsion damage in rats. 32 male Wistar albino rats were used and divided into 4 groups. Group 1 (sham group): Only the abdominal wall was opened and closed. Group 2 (torsion group): The left testis was rotated 720° clockwise for 2.5 hours around the longitudinal axis of the spermatic cord. Group 3 (torsion/detorsion): After 2.5 hours of torsion, the suture fixing the testis to the tunica dartos was cut for 3 hours of detorsion. Group 4 (torsion/detorsion+Hesperetin): Group with 2.5 hours of ischemia followed by administration of 30 mg/kg hesperetin 30 minutes before 3-hour detorsion/reperfusion. At the end of the experiment, testicular tissue was taken and biochemical tests (MDA, SOD, CAT, GSH levels) and histopathological and APAF-1 expressions were examined. Hesperetin treatment seemed to prevent the increase in MDA levels of testes due to torsion-detorsion. Statistically, while SOD, CAT and GSH activities decreased significantly in the torsion-detorsion group, they increased in the torsion-detorsion+hesperetin group. Histopathological sections showed degeneration in the spermatogenic cells in the torsion group, pycnosis in the nuclei of Sertoli cells, and congestion in the vessels in the interlobular area. decrease in appearance, a decrease in the number of apoptotic nuclei in Sertoli cells and a near-control appearance in the vessels in the intertubular area were observed. While an increase in APAF-1 expression was observed in the torsion+detorsion group, it was observed that the apoptotic index increased, but this index decreased in the application of hesperetin. It was thought that the application of Hesperetin showed an important antioxidative effect in the development of spermatogenesis and sperm formation, and that it could provide an important adhesion in cell-cell interaction.

**Keywords:** Hesperetin, APAF-1, Testicular torsion, rats.

### Introduction

The main pathophysiology of testicular torsion and detorsion seems to be ischemia/reperfusion injury of the testis. During reperfusion after short-term (i.e, 1-h) testicular torsion, leukocytes accumulate in the testis, possibly as a result of ischemia-induced up-regulation of endothelial adhesion molecules (Turner, Tung, Tomomasa, & Wilson, 1997).

Apoptotic cell death has been reported to play an important role in the limitation of the testicular germ cell population following the testicular ischemia-reperfusion (IR) injury and is associated with male infertility. Microbe cell homeostasis after testicular IR has been reported to depend on the balance between cell production, germ cell differentiation, and programmed cell death from a constantly renewed testicular stem cell population (Sukhotnik et al., 2008). Apoptotic protease activating factor-1 (APAF1), the central component of the apoptosome, undergoes significant structural changes during mitochondrial apoptosis. (Mondragón et al., 2009). The apoptosome develops and activates procaspase-9, an initiator member of the caspase family of cysteine aspartyl proteases. It then activates apoptosis effector caspases, initiating apoptotic cell death (Orzáez et al., 2014).

Hesperetin (3,5,7-trihydroxy-4'-methoxyflavanone) is a flavanone found in abundance in citrus fruits such as oranges and grapefruit, as well as in tomatoes and cherries. Take the glycoside form that increases intestinal absorption (Haidari, Ali Keshavarz, Reza Rashidi, & Mohammad Shahi, 2009). It has been reported that Hesperetin has anti-inflammatory, antioxidant, anticarcinogenic and neuroprotective effects (Choi & Ahn, 2008; Nalini, Aranganathan, & Kabalimurthy, 2012).

The aim of this study was to investigate the antioxidative effect of Hesperetin against damage to sperm development in testicular tissue in torsion-detorsion damage in rats.

## MATERIAL AND METHOD

All experimental protocols were conducted according to the National Institutes of Health Guidelines for the Care and Use of Laboratory Animals. The study was approved by local ethics committee. Forty male Wistar albino rats with a mean weight of 200-250 gr were used. They were housed in an air-conditioned room with 12-h/12h light and dark cycles, where the temperature ( $23\pm 2^{\circ}\text{C}$ ) and relative humidity (65–70%) were kept constant.

In this study, all surgical procedures were performed after intramuscular injection of 50 mg/kg ketamine hydroxide (Ketalar<sup>®</sup>, Pfizer, Turkey) and 10 mg/kg xylazine (Rompun<sup>®</sup>, Bayer, Germany) for general anesthesia. All operations were performed under sterile conditions. Animals were randomly divided into four groups. Forty adult male rats were used in each group.

**Control group:** The animals didn't undergo any surgical operation and were sacrificed at the end of the experiment. **Torsion group:** Ischemia injury was induced by torsion of the left testis, with a  $720^{\circ}$  twisting of the spermatic cord so as to produce a total occlusion of the testis for 2.5 hours. The left testicles were re-perfused for 3 hours after 2.5 hours of ischemia. **Torsion/detorsion group:** The left testicles were re-perfused for 4 hours after 3 hours of ischemia. **Torsion/detorsion+ Hesperetin group:** The left testicles were twisted clockwise  $720^{\circ}$  and 30 mg/kg Hesperetin (per-orally=p.o ) 30 min before ischemia was administered to the animals. After torsion and detorsion, 30 mg/kg hesperetin was administered for 3 days. The scrotum sutures were opened and the left testicles returned to the normal position. The scrotums were closed again and the testicles were reperfused for 4 hours. All animals were sacrificed at the end of the reperfusion period.

### Surgical procedure

Rats were anesthetized under aseptic conditions by intramuscular injection of 50 mg/kg ketamine hydroxide and 10 mg/kg xylazine. The tunica was removed with the help of a forceps to make the vaginal testicular tissue visible. A scrotal pocket was created to place the testicles back into the scrotum after twisting. The left testicle was rotated  $720^{\circ}$  degrees clockwise for 3 hours around the longitudinal axis of the spermatic cord to create torsion. To prevent deterioration, testis dartos and testicular tunica albuginea were fixed in the scrotal

pocket by passing a 4/0 non-traumatic absorbable suture. After the torsion procedure, a return was made for 4 hours for detorsion.

### Biochemical analysis

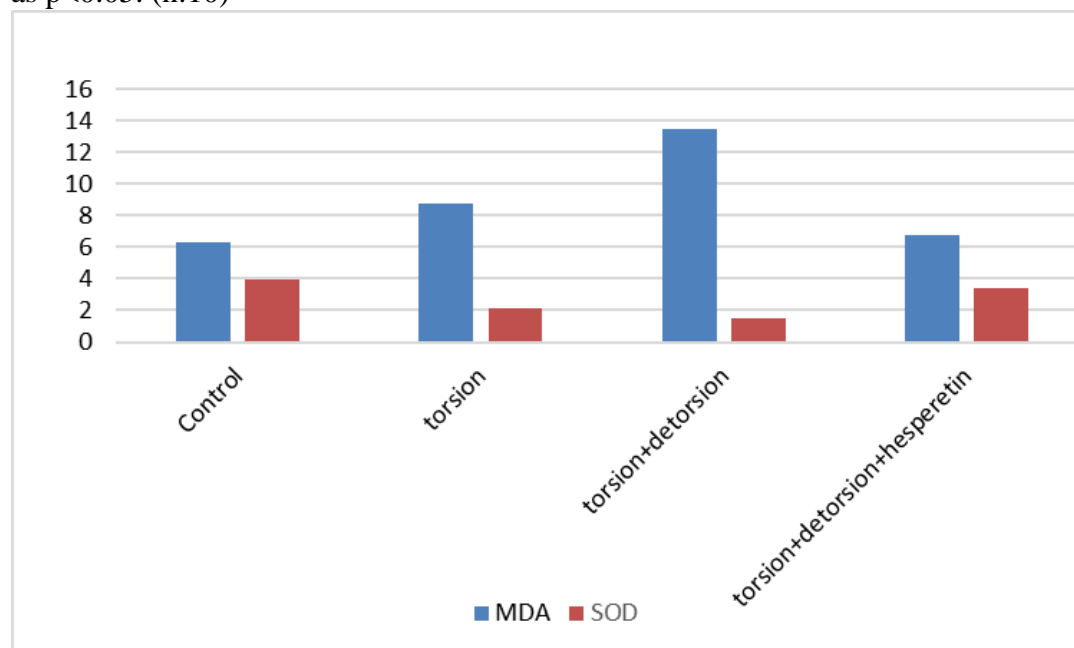
MDA, SOD, CAT and GSH levels were examined in testicular tissue. Tissue samples were homogenized with ice-cold 150 mM KC. MDA levels were assayed for products of lipid peroxidation, and the results were expressed as nmol MDA/g tissue (Ellati, Kavoussi, Turner, & Lysiak, 2009). The SOD activity in the tissue was measured using the RANSOD kit (Randox Laboratories, Crumlin, UK). GSH was determined by the spectrophotometric method based on the use of Ellman's reagent, and the results were expressed as  $\mu\text{mol}$  glutathione/g tissue (Doğan & İpek, 2020). CAT activity was determined by the spectrophotometric method based on the ability of hydrogen peroxide to form a stable stained complex with molybdenum salts.

### RESULT

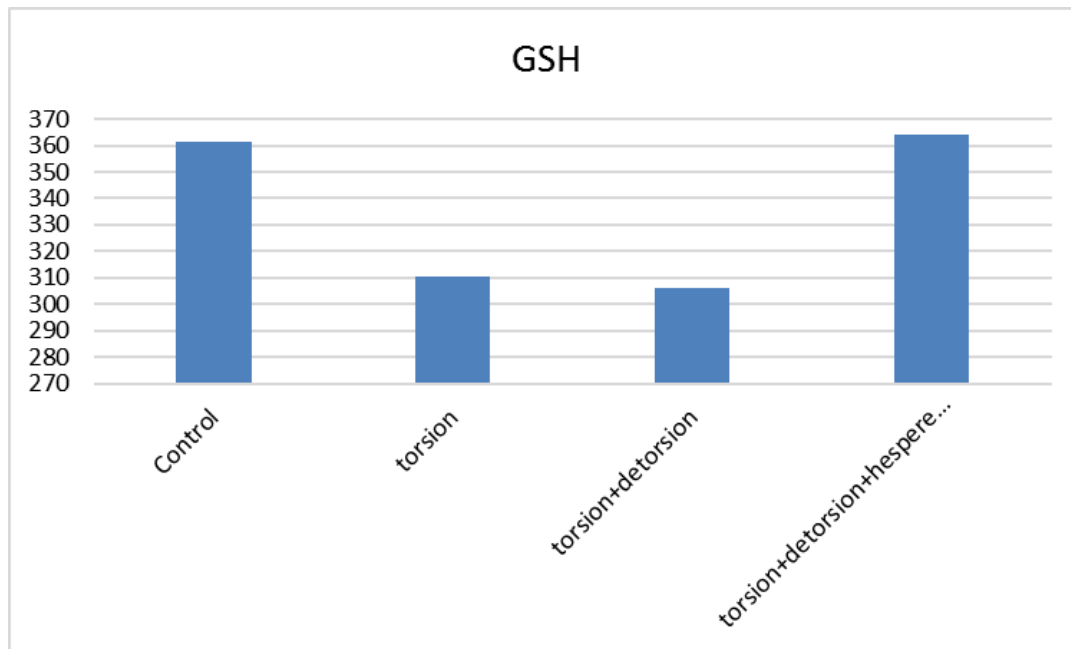
Parameter	Groups	Mean $\pm$ SD	Mean Rank	Kruskal-Wallis Test value	Multiple comparisons for groups (Dunn-Bonferroni test) (p<0.05)
MDA	(1) Control	6,30 $\pm$ 0,51	8,15	33,778 p=0	(2)(3)
	(2) Torsion	8,79 $\pm$ 0,78	25,55		(1)
	(3) Torsion/Detorsion	13,48 $\pm$ 0,49	35,59		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	6,78 $\pm$ 0,43	12,95		(3)
SOD	(1) Control	3,99 $\pm$ 0,49	33,94	33,537 p=0	(2)(3)
	(2) Torsion	2,15 $\pm$ 0,38	14,96		(1)
	(3) Torsion/Detorsion	1,55 $\pm$ 0,22	6,23		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	3,48 $\pm$ 0,35	27,09		(3)
CAT	(1) Control	0,05 $\pm$ 0,005	31,86	33,112 p=0	(2)(3)
	(2) Torsion	0,02 $\pm$ 0,003	15,54		(1)(4)
	(3) Torsion/Detorsion	0,01 $\pm$ 0,002	5,55		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	0,04 $\pm$ 0,004	29,56		(2)(3)
GSH	(1) Control	363,43 $\pm$ 12,74	30,08	29,834 p=0	(2)(3)
	(2) Torsion	312,31 $\pm$ 6,72	12,05		(1)(4)
	(3) Torsion/Detorsion	306,50 $\pm$ 9,35	9,05		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	364,09 $\pm$ 7,67	31,08		(2)(3)
Diameter of	(1) Control	305,93 $\pm$ 11,11	32,15	29,416 p=0	(2)(3)
	(2) Torsion	260,08 $\pm$ 13	11,20		(1)(4)

<b>Seminiferous Tubule</b>		,92			
	(3) Torsion/Detorsion	255,15±7,11	9,90		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	301,08±9,67	28,85		(2)(3)
<b>APAF-1</b>	(1) Control	0,50±0,75	6,18	31,325 p=0	(2)(3)
	(2) Torsion	3,16±0,59	27,05		(1)
	(3) Torsion/Detorsion	3,64±0,53	32,30		(1)(4)
	(4) Torsion/Detorsion+Hesperetin	2,12±0,56	16,55		(3)

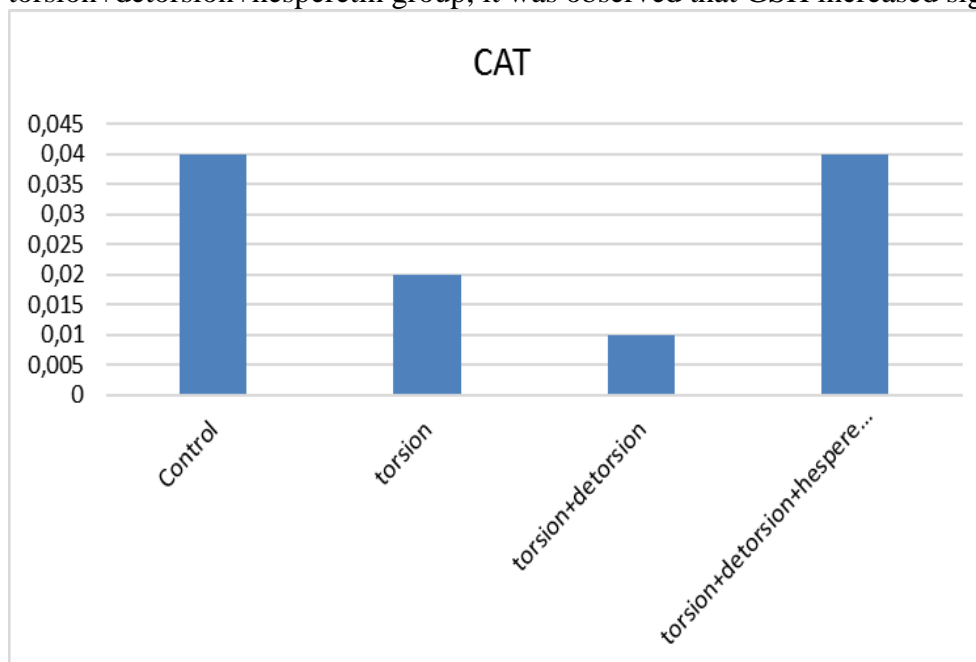
The data obtained in the study were expressed as arithmetic mean±standard deviation. Statistical analyzes were performed using the SPSS program. Kruskal-Wallis test and Dunn-Bonferroni post-hoc test were used to compare the groups. The significance level was taken as  $p < 0.05$ . (n:10)



When we compared the control group to the torsion group, it was observed that mda increased significantly. MDA increased significantly in the torsion group when compared to the torsion+detorsion group. When we compared the Torsion+detorsion group to the Hesperetin group, a significant decrease was observed.



When the control group was compared to the torsion group, it was observed that GSH decreased significantly, and there was a much greater decrease compared to the detorsion group. When the torsion and torsion+detorsion groups were compared to the torsion+detorsion+hesperetin group, it was observed that GSH increased significantly.



When the control group was compared to the torsion group, it was observed that CAT decreased significantly, and there was a much greater decrease compared to the detorsion group. When the torsion and torsion+detorsion groups were compared to the torsion+detorsion+hesperetin group, it was observed that CAT increased significantly.

### **Histopathologic Examination**

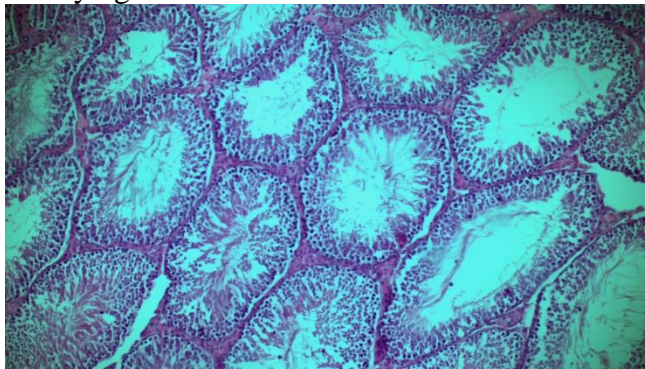
In the transversal section of the seminiferous tubules of the control group, it was observed that the primary spermatocyte cells along the basement membrane were in intense mitotic activity towards the lumen with oval-looking chromatin-rich nuclei.



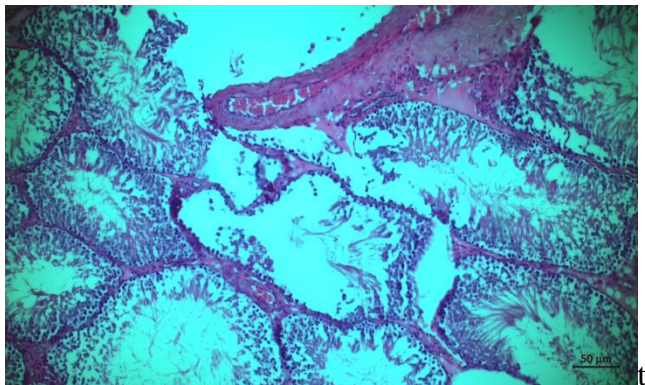
Sertoli cells were triangular towards the lumen and Leydig cells were regular in groups around small capillaries.

In the torsion group, separation of the basement membranes of the seminiferous tubules, degeneration in spermatogenic cells and increase in apoptotic cells, degenerative changes in sertololi cells were observed. Dilatation and congestion in the blood vessels in the intertubular area, and pycnosis in the Leydig cell nuclei were observed.

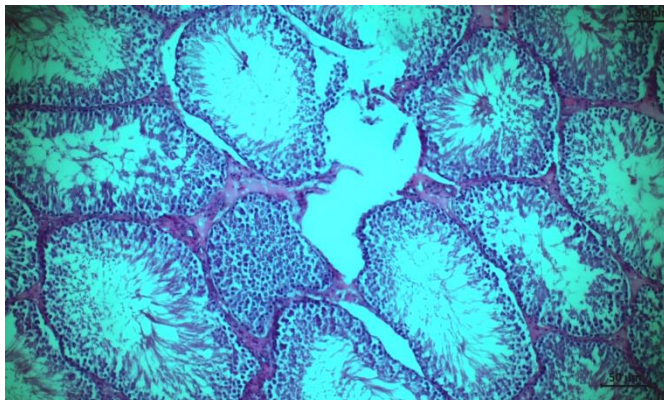
In the Torsion-Detorsion group, degeneration in spermatogenic cells in the seminiferous tubules and pycnosis in nuclei, degenerative Sertoli cells were observed. Congestion in blood vessels, deterioration in Leydig cells and pycnosis in nuclei were observed in the intertubular area. Torsion-Detorsion+Hesperetin group; While degenerative changes were observed in spermatogenic cells in some seminiferous tubules, decreased pycnotic appearance of nuclei. Sertololi cells preserved their triangular structure, while pycnosis was observed in the nuclei of Leydig cells.



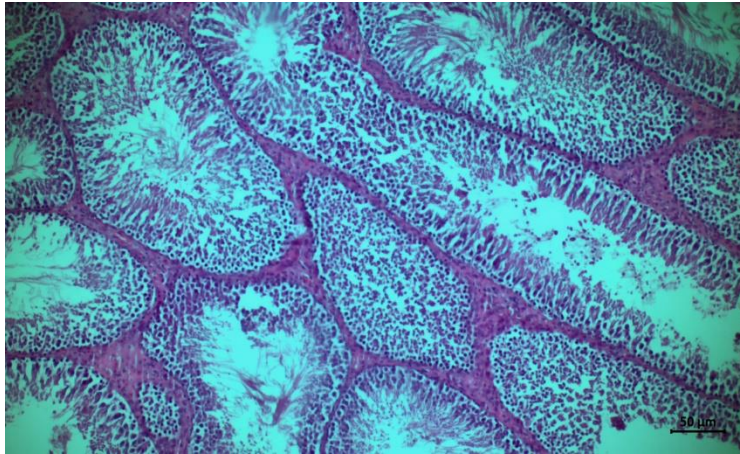
control group



torsion group



torsion+detorsion



torsion+detorsion+hesperetin

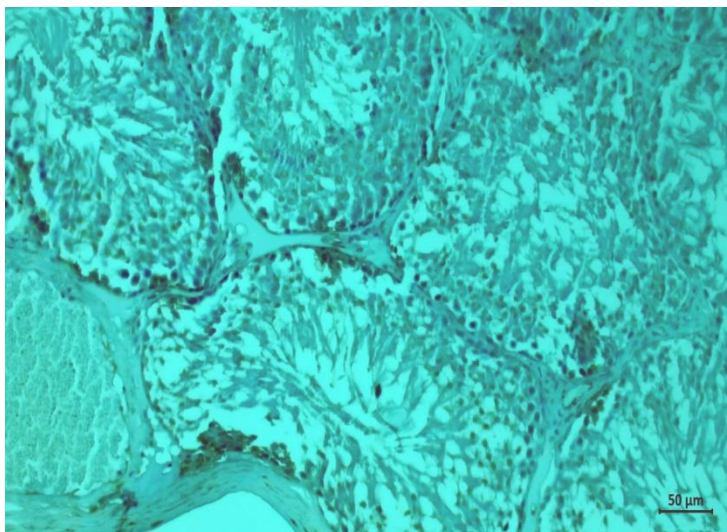
### Immunohistochemical examination

Control group. Negative APAF-1 expression was observed in the spermatogenic cells located from the basement membrane to the lumen in the seminiferous tubules, and in Sertoli cells and Leydig cells. In the testicular sections of the torsion group, APAF-1 expression was positive in spermatogenic cells towards the lumen, and in Sertoli cells and Leydig cells.

In the Torsion-Detorsion group, there was an increase in APAF-1 positive expression in pycnotic spermatogenic cells in the seminiferous tubule. APAF-1 expression was observed as negative in Leydig cells and some fibroblast cells. The expression of Torsion Detorsion+Hesperetin group was positive in some spermatogenic cells in the seminiferous tubule, while its expression was weak in cells located in the basement membrane and in Leydig cells.

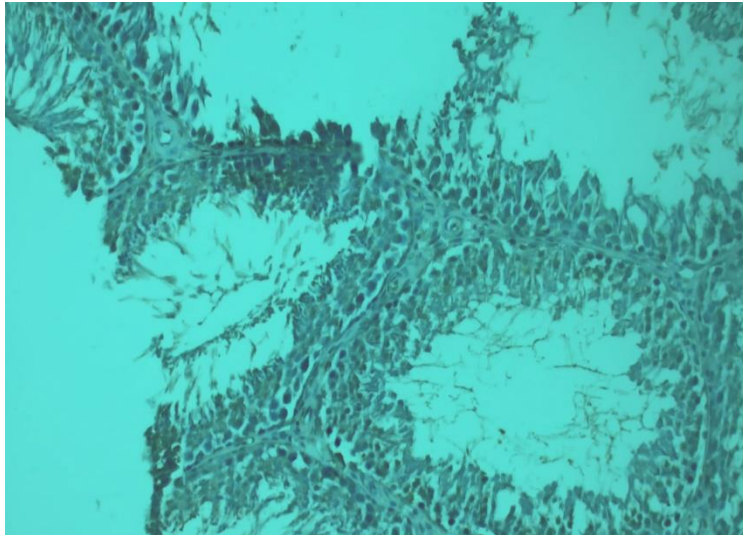


control group

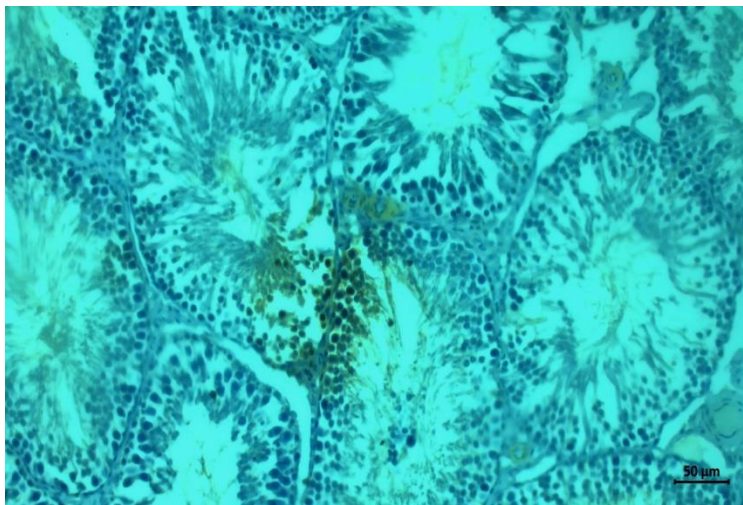


torsion group





torsion+detorsion



torsion+detorsion+hesperetin

## DISCUSSION

Testicular Torsion is a very serious disorder for men and develops due to obstruction of the spermatic cord, where the vessels carrying blood to the testicles are located. In the testis, reperfusion injury is more effective than ischemic tissue damage. After the resumption of blood flow in the tissues, some ischemic tissue was recovered and reperfusion damage was associated with systemic shock and subendothelial hemorrhagic necrosis. The enzymatic antioxidant defense system, which contains SOD, CAT and GSH-Px, reacts to eliminate free radicals in damage caused by ischemia and reperfusion models. It stimulates the migration of leukocytes and leads to ischemic region. Reactive oxygen species (ROS) production takes place. Lipid peroxidation causes an increase in the reaction. Lipid peroxidation indicator MDA value is increased (Cay et al., 2006; Dokmeci et al., 2007).

In the study, when compared with the control group, it was seen that the torsion and detorsion groups increased the MDA level and there was an increase in oxidative stress, while the SOD and GSH levels were decreased in the torsion and detorsion groups. The presence of high MDA levels in torsion and detorsion is an index for lipid peroxidation and oxidative stress. However, in the hesperetin group, the MDA value was decreased and the SOD and GSH values were close to the control. Separation of the basement membranes of the seminiferous tubules, degeneration in spermatogenic cells and increase in apoptotic cells, degeneration in sertololi cells were observed, while in the detorsion group, degeneration and pycnosis in the nuclei of spermatogenic cells were observed.

Apoptosis is characterized by marked biochemical and morphological changes, such as DNA fragmentation, plasma membrane bubbling, and cell volume shrinkage. Hypoxia - ischemia induces apoptotic and necrotic cell death, partly due to permanent changes in cellular energy homeostasis (Zini et al., 1998). When ROS production increases, it leads to oxidative stress.

It increases apoptosis and also increases DNA damage. It has been shown that testicular torsion-detorsion causes increased apoptosis in germ cells and increased Bax mRNA expression (Shoorei et al., 2019).

Hesperetin has also been shown to have protective effects in oxidative stress-related neurodegeneration. Kara et al. reported that hesperetin was effective in preventing retinal apoptosis after ischemia-reperfusion application and had a protective effect. It is thought that hesperetin is effective in spermatogenic cells in which it inhibits the proapoptotic process in the Torsion-Detorsion stage, and it may inhibit apoptotic development and signaling of these cells. In addition, it was thought that Hesperetin application had an important antioxidative effect in the development of spermatogenesis and sperm formation and could provide an important adhesion in cell-cell interaction.

## Conclusion

At the end of the experiment, testicular tissue was taken and biochemical tests (MDA, SOD, CAT, GSH levels) and histopathological and APAF-1 expressions were examined. Hesperetin treatment seemed to prevent the increase in MDA levels of testes due to torsion-detorsion. Statistically, while SOD, CAT and GSH activities decreased significantly in the torsion-detorsion group, they increased in the torsion-detorsion+hesperetin group. Histopathological sections showed degeneration in the spermatogenic cells in the torsion group, pycnosis in the nuclei of Sertoli cells, and congestion in the vessels in the interlobular area. decrease in appearance, a decrease in the number of apoptotic nuclei in Sertoli cells and a near-control appearance in the vessels in the intertubular area were observed. While an increase in APAF-1 expression was observed in the torsion+detorsion group, it was observed that the apoptotic index increased, but this index decreased in the application of hesperetin. It was thought that the application of Hesperetin showed an important antioxidative effect in the development of spermatogenesis and sperm formation, and that it could provide an important adhesion in cell-cell interaction.

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## BIOENGINEERING TECHNIQUES USED IN STEM CELL TREATMENT

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### Abstract

Stem cell which is working a lot of scientist has still been working. As a result of studies on stem cells discovered in many ways, and today many of these methods are used during the culture of stem cells. But these stem cells hold on the order of support for the media environment need so some scientists have turned to the work of tissue engineering. Have the functionality to create the desired tissue cells in tissue engineering tissue scaffolds combined with a suitable material prepared by the process of the creation of hybrid systems. Scaffolds, cells dönüşebilmelerinde provides the support necessary to organize a functional tissue. Control of the position and function of cells, tissue scaffolds, prepared for the success of the building creates a critical point. Material to the preparation of the development of tissue scaffolds, as well as the desired geometry of this material, topographic and functional properties of nanotechnological approaches to the design of structures is becoming increasingly important.

**Keywords:** Stem cell, scaffolds, bioengineering, cell therapy.

### Introduction

#### Stem Cell

The source of every cell and therefore every tissue and organ in the organism is stem cells. Our body is an organism formed by the differentiation of stem cells. The superior regeneration and differentiation abilities of stem cells, in the loss of many organs, tissues and cells resulting from various causes and diseases; The fact that it can be used to eliminate loss, regenerate tissue and eliminate the disease has attracted the attention of many researchers/practitioners, and intensive research and applications have emerged, especially starting with bone marrow transplantation, using different stem cell sources, and continuing with increasing speed, the concept of "regenerative medicine". has developed. Determining exactly how stem cells remain regenerated and unspecialized for a long time and what factors enable stem cells to turn into specialized cells form the basis of studies on stem cells (1).

Stem cell research, which started with bone marrow transplants in the world and continued for more than 20 years, and treatment studies and findings on the use of stem cells, which intensified after the 2000s, put this issue among the popular agenda items of the medical

world. Studies have shown that not only bone marrow can be used as a source of adult stem cells, but also peripheral blood, umbilical cord, amniotic fluid, and adipose tissues (2). As researchers learn more about stem cells, it will be possible to use stem cell technology not only in cell-based therapies, but also in other fields; for example, the study and research of new drugs and toxins. Human “embryonic stem cell” studies will answer many questions about human development. Cancer is caused by abnormal cell division and change. A better understanding of the genetic and molecular control systems of the proliferation and change mechanisms of stem cells will open doors for cancer treatment (1).

Today, it is possible to regenerate damaged tissues and organs by transplantation. But this process has many disadvantages; The first thing that comes to mind is to find a compatible donor for the recipient. Enabling stem cells to differentiate into special cells will create a new source for these processes. In addition, it will be a source of cells and tissues for the treatment of diseases such as Parkinson's, Alzheimer's, spinal cord injuries, stroke, burns, heart diseases, and diabetes (3). In order to bring these studies to the clinical level, stem cells must be differentiated and transformed into the desired cell, the cell or tissue must survive after transplantation and adapt to other tissue, the cells or tissue must function as they should throughout the patient's life and should not harm the recipient patient. For this, intensive studies are ongoing (4, 5).

### **Techniques Used in Texture Architecture**

Tissue architecture studies, which result from the production of undifferentiated cells or stem cells in a 3D Scaffold, are the focus of most research today. Such techniques will allow the regeneration or restructuring of the developing tissue without the need for human organs. In tissue architecture, cells reproduced in a 3-dimensional culture medium are needed instead of bone tissue, and these cells must be given sufficient nutrients and stimulating substances (6) Bioreactors that provide mechanical and chemical stimulation from cell culture are used in the growth and differentiation of cells. It can also increase mineralization of tissue architecture and extracellular matrix deposition (7).

Stem cells are frequently used in these areas due to their use in tissue architecture and regenerative medicine. Stem cells have many differences from progenitor cells. While the self-renewal capacity of progenitor cells is relatively less, the capacity of stem cells to differentiate and self-renew into multiple cell lines is theoretically unlimited (8) In this theory, the self-renewal capacity is derived from the donor's unlimited supply during transplantation. Stem cells can be derived from the inner cell mass cells of the embryo blastocyst (embryonic stem cells (ESC)) or from mature tissues such as bone marrow mesenchymal stem cells. However, there is a disagreement about whether MSC (mesenchymal stem cells) are correct stem cells. The main reason for this conflict is that only skeletal tissues such as bone can regenerate, while cartilage and marrow fat cells have limited self-renewal capacity. It is because the term "multipotent mesenchymal stromal cells" related to mesenchymal stem cells gives support to the stem cell status, however, manuscripts on this MSC term will be retained (9).

Mesenchymal stem cells Mesenchymal stem cells multiply faster than differentiated osteoblasts and are more easily obtained. Bone tissue engineering may require implantation of relatively undifferentiated stem cells into pre-differentiation osteogenic progenitor cells or osteoblasts to prevent nonspecific differentiation of stem cells (10).

Throughout the osteogenic series, MSCs use a non-protein based compound such as Dexamethasone (DEX). DEX is a product that is frequently used in texture architecture studies due to its affordable price. Although the Dex mechanism has not been elucidated, it has been shown to accelerate osteogenic maturation in the early and late stages of osteogenic

differentiation. In addition, differentiation of adipogenesis and chondrogenesis depends on the addition of co-factors to the medium in vitro (11). In studies with Dex, it was observed that Mesenchymal stem cells (MSCs) increased the expression of osteocalcin, bone sialoprotein (12), alkaline phosphatase activity and matrix mineralization. However, Dex was observed to downregulate the expression of collagen type 1 and enhanced adipocyte maturation in culture.

### Scaffold Preparation

The scaffold used in tissue engineering studies generally contains polyurethane. The pore size in the internal structure of this material is about 150-1000  $\mu\text{m}$  (usually 400  $\mu\text{m}$ ). This support material is 43-96  $\mu\text{m}$  (typically 65  $\mu\text{m}$ ) wide. These created materials were tested for their elasticity in the ELF3200 instrument. All samples were cut into cylinders with a diameter of 10 mm and a height of 5 mm, and each cylinder was sterilized with 70% alcohol. Scaffolds were washed with PBS and kept in culture medium for 10 min. The scaffolds were removed from the medium and the excess medium was removed by gently squeezing, and placed in unpainted steel rings with an inner diameter of 1 cm in a single fashion to allow the initial cells to attach to the scaffold (13).

### Cell Growth and 3D Scaffold Culture

It is replicated on a sterile scaffold in 5x10<sup>5</sup> steel rings in 50  $\mu\text{l}$  medium. After adding enough medium to cover the scaffold, we culture it in an incubator for 1 night so that the cells adhere to the scaffold. After an overnight culture, cells grown in the scaffolds were removed from the steel rings and these scaffolds were taken to another plate and completely covered with fresh medium for their safety. This medium supplemented with 50  $\mu\text{g/ml}$  Ascorbic acid-2-phosphate was added to the scaffolds on the first day and 5mM BGP (Betaglycerophosphate) was added to all samples in 4 days. Again on day 4, 10nM DEX (dexamethasone) was added to only a few selected scaffold media to regulate the differentiation of mesenchymal cells. These mediums were changed every 3 days and fresh mediums containing these additives (BGP, alkaline phosphatase and DEX) were added to the scaffold medium (14).

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## **SURGICAL ANATOMY OF THE TEMPORAL BONE**

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### **Abstract**

In recent years, the possibilities of radiological diagnosis of diseases of the temporal bone have significantly expanded. When preparing and defining indications for surgery, today, in order to minimize intraoperative complications and improve the quality of surgical interventions, instead of the generally accepted radiography of the temporal bones, leading clinics use modern diagnostic methods such as computed and magnetic resonance imaging, which allow an objective, non-invasive and to assess in some detail the state of the structures of the middle and inner ear, both bone and soft tissue density. To date, computed tomography is generally recognized as the method of choice for examining the temporal bone. If necessary, magnetic resonance imaging of the temporal bones is also used, which makes it possible to determine the boundaries of the soft tissue formation and reveal its distribution intracranially into the posterior or middle cranial fossa. A special place is occupied by the development of otosurgeons in children, since the range of ear microoperations performed has dramatically expanded recently. Computer diagnostics of temporal bone diseases has been widely used over the past few years. An accurate knowledge of the structural features of the temporal bone in different age periods becomes necessary. The aim of the work was to determine the anatomical features of the temporal bone structure on the basis of the dissection data of bone macro-preparations. The performed cuts of bone macropreparations made it possible to reveal important anatomical features of the temporal bone structure. The results of computed tomography made it possible to clarify the modern range of computed tomography capabilities in the diagnosis of the temporal bone. The sizes and age-related anatomical features of the temporal bone structures are systematized. The introduction into clinical practice of the features of the surgical anatomy of the temporal bone revealed as a result of the study, taking into account the development of new technologies, creates the basis for expanding the possibilities in otosurgery. The study of the temporal bone by the dissection method makes it possible to accurately compare the data of computed tomography and layer-by-layer cuts and select the most informative CT slices for each structure of the temporal bone separately, taking into account the volume of surgical intervention and the planned surgical access.

**Key words:** temporal bone, otosurgery, computed tomography.

## THE URINARY BLADDER GLANDS IN POSTNATAL ONTOGENESIS

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### Abstract

Purpose of the investigation is to learn the morphological peculiarities (quantity parameters, age, individual and regional characteristics) of the glands of urinary bladder 73 received from corpses in the different age stages of the postnatal ontogenesis in the norm. The urinary bladder glands have investigated with macromicroscopically (by Sinelnicov's method) and histologically (Van Gizons) methods and with the application of stereomicroscopic-binocular microscope MBS-9. Statistical data processing included calculation of arithmetic-mean values, their errors, confidential intervals. The glands in the walls of the human urinary bladder in postnatal ontogenesis are characterized with the age features. In the 1<sup>st</sup> mature period of postnatal ontogenesis, the quantity of the urinary bladder glands, alveoli departments and their length, thickness increase. After 1<sup>st</sup> mature age periods at elderly and senile ages is noted an involution of glands. The glands of the human urinary bladder and in postnatal ontogenesis are characterized with the individual features. As, the individual minimum and maximum percentages of glands in the urinary bladder gradually increase from the newborn period to senile age. Regional features characterize the glands in the wall of the human urinary bladder. Our studies have shown that the quantity and density of these glands are less in the upper third of the bladder wall than in the middle and lower third of all age groups in postnatal ontogenesis. Genitally features characterize the glands of the human urinary bladder. In reproductive periods of postnatal ontogenesis, the parameters of the alveoli departments of urinary bladder glands in the women are more comparing to men.

**Keywords:** Urinary bladder, Gland, Postnatal ontogenesis, Morphologically peculiarities



## DETERMINING THE SENSITIVITY OF THE AZERBAIJANI ECONOMY TO THE GLOBAL CRISIS

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### Summary

Relevance of the research: The sensitivity of each country to economic crises has always been in the spotlight. At a time when oil prices are fluctuating sharply and alternative energy sources are developing, countries like Azerbaijan, whose economies are highly dependent on natural resources, are being forced to reconsider their economic policies. Such countries aim to achieve sustainable growth and economic development with active program approaches designed specifically to prevent economic instability. Azerbaijan has set itself the goal of becoming one of the developed countries, and in this way the country faces many new challenges and requirements. Without solving them, it is impossible to imagine sustainable economic development in the medium and long term.

**Research methodology:** Comparative analysis, empirical-theoretical (observation), analytical (synthesis, systematic and comparative analysis), historical-logical method was used.

**The results of the study:** An agreement on the most appropriate monetary policy regime for the new era has not yet been reached. It can be said that the main idea is to pay more attention to the goal of financial stability in the implementation of monetary policy, and the concept of price stability is to increase the scope. Taking into account the above, it can be concluded that the development of monetary policy strategy in Azerbaijan in the short and medium term depends on the gradual implementation of the conditions for the application of inflation targeting. At the same time, it is important to consider strengthening the integration of monetary policy instruments with prudential instruments in the future within the inflation targeting regime.

**Key words:** inflation, unemployment, monetary, economic growth, crisis, inclusive development.

### Introduction

In addition to analyzing and assessing the impact of global crises on the Azerbaijani economy, it is necessary to make concrete proposals and recommendations by scientifically analyzing the ways out of it. We can say that the economic crisis "can affect the country's economy, companies or individuals in the micro aspect from a macro point of view, as sudden and unexpected events in the economy can have a serious impact." (Can Aktan, 2006) . As can be seen from this explanation, sudden and unexpected actions must take place in order for an economic crisis to exist. Based on this, we can say, for example, that the general rise in prices - inflation is a problem for both the state and individuals and companies, but not a crisis (Akin İlkin, Ekonomi Ansiklopedisi, 1984). Hyperinflation is a crisis. Because hyperinflation is defined as a monthly increase in demand or or supply inflation of 50% or more (Mahfi Eğilmez, 2006). Let's look at another example. A banking crisis, a subtype of

economic crisis, occurs when depositors "attack" a bank when a bank or some banks are struggling to pay due to a lack of liquidity. At the same time, there is panic and the market does not trust banks, and the entire banking sector can suffer suddenly.

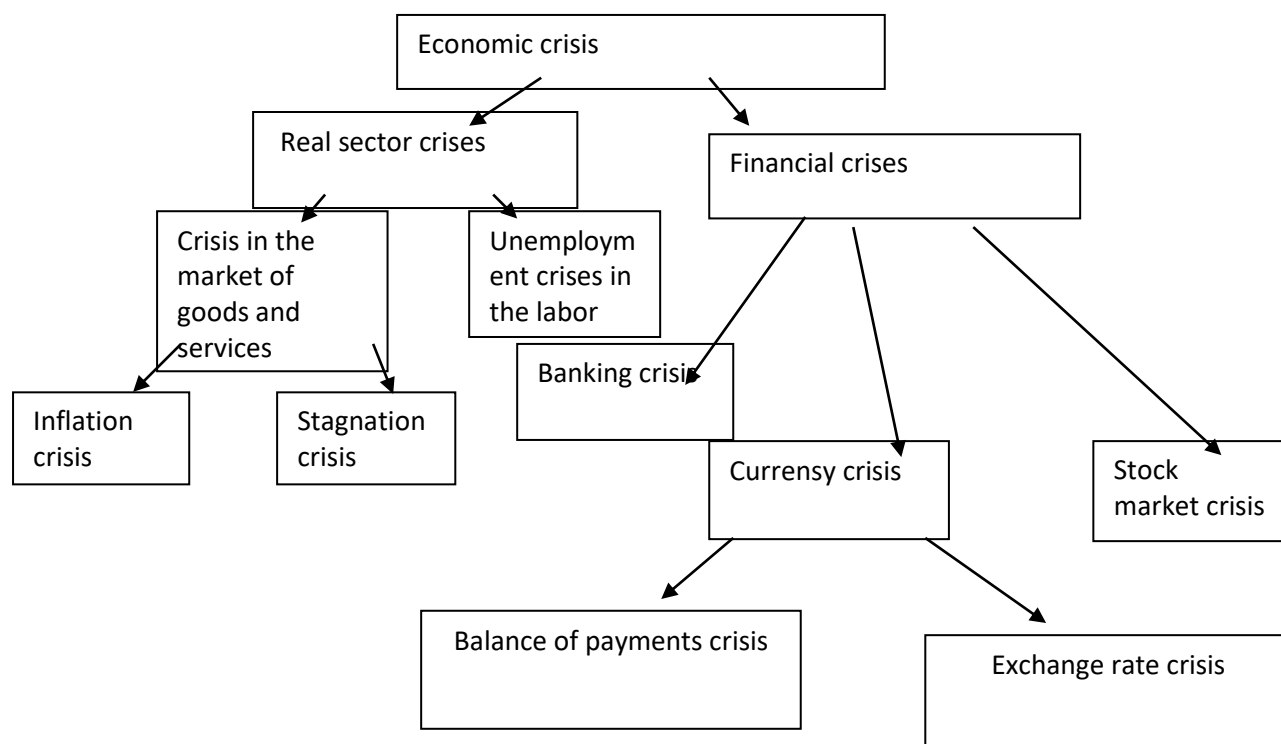
The crisis is that the economies of countries "floating in the sea of globalization" are exposed to financial storms of varying severity. The question to be answered in this case is "does it say that there is a crisis, is the country's economy ready for this wave, how sensitive is it?". We will look for the answer to this question in our research, we will show the degree of sensitivity of the Azerbaijani economy to crises. The economic literature discusses the existence of various "leading indicators" that predict crises. In this context, we will try to show through which channels the crisis has affected the Azerbaijani economy the most.

### **Directions for improving monetary policy**

For economic growth, the problem must first be correctly diagnosed, and then an appropriate strategy must be developed to solve the problem. In general, serious fluctuations in the prices of goods, services, production and foreign exchange, which are considered the main pillars of the economy, go beyond acceptable levels, are called economic crises. Economic crises are a difficult period in which peoples (states) pay for people's economic mistakes. According to management researchers John Kotter and Kim Cameron, crises lead to profound organizational changes (Evangelia F, Dora T, 2020). It is not the success that justifies institutional change, but the result of crises. Therefore, crises can be seen not only as destructive, but also as a period of opportunity for creativity. However, while economic crises have been described as an opportunity for some individuals and companies, they have often been a disaster for society. Some economic crises have even led to world wars. Although globalization has increased the scale of crises, it has shortened their duration. The scale of the crisis is local, regional and global. Let's take a closer look at these crises that changed the history of the world. If this was the case, then they were due to insufficient production of agricultural products. Later, the main cause of the crisis was the imbalance between industrial production and solvency (Vidadi Z, 2012).

Although it is known that the modern global crisis began with the crisis in Great Britain in 1825, the first known financial crisis in the history of economic theory is considered to be the sovereign debt crisis in England in 1340. Thus, new crises of a special nature began in the 19th century and recur about every 10 years on average. Economics is not yet able to give a scientifically sound opinion on how the future development of economic (financial) crises will go and end, alternative ways and their real consequences, and is not able to take preventive measures to avoid them. We can divide economic crises into financial crises and real sector crises. Accordingly, the financial crisis is defined as "a serious economic problem caused by sharp fluctuations in prices in financial markets such as real currencies and stock exchanges or excessive increases in non-performing loans to banks in the banking system," while the real sector crisis is defined by "severe contractions in production or employment." (Aykut K, 2006). This key difference and the sections of each crisis shown are shown in detail in Figure 3.1.

## Types of Economic Crisis



Source: [www.ideas.repec.org](http://www.ideas.repec.org)

In another explanation, which is not in this scheme, they show the financial crisis in two different ways. The first type of crisis is a speculative attack, the second type of crisis is a crisis associated with increased demand for foreign currency due to increased liquidity needs. We can say that the crisis in the economy of our country is the second type of crisis.

As can be seen, economists distinguish three main types of financial crises: the currency crisis (also called the monetary crisis), the stock market (sometimes debt) debt crisis, and the systemic banking crisis (Evgeni E, 2016). Sometimes a fourth is added to this list - the effect of "sudden stop"(Adam H, 2021). Even different types of crises, such as the external debt crisis and twin crises, are added.

Based on the above information, we can say that economic crises can occur in different ways. This includes a rapid contraction in production, a sharp drop in the general level of prices, bankruptcies, a sharp rise in unemployment, a decline in wages, the collapse of the stock market, speculative actions, and so on. factors can be shown as an example. But what is important here is what was done before the economic crisis or what wrong strategies caused it. Also, economic crises are not always for economic reasons. For example, natural disasters in the country (earthquakes, fires, floods, etc.) can cause economic crisis. (Coşkun A, 2006). According to the results in the table above, these economic crises can appear as financial crises. Let's look briefly at the causes of the crises mentioned in the scheme, and then find out which of them is most effective on the Azerbaijani economy.

In general, banking crises are explained in this way. Deterioration of the bank balance due to non-performing loans, contraction in commercial credit conditions and reduction of credit requirements to the real sector, sudden withdrawals from deposit accounts, sudden and sharp changes in the securities market, shocks to the financial system and capital erosion, etc. occurs as a result. Money crises are speculative, such as the rapid and sudden outflow of

foreign portfolio investment. At the same time, it is caused by shocks associated with the reduction of international reserves and loss of confidence in the national currency due to excessive fluctuations in interest rates, as well as the depreciation of the nominal exchange rate by 10% to 25% with the loss of central bank control over the exchange rate (Frankel J, Rose A, 1996) . In these cases, currency crises and balance of payments crises occur. Systemic financial crises can be defined as shocks that disrupt important functions of the financial system, such as the credit system, payments and asset valuation, and have a negative impact on the real economy. An external debt crisis is a situation in which a country declares that it is unable to repay the bulk (principal) and interest of its public or private sector debt due to external payment problems (Yavaş H, 2007). Real sector crises occur as a result of severe contractions in labor and goods and services markets (Kibritçioğlu A, 2001). Inflation crises are caused by inflationary pressures resulting from the constant rise of the general level of prices in the markets of goods and services above a certain level. Unemployment crises occur when the unemployment rate in the labor market exceeds acceptable (natural unemployment levels). Recession crises are caused by a slowdown in growth due to the inability to stimulate investment in the production of new goods and services, an increase in the general level of prices.

The main causes of financial crises and the main macroeconomic factors that led to the crisis are known to be unreasonable inconsistencies such as wrong economic policies, financing of budget deficits by printing money and keeping the exchange rate stable. Sometimes, other model reasons are given because these are not serious enough. The first is the government's abandonment of a stable exchange rate regime. The second is the government's support for a stable exchange rate regime. Third is the emergence of the circular logic that led to the crisis and the fact that the costs of maintaining a stable exchange rate regime outweigh the benefits (Krugman P, et al., 2018). The key point here is that the government makes a decision by comparing the cost of stable land protection with its value. Other economists, like the other model that led to the crisis, see government policies as leading to moral danger as a major factor in creating the crisis (Mishkin F, 1999).

What kind of capital is lacking in developing countries? In one article, three economists (Miriam Bruhn, Dean Karlan and Antoinette Schoar) point out that financial capital and human capital are always scarce and important for those countries. However, managerial capital is often overlooked by economists or is embodied in technological progress and innovation in economic models. Robert Lucas and Sherwin Rosen also point out that talent for managing is one of the key factors in economic development. (Miriam Bruhn, et al., 2010)

Let's look at how the proposed management capital affects the economy. First of all, it is possible by using natural resources properly and efficiently, motivating employees and building production, marketing and financial processes properly. Second, it is possible by planning, that is, by knowing what type of capital and labor, what technology, how much and when to use it. This is done by making plans for the future between investment and financial strategy. Therefore, it is necessary to increase the knowledge and skills of managers and entrepreneurs in developing countries in this area. Studies show that such measures have a positive effect mainly on small and medium-sized companies.

In addition, noting my proposal, I would like to say that, first, management capital is not created by itself, it is earned by working on successful and unsuccessful projects. For this reason, countries need to create conditions for the restructuring of companies that fail in the laws related to bankruptcy (recession), to allow entrepreneurs to restart. Second, according to financial capital, human capital, and managerial capital, administrative capital and bureaucratic resources must develop in parallel in all executive bodies of the state related to entrepreneurship and business. Businesses are the engine of job creation and economic

growth, and they drive economic activity through the value chain. Lack of any of these will not allow economic growth, but rather growing capital will be wasted.

The concept of "creative economy" has emerged in the fastest growing sector of the world economy over the past decade. The term was first used by Business Week in August 2000. It is the relevant sector of the national and international economy that distributes, produces and consumes products and services related to creative activities (the creative economy includes ETTK, software, film business, book trade, media, music and art business, video games, advertising and design, etc. services markets are included) (Kamran İ, 2019) . In short, it is understood as the sum of individuals and businesses that create culturally and artistically new products and services. Sometimes "creative" and "innovative economy" are synonymous. However, the latter are mostly used in scientific and technological developments and their commercialization. In recent years, even a new term "creative-innovative economy" has appeared. Creative economy is an area that promotes creativity and innovation, contributes to economic development and is based on individual creativity, and its importance is growing day by day. It is an area based on intellectual capital rather than physical capital, developed on the basis of information and communication technologies, growing by creating new jobs, regulating new market needs and at the same time meeting market expectations, and growing not only in developed but also developing countries (Ülkühan E, Özlem Ö, 2017).

According to the Center for Economic Reforms Analysis and Communication (CERAC) in Azerbaijan, economic growth is affected by 60 percent of labor and 40 percent of capital (Vüsal Q, 2021). American economists estimate that in 1890, 50 percent of GDP was generated from raw materials, but after 100 years this limit did not exceed 10 percent, where the main leading factor was human capital (Abbasov N, 2015). According to the World Bank, the US national wealth includes only 19% of fixed assets (buildings, facilities, machinery, etc.), 15% of natural resources, 76% of human capital (23.2% and 74% in Western Europe, 10% in Russia, 40% and 50%). Today, in any sphere of economic activity, human capital, its volume, quality and forms of use are one of the main factors of economic growth, competitiveness and efficiency.

This means that economic growth can be more influenced not only by increasing human capital, but also through labor productivity. At the same time, it is necessary to apply high technologies to increase the impact of capital on economic growth. There is a great potential for increasing the overall factor productivity in Azerbaijan. A favorable environment has the potential to further support economic growth. According to international standards, the quantitative indicator of human development is the human development index. The level of human development is an important factor influencing inclusive development. Only when human development is high, education, knowledge and skills are at the required level, the natural and financial resources that are important for inclusive development can be properly managed (Ələkbərov U, 2018).

The dynamics of economic growth is very important to assess the intensity and scope of the crisis. However, there is a significant difference in this approach between countries whose economies are heavily dependent on natural resources and those whose economies are diversified.

As we know, economic growth is a real indicator calculated on the basis of physical indicators. That is, it does not show the current state of the economy as it is and does not fully reflect its losses. For example, we can look at such a hypothesis. Any country produces only oil and natural gas. Suppose that the price of these products on the world market fell three times during the year, but production in natural terms increased by 10%. Since economic growth is calculated not at current prices, but at stable (base year) prices, the economy will grow by 10% even if prices fall by 3 times. In the case of Azerbaijan, half of the economy consists of oil and natural gas. Despite the sharp decline in prices, as the decline in oil



production will be offset by an increase in natural gas, we see almost no decline in official economic growth in this sector, or a weak decline in the face of a very serious crisis. The increase in public investment significantly solves the decline in the non-oil sector, and we are faced with a small economic downturn, which was reassured by the relevant institutions in the deep crisis. In this case, how to measure the depth of the crisis ?! I think the best approach is to look at the structure of national income. How much do institutional entities that receive a share of national income lose in a crisis year (years), how much do household, general business, and financial sector incomes (profits) decrease, and how do real incomes change, taking into account the effects of inflation? To do this, we need to analyze the IFRS and look at how the opinions of different entities have changed, whether the subjects are forced to use their savings or borrow in the event that the savings move to the negative zone. In fact, other issues to be investigated are how much of the rent and interest income is lost from the state's ownership of the Oil Fund from natural resources, and whether the government's budget revenues in the form of taxes are reduced.

So what are some ways to measure well-being ? Decision makers, politicians and economists use a variety of indicators to measure economic growth before making a decision. The most widespread of these indicators is GDP. GDP was first proposed in 1934 by Simon Kuznets. This was a need arising from the general global economic stagnation between the two world wars. The GDP used by Kuznets in his 1934 report to the US Congress was, in fact, himself a statement that the concept itself was not a long-term indicator and should be used temporarily. As a reason, he believed that this indicator included only economic growth and did not in fact reflect the side effects and other effects of economic growth on the environment. However, Kuznets's figure was longer. Thus, after the Bretton Woods Conference in 1944, it was adopted by almost many countries around the world and is still used as a very dominant indicator in the economy. As we already know, GDP is interpreted and calculated as the final market value of domestically produced goods and services during the year. This measurement allows us to measure only the monetary and material value of the economic growth of the country's economy. This is where the main criticism came from. This measure, as Kuznets himself noted, did not include damage to nature, as well as socio-economic well-being.

The debate on these alternative indicators, which began in 1980, intensified with the 2008 global financial crisis, and has intensified in the last five years with global climate change and the climate crisis. The main criticism was that GDP was a fairly wholesale, top-down measure and did not show how society would benefit from this economic growth, nor did it address environmental issues in the face of climate change and environmental crises in general. For example, it does not allow us to understand the carbon footprints of countries. For these reasons, from the 1970s and 1980s, a number of countries began to create national indicators. One of the first attempts was to measure the "happiness index" of the Kingdom of Bhutan in 1972. Although this index is not very widespread in the world, it is still calculated by the country in question and tries to measure the level of welfare of the society (country). Another aspect was the Genuine Progress Indicator (GPI) index (Tejvan P, 2011). This figure was suggested by environmental economists. However, this proposal was met with great anger by neoclassical economists. Because their main argument was that this indicator is only ecological and does not allow to measure economic growth. Nevertheless, this indicator has been used for some time, and so far in the European Union and Finland, annual reports on these indicators are prepared and presented to the public. Növbəti cəht 1980-ci illərin sonunda İnküziv İnkışaf İndikatorunun (The Inclusive Development Index - IDI) hesablanması idi (From Wikipedia) . This indicator tried to measure more socio-economic inequality. It also includes gender inequality, differences in their payments, poverty definition, and so on. such indicators were included. This indicator has been adopted

and used by many world organizations and is published annually by these organizations in the form of reports. The Inclusive Development Index (IDI) is an annual assessment of the economic performance of 103 countries. It measures how countries move in eleven dimensions of economic progress in addition to GDP. There are 3 columns. Growth and development, inclusion and intergenerational equality - sustainable management of natural and financial resources (knoema.ru, Inclusive Development Index Azerbaijan). Apparently, this indicator can more accurately detect development indicators and allow you to see it more accurately. Because rather than just measuring economic growth, we can see how it affects economic well-being. Unfortunately, Azerbaijan does not show good results on this indicator. It is ranked as one of the 3 countries with the worst results. After the 1980s, the countries most interested in measuring prosperity were Australia, Iceland, and Finland, and the Scottish government even formed a welfare economy coalition.

It seems that countries in the world measure prosperity in different ways, each country has its own approach. However, many of these methods are more of an umbrella than the UN's Sustainable Economic Development Goals. There are currently more than 130 different ways to measure well-being around the world. Some countries are trying to measure the issues they prioritize. For example, one of the latest dimensions has been the circular model of the economy. Since 2013, global corporations, governmental and non-governmental organizations have been promoting a circular economic model to address the devastating effects of a linear economy (raw materials-waste) (Abbaslı İ, 2019). This model offers a waste-free economy, working on the principle of "fix and reuse" ( Report by IMSA 2013). According to the model, such economic relations will benefit all parties (society-nature-business) and will have a positive impact on economic growth. It can be said that the movement around this model at the academic and business levels has led to the adoption of political directives by the European Union, the African Union and China. Proponents of the model argue that the circle will create sustainable development not only for DCs, but also for DCC economies (Felix P, Johanna L, 2017). However, this model, as in the traditional straight-line economic model, focuses mainly on economic growth and does not take into account the problem of depleted natural resources. At present, the model promises new opportunities and markets for businesses and large corporations in initial reports. Of course, the circular economy model can be considered an important event in the transition from a straight economy to a more sustainable economy. However, it seems that this model contributes to the depoliticization of capitalism based on economic growth, that is, the avoidance of inequality resulting from growth and the continuation of the quantitative development model.

No economist has predicted the 2008 global financial crisis. Such crises give us a signal that we must define, discover, or create new dimensions that can reveal more inclusive, more global problems in the world. Instead of these top-down dimensions, the main purpose of bottom-up dimensions, in which society also contributes, is to create a better economic policy. It is also better to implement a measurable policy based on statistics. There is a very serious debate going on around this topic, for example, economists like George J. Stigler think, what other indicators can we create besides GDP, and is it possible to create more applicable global indicators ?! Of course, no such alternative indicator has been found so far. At present, countries sometimes carry out these measurements by creating indicators more locally.

Maybe there is no need to create global indicators, maybe countries can create their own or regional indicators. Of course, developing countries like Azerbaijan can benefit more from the experience of DDCs. But experience shows that we can create our own indicators. However, there are very important conditions that must be taken into account when creating these indicators. For example, if we claim that despite the environmental impact, gender

equality, and GDP growth over the last 25-30 years, how much impact it has on welfare, how evenly distributed it is, that is, how much poverty has decreased, is important in terms of learning to use. As we noted in the previous chapter, Azerbaijan itself does not measure these indicators, we mostly get this information from the reports of international organizations. One of the important issues is to measure the perception of welfare. Because, in our opinion, the top-down indicators measured by the state may be different from the bottom-up indicators perceived by the society. In Azerbaijan, this research was once conducted by the Center for Caucasian Studies within the framework of the Caucasus Barometer. The center tried to measure certain perceptions of people. In my opinion, measuring these indicators every year would be a very important step. At the same time, our local indicators of Azerbaijan may be formed. It may also be important to more accurately identify the sensitivity of the Azerbaijani economy to the global crisis.

Prior to the recent global financial and economic crisis of 2008, the popularity of inflation-targeting (IH) regimes was steadily increasing among monetary policy regimes around the world. More and more countries around the world began to adopt the IH regime. The Central Bank of Azerbaijan also saw the way to improve its monetary policy strategy in the future by switching to the Board of Directors. But after the global financial crisis, which monetary policy regime seemed most appropriate for the Central Bank of Azerbaijan? As for this question, it can be answered by re-evaluating the monetary policy framework in Azerbaijan and considering the views on the monetary policy strategy, taking into account the lessons of the 2008 crisis.

In many cases, it can be said that the inflation targeting policy has proved to be more stable than other monetary policy regimes during the global financial crisis. Long-term studies have shown that macroeconomic imbalances are lower in countries with an inflation targeting regime. Many countries that applied inflation targeting before the crisis continue to prefer to keep the monetary policy regime largely unchanged even after the financial crisis. However, given the consequences of the global financial crisis, discussions are underway to make some changes to the monetary policy regime in both developed and developing countries. An agreement on the most appropriate monetary policy regime for the new era has not yet been reached. It can be said that the main idea is to pay more attention to the goal of financial stability in the implementation of monetary policy, and the concept of price stability is to increase the scope. Taking into account the above, it can be concluded that the development of monetary policy strategy in Azerbaijan in the short and medium term depends on the gradual implementation of the conditions for the application of inflation targeting. At the same time, it is important to consider strengthening the integration of monetary policy instruments with prudential instruments in the future within the inflation targeting regime.

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## PROBLEMS OF USING INNOVATIVE TECHNOLOGIES IN THE WORK OF TOURISM GUIDANCE

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### **Abstract**

The article characterizes the organization of excursions as one of the important directions in the modern tourism business. As a result of participation in excursions, along with many factors in the formation of new impressions in excursionists, increasing the level of satisfaction, increasing the level of perception, ensuring the fullness of services, the special role of professional skills of the guides and the level of use of innovative technologies and technical means is noted. Level of provision of innovative technologies and technical means in existing museums and tourism enterprises in Ganja city, Gadabay and Goygol districts of Ganja-Gazakh economic region, professionalism of guides and skills of using innovative technologies and technical means, knowledge of foreign languages, work skills of excursionists with various technical means, technologies, applications and level of satisfaction with excursions, the state of infrastructure in the areas were investigated. It was found that the application level of innovative technologies and the use of technical means in museums and tourism enterprises is low. At the same time, the guides' ability to use the innovative technologies, technical means, foreign language skills, and professional skills in organizing excursions, presentations, and demonstrations are low, and most guides prefer traditional presentation and demonstration methods. As a result of the research, it was determined that the current state of infrastructure, problems in the field of material-technical supply creates obstacles to the implementation of measures based on innovative methods of demonstration, presentation, etc. It is noted that the necessary infrastructure should be formed to operate more successfully in the field of tourism and excursion business with the widespread use of innovative technologies, the requirements for professional training of guides should be increased, cooperation regional state tourism management structures and educational, training, preparation, refining institutions with the tourism-excursion enterprises and individual entrepreneurs should be strengthened with the purpose of solving issues in this field.

**Keywords:** innovative technologies, professional skills of the guides, impression, level of satisfaction, Ganja-Gazakh economic region.

**Introduction.** In the tourism-excursion process, the serious impact of tourists consumption needs and the formation of new consumption models necessitate the creation of qualitatively new products and services that have a positive impact on the emotional state of tourist-excursionists and allow for the creation of fuller impressions. Given that this trend is becoming stronger and the demand for new products and services is increasing, it is necessary to adopt innovative technologies and use them as widely as possible in the tourism-excursion process in order to achieve the creation of extensive impressions and increase the effectiveness of sourcing activities, at a cost less than traditional methods.

At present, innovations cover all spheres of life activity of society and fully reflect the logic of development of modern spheres of activity and culture. Society, socio-economic relations



and culture change their foundations, scientific and technological progress, principles of activity, ways and forms of communication, personality types and their consumer needs, change their lifestyle (Styopin, 2001). Innovations are already becoming an important factor as rings and attractors that are constantly transforming the current state and future of both the individual and humanity as a whole (Kuzovenkova, 2011). These changes cover almost all spheres of modern social and social life, including consumer needs, and are dynamically expanding. The process of global changes in consumer demand is also widespread in various sectors of the tourism industry. This manifests itself in the development of innovative excursion programs and the enrichment with innovative components, in the search, formulation and application of new interactive ways of interaction with consumers of excursion services, in a word, in the whole excursion activity.

At this time when global changes happen, the development and application of new approaches and methods in order to expand tourism and its excursion activities, as well as to improve competitiveness, is gaining actuality. The strengthening of activity in this area is considered one of the ways of development of tourism-excursion enterprises ( Hjalager, 2002; Hjalager, 2009; Pechlaner et al., 2006), paves the way for their sustainable development in the modern business environment (Ceylan, 2013; Hall and Williams, 2008).

The modern era, which is also the result of the changes, requires new approaches to the processes of forming, producing and presenting tourism-excursion products to the consumer audience. Therefore, in order to be innovative, enterprises must strive to apply innovative technologies in all areas of activity (Bowen et al., 2010). The success of the innovation process for the tourism-excursion enterprise depends on ensuring the unity of scientific-technical, economic, technological, organizational, commercial and other necessary measures (Chirskiy and Khvagina 2015). Therefore, every tourism enterprise should mobilize its existing scientific, technological, economic, organizational, etc. opportunities to create new and innovative products and services so that it can effectively operate in the modern tourism market, where competitive conditions are aggravated. The individual entrepreneurship branches operating in the field of tourism, as well as the guides should pay special attention to this issue.

Generally, as in the prospect of all areas, technological solutions of the main directions of activity in the tourism industry, including in the field of excursion will be possible on the basis of mobile technology, augmented or virtual reality, Internet of Things (IoT), virtual assistants, large databases, block chain and 5K technologies (Belen, 2019). As we can see, the development and the solution of problems in the field of tourism and excursion are directly related to innovation.

The application of technical innovations in the excursion activity is also one of the most important areas of innovation activity (Turaev, 2010). With the help of computerization and various technical means of information-smartphones, tablets, audio guides, video cameras, apps for mobile phones, traditional excursions have become an innovative, very convenient and interesting process in the modern information space. The modern excursion business, one of the main goals of which is to create new emotions and impressions, can more easily achieve the set goal using technical means equipped with innovative technologies. The use of innovative technical means can contribute to the production of competitive services to the tourism enterprise, meeting the needs of the excursionists at a higher level, creating new impressions by influencing their emotions, forming and rapid development of the economy of impression (Payn II and Gilmor 2005) replacing the industrial and service economy.

Most of the technical innovations are used to allow tourists to explore the demonstration objects of the tour independently. Augmented reality (AR), audio extractions; virtual reality extractions (VR), GPS extractions, QR codes, mobile apps, online services, travel guides and reference books (including apps for VR Reality) etc. is attributed to the technical innovations in excursion activities. At present, it is possible to carry out virtual display and presentation of artefacts in museums using innovative technologies such as web sites and augmented reality. Using these technological capabilities, by enabling virtual display and display of cultural samples and digital collections are being enabled to expand museums activities (Wojciechowski et al., 2004).

The use of these technologies in the excursion programs devoted to various historical and cultural themes not only allows high-quality realization of presentations and demonstrations, but also plays an important role in the transmission of emotions, formation of impressions, raising the level of understanding of the subject, in other words, increasing the effectiveness of the results of the excursion activities. Augmented reality technology allows us to increase technical capabilities on excursions, creating digital boards and content, especially without spoiling the general landscape of cultural heritage and architectural monuments (Jung et al., 2016).

The innovativeness of the presentation and demonstration of the objects (natural areas, rocks, caves, lakes, industrial-production areas of historical importance, urban neighborhoods, houses belonging to state and public figures, etc. (Guisado-González et al., 2014; Korres, 2007; Nicolau and Santa-María, 2013).

**Research material and methods.** The research material consists of the excursions in Gadabay and Goygol districts of Ganja-Gazakh economic region and Ganja city, opportunities to use innovative technologies, electronic services and applications, condition of material and technical base and infrastructure, ability and professionalism of guides to use innovative technologies, relations emerging during the excursion. During the study, observation, comparison, questionnaire, analysis and generalization methods were used.

**Discussion.** Azerbaijan, as well as the Ganca-Gazakh economic region, is rich in tourism-excursion resources (Hasanov and Gasimov, 2021). The presence of 9 out of 11 climate types in the territory of our country, colorful and unusual natural landscape, natural, cultural, architectural monuments, rich biodiversity, specific household and cuisine, and etc. factors create ample opportunities for the development of tourism-excursion (Gasimov, 2011). It is possible to switch from one climate type to another in a short time in the territory of Ganja-Gazakh economic region, which creates additional opportunities for tourism-excursion business (Hasanov, 2014). It should be noted that the factors listed in the development of tourism-excursion business play a decisive role, but the process is technological, technical, infrastructure, personnel provision, etc. aspects are also important. In particular, changes in the nature of consumers' needs, the emergence of demand for quality, new, unusual tourism products and services makes the creation and application of innovative production and service technologies in this area more actual. The toughening of competition conditions in tourism business, stipulates the creation and application of innovations and the correct determination of opportunities and directions, creates the basis for the strengthening of competitiveness and successful activity of tourism-excursion enterprises.

During the study, the usage level of innovative technologies and technical means in the organization of excursions on various topics and routes in museums operating in Ganja city, Gadabay and Goygol districts of Ganja-Gazakh economic region and in the territories of the mentioned administrative subjects was observed, compared and summarized conclusions have been reached.

The use of modern presentation and demonstration technologies in our museums is limited and at a low level. Thus, innovative touch screens are used only in museums created in Heydar Aliyev centers, and they display audio exorcisms and various documentary films. In other museums, various technical means are used in part, demonstrations and presentations are mainly carried out in traditional form. Each of the four guides working at the H.Aliyev museum can use the available technical means for presentation and demonstration purposes. During the survey conducted with 14 guides working in museums, it was determined that only 2 of them have an average level of information on modern innovative technologies applied in tourism-excursion business, and 3 people have a low level of information. The rest (9 people) said they heard certain information about the current technologies, but were not interested.

According to the guides, excursions are not particularly dissatisfied with the services offered, so there is no need to use innovative technologies and no special attention is paid to this issue yet. At the same time, taking into account the importance of using innovative technologies in the field of modern tourism-excursion, the guides stated that they plan to participate in special training, training courses to adopt innovative technologies in the future and try to increase their knowledge.

Information on the level of use of technical means and innovative technologies is given in the Table 1.

During the research, the information obtained on the foreign language knowledge, one of the criteria for assessing the level of professionalism of the museum guides showed that the presentation and demonstration skills of the majority of the guides in the foreign language are not at the proper level.

Table 1. The usage indicators of innovation technologies at museums.

Regions	Museums	Augmented reality (AR)	Virtual reality (VR)	Audio tours	GPS tours	QR code	Mobile applications, online services, travel guides and reference books	Technical means (microphone, lighting, etc.)
Ganja	Haydar Aliyev	-	-	+	-	-	-	+
	Historical and local lore	-	-	-	-	-	-	+
	Nizami Ganjavi	-	-	-	-	-	-	+
	Gala gapisi	-	-	-	-	-	-	+
	Mahsati Ganjavi	-	-	-	-	-	-	-
	Mirza	-	-	-	-	-	-	-

	Shafi							
	Mir Calal Pashayev	-	-	-	-	-		+
	İsrafil Mamedov	-	-	-	-	-	-	-
Gadabay	Haydar Aliyev	-	-	+	-	-	-	+
	Historical and local lore	-	-	-	-	-	-	-
	Ashug (saz) art	-	-	-	-	-	-	-
Goygol	Haydar Aliyev	-	-	+	-	-	-	+
	Historical and local lore	-	-	-	-	-	-	-

From 14 guides working in 8 museums of the city of Ganja, 1 person in Russian and English, 1 person in English, 6 people in Russian, 1 person in Persian can guide an excursin, and can be in contact with excursants. The remaining 5 people serve excursants only in the Azerbaijani language. One of the guides leading the program of excursion in english is an employee of the Museum of history and local studies, which has been closed since October 2019 for construction.

One of the 4 guides working in 3 museums in Gadabay can lead an excursion in English, one of them in Russian and one of the 3 guides working in 2 museums in Goygol can lead an excursion in English and one of them in German.

Excursions in Ganja are mainly organized to museums, religious objects, Hajikand recreation area, Goygol National Park. 'GTR tours', 'Efes travel', 'West tour', 'SL tourism', 'Bizimtur travel', 'Globus travel' and 'Sport Luxury' tourism enterprises are active in organizing excursions. Guides leading tours on a variety of topics mainly use traditional presentation and demonstration methods. Observations and surveys with guides show that there is little interest in the use of innovative technologies in tourism enterprises operating in Ganja. An analogical situation is typical for the guides of enterprises operating in Gadabay and Goygol.

The language skills of the guides in the enterprises that offer tourism and excursion services in these regions are also low. Out of 8 guides operating in tourism and excursion enterprises in Ganja, one can present in English, one in Russian and English, and one in Russian. In Gadabay and Goygol districts, none of the guides working in tourism and excursion enterprises can present in a foreign language.

The level of presentation and demonstration skills of guides in a foreign language cannot be considered normal, and the heads of museums and tourism-excursion enterprises should take necessary measures to solve this problem. Information on the knowledge of foreign languages by the guides is given in Table 2.

Table 2. Language skills of guides at museums and tourism enterprises

Regions	The number of museums and tourism enterprises	The number of guides at museum and enterprises	Languages						
			English	English and Russian	Russian	Persian	German	Other languages	Not knowing a foreign language
At museums									
Ganja	8	14	1(2)	1	6(7)	1	-	-	5
Goygol	2	3	1	-	-	-	1	-	1
Gadabay	3	4	1	-	1	-	-	-	2
At tourism enterprises									
Ganja	7	8	1(2)	1	1(2)	-	-	-	5
Goygol	2	2	-	-	-	-	-	-	2
Gadabay	1	1	-	-	-	-	-	-	1

During the study, 167 tourists of different age groups were asked about their ability to use mobile applications, innovative technologies and technical means, and it was determined that 86% of them have such skills. This indicator was 89% in Ganja city, and 87% and 82% in Gadabay and Goygol districts, respectively. These skills are highest at 100% for those under 30 (63 people) and lowest at 56% for those over 61 (21 people). In the age groups of 31-45, 46-60 (48 and 31 people, respectively), this figure was 97% and 91%, respectively.

Those over the age of 61 said they preferred to receive information about the tour sites in direct communication with the guides and showed little interest in using technical means. Those in the other three age groups said they believed it would be more effective to enrich the presentation and demonstration with innovative technologies and techniques. Most of the excursionists from the first three age groups consider the use of innovative technologies in this area as one of the main ways to adapt services to new quality requirements and consumer models, to create new emotions and enrich impressions. They also see this as an indicator of the professionalism of the guides.

The use of innovative technologies and various technical means in the modern tourism-excursion business serves to ensure the completeness of services, improve perception and understanding, create more positive emotions, form new impressions, increase the efficiency of tours and excursions, and ultimately increase the satisfaction of tourists. During the survey, participants were asked to comment on the level of use of innovative technologies and technical means in the excursions and their satisfaction with the services provided in general. 93% of participants, including all participants over the age of 61 (100%), 89%, 87% and 95%, respectively, were satisfied with the services of the 30-45, 31-45 and 46-60 age groups. According to those over 61, it is enough to spend time effectively and get information about certain objects during the tour, and the use of innovative technologies is not so important. The ability of tour participants to use mobile applications by age groups and the level of satisfaction with the tours are given in Table 3.



**Table 3.** Ability of using mobile applications and technical tools by age group of excursions and satisfaction rate of excursions

Regions	The number of excursions	Age group				The rate of ability using mobile applications and technical tools by age groups, (%)					Satisfaction rate of excursion by age groups (%)				
		Up to 30	31-45	46-60	Over 61	Up to 30	31-45	46-60	Over 61	Average	Up to 30	31-45	46-60	Over 61	Average
Ganja c.	68	26	19	14	9	100	100	91	66	<b>89</b>	92	84	93	100	<b>92</b>
Gadabay d.	46	19	16	6	5	100	100	91	60	<b>87</b>	89	93	10	100	<b>96</b>
Goygol d.	53	22	13	11	7	100	92	90	43	<b>82</b>	86	85	91	100	<b>91</b>
<b>Sum</b>	<b>167</b>	<b>67</b>	<b>48</b>	<b>31</b>	<b>21</b>	<b>100</b>	<b>97</b>	<b>91</b>	<b>56</b>	<b>86</b>	<b>89</b>	<b>87</b>	<b>95</b>	<b>100</b>	<b>93</b>

**Result.** During the research, it was determined that the level of use of innovative technologies during the excursions organized in different regions on different topics depends on the level of supply with information communication technologies, technical means, providence of other necessary infrastructure elements in the area, the theme of excursion, the level of complexity of the excursion route, the membership of the excursion group, the guide's level of professionalism and mastery, specialization direction, ability of mastering and applying of the innovation technologies. The use of innovative technologies also depends on the methodological features of the demonstration and presentation, the characteristics of the various demonstration facilities included in the excursion program.

**Conclusion.** As a result of the study, it can be concluded that the solution of existing problems in the field of tourism guidance requires the implementation of the following measures:

- Requirements for the level of professional training of guides should be increased,
- Special attention should be paid to increasing the knowledge of guides in the field of innovative technologies,
- Measures should be taken to address the problem of enriching and improving the language skills of guides in order to expand the opportunities for providing tourism and excursion services to foreign tourists;
- Training courses in these areas should be organized in the regions, participation of guides in events to increase the level of professionalism and knowledge should be provided,
- Shortcomings in the formation of the necessary infrastructure for the widespread use of innovative technologies and more successful operation in the field of tourism and excursion business in the surveyed areas should be eliminated,
- In order to quickly solve the problems in the field of excursion business, cooperation between regional state tourism management structures, educational institutions and tourism-excursion enterprises and individual entrepreneurs should be strengthened.

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## ABOUT RELIGIOUS TOLERANCE IN AZERBAIJAN DURING INDEPENDENCE YEARS

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### Abstract

Historically, Azerbaijan always has been a tolerant country from the national and religious point of view. There has not been discrimination and religious conflict in our country in spite of the many ethnic groups and different religions that have long lived together. (The exception is the Armenians who lived in Azerbaijan and endured conflicts associated with land claims.). During the pre-Islamic period and after the spread of Islam in this area, the various ethnic groups who for many years lived here, formed national-cultural and religious attitudes based on mutual trust. The people lived in peace and had a high level of tolerance. Azerbaijani people and the religion of Islam played historically an important role in preserving the culture of tolerance between different religions and ethnic groups till nowadays in this area. Historically formed multi-confessionalism in our country and joint development of religious worldviews in Azerbaijan in a single society can be considered as a clear and vivid example of intercultural dialogue availability. Azerbaijan is a country where mosques, churches and synagogues co-exist. Also, there is no conflict or discrimination between members of various religions. Azerbaijan differs by the quality of its tolerance not only from other countries in the East, also from other countries throughout the world. The religious policy of the Azerbaijani Government has aimed to resolve social problems and to create a dialogue between religious communities. The Azerbaijani Republic is implementing a comprehensive integration policy as a multi-ethnic and multi-religious state. The Azerbaijani Government's religious policy is based on building a democratic state, as well as developing the principle of national moral and legal regulation of state-religion relations. Socio-political stability, civil society, ethnic and religious tolerance are all logical consequences of the progressive historical traditions resulting from this national policy.

**Keywords:** mosque, church, synagogue, environment, tolerance, religious.

Tolerance is a national and moral value of the Azerbaijani people and state based on unshakeable foundations, rich traditions, and centuries of shared history. Along with provision of rights to the Muslims comprising the majority of the country's citizens, the state takes care of other religions throughout the republic.

For instance, the Jen Mironosets Church, closed in 1920, was handed over to the Russian Orthodox Church in 1991, while the Church of Holy Maria, another Orthodox temple, was restored in the capital in 1999-2001. Moreover, a Catholic church with a design approved by the Vatican, is presently being constructed in the capital. The cultural heritage of the Jewish commune, including its old traditions, is also treated with care by the Azerbaijani government.

While speaking about the respect towards Jews in Azerbaijan, the settlement of "Krasnaya sloboda" should be mentioned. This is the place where a community of Jews lived in the former Soviet Union and is very unique. There were 11 synagogues in the settlement that

operated until the establishment of the Soviet power in Azerbaijan. Only one of them functioned in the Soviet period. Two more synagogues were given back after 1996 by the government. A formal ceremony was arranged upon the restoration of the two-storey, six cupola synagogue in October 2001.

In accordance with this, the traditions of tolerance formed over centuries in Azerbaijan are constantly being renewed in the public sphere. Indeed the notion of tolerance is regulated by state and moral laws in Azerbaijan. The President of the Azerbaijani Republic, Ilham Aliyev, has expressed it this way: "Religious and national tolerance dominate in Azerbaijan. All nations live as one family. I am sure, that this is a very important factor for the future of our country." (Azerbaijan-The Land of Tolerance, 2001: 2)

The collapse of the Soviet Union, along with independence, helped restore this historical mission and initiated a new phase in relations with national and spiritual value. Adopted in 1992 the "Freedom of religion" law of the Azerbaijani Republic contributes to friendly relations between the two religious communities in the country and encourages the development of religion tolerance. In addition, the constitution of the Azerbaijani Republic ensures the right to freedom of conscience and guarantees religious choice. Freedom of religion and conscience in Article No.8 has been defined as follows:

"I. Every person has the freedom of conscience.

II. Everyone has the right to define his attitude to religion, profess any religion alone or with others, to profess or not profess any religion, and to express and disseminate beliefs, concerning any religion.

III. The performance of religious ceremonies is free if it doesn't violate public order or public morality.

IV. Religious beliefs and convictions do not excuse the offence. (Constitution, 2009: 17)"

After gaining its independence, there were many international conferences related to religion and culture held in the country. These conferences should play an important role as models for other countries in the field of religious tolerance. On November 16th, the International Day of Tolerance was celebrated in Azerbaijan for the first time and our National Leader Haydar Aliyev met with the head of religious communities on his own initiative on this auspicious day. In doing so he not only demonstrated the position of the principle of tolerance, but also paved the way for the creation of a progressive tradition.

Azerbaijan has become an important center and organizer of dialogues on the international level, so its hosting of major international conferences devoted to the regulation of state-religion relations and the organization of inter-religious dialogue is not a coincidence. A two-day international conference held in Baku on 3-4 April 2007 "Haydar Aliyev and Religious Policy in Azerbaijan: Realities and Perspectives," was attended by representatives of 20 countries. In recent years, Azerbaijani leadership has taken into account the important role of religious factors in regional conflicts and has implemented a number of measures promoting mutual understanding between different religions.

One such measure is the International Conference: "Interreligious Dialogue: from Mutual Understanding towards Joint Cooperation," held in Baku on November 6, 2009. This conference confirmed that Azerbaijan is a tolerant country in religious and ethnic terms. The need for inter-religious cooperation is increasing in the modern world and the participants at this conference considered the holding of this conference in Azerbaijan to be a guiding example.

The future development of inter-religious historical and traditional relations, the refinement of relations between state and religion on humanistic criteria, and the restoration of broken or deformed national-religious relations dating from past centuries, are all pressing issues, and the second World Summit of Religious Leaders in Baku on 26-27 April, 2010, played an important role in the realization of inter-religious dialogue and cooperation - not only in the

region, but in the world as a whole. The publication of the article "Baku is the City of Tolerance and the Sun" in the well-known Egyptian magazine "Al-Ahram Al-Arabi" was one of the results of the First International Baku Forum: "Strengthening of Tolerance in a Changing World," 19-21 December, 2012.

Within the framework of this modern Azerbaijani model of state-religion relations, all religions are equal before the law and have the same status. Islam plays an important role in the formation of tolerance in our country. It is derived from the moral value of tolerance inherent in Islam, the traditional religion of Azerbaijan.

The historical facts prove that Muslims both respect other religions in Azerbaijan, and provide sanctuaries for construction to show their support. At the end of the 19th century, local Muslims allocated a huge amount of funds for the construction of the Alexander Nevsky Church, known as the Golden Church in Baku. This is known as an important event in the history of tolerance. The temple was erected in an old cemetery after local Orthodox and Muslims donated the funds to charity in 1887. The Church was brick, built in the architectural style of the Byzantine. In the early years of the 20th century the temple was closed by the Soviet government and used for other purposes. In 1946 the temple was returned to the Russian Orthodox Church. Various icons from the old interior of the church have been preserved to the present day. Among them are icons named after Alexander Nevski and Saint Maria Magdalena. The ceremonies of worship on Saturday and Sunday, as well as the holidays of the Orthodox, are organized in the church.

"Zhen Mironosist" Orthodox Church was designed in the Russian style by the architect M.F.Verzhbitsky and was built by millionaire philanthropist Hadji Zeynalabdin Taghiyev, who provided private financial support and donations in 1909. For a time, the Temple was under the control of a regiment of infantry reserve and met their spiritual needs. But in 1920, during the Soviet period, the Church was one of the first 'signed' places of worship and the head priest was shot. The temple became a warehouse during the communist regime and after that period of time was given over to sportsmen to be used as a gym.

In 1990, during the bloody January events, two missiles fell on the roof of the Church. As a result the roof was completely destroyed, the floor collapsed and the walls were cracked. This dilapidated Temple building was transformed into the Russian Orthodox Church in 1991. After the establishment of Arkhirey Cathedral, restoration work in Baku was allowed to take place. Repair work was carried out with the help of Alexander Ishein, the Archbishop of the Diocese of the Russian Orthodox Church in Baku.

The "Saint Mary" Basilica was built by donation in 1896. The Parish school operated in the Church. The Temple was closed and turned into military barracks after the October Revolution, but in 1944 it was returned to the Russian Orthodox Church again and given the Cathedral status of the Stavropol-Baku Diocese. In 1946, upon the initiative of Sergei Kazanski, an additional alter was established in the church. There were reconstruction works by the Baku and Caspian Eparchy Aleksandr Ishei, including a rich library with Orthodox literature, a Sunday school for children, and a charity canteen.

The synagogue building of the Mountain Jews has been in operation since 1945. In the Soviet period, after the end of World War II, the oldest building in the city center was allocated for meeting religious needs. The building was in very bad condition and those who visited there to worship were disadvantaged. Such cases continued until the gaining of independence. In the period of independence repairs were started and restoration accomplished. The second floor of the synagogue was built, creating favorable conditions for visitors to worship. In 2010, along with the reconstruction and restoration works in Baku, the President of the





Azerbaijani Republic, Ilham Aliyev initiated the construction of a synagogue for Mountain Jews. On the 5th of April, 2011, the opening ceremony was held, creating a new place of worship for Mountain Jews.

The synagogue in the Red Settlement of Guba region at the Khanukov Street was built in 1888; Gilel be Khaim was the architect. The six cupolas (the synagogue also has 6 corners) is the symbol of those who came here from neighboring Geleduz village by permission of Huseinli Khan during the '6 days.' There are 14 main windows in the temple. The synagogue is an ancient architectural monument in the oriental style with a large praying hall. The part facing the wall is called the aron-kadus. It is the unprecedented, highest sanctuary in Europe outside Jerusalem. The height is 7 meters. Holy books are kept in the closet on the wall. Hexagonal star-shaped windows are made of oak wood. The restoration of the synagogue was begun in 1995 and finished in October 2000. At present, there is a hall available for 60 persons and a kitchen for use of the religious worshipers.

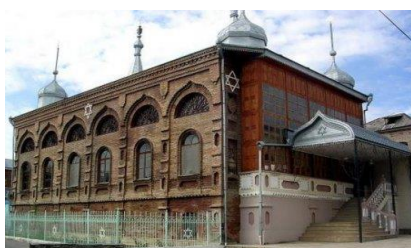
The synagogue for European and Georgian Jews was opened on the 9th March, 2003. It was built based on a project of Alexander Garberin in the architectural style of Jerusalem. This temple is considered to be the first synagogue built in the Near East in last the 60-80 years. One of the biggest synagogues in Europe, it was established in the place of the old temple.

After the end of World War II, the Soviet Government allocated the one-floor warehouse for meeting the religious needs of European and Georgian Jews. Men prayed in the cold, wet basement, and women in the room above. The veranda of the building was given over to women, too. But now, the new, three-floor synagogue, built with white stone, is very comfortable for all religious worshipers. People of various religious and separate classes participated in the construction of the synagogue. The names of many of those persons are written on a board in the entry of the temple. Not only did Jewish organizations abroad participate in the financing of the construction, so too did the Caucasus Muslim Board and the Russian Orthodox Church Eparchy of Baku and Azerbaijan. This may be the brightest display of tolerance and cooperation between various religious faiths in Azerbaijan.

Our National Leader, Haydar Aliyev, supported the construction of these new temples, as well as the reconstruction of historical-religious temples. Temples of all religions were reconstructed, including the Bibi-Heybet Mosque, a Catholic Church, a Russian Orthodox Cathedral the church of Kish, (the major cultural and historical heritage site of Caucasian Albania), and finally the biggest synagogue in Baku region. All of these caused a great impact beyond the nation's borders.

Continuing this tradition, the President of the Azerbaijan Republic Ilham Aliyev congratulates all people of various religions without any discrimination. Also, with the support of our President, the reconstruction of our temples is continuing. One such reconstructed temple is the Saint Elias church in the Nidj village of Oguz region, which belongs to the Udins. Constructed in 1723 and used by Udins as their main temple, it was given to the Armenian Grigorian Church in 1836 by special resolution of the "Russian Saint Synod." Udins haven't gone there since that time and at one point the Church was even destroyed. But after visiting Nidj in 2005, President Ilham Aliyev gave instructions to reconstruct the Alban historical-religious temples.

After these instructions the religious cultural heritage was reconstructed. One of these reconstructed monuments is the church-museum in the Kish village of the Sheki region, the oldest Christian temple in the Caucasus and in the whole world. Historically, this church



belongs to the 4th - 5th century AD. The reconstruction began in 2000 and ended in 2003. Also constructed were new Albanian-Udin temples in Nidj and other villages of Oguz region. All of these facts prove the high religious tolerance of the Azerbaijani Republic.



Restoration, construction and repair of religious monuments are conducted at the state level. Application of the Law of the Azerbaijani Republic on "the protection of historical and cultural Monuments" dated 13th June 1998, reflects the Presidential Decree of Azerbaijani Republic.

The head of the State gave instructions to restore the Djuma Mosque, the Imamzadeh sanctuary in Gandja and the "Ateshgah Temple" historical-architecture reserve, while also financing this process. The measures taken under the guidance of the President play an important role in the restoration of the religious sanctuaries, which have a rich history. The last full-scale, restored works are Bibiheybet and Tezepir, both located in the Old city of Djuma.



The construction of Tezepir was begun on 23th July 1905 on Mebes Holiday. Groundbreaking for the mosque turned into a crowded ceremony, beginning with the reading religious Koran. Hadji Zeynalabdin Taghiyev then placed the first stone of the Mosque. The head architect was the talented master Ziver Ahmedbeyov.

The construction of the Mosque began in 1905 and ended in 1914. Tezepir Mosque was the first religious building

constructed with white stone. Tezepir is located far from the city center at the peak of the mountains, but you can see it from several parts of the city. Specialists in Eastern architecture educated in Europe built the mosque. The reconstruction project of the mosque and the surrounding area was accomplished based on the instructions of our President in 2005. The old buildings were removed and 3 new 5-floor buildings of the Caucasian Muslims Office and Baku Islam University were constructed there.



On the seashore, 4-5 km from Baku Bibiheybet Mosque is located. You can see here the tombs of VII Imam Prophet, Museyi-Kazim and his daughter, Prophet Lady Hakime as well as his two grandsons and granddaughter. This historical - architecture monument was built by Shirvanshakh II Farrukhzad ibn Akhsitan in the 13th century. There is an inscription on the wall of the Mosque. It is noted in the inscription that the architect of the mosque is Mahmud ibn Seyid and that it was built between 1281-1282. This temple was blown up with dynamite in 1934. After the gaining of independence, Bibiheybet was restored. This process began in 1997.



The Mosque was restored in Eastern architectural style over the course of 11 years. We can see the subtle architectural patterns on the 1st and 2nd floors, central hall, ceiling of the foyer, on the basements' walls. Also, the dome was decorated perfectly. The "Al-Nisa" Surah of the Koran is written in mosaic of glass material. Several Surahs of the Koran are reflected on the mosque's walls. There is also a big library as in other mosques. The height of the mosque is 5 meters. 3000 persons can perform the Namaz here at the same time. In addition, a ventilation system and a good water supply are provided, as well as a separate room. In the large square of the mosque, cultural events and religious ceremonies may be organized.

The Djuma Mosque, located in Shemakha city, was built in 743. It is recognized as one of the oldest Muslim temples to have survived to the present date, not only in the South Caucasus, but also in the whole of the Near East. Because of terrible earthquakes in 1859 and 1902, the mosque was seriously affected, but at the beginning of the 20th century it was

restored. In 1918, because of the genocide committed by Armenian aggressors, thousands of innocent people were killed, and the Djuma Mosque was burned.

After independence in 2010, the restoration work of Djuma Mosque was began. Special attention was paid to the original view of the mosque within the total area to about one hectare. The Moslem religious schools, cells and graves, founded during the first 70-80 years of of the 20th century were saved in their original view. Because of the Shemakha's location in aseismic zone, the mosque was strengthened by a reinforced-concrete structure. The height of the minaret is 36, 4 meters. The entry, middle, big dome, and also right and left domes, were refined. Domes were decorated in old architectural style. The average salon was restored in the national architectural style. 1500 persons can pray here at the same time. There is a conference hall and other rooms in the mosque, too. The ceremony room is 520 square meters and holds 250 persons and includes a fully equipped kitchen. The rich library was given to the religious use. In general, the Djuma Mosque is the main mosque of Azerbaijan and our nation and offers another example of a rich historical, cultural and religious pattern, one featuring high and sensitive relations.

The active participation of the Haydar Aliyev Foundation should be emphasized in the construction and rehabilitation of new mosques, temples, synagogues and churches. Lady Mehriban Aliyeva, UNESCO and ISESCO goodwill Ambassador and also the deputy of the National Assembly, paid great attention to the restoration of historical-cultural monuments as part of the

"Azerbaijan is the address of tolerance" project, with the financial help of the Haydar Aliyev Foundation, the Dashkesen city Mosque, Mohsin Slim and Imam Rza Mosques in Bina village of Khazar region, Pirhasan sanctuary of Mardakan village, Djuma Mosque of Buzovna village, Shah Abbas and Prophet Zeynab Mosques in Gandja city, Djavad Khan and Djomerdli Gassab's tomb, also the Catholic Church of Saint Maria in Baku were all restored.

This tolerance opens the door to the future for our country. If the country has no tolerance, inter-religious and intercultural dialogue is impossible. Armenian aggression against Azerbaijan damaged not only the socio-economic sphere, but also our cultural heritage. Ilham Aliyev explained certain facts regarding this: "The fact-finding mission of the OSCE, monitoring in the occupied regions in 2005 prepared and submitted a report based on this monitoring. According to the report, everything was destroyed. Armenian aggressors destroyed all historical monuments. Cultural centers were destroyed, all exhibits were stolen, and museums were robbed. The tombs of our forefathers and our mosques were destroyed. Armenia did all of this. The fact-finding mission of OSCE confirmed all of this and showed it in their report." (Huseinov, 2012: 154)

Armenians took over Turkic-Orthodox monuments not only in the South Caucasus, but also in West Azerbaijan. Those monuments which they couldn't adopt, destroyed before burying their tracks. For this reason, in Yerevan, "City of mosques and monuments", there was left just one mosque and this mosque they referred to as Persian. In 1832 Russian officer I. Shopen registered 12 mosques in Yerevan: 1) Castle Mosque, 2) Shah Abbas Mosque, 3) Zal Khan Mosque, 4) Novruzali bay Mosque, 5) Sartib khan Mosque, 6) Huseyni khan Mosque, 7) Hadji Imamverdi Mosque, 8) Hadji Djafar Mosque and 4 others. (Alekbberli, 2006: 21)

Nowadays, those mosques are gone and there are no Turks in the Turkic city called Yerevan. As a result of genocide against Azerbaijan, Turks allowed the whole region to be occupied by Armenian foreigners.

In the Garabakh region more than 2000 various cultural monuments were registered. The majority of them were epigraphic monuments. The tomb of Sheikh Yagub in Fizuli region (12th century), Goch Akhmedli Djuma Mosque, Hadji Alesker Mosque, Mir Ali tomb in Ashagi Veyselli village and in Ahmedli village (14th century), the tomb of Sheikh Ibrahim (XVII century), Akhmed Sultan Tomb, Djalal Tomb (1307), Djuma Mosque in Khoradiz



village, the tomb in Shikhlar village of Djabrail region (1308) and other tombs, 12 cornered tomb in the Khachin Derbend village of Agdam region, Djuma Mosque (1870), Shakhbulag Mosque of Agdam, 8 cornered tomb in Shusha, Mamayi Mosque, Meshedi Shukur the son of Mirsiyab Mosque Caravanserai, Djulfalar Mosque, Hadji Yusifli Mosque, Saatly Mosque, Yukhari Govheraga Mosque, Ashagi Govharaga Mosque (XIX century), Garasaggaq tomb in Lachin, Soltan grandfather's tomb, Sheikh Ahmed tomb, Sri ahig tomb (XV century). The tombs in Djidjimli village are very precious examples of the material culture for our history. All monuments were destroyed by Armenian vandalism. (The Karabakh monuments, 2009: 5)



Our hundreds of architectural monuments of historical importance in the occupied regions of Azerbaijan had been remained in the Armenian captivity until November 2020. Fizuli district is the place where the most ancient historical monuments of Karabakh are fixed. The tombs also have a special place among the

monuments existent in the territory of the district. One of such historical monuments of the region is the tomb of Sheikh Babi.

Sheikh Babi Yagubi was buried in the tomb. The tomb was built by architect Ali Majidaddin in 1273-1274. The tomb has eight corners. It is built of white stone and covered with split octagonal dome. One tomb and a damaged minaret remained from the tomb complex. The impact of the tomb of Momuna Khatun can be seen in the outer surface of the tomb of Sheikh Babi. Vaults decorated with tiles, the residues of a caravanserai and the remains of the protective walls of the complex were revealed during the archaeological excavations carried out in Sheikh Babi complex in Babi village of Fizuli district. Presently it is planned to continue excavations in the area. The project envisages the restoration or conservation of the uncovered monuments, as well as renovation work in the area on the basis of which work has already begun over the monument.



The famous Azykh and Taghlar caves, which were one of the first human settlements, as well as Karakopek, Uzerliktepe kurgans currently used for military purposes were deliberately destroyed as a result of military aggression.

The cemeteries, tombs, tombstones, mosques, temples, monuments belonged to Caucasian Albania and other national monuments in the territory of occupied regions-Shusha, Lachin, Kalbajar, Gubadli, Zangilan, Fizuli have been eliminated along with the kurgans in Khojaly, Aghdam, Aghdara, Fizuli and Jabrayil regions.

The invaders carried out large-scale, non-professional archaeological excavations, destroyed kurgans and conveyed the finds they looted, to Armenia.

It should be noted that, arbitrariness of the Armenian occupiers in the occupied territories the Republic of Azerbaijan, destruction and deliberate damage of our historical and cultural monuments contradicts the Convention for the Protection of Cultural Property in the Event of Armed Conflict, Hague, 1954; European Convention on the Protection of the Archaeological Heritage, 1992, UNESCO Convention concerning the Protection of World Cultural and Natural Heritage, 1972. (Ali: D.A. 20.02.2015)

Armenia's pursuing aggressive policy, its desire to occupy 20 percentage of Azerbaijan's territory, finally living of more than a million of our compatriots as internally displaced people, the destruction of our occupied historical and religious monuments created serious obstacles to the establishment of peace and stability not only in Azerbaijan, but in the whole region, as well as strengthening of the traditions of tolerance, deepening of inter-religious cooperation. However, Azerbaijan again liberated its



historical land of Karabakh from Armenian aggressors due to 44-day struggle for justice. Our demolished monuments in captivity were released from occupation. Azerbaijan has been striving for political stability and tolerance in the region and continues traditions of tolerance formed historically at the state level. These traditions are enriched with new qualities over time.

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## MEMORY CASE FROM THE EASTERN IN CONTEMPORARY ART

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### Abstract

This research aims to discuss the phenomenon of memory, which is reflected in the prominent 'works' of contemporary artists located in 'Oriental' geographies in today's contemporary art. Within this scope, the theoretical accumulations revealed by social science circles on the basis of the concept of memory in different time periods of the historical process and their relevance to art are discussed. Here, Mnemosyne, the mythological goddess of Antiquity, is known as the 'goddess of memory'; The 'remembering the past' feature or meaning of memory and its connections in terms of 'past, present and future times' and its effects on artistic works are examined. So much so that the phenomenon of memory, which attracted the attention of philosophers and artists in the past, is today a subject of interest in all fields of social, natural and health sciences. Today, the phenomenon of memory, which is reflected in the works of contemporary artists who produce art, continues to contribute to the formation of the form and content of 'works'. The works that contemporary art presents around postmodern discourses are studied not only by 'Western' (Europe and America) art circles, but also by 'Eastern' (Asia-African) art circles. Because by adopting the 'everything is possible' discourse, Postmodernism embraces all the 'black' people of the world and preserves and preserves the contemporary works of art of the 'white' geographies. In this context, here is the video art called 'Moving Cities' shot in 1997 by South Korean Kimsooja, one of the contemporary artists working on 'Oriental memory'; Turkish Handan Börüteçene's 2015 installation titled 'I'm Buried in Myself' and India's Subodh Gupta's 2008 installation titled 'Control Line' are examined. In line with Postmodernist discourses, the ways in which these 'Oriental' artists deal with the concepts of personal, social and cultural memory in their works are expressed. Therefore, this research, on the one hand, explains the role that the concept of memory plays in the world of social sciences, especially in the world of historical process, on the other hand, it discusses the effects of the phenomenon of memory on today's 'Oriental' contemporary artists and works. It is hoped that the results obtained from this study, which focuses on the 'Eastern' part of the memory effect in contemporary art works, can contribute to the field.

**Keywords:** Contemporary Art, Postmodernism, Memory, 'Works', Mnemosyne.

## ÇAĞDAŞ SANATTA 'DOĞU'LU BELLEK OLGUSU

### Özet

Bu araştırma, günümüz çağdaş sanatı içerisinde 'Doğu'lu coğrafyalarda yer alan çağdaş sanatçıların öne çıkan 'iş'lerine yansıyan bellek olgusunu tartışmayı hedefler. Bu kapsam etrafında, tarihsel sürecin farklı zaman dilimlerinde sosyal bilim çevrelerinin bellek kavramı temelinde ortaya çıkardığı kuramsal birikimler ve bunların sanatla olan ilgileri ele alınır.

Burada, Antikite Dönemi mitolojik tanrıçası Mnemosyne'in 'bellek tanrıçası' olarak bilinmesi; belleğin 'geçmiş hatırlama' özelliği ya da anlamı ile belleğin 'geçmiş, şimdi ve gelecek zamanlar' açısından olan bağlantıları ve sanatsal işler üzerindeki etkileri irdelenir. Öyle ki, geçmişte felsefecilerin ve sanatçıların ilgisini çeken bellek olgusu bugünde tüm sosyal, fen ve sağlık bilimleri alanlarının ilgisine mazhar olur. Bugün, sanat üretimi yapan çağdaş sanatçıların çalışmalarına yansıyan bellek olgusu, 'iş'lerin biçim ve içeriklerinin oluşumuna katkı vermeye devam eder. Çağdaş sanatın günümüzde postmodern söylemler etrafında ortaya koyduğu işler sadece 'Batı'lı (Avrupa ve Amerika) sanat çevrelerince değil 'Doğu'lu (Asya-Afrika) sanat çevrelerince de çalışılır. Çünkü Postmodernizm, 'her şey mümkün' söylemini benimsemekle dünyanın tüm 'siyah' ve 'beyaz' coğrafyalarının çağdaş sanat işlerini korur ve kollar. Bu bağlamda burada, 'Doğu'lu bellek ile ilgili çalışma yapan çağdaş sanatçılardan Güney Kore'li Kimsooja'nın 1997 yılında çektiği 'Hareketli Şehirler' adlı video sanatı; Türkiye'li Handan Börüteçene'nin 2015 tarihli 'Kendime Gömülü Kaldım' adlı yerleştirmesi ve Hindistan'lı Subodh Gupta'nın 2008 tarihli 'Kontrol Hattı' adlı yerleştirmesi irdelenir. Söz konusu 'Doğu'lu sanatçıların, Postmodernist söylemler doğrultusunda işlerinde kişisel, toplumsal ve kültürel bellek kavramlarını ele alış biçimleri ifade edilir. Dolayısıyla bu araştırma bir yandan tarihsel süreçte yol alan bellek kavramının özellikle sosyal bilimler dünyasında oynadığı rolü açıklarken diğer yandan bellek olgusunun bugünün 'Doğu'lu çağdaş sanatçıları ve işleri üzerinde yarattığı etkileri tartışır. Çağdaş sanat işlerindeki bellek etkisinin 'Doğu'lu kısmına odaklanan bu çalışmadan elde edilen sonuçların alana katkılar sağlayabileceği umut edilmektedir.

**Anahtar Kelimeler:** Çağdaş Sanat, Postmodernizm, Bellek, 'İş', Mnemosyne.

## INTRODUCTION

The phenomenon of memory comes to the fore as a whole of the behavior and action forms that human beings exhibit within the scope of forgetting-remembering, time and temporality-permanence terms in the long story of the historical process. Those who evaluate their behaviors and actions in the field of art protect human memory from visual and auditory aspects and take the responsibility of protecting it. On the other hand, in societies with developed language and speaking skills, rhetoric provides information to people through memory. Mnemosyne, one of the mythological goddesses of the Antiquity Period (Greek-Roman, 900 BC-300 AD) in the historical process, "means memory and is the daughter of Uranus and Gaia." (Erhat, 1993, p. 207). "If Mnemosyne, the goddess of memory, is the mother of the muses\* in ancient mythology, this means that memory is the origin and foundation of the arts... Her lovely name means 'thought', 'remembering' that comes to life in her with the union of Uranus and Gaia. Mnemosyne lived as a virgin among the Titans until she married Zeus and gave birth to the muses, those goddesses who shared among themselves the treasure of knowledge that their great mother carried in one piece." (Fleckner, Sarkis, 2017, pp. 19-20). So much so that Mnemosyne, the mythological goddess of Antiquity, has an identity that contributes to art and produces knowledge through her daughters (mother of muses), in addition to her 'memory goddess' feature. Art representatives of civilizations in different parameters of art history seem to have embraced the qualities of Mnemosyne and her daughters. The works (painting, sculpture, music, poetry, theatre, architecture, ornamentation, etc.) made by the civilizations in question and in their current form (museum, gallery, book, encyclopedia, etc.) challenge the dynamic structure of the phenomenon of memory. they bring.

Forming today's understanding of contemporary art, Postmodernism, with its theoretical discourses and practical actions, reveals a different view and orientation from the memory understandings of the pre-Modern Period and the end of the Modern Period (1950s). In other words, Postmodernism, which criticizes Modernism after the 1960s, presents a different language about the phenomenon of memory, on the one hand, the discourses of the literature (literature) studies that form its theoretical infrastructure, and on the other hand, the actions of the 'works' that make up the contemporary art of the period. So much so that the French philosopher Jean François Lyotard (1924-1998), one of the theorists of this period, in his 1979 book 'Postmodern Situation', heralded the end of the Modern Era and the beginning of a new period that will be called the Postmodern Era, while the 'grand narrative', which contains a reference to the phenomenon of memory, in its internal structure. and uses the terms 'small narrative'. "We no longer resort to grand narratives—we can appeal neither to the dialectic of Spirit—or even to the emancipation of humanity as a validation of postmodern scientific knowledge." (Lyotard, 1997, p. 130). Lyotard, 'grand narrative' and 'historical memory', 'cultural memory'; while emphasizing the titles of 'small narrative' and 'personal memory'; It is loaded onto Modernism with its 'big narrative' and gives way to Postmodernism with its 'small narrative'.

\* Muse: Children of Mnemosyne, the goddess of memory in ancient mythology, and each of nine sister goddesses known as the 'muse' of the arts, and these goddesses include: music, love poetry, epic poetry, sacred poetry, history, tragedy, dance, comedy, astronomy . (<https://en.wikipedia.org/wiki/M%C3%BCzler>).

It is possible to encounter traces of the phenomenon of memory in the formal and contextual qualities of contemporary art 'works' made in Europe and America after the 1960s. This is the situation of contemporary artists. Due to the 'everything is possible' discourse of Postmodernism in his works, it is sometimes seen as a 'big narrative' and sometimes as a 'small narrative'. However, it is an indisputable fact that the use of 'major and minor narratives' in the works of today's contemporary artists is controversial in terms of form and content. So much so that contemporary artists sometimes do not hesitate to adhere to the 'big narrative' discourse of Modernism and sometimes to the 'small narrative' discourse of Postmodernism. In other words, the artists of this period used 'major and minor narratives' in their works, different strategies of contemporary art (metaphor, pastiche, parody, irony, manipulation, appropriation, jactaposition, reformatting, simulation) and forms (painting, conceptual art, installation/installation, they use it recklessly in the context of performance, photography, land art, and ethnic art. So, instead of respecting 'grand narratives', contemporary artists prefer to use them crudely.

The continents of Asia and Africa, excluding Europe and America, are generally described as 'East' by social science circles. Since the beginning of the 20th century, 'Oriental' people in Europe and America and 'Oriental' art workers living in Asia and Africa, within the framework of their works on the struggles of their own geographies regarding freedom, equality, culture, identity, memory, gender and immigration problems. they support. Both the artists of 'Eastern' origin living in the geographies of Europe and America, and the contemporary artists residing in the geographies of the 'East', who guide today's postmodern understanding, also make works that include 'large and small narratives' in their works related to the aforementioned problems. Although today's postmodernism takes a stand on the 'historical and cultural memories' inherited by the past through 'grand narratives' in the theoretical context, contemporary artists with 'Oriental' identities in different geographies of the world have both 'big narratives' and 'small narratives' in their 'works'. They do not hesitate

to include narratives. Therefore, it is possible to encounter an 'Oriental' memory phenomenon experienced in contemporary art.

This research, titled 'Memory Case from the East' in Contemporary Art, uses the qualitative research method and, depending on this method, the descriptive analysis approach, especially when evaluating contemporary artists with a 'Oriental' identity. This study was created by examining social science literature studies and scanning the visual art 'works' of today's contemporary art. This research both reflects the memory phenomenon of today's contemporary art and focuses on the works of contemporary artists from the geography of the 'East', which contributes to the 'Oriental' memory phenomenon in contemporary art. Therefore, the importance of this research is the examination and discussion of their works with 'Oriental' artists who work on the basis of memory.

### **CONCEPTUAL VIEW OF MEMORY**

Memory, defined in the Turkish dictionary as "the power to consciously keep in mind what has happened, learned subjects and their relationship with the past, is repertoire, mind, memory, mind", is described as follows in philosophy: "The ability to remember past experiences, experiences and experiences. The power to remember experiments or experiences, to visualize them and to preserve the past in the present. Non-inferential knowledge of the remembering subject about his past experiences, states of consciousness, or objects he has perceived in the past. Function consisting of preserving in the mind cognition or information about original events, facts and objects, images and ideas when they are not present. The system or place that is supposed to store and accumulate the information in question." (Cevizci, 2005, p. 224). In these definitions, memory is the mental power of man; It is emphasized as a system that it reveals through its storage, protection, animation, and recall features. The state of being able to re-activate the events, images, facts, thoughts and objects in the past, by means of mental power, refers to memory. On the other hand, appealing to one's memory leads to experiences.

First, the philosophers of Antiquity (Greek-Roman, 900 BC-300 AD) confront the phenomenon of memory while questioning knowledge. For them, one of the basic elements that provides information to human beings is memory. Aristotle (428-348 BC), one of the philosophers of this period, while expressing his thoughts on the concepts of memory and remembering, relates this concept to the past tense and writes: status or change. As we have said before, we do not remember the present in the present; When it comes to the present, perception is used, when it comes to the future, it is hope, when it comes to the past, memory is used." (Fleckner, Sarkis, 2017, p. 38).

British anthropologist Paul Connerton (1940-2019), who has studies on social and personal memory, in his book 'How Societies Remember?', published in 1989, examined both the close contact of Aristotelian memory with the past and the present memory of memory. reveals its relations with time: "With regard to memory itself, we can state that our experience of the present is largely based on our knowledge of the past. We live in today's world in a context in causal connections with the events and objects of the past, that is, in the context of events and objects of the past that we did not experience at that moment and objects that we did not perceive at that moment. This shows that we will live in the present according to whichever of our various past lives we can relate to." (Connerton, 1999, p. 9). On the other hand, Henri Bergson (1859-1941), one of the French philosophers of the Modern Era, in his 1896 book 'Matter and Memory', expresses the connections of memory with past, present and future tenses: it is to remember all the past perceptions that are similar to the perception, to remind us of the previous and the next, thus inculcating the most beneficial decision to us. But that's not all. By making us grasp the multiple moments of

duration in a single intuition, it saves us from the flow of things, that is, from the rhythm of necessity. The more he can stack these moments in a single moment, the stronger the effect it will have on matter; Thus, the memory of a living being seems primarily to measure the strength of his action on things, and is only an intellectual echo.” (Bergson, 2007, p. 167).

Dutch psychologist Douwe Draaisma (1953-), in his 1995 book 'Metaphors of Memory: A History of Ideas About the Mind', explains that human beings have the ability to forget and can overcome this through memory. However, he states that the memory is also 'temporary/mortal' and therefore, humanity has created many memories (artificial memories) that will help its own memory (natural memory) in the historical process, and expresses these as follows: "The oldest memory assistant is writing; Clay or wax tablets in ancient times, parchment or vellum (leather) in the Middle Ages, and later on paper. All kinds of drawings can also enter these writing surfaces: hieroglyphs, diagrams, portraits. In 1839, an artificial memory emerged, which we call photography, which rapidly developed and became sophisticated, allowing the direct recording of images; After 1895, thanks to the invention of the cinematograph, motion pictures could also be captured and recorded. The age-old dream of preserving sound became a reality thanks to Edison's phonograph, which received a patent in 1877. Today, there are countless 'artificial' memories for everything the eye and ear can grasp: tapes, videos, CDs, computer memories, holograms (a three-dimensional image obtained with laser beams). Image and sound can be transported in time and space, reproduced and reproduced on a scale unimaginable a hundred years ago.” (Draaisma, 2014, p. 19). The writing, camera and phonograph (sound recorder), which are among the artificial memories that emerged in the struggle of man against 'memory loss', can be considered as the pioneers of many artificial memories that will emerge in the modern period and later.

In particular, memory-based studies, which gained momentum around scientific developments after the Modern Period (20th century), lead to the topic of memory under many different names. These names, which show the interest of the study areas of social, science and medical science disciplines, are as follows: “cultural memory, personal memory, collective memory, visual memory, photographic memory, autobiographical memory, object memory, mimetic memory, semantic/semantic memory, memory/episodic memory, communicative memory, digital memory, absolute memory, natural memory, artificial memory, chemical memory, habitual memory, collective memory, experiential memory, ethnic memory, social memory, holographic memory, spatial memory” (Connerton, 1999; Huyssen, 1999; Connerton, 2012; Draaisma, 2014; Assmann, 2015; Yacavone, 2015; Draaisma, 2020). Each discipline makes and uses the aforementioned nomenclature in line with the developing interests related to memory during research, examination and trials on the basis of memory phenomenon. The memory-related nomenclatures identified above prove that the phenomenon of memory is of interest to all fields, from social sciences to medical sciences and even natural sciences.

While the phenomenon of memory attracted the attention of philosophers, theologians and artists in the past, today it is the subject of social science and health sciences (philosophy, psychology, anthropology, medical science, anatomy, neurology, biology, chemistry, sociology, history, geography, literature, art history, etc.). contemporary art circles etc.) continues to attract attention. Today's scientific world, which discusses human and its problems, focuses on historical, social and traditional knowledge about memory, on the other hand, conducts experimental research supported by science and medicine. Jan Assmann describes the interest of today's social science circles on memory as follows: This topic began to occupy thinkers in the East and West nearly a decade ago. I don't think it's a coincidence.” (Assmann, 2015, p. 17). German literary scholar-academician Andreas Huyssen (1942-) also writes the following in his book titled 'Twilight Memories Determining Time in the Culture of Amnesia', published in 1995, regarding the interest this subject has received in recent



years: Complaints about political, social, and cultural amnesia, and various sacramental or apocalyptic discourses about posthistoire, have been accompanied by a memory explosion of unprecedented proportions in the last fifteen years. There are extensive debates on memory in the culture, social and natural sciences.” (Huysen, 1999, p. 16).

French sociologist Maurice Halbwachs (1877-1945), who was also a student of Henri Bergson, one of the French philosophers of the Modern Era, defined the concept of 'individual memory' in his book 'Collective Memory' published in 1952 after his death, especially 'collective memory'. ' and 'social memory' put forward the concepts. ([https://en.wikipedia.org/wiki/Maurice\\_Halbwachs](https://en.wikipedia.org/wiki/Maurice_Halbwachs); Halbwachs, 2019). “The main thesis followed in all of Halbwachs' works is the dependence of memory on social conditions. Halbwachs does not consider memory from a biological point of view, ie neurology and brain physiology, but instead puts the social framework necessary for the formation and preservation of an individual memory... Memory is formed in the socialization process of human beings. Yes, memory always "belongs" to an individual, but this memory is socially determined. Therefore, “social memory” should not be perceived as a metaphorical expression. Of course, societies do not have a "belonging" memory, but societies determine the memory of their members. Even the most personal memories are formed only through the communication and interaction of social groups. We not only remember what we learned from others, but we also remember what they told, emphasized and reflected as meaningful.” (Assmann, 2015, p. 44). According to Halbwachs, it is necessary to talk about 'individual memory' (personal memory), which constitutes the concept of 'social memory'. In other words, a set of events, behaviors, trials and images that each individual remembers, experiences and brings to the agenda primarily lead to the concept of 'individual memory'. On the other hand, these 'individual memories' emerging in the social structure cause the concept of 'social memory' in terms of communicating with other individuals in the society and affecting them semantic.

The German scientist (Egyptian Science and Religious Science) Jan Assmann (1938-) examined the stages of the concept of "cultural memory" in the historical process in his book titled "Cultural Memory, Writing, Remembrance and Political Identity in Ancient High Cultures" published in 1997. It focuses on the responsibility it assumes between Assmann defines the concept of memory, including cultural memory, as a four-dimensional mechanism that develops outside of human internal dynamics and defines them as follows: “1. Mimetic memory. This area is the behavior area. Behaviors are acquired as a result of imitation... Behaviors in many areas of daily life are still based on habits and rules attached to the tradition of imitation... 2. Objects memory. From daily and private items such as beds, chairs, dining and bathing sets, clothes and tools to houses, villages and cities, streets, vehicles and ships; dreams of relevance, comfort, and beauty are thus, in a sense, surrounded by what he finds himself in. Therefore, the objects surrounding it are in a sense a reflection of themselves, reminding them of their past and ancestors... 3. Communicative memory. (Language and communication). Man develops his language ability and the ability to communicate with others, not by himself as an internal dynamic, but in exchange with others, with the cyclical and reversible interaction of inside and outside... 4. Cultural memory. (Meaning transfer). Cultural memory constitutes the area where the previous three areas meet more or less in unity... Traditions enter the domain of cultural memory as a way of transferring and reviving cultural meaning. This determination is valid for everything that is not only purposeful but also has a meaning, such as monuments, tombstones, temples, idols, and transcends the boundaries of the memory of objects, such as symbols, icons, representations, by translating the introverted time and identity sequence.” (Assmann, 2015, pp. 27-28). According to Jan Assmann, cultural memory refers to memories realized through the external dynamics of human beings. Assmann, space, space, object, geography, human,

animal, etc. cultural memory is the whole of the phenomena that emerge through communication and interaction with all external elements in the context of past, present and future time.

Cultural memory has close relations with the world we live in; Assmann, who says that man expands the limits of life and is an internal state, states the following: “Cultural memory expands and completes the daily world by adding negation and potential elements, and in this way, it enables the being to regain what it has lost due to daily life. Thanks to cultural memory, human life acquires a two-dimensionality or two-timeness that is preserved throughout all stages of cultural evolution... Cultural memory is the organ of remembering non-daily events... It is not a wave that affects individual beings from the outside, but rather a world of objects that people create for themselves.” (Assmann, 2015, pp. 66-67). Spanish film director Luis Buñuel (1900-1983) emphasizes amnesia on the subject of cultural memory and describes the wide dimension of cultural memory as 'life itself' and says: You must start to lose your memory. Life without memory is not life... Our memory; It is our consistency, our mind, our emotion, even our action. We are nothing without him...” (Huysen, 1999, p. 11).

In today's postmodern environment, the subject of memory continues to be a source for the theoretical work of the social sciences, and the applied 'works' of the experimental and contemporary art circles of the science world. The subject of memory, which functions as a catalyst for the rationalist and innovative goals of the Modern Era in all times, continues to exhibit 'states' without history, space, space and asynchrony in the Postmodern Period. Huysen, in his 1995 book 'Twilight Memories', states the state of memory in the modern period and expresses its different role in postmodern days as follows: and it is not a negation of the barred homogeneity of its consumer markets. Rather, slowing down computing processes; resisting the dissolution of time in the synchronicity of the archive; reclaiming a way of thinking outside the universe of similitude, rapid information flow, and cable networks; It represents an attempt to claim a foothold in a bewildering and often threatening world of heterogeneity, asynchrony, and information overload.” (Huysen, 1999, p. 19). In other words, for Postmodernists who see 'everything is possible', it is a goal to 'disrupt', 'solve', 'break', 'draw' and 'crush' history, time, space, geography and memory between the wheels of the world of global technology and speed. becomes. Contemporary artists of this period also remove memory from the position of a 'savior force' and transform it into a 'process that creates more chaos in an environment of chaos'. However, contemporary artists of the postmodern era do not just cause chaos; At the same time, they try to cure people and human communities who suffer from 'memory loss' syndrome in modern times. In this respect, memory gives a paradoxical appearance in postmodern times. So much so that the memory-related actors of this period, on the one hand, struggle against amnesia and forgetting, on the other hand, they try to 'shear' the memory by rendering it dysfunctional.

In today's postmodern conditions, representatives of the contemporary art world, seeking a place for themselves under globalization and techno-capitalist influences, listen to the memory phenomenon not only from 'Western' geographies, but also from 'Eastern' countries. However, contemporary artists from the 'Eastern' exhibit a different memory phenomenon than their 'Western' counterparts. In these 'works', where an 'Oriental' understanding of memory emerges, artists focus on their own problems (freedom, equality, culture, nation, identity, memory, gender, deterritoriality and immigration). Huysen expresses this 'Oriental' memory phenomenon and its different aspects, which came to the fore in the contemporary art environment of the Postmodern Era, as follows: “The memory concern went far beyond the official political or cultural sphere. Today, the struggle for minority rights is increasingly organized around cultural memory, exclusions and taboo zones of cultural memory. Other

memories and other stories occupied the forefront of feverish identity debates about gender, sexuality, and race in the 1980s and early 1990s. Migration and population shifts put enormous strain on social and cultural memory in all Western societies, and such public debates are intensely political.” (Huyssen, 1999, pp. 16-17). So much so that nowadays, it is possible to encounter an 'Oriental' memory phenomenon that defends itself through art against the hegemony of the 'Western' world and appeals to its own memory for this purpose. In addition, it is a reality that contemporary art representatives from the 'Oriental', who contribute to the concept of memory in contemporary art works, struggle in an environment of postmodern chaos from another perspective.

## **METHOD**

While this research presents an analysis under the title of "The 'Oriental Memory Case in Contemporary Art'", it uses the qualitative research method and, depending on this method, the descriptive analysis approach. American academic Michael Quinn Patton (1945) states the following about this method in his 2002 book, 'Qualitative Research & Evaluation Methods': “The data required for qualitative analysis is usually obtained from fieldwork. During fieldwork, the researcher spends time in the environment where he/she works. This environment can be a program, an organization or a society, or it can be situations in which important observations and analyzed documents are included in the research. As a 'participating observer', the researcher makes first-hand observations by sometimes taking part in the activities or interactions.” (Patton, 2014, p. 1-2). On the other hand, the descriptive analysis approach of the qualitative research method is also applied here. The descriptive analysis approach is; “... It is used to define, interpret and scrutinize any situation, event and problem in detail, and the existence and degree of the relationship between the analyzed events and variables is questioned by determining criteria.” (Aydoğdu, Karamustafaoğlu, Bülbül, 2017, pp. 558-559).

The data of this research were obtained from the visuals of books, articles and applied artistic works written in the field. In this context, the textual references and sample visual data obtained as a result of the literature review with the qualitative research method were evaluated with the descriptive analysis approach. All written and visual data determined for this research were subjected to identification, examination, interpretation and questioning. Finally, in the light of the data obtained, the conclusion and evaluation part of the research was written. Here, the focus is on the 'Oriental' memory phenomenon, which is known and seen in today's contemporary art environment, although it does not occupy the agenda too much. Therefore, the aim of the research is to both discuss the 'works' of 'Oriental' contemporary artists, who produce in today's postmodern art environment, but are mostly in the background or left behind, on the basis of memory, and to draw attention to their differences with 'Western' memory. The importance of the research is to contribute to the memory phenomenon, which is intensively studied and discussed by today's social, science and health sciences, at the point of "little known and different" in terms of "Oriental memory". The universe of this research is to evaluate the contemporary art 'works' of lesser known and different 'Oriental' geographies by approaching the memory issue, which is of interest to social, science and health sciences, within the scope of art. The sample of this research is South Korean Kimsooja, who is one of the contemporary artists from the "Orient" who created the memory phenomenon; It consists of the works of Handan Börüteçene from Turkey and Subodh Gupta from India. Therefore, the limitation of this research is the three art examples presented by three 'Oriental' artists from the 1980s to the present.

## EXAMPLES OF MEMORY FROM THE EASTERN IN CONTEMPORARY ART

Here, a video work called 'Moving Cities' shot in 1997 by South Korean Kimsooja, one of the artists who produce 'work' in today's postmodern contemporary art environment; Handan Börüteçene's installation from Turkey, titled 'I Have Been Buried in Myself', dated 2015, and the installation titled 'Control Line' by Subodh Gupta, from India, dated 2008 have been identified. Below, the contemporary art works of three artists from three different countries, reflecting the 'Oriental' identity of contemporary art, are discussed in order on the basis of memory phenomenon.

Kimsooja (1957-) from South Korea, who makes contemporary art 'work' in today's postmodern environment and reflects the 'Oriental' memory effect on her works, shoots the video film 'Moving Cities: 2727 kilometers Pack Truck' (Image-1) in 1997. "Kimsooja often examines immigration, the role of women in society, the individual's relationship with society and himself... In his work 'Moving Cities: 2727 kilometers Pack Truck', Kimsooja sits on colorful bundles loaded on the back of a blue pickup truck... Kimsooja, South Korea in November 1997 He travels alone for eleven days and travels 2727 km in . Traveling through cities and villages, the artist revives his childhood, where he lived an almost nomadic life with his army member family, and as an artist traveling the world with his wandering spirit, he relives memories but gains new experiences. In this video work, which he prepared based on his observations and ideas, he allows the viewer to go back and forth between the images and sounds that he weaves like a thick fabric... According to Kimsooja, his own body is one of the bundles in the truck. The inner self, which represents the content of the bundle, changes according to the passing landscapes. As the relationship between the self and the environment changes, the person becomes withdrawn and falls into a void. Village and urban landscapes form the background of this performance by Kimsooja. The artist travels through the places where he lives, the mountains, the winding shores, the beaches, the city traffic and the borders." (Farthing, 2012: p. 480-481).

Contemporary South Korean artist Kimsooja deals with the concepts and themes of city, identity, cultural memory, personal memory, collective memory, displacement and immigration in the aforementioned video film dated 1997. In this video film, Kimsooja refers to her own personal memory while processing the events related to her family's intercity moving, relocation and immigration memories due to the appointment of her military father. A set of behaviors, traditions and beliefs that the artist sees and adheres to in the social structure in which he lives results in the use of his social and cultural memory. On the other hand, Kimsooja, playing with the concept of time, refers to the themes of 'timelessness, homelessness, placelessness, immigration' against the past-present-future tense of memory in the Modern Era. Kimsooja also questions the urban and national issues of the society she lives in with her own identity problem, in the video film that she shoots by focusing on her personal and social memory. In this 'work', the 'Oriental' artist, on the one hand, refers to the memories that he lived and lived around, on the other hand, he adheres to the discourses of postmodern contemporary art. Here, the artist's own personal memory of the Postmodernist 'small narrative'; The memories that emerge through social communication around him gain value as a Modernist 'grand narrative'. So much so that this situation points to the paradoxical aspect of today's contemporary art. Therefore, in this contemporary art 'work', Kimsooja contributes to the 'Oriental' memory phenomenon on the basis of problems centered on his own geography, through the concepts of personal and social memory.





**Image-1**, Kimsooja, 1997, 'Cities on the Move: 2727 Kilometers Pack Truck', Video Art, Seoul, South Korea.

Handan Börüteçene (1957-) from Turkey, who makes contemporary art 'work' in today's postmodern world and approaches the subject of memory from an 'Oriental' perspective, made her installation titled 'I'm Buried in Myself' (Visual-2) in 2015. "The main theme of Börüteçene's work is the problems of memory and cultural identity all over the world. In this context, the artist uses archeology, history, geology, sociology, anthropology and nature as tools; His works, which bring different cultures together at a common memory point, are in the nature of a political opposition. Börüteçene, who generally prefers historical places for her exhibitions, uses the space as a part of the work..." (Germaner, Koçak, Rona, Erdemci, 2008, p. 376). Turkish art critic and academic Ahu Antmen (1971-) writes in the artist's 2014 exhibition catalog regarding Handan Börüteçene's installation titled 'I'm Buried in Myself' in 2015: they actually invite the audience to a new consciousness of the future. Handan Börüteçene, who is the first artist to problematize the concepts of memory, archeology, culture and history in the Turkish art scene with alternative forms of expression, with her production dating back to the late 1970s, is a Mnemosyne who has persistently pursued her curiosity in this direction from the very beginning." (<http://www.sanatatak.com/view/kendime-gomulu-kaldim>; Börüteçene, 2014).

Contributing to the phenomenon of 'Oriental memory' from Turkey, Handan Börüteçene deals with the concepts and themes of archeology, history, city, identity, culture, civilization, time, cultural memory, personal memory and social memory in her 2015 installation titled 'I'm Buried in Myself'. Börüteçene performs this installation at the Istanbul Archeology Museum, a historical place. The artist transforms a woman's dress, prepared in turquoise blue (Turkish Blue), into a sculpture; The statue has only the body, no head and feet. The artist, with the women's clothing she uses here, turns to her own personal memory and engages in inquiries over her female identity; turning to his cultural and social memory, he makes references to the themes of history, city and civilization with pottery pieces belonging to different civilizations that he mounted on statue-shaped clothes. Börüteçene takes the statue-shaped outfit to different historical places of Istanbul (Hagia Sophia Mosque, Hagia Eirene Church, Sultanahmet Square...) and takes pictures of it by placing it in the parts it deems appropriate. According to him, Istanbul is a city that contains a rich history, archeology, culture and civilization belonging to past times. The artist exhibits a stance against the Turkish social structure, which has lost its memory in the face of the rationalist and progressive innovations of the Modern Era, by using the installation form of postmodern



contemporary art and the themes of cultural, personal and social memory. In this respect, Börüteçene, as a contemporary artist living in Turkey, problematizes the problems seen on the basis of the cultural, personal and social memory of her environment through an 'Oriental' identity.



**Image-2,** Handan Börüteçene, 2015, 'I Remain Buried Within Myself', Installation, Istanbul Archeology Museum, Istanbul, Turkey.

Subodh Gupta (1964-) from India, who works on contemporary art in the environment in which we live in postmodern times and approaches memory with an 'Oriental' eye, produces his installation 'Line of Control' (Image-3) in 2008. "The 'Control Line', made of gleaming stainless steel pots, pans, and utensils, has been given the shape of a mushroom-like cloud rising to the ceiling. However, knowing the title of the work, which refers to the borders where conflicts took place between the two countries (which Indian and Pakistani audiences immediately think of, Kashmir) adds a bitter feeling to the work. The metal components in the work are ubiquitous in Gupta's hometown... Gupta often uses the kind of objects that make up the structure of the 'Line of Control'. In particular, his serviette is frequently included in the works, both in terms of the artist's memories of his home and childhood, and the negative effects of the transformation of provincial Indian society along the hyper-capitalist line." (Wilson, 2015, p. 172).

Contemporary Indian artist Subodh Gupta, who includes the phenomenon of 'Oriental' memory in his works, focuses on the concepts and themes of culture, nation, city, war, cultural memory, personal memory and collective memory in his 2008 installation 'Line of Control'. In this installation, the artist acts on the images that remain in his memory within the framework of his childhood and youth memories. Gupta's installation with utensils distilled from his personal memory both resembles a cloud and is one of the 20th century's Modern Period discoveries, and when used in some wars (US use in the Japanese city of Hiroshima during World War II), it leads to mass human deaths. It is reminiscent of the dust cloud left by the atomic bomb that caused the explosion. Ultimately, in this installation, the artist uses collective memory while questioning the conflicts between India and Pakistan in the Kashmir region. Gupta's handling of the utensils used as the main material of the sculpture in this installation is caused by some features of the traditions and cultural structure of India, which constitute the artist's past memories and stories, as well as his cultural and social memory. Therefore, Gupta presents an installation that reflects his personal, social and

cultural memory on the basis of the problems he personally and socially Indian society has experienced in the past and present, and points to the phenomenon of 'Oriental' memory.



**Image-3**, Subodh Gupta, 2008, 'Line of Control', Installation/Installation, Stainless Steel and Steel Frame, Stainless Steel Pan and Plate, 1000x1000x1000 cm., Tate Britain, London, England.

## CONCLUSION AND EVALUATION

In this study, which is titled 'Memory from the East in Contemporary Art', first of all, a theoretical overview of the phenomenon of memory is made and then three different works, which are examples of 'Oriental' memory in today's contemporary art, are evaluated. Here, by following the historical process of the concept of memory, the paths and roles that Modernism took until the end are examined. Accordingly, a number of reflexes (writing, camera, phonograph and technological artificial memories discovered since the 20th century) developed against forgetting and amnesia behaviors on the historical journey are determined. It is seen by many social scientists that memory exhibits a dynamic power between past-present and future time, providing motivation to people and societies. It is seen that the phenomenon of memory has been handled not only in social sciences but also in the interests of science and health sciences since the modern period. Within this scope, a large number of memory names emerge, which each discipline finds close to itself. So much so that researches and studies on these continue to be discussed and questioned by both the theoretical representatives of the disciplines and the practitioners or artists of the contemporary art world.

The postmodern paradigm determines the approach to memory in the contemporary art world after the 1960s. Accordingly, memory gains value as a phenomenon used in line with the 'everything is possible' discourse. For contemporary artists, memory ceases to be an armor used against forgetting and 'amnesia'. From now on, memory does not have a task that communicates and maintains balances between times, spaces, places, geographies and cultures; he now takes stances against time, space, space, geography and culture; He tries to cause chaos in society and shock people. Rationalism, innovation and progressivism, which are the goals of the modern period, are not valid money for the contemporary artist of this

period. The 'grand narratives' (history, mythology, politics, etc.) of the Modern Period and before are replaced by 'small narratives' (memory, memory, personal memory, small things that the artist lives in at that moment, etc.) in this period. Despite all this, the contemporary artist sometimes cannot help but resort to the 'grand narratives' of the Modern Era in contemporary works.

Today's postmodern world is globalizing in the center of technological, economic, capitalist, political, national, cultural and social concepts. In a world where 'everything is possible', dealing with contemporary art must not only be the work of the 'West' but also of the 'East'. Because, under the technology storm brought by globalization (media-television, computer, internet, social media, etc.), almost everyone from the "Western" and "Eastern" in the world has the opportunity to access the same information and document opportunities. In this respect, the 'hegemonic' powers of the global world unwittingly -or unknowingly- create equal opportunities for people living in the 'Eastern' geographies. The people of this region, who are busy with art, both use the new possibilities of contemporary art and include memory in their works. As a result, an 'eastern' memory phenomenon comes into existence in the contemporary art world.

South Korean Kimsooja's video work titled 'Moving Cities', which is examined in this research within the scope of 'Oriental' memory; In Turkey's Handan Börüteçene's installation 'I'm Buried in Myself' and India's Subodh Gupta's 'Control Line', the artists' personal and social memories, memories, cultures, traditions and problems, with the identity of the 'eastern' geography, It is seen that they deal with problems in their works. In other words, the problems of South Korea, Turkey or India, which are countries belonging to the 'Eastern' geography, arising within the framework of the concepts and themes of city, identity, nation, war, culture, tradition, civilization, history, personal memory, social memory, cultural processed around memory. The nature of the works of contemporary artists who contribute to the 'Oriental' memory, towards their own selves and their own society, makes them valuable in terms of personal, social and cultural memory. While the formal language of the works in question shows a postmodern character, the contextual language carries both modern and postmodern characters. In this respect, the contemporary works of art examined here within the scope of the 'Oriental' memory phenomenon present a paradoxical appearance in themselves.

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## TECHNICAL AND THEME CAN BE REPRODUCED; APPROPRIATION ON VIDEO ART

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### Abstract

The aim of the study is to examine the video art produced in the context of the 'appropriation' strategy, which has come to the fore as a style in contemporary art from the 1980s to the present. Appropriation, which means copying or reinterpreting a work of art, is considered one of the important strategies of contemporary art. Thus, there is no harm in appropriating a previously produced work by copying or reproducing it by the artist. Moreover, Postmodernism is not concerned with the 'what' and 'how' of the artist's work, but with 'what' he does. This highlights the conceptual side of things. As the idea behind the works produced becomes more important than how they are made, the acceptance of the idea that contemporary art is largely a way of reproducing the existing becomes widespread. As the idea behind the works produced becomes more important than how they are made, the acceptance of the idea that contemporary art is largely a way of reproducing the existing becomes widespread. Thus, while the works produced by the artists with the strategy of appropriation, which they reinterpret the existing ones, have been seen in many contemporary art practices, especially painting, sculpture, photography and video art in recent years, especially video arts have been examined in the study. In the research, video art is discussed in the context of Walter Benjamin's article titled "The Artwork in the Age of Reproducibility with Techniques" in the context of the view that the work of art is reproducible, and appropriation in the context of postproduction, which Nicolas Bourriard considers as the first stage of postproduction. Thus, the study aims to make a reading on the relationship between video art as a technically reproducible method and the concept of appropriation in the context of reproduction as a theme. For this purpose, video art examples in which classical period works of Western and Turkish art are reinterpreted were examined. In this context, the sample of the study consists of video art works that Bill Viola, Genco Gülan and Özlem Şimşek, who are important representatives of video art, reinterpret important works of European and Turkish art and appropriate for themselves. While Bill Viola reinterprets the works of Masolino and Michelangelo, masters of Classical Western art, in the videos, Genco Gülan reinterprets the classics of Turkish and Western art and appropriates it. Working with photography and video techniques, Özlem Şimşek questions the concept of identity through the image of woman while reinterpreting the paintings of Turkish painters such as Abdülmecid Efendi, Halil Paşa and İbrahim Çallı. Thus, in the research, it was concluded that the artists used the appropriation strategy as a tool to convey their thoughts and ideas.

**Keywords:** Appropriation, Contemporary Art, Reproducibility, Video Art.



## TEKNİK ve TEMA OLARAK YENİDEN ÜRETİLEBİLİR; VIDEO ARTTA TEMELLÜK

### Özet

Çalışmanın amacı, 1980'lerden günümüze çağdaş sanatta bir üslup olarak öne çıkan 'temellük' stratejisi bağlamında üretilen video artları incelemektir. Bir sanat eserini kopyalama ya da yeniden yorumlama anlamına gelen temellük, çağdaş sanatın önemli stratejilerinden biri olarak kabul edilir. Böylece önceden üretilmiş olan bir eserin kopyalanarak ya da yeniden üretilerek sanatçı tarafından kendine mal edilmesinde herhangi bir sakınca görülmez. Kaldı ki Postmodernizm, sanatçının eserini 'ne' ile ve 'nasıl' yaptığıyla değil 'ne' yaptığıyla ilgilenir. Bu da işlerin kavramsal yönünü öne çıkarır. Üretilen işlerin arkasında yatan fikrin, onların nasıl yapıldığından daha önemli bir hale gelmesiyle çağdaş sanatın, büyük oranda var olanı yeniden üretme biçimi olduğu düşüncesinin kabulü yaygınlık kazanır. Böylece sanatçıların var olanı yeniden yorumlayarak kendilerine mal ettikleri temellük stratejisi ile ürettikleri işler son yıllarda resim, heykel, fotoğraf ve video art başta olmak üzere birçok çağdaş sanat pratiğinde görülürken çalışmada özellikle video artlar incelenmiştir. Araştırmada video art, Walter Benjamin'nin "Tekniğin Olanaklarıyla Yeniden Üretilbildiği Çağda Sanat Yapıtı" adlı makalesinde sanat eserinin yeniden-üretilbilir olduğu görüşü bağlamında, temellük ise Nicolas Bourriard'nun yapım sonrası yeniden üretimi, postüretim ilk safhası olarak ele aldığı postprodüksiyon bağlamında ele alınmıştır. Böylece çalışma, teknik olarak yeniden-üretilbilir bir yöntem olarak video art ile tema olarak yeniden üretim bağlamında temellük kavramı arasındaki ilişki üzerine bir okuma yapmayı amaçlar. Bu amaçla, Batı ve Türk sanatının klasik dönem eserlerinin yeniden yorumlandığı video art örnekleri incelenmiştir. Bu bağlamda çalışmanın örneklemini video art'ın önemli temsilcilerinden Bill Viola, Genco Gülan ve Özlem Şimşek'in Avrupa ve Türk sanatının önemli eserlerini yeniden yorumlayarak kendilerine mal ettikleri video art işleri oluşturur. Bill Viola, videolarda Klasik Batı sanatının ustalarından Masolino ve Michelangelo'nun eserlerini yeniden yorumlarken, Genco Gülan da Türk ve Batı sanatı klasiklerini yeniden yorumlayarak kendine mal eder. Fotoğraf ve video teknikleriyle çalışan Özlem Şimşek ise, Abdülmecid Efendi, Halil Paşa ve İbrahim Çallı gibi Türk ressamlarının resimlerini yeniden yorumlarken kadın imgesi üzerinden kimlik kavramını sorgular. Böylece araştırmada, sanatçıların düşünce ve fikirlerini aktarmak için temellük stratejisini bir araç olarak kullandıkları sonucuna varılmıştır.

**Anahtar Kelimeler:** Çağdaş Sanat, Temellük, Video Art, Yeniden Üretilbilirlik.

### INTRODUCTION

Today's artists reinterpret an existing work by using artistic expressions such as painting, photography, new media, and video art, and they appropriate the work. Appropriation, which is a copy or reinterpretation of the existing, that is, what has been produced before, turns into a strategy that has been widely used in contemporary art since the 1980s. With this aspect, some people see appropriation as a technique/form of contemporary art, while others consider it an art in itself.

Although appropriation is widely used today as one of the contemporary art strategies, it still continues to be discussed. As Sevil Dolmacı mentioned in her article "Contemporary Art" (2011); "This ongoing controversial situation around the concepts of 'authority, originality,

ownership' in art also makes the concept of appropriation problematic." However, it would be useful to underline the following; appropriation is not just a reproduction/replica. As can be seen in the examples we will examine, appropriation is the artist's reinterpretation of the existing, his owning by adding something of himself to it. In this respect, it differs from reproduction, examples of which can be seen in contemporary art. Here, we can give an example of reproduction of the sculpture "String of Puppies" made by Jeff Koons in 1988. Koons used the photograph "Puppies" taken by photographer Art Rogers in 1980 for the sculpture, and Rogers sued Koons. Which is just one of the similar lawsuits brought against Koons. While Koons turned the black-and-white photograph into a sculpture, he only colored it and did not bring any interpretation. Thus, the sculpture made by Koons was accepted not as an appropriation but as a replica/reproduction and the court made a decision in this direction. In recent years, similar examples have been encountered frequently in contemporary art, and this situation brings with it discussions of plagiarism in art. Similarly, Richard Prince uses some photographs taken by photographer Patrick Cariou in 1996 in his exhibition "Canal Zone". The artist, who made almost no changes in the photographs, and if he did, made very small changes, enlarged them as they were, transferred them to the canvas and was met with the reaction of the photographer. Coriou sued Prince, but the appeals court ruled in Prince's favor. Here, too, Prince's direct copying of photographs instead of reproducing them with his own interpretation draws attention as the most important reason for the plagiarism debate. Although both examples contain some common points, the court decided differently in both. However, it should be underlined that the boundaries between appropriation and reproduction/replica/plagiarism/pastiche are quite vague.

Contemporary art, on the other hand, is not concerned with 'how' the work of art is made, but what it tells, that is, what the idea behind it is. This gives artists a free creative space. Because what is important in art now is the idea that led to the emergence of the work. In this context, Nicolas Bourriaud's view that; "the artist's selection of existing works of art, making changes on them or reinterpreting them in an original way is in accordance with the spirit of contemporary art" (2018, p. 28); It is important to understand contemporary art. Bourriaud's emphasis on the reproducibility of the work of art as a theme is seen in Walter Benjamin's article "Artwork in the Age of Reproducibility with the Possibilities of Technique" published in 1935, as the work of art is technically reproducible. In the light of these discourses, with the words of Barış Acar, the contemporary artist; "For what he wants to say, he acts in an interdisciplinary field within the limits of the possibilities of the technique and by forcing them." (2008, p. 141). Therefore, in this study, video art is examined as a mechanically reproducible technique, as Benjamin suggests, and appropriation as a reproducible theme, as in Bourriaud's view. In this context, it is tried to analyze how an existing work is transformed by the artist both into his own art practice and into the art phenomenon and technique of the age, by making an analysis especially through video art works of artists who use appropriation as a strategy.

### **APPROPRIATION AS A STRATEGY IN CONTEMPORARY ART: VIDEO ART EXAMPLE**

In contemporary art, appropriation, which refers to the existing for various reasons, is handled by resynthesizing with the traces of the artist and his period, and transformed, is identified with the eclectic attitude of Postmodern art and accepted as an artistic form on its own. In this eclectic attitude, appropriating by producing something new from the existing; may include inspiration, copying, quoting, reference, parody, pastiche, irony, metaphor, manipulation, post-production strategies and use one or more of them together. Although

these strategies are separated from each other with small nuances, they come together at a common point in terms of reconsidering a work for different purposes and making it appropriate for the artist.

Tamalluk from the Arabic root “melk, mülk”; It means ‘owning, possession, appropriation’ and it is used with the meanings of “possession”, “appropriation” in Turkish similarly. Appropriation, which is the English equivalent of appropriation, which comes from the Latin word “appropriate”, is used as “self-appropriation”, “appropriation” in contemporary art. Appropriation, according to Stuart Sim is “the incorporation of real objects or existing art into works that are claimed to be new on the grounds that they are later recontextualized” (2020). This kind of appropriation is seen in a wide range of forms, from collages starting with Picasso and Braque, to Duchamp’s ready-mades, from Andy Warhol’s soup cans to today’s digital images. In addition appropriation is discussed as “the first phase of postproduction post-production remanufacturing” (2018, p. 40) in the book “Postproduction” which, published by Nicolas Bourriaud in 2001. Although postproduction is a concept related to cinema, film and video, which is used to express the process of making finished films and videos ready for presentation, Bourriaud uses it for the appropriation strategy in which contemporary artists reinterpret existing works. According to Bourriaud (2018, pp. 21-22); “Since the early nineties, an increasing number of artworks are created based on pre-existing works; more and more artists are interpreting, reproducing, re-exhibiting or using work made by others or existing cultural artifacts.”

This approach of Bourriaud, which deals with the understanding of postmodern art, finds a legal ground with the exhibition ‘Pictures’ opened in 1977 at the Artists Space in New York under the curatorship of Douglas Crimp. The exhibition, which is a reflection of Crimp’s view that “behind every painting is another painting” (1993), includes the appropriation works of artists such as Sherrie Levine, Cindy Sherman and Richard Prince, who produce works in accordance with Bourriaud’s definitions above. Stuart Sim, in his book ‘The Routledge Guide to Postmodernism’, referred to the article of the exhibition curator, Crimp, in the exhibition catalogue; He says that he “praises the artists who define skill as ‘simulation’ rather than simulation (emulation), as repetition rather than originality, as confiscation (state seizure of property) rather than creation” (2020, p. 435). Dolmacı (2011), who draws attention to the fact that this exhibition almost officially gives full independence to the artists who use the strategy of appropriation, also emphasizes that the exhibition also “questions and even destroys the myth of ownership that is constructed on the basis of originality and artistry-creativity-individual”. Curated by art historian and art critic Nazlı Pektaş, the exhibition titled ‘Plagiarism? / Status?’ opened at Yapı Kredi Culture and Art in 2018, opens up similar concepts and the strategy of appropriation for discussion. In the exhibition; the works of the artists, consisting of Çağrı Saray, Erinç Seymen, Ferhat Özgür, Mehtap Baydu, Özlem Günyol, Mustafa Kunt and Necla Rüzgar, come together with six new works produced by each other based on their previous works. So, what is the reasoning behind the artists’ re-consideration of the existing and appropriating it by interpreting it instead of pursuing what has not been done before, as in previous centuries? Is it the thought that everything that can be done has been done and that the possibility of doing something new is no longer possible, that many artists in art history were inspired by previous masters, is it a subversion of traditional codes or just a parody? Probably all or none of these. Art historian Benjamin H.D. Buchloh, in his article titled “Parody and Appropriation in Francis Picabia, Pop and Sigmar Polke” in 1982, the act of appropriation; He states that “in the practice of aesthetics, it may be the result of a genuine desire to question its historical validity by linking a local contemporary code with a different set of codes—for example, earlier

styles, different iconic sources, or different modes of production and reception” (1982). At the same time, as the reasons why Buchloh artists use the strategy of appropriation; He adds that it can be ‘continuity and tradition’, ‘the desire to construct an identity’ or ‘the desire to establish a universal dominance over coding systems’. As Bourriaud argued above, this is perhaps one of the basic qualities that constitute the “spirit of contemporary art”. Or, it is possible to interpret this situation as a manifestation of the acceptance of the importance of the idea in art as the priority of everything and the ‘everything is possible’ discourse of Postmodernism. Because postmodern art has developed an understanding against its predecessors, especially modern art, since the 1960s, when it emerged, and the ‘genius artist’ that modern art glorifies has ignored all the features of the work of art such as the ‘unique’ and ‘original’. Thus, while today’s artists are literally looting art history, in the words of Ali Artun, “they are also destroying the principles of modern art, which becomes the strategy of postmodernism” (2013). Nicolas Bourriaud states that the artist, who uses appropriation as a strategy by including ‘creativity’ and ‘copy’ in these features, “dissolves the traditional distinction between production and consumption, creation and copy, ready-made object and original work” (2004: 22) stresses that it plays an important role. On the other hand, postmodern artists have aimed to reverse the accepted rules of both social and artistic order by playing with them. Koç and Aykut discuss this approach of postmodern artists in the context of Lyotard’s theory of ‘big narrative’, ‘small narrative’ (1990) in their article titled “Strategies Developing Around the Phenomenon of Culturalism in Contemporary Art”. According to this; “Contemporary artists can create their own ‘small narratives’ by accepting works of art from the past period as ‘grand narratives’ and combining or manipulating the works with strategies such as imitation and imitation” (2021, p. 10). At this point, they initiate a process of inquiry through appropriation, which is reinterpreted using existing artworks or images. In this context, copying or appropriating a work of art is accepted as a strategy that represents the spirit of the postmodern era.

When the history of art is examined, one of the first examples of selfing that comes to mind is Marcel Duchamp’s work named “L.H.O.O.Q.” dated 1919, in which he ridiculed Leonardo Da Vinci’s “Mona Lisa” painting. In this work, which has become the symbol of Dadaism, Duchamp reproduced the Mona Lisa on a postcard by adding a mustache and beard, to put it in Bourriaud’s words, he made a copy of the Mona Lisa painting, but he did this not as a replica, but by appropriation. In another example, it is seen that the painting “Las Meninas (The Bridesmaids)” by Diego Velazquez was painted by Pablo Picasso in 1957 with the same name. Picasso reinterpreted the painting in gray tones by playing with the colors of the painting, which he reinterpreted with the Cubism technique, and made it his own, moreover, he painted the same painting 58 times. Another painting Picasso quotes is Manet’s painting “Lunch on the Grass” (1862), which caused sensations at the time it was made. Again, it is known that Picasso painted this painting 24 times. In addition, the artist; He painted also inspired by Ingres, Goya, Poussin and Jacques Louis David.

Looking back from here, it is possible to see many similar works in the history of art. Because if appropriation is accepted as producing a new work of art with a new interpretation from an existing work of art, we see that in every period of art history, artists examined the works of the great masters before them, copied them, and moreover produced their works by being inspired by them. For example, Manet was inspired by Tiziano’s “Venus of Urbino” (1534) in his “Olympia” in 1863, and Tiziano was inspired by Giorgione’s “Sleeping Venus” (1510). The painting is also known to have inspired Françoise Goya’s paintings “The Naked Maya” (1790-1800) and “Clothed Maya” (1802-1805). Manet’s painting “Olympia” was reinterpreted in 1988 by Japanese artist Yasumasa Morimura as “Portrait (Twins)”. Another

example is the painting “Circle of Prisoners” painted by Van Gogh in 1890. It is known that Van Gogh made this painting inspired by an 1872 engraving by the French painter Gustave Doré. Van Gogh reinterprets the painting by making some changes to Dore’s engraving. Again, Francis Bacon produced his work “Study after Velazquez’s Portrait of Pope Innocent X” in 1953, based on the painting “Papa X. Innocent” by Velazquez in 1650, but instead of making an exact copy, he added his own interpretation to the painting, just like other artists. He reversed the meaning of Velaquez’s painting. Whether all of these examples are explained as inspiration, copying or appropriation, although it is possible to use the expressions that the artist was influenced by this artist in this work or he used the strategy of appropriation by reinterpreting this painting, appropriation in art was not accepted as a strategy until the 1980s. On the other hand, an approach can be brought to the appropriation strategy through the theory of ‘mimesis’. Plato, in his theory of ‘mimesis’, accepts the world as the reflection of the ideas and the work of art as the copy of the reflections. Accordingly, a reinterpretation made by inspiration, imitation, reproduction or appropriation of a work of art (copy) can only be a copy of the copy. In this context, we can give an example of Feminist artist Sherrie Levine, known for her works on gender and gender discrimination, to appropriate a photograph of Walker Evans in 1981 without any changes. Known as “After Walker Evans”, the work of the artist, who wants to draw attention to the neglect of women artists in art history and their low number, and reinterprets the works of male artists and appropriates them, is the photograph of Evans’ photograph. The important detail here is Levine’s reference to the original with the name of the photograph. This reference means that the artist deliberately chose and used Evans’ photograph. Can we say here that this reference makes it considered appropriation and not plagiarism/copy? Or, if Evans had been alive at the time, would Levine have faced a lawsuit just like Koons and Prince and been accused of copying his work? When we continue by leaving these and similar questions open-ended, we see that the photograph of Walker Evans was reused by the American artist Michael Mandiberg in 2001. This time, we encounter Mandiberg’s “Untitled, After Sherrie Levine” name, just like Levine, without intervening in the photograph, only citing and appropriating the photograph. Here, Mandiberg’s reference to Levine, not Evans, is important in the context of the use of the strategy of appropriation. In the words of Bourriaud (2018); “The important thing for these artists is not to use the objects in their own works, but to re-exhibit them”. This brings to mind the phrase “imitations keep the original alive”, which is widely used in Turkish. In this context, the photograph Rabia Demir and Ali Koç reused in 2021 with the title “After Michael Mandiberg” makes reference to both Plato’s theory of ‘mimesis’ and Walker Evans through appropriation, in the context of postmodernism’s ‘anything is possible’ discourse. In the title of the work, Mandiberg is specifically cited instead of Walker Evans, who took the photo. In this respect, the work, like other works that use the strategy of appropriation, can be considered as articulation with ready-made objects that Duchamp uses and signed and appropriated.





**Image 1.** Walker Evans, Allie Mae Burroughs, Photograph, 1936 **Image 2.** Sherrie Levine, After Walker Evans, 1981 **Image 3.** Michael Mandiberg, Untitled, After Sherrie Levine, 2001 **Image 4.** Rabia Demir&Ali Koç, After Michael Mandiberg, 2021

Guy Debord, who said that there is no harm in reproducing the artist, but that he should add his own interpretation to it, said in the article titled “Methods of Detournement”; He emphasizes that “it is not limited to correcting a work or integrating various parts of old works with new ones, but also the necessity of changing the meaning of the work they reuse” (Debord, Bourriaud, 2018, p. 56). This emphasis by Debord on the need for the artist to add his own interpretation to the work and take it in a new context; Using appropriation as a strategy can be seen in the work of feminist artists such as Cindy Sherman and Renee Cox. As Sherman and Cox reinterpret important works and portraits of Western art using their own bodies, they impersonate with a new context. Mike Bidlo, on the other hand, appropriates the works of artists such as Picasso, Duchamp, Brancusi, and Warhol by naming them as “Not Picasso”, “Not Warhol”, while copying them in terms of form and technique. The fact that almost all of these artists appropriated the most important works of art history, undoubtedly, both ensured the recognition of the artists in the international art arena and attracted attention as an effective method of conveying their ideas to the masses. Just like Japanese artists Yasumasa Morimura, Serkan Özkaya and Genco Gülan, who reinterpreted and appropriated important works of Western art. Of course, it is possible to say the same for Turkish artists. As can be seen in the examples of Genco Gülan and Özlem Şimşek, which we will examine in detail below, these artists have reinterpreted the famous works of both Western and Turkish art.

In this kind of reinterpretation, it is seen that artists commonly prefer reproduction techniques such as photography and video. The mechanical reproduction of the image, which started with the discovery of photography in the 1830s, caused major breaks in art, and with the use of Video Art by artists in the 1960s, mechanical reproduction gained a new dimension and became widespread as an important reproduction technology in delivering the image to large masses. In the following years, developments in the field of digital technology and the widespread use of the Internet give an unprecedented momentum to the reproduction of images and their transmission to the masses. All these developments bring along important changes in the art-artist-work relationship. The strategy of appropriation plays an active role right here, in questioning these relations, in starting new discussions. Because for most artists who use appropriation as a method, mechanical reproduction tools come into play in reproducing and reproducing the works they produce as themes and in delivering them to the masses more easily. Postmodern art paradigms, which emerged against the principles of modern art, replace the artist's talent or technical skill with the importance of the idea. Therefore, contemporary artists widely use mechanical production tools such as photography,

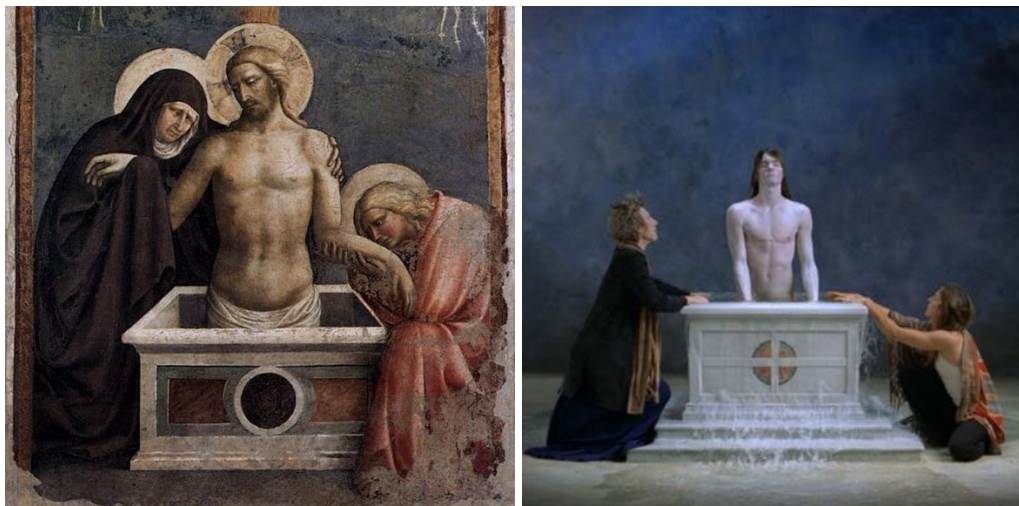
new media and video in their works of art, which they reproduce not only from other artists but also from mass media, advertisements and popular culture images.

The scope of video art; Expanding greatly in terms of technology, content, and historical research, artist Bill Viola plays an important and leading role in the acceptance of video as a contemporary art form. Born in 1951 in New York City, Viola studied painting and electronic music at Syracuse University, then discovered video and attended the school's Experimental Studio Department. Having worked for videotapes, video installations, sound media, electronic music performances and television throughout his career since the 1970s, Viola's video installations, which surround the audience with images and sound, draw attention with their impressive simplicity. Viola uses video to explore sensory perception as a pathway to self-knowledge. In this context, Viola, who creates a mysterious atmosphere by using space, light and composition in her videos just like a classical period painter, and slows down time, in the words of Meltem Cansever; He is known as the “Rembrandt of Video” (2019). Using herself, her husband and her close circle as a model in her first videos, Viola works with professional actors in the following years. The most important feature of Viola's videos is the progress of a moment that is actually in a very short time, almost in a paused time. Thus, the viewer; He is asked to focus on that moment and look again, noticing every single movement, gesture, expression, look that he had not seen or noticed before.

Art historian, critic and curator Firat Arapoğlu states that Viola questions “complex cognitive processes with the perception of image and sound in his works, while doing this, he focuses on individual and social moods” (2019), especially by focusing on portraiture. In this context, the roots of the artist's works, which focus on universal and human emotions and experiences such as birth, death, pain, suffering, patience; Christian mysticism extends to the mystical traditions of the East and West, such as Sufism and Zen Buddhism. With these effects, it is possible to see the appropriation strategy in most of the artist's works. He reinterprets the sufferings of Jesus' crucifixion in his video series titled “Passions”, which he made with the influence of Renaissance and Medieval art. The video titled “The Greeting” deals with the greeting of the pregnant Virgin Mary, which was a frequently discussed theme in art in the 16th century. One of the artists Viola was influenced by and reinterpreted his works was Michelangelo. The works of Michelangelo and Viola are exhibited in pairs in the exhibition titled “Bill Viola/Michelangelo Life, Death, Rebirth (Bill Viola/Michelangelo Life, Death, Rebirth)” opened at the Royal Academy of Art in 2019. In the video titled “The Raft (Tue)” he made in 2004, it is seen that he was inspired by Théodore Géricault's painting “Medusa Tuesday”.

Viola's 2002 video work “The Emergence” is a reinterpretation of Masolino's “Pieta” scene in 1424, where Jesus is embraced by Mary after he is taken down from the cross. Masolino depicts Jesus rising from the tomb between Madonna and John. In Viola's video work, which uses a very minimal space as in all her videos, a young man like Jesus slowly emerges from a marble tub/box filled with water in a plain space. Water draws attention as an element that Viola frequently uses as a metaphor for purification or destruction—ocean, underwater, mirage, lake, rain—in most of her videos. Water draws attention as an element that Viola frequently uses as a metaphor for purification or destruction—ocean, underwater, mirage, lake, rain—in most of her videos. These figures, whose suffering and love for Jesus are clearly visible in Masolino's painting, appear in Viola's work as two women, old and young (Virgin Mary and Mary Magdalene), in a similar grief. The video, in which Viola deals with birth and death together, refers to the ‘Resurrection’ scene where Jesus is resurrected iconographically. In slow motion lasting eleven minutes and forty-nine seconds; A pale,

naked man emerges from the tub of water between two women sitting sadly and sadly next to a large marble box. Just as she was about to fall, the women grabbed her and gently helped her down to the ground, covering her with a cloth. Avoiding describing his work with absolute clarity, Viola invites more viewers to reflect. Thus, “Emergence” audience; Where does the scene take place, who are the two women, what is their relationship to each other and to the man, where does the man come from, is he alive, is he born, is he dying? It makes you think about questions like. Because Viola doesn’t answer any of these openly. Therefore, these questions show that the video can be read from two different perspectives on birth and death. Similarly, Viola says, “from today’s perspective, this is a drowning event: These two women are pulling a lifeless figure out of the water. If I look inwardly, a birth; overflowing waters and a naked young man being brought out by women with the function of bringing an existence to the world” (Jones, 2014) emphasizes these two opposite meanings. Thus, at the beginning of the video, the person who is resurrected is covered when he is about to die again at the end of the video, so the work turns into a paradox showing that life and death are intertwined.



**[Image 5. Masolino da Panicale, Pietà, 280x118 cm, Fresco, 1424, Sant’Andrea Collegiate Church Museum, Empoli](#)** **[Image 6. Bill Viola, The Emergence, Video Art, 11:49, 2002](#)**

The other artist we will examine here is Genco Gülan, who uses the appropriation strategy in different media such as sculpture, photography, video art, and new media. A versatile artist, Gülan was born in Istanbul in 1969. While studying Political Science and International Relations at Boğaziçi University, she continues to the Fine Arts Department. The artist who attends Greg Wolff’s workshop here is influenced by Wolff’s art approach and educational philosophy. In 1998, he was accepted to the New School in New York on a semi-scholarship and completed his master’s degree in New Media Art. Gülan, whose works have been exhibited in many important exhibitions at home and abroad, works as a lecturer at Mimar Sinan Fine Arts and Boğaziçi Universities. Gülan defines the works he produces using new media art channels such as painting, sculpture, performance, installation and photography, as well as video art, digital art and internet art, as ‘idea art’ and calls this field ‘visual intellectuality’.

Marcus Graf defines Gülan’s art, which is influenced by various concepts, forms, mediums and orientations in art production; “the private and the public; produces social artworks by comparing personal, national or international mythologies. Social and political themes, new technology, individual differences, daily habits, and psychological history characterize his work.” (2008, p. 9-11). In addition, it is seen that Gülan’s works are influenced by daily life,

events and cultural objects, as well as reinterpreting the context of existing works of art. In this context, Gülan is fed from a wide spectrum; It reinterprets many works and images that have left their mark on art history, from Ancient Greece to Orientalism, from Modern Art movements to artist portraits and photographs. The purpose of the artist, who appropriates the works of other artists by constructing them in a new context; Putting himself in the artist's shoes, he says, it is to understand "what he did, how he felt, what he saw". Gülan cites the "Everyday Mythologies" series as an example; "By taking a series of photographs looking for Hippolyte Berteaux in the space, he thought how he could put himself in her place, how Berteaux felt while making the frescoes on the ceiling, how he worked, how he could look like him in whatever he does? He says he is trying to look through the eyes of the painter by asking questions" (Graf, 2008, p. 27). On the other hand, he adds a new deformation to the deformations made by Picasso by multiplying the organs of the figures such as eyes and arms in a series of oil paintings on canvas in which Picasso interprets his women. This kind of selfing (organ duplication or reduction) that tries to break accepted beauty patterns is also seen in Gülan's antique sculpture works. The artist, who sees these organ reproductions as a reflection of Biotechnology, that is, cloning, on art, says that he sees the appropriation strategy he frequently resorts to as a kind of 'relay race' in an interview he attended at Altınbaş University in 2020. Similarly, in the interview with Marcus Graf (2008); Emphasizing that culture consists of layers, he says that "the artist has to add new ones to these layers". Of course, while the artist does this, he rearranges them according to his age. Thus, in Gülan's works, we see that an ancient sculpture and a robot are often used together, using mechanical reproduction techniques and the possibilities of digital technology. In this context, he produces the work titled "Ear cut (h / ear cut)" as video art, in which he reinterpreted the self-portrait made by Van Gogh after he cut off his ear in 2002. Gülan cuts her hair to a number one for this work she does to explain her own childhood traumas. The artist, who wore a second ear with plastic make-up on his ear, cuts his ear as if he were shaving in front of the wall where the Van Gogh reproduction he made in 1984 hangs, and the red liquid flowing from the tube placed inside the ear falls on his white shirt. In addition, the beeper used in the video and cut off with the ear fills in "the speculation that Van Gogh's discomfort was caused by a sound he heard in his ear." (Graf, 2008, pp. 31-32).

In addition, Gülan believes that local culture and the universal do not have to conflict, on the contrary, that cultural values should be preserved, and in this context, he works on the series in which he reinterpreted Osman Hamdi Bey's works in recent years. In this series; "Yellow Robe (in the Rüstem Pasha Mosque)", "Abu Hayat", "Theologian", "Quran Education" and "Turtle Trainer" are some of the works that Gülan reinterpreted and appropriated. Just like Osman Hamdi Bey, whom he calls my master, the artist goes to the places in the paintings and has his photographs taken. Instead of Osman Hamdi Bey, who we see in oriental clothes in the pictures, Genco Gülan is seen in the clothes of a western engineer. Using the raincoat and cap worn by the engineers, Gülan prefers colors that match the colors in the picture. Instead of the books Osman Hamdi Bey is holding or reading, Gülan is holding a tablet or looking at the tablet. Similarly, the work "Turtle Trainer" uses a small android robot borrowed from Boğaziçi University Computer Engineering Department instead of turtles. Thus, an image emerges where a human and a robot stand facing each other, where, just like turtles, there is a training through coding.

In the video titled "Turtle Trainer", the artist puts the turtle on a table; Tells the geographical, cultural, social and economic structure of Turkey. In the meantime, the turtle is moving, and the video shot with the mobile phone on the table goes, and the conversations of Gülan, who fixes his mobile phone, are often interrupted. The artist's persistent attempt to carry the



tortoise to its place and to train it by showing it the direction it needs to go -forward- draws attention as a reinterpretation of both Osman Hamdi Bey's painting "Turtle Trainer" and Joseph Buys' performance "How to Tell Artworks to a Dead Rabbit". It would be useful to recall the views that Osman Hamdi Bey might have painted "The Tortoise Trainer", influenced by the engraving "Charmeur de Tortues" published in the Tour du Monde magazine in 1869.



**Image 7.** Charmeur de Tortues, Tour du Monde Magazine, 1869 **Image 8.** Osman Hamdi Bey, Turtle Trainer, 222x122 cm. Oil on canvas, 1906, Pera Museum **Image 9.** Genco Gülan, Turtle Trainer, 5:50, Video Art. 2017

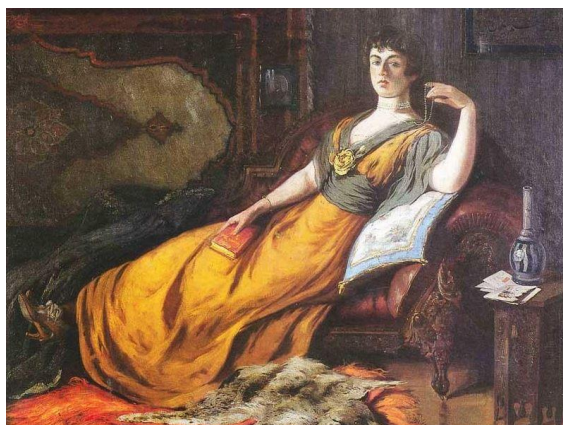
Özlem Şimşek, who produces photography and video works using the appropriation strategy, was born in Istanbul in 1982. Şimşek, who received her undergraduate education at Marmara University, Department of Journalism and completed her master's degree in photography at Dokuz Eylül University and her doctorate from Yıldız Technical University Art and Design. Şimşek reinterprets the masterpieces of Turkish painting history with photography and video art works in the series titled "Modern Turkish Painting as Self-Portrait", which he reinterpreted with the strategy of appropriation between 2009 and 2013. This series; it consists of two different series, "Epic Temptation" and "Dramatic Persona". "Epic Temptation"; It is about how the image of woman changed after the Tanzimat and the Republic, what the roles were assigned to women in these periods and how this was represented in Turkish painting. In her "Dramatic Persona", Şimşek focuses on how the image of woman was established in the 19th and 20th centuries, focusing on how Turkish painters reflected women's images in Western art and Eastern / Western mythology. Şimşek in the "Epic Temptation" series; she reinterprets the images of modern women in the paintings of male artists such as Caliph Abdülmecid Efendi, Osman Hamdi Bey, İzzet Ziya, Nazmi Ziya Güran, Halil Paşa, İbrahim Çallı, Namık İsmail, Şeref Akdik, Mahmut Cuda, Nuri İyem. Again in the same series, Hale Asaf uses the self-portraits of female artists such as Mihri Müşfik, animating the roles, mimics and gestures of the women represented, and appropriating them. The purpose of the artist; both to display the roles assigned to the female figure through the 'masculine eye' in these paintings with a feminist approach, and to construct her own identity through the women she reinterprets. Şimşek's use of the strategy of appropriation in this way, in the words of Judith Butler, "the female body, which is a tool used by an appropriative and interpretive will to determine a cultural meaning for itself, is appropriated by a woman, but to remind women of their experiences." (Antmen, 2014, pp. 46 - 48). In these two series, which aim to understand how the image of "femininity" in



Turkey is constructed, the artist firstly engages in research; examines the subjects and stories of the paintings, costumes are specially made, and the spaces used in the paintings are carefully set up.

In these works, which focus on the “feminine” roles assigned to the modern Turkish woman, the artist pursues the “archeology of femininity roles and gestures” with photographs, while in the video works, the question; “what would these women do if they came to life”. In this context, one of the women that Şimşek portrayed by appropriating; The first wife of the Caliph Abdülmecid Efendi in the painting “Goethe in the Harem”, which he painted in 1917 as a response to the orientalist representations of the harem, is Şehsuvar Kadınefendi. The portrait, which is depicted in a way that cannot be distinguished from a Western woman with her hair and dress, and shows Şehsuvar Kadınefendi reading a book, has a special place in the history of Turkish painting as the first of the works in which the modernization of the Ottoman Empire is represented. Because, on the one hand, the woman in Abdülmecid Efendi’s painting touches the pearl on her neck and rests in a half-reclining position, like the female images in the Western tradition, on the other hand, she creates an intellectual woman image with letters written in different languages that can read Goethe in her original language and seen at her bedside.

In Şimşek’s video work “Goethe in the Harem (After Abdülmecid Efendi)”, a woman reading a book is seen in a place as similar to the original as possible, wearing similar items and clothes, as in the painting of Caliph Adulmecid Efendi. In the video, which consists of a 56-minute repetitive moving photographic image, Şimşek is half-lying on the chair while resting. The woman’s breathing while reading a book, turning the pages of the book sometimes absentmindedly and sometimes carefully, and shaking her feet from time to time cause the photographic image to come alive. Thus, Şimşek, in Antmen’s words; “It takes the woman in the picture from being a mere appearance, transforms it into a real woman having an experience.” (2014, s. 50). In addition, Şimşek, who opened the strict rules of Turkish painting for discussion, also included an interview published in the magazine Kontrast; she says that; “opens these narratives for discussion, or at least tries to do so, by incorporating them into the narrative of the work referenced by the appropriations”. This view is reflected in the video by superimposing the naked and clothed images of the woman.



[Image 10.](#) Abdülmecid Efendi, Goethe in the Harem, 132x173 cm. 1917, Ankara State Painting and Sculpture Museum [Image 11.](#) Özlem Şimşek, Goethe in the Harem (After Abdülmecid Efendi), Video Art, 56:00, 2011

## CONCLUSION

The ability to reproduce the work of art through mechanical reproduction techniques, which started with the discovery of photography in the 1830s, affects the production channels of the work of art in parallel with the developments in the field of technology today. At this point, video, which started with the animation of the photographic image, emerged as an alternative to television broadcasting in the late 1950s and early 1960s. Video, which has gained widespread use with its ability to reach large masses in a shorter time compared to photography and film, has been widely used as an art medium since the 1960s with the interest of artists. Thus, it plays an active role in conveying the work of art to the masses. In the study, video is handled in the context of technical reproduction and an analysis has been made on how artists working with video art use the appropriation strategy in their works. In this context, video is also discussed on a common denominator as a technical reproduction tool, a reproduction strategy as a theme in appropriation. While appropriation has been widely used as a contemporary art strategy since the 1980s, it still continues to be discussed today. While these discussions are made especially in the context of 'plagiarism/copy/inspiration', appropriation also takes shape around the ignoring of the 'uniqueness', 'originality', 'creativity' and 'originality' conditions of the work of art. At this point, another subject of discussion is the aura of the work of art, which Benjamin states that "in the age when art can be reproduced with the possibilities of technique such as photography and cinema mediums, the 'sense of uniqueness' of the work of art disappears and its aura also disappears" (2004, pp. 53-55) emphasizes. Adding to this the reproduction of the works as a theme, it is now seen that it is impossible to talk about the uniqueness of the work of art and its 'aura'. At this point, it is noteworthy that the appropriation strategy developed in the light of postmodern discourses eliminates the traditional distinction between creativity and copy, ready-made object and original work in art.

In the research, the appropriation strategy was approached in the context of the artist's reinterpretation of an existing work and in this sense, the nuances between strategies such as inspiration, influence, imitation, reproduction or pastiche were ignored. Thus, Picasso and Braque's collages, Duchamp's ready-mades, Andy Warhol's soup cans and artworks made from digital images have been accepted as a kind of appropriation. When the art historical process is examined, it is seen that many artists such as Manet, Van Gogh, Picasso and Bacon interpreted the existing works with a new perspective and appropriated them. These painters, like contemporary artists who use the strategy of appropriation, added their own interpretations to the paintings instead of making an exact copy. In this case, it would be appropriate to recall Douglas Crimp's opinion that "under every painting lies another painting." (1993).

So, what is the reasoning behind the artists' re-consideration of the existing and appropriating it by interpreting it instead of pursuing what has not been done before, as in previous centuries? Is it the thought that everything that can be done has been done and that the possibility of doing something new is no longer possible, that many artists in art history were inspired by previous masters, is it a subversion of traditional codes or just a parody? Of course, it does not seem possible to show a single reason for this. Art historian Benjamin H.D. According to Buchloh (1982); "There may be various reasons such as 'continuity and tradition building', 'desire to construct an identity construct' or 'the desire to establish universal dominance over coding systems.'" Or as a manifestation of Postmodernism's 'everything is possible' discourse, just as Bourriaud advocates; It is one of the basic qualities that make up the "spirit of contemporary art" (2018, p. 28). The fact that everything is

possible has led to the destruction of the principles of “genius artist”, “uniqueness” and “authenticity” of the work of art. Because postmodern artists aimed to reverse the accepted rules of both social and artistic order. In this context, it is noteworthy that almost all of the artists who use the appropriation strategy use the most important works of art history. Undoubtedly, this situation both ensured the recognition of the artists in the international art arena and attracted attention as an effective method of conveying their ideas to the masses. Feminist artist Sherri Levine, Japanese artist Yasumasa Morimura, Turkish artist Serkan Özkaya. At this point, it is seen that the artists exhibit a questioning and critical approach. For example, Özlem Şimşek questions the socially constructed female identity of the period in her works in which she appropriates and reinterprets important female portraits of Turkish painting. As a female artist, she does this by animating the gestures and mimics of the women in the paintings. Thus, in his video works, he questions the fictionalized female identity by looking at the painter and his model through the ‘masculine eye’, while trying to understand what those women might have felt at that moment. With this approach, it can be said that the strategy of appropriation turns into a reckoning with the art of the past. Similarly, Genco Gülan says that he sees the works he uses by appropriating both as a “relay race” and as a kind of reckoning with the history of art. In this context, his works using ancient Greek sculptures are a kind of reckoning with the perception of “both the ancient period and the beauty and ideal human form that that period reflects today” (Gündüz, 2021). Inspired by the paintings of classical masters and using unique elements in his video works, Bill Viola, a leading artist in this field, uses the strategy of appropriation; He focused on universal and human feelings and experiences such as birth, death, pain, suffering, patience. In this context, Viola's works offer both a very mystical and a very thought-provoking experience.

As a result, appropriation, which is accepted as the eclectic attitude of postmodern art, has been defined as postproduction/postproduction by Bourriaud. This means that the artist chooses between existing images and puts them back together instead of starting from scratch. In this context, the artist, who uses the strategy of appropriation, is expected to address and transform his own idea by resynthesizing it in accordance with the understanding of the period. Thus, the artist who reproduces a work with his own interpretation produces a new work, not a replica/copy.

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## FEEDBACK IN AVIATION

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**Key words:** Feedback, aviation, customer satisfaction, airway company performance, feedback forms.

### **Abstract**

Feedback is one of the most important part of successful business. Feedback helps discover customer concerns, so the business can resolve the issue in timely manner. Feedback can help with customer retention which in turn leads to profit, while setting up a specific form isn't a hard task and can be done just by 1 programmer. Feedback isn't only negative, it can help identify the strengths of the business if the feedback form is provided in a correct manner. Feedback forms vary depending on the product but selecting the correct questions is the most important part of it. Usually business owner wants as much information from feedback but at the same time they have to get it without boring a customer, because if there are too many questions customer will eventually get tired and may skip the last few questions. Types of questions also vary as there are single choice, open and multiple choice types of questions. Feedback has been recently becoming a trend in many big companies. Windows already have task bars asking customers for feedback, Amazon, Nike always have different forms after you purchase a product from their website. Lately Feedback has been becoming popular in aviation business as well. A lot of bigger companies in their respective regions like Delta, Lufthansa, Turkish Airlines already have pretty advanced feedback forms on their website. These feedback forms have different questions depending on the feedback provided, like after a flight a client can get a specific feedback form regarding service on airplane, if a client has feedback about website and has difficult time with interface while purchasing product they can select a feedback form with questions that cater to their needs. At current only top aviation companies use Feedback systems, I suggest more companies use these forms.



## THE VALUES OF THE TRADITIONAL GAMES OF THE TURKIC PEOPLES

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### Abstract

The article is devoted to the results of the study of the scientific and methodological basis of the values of traditional games and sports of the Turkic people. At the 2nd summit of the Turkic Council in Bishkek in 2012, Kyrgyzstan's proposal to host the World Nomad Games was accepted and supported by Turkic-speaking countries. These Games were held in 2014, 2016, 2018 in Cholpon-Ata, Kyrgyzstan with the support of the Office of the Turkic Council and its member countries. The traditions and folk games of nomads, which have been preserved for centuries and passed down to future generations, reveal the beauty of sport festivals and celebrations in our time. At the same time, they are the basis for the historical and future unity of the Turkic-speaking countries. The 4th World Nomad Games to be held in Turkey in 2020 have been postponed due to the 2021 pandemic.

The study of the values of traditional games of the Turkic people, the methodological features of the national types of sport and the use of the results in the formation of pedagogical skills of physical culture and sport is considered as an effective tool for promoting the culture and traditions of Turkic-speaking people around the world. In our time, there is a lack of research on the traditional national games of Turkic people in the educational process of young people, content and educational potential of folk games as a means of physical education.

The main purpose of the proper organization of educational activities of school children is to develop the abilities of students, as well as to facilitate discovery of their hidden potential, natural talent. Teaching the rules of a game, along with the development of the necessary movements and physical qualities, can help to develop children's communication skills, during which students learn to communicate with each other, cooperate, overcome difficulties, win or lose games. During the conditions and requirements of the game, each participant learns to be responsible, determined and strong-willed. Therefore, in the process of educating the younger generation, it is recommended to widely use the national movement and intellectual games in the educational process of school children.

**Keywords:** values, culture, traditional games, sport, mentoring.

## TÜRK HALKLARININ GELENEKSEL SPOR OYUNLARININ ÖNEMİ

### Özet

Makalemiz, Türk halklarının geleneksel spor oyunlarının öneminin bilimsel ve metodolojik temelini araştırılmasını amaçlamaktadır. Türk Dili Konuşan Ülkeler İşbirliği Konseyi (Türk Konseyi)'nin 2012 yılında Kırgızistan'da düzenlenen II. Zirvesinde Kırgızistan'ın Dünya Göçebe Oyunlarına ev sahipliği yapma önerisi, Türk Dili konuşan ülkeler tarafından resmi olarak karara bağlanmış ve bu ülkeler tarafından desteklenmiştir. Bu Oyunlar, Türk Konseyi Sekreterliği ve üye ülkelerinin desteğiyle 2014, 2016 ve 2018 yıllarında Kırgızistan'ın Issık-Göl Bölgesine bağlı Çolpon-Ata şehrinde gerçekleştirilmiştir. Göçmenlerin yüzyıllardır nesilden nesle aktarılan gelenekleri ve milli oyunları, günümüzde kültürel etnospor şenliklerinin ve kutlamalarının güzelliğini gözler önüne sermektedir. Bu organizasyonlar, aynı zamanda Türk dili konuşan ülkelerin geçmişteki ve gelecekteki birliğinin bir temeli olarak analiz edilmiştir. 2020 yılında Türkiye'de düzenlenmesi planlanan VI. Dünya Göçebe Oyunları, 2021 yılında alınan Kovid-19 pandemi tedbirleri nedeniyle ertelenmiştir.

Türk halklarının geleneksel spor oyunlarının öneminin incelenmesi çerçevesinde, milli sporların metodolojik özelliklerinin beden eğitimi kültürünün ve pedagojik spor becerilerinin oluşumunda önemli bir yere sahip olması, kültürün ve sporun teşvik edilmesinde etkili bir araç olarak görülmektedir. Türk halklarının geleneksel spor oyunlarının bugün gençlerin eğitim sürecindeki eğitsel oyun içeriği ve bir beden eğitimi aracı olarak kullanılması konusunda araştırılması gerekliliği görülmektedir.

Okul çocuklarının eğitim faaliyetlerinin uygun şekilde organize edilmesinin temel amacı, öğrencilerin yeteneklerini geliştirmek ve aynı zamanda gizli doğuştan gelen yeteneklerinin keşfedilmesini kolaylaştırmaktır. Gerekli fiziksel hareketlerin ve fiziksel niteliklerin geliştirilmesiyle birlikte spor oyunu kurallarının öğretilmesi; öğrencilerin birbirleriyle iletişim kurmasında, iş birliği yapmasında, zorlukların üstesinden gelmesinde, oyunlarda başarı elde edilmesinde ve iletişim becerilerinin geliştirilmesinde yardımcı olabilir. Spor oyunları sırasında her öğrenci sorumlu, kararlı ve istekli olmayı öğrenir. Bu nedenle çalışmamızda okul çağındaki çocukların ve gençlerin eğitim sürecinde geleneksel spor oyunlarının yaygın olarak kullanılması önerilmektedir.

**Anahtar Kelimeler:** değerler, kültür, geleneksel oyunlar, spor türleri, eğitim.

Many scientific studies of the games of children and national sports of the Turkic peoples are devoted to the culture, history of various types of games and competitions.

Children's games and national sports of the Turkic peoples have always occupied an important place in public life.

The Center for the Study of Traditional Games of the Kyrgyz-Turkish Manas University conducts research on the educational value of folk games.

Many traditional children's games of the Turkic peoples have lost their cultural value and falling into oblivion as well as they are replaced by other mundane things. The absence of the cultural tinge from moral and esthetical perspectives is still upsetting.

Traditional bright colors of ethnic culture, elements of clothing, examples of the behavior of women and men - these and other cultural and ethnic values of the Turkic peoples should be present in the upbringing and education of our children in the family and at school.

We proposed the use of traditional games in the process of teaching primary school children. We have developed methodological requirements.

While playing the game, there should be training for various movements as the traditional games have positive image.

The content and focus of traditional children's games are based on the ethnocultural values of the Turkic peoples: lifestyle, respect for elders, the ability to overcome obstacles without losing honor and dignity, love for animals and nature.

There are scientific works on the role of children's games in the socialization of a child, the use of folk traditions in the family (R. Lachin, 2009, Aliriza Jafari Golyamkhuseyn 2014, A. Alimbekov, 2015, A. Kasmalieva 2017 etc.)

In the learning process, the content and focus of the game on the moral and mental development of the child is important.

Therefore, we proposed to use outdoor sports and intellectual games in the school's physical culture lessons in secondary school № 88 in Bishkek.

The use of traditional games for the socialization and education of children and youth of the Turkic peoples implements the methodological features of the game in learning, organizing creative learning, and making it interesting for the student (A. Alimbekov, 2015, A., E.Muslimova, 2015, Kasmalieva 2017).

During the game, the child learns to cooperate, to be self-active, decisive and purposeful.

Items used in the game must be aesthetically pleasing, with special attention paid to their color and quantity (6, 9, 40, etc.).

Toys for boys should be symbols of courage and strength and educate the defenders of the homeland, and toys for girls are symbols of beauty, tranquility and family comfort: round beautiful pebbles for "Besh Tash", colored scarves, colorful alchiks, 9 balls and 9 holes for "Toguz korgool", swing, etc.

The main goal of teaching children in primary school is to develop children's abilities. Correct organization of games for children of different ages will reveal the talents of children and abilities for different school subjects: for example, "Toguz korgool" teaches counting and develops logics, games in alchiki - coordination and accuracy.

Each game has its own characteristics. Games develop communication skills. Now we are preparing for publication the textbook "Children's games and entertainment" for teachers and students.

The main task of the teacher is to simulate the conditions for the education and upbringing of children, to teach creativity, be active and make the right decision. Through play, the child learns the world and himself.

Today in the Kyrgyz Republic, the school curriculum includes a regional component (20 hours per year) - each school can include traditional games and national sports. This allows you to increase interest in physical education lessons, as well as acquire motor experience for the development of other sports: basketball, volleyball, athletics, football, etc.

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## **DADA'S UNIQUE ARTIST, REBELLIOUS AND FUTURE LOOKING: FRANCIS PICABIA**

## **DADA'NIN İSYANKÂR VE GELECEĞE BAKAN ÖZGÜN SANATÇISI: FRANCIS PICABIA**

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### **Özet**

Modern dönemin, o zamana kadar yaşanmamış yoğunlukta araştırma isteği ve hızıyla yüklü olması, kuşkusuz önceki iki yüzyılın bilimsel ve toplumsal dönüşümlerinin bir sonucudur. Özellikle 20.Yüzyılın başı, bu dönüşümlerin siyasi çalkantıların yarattığı belirsizliklerle zirveye çıkarak özellikle Avrupa'da toplumun şekillendiği, sanatın da buna hızlıca ayak uydurduğu bir zaman dilimidir. Görsel Sanatların yaklaşık bir yüzyıldır yoğunlaştığı biçimsel araştırmalar; yüzyılın başındaki siyasi gerilimler, savaş ve devrimler gibi koşullarla eksenini değiştirmiş, düşünsel yönü ağırlıkta çeşitli sanat akımlarının oluşmasına zemin hazırlanmıştır. Bu akımların en önemlilerinden biri olan Dada, sadece döneminde değil, günümüze kadar pek çok akım ve dönemdeki sanatçılara ilham kaynağı olacak bir isyan duygusunu bünyesinde taşıyan üyeleriyle geçmiş ve geleneksel olanla tamamen bağını koparmış bir akımdır. Dada akımının geçmişi reddeden yoğun isyan duygusunu, araştırmada incelenen Francis Picabia'nın hiciv ve gizli anlamlar barındıran insansı biçimlerinde, geçmişin sanatını tamamen reddeden tahrik edici hazır nesnelere ve geleceğin tasarımına yönelen özgün biçimsel arayışlarında görmemiz mümkündür. Sanatçının vizyoner doğası, Dada ile yolları kesişmeden de kendini sanat dünyasından ayırtmış, Dada döneminde ise yapıtlarındaki isyan ve farklılık güdüsü tam anlamıyla karşılığını bulmaya başlamıştır.

Francis Picabia, tıpkı Marcel Duchamp gibi nesneyi manipüle ederek izleyiciyi yönlendirme, nesneye farklı anlamlar yükleme konusunda sanatta kavramı yoğun olarak kullanmıştır. Kavramın öne çıkarılması, yapıtın sadece bir fikir, bir kavram haline gelmesi, 1960 sonrası sanatın izlediği yolun şekillenmesinde önemli rol oynamıştır. Yine geçmişin hayranlık durulan sanatçıları ile adeta alay eden çalışmasının barındırdığı, geçmiş sanatın taklit olduğuna dair bakış açısı, onun geleceğe yönelik bakışının ürünlerindedir. Geleceğin ön gösterimi gibi görünen insansı nesnelere de ileriye bakan, fakat bunu yaparken yine hiciv ve alt anlamları eksiksiz sunan Picabia'nın üstün ifade tarzı, Dada ruhunun düşündürmeye dayalı yapısını göstermektedir.

Araştırmada öncelikle Francis Picabia'nın sanat yolculuğu ve eserlerinin Dada akımı ile olan ilişkisi incelenmiştir. Yapıtlarındaki özgünlük ve daha önce yapılmış olanlardan ayrıldığı noktalar incelenmiş, kendinden sonra gelen akım ve sanatçılar üzerindeki olası etkileri üzerinde durulmuştur.

**Anahtar kelimeler:** Francis Picabia, Dada, Manifesto, Hazır nesne

## Abstract

The fact that the modern period is loaded with an unprecedented intensity of research desire and speed is undoubtedly a result of the scientific and social transformations of the previous two centuries. Especially at the beginning of the 20th century, these transformations peaked with the uncertainties created by the political turmoil, and the society was shaped, especially in Europe, and the art quickly adapted to it. Formal studies in which the Visual Arts have been intensified for nearly a century; changed its axis with conditions such as political tensions, wars and revolutions at the beginning of the century, and laid the groundwork for the formation of various artistic movements with an emphasis on intellectual aspects. Dada, one of the most important of these movements, is a movement that has completely cut off its ties with the past and traditional, with its members embodying a sense of rebellion that will inspire artists not only in its period, but also in many movements and periods. It is possible to see the intense sense of rebellion of the Dada movement in Francis Picabia's satirical and occult humanoid forms examined in the research, in the provocative ready-made objects that completely reject the art of the past, and in his original formal searches for the design of the future. The visionary nature of the artist separated himself from the art world even before he crossed paths with Dada, and in the Dada period, the motive of rebellion and difference in his works began to find its full response.

Francis Picabia, like Marcel Duchamp, used the concept extensively in art to manipulate the object and to direct the viewer and to attribute different meanings to the object. Emphasizing the concept, making the work just an idea, a concept played an important role in shaping the path followed by art after 1960. Again, the point of view of his work, which almost mocks the admired artists of the past, and that the past art is imitation, was one of the products of his view towards the future. Picabia's superior expression style, which looks forward in humanoid objects that seem to be previews of the future, but still presents satire and sub-meanings completely while doing this, shows the thought-based nature of the Dada spirit.

In the research, first of all, Francis Picabia's art journey and the relationship of his works with the Dada movement were examined. The originality of his works and the points where he differed from the previous ones were examined, and the possible effects on the artists and the movements that came after him were emphasized.

**Keywords:** Francis Picabia, Dada, Manifesto, Ready made

## Giriş

20.yüzyılın başında ortaya çıkan sanat akımlarını, tıpkı diğer yüzyıllardaki gibi dönemin sosyal ve siyasi koşullarından ayrı düşünmek olanaksızdır. Fakat 1900'lerin başı birçok yönden dünya genelinde bu alanlarda çok fazla hareketliliğe sahne olduğu gibi Modern dönemin getirileri olan bilimsel ve ekonomik arayışlar ile de şekilleniyordu. Düşünsel yönden Aydınlanma Çağı'nı takiben geçen bir yüzyıl içerisinde ulusların hayatına yerleşen yeni kavramlar ile eski yönetim şekilleri sarsılmakta, dünya savaşlarının ve kimi ülkelerde yönetim değişikliklerinin önü açılmaktaydı. İzlenimcilik ile birlikte sanatta biçim ve öz arayışının izinde araştırmalarını sürdüren akımlar, tam bu dönemde bu yoğun siyasi ve toplumsal değişimlerden etkilenir. 1916 yılında I. Dünya Savaşı'nın gölgesinde, tarafsız İsviçre'nin Zürih şehrinde ortaya çıkan Dada akımı için savaş, aynı zamanda akımın fitilini ateşleyen ve üyelerini bir araya getiren bir motivasyon kaynağıdır. Cabaret Voltaire denen klüpte bir araya gelen ressam, şair ve düşünürlerden oluşan bir grup göçmenden oluşan Hugo Ball, Tristan Tzara ve Marcel Janco gibi ilk Dadacılar arasında gösteremeyeceğimiz Francis



Picabia ise akımın soluğunu oluşturan, ona kimliğini kazandıran sanatçıların en önemlilerindedir. Barcelona'dan Zürih'e gelişiyle birlikte akıma yeni bir bakış getiren (Bocola, 1999:318) ve onu hem Paris hem de New York'ta temsil eden Picabia (Erden, 2020:224), radikal düşünsel yaklaşımları, bunları ifade ettiği edebi eserleri ve oluşturduğu öncü çalışmalarla Dada'nın ruhunu doğrudan hissedebileceğimiz bir sanatçı olarak Dada gibi bir akım içerisinde bile öne çıkmayı bilmiştir.

### **Dada akımının genel özellikleri**

Hugo Ball'ın Cabaret Voltaire'de kendi gibi savaş karşıtı sanatçı ve düşünürleri bir araya getirerek yola çıktığı Dada serüveni, önceleri sadece muhalif görüşlerin paylaşılacağı, sanat ve edebiyat sohbetlerinin yapılacağı bir alan yaratma ihtiyacından doğmuştu (Öztürk, 2020:3). Kısa zamanda bu kabarede başlayan etkinlikler ile önce savaş ve sonra da sanat karşıtlığına varacak bir isyan duygusuyla geçmiş ile tamamen bağlarını koparan bir akım ortaya çıktı. Tristan Tzara'nın kaleminden çıkan Dada manifestosunda da akımın ismiyle vakit kaybedilmemesi gerektiğinin vurgulanması bile grubun geleneksel ve benimsenmiş değerlere uzak yapısını temsil etmektedir. Bu manifesto; nesnelere, duygular, inançlar, ilişkiler ya da töre, bellek, savaş gibi kavramlara tamamen sorgulayıcı bir bakış açısı getirip, delilik gibi kavramlara saygı gösterir (Antmen, 2018:123). Özellikle savaşı ortaya çıkaran insan aklının yetersizliğine bir vurgu söz konusudur. Savaş olgusunu ortaya çıkaran insan aklının doğası bu düzeyde olduğuna göre aklın ve mantığın dışında olmak Dadacıların gönüllü olarak seçtikleri bir taraftır. Kurgulamadan bilerek kaçınma, rastlantısallığa yönelme, bu yolla ve ötesinde izleyicide şok duygusu uyandırarak onu sorgulamaya itme, temel düşünce ve yöntemleridir (Öztürk, 2020:4). Bu rastlantısallık ilkesine göre düzenledikleri sanat faaliyetleri Dada şiirlerinde de resimlerinde de görülebilmektedir. Geleneksel sanat yöntemlerinin reddi anlamına gelen bu başkaldırıya örnek olarak Tristan Tzara'nın "Dadacı bir şiir yazmak" için verdiği tarif yeterlidir. Bir gazete ve bir makasın kullanıldığı bu reçetede, makasla gazeteden istenilen sayıda sözcük kesilerek bir torbaya konulur ve rastgele çekilerek bir kâğıda yazılır (Antmen, 2018:124).

Sanatın durumuna, onun yüksek fiyatlarla alınıp satılmasına, üretkenlikten uzak olmasına yönelik kesin bir tavır benimseyen Dada üyelerinin geleneksel estetik ile tamamen yollarını ayırdıklarını görürüz. Bu tavırda en çok arzu edilen şeylerden biri de, sanat ile yaşam arasındaki sınırı yok etmektir (Antmen, 2018:126). Bu noktada akımın en özgün eserler vererek kendinden söz ettiren sanatçıları olarak Marcel Duchamp, Francis Picabia ve Man Ray gibi akımın Amerika ayağını oluşturan sanatçıları görürüz. Kolaj ve assemblaj tekniklerinin ağırlık kazandığı akımda hazır nesnenin de sanat malzemesi, hatta sanat yapıtının kendisi haline gelmesi, ifadede yeni bir boyutu ortaya koymaktadır. Geleneksel sanat malzemesi, yerini fikirselleştirilmiş hazır nesneye, geleneksel estetik de güzel sanatlardaki kesin konumunu kavrama bırakma yolunda ilk başkaldırısını Dada ile yapar.

Geçmişin ve değerlerinin bu alabildiğine şiddetli reddi, Dada'yı, İtalyan Fütürizmi benzeri geleceğe yönelik umutlar besleyen bir akım yapmaktan çok geleceğe de kuşkuyla bakan bir konuma yerleştirmekteydi. Akımın üyeleri, savaşın büyük kıyımlarının; sanayi destekli büyüme, makineleşme gibi kavramların karanlık taraflarının bir ürünü olarak gerçekleştiği konusunda hemfikirler (Sheppard, 2000). Yine de geleceğin potansiyelinin farkındaydılar ve yeni başlayan yüzyılın bilim ve teknolojisinin yarattığı bu önde gelen makine fenomenine çalışmalarında sıkça başvurmuşlardır. George Grosz ve John Heartfield gibi sanatçılar montajlarında, kendilerini sanatçıdan çok mühendis gibi görürler ve neredeyse çoğu Dadacı, makineyi bir ironi ve metafor üretme aracı olarak kullanır (Artun ve Artun, 2018:239). Dada'nın tüm amacı olan sanatın hayatla doğrudan ilişki kurması bu metaforlarda da kendini

göstererek makinelerin çalışma yapısı gündelik hayatın birer fragmanı, insan yaşamına ait kareler gibi görünür. Francis Picabia'nın portreleri de bunun en tipik örneklerini oluşturmaktadır. Fakat Picabia'nın makine kavramı daha çok tanrılaştırılan bir idealizmdir. Kendi soğuk ve kayıtsız halini makineninkiyle özdeşleştiren sanatçı, onu bu yönden de ideal hale getirmektedir. Onun çılgın makineleri, modern çağın çılgınlık hissini, aynı zamanda dönemin getirdiği bir duyarsızlaşmayı da bünyesinde barındırır ve insanı da kılık değiştirmiş birer makine gibi göstermektedir (Kuspit,2005).

### **Francis Picabia'nın sanatında Dada akımı özellikleri ve sanatçının özgünlüğü**

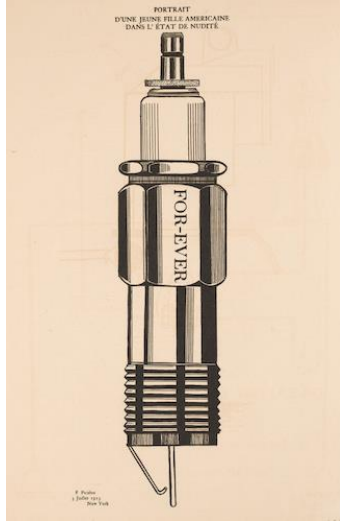
Küba asıllı bir ailenin oğlu olarak 1879 yılında Paris'te doğan Francis Picabia, erken yaşta keşfedilen sanatsal yeteneği sayesinde iyi bir eğitim alır ve kısa zamanda Avrupa'da gelişen birçok sanat akımını deneyimleme fırsatı bulur. Ünlü sözü "Temiz fikirlere sahip olmak istiyorsanız onları her gün değiştirin" düşüncesini kendinde net şekilde uygulayan sanatçının kariyerinde resim, performans, şiir, yayıncılık gibi alanlarla birlikte İzlenimcilikten Art Informel'e kadar birçok farklı sanatsal tarzda eserler verdiğini de görmek de şaşırtıcı değildir (Moma "Francis Picabia"). Dada akımında eserler veren birçok sanatçının da tıpkı Picabia gibi uzun ve verimli bir sanat eğitimi ve arayış sonucunda Dada'ya ulaştıkları görülmektedir. Dada, genel olarak sanatçılar arasında üslup birliğinin de görülmediği, fikirsel birliğe dayalı, savaş ve genel olarak mantık karşıtı bir akımdır.

Dada'nın Amerika Birleşik Devletleri ayağı, neredeyse Zürih ile eşzamanlı olarak gelişmiştir. Burada uzun zamanlı yoldaşı Marcel Duchamp ve ayrıca Man Ray ile birlikte gördüğümüz Francis Picabia, fotoğrafçı Alfred Stieglitz'in ünlü 291 adlı galerisinde sergi açarak kendini Amerika'ya tanıtan önde gelen sanatçılardan biri olmuştur (Martinique, 2019). Yine Alfred Stieglitz'in galerisi 291'e karşılık 391 adlı bir Dada dergisi yayınlamaya başlayan sanatçı, bu şekilde akımın hızlı yayılmasında önemli rol oynamıştır. Berlin, Paris, Köln gibi merkezlerde de Dada'nın yaygınlaşma yollarından biri haline gelen bu dergiler ile Dada ruhu geniş kitlelere aktarılabilirdi (Antmen, 2018:125). Dada'nın kuruluşundan itibaren organize olma konusunda ne kadar özenli olduğunu, gösterileri ve etkinliklerinden olduğu kadar fazla düzenli olmasa da çıkarılan bu dergilerden anlayabiliriz.

Picabia'nın Dada düşüncesini başlı başına şekillendirmesi, yönünü radikalleştirmesi, onun birçok şeye karşı uslanmaz bir muhalif oluşuna bağlıdır. Dadacıların birçoğu da grubun Picabia ile karşılaşmasını, bir kırılma noktası olarak tanımlamaktadır (Artun ve Artun, 2018;239). İflah olmaz nihilizmi ile sanata ve yaşama ait bir umut ya da idealizm barındırmayan sanatçının etkisiyle Dadacıların birçoğu sanat karşıtı bu eğilimi benimsemiştir. Francis Picabia, yazdığı Dada manifestosunda da son derece muhalif bir tavır takınır. Özellikle çağdaşı Kübizmi bir fikir kılığı olarak nitelendiren sanatçı, sadece Dada'nın gerçeklerden bahsettiğini ve üstünün örtülmek istendiğini anlatır. Yüksek fiyatlara satılan sanat eserlerine, tacirlere eleştiri getirir ve insanları kopya sanat eserleri almaya teşvik eder. Bu yönüyle tamamen isyankardır (Picabia, 1920). Dada'nın isyan düşüncesi, onu geçmişteki bütün sanat akımlarından ayıran en önemli unsurların başında gelir. Bu isyan, geçmiş sanata olduğu kadar aynı zamanda bütün yönleriyle toplum yaşayışına karşıdır. Picabia'nın bu muhalif tavrının etkisiyle grubun isyan düşüncesinin yoğunlaşması da Dada'yı daha uzlaşmaz hale getirmiş, öncekilerden anlamlı ölçüde ayırmıştır.

Düşüncesini ve sanatını şekillendiren birçok etmenin içinde onu etkileyen bazı kişiler ön plana çıkar. Öncelikle Dada ile karşılaşmaları aynı tarihte olan ve uzun zaman benzer düşünce yapısında oldukları bilinen Marcel Duchamp buna örnektir. Bununla birlikte yine dönemin felsefi altyapısında da etkisi yoğun olan düşünürler Henri Bergson, Friedrich Nietzsche ile oyun yazarları Alfred Jarry ve Raymond Roussel de Duchamp kadar etkili

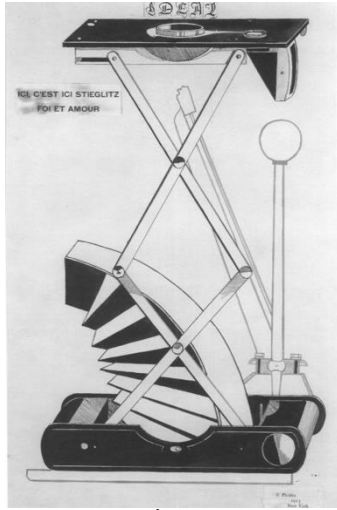
olmuştur. Bergson'un yaşamın sürekli bir akış olduğuna dair düşüncesi, Picabia'nın rutinler ve sınırlamalara başkaldıran doğasına doğrudan uymaktaydı ve Nietzsche'nin burjuva hukuk ve ahlak standartlarının dışında yaşayan üstün insan düşüncesi de yine kendi hayatında benzer ideallere sahip olması ve bu inançları yaşamaya çalışarak sık sık kargaşa çıkarması yüzünden ona ilgi çekici gelmekteydi (Camfield, 1966: 310).



**Görsel 1:** “Çıplaklık durumundaki genç bir Amerikalı kızın portresi”, Francis Picabia'nın çizimi ve Alfred Stieglitz'in fotograferi, 1915, 44x24cm, ADAGP, Paris 2021 © RMN-Grand Palais (Musée d'Orsay) / Hervé Lewandowski

Kendi ifadesiyle “Gerçekliğin niteliksel kavrayışı artık salt görsel ya da optik bir biçimde ifade edilemez”. Bu aşamada sanatçının kendi mental, öznel durumuna bağlı olan yeni bir nesnellik ortaya koyduğunu görmekteyiz (Henderson, 1989:116). 1913'te Kendi Mekanik İfademizle Görülen Mekanik İfade başlıklı sıra dışı bir suluboya oluşturan sanatçı, bir dansçı gibi somut bir figürden yola çıkarak radyometre şeklinde sembolik bir nesne seçerek kullanır. Orijinal öznesini bu şekilde temsil eden Picabia'nın bu ilk denemeleri, iki yıl sonraki mekanomorf evresinin oluşmasına zemin hazırlayacaktır (Bohn, 1985:673). Makine parçaları gibi nesnelere, yaşamın birer parçası, insan hayatının, insan bedeninin birer elemanı gibi, onu duygusal yönden ifade etmek için kullandığı açıktır. Bu çalışmalarında kişiler, bütün özellikleri, formları ve karakterleri ile makine parçaları ile özdeşleşerek ifade bulur. “Resim şeyleri değil, şeyler tarafından zihnimize oluşturulan duyguları resmetmelidir,” ifadesi de ünlü tablolarında karşılığını bulmuştur (Kuspit,2005).

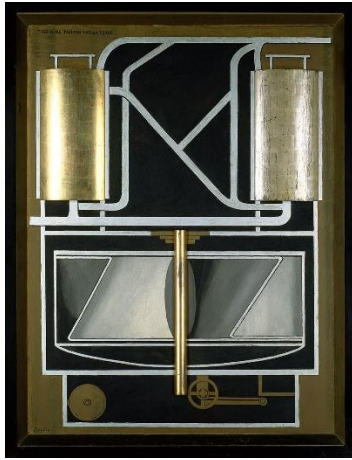
1915 yazında sanatında köklü bir değişim meydana getiren Francis Picabia'nın mekanomorfaları, içinde bulunduğu dönemin bilimsel ve teknolojik nimetleriyle doğrudan karakterize olmuş yapısı ve düşünce ikliminden etkilenerek yolunu bulmuştur (Camfield, 1966:310). Gazeteci Agnes Meyer'in portresi olarak tahmin edilen Çıplaklık durumundaki Genç Bir Amerikalı kızın Portresi'nde göze çarpan bir bujinin şematik görüntüsüdür. Fakat burada bu ateşlenmeye hazır mekanik parça gazeteciye, Amerikan feminenliğine ve eserin içinde bulunduğu 291'in yapısına bağlı olarak Meryem Ana'ya kadar birçok kadını temsil etmektedir (Wong, 2015: 128).



**Görsel 2:** “İşte Stieglitz”

291’in kapağı No:5-6 (lüks baskı), 1915, kâğıt üzerine kalem ve kırmızı-siyah mürekkep.

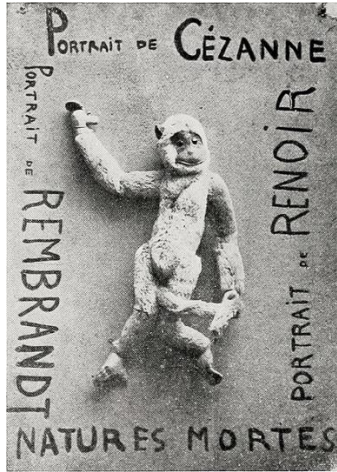
Amerika’daki en yakın dostlarından ve ona ilk solo sergisini veren Alfred Stieglitz ile aralarının açılması üzerine yaptığı düşünülen İşte Stieglitz’de Picabia, bozuk bir kamerayla fotoğrafçıyı sembolize ederek, aynı zamanda modası geçmiş Gotik haflerle IDEAL yazarak onu eleştirmektedir (“Francis Picabia”). Makine formları ile insanları sembolize ederek yakaladığı yeni anlatım dili, giderek daha açık, anlaşılır ve kışkırtıcı olarak, tipik bir Dada örneği haline gelmekteydi.



**Görsel 3.** “Dünyanın Çok Nadir Bir Resmi”, sanatçının boyalı çerçevesi ile pano üzerine metalik ve yağlıboya ve ahşap üzerine gümüş ve altın varak, 1915.

İki adet monte edilmiş ahşap form içererek Picabia’nın bilinen ilk kolajı olma özelliği olan Dünyanın Çok Nadir Bir Resmi’nde sanatçının 1915 yılının endüstriyel nesnelere kendine kaynak olarak aldığı dönemecin nadir örneklerinden birini görmekteyiz. İnsana ait cinsel referansları makine parçalarıyla özdeşleştirme fikrinin uygulandığı en temel örneklerden biri olan eserde ve benzer eserlerinde ilerlemeyi insan yaşamına bağladığına dair izler görmek mümkündür (“Francis Picabia”).





**Görsel 4:** “Natürmort; Cezanne’ın portresi, Renoir’ın portresi, Rembrandt’ın portresi”, Karton üzerine oyuncak maymun ve yağlıboya, boyutları ve nerede olduğu bilinmiyor. Cannibale, Paris’teki yeniden yapım, n. 1, 25 Nisan 1920.

Eserini oluşturmada gerçek bir maymunu kullanmak istediği bilinen Picabia’nın sonunda doldurulmuş bir oyuncak maymun olarak onu tuval üzerine Natürmort; Cezanne’ın portresi, Renoir’ın portresi, Rembrandt’ın portresi, onun mekanomorflarından sonra oluşturduğu farklı bir eğilimdedir. Çoğu şekilde sanatçının yakın arkadaşı ve Dada içindeki en benzer isim olan Duchamp’ın hazır nesne fikrinden ödünç aldığı düşünülebilecek bu fikir esasında izleyiciye hazır nesne ile resim arasında bir bağ sunmaktadır. Picabia burada özellikle hazır nesnesini geleneksel bir resim malzemesi olan tuval yüzeyine yerleştirmeyi tercih etmiştir (Baker, 2001:57). Kaba harflerle ve maymunun eski püskü görünümü ile estetikten uzak bir tavır daha baştan benimseyen sanatçı, geçmişin ve çağının saygıdeğer sanatçıların adlarıyla resim sanatına şiddetli bir saldırıda bulunmaktadır (Kuspit, 2005). Burada izleyicinin algılayabileceği bir karşı duruş söz konusudur. Cezanne, Rembrandt ve Renoir’ın portreleri olarak takdim edilen oyuncak maymunun yapıttaki varlığı, resim sanatındaki yerleri çok kişi tarafından kabul gören bu ustaları sorgulamaya itmektedir. Burada adı geçen isimlerle birlikte temsil ettikleri sanat da geçmişe doğru itilmektedir ve bu çalışmadan bir yıl önce kendi dergisi 391’in kapağında Picabia “Cezanne’ın resimlerinden tiksiniyorum, beni sıkıyorlar” diyerek görüşünü açıkça dile getirmiştir (Baker, 2001:57).

Sanatçı yine, 1924 yılında kaleme alınan fakat asla yayınlanma fırsatı bulanamayan Kervansaray isimli, kişisel düşüncelerini de içeren kısa öykülerden oluşan kitabında da şu şekilde belirtmiştir: “Şöyle söyleyeyim size dostum, Bir Rembrandt’a bakmaktansa bir sepet kozalağa bakmayı her zaman tercih etmişimdir!” (Picabia, 2021).

Aslında Picabia’nın vurguladığı şey, resmin bir mimetik aktiviteye dönüşmesiydi. Bu eserde mimetik paradigmanın ölümünü ilan ederken, onu tıpkı tuval yüzeyine sabitlenmiş doldurulmuş bir hayvan ya da müzedeki bir yapıta indirgemektedir (Baker, 2001:58). Bu doğa taklidi aktiviteyi oluşturan sanatçılar, onun için insan hareketlerini taklit eden bir canlıyla özdeş tutularak ifade edilmiştir. Onun için gerek geçmişin gerekse çağın sanatı içinde doğa taklidinin yeri yoktur ve bu mimetik aktivite onun için sadece sıkıcı bir eylemdir.





Dada sanatçısının gelecek hakkındaki karamsar görüşlerinin aksine makinelerin dünyasına yönelik ilgisi de onu kendi akımı içerisinde bile daha vizyoner bir konuma yerleştirmektedir. Dada'nın bu öncü sanatçısı için araştırma alanı genişletilmeli, dahil olduğu her bir sanatsal alan, akım incelenmeli ve eserleri üzerinde detaylı analizler yapılmalıdır.

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## THE WAYS OF FRENCHIFYING COMPUTER SCIENCE TERMS OF ENGLISH ORIGIN

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### ABSTRACT

Development of information technologies has accelerated the flow of the English words into the French language. But appearance of another new sphere – computer science in the 60s of the past century accelerated the flow of words from English into French. The “Policy of linguistic borrowings” adopted by Canada’s Quebec Board of the French Language on September 14, 2007, accurately explains calquing and the principles of their formation. The document says that only calques conforming to the morphological and semantic system of the French language and socio-linguistic norms can be accepted and used. Expressing new notions through the potential of the language is also a part of the language policy of the French state and this approach is understandable. If the terms are used the way they are borrowed, then disruption of the identity of the French language will become inevitable.

**Key words:** Frenchification, calquing, term, computer

Development of information technologies has accelerated the flow of the English words into the French language. Having a look into history we will see that rapid flow of words of English origin began in the 19th century. But appearance of another new sphere – computer science in the 60s of the past century accelerated the flow of words from English into French. Initially, various versions were offered regarding the translation of terms of English origin (mostly American English). Christiane Marcellesi from the University of Rouen even recommended calquing terms fully.

This is how Professor of Paris 13 University, editor of the *Neologica* scientific journal Jean-François Sablayrolles explains the process of frenchifying terms: “Frenchification means adaptation of the word form, stress, root, suffix, prefix and etc. to the French language. More attention is paid to the exterior form: it includes adjustment of inferior and diacritic signs, plural and singular form, affixes of English origin. Special attention must be paid to the root of the borrowed word and affix (if there is any).” [2, p.47]

Canada’s Quebec Board of the French Language, which is dealing with systematization of the French terminology, puts forward two criteria for adoption of borrowed terms: linguistic and sociolinguistic factors. Any borrowed term is to meet both categories for it to be adopted into the French language. [1, p.6]

Linguistic requirements allow determining conformity of a term to the lexicon of the French language.

Sociolinguistic requirements are designated to determine conformity of a borrowed word to the social norms.

The Board also groups the borrowed terms for the degree of adoption. The adopted borrowed words include the terms, words and expressions, which the Board recommends to use.

The terms, words and expressions, which are not recommended by the Board, especially which are not considered satisfactory from sociolinguistic point of view, fall under the category of unaccepted borrowings.

One the most widespread methods of Frenchification of computer science terms of English origin is to pronounce the term in accordance with the French phonetics by maintaining

orthography or making slight changes to it. The term adapted to the French phonetics is adjusted to the language more easily.

Though a number of computer science terms in French maintain English graphics, their pronunciation has been frenchified. Some of the terms, which orthography is the same and orthoepy is different, are shown below in an alphabetical order:

<b>Term</b>	<b>English pronunciation</b>	<b>French pronunciation</b>
Baud	[bɔ:d]	[bo]
Bit	[bit]	[bit]
Brotherton (courbe de)	brʌðətən]	[brotherton]
Bus	[bʌs]	[bus]
Byte	[bait]	[bit]
Cable coaxial	[keibl kəvæksiəl]	[kabl]
Cache	[kæ:ʃ]	[kaʃ]
Code	[kəud]	[kɔd]
Extranet	[ekstrənɛt]	[ekstranɛt]
Format	[fɔ:mæt]	[fɔrma]
Gain	[gein]	[gɛ̃]
Instruction	[instrʌkʃən]	[ɛ̃struksjɔ̃]
Interface	[intəfeis]	[ɛ̃tɛrfas]
Intranet	[intrənɛt]	[ɛ̃tranɛt]
Metallisation	[metalizeɪʃn]	[metalizasjɔ̃]
Modem	[məudən]	[mɔdɛm]
Pixel	[piksəl]	[piksɛl]
Placement	[pleismənt]	[plasmā]
Erlang	[ɜ:læŋ]	[ɛrlɑ̃]
Firmvare	[fɜ:m weə]	[firmwɑ:ʁ]
Interpolation	[intə:pəleɪʃn]	[ɛ̃tɛrpɔlasjɔ̃]
Language	[læŋgwɪdʒ]	[lɑ̃gɑ:j]
Message	[mesɪdʒ]	[mɛsɑ:j]
Netware	[netweə]	[netwɑ:ʁ]
Octet	[ɔktɛt]	[ɔktɛ]
Script	[skript]	[skrip]
Shannon	[ʃænən]	[ʃanɔ̃]
Signal	[sɪgnəl]	[sɪnal]
Simulation	[simyuleɪʃn]	[simulasjɔ̃]
Site	[sait]	[sit]
Stretch	[streɪtʃ]	[strɛʃ]
Bios	[baɪos]	[bɪɔs]
Whatsapp	[wɒtsap]	[watsap]

Frenchification of the pronunciation through maintenance of orthography is felt more clearly in abbreviations.

<b>Abbreviation</b>	<b>English pronunciation</b>	<b>French pronunciation</b>
DVD	[dɪvɪdi]	[devede]
COBOL	[kəubɒl]	[kɔbɔl]
Wifi	[wajfaj]	[vifi]

It should be noted that in English, which is a major source for computer science terms, stress may fall on different syllables. Prolongation of vowels in the previous syllables, weak pronunciation of the last syllable is a normal language phenomenon. In French this matter is concrete. Stress must fall on the last syllable of a word or rhythmic group, vowels must be pronounced only within orthoepic norms. This principle is observed almost in all cases. Of course, there are some exceptions. Unlike French-speaking people in Europe and Africa, Canadians often pronounce the term “Wifi” as it is pronounced in English. Though this term is in masculine gender, sometimes native speakers make mistakes in using the article.

Adjustment of computer science terms borrowed from English to the French orthography undergoes some procedures.

In most cases vowel “e” is added to the end of a borrowed term so that the last consonant is read:

Domain - domaine

Icon – icône

Protocol – protocole

Interactif – interactive (interactif - fem.)

Map - Mapped

Multiband – multibande. In French this term is used both as a noun and an adjective, i.e. category change occurs along with orthographic change.

One of the double consonants at the end of the word is omitted:

Access - accès

Suffix “or” is replaced by “eur”.

Moderator – modérateur

Processor – processeur

Server – serveur

The letter “e” is replaced by “é” in open syllable, and by “è” in closed syllable:

Multimedia - multimédia

Interference – interférence

Access - accès

Letter combination “ck”, which sounds as [k], and the letter “c” at the end of the word is replaced by “qu”:

Numeric - numérique

Packet –paquet

Photonic - photonique

In verbs prefix “to” is replaced by the relevant infinitive suffixes of the French language (mostly “er”):

To rip - riper

To click – cliquer

To demultiplex – démultiplexer.

Verbs predominate among the computer science terms borrowed from English. The borrowed verbs mainly fall under the first group, this helps both native speakers and those learning French.

Another variant of the Frenchification of terms of English origin is calquing. Calquing means borrowing a word or phrase from another language while translating its components so as to create a new lexeme in the target language.

The “Policy of linguistic borrowings” adopted by Canada’s Quebec Board of the French Language on September 14, 2007, accurately explains calquing and the principles of their formation. The document says that only calques conforming to the morphological and semantic system of the French language and socio-linguistic norms can be accepted and used. The calque must not cause confusion of meaning [1, p.12]. The calque used to fill the lexical



gap in French without eliminating the difference of meaning and changing the meaning (meanings) of the term are acceptable.

French linguists divide calques into 2 groups: semantic calques and morphological calques. Semantic calque is the selection of words for formal similarity: bug-bogue, bus-bus etc.

As there is no gender category in English, this does not cause a serious problem in the process of calque formation. But another interesting moment emerged when using the word **bogue** as a calque. This word, which has existed in French since the 16th century, meant chestnut shell and was used in the feminine gender. In the 70s of the past century, when this term was used as an equivalent of bug in English, its gender was also changed. So, the number of nouns changing their meaning for gender in French also rose. **Bogue** is the only noun in the French computer science terminology, which meaning changes according to the gender. Consequently terms déboguer, débogage and débogueur derived from this noun.

Morphological calque mostly appears when a word of a foreign language is translated: Autoroute de l'information (information highway), disque compact (compact disc). When comparing the dictionaries and technical literature published in the previous years, it turns out that among the computer science terms in French, the number of terms borrowed from English without changes is sharply reducing. Such terms either become archaic, or are replaced by French words. This update is connected with the activity of the bodies pursuing the language policy, including commissions on computer science terms. The tendency of replacing English terms is also observed in media.

Sometimes, computer science terms formed through calquing are used side-by-side with the English terms. Blogue-blog, blogage-blogging, toile-web, matériel-hardware, logiciel-software. This situation is mainly observed in the colloquial speech. In written language the authors usually prefer using standardized terms. It is banned to use the English variant of the terms, which have official status and substitute in the French language. Though one can determine how much this ban is observed in the written language, this is practically impossible in the colloquial speech. In order to have a better understanding of the situation, suffice it to have a look at the posts of the French youth on social media. However, it is praiseworthy that French authors use the borrowed terms as little as possible.

Actually, such a situation, in other words use of the English computer slang words or terms by the youth in speech is the manifestation of globalization and this has become an irreversible process.

Having a look at the computer science dictionaries and periodicals in French, we see that there are few borrowed terms in this sphere. As a rule, the names of processes, tools and equipment are frenchified. Subsequently, the number of borrowed terms is reducing year-after-year. This can be regarded as a result of the state's language policy. Calquing also plays a great role in the rapid Frenchification of the computer science terms.

Expressing new notions through the potential of the language is also a part of the language policy of the French state and this approach is understandable. If the terms are used the way they are borrowed, then disruption of the identity of the French language will become inevitable. This problem is more pressing and serious in the light of globalization. Though it is impossible to prevent the flow of new terms in the light of the development of technology, this process must be properly directed and regulated.

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## **ROLE OF INTERNATIONAL ORGANIZATIONS IN THE DEVELOPMENT AND COOPERATION OF TURKIC-SPEAKING STATES**

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### **Abstract**

In recent years, cooperation between Turkic-speaking countries has been increasingly developing, which contributes to the unity of the Turkic peoples. Signing of the Agreement of creation of the international organization of the Council of Turkic-speaking States Cooperation, dated October 3, 2009 in the city of Nakhichevan (Azerbaijan Republic) by the initiative of the President of Kazakhstan N.A. Nazarbayev at the 9th Summit of Heads of Turkic-speaking States was an important historical event for Turkic-speaking peoples around the world.

The Council of Turkic-speaking States Cooperation or the Turkic Council is the international organization whose main goal is to develop comprehensive cooperation between different states. Currently, Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan and Turkey are members of this organization. Hungary has observer status. The organization is headquartered in Istanbul. The structures of the Turkic Council are: the office is in Istanbul, the Council of Presidents, the Council of Foreign Ministers, the Committee of Senior Officials, the Council of Elders of Turkic-speaking States, the Parliamentary Assembly (TurkPA) in Baku, the Turkic Academy in Nur-Sultan and the International Organization of Turkic Culture in Ankara. Thanks to the activities of these organizations, many projects have been implemented and relations between Turkey and the countries of the region have dynamically developed. Also, outside this structure, the Turkish Agency for Cooperation and Coordination (TİKA) was created, which is considered one of the main instruments of Turkish foreign policy influence in the region and outside. Dated March 31, 2021, at an informal meeting of the leaders of the Council of Turkic-speaking States Cooperation, held in a video conference format, the President of the Kyrgyz Republic emphasized that "Kyrgyzstan fully supports the renaming of the Council into the Organization of Turkic States.

The transformation of the Council of Turkic-speaking States Cooperation will attract attention of other countries and new members of this organization and increase the number of observers. Kyrgyzstan supported the creation of the Turkic Investment Fund, and stressed the need to use the Trans-Caspian International Transport Corridor as the safest and shortest route between Europe and Asia. The role of this organization is also great in the implementation of projects for construction of railways for the further development of trade relations and the creation of a single tourist map of the Turkic world. Such organizations as TURKSOY, the Turkic Parliamentary Assembly, the Turkic Culture and Heritage Foundation and the International Turkic Academy play a leading role in strengthening and developing

cultural, humanitarian ties, studying the historical heritage and disseminating the values of Turkic culture.

**Keywords:** Turkic council, culture, humanitarian relations, cooperation.

## THE VALUES OF THE TRADITIONAL GAMES OF THE TURKIC PEOPLES

### TÜRK DİLİ KONUŞAN ÜLKELERİN GELİŞİMİ VE İŞBİRLİĞİNDE ULUSLARARASI KURULUŞLARIN ROLÜ

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Son yıllarda Türk dili konuşan ülkeler arasındaki işbirliğinin giderek gelişmesi Türk halklarının yakınlaşmasına katkı sağlamaktadır. 3 Ekim 2009 tarihinde Nahçıvan (Azerbaycan Cumhuriyeti) şehrinde düzenlenen Türk Dili Konuşan Ülkeler Devlet Başkanları 9. Zirvesi'nde Kazakistan Cumhuriyeti Cumhurbaşkanı Nursultan NAZARBAEV'in girişimiyle "Türk Dili Konuşan Ülkeler İşbirliği Konseyi'nin (Türk Konseyi) Kurulmasına Dair Nahçıvan Anlaşması"'nın imzalanması bütün Türk dili konuşan halklar için önemli bir tarihi olay olmuştur.

Türk Dili Konuşan Ülkeler İşbirliği Konseyi, yani Türk Konseyi, farklı devletler arasında çok yönlü işbirliğini geliştirmeyi amaçlayan uluslararası bir kuruluştur. Türk Konseyi üye ülkeleri Azerbaycan, Kazakistan, Kırgızistan, Özbekistan ve Türkiye'dir. Macaristan gözlemci statüsündedir. Konseyin merkezi İstanbul'dadır. Türk Konseyi'nin yapısı: İstanbul'daki Sekretarya, Devlet Başkanları Konseyi, Dışişleri Bakanları Konseyi, Kıdemli Memurlar Komitesi, Türk Dili konuşan ülkelerin İhtiyarlar Kurulu (aksakallar kurulu), Bakü'deki Türk Dili Konuşan Ülkeler Parlamenter Asamblesi (TÜRKP), Nur-Sultan'da bulunan Uluslararası Türk Akademisi ve Ankara'da bulunan Uluslararası Türk Kültürü Teşkilatı (TÜRKSÖY). Bu kuruluşların faaliyetleri sayesinde birçok proje hayata geçirilmiş ve Türkiye ile bölge ülkeleri arasındaki ilişkiler dinamik bir şekilde gelişmiştir. Bunun dışında, bölgede ve diğer ülkelerde Türk dış politikasının uygulama araçlarından biri olarak kabul edilen Türk İşbirliği ve Koordinasyon Ajansı (TİKA) oluşturulmuştur. 31 Mart 2021'de video konferans formatında düzenlenen Türk Konseyi liderlerinin gayri resmi toplantısında Kırgızistan Cumhurbaşkanı, Türk Dili Konuşan Ülkeler İşbirliği Konseyi'nin (Türk Konseyi) adının, Türk Devletleri Örgütü olarak yeniden adlandırılmasını Kırgızistan'ın desteklediğini söyledi.

Türk Konseyi'nin Türk Örgütü'ne dönüştürülmesi diğer ülkelerin dikkatini çekeceğini, onların örgüte üye olmalarını ve gözlemci sayısının artmasını sağlayacağını, Türk Dünyası Yatırım Fonu'nun kurulması fikrini de desteklediğini belirtti. Ayrıca, Trans-Hazar Uluslararası Taşımacılık Koridoru'nun Avrupa ile Asya arasındaki en güvenli ve en kısa yol olarak kullanılması gerektiğini vurguladı. Ticari ilişkilerin daha da geliştirilmesi ve Türk dünyasının turist haritasının oluşturulması için demiryolu projelerinin hayata geçirilmesinde bu örgütün ne kadar önemli bir role sahip olduğunu kaydetti. Kültürel, insani bağların güçlendirilmesi ve geliştirilmesinde, tarihi mirasın araştırılmasında ve Türk kültürünün yaygınlaştırılmasında TÜRKSÖY, Türk Parlamenter Asamblesi, Türk Kültürü ve Mirası Vakfı ve Uluslararası Türk Akademisi gibi kuruluşlar öncü rol oynadığını ifade etti.

**Anahtar kelimeler:** Türk Konseyi, kültür, insani ilişkiler, işbirliği.

In the modern world, the issues of integration of the post-Soviet "Turkic republics" and the Turkish Republic and the emergence of the "Turkic factor" in modern international relations are increasingly being raised. The institutionalization of these relations occurred with the signing of the Agreement on the establishment of the Cooperation Council of Turkic-speaking states on October 3, 2009 in the city of Nakhichevan (Azerbaijan) at the 9th Summit of the Heads of the Turkic-speaking states at the initiative of the President of Kazakhstan N. Nazarbayev.

At the first stage, the Turkic Council included Turkey, Azerbaijan, Kazakhstan and Kyrgyzstan. The members of the CCTS are currently Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan and Turkey. Hungary has observer status. The headquarters of the organization is located in Istanbul. The structures of the Turkic Council are: the Secretariat in Istanbul, the Council of Presidents, the Council of Foreign Ministers, the Committee of Senior Officials, the Council of Elders (aksakals) of the Turkic-speaking states, the Parliamentary Assembly (TurkPA) in Baku, the Turkic Academy in Nur-Sultan and the International Organization of Turkic Culture (TURKSOY) in Ankara.

Today, thanks to the activities of these organizations, many projects have been implemented and relations between Turkey and the countries of the region have developed dynamically.

A striking example of the unifying role of the CCTS is the idea of holding the World Nomad Games.

The Council supported the statement of Kyrgyzstan with the initiative to unite the Turkic states at the I World Nomad Games.

Delegations from 12 countries of the CIS and far abroad took part in the I World Games of Nomads. The II World Nomad Games were held from 3 to 8 September 2016 in Cholpon-Ata. The games program included 23 ethnic sports.

And in 2018, more than 3 thousand athletes from 77 countries of the world took part in the III Games in competitions in 37 national sports of nomadic peoples, which are distinguished by their originality and entertainment.

Kyrgyzstan became the first host country of such an international project with a completely new format.

Sports and cultural events in the Games program are an ideal way to strengthen relations between different countries and peoples and share the amazing history and culture of nomads with the rest of the world.

From October 30 to November 2, 2016, in the city of Bartın (Turkey), Askhat Akibayev, President of the World Ethno Games Foundation, took part in a solemn event dedicated to the Turkic educator, poet and writer Ismail Gaspraly. The event was organized by the Foundation. I. Gaspraly and UNESCO with the support of the Consulate General of the Kyrgyz Republic in Istanbul.

The World Nomad Games were awarded in the "New Project in the Turkic World" nomination.

Cooperation of the Turkic-speaking States (CCTS) has its own long history and further development prospects. Each one makes its own unique contribution to the progress and development of mankind.

A striking evidence of this can be called the successful activities of joint international companies and businessmen working in various fields, which make a worthy contribution to the development of international cooperation in the economy, education and culture.

On March 31, 2021, at an informal meeting of the CCTS (Cooperation Council of Turkic Speaking States) of leaders, held in the format of a videoconference, the President of the Kyrgyz Republic emphasized that "Kyrgyzstan fully supports the renaming of the Council



into the Organization of Turkic States. The transformation of the Council will allow attracting other countries to participate in this organization and increasing the number of observers.

Kyrgyzstan supported the idea of creating a Turkic Investment Fund. President of the Kyrgyz Republic S. Japarov emphasized the need to use the Trans-Caspian international transport corridor as a safe and short route between Europe and Asia, projects for the construction of railways and the development of trade and economic relations. It is especially important to create a unified tourist map of the Turkic world.

The ties between our peoples and countries are strong and rely on common historical, cultural, spiritual values, so it is easier for us to find a "common language" and jointly create a favorable political and social climate in the region.

Thus, today the interaction of the Turkic-speaking countries is based on three main components:

- joint solution of security issues;
- optimization of trade and economic cooperation, including the energy sector, tourism;
- development of cultural and humanitarian ties.

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## ANALYSIS OF MOTIVATION LEVELS OF DISABLED INDIVIDUALS IN PARTICIPATION TO SPORT ACTIVITIES

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### Abstract

This study aims to analyse the motivation levels of disabled individuals in participation to sport activities. The population of the study consists of disabled individuals who are actively doing sports, while the sample group consists of 123 participants. Motivation Scale for Sports Participation of People with Disabilities (MSSPPD), developed by Tekkurşun, İlhan, Esentürk and Kan (2018), was used in the study as data collection instrument. Student t test was used to find out whether scale total scores and subscale total scores differed in terms of variables such as gender, branch, etc., while One way ANOVA and Tukey multiple comparison test were used to find out whether they differed in terms of variables such as grade, income level, sport level, etc. No statistically significant difference was found in terms of participants' sports participation motivation levels in terms of age, gender, income level, sport branch, sport level and sport orientation states. On the other hand, it was concluded that students who had language and speech and orthopaedic disabilities, 7th graders and those doing team sports had higher sports participation motivation levels. Disabled individuals are known to have different incompetence. Sport is a phenomenon that helps these individuals to relax, to have higher self-confidence, to socialize and to improve physically and mentally. In this process, children in developmental age should be intertwined with sports. Suitable materials should be provided to disabled students for sports activities to take place in schools. It is also important to raise awareness in families, to have the support of school management and to take promoting measures to guide disabled students to curricular and extra-curricular sport activities.

**Keywords:** Disabled individuals, Sports, Motivation

### GİRİŞ

Kişilerde engel durumu; hastalık, sakatlık vb. şeklinde oluşabileceği gibi doğum öncesi veya sırasında da ortaya çıkmaktadır. Bu durum kişinin yaşamında hemen hemen bir çok alanda kısıtlanması anlamına gelmekte ve engellerle karşılaşmasına sebebiyet vermektedir. Söz konusu kısıtlama ve engel türleri bedensel, zihinsel, işitme, görme olarak dört grupta ele alınmaktadır (Tekkurşun Demir ve İlhan, 2019).

Sporun; ister sağlıklı ister engelli olsun her birey için oldukça önemli olduğu, özellikle engelli bireylerin bu süreçte hareket etmekten keyif alma, başarma ve aynı zamanda eğlenme gereksinimlerinin karşılanması durumuna katkı sağladığı açıktır. (Brouwer ve Ludeke, 1995).

Spor her bireyin ihtiyacı olan, sadece sağlıklı bireyler için değil aynı zamanda yetersizliği olan başka bir ifadeyle engelli bireyler içinde katkısı göz ardı edilemeyen bir araçtır. İlaveten bu süreçte spor iletişim ve öz güveni geliştiren bir etkiye de dönüşebilmektedir (Kabasakal, 2007). Diğer taraftan engelli bireylerde çeşitli faktörlerden dolayı ortaya çıkan saldırganlık ve öfke gibi durumların kontrol edilebilmesinde de katkı sağlamaktadır (İlhan, 2008). Dolayısıyla engelli bireylerin spora katılımı yaşam kalitesini arttırmak açısından oldukça önem taşımaktadır. Tüm bunların yanı sıra kişiyi belli amaca ulaşmak için davranışa iten, yönelten içsel güç, motivasyon olarak adlandırılmaktadır (Başaran, 1982: 176). Aynı zamanda motivasyon sosyal kabul, ödülle, bedensel zorlama olarak dışsal; kendini tanıma, tatmin etme, aktivitelerden alınan zevk olarak içsel anlamda olmak üzere iki boyutta karşımıza çıkmaktadır (Şirin ve ark., 2008). Nitekim engelli bireylerin spor faaliyetlerine katılım sürecinde de motivasyon düzeyi oldukça önemli rol oynamaktadır.

Günümüzde spor branşlarının birçoğunu engelli bireyler tıpkı normal gelişim gösteren diğer insanlar gibi başarıyla uygulamaktadırlar. Sportif faaliyetlere katılma durumu kas, koordinasyon, denge, esneklik, solunum ve dolaşım sisteminin gelişiminde aynı zamanda duruş kontrol gelişiminde de önemli ölçüde katkı sağlamaktadır (İlhan ve Esentürk, 2015). Dolayısıyla tüm bu bilgiler ışığında çalışma engelli bireylerin spor faaliyetlerine katılımında motivasyon düzeylerinin incelenmesi amacını taşımaktadır.

## YÖNTEM

Araştırmanın yürütülmesi hususunda Ondokuz Mayıs Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurul Kararı (karar no: 2021/617) ile onay alınmıştır. Araştırma betimsel araştırma deseninin bir çeşidi olan tarama araştırma modelindedir. Çalışmanın evrenini aktif olarak spor yapmakta olan engelli bireyler oluşturmakta olup, örneklem grubu 123 katılımcı kapsamındadır.

Çalışmada veri toplama aracı olarak Tekkurşun, İlhan, Esentürk ve Kan (2018) tarafından geliştirilen Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği (ESKMÖ) kullanılmıştır. İlgili ölçek 5'li likert tipli olup, 22 madde ve 3 alt boyuttan (İçsel Motivasyon-Dışsal Motivasyon-Motivasyonsuzluk) oluşmaktadır. İçsel motivasyon 12, dışsal motivasyon 5, motivasyonsuzluk 5 madde kapsamındadır. Ölçekte Motivasyonsuzluk faktörü ters maddelerden oluşmaktadır. Motivasyonsuzluk alt boyutundaki maddelerin değerleri ise puanlama aşamasında (1=5, 2=4, 3=3, 4=2, 5=1) ters kodlanmaktadır. Ölçekteki puanlar, 5' e yaklaştıkça öğrencilerin spora katılım motivasyon düzeylerinin yüksek; 1'e yaklaştıkça da düşük olduğu kabul edilmiştir.

Tablo 1. Katılımcıların ölçek maddelerine verdikleri cevaplara ait iç tutarlılık katsayıları

Ölçek	İç Tutarlılık Katsayısı	Değerlendirme
ESKMÖ	0,944	Yüksek Düzeyde Güvenilir
İM	0,983	Yüksek Düzeyde Güvenilir
DM	0,865	Yüksek Düzeyde Güvenilir
M	0,851	Yüksek Düzeyde Güvenilir

ESKMÖ: Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği, İM: İçsel Motivasyon, DM: Dışsal Motivasyon, M: Motivasyonsuzluk

Katılımcıların ölçek maddelerine verdikleri cevapların iç tutarlılığı yüksek düzeyde yeterli bulunmuş olması nedeni ile herhangi bir maddenin çıkarılmasına gerek kalmamıştır (Tablo 1). Katılımcıların ölçek maddelerine verdiği cevaplardan elde edilen toplam puanların kişisel

bilgi formundaki değişkenlere göre normal dağılım gösterip göstermediği Kolmogorov-Smirnov ( $n \geq 50$ ) ve Shapiro-Wilk ( $n < 50$ ) testi ile belirlenmiştir ( $P > 0,05$ ). Çalışmada, katılımcıların yaşı ile ölçek toplam puanların ve alt boyut toplam puanları arasındaki ilişki düzeyi Pearson korelasyon katsayısı ile belirlenmiştir. Çalışmada, ölçek toplam puanların ve alt boyut toplam puanlarının cinsiyet, branş vb. değişkenlere göre farklılık gösterip göstermediği Student testi ile, okuduğu sınıf, gelir düzeyi, spora yönlendirilme durumu vb. gibi değişkenlere göre farklılık gösterip göstermediği ise Tek Yönlü Varyans Analizi (One-way ANOVA) ve Tukey çoklu karşılaştırma testi ile belirlenmiştir. Araştırma bulgularının ortalama ve standart sapma değerleri gösterilmiş olup, sonuçlar  $p < 0,05$  önem seviyesinde anlamlı kabul edilmiştir. Tüm istatistiksel hesaplamalar SPSS 22.0 V istatistik paket programında yapılmıştır.

## BULGULAR

Tablo 2. Katılımcıların demografik özelliklerine ilişkin frekans ve yüzde dağılımları

Cinsiyet	n	%	Engel Durumu	n	%
Kız	52	42,3	Zihinsel	17	13,8
Erkek	71	57,7	İşitme	21	17,1
Toplam	123	100,0	Görme	9	7,3
			Ortopedik	5	4,1
Gelir Düzeyi	n	%	Dil ve Konuşma	27	22,0
Düşük (Gelir < Gider)	29	23,6	Ruhsal ve Duygusal	4	3,3
Orta (Gelir = Gider)	75	61,0	Süreğen Hastalık	18	14,6
Yüksek (Gelir > Gider)	19	15,4	Dikkat Eksikliği ve Hiperaktivite	22	17,9
Toplam	123	100,0	Toplam	123	100,0
Spor Yapma Düzeyi	n	%	Spor Branşı	n	%
Amatör	80	65,0	Bireysel	70	56,9
Profesyonel	43	35,0	Takım	53	43,1
Toplam	123	100,0	Toplam	123	100,0
Okuduğu Sınıf	n	%	Spora Kimin Yönlendirdiği	n	%
5	35	28,5	Aile	35	28,5
6	30	24,4	Öğretmen	19	15,4
7	28	22,8	Arkadaş	20	16,3
8	30	24,4	Kendi Tercih	49	39,8
Toplam	123	100,0	Toplam	123	100,0

Çalışma 52 kız, 71 erkek olmak üzere toplam 123 öğrenci üzerinde gerçekleştirilmiştir. Çeşitli engel türlerine sahip olan ortaokul öğrencilerinin çoğunlukla orta düzeyde gelir durumuna sahip olduğu tespit edilmiştir. Ayrıca çoğunlukla bireysel spor branşına sahip olan öğrencilerin, genellikle spor ile amatör olarak ilgilendikleri ve kendi tercihleri ile spora yönelindikleri belirlenmiştir (Tablo 2).

Tablo 3. Katılımcıların yaşı ve spora katılım motivasyon düzeyleri arası ilişkiler

	ESKMÖ	İM	DM	M	
Y	r-değeri	0,165	0,160	0,171	-0,007
	p-değeri	0,068	0,078	0,059	0,941

ESKMÖ: Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği, İM: İçsel Motivasyon, DM: Dışsal Motivasyon, M: Motivasyonsuzluk

Çalışmada katılımcıların yaşı ile spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir (Tablo 3).

Tablo 4. Katılımcıların cinsiyetine göre spora katılım motivasyon düzeyleri

Ölçek ve alt boyutları	Kız (n= 52 )		Erkek (n= 71 )		P-değeri
	Ortalama	Std. Sapma	Ortalama	Std. Sapma	
ESKMÖ	90,13	16,81	91,24	14,24	0,694
İM	48,98	11,89	50,90	9,93	0,332
DM	19,25	5,13	19,48	4,71	0,798
M	21,90	3,08	20,86	4,06	0,123

ESKMÖ: Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği, İM: İçsel Motivasyon, DM: Dışsal Motivasyon, M: Motivasyonsuzluk

Çalışmada katılımcıların cinsiyetine göre spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir (Tablo 4).

Tablo 5. Katılımcıların engel durumuna göre spora katılım motivasyon düzeyleri

Engel Durumu	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
Zihinsel	17	87,47 ab	19,45	0,022
İşitme	21	90,43 a	9,61	
Görme	9	91,44 a	11,09	
Ortopedik	5	95,80 a	10,64	
Dil ve Konuşma	27	97,26 a	9,75	
Ruhsal ve Duygusal	4	67,75 b	29,26	
Süreğen Hastalıklar	18	87,94 ab	16,02	
Dikkat Eksikliği ve Hiperaktivite	22	90,77 a	17,15	
<b>İçsel Motivasyon</b>				
Zihinsel	17	47,47 ab	14,16	0,019
İşitme	21	49,33 a	7,02	
Görme	9	51,11 a	9,10	
Ortopedik	5	54,20 a	5,31	
Dil ve Konuşma	27	54,44 a	6,51	
Ruhsal ve Duygusal	4	33,25 b	20,12	
Süreğen Hastalıklar	18	49,00 a	11,65	
Dikkat Eksikliği ve Hiperaktivite	22	50,09 a	11,41	
<b>Dışsal Motivasyon</b>				
Zihinsel	17	18,06 ab	5,95	0,011
İşitme	21	19,38 a	3,29	
Görme	9	18,67 ab	3,32	
Ortopedik	5	22,40 a	2,41	
Dil ve Konuşma	27	21,59 a	3,20	
Ruhsal ve Duygusal	4	12,75 b	8,06	
Süreğen Hastalıklar	18	18,17 ab	4,99	
Dikkat Eksikliği ve Hiperaktivite	22	19,50 a	5,78	
<b>Motivasyonsuzluk</b>				
Zihinsel	17	21,94	4,90	0,899
İşitme	21	21,71	2,63	
Görme	9	21,67	2,35	



Ortopedik	5	19,20	6,18
Dil ve Konuşma	27	21,22	4,09
Ruhsal ve Duygusal	4	21,75	2,99
Süreğen Hastalıklar	18	20,78	3,56
Dikkat Eksikliği ve Hiperaktivite	22	21,18	3,36

Katılımcıların engel durumuna göre spora katılım motivasyon düzeyleri arasında ölçeğin alt boyutlarından olan içsel ve dışsal alt boyutunda anlamlı bir farklılık olduğu tespit edilmiştir. Ölçeğin içsel ve dışsal alt boyutunda dil ve konuşma-ortopedik engel türüne sahip olan öğrencilerin spora katılım motivasyonlarının en yüksek; ruhsal ve duygusal engel türüne sahip olan öğrenci grubunun ise en düşük olduğu belirlenmiştir (Tablo 5).

Tablo 6. Katılımcıların gelir düzeyine göre spora katılım motivasyon düzeyleri

Gelir Düzeyi	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
Düşük(Gelir<Gider)	29	93,55	11,11	0,469
Orta (Gelir=Gider)	75	89,49	16,58	
Yüksek (Gelir>Gider)	19	91,58	15,78	
<b>İçsel Motivasyon</b>				
Düşük(Gelir<Gider)	29	51,97	7,91	0,505
Orta (Gelir=Gider)	75	49,24	11,56	
Yüksek (Gelir>Gider)	19	50,58	11,57	
<b>Dışsal Motivasyon</b>				
Düşük(Gelir<Gider)	29	19,59	4,05	0,845
Orta (Gelir=Gider)	75	19,19	5,09	
Yüksek (Gelir>Gider)	19	19,84	5,33	
<b>Motivasyonsuzluk</b>				
Düşük(Gelir<Gider)	29	22,00	2,75	0,510
Orta (Gelir=Gider)	75	21,07	3,70	
Yüksek (Gelir>Gider)	19	21,16	4,89	

Çalışmada katılımcıların gelir durumuna göre spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir (Tablo 6).

Tablo 7. Katılımcıların sınıf düzeyine göre spora katılım motivasyon düzeyleri

Sınıf	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
5.sınıf	35	86,11	17,76	0,092
6.sınıf	30	89,73	15,23	
7.sınıf	28	95,18	10,47	
8.sınıf	30	93,13	15,23	
<b>İçsel Motivasyon</b>				
5.sınıf	35	46,89	12,18	0,150
6.sınıf	30	49,77	11,97	
7.sınıf	28	52,07	6,60	
8.sınıf	30	52,30	10,53	
<b>Dışsal Motivasyon</b>				
5.sınıf	35	17,74 b	5,58	0,041
6.sınıf	30	19,00 ab	4,89	
7.sınıf	28	21,07 a	3,45	
8.sınıf	30	20,10 ab	4,65	
<b>Motivasyonsuzluk</b>				

5.sınıf	35	21,49	2,89	0,549
6.sınıf	30	20,97	3,83	
7.sınıf	28	22,04	3,42	
8.sınıf	30	20,73	4,62	

Katılımcıların sınıf düzeyine göre spora katılım motivasyon düzeyleri arasında ölçeğin alt boyutlarından olan dışsal alt boyutunda anlamlı bir farklılık olduğu tespit edilmiştir. 7. sınıfa giden ortaokul öğrencilerinin spora katılım motivasyon düzeylerinin daha yüksek olduğu sonucuna ulaşılmıştır (Tablo 7).

Tablo 8. Katılımcıların spor yapma durumuna göre spora katılım motivasyon düzeyleri

Spor Yapma Düzeyi	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
Amatör	80	89,53	16,35	0,219
Profesyonel	43	93,09	13,05	
<b>İçsel Motivasyon</b>				
Amatör	80	49,53	11,60	0,431
Profesyonel	43	51,14	9,15	
<b>Dışsal Motivasyon</b>				
Amatör	80	19,01	5,05	0,253
Profesyonel	43	20,07	4,51	
<b>Motivasyonsuzluk</b>				
Amatör	80	20,99	3,76	0,202
Profesyonel	43	21,88	3,57	

Çalışmada katılımcıların spor yapma durumuna göre spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir (Tablo 8).

Tablo 9. Katılımcıların spor branşına göre spora katılım motivasyon düzeyleri

Spor Branşı	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
Bireysel	70	89,01	16,72	0,144
Takım	53	93,09	13,04	
<b>İçsel Motivasyon</b>				
Bireysel	70	48,97	11,80	0,188
Takım	53	51,57	9,21	
<b>Dışsal Motivasyon</b>				
Bireysel	70	18,63	5,11	0,048
Takım	53	20,38	4,39	
<b>Motivasyonsuzluk</b>				
Bireysel	70	21,41	3,52	0,698
Takım	53	21,15	3,96	

Katılımcıların spor branşına göre spora katılım motivasyon düzeyleri arasında ölçeğin alt boyutlarından olan dışsal alt boyutunda anlamlı bir farklılık olduğu tespit edilmiştir. Takım spor branşına sahip öğrencilerin spora katılım motivasyon düzeylerinin daha yüksek olduğu sonucuna ulaşılmıştır (Tablo 9).

Tablo 10. Katılımcıların spora yönlendirilme durumuna göre spora katılım motivasyon düzeyleri

Spora Yönlendirilme	n	Ortalama	Std. Sapma	P-değeri
<b>Engelli Bireylerde Spora Katılım Motivasyonu Ölçeği</b>				
Aile	35	87,80	17,75	0,411
Öğretmen	19	89,47	15,88	
Arkadaş	20	90,75	11,29	
Kendi Tercihim	49	93,41	14,64	
<b>İçsel Motivasyon</b>				
Aile	35	49,03	12,48	0,782
Öğretmen	19	48,95	11,24	
Arkadaş	20	50,25	7,72	
Kendi Tercihim	49	51,22	10,60	
<b>Dışsal Motivasyon</b>				
Aile	35	18,09	5,63	0,271
Öğretmen	19	19,26	4,66	
Arkadaş	20	19,85	3,86	
Kendi tercihim	49	20,16	4,68	
<b>Motivasyonsuzluk</b>				
Aile	35	20,69	3,72	0,332
Öğretmen	19	21,26	3,48	
Arkadaş	20	20,65	3,88	
Kendi tercihim	49	22,02	3,68	

Çalışmada katılımcıların spora yönlendirilme durumuna göre spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir (Tablo 10).

## TARTIŞMA ve SONUÇ

Elde edilen verilerin analizi sonucunda, katılımcıların yaşı, cinsiyeti, gelir düzeyi, spor branşı, spor yapma düzeyi ve spora yönlendirilme durumlarına göre spora katılım motivasyon düzeyleri arasında istatistiksel olarak anlamlı bir farklılık olmadığı tespit edilmiştir. Diğer taraftan dil ve konuşma-ortopedik engeli olan, 7. sınıfta öğrenim gören ve takım spor branşına sahip öğrencilerin ise spora katılım motivasyon düzeylerinin daha yüksek olduğu sonucuna ulaşılmıştır.

Literatürde çalışma bulgularıyla benzerlik veya farklılık gösteren diğer araştırmalar incelendiğinde; bedensel engelli sporcuların görme ve işitme engelli sporculara göre spora katılım motivasyonlarının daha yüksek olduğu (Tekkurşun Demir ve İlhan, 2020), görme engelli sporcuların yaşı arttıkça spora katılım motivasyonunda artış gözlemlendiği (Tekkurşun Demir ve İlhan, 2019), engelli bireylerin fiziksel aktiviteye katılım sürecinde çevresel ve bireysel birçok sorunla karşılaştığı (Esatbeyoğlu ve Karahan, 2014), çalışma öncesinde çekingen ve utangaç tavırlar sergileyen engelli öğrencilerin tutumlarının kaybolduğu ve engelli öğrencilerin süreç içerisinde daha sosyalleştiği (Çevik ve Kabasakal, 2013), motivasyon eksikliğinin engelli bireylerin sportif faaliyetlere katılımında yaşanan problemler arasında yer aldığı (Tenenbaum ve Eklund, 2007), fiziksel aktivitelere katılım sürecinde dalga konusu olma kaygısının engelli bireylerin faaliyetlere katılmamasında etkili olduğu (Heller ve ark., 2002), engelli bireylerin arkadaşlık kurması ve toplumla bütünleşmesi sürecinde rekreatif faaliyetlerin etkisi olduğu (McMahon, 1998) şeklinde sonuçlara ulaşılmaktadır.

Engelli bireylerin çeşitli yetersizlik durumuna sahip olduğu bilinmektedir. Spor bu süreçte kişileri rahatlatan, öz güvenin artmasını sağlayan, sosyalleştiren ve aynı zamanda kişiyi fiziksel, zihinsel yönden geliştiren bir olgudur. Bu süreçte gelişim çağındaki çocukların sporla iç içe olması gerekmektedir. Özellikle okullarda spor faaliyetlerinin gerçekleştirilmesi hususunda yetersizliği olan öğrencilere uygun materyallerin sağlanması gerekmektedir. Diğer yandan engelli öğrencilerin okul içi ve okul dışı sportif faaliyetlere yönlendirilmesi hususunda ailelerin bilinçlendirilmesi, okul yönetiminin gerekli desteği sağlaması ve bu süreçte teşvik edici tedbirlerin alınması önem arz etmektedir.

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## NEW TRENDS IN INTERDISCIPLINARY/INTERSEMIOTIC PRACTICES

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### **Abstract**

To the various “turns” that emerged in the past decades in Translation Studies, several more liberating “turns” have been added (“the creative turn”, “the experimental turn”, “the fictional turn”, et al) – culminating in “the intersemiotic turn” where exchanges between Translation Studies and other disciplines (among them Literary Studies, Memory studies, Museum Studies, Film Studies, Urban Studies, et al) are investigated. Interdisciplinarity in Translation Studies actually denotes the exchanges and collaboration between disciplines within the same medium, such as translation, literature, history, philosophy, sociology, et al; whereas in intersemiotic exchanges/practices there are two different disciplines within the framework of two different media at work. Of these interdisciplinary (more precisely intersemiotic ) practices, the exchanges between “Literary Studies” and “Film Studies” undoubtedly is the most fruitful one. Many well-known literary works have inspired film directors to “re-translate” them for the silver screen. In this presentation one seminal case will be examined to illustrate the said intersemiotic practice: The film version by Orson Welles of Franz Kafka’s classic novel The Trial.

**Keywords:** turns, interdisciplinarity, intersemiotic translation



## **PRESERVICE TEACHERS' TEACHER EFFICACY BELIEFS AND ATTITUDES TOWARDS STEM**

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### **Abstract**

Preservice teachers' attitudes towards STEM might shed light on to predict whether they integrate STEM disciplines into their future teaching practices. The critical impact of attitudes on behavioral intention makes it essential to investigate attitudes and what influences attitudes. One of the factors that impact teachers' educational attitudes is teacher efficacy. Teacher efficacy is closely related to teacher attitudes and, in turn, related to behavioral intention. This study aims to examine preservice teachers' STEM attitudes and teacher efficacy beliefs in a relational manner and utilized the relational survey design. Data was collected and analyzed via quantitative methods. Two hundred seventy-one preservice teachers majoring in four departments (33% primary teaching, 32% mathematics teaching, 23% pre-school teaching, and 12% science teaching) who completed the instruments voluntarily participated in the study. 85% of participants were female. Additionally, participants were either third grade (72%) or fourth grade (28%). Data was collected via an instrument that had three sections. The first section provided demographic information. The second was the Teachers' Sense of Efficacy Scale developed by Tschannen-Moran and Hoy (2001). The third section was The Attitude towards STEM Scale developed by The Friday Institute for The Educational Innovation (2012). SPSS was used to analyze data. Descriptive statistics, t-test, correlation analysis, and regression analysis were used to identify preservice teachers' efficacy beliefs and STEM attitudes and reveal the relationships between these constructs. Results show that gender did not lead to differences in teacher efficacy beliefs, but male respondents had more positive attitudes in engineering and technology. Besides, female respondents had more positive attitudes towards 21<sup>st</sup> century learning. Preservice teachers' efficacy beliefs for student engagement and instructional strategies were found to be significant predictors of their STEM attitudes. Suggestions and implications were made based on the highlights of the study.

**Keywords:** Attitudes towards STEM, teacher efficacy beliefs, preservice teachers

### **INTRODUCTION**

Teacher efficacy refers to how teachers feel and think in the teaching process, how they motivate themselves and how they behave in the classroom (Pajares, 1997), what they think about teaching, how they feel and motivate themselves, and the time and effort they spend to overcome these difficulties when they encounter difficulties (Bandura, 1977; Pintrich and Schunk, 2002; Tschannen-Moran and Hoy, 2001). Bandura (1977) and Tschannen-Moran

and Hoy (2001) defined teacher efficacy as the judgment of their abilities to achieve desired outcomes such as student engagement, classroom management, and increasing student motivation and achievement. Teacher efficacy concerns both students and teachers. Teachers' efficacy beliefs have a crucial role in students' achievement, motivation, and self-efficacy beliefs (Tschannen-Moran and Hoy, 2001). Teachers with high teacher efficacy beliefs are more likely to use student-centered approaches and techniques than those with low efficacy levels (Enochs and Riggs, 1990), increase students' performance, and make students feel more secure in the classroom (Zamir, Arshad, and Nazir, 2017). Teachers with high efficacy beliefs tend to seek out and use different teaching techniques, and their teaching is generally student-centered (Weiner, 2003; Ashton and Webb, 1986). STEM might be one of the approaches that teachers with high teacher efficacy beliefs tend to use in their classrooms. Teacher attitudes also play an important role in the implementation of new teaching practices such as STEM (Wahono and Chang, 2019).

Teachers can be people who help or hinder their students' mastery experiences with STEM education (Margot and Kettler, 2019). The role of teachers in students' interest and success in STEM education can be revealed by examining teachers' attitudes towards STEM. Attitudes towards STEM can be defined as "the tendency to respond positively or negatively to STEM" based on Ajzen's (1988) definition. Teachers' characteristics, perceptions, and attitudes towards STEM influence their implementation of integrative STEM approaches and ultimately shape the learning environment. Teachers' efficacy beliefs and attitudes influence their intentions and behavior in the classroom. Determining pre-service teachers' efficacy beliefs and STEM attitudes can inform us about how they will behave in their future classrooms (Ajzen, 2002). Teachers' efficacy beliefs and STEM attitudes form the theoretical foundation for STEM learning environments and practices to provide an efficient learning environment and motivate students. Because teachers' attitudes towards STEM play a very important role in teachers' success in integrating STEM disciplines into their teaching practices (Aldahmash, Alamri, Aljallal, and Bevins, 2019) and are related to teachers' professional attitudes towards STEM. Teacher attitudes have a significant impact on their behavioral intentions (Lin and Williams, 2016), teaching practices (Bandura, 1986), and decision-making (Pajares, 1992). Therefore, it is essential to reveal the factors influencing preservice teachers' STEM attitudes. Considering the relationship between teacher beliefs and attitudes, this study aimed to investigate preservice teachers' STEM attitudes within the context of teacher beliefs.

## **METHODS**

This study used a correlational research design to examine preservice teachers' efficacy beliefs and attitudes towards STEM. In correlational research, relationships between two or more variables are examined without any intervention. Correlational research might be regarded as descriptive research as it also describes a relationship between variables. Correlational studies help explain important human behaviors or predict possible outcomes (Fraenkel, Wallen, and Hyun, 2012). In this study, preservice teachers' STEM attitudes and

teacher efficacy beliefs were described, and correlational research was used to determine the extent to which other variables predicted STEM attitudes.

### **Participants**

The data were collected from 271 preservice teachers in Central Anatolia, selected by random sampling. In this sampling method, all individuals have an equal probability of being chosen for the study (Christensen, Burke Johnson, and Turner, 2014). The study group consisted of 3rd grade (n=194; 72%) and 4th grade (n=77; 28%) preservice teachers as they are closer to the teaching profession than other grades. Among the participants, 33 (12%) were studying science teaching, 87 (32%) mathematics teaching, 89 (33%) classroom teaching, and 62 (23%) preschool teaching. 15% of the participants (n=41) were male and 85% (n=230) were female. The mean age of male preservice teachers is 21.439 (Sd=1.285), and their grade point average is 3.133 (Sd=.344). Similarly, the mean age of female teacher candidates was calculated as 21.247 (Sd=2.042), and their grade point average was 3.268 (Sd=.364).

### **Data collection tools**

The data collection tool consists of two parts. In the first part, the Personal Information Form was used to determine the demographic information of the participants (e.g., gender, grade level, age, grade point average). In the second part, the Teacher Self-Efficacy Scale and the Attitude towards STEM Scale were used.

*The Attitude towards STEM Scale* was developed by the Friday Institute for Educational Innovation (2012). The final version of the scale was published by Unfried, Faber, Stanhope, and Wiebe (2015). The scale was adapted into Turkish by Özcan and Koca (2019). The measurement tool consists of four factors, (i) science, (ii) mathematics, (iii) engineering and technology, and (iv) 21st-century skills, and 37 items. There are nine items in the science attitudes factor, eight items in mathematics, nine items in engineering and technology, and 11 items in the 21st-century skills factor. "I would consider choosing a career that uses math" was a sample item on the scale. The items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha values were calculated for each factor by the researchers. The reliability coefficients were calculated as .930 for the mathematics attitudes, .909 for the science attitudes, .889 for the engineering and technology attitudes, and .914 for the 21st-century skills dimension.

*The Teachers' Sense of Efficacy Scale (TSES)* was developed by Tschannen-Moran and Hoy (2001) and was adapted into Turkish by Çapa, Çakiroğlu, and Sarıkaya (2005). The measurement tool consists of three subscales (student engagement, instructional strategies, and classroom management) and 24 items. A sample item was "How well can you succeed in reaching students who are difficult to study?". The items were measured on a five-point Likert scale ranging from 1 (not enough) to 5 (very sufficient). The reliability coefficients were recalculated for this study. Cronbach's Alpha values were calculated as .819 for the

efficacy in student engagement, .844 for the efficacy in instructional strategies, and .862 for the efficacy in classroom management.

### Data Analysis

We used SPSS to analyze data. Before the analysis of the data, extreme values and missing values were removed from the data set. The normality of the data was tested with (i) Kolmogrow-Smirnov and (ii) Skewness and Kurtosis values. The normality results are given in Table 1. Tabachnick and Fidel (2019) state that Skewness-Kurtosis values should be between +1.5 and -1.5 for normal distribution. Accordingly, we can say that the data set has a normal distribution based on Table 1.

**Table 1.** Normal Distribution Statistics

Variables	Mean	Std. Deviation	Skewness	Kurtosis	Kolmogorov-Smirnov Statistic	Sig.
Attitudes toward STEM TSES	3,646	,602	-,210	,574	,040	,200
TSES	3,988	,464	,130	-,468	,050	,096

Frequency, percentage, mean, and standard deviation were calculated to interpret the results. T-test was performed for binary variables. Cohen's d was calculated for effect size if the difference between the groups was significant. The effect size was defined as a small, medium, and large, respectively, in response to .2, .5, and .8 values (Cohen, 1988). Pearson correlation analysis was used to determine the correlation between the factors constituting the measurement tools. In addition, multiple regression analysis was used to determine the predictive variables of preservice teachers' attitudes towards STEM. According to Fraenkel et al. (2012), multiple regression allows researchers to determine whether there is a relationship between a criterion variable and a combination of two or more predictive variables. Using the multiple regression estimation formulae, the extent to which teacher efficacy scores predict STEM attitudes was identified.

### RESULTS

The t-test results demonstrating preservice teachers' attitudes towards STEM and teaching efficacy beliefs, based on gender, are given in Table 2.

**Table 2.** T-test results for differences in STEM attitudes and teacher efficacy beliefs based on gender

	Subscales	Gender	N	Mean	Std. Deviation	t	p	Cohen d
TSES	Efficacy for Student Engagement	Male	41	4,018	,523	,083	,934	-
		Female	230	4,011	,483			
	Efficacy for Instructional Strategies	Male	41	4,030	,466	,616	,539	-
		Female	230	3,977	,517			
	Efficacy for Classroom Management	Male	41	3,984	,513	,241	,810	-
		Female	230	3,963	,535			
Attitudes toward STEM	Math Attitudes	Male	41	3,588	1,116	,269	,788	-
		Female	230	3,541	1,016			
	Science Attitudes	Male	41	3,162	,749	-,803	,423	-
		Female	230	3,287	,943			
	Engineering and Technology Attitudes	Male	41	3,780	,695	2,966	,003*	,546
		Female	230	3,340	,903			
	21st Century Learning Attitudes	Male	41	4,053	,779	-1,841	,047*	,284
		Female	230	4,252	,610			

\*p<0.05

According to the t-test results in Table 2, there were no significant differences in TSES subscales based on gender. When the STEM attitude scores were examined, there was a significant difference in the Engineering and Technology Attitudes in favor of male preservice teachers ( $t=2.966$ ;  $p<.05$ ;  $d=.545$ ), and a significant difference in the 21st Century Learning in favor of female preservice teachers ( $t=-1.841$ ;  $p<.05$ ;  $d=.284$ ). Male respondents had higher attitudes towards Engineering and Technology than females. However, in the 21st Century Learning subscale, female teacher candidates have higher scores than males. In addition, the effect sizes for the differences between the groups were examined. The difference in the Engineering and Technology Attitudes has a small effect size, and the difference in 21st Century Learning has a medium effect size (Cohen, 1988).

The t-test results demonstrating preservice teachers' attitudes towards STEM and teaching efficacy beliefs, based on grade level, are given in Table 3.



**Table 3.** T-test results for differences in STEM attitudes and teacher efficacy beliefs based on grade level

	Subscales	Grade Levels	N	Mean	Std. Deviation	t	p	Cohen d
TSES	Efficacy for Student Engagement	Junior	194	3,976	,491	-1,914	,048*	,260
		Senior	77	4,102	,475			
	Efficacy for Instructional Strategies	Junior	194	3,936	,514	-2,503	,013*	,344
		Senior	77	4,107	,479			
Attitudes toward STEM	Efficacy for Classroom Management	Junior	194	3,938	,523	-1,356	,176	-
		Senior	77	4,035	,548			
	Math Attitudes	Junior	194	3,661	,962	-2,914	,004*	,377
		Senior	77	3,263	1,139			
	Science Attitudes	Junior	194	3,138	,872	-3,812	,000**	,504
		Senior	77	3,597	,947			
	Engineering and Technology Attitudes	Junior	194	3,297	,797	-3,278	,001*	,415
		Senior	77	3,682	1,040			
	21st Century Learning Attitudes	Junior	194	4,209	,621	-,507	,612	-
		Senior	77	4,253	,691			

\*p<0.05

\*\*p<0.01

According to the t-test results, there were significant differences in Efficacy for Student Engagement ( $p=-1.914$ ;  $p<.05$ ;  $d=.260$ ), Efficacy for Instructional Strategies ( $p=-2.503$ ;  $p<.05$ ;  $d=.344$ ), Science Attitudes ( $p=-3,812$ ;  $p<.05$ ;  $d=.504$ ), and Engineering and Technology Attitudes ( $p=-3,278$ ;  $p<.05$ ;  $d=.415$ ) in favor of senior preservice teachers. The significant difference in the Mathematics Attitudes is in favor of juniors Mathematics Attitudes ( $p=-2.914$ ;  $p<.05$ ;  $d=.377$ ). The effect sizes for differences in Efficacy for Student Engagement, Efficacy for Instructional Strategies, Mathematics Attitudes, and Engineering and Technology Attitudes were small. On the other hand, the difference in the science attitudes had a moderate effect size.

The results of the correlation analysis performed to determine the relationship between the subscales of TSES and subscales of the attitudes toward STEM scale are given in Table 4.

**Table 4.** The correlations among subscales of the attitudes towards STEM and TSES

		1	2	3	4	5	6	7
Efficacy for Student Engagement (1)	p	1	,761**	,726*	,174**	,373**	,331**	,450**
Efficacy for Instructional Strategies (2)	p		1	,750*	,246**	,368**	,355**	,407**
Efficacy for Classroom Management (3)	p			1	,153*	,281**	,206**	,326**
Math Attitudes (4)	p				1	,140*	,222**	,245**
Science Attitudes (5)	p					1	,550**	,387**
Engineering and Technology Attitudes (6)	p						1	,463**
21st Century Learning Attitudes (7)	p							1

\*\*p<0.01

\*p< 0.05

The correlation analysis revealed that all subscales of both TSES and attitudes towards STEM scale were positively correlated to each other. The positive correlations among the subscales in TSES and among the subscales in the attitudes towards STEM scale demonstrate the consistency in the scales. Besides, it is possible to say that a change in preservice teachers' efficacy beliefs would change their STEM attitudes.

Multiple linear regression (MLR) was performed to reveal the extent to which preservice teachers' efficacy beliefs (Efficacy for Student Engagement, Efficacy for Instructional Strategies, and Efficacy for Classroom Management) predict their attitudes towards STEM. Before performing MLR, the assumptions of multiple regression were tested. The assumptions are:

- (i) there is no strong correlation between independent variables,
- (ii) there is a linear (moderate correlation) relationship between independent variables and the dependent variable,
- (iii) data has a normal distribution,
- (iv) VIF values are below 3,
- (v) there are no significant outliers in the data set, and
- (vi) continuity of the variables (Tabachnick and Fidell, 2019).

**Table 5.** Multiple regression analysis for STEM attitudes and teacher efficacy beliefs

Variable	Unstandardized		Standardized	t	r
	B	Std. Error	$\beta$		
Efficacy for Student Engagement	,351	,107	,285*	3,281	,172
Efficacy for Instructional Strategies	,454	,106	,385*	4,264	,224
Efficacy for Classroom Management	-,178	,096	-,157	-1,846	-,097
F (3,267)				32,080*	
Constant				1,136*	
Durbin-Watson				1,823	
R Square				,265	
Adjusted R Square				,257	

\*p<0.01

The regression model examined the effect of respondents' teacher efficacy beliefs on their STEM attitudes. Table 5 reveal that the established model is significant [F(3,267)=32,080; p<,01]. Preservice teachers' efficacy beliefs for student engagement and instructional strategies explain almost 26% of the variance in STEM attitudes ( $R^2_{adjusted}=.257$ ). The rate of explained variance in STEM attitudes by efficacy for student engagement is 3% (r=,172; p<,01) and by efficacy for instructional strategies is 5% (r=,224; p<,01). These results show that preservice teachers' efficacy beliefs for student engagement ( $\beta=.285$ ; t(271)=3,281; p<.01;  $pr^2=.029$ ) and instructional strategies ( $\beta=.385$ ; t(271)=4,264; p<.01;  $pr^2=.050$ ) are significant predictors of STEM attitudes.

The value of Durbin-Watson is calculated as 1.736. it is suggested that the Durbin-Watson value should be in the range of 1.5 and 2.5 (Kalaycı, 2009). Besides, the constant was 1.136, which implies that even if the respondents' scores in the efficacy for student engagement and instructional strategies were zero, their score in STEM attitudes would be 1.136. The regression model according to values in Table 4 can be explained with the following equation: "STEM attitudes=1.136+(Efficacy for Student Engagement)\*.285+(Efficacy for Instructional Strategies)\*.385.

The equation refers that the one-point increase in preservice teachers' efficacy beliefs for student engagement and instructional strategies leads to an increase of .670 points in their STEM attitudes.

## CONCLUSION AND DISCUSSION

This study investigated 271 preservice teachers' teacher efficacy beliefs and STEM attitudes. The results showed that respondents' scores in TSES and the attitudes towards STEM were close to four-point. In other words, it is possible to say that participants feel efficacious in teaching and have positive attitudes towards STEM.

There were no significant differences in teacher efficacy beliefs based on gender. This finding is consistent with the results of another research (Çaycı, 2011; Pendergast, Garvis, and Keogh, 2011; Tschannen-Moran and Hoy, 2007). This result may imply that it is inappropriate to regard the teaching profession as a predominantly female profession. However, senior preservice teachers were more efficacious in student engagement and instructional strategies than juniors. There is much research indicating that teacher efficacy beliefs may differ based on grade level (Çaycı, 2011; Uyanık, 2016; Woodcock, 2011). Studies underlined that preservice teachers' efficacy beliefs increase during their preparation programs (Tschannen-Moran and Hoy, 2007; Woodcock, 2011). The most influential source of the efficacy beliefs is the mastery experiences (Hoy and Spero, 2005). Senior preservice teachers experienced student teaching, and they had the opportunity to see how to deal with issues regarding student engagement and instructional strategies.

Male preservice teachers have more positive attitudes in engineering and technology than their female counterparts. Female respondents reported more positive attitudes toward 21<sup>st</sup>-century learning. These results align with the findings of Kartal and Taşdemir (2021) and Yenilmez and Balbağ (2016). Kartal and Taşdemir (2021) emphasized that female respondents might have underestimated their abilities regarding engineering and technology or have spent less time with these activities. Senior preservice teachers had more positive attitudes towards science and engineering/technology than junior ones. Similarly, this finding is consistent with the literature (Kartal and Taşdemir, 2021; Tekerek and Karakaya, 2018). Juniors' attitudes towards mathematics were more positive than senior ones.

Correlation analysis revealed that the subscales of TSES were positively correlated to the subscales of the STEM attitudes scale. An increase in preservice teachers' efficacy beliefs might lead to an increase in their STEM attitudes. Regression analysis was performed to determine the extent to which preservice teachers' efficacy beliefs predict their STEM attitudes. It is found that efficacy beliefs for student engagement and instructional strategies were significant predictors of their STEM attitudes. These beliefs explain almost 26% of the variance in their STEM attitudes. These results may imply that promoting preservice teachers' positive attitudes are related to their high level of teacher efficacy. Therefore, improving preservice teachers' efficacy beliefs might be considered through the sources of efficacy. They should be allowed to observe teachers integrating STEM subjects and to implement integrated STEM subjects.

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## **PRESERVICE TEACHERS' UNDERSTANDINGS OF SCIENCE, TECHNOLOGY, AND MATHEMATICS AND THE RELATIONSHIPS AMONG THESE DISCIPLINES**

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### **Abstract**

Many studies examined preservice teachers' understandings of science, mathematics, and technology independently of each other. A few studies examined preservice teachers' thinking processes about the relationships among technology and science and mathematics. Preservice teachers need to understand the nature of science, mathematics, and technology, recognize the similarities and differences of these disciplines, and determine the relationships among these disciplines. Preservice teachers must be aware of the relationships among these disciplines, especially for interdisciplinary approaches such as STEM education, to reach their goals. This study examined preservice teachers' definitions of science, mathematics, and technology and views about the relationships between these disciplines. In line with the purpose of the study, data were collected and analyzed using a qualitative descriptive design. Participants are preservice teachers who voluntarily completed the data collection tool among the 3rd and 4th-grades studying in the science, mathematics, and primary teaching departments of a state university in Central Anatolia. 29% of the participants are in their last year of education. Female preservice teachers comprised 76% of the participants. The questions in the data collection form are as follows: (i) What is "Science" to you? (ii) What is "Mathematics" to you? (iii) What is "Technology" to you?, and (iii) What kind of a relationship do you think there is between science, mathematics, and technology?. Data were analyzed using content analysis. The findings show that preservice teachers do not have difficulty revealing the relationship between their major discipline and their lives, but they do not have comprehensive views about the relationships among these three disciplines. It is thought that this study will shed light on the literature on determining what preservice teachers may need to effectively integrate the disciplines of science, technology, and mathematics, which are also the basis of STEM.

**Keywords:** Preservice teachers; science; mathematics; technology; interdisciplinary perspective

### **INTRODUCTION**

21st-century requires individuals to solve real-world problems using scientific, mathematical, and technological knowledge. This requirement is also called science, mathematics, and technology literacy. Besides, the growing interest in STEM education and the increasing need for STEM fields spark researchers' interest in interdisciplinary teaching.

In other words, it might not be enough for teachers to know only their major subject; instead, they should also connect their disciplines to others. Interdisciplinary approaches, such as STEM, contribute to students' affective, cognitive, and psychomotor aspects (Cinar, Pirasa, and Sadoglu, 2016) and improve the quality of teaching these disciplines (An, 2017). Identifying the interdependence of science, mathematics, and technology is crucial in scientific literacy (Park, 2006 ). Therefore, promoting these approaches is of great importance for countries.

Teachers' views about their disciplines might influence how they teach and how their students perceive the discipline. Therefore, it is crucial to identify teachers' views of their major disciplines and other disciplines (Abel and Smith, 1994). Bloom (1989) categorized teachers' views of science into four groups: *a study of the world, a set of processes, a body of knowledge, and a search for new developments*. White and colleagues (2005) found that most of the respondents agreed that mathematics is computation. Lastly, Gök and Erdoğan (2010) classified preservice teachers' metaphors of technology into *needed technology, constantly changing technology, developing technology, harmful technology, beneficial technology, both harmful and beneficial technology, addictive technology, and facilitating our life technology* categories.

Teachers often convey information about their major disciplines and fail to show how the conveyed information can be applied in other disciplines (Çınar, Pirasa, Uzun, and Erenler, 2016). Although the integration of science and mathematics has a long history, the increasing access to technological tools makes integrating technology into science and mathematics essential (An, 2017). Even though the ideas about science and mathematics have gotten attention in years, preservice teachers' ideas about technology are still underresearched (Flick and Lederman, 2003). Understanding associations among science, mathematics, and technology would improve teaching these subjects (An, 2017) and display their ideas, perspectives towards these disciplines, and attitudes they obtained through their experiences (Gök and Erdoğan, 2010).

Preservice teachers might experience challenges in identifying interdisciplinary content. Cinar and colleagues (2016) found that preservice teachers perceived STEM integration as appropriate for only science lessons. However, it is possible to positively impact preservice teachers' knowledge and competence in interdisciplinary approaches through interventions within the context of teacher preparation programs (An, 2017).

Given the necessity of an interdisciplinary perspective in the digital era, it is crucial to examine preservice teachers' views regarding their major disciplines and other disciplines related to their major one. This study might shed light on the teacher preparation programs to prepare preservice teachers for the 21<sup>st</sup> century as the results would reveal how preservice teachers perceive interdisciplinary associations. The research questions that guide data collection and analysis throughout the study are as follows.

1. What is science to you?
2. What is mathematics to you?
3. What is technology to you?

4. How do preservice teachers define the interrelationships between science, mathematics, and technology?

## METHODS

This study aims to describe preservice teachers' ideas about science, mathematics, technology and about the relationships among these disciplines. Therefore, we used a basic qualitative description design, presenting direct and straightforward descriptions of a phenomenon or event to collect, analyze, and interpret data (Sandelowski, 2000). The qualitative descriptive study deals with what of events. Individuals' perceptions of something form the descriptions regarding that thing (Sandelowski, 2000). This study focused on preservice teachers' descriptions of science, mathematics, technology, and the relationships among these disciplines.

### Participants

To better understand preservice teachers' descriptions of science, mathematics, and technology and the relationship among these disciplines, we identified the sample consisting of preservice teachers from three different departments (science education, mathematics education, and primary education) at an Education Faculty in Middle Anatolia. This kind of selection might ensure maximum variation in preservice teachers' descriptions (Patton, 1990) as participants are trained to teach either science or mathematics or both of them. Seventy-one preservice teachers participated in the study. The demographics of participants are given in Table 1.

**Table 1.** Demographics of participants

	N	%
<i>Department</i>		
Science education	2	33.8
	4	0
Mathematics education	1	25.3
	8	5
Primary education	2	40.8
	9	5
<i>Grade level</i>		
Juniors	5	71.8
	1	3
Seniors	2	28.1
	0	7
<i>Gender</i>		
Female	5	76.0
	4	6
Male	1	23.9
	7	4

### **Data collection tool**

The measurement instrument was sent via a Google Forms link to preservice teachers. A form consisting of demographics information and four open-ended questions regarding what science, mathematics, and technology are and what kind of relationships exist among them was used to collect data. At the beginning of the form, preservice teachers were informed about the purpose of the study and their right to withdraw from the study any time they wished. Preservice teachers were asked if they accepted to participate in the study before answering the questions.

The open-ended questions asked respondents to describe how they defined science, mathematics, and technology and the relationships among these disciplines. The questions were (i) *What is science to you?*, (ii) *What is mathematics to you?*, (iii) *What is technology to you?* and (iv) *What do you think the relationships among science, mathematics, and technology?*.

### **Data analysis**

Before starting data analysis, we read the whole data without analyzing and interpreting it. We detected some repeating responses and removed them from the data set that consisted of 85 responses initially. After removing the repetitive responses, we had 71 responses in our final data set. Then, we performed content analysis through the technique of analytic induction. First, the codes were identified, and an initial list of codes was constructed. The next step was to identify whether similar codes existed; we integrated the similar codes into a new category, including both. The code list showed which respondents' answers were in each response category to make quoting easier. For example, we could see which preservice teachers mentioned that science is closely related to daily life and choose appropriate quotations. The frequencies and percentages for each response category were calculated. This kind of counting reveals the patterns and regularities in the data set (Sandelowski, 2000). Researchers firstly analyzed data from preservice science teachers independently and then compared their codes and categories. After reaching a consensus about how to analyze data, the first researcher analyzed the whole data.

## RESULTS

Results are given in response to each question in the measurement instrument. Preservice teachers' perceptions of science are given in Table 2.

**Table 2.** Preservice teachers' descriptions of science

<i>Science is</i>	Preservice science teachers		Preservice mathematics teachers		Preservice primary teachers		Total	
	N	%	N	%	N	%	N	%
Life	16	66	7	38.89	10	34.48	33	46.48
The means of understanding nature	3	12.5	4	22.22	17	58.62	24	33.80
Acquiring scientific knowledge through observations and experiments	2	8.3	4	22.22	6	20.69	12	19.90
Physics, chemistry, biology, and astronomy	7	29.16	-	-	2	6.89	9	12.67
Making life easier	5	20.83	1	5.55	3	10.34	9	12.67
The means of the understanding universe	4	16.66	1	5.55	3	10.34	8	11.26
Discovery	2	8.32	1	5.55	3	10.34	6	8.45
Technology	1	4.16	2	11.11	3	10.34	6	8.45
Innovation	1	4.16	1	5.55	-	-	2	2.81
A systematics point of view	-	-	-	-	2	6.89	2	2.81

As seen from the Table, nearly half of the respondents (46.48%) reported that science is closely related to life. They referred to life as their daily lives and emphasized that science is everywhere in daily life. A preservice science teacher explained how science is related to our daily lives at business or home, as follows:

*“Science means life to me. Everything we see is science. For example, we can use a pulley to carry the materials to the top floor. Science is in front of us in every part of life, as physics, chemistry, and biology. If we use the detergents at home carelessly, not cautiously, we can poison ourselves and even lead to death with the interaction of chemical substances.”*

A preservice mathematics teacher connected science and mathematics while stating the relationship between science and life.

*“Science is the explanation of the mechanism of real life. We use numbers and symbols to make it relatively concrete.”*

Lastly, a preservice primary teacher's perception of science is as follows:



*“Science has a direct or indirect relationship with physics, chemistry, and mathematics. For me, although not all individuals are aware of it, science can be researched for every moment of life, in the natural environment, or even the air we breathe.”*

The most reported perception of science is its connection to life among preservice science and mathematics teachers. On the other hand, preservice primary teachers mainly mentioned that science is the means of understanding nature. A sample quote is as follows:

*“Science tries to explain the events in nature through observation and experimentation. For me, science explains events that you may encounter in your life.”*

Additionally, there are a few responses not included in the Table to avoid redundancy. They are: *science aims to prepare scientific literate individuals* (one preservice science teacher), *science is hard* (one preservice mathematics teacher and one preservice primary teacher), *science is a numerical subject* (one preservice mathematics teacher), *science is an essential subject* (one preservice mathematics teacher), and *science requires higher-order thinking skills, such as critical thinking, problem-solving, and higher-order thinking* (one preservice primary teacher). It is promising that the preservice mathematics teachers who stated that science is hard also addressed the necessity of science in life.

Briefly, preservice teachers viewed science as a valuable tool to make sense of the nature, universe, and daily lives. A few of them addressed the tools used in science to acquire information, such as experiments and observation.

Preservice teachers were asked, *“What is mathematics to you?”*. The responses given by respondents were categorized in Table 3.

**Table 3.** Preservice teachers' descriptions of mathematics

<i>Mathematics</i>	Preservice science teachers		Preservice mathematics teachers		Preservice primary teachers		Total	
	N	%	N	%	N	%	N	%
Is everywhere	9	37.5	8	44.44	13	44.83	30	42.25
Consists of quantities	12	50	3	16.67	6	20.69	21	29.58
Is the means of understanding the nature and universe	3	12.5	5	27.78	8	27.59	16	22.54
Requires logical thinking and reasoning	4	16.67	1	5.56	5	17.24	10	14.08
Is abstract	-		1	5.56	4	13.80	5	7.04
Makes life easier	-		2	11.11	2	6.90	4	5.63
Includes arithmetic, geometry, and algebra	2	8.33	-		1	3.45	3	4.23
Includes symbols, terms, and notations	2	8.33	-		1	3.45	3	4.23
Arises based on the wants of the society	-		2	11.11	1	3.45	3	4.23
Helps other disciplines' improvement	-		2	11.11	-		2	2.82
Becomes more valuable as time goes on	-		2	11.11	-		2	2.82

Most of the preservice teachers (42.25%) stated that mathematics is all around life. Sample quotations about the connectedness of mathematics to life are as follows:

*“People might think that mathematics is seen only in numerical lessons, but it is in all areas of life.”*

*“Mathematics is in life. It improves lives of all.”*

*“It is life itself. It tries to make sense of life through quantities.”*

Preservice teachers out of mathematics education emphasized the content of mathematics as including quantities, notations, and symbols.

*“It is the science that studies numbers and quantitative through reasoning.”*

*“Mathematics is everything related to numbers and quantities.”*

On the other hand, preservice mathematics teachers stated that mathematics arose based on the wants of society and made life easier. To preservice mathematics teachers, mathematics also promotes other disciplines' improvement. A respondent wrote as follows:

*“Besides being a science, mathematics might also be considered the language of the sciences. Every development in mathematics touches our lives and guides the sciences. Mathematics is complicated for students at first, but they love it as they explore and spend time. Understanding mathematics is of great importance today. Mathematics arose based on the wants of society and has taken its place in all areas of life over time.”*

Additionally, an interesting finding is that a preservice primary teacher emphasized that individuals do not use mathematics in their daily lives. The respondent might think like this as he/she perceived mathematics as a hard lesson. The other respondents from science and primary teaching also reported that they did not like mathematics.

The third question is “*What is technology to you?*”. The responses are given in Table 4.

**Table 4.** Preservice teachers' descriptions of technology

<i>Technology</i>	Preservice science teachers		Preservice mathematics teachers		Preservice primary teachers		Total	
	N	%	N	%	N	%	N	%
Makes life easier	8	33.33	10	55.56	11	37.93	29	40.85
Is ever growing-and-changing	4	16.67	5	27.78	10	34.48	19	26.76
Is essential for social life	3	12.50	2	11.11	7	24.14	12	16.90
Has both advantages and disadvantages	6	25.00	1	5.56	1	3.45	8	11.27
Meets the needs and wants of society	2	8.33	2	11.11	4	13.79	8	11.27
Is the sum of the techniques, skills, methods, tools, and machines	3	12.50	2	11.11	2	6.90	7	9.86
Is valuable when used appropriately	3	12.50	2	11.11	2	6.90	7	9.86
Provides ease of access to information all around the globe	3	12.50	1	5.56	2	6.90	6	8.45
Is all around everywhere	3	12.50	1	5.56	1	3.45	5	7.04

Is the application of scientific information and investigation	2	8.33	-	3	10.34	5	7.04
Saves time	1	4.17	3	16.67	-	4	5.63
Is innovation	2	8.33	1	5.56	1	3.45	5.63
Is essential to remain competitive in the globe	1	4.17	1	5.56	2	6.90	5.63
Is advantageous in education	2	8.33	1	5.56	-	-	4.23

Preservice teachers mostly emphasized the advantage of technology as making life easier. The followings are sample quotes from preservice teachers' responses:

*"Technology is an application that can change and develop to make life and work easier and faster in line with people's needs."*

*"Technology is a mechanism that affects people's lives positively or negatively, by evolving day by day to make people's lives easier."*

*"Everything that makes our life easier is the technology for me."*

Preservice teachers' responses highlighted respondents' beliefs about technology's ever-growing and changing nature, the importance of the appropriate use of technology, and the essence of technology in social life.

*"It means staying up to date. The countries with the highest level of technology are developed countries. It makes life easier when used correctly."*

Preservice teachers reported about the ease of access to and delivery of information. However, a few preservice teachers mentioned the effectiveness of using technology in education.

*"Technology has an important place in our lives as we use it in many areas. I think the use of technology for education is beneficial."*

*"Technology plays a key role in the scientific innovations in our lives. Today, it can be a pioneer in the developments of many fields. Technology, which can contribute to every field of science, has also taken its place in education today. Technology can be used in many situations, such as teaching a subject to students, drills, and practice. Despite the disadvantages of technology, its contributions to science and our lives are significant."*

Preservice teachers did not mention the role of technology in learning and teaching even though they were aware of the benefits of technology in other areas.

The last question was related to preservice teachers' perceptions of the interrelationships among science, mathematics, and technology. The responses are given in Table 5.

**Table 5.** Preservice teachers' perceptions of interrelationships among science, mathematics, and technology

	Preservice science teachers		Preservice mathematics teachers		Preservice primary teachers		Total	
	N	%	N	%	N	%	N	%
They are connected to each other	6	25	3	16.67	8	27.59	17	23.94
One way relationship	8	33.33	2	11.11	4	13.79	14	19.72
Science as the overarching discipline	7	29.17	1	5.56	3	10.34	11	15.49
Technology is the product of the integration of science and mathematics	2	8.33	3	16.67	6	20.69	11	15.49
Technology is an adds-on to science and mathematics	3	12.50	3	16.67	3	10.34	9	12.68
All are crucial for innovations	1	4.17	4	22.22	4	13.79	9	12.68
They make life easier together	1	4.17	3	16.67	4	13.79	8	11.27
Science and mathematics uses technology	2	8.33	2	11.11	2	6.90	6	8.45
A dynamic relationship	1	4.17	-	-	4	13.79	5	7.04
Engineering design	4	16.67	-	0,00	-	-	4	5.63
Technology improves science and mathematics teaching and learning	2	8.33	2	11,11	-	-	4	5.63

Preservice teachers mainly reported that these disciplines were connected. The sample responses that emphasized the connectedness of the disciplines are as follows:

*"They complement each other and help us understand life."*

*"There is an innovative, supportive, beneficial relationship that enables each other's development and facilitates its implementation. A development in one affects all positively."*

*"...science, math, and technology are intertwined."*

The one-way relationship includes preservice teachers' responses referring to the development of disciplines via other disciplines. For example, some preservice teachers



stated that science and mathematics promoted the developments in technology. On the other hand, some addressed the role of technology in scientific and mathematical developments.

*“The inventions in science and mathematics have benefited technology. If science and mathematics did not exist, technology would not progress.”*

*“As technology progresses, there have been advances in science and mathematics. Misunderstandings have been found with technology, or technology has provided the opportunity to conduct more in-depth research on issues that are not fully known.”*

Considering the respondents were preservice teachers, it might not be promising to see that only four participants addressed the relationships of these disciplines within the context of teaching and learning.

*“As we live in the age of technology, we must associate mathematics and science with technology, learn and teach.”*

*“Now, we learn and apply most of the information easily with the help of technology. It should not be forgotten that technology makes it easier to understand and learn science and mathematics. At the same time, many important technological studies have been done and will be done by knowing science and mathematics.”*

## DISCUSSION

This study investigated preservice teachers' perceptions of science, mathematics, technology, and of relationships among these disciplines. Almost half of the respondents perceived science as life itself. Then they reported that science helps understand the environment around them and explores the unknown through observations and experiments. Similar results exist in the literature. Yalvac and colleagues (2006) found that a third of their participants defined science as exploring the unknown and improving the world. However, 2% of their respondents perceived science as the research of physics, chemistry, and biology. The rate of preservice science teachers that responded as same in this study was 29.16%. Considering preservice science teachers' most reported definitions of science, we might define science as a discipline all-around life, including physics, chemistry, and biology, to improve the world.

Participants regarded the connection of mathematics to life to the extent that they did for science. Respondents mostly viewed mathematics as a discipline all around the globe that helps understand the world through quantities. The mediating role of mathematics in understanding the world is seen in the literature (Andrew and Hatch, 2000; Guner, 2013; Kılıç and Yanpar Yelken, 2013; Mura, 1995; White, Perry, Way, and Southwell, 2006). However, the mathematics definitions of preservice mathematics teacher respondents are slightly different from teachers' mathematics definitions revealed by Mura (1995). Our respondents did not mention the axiomatic systems and abstract structures and objects.

Given the most reported responses for technology, we can define technology as making life easier with its ever-growing and changing nature and as a need in the world. These technology perspectives were also the most cited responses in each group of preservice teachers, and they were also emphasized in other research (Gök and Erdoğan, 2010; Yalvac

and colleagues, 2007). Besides, it is surprising to report that only 4.26% of respondents referred to the value of technology in education.

The last question was related to relationships among science, technology, and mathematics. Almost a quarter of the respondents mentioned the interdependence of these disciplines. According to these respondents, these disciplines were interrelated, and it is challenging to consider them separate. However, it is reported that the developments in technology improve science and mathematics, and vice versa. As in this study, the one-way relationship is also reported by Yalvac and colleagues (2007). Most of the preservice science teachers viewed science as the basis overarching discipline for improvements. This finding underpins other research (Çınar et al. 2016; Yalvac et al., 2007). It is worth noting that only a few respondents underlined the benefits of technology in science and mathematics teaching while explaining the relationships among the disciplines.

In sum, respondents were aware of the connections between science, mathematics, technology, and our lives. This finding is promising as respondents are likely to link their discipline to students' daily lives in their future teaching practices. This kind of linking might promote their students' making meaning of information through their experiences. However, the teaching and learning of these disciplines were not adequately underlined by respondents. The responses were more related to the disciplines' nature and contributions to society. This gap in the findings might be filled through in-depth interviews regarding these disciplines' teaching and learning process.

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## EVALUATING THE RELATIONSHIP BETWEEN CONSUMERS' INDIVIDUAL VALUES AND THEIR VOLUNTARY SIMPLICITY LIFESTYLES

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### **Abstract**

The objective of this study is to determine the relationship between the individual values of consumers and their voluntary simplicity lifestyles. For this purpose, an ethical permission resolution no of 2021/185 dated 29.07.2021 was obtained from the Duzce University, accordingly a questionnaire was conducted with 229 students studying at the Faculty of Business Administration chosen with the convenience sampling method. The individual values scale and the voluntary simplicity lifestyle scales were employed. The main hypotheses were set as “H<sub>1</sub>: There is a significant relationship between the universalism value of individuals and their voluntary simple lifestyles.” and “H<sub>2</sub>: There is a significant relationship between the benevolence value of individuals and their voluntary simple lifestyles. The data were analysed with the SPSS program. As a result of the factor analysis, it was determined that participants perceived the individual values in 5 dimensions and voluntary simplicity lifestyle in 4 dimensions. Correlation analysis was conducted for the existence of a relationship between the sub-dimensions of individual values and voluntary simplicity lifestyle. As a result of the analysis, it was determined that there is a statistically significant partial relationship between the sub-dimensions of the individual values and voluntary simplicity lifestyles. Considering that today individuals attach more and more importance to voluntary simplicity, it would be beneficial for businesses to follow this trend in their future activities and revise their programs accordingly. In this framework, they can develop simple and green (environmental) products that can be used for a longer term for consumers who tend to voluntarily simple lifestyles, taking into account the value judgments of individuals.

**Keywords:** Consumers’ Individual Values, Values, Voluntary Simplicity Lifestyle

## TÜKETİCİLERİN BİREYSEL DEĞERLERİ İLE GÖNÜLLÜ SADE YAŞAM TARZLARI ARASINDAKİ İLİŞKİNİN İNCELENMESİ

### **Özet**

Bu çalışmanın amacı, tüketicilerin bireysel değerleri ile gönüllü sade yaşam tarzları arasındaki ilişkiyi belirlemektir. Bu amaçla Düzce Üniversitesi'nden 29.07.2021 tarih ve 2021/185 sayılı etik izin kararı alınmış, buna göre kolayda örnekleme yöntemi ile seçilen İşletme Fakültesi'nde öğrenim gören 229 öğrenciye anket uygulanmıştır. Çalışmada bireysel değerler ölçeği ve gönüllü sade yaşam tarzı ölçekleri kullanılmıştır. Araştırmanın ana hipotezleri; “H<sub>1</sub>: Bireylerin evrenselcilik değeri ile gönüllü sade yaşam tarzları arasında anlamlı ilişki vardır.” ve “H<sub>2</sub>: Bireylerin güç değeri ile gönüllü sade yaşam tarzları arasında anlamlı ilişki vardır.” şeklinde kurulmuştur. Veriler SPSS programı ile analiz edilmiştir. Faktör analizi sonucunda katılımcıların bireysel değerleri 5 boyutta ve gönüllü sade yaşam tarzını 4 boyutta algıladıkları belirlenmiştir. Bireysel değerlerin alt boyutları ile gönüllü sade yaşam tarzı arasında bir ilişkinin varlığı için korelasyon analizi yapılmıştır. Analiz sonucunda

bireysel değerlerin alt boyutları ile gönüllü sade yaşam tarzı arasında istatistiksel olarak anlamlı bir kısmi ilişki olduğu tespit edilmiştir. Günümüzde bireylerin gönüllü sadeliğe giderek daha fazla önem verdiği göz önüne alındığında, işletmelerin bundan sonraki faaliyetlerinde bu trendi takip etmeleri ve programlarını buna göre revize etmeleri faydalı olacaktır. Bu çerçevede işletmeler, bireylerin değer yargılarını dikkate alarak, gönüllü sade yaşam tarzlarına yönelik tüketiciler için daha uzun süre kullanılabilecek basit ve yeşil (çevresel) ürünler geliştirebilirler.

**Anahtar Kelimeler:** Tüketicilerin Bireysel Değerleri, Değerler, Gönüllü Sade Yaşam Tarzı

### **Giriş**

XX. yüzyılın sonlarına doğru piyasalarda ortaya çıkan ürün zenginliği ve çeşitliliğiyle birlikte şekillenmeye başlayan tüketim kültürü, bireylerin sadelikten uzaklaşmasına yol açtığı gibi hedonik (hazcı) davranışları üzerinde de uyarıcı bir etkiye neden olmaktadır. Fonksiyonel ihtiyaçların üründe farklılaşmayı daraltan özelliğinden ötürü işletmelerin hazcı gereksinimleri temel olarak üretim faaliyetlerinde bulunmaları, tüketimin artmasını da beraberinde getirmektedir.

Bireylerin toplumdaki yerlerini, statülerini ve en önemlisi sahip oldukları değerleri tüketimleri ile gösterme çabası içinde olmalarının ve kendilerinin tüketimleri ölçüsünde değerli görüleceği inancının, insanlığı hem toplum hem de çevre bakımından pek çok boyutuyla tehlikeli olabilecek bir sürece taşıyacağı aşikârdır.

Bununla birlikte yaşamın her alanında sadelik ve basitliği teşvik edip destek veren gönüllü sade yaşam tarzı (GSYT), tüketimdeki artışın ciddi boyutlara ulaşmaya başlamasıyla yeniden gündeme gelmiştir. Bireyin iç dünyasında yani manen zenginliği, dış dünyasında yani madden ise sadeliği savunan ve neticede bireyin yaşam doyumu düzeyini yükselten bu akımın, tüketim toplumu için bir alternatif olabileceğine ilişkin görüşler bulunmaktadır (Elgin, 1993).

### **Yöntem**

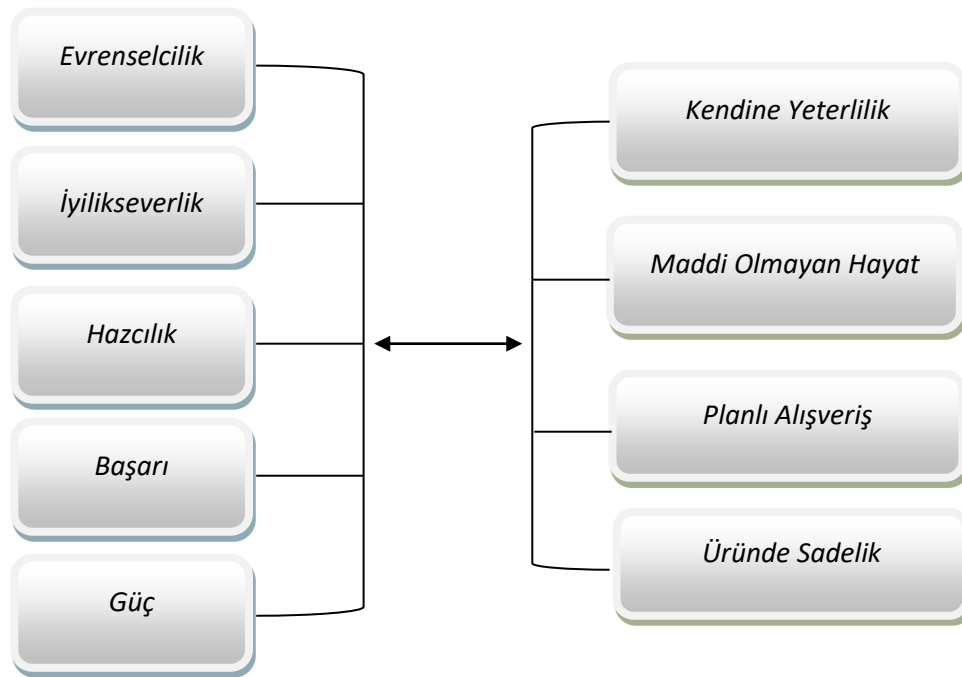
Düzce Üniversitesi Etik Kurulu'ndan 29.07.2021 tarih ve 2021/185 sayılı karar ile alınmış olan etik izin çerçevesinde, nicel yöntem kapsamında çevrimiçi anket yoluyla toplanan veriler SPSS programı yardımıyla gerekli analizlere tabi tutulmuş ve elde edilen araştırma bulguları yorumlanmıştır.

### **Araştırmanın Amacı**

Bu çalışmanın amacı, tüketicilerin bireysel değerlerinin gönüllü sade yaşam tarzları ile ilişkisinin belirlenmesine yöneliktir.

## Araştırmanın Modeli

Şekil 1. Araştırma Modeli



Aşağıda araştırma modeli kapsamında test edilecek temel ve alt hipotezlerden bazıları örnek olarak verilmiş olup, tüm hipotezler Tablo 1’de verilmiştir.

**H<sub>1</sub>: Bireylerin evrenselcilik değeri ile gönüllü sade yaşam tarzları arasında anlamlı ilişki vardır.**

*H<sub>1a</sub>*: Evrenselcilik değeri ile planlı alışveriş arasında anlamlı ilişki vardır.

*H<sub>1b</sub>*: Evrenselcilik değeri ile kendine yeterlilik arasında anlamlı ilişki vardır.

*H<sub>1c</sub>*: Evrenselcilik değeri ile maddi olmayan hayat arasında anlamlı ilişki vardır.

*H<sub>1d</sub>*: Evrenselcilik değeri ile üründe sadelik arasında anlamlı ilişki vardır.

**H<sub>2</sub>: Bireylerin güç değeri ile gönüllü sade yaşam tarzları arasında anlamlı ilişki vardır.**

*H<sub>2a</sub>*: Güç değerleri ile planlı alışveriş arasında anlamlı ilişki vardır.

*H<sub>2b</sub>*: Güç değerleri ile kendine yeterlilik arasında anlamlı ilişki vardır.

*H<sub>2c</sub>*: Güç değerleri ile maddi olmayan hayat arasında anlamlı ilişki vardır.

*H<sub>2d</sub>*: Güç değeri ile üründe sadelik arasında anlamlı ilişki vardır.

Tablo 1. Tüm Alt Hipotezler

BOYUTLAR	Evrenselcilik	Güç	Hazcılık	Başarı	İyilikseverlik
Planlı Alışveriş	<i>H<sub>1a</sub></i>	<i>H<sub>2a</sub></i>	<i>H<sub>3a</sub></i>	<i>H<sub>4a</sub></i>	<i>H<sub>5a</sub></i>
Kendine Yeterlilik	<i>H<sub>1b</sub></i>	<i>H<sub>2b</sub></i>	<i>H<sub>3b</sub></i>	<i>H<sub>4b</sub></i>	<i>H<sub>5b</sub></i>
Maddi Olmayan Hayat	<i>H<sub>1c</sub></i>	<i>H<sub>2c</sub></i>	<i>H<sub>3c</sub></i>	<i>H<sub>4c</sub></i>	<i>H<sub>5c</sub></i>
Üründe Sadelik	<i>H<sub>1d</sub></i>	<i>H<sub>2d</sub></i>	<i>H<sub>3d</sub></i>	<i>H<sub>4d</sub></i>	<i>H<sub>5d</sub></i>

### Araştırmanın Ana kütlesi ve Katılımcılar

Araştırmanın ana kütlesini Düzce Üniversitesi İşletme Fakültesi’nde 2020-2021 döneminde kayıtlı eğitim gören öğrenciler oluşturmaktadır. Araştırmada kolayda örnekleme yöntemi kullanılmış ve araştırma verileri 229 kişiden çevrimiçi anket tekniğiyle elde edilmiştir. Araştırma örnekleminde yer alan katılımcıların demografik özelliklerine ilişkin bilgiler, Tablo 2’de görülmektedir.



**Tablo 2.** Katılımcıların Demografik Özelliklerine İlişkin Dağılım

Bölüm	Frekans	%	Cinsiyet	Frekans	%
Sigortacılık ve Sosyal Güvenlik	26	11,4	Kadın	117	51,1
Uluslararası Ticaret ve Finansman	77	33,6	Erkek	112	48,9
İşletme	27	11,8	<i>Toplam</i>	229	100
Yönetim Bilişim Sistemleri	88	38,4	<b>Yaş</b>	<b>Frekans</b>	<b>%</b>
Sağlık Yönetimi	11	4,8	15-21 yaş arası	137	59,8
<i>Toplam</i>	229	100	22-40 yaş arası	92	40,2
			<i>Toplam</i>	229	100

### Veri Toplama Aracı

Araştırmada veri toplama tekniği olarak çevrimiçi anket kullanılmıştır. Anket genel tanımı ile “cevaplandırıcıların daha önce belirlenmiş bir sıralama ve yapıda oluşturulmuş soru setini yanıtlamasıyla veri elde etme yöntemi”dir (Altunışık vd., 2007: 68). Bu çalışmanın amacı, tüketicilerin bireysel değerlerinin gönüllü sade yaşam tarzları ile ilişkisinin belirlenmesine yöneliktir. Bu amaçla literatürde ahlaki değerler, insani değerler ve bireysel değerler olarak adlandırılan değerleri ölçmek için 57 değerden oluşan Schwartz Değerler Listesi’nden Özaşkınlık değer boyutu (evrenselcilik ve iyilikseverlik) ve Özgenişletim değer boyutu (başarı, güç ve hazcılık) alınarak oluşturulan ölçek kullanılmıştır. Kuşdil ve Kağıtçıbaşı (2000) tarafından yapılan çalışmada ana boyut ve değer tipleri ile her bir değer tipi içerisinde yer alan değerlerle ilgili olarak kullanılan Türkçe adlandırmalar esas alınmıştır. Çalışmada gönüllü sade yaşam tarzının ölçümü için ise Özgül’ün (2008) Iwata (1997) ve Shama (1985) tarafından geliştirilen gönüllü sade yaşam ölçeklerinden yararlanarak oluşturduğu “Gönüllü Sade Yaşam Tarzı Ölçeği” kullanılmıştır.

### Analiz ve Bulgular

#### Yapı Geçerliliği: Açımlayıcı Faktör Analizi

Araştırmamızda bireysel değerler ve gönüllü sade yaşam tarzı değişkenleri için açımlayıcı faktör analizi yapılmıştır. Açımlayıcı faktör analizi, değişkenler arası ilişkilerden hareketle faktör bulmaya ve teori üretmeye yönelik yapılan bir analiz türüdür (Büyüköztürk, 2002: 470-483). Araştırmada keşfedici faktör analizi yapılmıştır. Gerçekleştirilen faktör analizleri sonucunda tüketicilerin bireysel değerleri 5 boyutta ve GSYT’nı 4 boyutta algıladıkları tespit edilmiştir.

Bireysel değerler ölçeğine yönelik yapılan faktör analizi sonucunda Kaiser-Meyer-Olkin (KMO) örneklem yeterliği katsayısı ,84 ve Barlett’s küresellik testi ,000 düzeyinde manidar bulunmuştur. Elde edilen verilere istinaden örneklem büyüklüğünün, değişkenin ölçümünde ve kullanılmasında yeterli, veri yapısının da faktör çıkarmaya uygun olduğu yorumu yapılmıştır. İlgili değişkene yönelik faktör ve güvenilirlik analizi sonuçlarına ait veriler Tablo 3’te gösterilmiştir.

**Tablo 3.** Bireysel Değerler Faktör ve Güvenilirlik Analizi Bulguları

	<b>Faktör Yükleri</b>	<b>Açıklanan Varyans</b>
<b>BAŞARI</b>		
30. BECERİKLİ OLMAK (işin üstesinden gelebilen, yetenekli, etkin ve verimli biri olmak)	,803	<b>,29</b>
28. ZEKİ OLMAK (mantıklı, akıllı biri olmak)	,781	
29. HIRSLI OLMAK (başarmak için çok sıkı çalışan, gözü ilerde biri olmak)	,76	
31. SÖZÜ GEÇEN BİRİ OLMAK (insanlar ve olaylar üzerinde etkili olmak)	,648	
27. BAŞARILI OLMAK (hedeflediği noktaya gelebilmek)	,594	
<b>İYİLİKSEVERLİK</b>		
23. SADIK OLMAK (arkadaşlarına ve çevresine bağlı olmak)	,751	<b>,11</b>
25. DÜRÜSTLÜK (açık yüreklilik, içtenlik, samimilik)	,75	
21. İYİLİĞE KARŞILIK VERMEK (başkasına borçlu kalmaktan kaçınmak)	,689	
22. BAĞIŞLAYICI OLMAK (başkalarının özrünü kabul edebilmek, affedebilmek)	,686	
24. SORUMLULUK SAHİBİ OLMAK (güvenilir ve itimat edilebilir biri olmak)	,622	
20. YARDIMSEVER OLMAK (başkalarının iyiliği ve refahı için uğraşmak)	,471	
<b>EVRENSELÇİLİK</b>		
4. DOĞAYLA BÜTÜNLÜK İÇİNDE OLMAK (doğayla uyumlu, iç içe olmak)	,775	
3. BARIŞ İÇİNDE BİR DÜNYA (savaş ve çatışmalardan uzak bir dünya)	,74	
6. GÜZEL BİR DÜNYA (doğa ve sanatın güzelliği)	,684	<b>,09</b>
2. İÇ UYUM (kendimle barışık olmak)	,573	
5. BİLGELİK (olgun bir hayat anlayışına sahip olmak)	,566	
<b>HAZCILIK</b>		
12. İSTEKLERİNE DÜŞKÜN OLMAK (kendisine zevk veren, keyif veren şeyler yapmak, kendini şımartmak)	,812	
11. ZEVK (istek ve arzuların giderilmesi, haz almak)	,794	<b>,07</b>
10. HAYATIN TADINI ÇIKARMAK (yeme-içmeden, boş zaman eğlencelerinden zevk almak)	,722	
<b>GÜÇ</b>		
14. SOSYAL GÜÇ SAHİBİ OLMAK (başkalarını denetleyebilmek, baskın olmak)	,735	
16. SOSYAL KABUL GÖRME (başkalarından saygı ve kabul görmek)	,721	<b>,05</b>
13. OTORİTE SAHİBİ OLMAK (başkalarını yönetme ve yönlendirme hakkına sahip olmak)	,665	
17. TOPLUMDAKİ İMAJIMI MUHAFAZA ETMEK (başkalarına karşı mahcup duruma düşmemek, toplumsal itibarımı koruyabilmek)	,655	

Faktör çıkarma metodu: Temel bileşenler analizi; Döndürme metodu: Varimax; Toplam Açıklanan Varyans: 0,61; KMO Örneklem Yeterliliği: %84;  $p=0,000<0.001$ ; Cronbach Alfa Değeri: 0,903

Çalışmada diğer değişken olan GSYT'na yönelik yapılan faktör analizi sonucunda Kaiser-Meyer-Olkin (KMO) örneklem yeterliliği katsayısı ,65 ve Barlett's küresellik testi ,000 düzeyinde manidar bulunmuştur. Elde edilen verilere istinaden örneklem büyüklüğünün, değişkenin ölçümünde ve kullanılmasında yeterli, veri yapısının da faktör çıkarmaya uygun olduğu yorumu yapılmıştır. İlgili değişkene yönelik faktör ve güvenilirlik analizi sonuçlarına ait veriler Tablo 4'te gösterilmiştir.

**Tablo 4.** Gönüllü Sade Yaşam Tarzı Faktör ve Güvenilirlik Analizi Bulguları

	Faktör Yükleri	Açıklanan Varyans
<b>KENDİNE YETERLİLİK</b>		
4. Gelecekte, kendime yetebileceğim bir yaşam sürmek isterim.	,898	<b>,34</b>
3. Gelir harcama dengesi açısından, insanın kendine yetebilmesi istenilen bir durumdur	,872	
<b>MADDİ OLMAYAN HAYAT</b>		
6. Ekonomik gelişimden çok kişisel gelişimim ile ilgilenirim	,880	<b>,18</b>
5. Maddi zenginliktense, daha çok zihinsel gelişim ve başarıya önem veririm	,843	
<b>PLANLI ALIŞVERİŞ</b>		
2. Param olsa bile, plansız alışverişler yapmak benim ilkelerimle uyuzmaz.	,891	
1. Alışveriş yaparken, bir ürünün benim için gerçekten gerekli olup olmadığına bakar, ona göre karar veririm.	,762	<b>,14</b>
<b>ÜRÜNDE SADELİK</b>		
8. Genellikle gelişmiş özellikleri olan, kullanımı zor ürünleri satın almam	,879	
7. Karmaşık, çok fonksiyonlu ürünlerdense, basit ve işimi gören ürünleri tercih ederim.	,774	<b>,11</b>

Faktör çıkarma metodu: Temel bileşenler analizi; Döndürme metodu: Varimax; Toplam Açıklanan Varyans: 0,77; KMO Örneklem Yeterliliği: %65;  $p=0,000<0.001$ ; Cronbach Alfa Değeri: 0,716

#### **Değişkenler Arası İlişkinin Tespitine Yönelik Yapılan Korelasyon Analizi Bulguları**

Bu araştırmada esas olarak nicel araştırma desenlerinden ilişkiyel tarama deseni kullanılmıştır. İlişkiyel tarama araştırmaları iki ya da daha çok değişken arasındaki ilişkinin herhangi bir şekilde bu değişkenlere müdahale edilmeden incelendiği araştırmalardır. Bu tür araştırmalarda değişkenler arasındaki birlikte değişimin derecesi de ortaya çıkarılabilmektedir (Büyüköztürk ve diğ., 2013). Analiz neticesinde ortaya çıkan korelasyon katsayısı -1 ile +1 arasında değer alır. Korelasyon katsayısının pozitif (+) olması değişkenlerin aynı yönde değiştiğini gösterirken, negatif (-) olması ise iki değişkenin arasında ters yönde bir ilişki olduğunu gösterir. Eğer değişkenlerdeki artış veya azalış birbirine bağlı değilse korelasyon sıfır olur. Bu da değişkenler arasında ilişkinin olmadığı anlamına gelir. Diğer bir ifadeyle ilişkiyel araştırma yöntemi, değişkenler arasındaki ilişkiyi açıklama ve sonuçları tahmin etme fırsatı sunmaktadır (Tekbıyık, 2015). Çalışma kapsamında yapılan korelasyon analizi bulguları Tablo 5'te verilmektedir.

**Tablo 5.** Gönüllü Sade Yaşam Tarzı ve Bireysel Değerler Değişkenlerinin Alt Boyutlarına İlişkin Korelasyon Analizi

		<b>Evrenselcilik</b>	<b>Hazcılık</b>	<b>Güç</b>	<b>İyilikseverlik</b>	<b>Başarı</b>
<b>Planlı Alışveriş</b>	Correlation Coefficient	<b>,132**</b>	,028	,114	<b>,199***</b>	,125
	Sig. (2-tailed)	<b>,047</b>	,679	,085	<b>,002</b>	,06
<b>Kendine Yeterlilik</b>	Correlation Coefficient	<b>,248***</b>	,116	,116	<b>,15**</b>	,066
	Sig. (2-tailed)	<b>,000</b>	,08	,079	<b>,023</b>	,32
<b>Maddi Olmayan Hayat</b>	Correlation Coefficient	<b>,264***</b>	-,069	,005	<b>,168**</b>	,078
	Sig. (2-tailed)	<b>,000</b>	,301	,936	<b>,011</b>	,242
<b>Üründe Sadelik</b>	Correlation Coefficient	,113	,039	,057	,075	,019
	Sig. (2-tailed)	,088	,557	,388	,258	,777

**\*\* p<0,05 düzeyinde anlamlı**

**\*\*\* p<0,01 düzeyinde anlamlı**

Korelasyon analizi sonuçlarına bakıldığında, gönüllü sade yaşam tarzı alt boyutlarından planlı alışveriş, kendine yeterlilik ve maddi olmayan hayat; özaşkınlık değer boyutlarının alt boyutları olan evrenselcilik ve iyilikseverlik boyutlarıyla düşük düzeyli, istatistiksel olarak anlamlı, pozitif ilişkili olduğu görülmektedir. Üründe sadelik ile özaşkınlık değer boyutları arasında herhangi bir ilişkinin olmadığı tespit edilmiştir. Ayrıca gönüllü sade yaşam tarzı alt boyutları ile özgüven değeri boyutları (hazcılık, güç ve başarı) arasında istatistiksel olarak anlamlı bir ilişkinin olmadığı görülmektedir. Yani H<sub>1a</sub>, H<sub>1b</sub>, H<sub>1c</sub>, H<sub>2a</sub>, H<sub>2b</sub> ve H<sub>2c</sub> hipotezleri kabul edilirken, diğer hipotezler reddedilmiştir.

### **Sonuç ve Öneriler**

Araştırmada ulaşılan sonuçlara dayanarak bireylerin şahsi hayatını ilgilendiren, hayatının merkezine kendisini koyan ve kendi iç dünyasını şekillendiren “özgüven değeri” ile “gönüllü sade yaşam tarzı” arasında anlamlı bir ilişkinin olmadığı sonucuna ulaşılmıştır.

Diğer yandan bireylerin diğer bireylerle ilişkisini gerektiren; içerisinde dürüst olmak, iyiliğe karşılık vermek, bağışlayıcı olmak, barış içinde güzel bir dünya arzusu gibi değerleri barındıran “özaşkınlık” değerleri ile “Gönüllü sade yaşam tarzı”nın bireylerin kendilerinden fedakârlık gösterip diğerlerini de dikkate alma ve kaynakların tüketiminde ve çevrenin korunmasında duyarlı hareket etmesinin gerekliliği manasını hissettiren “kendine yeterlilik, planlı alışveriş ve maddi olmayan hayat” boyutları arasında pozitif anlamlı bir ilişkinin var olduğu yorumunu yapabiliriz.

Gönüllü sadelik, işletmeler ve hırsız davranış eğilimli tüketiciler için cazip önerilere sahip alternatif bir yaşam tarzıdır. Çünkü bireyler için öngördüğü farklı yaşam tarzı, işletmeler için de çeşitli fırsatların önünü açmaktadır. Ürün ve hizmet alırken kaliteyi takip eden gönüllü sadecilerin, çevreye, toplumsal ve bireysel gelişime önem veren işletmeleri daha çok tercih

ettikleri bilinmektedir. Günümüzde bireylerin gönüllü sadeliğe giderek daha fazla önem verdiği de düşünüldüğünde, işletmelerin gelecekteki faaliyetlerinde bu akımı takip etmeleri ve programlarını bu doğrultuda revize etmeleri yararlı olacaktır. Bu çerçevede, örneğin, gönüllü sade yaşam tarzına eğilimli tüketiciler için daha uzun vadeli kullanılabilir, sade ve yeşil (çevreci) ürünleri, bireylerin değer yargılarını da göz önünde bulundurarak geliştirebilirler.

Konu ile ilgili gelecekte yapılacak çalışmalarda bireysel değerlerin bireylere kazandırılması ve hayata tatbik edilmesine yönelik uygulanabilecek eğitim metotlarının (değerler eğitimi) ayrıntılı olarak ele alındığı çalışmaların literatüre eklenmesi de faydalı olacaktır.

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## THE PERCEPTION OF RELIGION IN CLASSICAL TURKISH POETRY

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### ABSTRACT

Depending basically upon Persian literature and its religious perspective in the establishment period, classical Turkish poetry which maintained its existence for over six centuries had not only been shaped by religion but shaped equivalently religious perspective as well.

Being developed in accordance with Islam in terms of its both devotional and mystic sides (tasavvuf), classical Turkish poetry created a two dimensional religious perspective in which these two opposite aspects always struggled with each other. Additionally, these two sides of the religion designed two characters and various symbols existing around them. One of these two characters was called “rind” (bohemia or vagabond) representing the mystic and also preferential side of Islam and the other one was called “zahid”(prayerful) embodying the devotional, apparent and in a sense undesirable side of the religion. On one side there is “rind” who always drinks wine, goes to meyhane (traditional pub) and lives for love and on the other side there is “zahid” who as a pious character always performs prayer, counts his beads thinks heaven and intimidates people with hell. These two opposite characters and their moods about philosophy of life within poetry have determined to a degree the religious perspectives of people in their real lives with time.

In this study, two aspects of Islam and two characters impersonating them in Turkish poetry are to be analysed in the light of sample verses belonging different Turkish poets.

**Keywords:** Classical Turkish Poetry, Islam, Tasavvuf, Rind (Bohemia), Zahid (Prayerful)

### INTRODUCTION

One and the most important source of classical Turkish poetry is Islam and its metaphysic dimension called “tasavvuf”. As a result of religion-art relationship, Islam has influenced all art branches in Muslim communities. Because of this influence, classical Turkish poetry, originated from Arabic poetry and shaped mostly by Persian literature tradition, constituted its bases upon Islam and Islamic Sufism “tasavvuf”.

Depending basically upon Persian literature and its religious perspective in the establishment period, classical Turkish poetry which maintained its existence for over six centuries had not only been shaped by religion but shaped equivalently religious perspective as well. Being developed in accordance with Islam in terms of its both devotional and mystic sides (tasavvuf), classical Turkish poetry created a two dimensional religious perspective in which these two opposite aspects always struggled with each other. Additionally, these two sides of the religion designed two characters and various symbols existing around them. One of these two characters was called “rind” (bohemia or vagabond) representing the mystic and also preferential side of Islam and the other one was called “zahid”(prayerful) embodying the devotional, apparent and in a sense undesirable side of the religion. On one side there is “rind” who always drinks wine, goes to meyhane (traditional pub) and lives for love and on the other side there is “zahid” who as a pious character always performs prayer, counts his beads, thinks heaven and intimidates people with hell.

Upon the doctrine of “vahdet-i vucud” or “vahdet al-vucud (uniqueness of being) developed by Ibn Arabi, perception of religion changed considerably. Thanks to the influence of Persian literature at first stage in Turkish literature especially Rumi and Yunus Emre handled the entity and being perception of Arabi in their poems. Hence, there occurred a more esoteric religion perspective different and in many ways opposite to classical Islamic theology.

## DISCUSSION

The best symbolic incident indicating the controversy between sufists and theologians has been the case of Mansur Al-Hallaj who was executed for his statement meaning “I am God”. By all means Hallaj was not crazy; on the contrary he was a well-educated intellectual philosopher and poet. His tragic death made him a symbol character for rinds and lovers in classical Turkish poetry.

Yunus has been one of the pioneer poets in Turkish literature. In his poems love is the basis of whole universe. In his many poems, Yunus indicates the importance and priority of love in human life. In terms of Islam, a Muslim should be in love with God and only then he could be a sincere worshipper.

İy ‘âşîkan iy ‘âşîkan ‘ışk mezhebi dîndür bana  
Gördi gözüm dost yüzünü yas kamu düğündür bana (Yunus, 2008: 29)

“Oh lovers, oh lovers! Love is my religion, because I saw the face of lover, sorrow is a festival for me”

In the couplet above Yunus says that his religion is love. He gives such an importance to love that he considers it as if it is his religious sect.

In terms of Islamic law, a statement like “my religion is love” causes abjuration of Islam. In Islam history there are many sufis who were killed or punished for their statements which were considered to be heretical. As indicated above, one of the most famous sufis being hung was Hallaj for his statement of “I am God”. Actually he meant that everything in this universe is nothing else than different reflections of God. In the words of Arabi “The creatures are in essence nothing else than God, but in their determined forms they are far from being the same as God.” (Izutsu, 1984: 89). There is an absolute being and all other being forms are shadows of that absolute being. This view is known in tasavvuf as “unity of being” (vahdet al-vucud) systemised by Ibn Arabi.

Rind represents esoteric side of religion and in a sense resembles perfect man (insan-ı kâmil) looking for the absolute truth in terms of tasavvuf whereas zahid represents exoteric side of Islam within the boundaries of apparent. Rind is the one who has internalized the spirit of religion and arranged his life according to this love-based belief system rather than a ritualistic understanding which has rather been a life style for zahid.

Faith in God of rind has a transcendental character. Belief in God of zahid on the other hand seems in some degree to have a spurious and insincere feature.

The ultimate aim of rind is God or reaching, unifying and becoming integrated with God. In this process the main factor which realizes this unification is love, a divine love. Contrarily zahid worships God for both entering heaven and being saved from hell.

The main factor in the conflict between rind and zahid is the concept of love. As originated from divinity, love constitutes the perspective of rind about everything related to God, being and universe. According to zahid on the contrary love is something humanistic and in a sense evil rather than a celestial phenomenon. Poets of classical Turkish poetry present their perception of love phenomenon from the viewpoint of rind and criticize zahid for his ignorance about love such that love is claimed most of the time to be a matter of science

which cannot be learned in madrasah but only by practicing in person. As in many other belief systems in Islam also there is a distinction of esoteric and exoteric sciences and love is the subject of esoteric sciences which can only be achieved by revelation. If a school should be recommended for a love education, it can only be a tekke (dervish lodge).

Fakîh-i medrese ma'zûrdur inkâr-ı ışk itse  
Yok özge ilmîne inkârımız bu ilme câhildür (Fuzuli, 2012: 229)

“Canonist of madrasah (school Muslim theological) is excused if he denies love, we don't dispute his different kinds of knowledge but he is ignorant of this knowledge (love)”

In this couplet, knowledge of a canonist who has a remarkable scientific background as a well educated person and a madrasah instructor has been discussed and concluded that he has no any faintest idea about love. The reason of such a conclusion is the nature of love itself. Love can only be known or learnt by experience, in other words knowledge of love is experiential rather than learned knowledge.

Görme ey zâhid günâhum çoklugın şol 'âlemi  
Magfîret deryâsına gark eyleyen Gaffârı gör (Bâkî, 2015: 144)

“Oh Zahid, do not take notice the multitude of my sins, consider Forgiver God who overwhelms this universe with forgiveness sea.”

In Islam, mercy of God is believed to be endless and this gives Muslims hope for forgiveness of their sins. This hope in a way makes people behave more comfortable and maybe a little irresponsible in their acts. In the couplet, zahid is the interlocutor who lives his life with the expectation of heaven and the fear of hell. In fact there is no fear for one who believes and loves God sincerely because God tends to forgive all servants who have repentance for their sins.

Şi'r-i Bâkîye kulak tutmasa zâhid ne 'aceb  
Söz güherdür ne bilür kadrini nâ-dân güherüñ (Bâkî, 2015: 271)

“Is it weird if Zahid dont lend an ear to poem of Baki, word is jewel but ignorant ones cannot appreciate the value of jewel”

Zahid seems not only a negative figure for his religious attitude but he is also disparaged for his ignorance about the all areas of life. The poet compares his poem to jewel and claims that zahid cannot appreciate its value. This reality indicates the perspective about the situation of zahid in classical Turkish poetry.

Mescidde riyâ-pîşeler itsün ko riyâyı  
Mey-hâneye gel kim ne riyâ var ne mürâyı (Yahya, 2001: 460)

“Let hypocrites practise hypocrisy in mosque, come to meyhane (traditional pub) since there is neither hypocrisy nor hypocrite”

This couplet summarizes the religion perception of Turkish poetic mentality in symbolic terms. In fact the poet, Yahya was a shaiikh al-Islam (the chief religious official in the Ottoman Empire) and his words said in the couplet seem to have apostatic features. The

couplet clearly denigrates the mosque which is the symbol of prayer and in general Islam religion whereas it praises “meyhane” and regulars of it although it is forbidden according to Islamic law. Yahya was blamed severely by some religious people in his time for his this kind of verses. However as a sheikh al-Islam he had already known the realities, rules and features of Islam very well and the aim in such a discourse was to make people understand the essence of Islam. Not only Yahya but most of the poets in Ottoman era tried to construct a religious perception based on sincerity in all attitudes and behaviours rather than a ritualistic way of life full of ostentation and arrogance.

Niçün terk eylesün mey-hâne küncin rind-i mey-hâre  
Ne zâhiddür ne râhib neylesün ol mescid ü deyri (Yahya, 2001: 445)

“Why should rind leave meyhane (traditional pub), he is neither zahid nor priest so he doesnt need mosque or church”

In Turkish poetry, when it is talked about rind, there are the subjects either related to love or drinking wine. As a drinking place “meyhane” is the hangout for rind. From this point, rind does not go mosque or church since he is neither a zahid nor a priest. That doesn’t mean that rind is an irreligious person. The perception of rind related to religion is aside from the usual religious understanding. He sees God not as an authority to be feared and obeyed but rather he is connected to God with a celestial love.

‘Âşika baş agrıdup ‘arz itme nâsîh cenneti  
Leblerin sorduk nigârün âb-ı kevserden lezîz (Mihri, 2018: 59)

“Admonisher! do not offer heaven by pothering the lover, we inquired the lips of the beloved, (learned that) they are delicious than kevser (the holy water of paradise)”

For a lover, his beloved is precious than everything. In religious based Turkish poetry beloved one is God although as in the couplet above seems to be a human (and in general a woman). All the aspects related to beloved, in fact symbolises the different features of God as the absolute being. The couplet points out that one should demand for God in person rather than the blessings of heaven.

Bırak riyâ revîşin merd odur ki âlemde  
Küşâde-meşreb ola rind ola kalender ola (Okçu, 1993: 821)

“Abandon duplicity since (virtuous) man is one who is good nature, rind and carefree”

From the beginning era of classical Turkish poetry to the end, the position of rind and zahid has not changed at all. Galib who is accepted as the final master poets of classical Turkish poetry maintains the traditional perspective towards rind and zahid. In the couplet above Galib indicates the evilness of duplicity which is attributed to zahid and he recommends being a carefree rind who has sincere in his all acts.

Deyr-i cihânda bir sanem-i şîve-kâr ile  
Zünnâr-bend-i ‘ışk olalı hâlümüz harâb (Nâ’ilî, 2019: 284)

“We are in great distress since wearing a cincture for falling in love with a coquettish idol (beloved) in monastery of universe”

The statement expressed in the couplet has heretical aspects. There are symbols belonging to Christianity like “deyr” (church or manastery), “zünnar” (cincture) and besides there is also the term “sanem” (idol) recalling paganism. Those non-religious concepts, especially the ones related to Christianity make reference to Sheikh San’an.

Sheikh San’an was a Muslim sheikh who had converted to Christianity after falling in love with a Christian girl. The main point in the story of San’an is the sincerity in love. In other words, the story implies the fact that as far as a real love is concerned, one should abdicate from his religious belief. Actually, tergiversation in the story is a kind of purification from insincerity, formalism, biases of religion rather than the religion itself for the sake of beloved as a devotion indicator. Classical Turkish poets used San’an and the symbols of the story as their evaluations on love and lover.

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### **CONCLUSION**

As can be seen in the example couplets from different ages and different poets, religious perception of Islam Sufism “tasavvuf” and classical Turkish poetry which is based highly on it has been quite different and even dissimilar with classical doctrine of Islam. Hence classical Turkish poetry depending upon a mystic Islam understanding has constructed a religious model having two dimension represented by two character types.

These two opposite characters and their moods about philosophy of life within poetry have determined to a degree the religious perspectives of people in their real lives with time. With a softer and carefree Muslim type represented by rind, poets have emphasized the essence of religion and they have constructed a God-servant relation based on love. By doing this zahid has been presented to represent the opposite and undesired Muslim type. Actually zahid has ideal behaviours as a worshipper by performing prayer, fasting, counting his beads etc. in appearance. However, he is not considered to do all these worshipping consciously and sincerely. And by making comparisons among these two types, poets have aimed to demonstrate the convenient Islamic philosophy.

The important point of the using such a being doctrine basically tied to a divine love is that by art and literature one can see the essence of Islam and comprehend its love-based structure.

The negative image of religion is mostly based on the exoterical or formal practices observed in Islam communities. Actually, religion arranges both this world life and hereafter life of people. The expectation of God from servants is to be a sincere worshipper. Being a sincere worshipper has been commented by people in two ways as explained above. Some believed to be a sincere servant by loving God as a beloved whereas some saw God as an authority setting strict rules for his servants.

Islam is the religion of toleration, sympathy, and love. Throughout the history, artists and in particular poets in Islam societies have tried to reveal the essence of Islam from its esoteric dimension constructed by love.



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**AN EXAMINATION OF NURI BILGE CEYLAN'S FILM  
"KIŞ UYKUSU"  
WITHIN THE FRAMEWORK OF HERBERT ZETTL'S  
AESTHETIC ELEMENTS OF CINEMA**

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**ABSTRACT**

Cinema is the most effective and aesthetic form of self-expression. Cinema has shown a continuous development process in line with technology. It gained a completely different dimension with the fact that it only contains the sound element and in time this deficiency was eliminated and included in the cinema. In addition, the aesthetic elements existing in cinema have caused the concept of "cinema aesthetics", an area that appeals to both the eye and the ear, to turn into a more original narrative form. Herbert Zettl, who adapted this concept through visual media, states that there are 6 different aesthetic elements in cinema: color, sound, light, space, time-movement and visualization. In the phenomenon of cinema, the color element strengthens the visual expression; the sound element strengthens the meaning in the image; light element in the formation of visual perception; area element, in the evaluation of spatial relations; time-movement element in decoupling from other two-dimensional images; visualization element, on the other hand, are very effective elements in producing meaning. In this sense, "Kış Uykusu" (2014), directed by Nuri Bilge Ceylan will be evaluated in order to examine the aesthetic elements specified in the cinema. This film is intended to show a reflection of the lighting techniques used in the paintings in the baroque period, the relationship of lighting with the scenario and dramatic structure, the state of hosting visually rich scenes, the features it has in order to facilitate the perception of space and objects and to accelerate the transmission of the desired message, and the ways of strengthening the areas according to the lighting style used.

**Keywords:** Aesthetic, Film, Cinema, Kış Uykusu, Nuri Bilge Ceylan

## BILL GUARANTEE OF THE BILLS OF EXCHANGE

### KAMBIYO SENETLERİNDE AVAL

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#### ÖZET

Ticari hayatta teminatın önemi herkesin malumudur. Alacaklının, alacağını tahsil edeceğine dair olan inancı ne oranda güçlüyse, ticari hayatın aktörlerinin kredi temin etmeleri de o denli kolay olacaktır. Zira, teminatlar, temin ettikleri alacağın zamanı geldiğinde tahsil edileceğine olan güveni artırmakta ve böylece borçlunun krediye daha kolay erişmesini sağlamaktadır. Hukukumuzda teminatlar, aynı ve şahsi teminatlar olmak üzere iki kısma ayrılarak incelenmektedir. Bu ayrımında, kefalet gibi, aval de bir şahsi teminat olarak karşımıza çıkmaktadır. Aval, kambiyo senetlerinde ödemeyi kısmen veya tamamen teminat altına alan kambiyo senetlerine özgü bir şahsi teminat türüdür. Niteliği itibariyle, kefalete benzer yanları bulunsa da hüküm ve sonuçları itibariyle kefaletten ayrılmaktadır. Aval kurumu sayesinde kambiyo senetlerine olan güven artmakta ve bu da senede tedavül kolaylığı sağlamaktadır.

Avale ilişkin hükümler esas itibariyle Türk Ticaret Kanunu'nun m. 700 – 702' de düzenlenmiştir. Aval verilmesi ile, kambiyo ilişkisine lehine aval verilenle aynı derecede sorumlu yeni bir borçlu dahil olmaktadır. Avalist, kim için taahhüt altına girmişse senet alacaklılarına karşı aynen onun gibi sorumlu olmaktadır. Bu nedenle lehine aval verilen kimsenin senet alacaklısına karşı ileri sürebileceği bütün defileri avalin de ileri sürmesi gerekir. Diğer yandan, aval olduğu kimsenin taahhüdü geçersiz olsa dahi avalistin senet alacaklılarına karşı sorumluluğu devam edecektir. Örneğin asıl borçlunun taahhüdü ehliyetsizlik, imzanın zorla attırılmış olması veya imzanın sahte olması gibi sebeplerle geçersiz olması avalin sorumluluğunu ortadan kaldırmayacaktır. Ayrıca, avalistin sorumluluğu asıl borcun var olmasına ya da geçerliliğine de bağlı değildir. Aval beyanı, bağımsız, tek taraflı ve soyut bir borç yaratır. Avalist, düzenleyen lehine aval verilmiş olsa dahi, başvuru borçlusu niteliğindedir. Dolayısıyla senet alacaklısının avaliste başvurabilmesi için başvuru hakkının doğmuş olması şarttır.

Bu çalışmada kambiyo senetleri bakımından aval kurumu incelenmiş, avalin hukuki niteliği ve şahsi teminatlardan birisi olan kefaletle benzer ve farklı yönleri hususunda açıklamalar yapılmış, doktrinadaki tartışmalara yer verilmiş, mevzuat ve Yargıtay kararları ışığında görüş ve önerilerde bulunulmuştur.

**Anahtar Kelimeler:** Kambiyo Senetleri, Aval, Kefalet.

#### Abstract

The importance of collateral in commercial life is known to everyone. The stronger the creditor's belief that he will collect his receivables, the easier it will be for the actors of commercial life to obtain credit. Because, the guarantees increase the confidence that the receivables they provide will be collected when the time comes and thus enable the borrower to access the loan more easily. In our law, guarantees are examined by dividing into two parts as real and personal guarantees. In this distinction, like suretyship, bill of exchange appears

as a personal guarantee. Aval (bill guarantee) is a type of personal guarantee specific to bills of exchange that partially or fully guarantees payment in bills of exchange. Although it has similar aspects to surety in terms of its nature, it differs from surety in terms of its terms and consequences. Thanks to the aval institution, the confidence in the bills of exchange increases and this provides ease of circulation in the year.

Provisions related to the aval are essentially in the article of the Turkish Commercial Code. It was arranged in 700 – 702. With the issuance of the bill, a new debtor is included in the foreign exchange relationship with the same responsibility as the one in whose favor the bill was given. The avalist is liable to the creditors of the promissory note just like him, for whom he has committed himself. For this reason, the person in favor of whom an aval is given must also put forward all the defenses that he can put forward against the creditor of the promissory note. On the other hand, even if the pledge of the available person is invalid, the avalist's responsibility towards the promissory note creditors will continue. For example, if the original debtor's commitment is invalid due to incompetence, forced signature or fake signature, it will not remove the responsibility of the bill. In addition, the responsibility of the avalist does not depend on the existence or validity of the original debt. The declaration of aval creates an independent, unilateral and intangible debt. Even if aval is given in favor of the issuer, the avalist is in the nature of the application debtor. Therefore, in order for the deed creditor to apply to the avalist, the right of application must have arisen.

In this study, the institution of aval has been examined in terms of bills of exchange, explanations were made about the legal nature of bill of exchange and its similar and different aspects with surety, which is one of the personal guarantees, discussions in the doctrine were given, opinions and suggestions were made in the light of the legislation and Supreme Court decisions.

**Keywords:** Bills of Exchange, Aval, Bail

### **AVAL KAVRAMI**

6102 sayılı Türk Ticaret Kanununda, avalin tanımına rastlamamaktayız. Avale ilişkin tanım şu şekilde yapılabilir: aval, kambiyo senetlerinde geçerli olan bir alacak hakkının senet hamiline kısmen veya tamamen ve kayıtsız ve şartsız olarak vadesinde ödeneceğini taahhüt eden ve kambiyo senetlerindeki borçlulardan her hangi birinin yanında yer alan soyut ve kişisel bir teminattır<sup>1</sup>. Aval veren kimseye “avalist”, lehine aval verilen kimseye ise “avalat” adı verilmektedir.

Tanıma göre, avalden bahsedebilmek için kambiyo senetlerinden doğan bir alacağın vadesinde ödeneceğine dair teminat verilmesi gerekir. Teminat, her hangi bir senet borçlusu lehine verilebilir. Ayrıca, aval, senet borçlusu olmayan üçüncü bir kişi tarafından verilebileceği gibi, poliçede imzası bulunan bir kişi tarafından da verilebilir (TTK 700/2).

Aval, aval olunan kimsenin sorumlu olduğu tüm bedeli teminat altına alabileceği gibi, kısmen de teminat altına alınabilir. Nitekim, TTK 700/1’de yer alan, “Poliçede bedelin ödenmesi, aval suretiyle tamamen veya kısmen teminat altına alınabilir” ifadesi ile vücut bulan hükümde bu husus açıkça ifade edilmiştir. Ancak, kısmi aval verilmek isteniyorsa, bunun açıkça aval şerhinde belirtilmesi gerekir; aksi halde avalin borcun tamamını temin ettiği sonucu ortaya çıkacaktır.

Aval kurumu kambiyo senetlerine has bir teminat türü olarak karşımıza çıkmaktadır. Düzenleniş biçimi bakımından avale ilişkin hükümlerin 6102 sayılı Türk Ticaret Kanunu’nda

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<sup>1</sup> Benzer tanım için bkz. DOMANIÇ, Hayri, Kıymetli Evrak Hukuku ve Uygulaması (TTK. Şerhi-IV), İstanbul 1990, s. 214

poliçeye ilişkin hükümler içerisinde (TTK 700-702) düzenlenmiş olduğunu görüyoruz. Bu hükümler, diğer kambiyo senetleri için de uygulama alanı bulacaktır<sup>2</sup>.

Aval kurumu, kambiyo senetlerinde borcun teminat altına alınmasını sağlayarak, senet alacaklısına karşı ek bir teminat sağlamaktadır. Aval kurumu, kambiyo senetlerine olan güveni artıran bir işlem olarak karşımıza çıkmaktadır. Bu yönüyle, kambiyo senetlerinin daha kolay tedavül etmesini sağlar<sup>3</sup>.

### **AVALİN ŞEKLİ**

Aval şerhi, kambiyo senedi üzerinde yazılabileceği gibi, alonj üzerine de yazılabilir (TTK 700/1). Aval şerhi, “aval içindir” veya bununla eş anlamlı başka bir ibareyle yapılması ve aval veren kimse tarafından bu beyanın imzalanması suretiyle gerçekleştirilir (TTK 700/2) . Bu anlamda, aval beyanının “avalım”, “kefilim”, “aval içindir”, “kefil içindir”, “teminat içindir” ifadeleri kullanılarak da yapılabileceği sonucu çıkmaktadır. Uygulamada, matbu senetler üzerinde senedin önyüzünde kefil adı altında kısım olduğu ve senet alacaklılarının “kefil” adı altında senet borçlusu dışında bir yada iki kişiden daha imza aldığı görülmektedir. Burada, her ne kadar kefil adı altında imza atılmış olsa da, bu beyanın aval beyanı olduğunu ve kefalet sözleşmesine ilişkin hükümlere değil, 6102 sayılı Türk Ticaret Kanununun avale ilişkin hükümlerine tabi olduğunu ifade etmek gerekir.

Kambiyo senetlerinde düzenleyenin, (poliçede muhatabın) imzası hariç olmak üzere kambiyo senetlerinin ön yüzüne atılan her imza aval şerhi sayılır (TTK 700/3). Aval şerhi, senedin arka yüzüne de yapılabilir. Ancak, senedin arka yüzüne yapılacak aval şerhi için bu beyanın aval için verildiği açıkça belli olmalıdır. Aksi halde, beyaz ciroyla karışıklığa yol açabilir.

Avalin kim lehine verildiği açıkça belli olması gerekir. Aval şerhi, kim için verildiği belirtilmemişse, düzenleyen lehine verilmiş sayılır (TTK 700/4).

### **AVALİN HUKUKİ NİTELİĞİ**

Aval, niteliği itibariyle, kambiyo senetlerine özgü bir şahsi teminat olarak karşımıza çıkmaktadır. Bu yönüyle, kefalet sözleşmesine çok benzemektedir<sup>4</sup>. Ancak aval kurumu hukuki niteliği itibariyle kefaletten oldukça farklı olup, hüküm ve sonuçları bakımından da farklı sonuçlar doğurmaktadır. Aval, kefalet sözleşmesi veya onun bir türü niteliğinde değildir<sup>5</sup>.

Aval, kambiyo senetlerinin üzerinde yazılan, soyut ve bağımsız bir kambiyo taahhüdü niteliğinde şahsi teminat sonucunu doğuran tek taraflı bir irade beyanıdır<sup>6</sup>. Buna göre aval, “tek taraflı bir hukuki işlem” niteliğini haiz olmakla birlikte, sözleşme niteliğinde değildir. Karşılıklı ve birbirine uygun irade beyanları aranmaz. Dolayısıyla, sözleşmelerin kurulması bakımından cari olan “öneri” ve “kabul” aşamaları aval kurumu için söz konusu olmayacaktır. Bunun dışında, avalin geçerli olması için lehine aval olunan kimsenin veya diğer senet borçluları veya alacaklılarının onayı, icazeti aranmamaktadır.

<sup>2</sup> Avale ilişkin hükümler, TTK 778/3 uyarınca bonolar, TTK 794 gereği de çekler hakkında uygulama alanı bulacaktır.

<sup>3</sup> Medeni hukukta kullanılan teminatların hiç birisinin avalin sağladığı tedavül kolaylığını sağlayamadığına ilişkin bkz. DEMİRKAPI, Ertan, Kambiyo Senetlerinin Aval Yoluyla Temini, İzmir 2005, s.5.

<sup>4</sup> Aval kurumu, “poliçe kefaleti” olarak da adlandırıldığına ilişkin bkz. ÖZTAN, Fırat, Kıymetli Evrak Hukuku, 2. Bası, Ankara 1997, s. 790-792.

<sup>5</sup> Kefaletle ilişkin hükümlerin kıyas yoluyla dahi olsa aval kurumuna uygulanamayacağına ilişkin bkz. REİSOĞLU, SEZA, Türk Kefalet Hukuku, Ankara 2013, s. 134.

<sup>6</sup> POROY, REHA/TEKİNALP, Ünal, Kıymetli Evrak Hukuku, 2018, s.220



Aval, aval olunan kimsenin taahhüdünden bağımsız olarak soyut bir borç doğurur. Bu nedenle aval kurumunun doğumu ve geçerliliği her hangi bir kabul beyanı aranmamıştır. Bu nedenle, aval olunan kimsenin taahhüdünde her hangi bir sakatlık meydana gelmesi, avalistin sorumluluğunu ortadan kaldırmaz. Nitekim bu husus TTK 702/2’de açıkça ifade edilmiştir: “Aval veren kişinin teminat altına aldığı borç, şekle ait noksandan başka bir sebepten dolayı batıl olsa da aval verenin taahhüdü geçerlidir”. Buna göre, ehliyetsizlik, sahte imza veya yetkisiz temsil gibi nedenlerle asıl borçlunun taahhüdü hükümsüz olsa dahi, avalistin sorumluluğu ortadan kalkmayacaktır.

### **KEFALET VE AVAL İLİŞKİSİ**

TBK 581 uyarınca kefalet sözleşmesi, “kefilin alacaklıya karşı, borçlunun borcunu ifa etmemesinin sonuçlarından kişisel olarak sorumlu olmayı üstlendiği sözleşme” olarak tanımlanmıştır. Dolayısıyla, kefalet, hukuki niteliği gereği sözleşmedir. Kişisel teminat niteliği taşıması gereği, bu yönüyle avale benzer bir kurum olarak karşımıza çıkmaktadır. Ancak, aval kefaletten farklıdır ve farklı hukuki sonuçlar doğurmaktadır.

### **Hukuki Niteliği Bakımından**

Her şeyden önce kefalet bir sözleşmedir. Bütün sözleşmelerde olduğu gibi, karşılıklı birbirine uygun irade beyanı gerektirir. Öneri ve kabul aşamaları vardır. Kefalet, borcun alacaklısı ve kefil olacak kimse arasında kurulur. Buna göre, kefalet iki taraflı bir hukuki işlemdir. Ancak, aval, tek taraflı bir hukuki işlem olup, doğumu ve geçerliliği bir başkasının onayına tabi değildir.

Kefalet hukuka aykırı olmayan her türlü borca ilişkin verilebilir. Borcun kaynağı, kefaletin verilebilmesi bakımından önem taşımaz. Dolayısıyla, bir sözleşmeden doğan borç kefalet ile teminat alınabilirken; haksız fiil veya sebepsiz zenginleşmeden doğan borçlar da kefalet ile teminat altına alınabilir. Ancak, aval sadece kambiyo senedinden doğan borca, yani kambiyo taahhüdüne ilişkin verilebilir. Nitekim aval, kambiyo senetlerinde senet bedelinin ödenmesini teminat altına alan bir kambiyo taahhüdü olarak karşımıza çıkar.

### **Şekil Bakımından**

Kefalet sözleşmesinin şekline ilişkin hüküm, TBK 583’de yer almaktadır. Anılan hükme göre, kefaletin geçerli olabilmesi için kefil olma iradesinin yazılı şekilde ifade edilmesi ve kefilin sorumluluğuna dair azami miktar ve tarihin belirtilmesi ve müteselsil kefalet söz konusu olduğunda müteselsil kefalet iradesinin el yazısı ile sözleşmede belirtilmesi gerekir. Aval olunan tarihin bulunması şart değildir. Aval olunan borcun miktarı belirtilebilir ve bu durum kısmi aval bakımından önem taşıyabilir. Ancak, aval olunan borcun miktarı belirtilmese dahi aval şerhi geçerli olacaktır. Bu halde, borcun tamamı için aval verilmiş sayılır.

Kefalet beyanı, sözleşme dışında ayrı bir kağıtta olması mümkündür. Avalde ise, aval şerhi kambiyo senedinin üzerine veya alonj üzerine yapılabilir. Senet dışında, yani senet veya alonj dışında, başka bir kağıt üzerinde aval şerhinin konulması mümkün değildir. Senetten ayrı bir kağıda, taraf iradesi “aval” olarak şekillenmiş olsa dahi, aval şerhi verilmesi mümkün değildir. Bu takdirde, aval kurumundan değil, olsa olsa, ortada bir sözleşme olması şartıyla, kefaletten söz edilebilir<sup>7</sup>.

### **Asıl Borca Bağlılık/ Bağımsızlık Bakımından**

<sup>7</sup> Bkz. Yargıtay 12. HD, 09/03/2017, E.2016/12589, K.2017/3485.

TBK 587 hükmüne göre kefalet sözleşmesi ancak ve ancak mevcut ve geçerli bir borca ilişkin verilebilir. Buradan hareketle, kefalet, kurulması ve geçerliliği asıl borca bağlı olan, fer'i nitelikte bir borç yaratır. Başka bir ifadeyle, kurulması ve geçerliliği asıl borcun varlığı ve geçerliliğine bağlıdır. Asıl borç her hangi bir nedenle geçersiz olursa, bu durum kefaletin de geçersiz olması sonucunu doğuracaktır. Keza, asıl borcun sona ermesi, kural olarak kefilin de sorumluluğunu sona erdirir.

Avalistin taahhüdü, kambiyo senedinden kaynaklanan bağımsız bir borç taahhüdüdür. Asıl borca bağlı değildir. İmzaların istiklali ilkesi (TTK 667), aval kurumu için de geçerlidir. Bu nedenle, asıl borçlunun ehliyetsizliği, imzasının sahteliği, zorla imza attırılması gibi nedenlerle asıl borçlunun taahhüdü geçersiz olsa dahi avalist, bu savunma imkanlarını ileri sürerek sorumluluğundan kurtulamayacaktır.

### **Sorumluluğun Niteliği Bakımından**

TBK 583 hükmü uyarınca “müteselsil kefil” ibaresinin el yazısı ile yazılması halinde müteselsil kefalet doğacaktır. Bunun dışında, kanundan kaynaklanan nedenlerle de, örneğin TTK 7, müteselsil kefalet doğabilecektir. Bunun haricinde, kefaletin adi kefalet niteliğinde olacağı kabul edilir.

Avalistin sorumluluğu, müteselsidir. Böylece, avalist, kambiyo senedinin ödenmemesinden diğer senet borçluları ile birlikte müteselsilen sorumludur. Hamil, senet borçlularından biri veya hepsine sıra ile bağlı olmaksızın başvurabilir (TTK 724).

Kefalet sözleşmesi, niteliği gereği fer'i olması nedeniyle, herşeyden önce asıl borcun mevcut ve geçerli olması şarttır. Bu anlamda, asıl borcun geçersiz olması, kefaleti de geçersiz kılacaktır. Bunun yanı sıra, kefaletin fer'i nitelikte olması nedeniyle asıl borcun doğması ve geçerliliğine ilişkin tüm def'ilerin alacaklıya karşı ileri sürülmesi mümkündür.

Avalistin sorumluluğu, lehine aval verdiği kimsenin sorumluluğu gibidir. Nitekim, TTK 702/1 hükmünde geçen “Aval veren kişi, kimin için taahhüt altına girmişse aynen onun gibi sorumlu olur” ifadesi ile bu husus kanunda açıkça ifade edilmiş bulunmaktadır. Bu anlamda, lehine aval verilen kimsenin sorumlu olduğu anda, avalistin de aynı düzeyde sorumluluğu doğacaktır. Avalist, lehine aval verdiği kimsenin sahip olduğu kişisel defileri senet alacaklısına karşı ileri süremeyecektir. Ancak, bizatihi kendisi şayet senet alacaklısına karşı sahip olduğu defilere sahipse, bunları ileri sürme imkanı bulunmaktadır. Örneğin, senet alacaklısı nezdinde kendisinin alacaklı olduğu bir borç ilişkisi varsa, takas defisini ileri sürebilecektir.

### **Halefiyet ve Rücu Bakımından**

TBK m. 596/1 hükmü uyarınca kefalette, kefil alacaklıya ödemede bulunduğu nispette alacaklının haklarına halef olur. Halefiyetin sonucu olarak, kefil, alacaklının haklarına halef olarak müracaat hakkını kullanabilir.

Avalde ise, borcu ifa eden avalistin kambiyo hukukundan kaynaklanan bağımsız bir rücu hakkı doğar. Halefiyet, avalde söz konusu değildir<sup>8</sup>. Nitekim TTK 702/3 hükmüne göre: “Aval veren kişi, poliçe bedelini ödemediği takdirde, poliçeden dolayı lehine taahhüt altına girmiş olduğu kişiye ve ona, poliçe gereğince sorumlu olan kişilere karşı poliçeden doğan haklarını iktisap eder.”

### **AVALİST EVLİ İSE, EŞİNİN RIZASI ŞART MIDIR?**

Kefalet bakımından TBK 584/1 hükmü, evli kimselerin kefaletlerinin geçerli olması için eşin yazılı rızasını aramıştır: “Eşlerden biri mahkemece verilmiş bir ayrılık kararı

<sup>8</sup> REİSOĞLU, a.g.e., s. 136

olmadıkça veya yasal olarak ayrı yaşama hakkı doğmadıkça, ancak diğerinin yazılı rızasıyla kefil olabilir; bu rızanın sözleşmenin kurulmasından önce ya da en geç kurulması anında verilmiş olması şarttır”.

TBK 603 hükmü de eşin rızasına ilişkin bu düzenlemenin diğer kişisel teminatlara da uygulanacağını vurgulamıştır: “Kefaletin şekline, kefil olma ehliyetine ve eşin rızasına ilişkin hükümler, gerçek kişilerce, kişisel güvence verilmesine ilişkin olarak başka ad altında yapılan diğer sözleşmelere de uygulanır”. Hükmün gerekçesinde ise, bu hüküm ile kefil koruyucu hükümlerden kurtulmak için başka ad altında yapılan sözleşmeler yapılmasının önüne geçmeyi amaçlandığı ifade edilmiştir.

Aval de hukuki niteliği gereği şahsi teminat niteliğinde olduğu için, TBK 603 hükmünün kapsamında yer alıp almayacağı; bu anlamda avalin geçerli olması için eşin rızasının aranıp aranmayacağı tartışılabilir.

Her şeyden önce, TBK 604 hükmünde “...diğer sözleşmelere de uygulanır...” ifadesi geçmektedir. Ancak, aval niteliği itibarıyla bir sözleşme değil tek taraflı hukuki işlem niteliğindedir.

TBK 604 hükmü, gerekçesinde de ifade edildiği üzere, kefil koruyucu bir düzenleme getirmiştir. Ancak, aval kurumu ise kamu güvenliği ve tedavül kabiliyeti gibi kambyo senetlerine özgü bir takım menfaatleri korumaktadır. Aval kurumu, kambyo senetlerinde cari olan bir taahhüt biçimi olduğu için ticaret hukukunda cari olan hız ve güven ilkeleri aval kurumu için de geçerli olacaktır. Bu anlamda, aval için eşin rızasını aramak kambyo senetlerine duyulan güveni olumsuz etkileyecektir. Ayrıca, kambyo senedini düzenlerken veya ciro ederken eşin rızası aranmazken, aynı nitelikte sorumluluğa yol açacak aval için eşin rızasını aramak uygulama bakımından çelişki yaratacaktır. Yargıtay Hukuk Genel Kurulunun verdiği içtihadı birleştirme kararlarında da aval bakımından, eşin rızasının aranmayacağı vurgulanmıştır<sup>9</sup>.

## SONUÇ

Aval, kambyo senetlerinde geçerli olan bir alacak hakkının senet hamiline kısmen veya tamamen ve kayıtsız ve şartsız olarak vadesinde ödeneceğini taahhüt eden ve kambyo senetlerindeki borçlulardan her hangi birinin yanında yer alan soyut ve kişisel bir teminattır. Aval kurumu kambyo senetlerine has bir teminat türü olarak karşımıza çıkmaktadır. Düzenleniş biçimi bakımından avale ilişkin hükümlerin 6102 sayılı Türk Ticaret Kanunu’nda poliçeye ilişkin hükümler içerisinde (TTK 700-702) düzenlenmiş olduğunu görüyoruz. Bu hükümler, diğer kambyo senetleri için de uygulama alanı bulacaktır.

Aval, kambyo senetlerinin üzerinde yazılan, soyut ve bağımsız bir kambyo taahhüdü niteliğinde şahsi teminat sonucunu doğuran tek taraflı bir irade beyanıdır. Aval, niteliği itibarıyla, kambyo senetlerine özgü bir şahsi teminat olarak karşımıza çıkmaktadır. Bu yönüyle, kefalet sözleşmesine çok benzemektedir. Ancak aval kurumu hukuki niteliği itibarıyla kefaletten oldukça farklı olup, hüküm ve sonuçları bakımından da farklı sonuçlar doğurmaktadır. Aval, kefalet sözleşmesi veya onun bir türü niteliğinde değildir.

Kefalet bakımından, evli bir kimsenin kefil olabilmesi ancak mahkemece verilmiş bir ayrılık kararı olmadıkça veya yasal olarak ayrı yaşama hakkı doğmadıkça, ancak diğerinin yazılı rızasıyla mümkündür (TBK 584/1). Bu hüküm, TBK 603 gereği gerçek kişilerin kişisel güvence verilmesine dair başka ad altında yapılan diğer sözleşmelere de uygulama alanı bulacaktır. Aval de hukuki niteliği gereği şahsi teminat niteliğinde olduğu için, TBK 603 hükmünün kapsamında yer alıp almayacağı; bu anlamda avalin geçerli olması için eşin

<sup>9</sup> YHGK, T.20.04.2018, E.2017/4, K. 2018/5.

rızasının aranıp aranmayacağı tartışılabilir. Aval kurumu, kambiyo senetlerinde cari olan bir taahhüt biçimi olduğu için ticaret hukukunda cari olan hız ve güven ilkeleri aval kurumu için de geçerli olacaktır. Bu anlamda, aval için eşin rızasını aramak kambiyo senetlerine duyulan güveni olumsuz etkileyecektir. Ayrıca, kambiyo senedini düzenlerken veya ciro ederken eşin rızası aranmazken, aynı nitelikte sorumluluğa yol açacak aval için eşin rızasını aramak uygulama bakımından çelişki yaratacaktır. Bu nedenle, avalistin taahhüdü için eşin rızasının aranmaması gerektiği söylenebilecektir.

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## ANALYSIS OF HIGHER EDUCATION IN TURKEY FROM THE STRATEGIC MANAGEMENT PERSPECTIVE AND APPLICATION OF IBN HALDUN UNIVERSITY

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### Abstract

The aim of this study is to examine and assess Ibn Haldun University, which aims to be in a different place in the higher education area by having distinctive targets based on the social dynamics of Turkey in today's rapidly transforming and changing world, with regard to Strategic Management Factors. Based on this, we will assess Ibn Haldun University, which finds insufficient to address education completely with the acceptance of the West, tries to establish a system with its own values within the scope of the strategic management model. Each society has sub-systems based on their systems. The systems such as education, economy and law are the subsystems which should be shaped based on the dynamics of a society. Trying to apply these areas by merely copying from other societies will cause great problems for that society. At this point, it is important to examine and assess the educational approach adopted by IHU is important in terms of analyzing university education systems in Turkey. Also, within the scope of this study, it is aimed that the comparison of the educational system applied in Ibn Haldun University with the other universities operating in Turkey becomes an eye-opening point of view in terms of the development of the higher education system in Turkey. In the study, SWOT and blue ocean strategies, which are among the Strategic Management applications, were used. The analyses made were discussed within the scope of IHU educational activities and views were presented on the activity areas of Turkey Higher Education Institutions based on the results obtained. Abovementioned Strategic Management applications were applied at IHU under different topics and they contributed to the assessment.

**Key Words:** Higher Education, Strategic Management, SWOT Analysis, Blue Ocean Strategy, Civilisation

### 1. INTRODUCTION AND LITERATURE REVIEW

Education has been the most important agenda of humanity for centuries with its various forms. The reason for this importance is the potential of education to change the phenomenon and events that it addresses. Education, without doubt, has become the most important factor shaping the present and future of people, societies and states.

The enlightenment philosophers who have stood behind most of the institutions, ideas and trends which are presented for the acceptance of humanity today with the title of "modern" and laid the foundations of them, human type who determines his/her own fate by using his/her own intelligence independent from all kinds of authorities and who live a good, virtuous life. According to the enlightenment philosophers, people should be equipped with correct information to get rid of not being mature, that is to use their intellect and education will provide this (Özgözlü, 2020). Almost all of the thinkers who have shaped the West of today, which dominates the world in both economic and scientific terms, were fascinated by



an education fetishism and wrote works demonstrating their power with the importance of education and emphasizing that the lives of students should be completely controlled pedagogically (Zabcı, 2016). Similarly, Islamic civilization has also given great importance to education and science from its early periods. "Read and Think" are among the most important orders given to humanity by the holy book Quran. The prophet of Islam has said "Seek knowledge even if you have to go as far as China, for seeking knowledge is a duty on every Muslim." (Beyhaki, 1410). Accordingly, scientists have been raised in many Islamic regions such as Andalusia and Buhara in every field of the era, while the west was under darkness and lighted the way for humanity and have had an important role by being a bridge between the West and Greek philosophy after the dark age of the west. (<https://islamansiklopedisi.org.tr/endulus>)

However, the changing conditions of the world unlinked the connections between the Muslim World and science and this has made science a product to be imported to these geographies. Then the world has reached a stage which has not been experienced before, and all the societies of the world have started armed fights to establish superiority over others and experienced World Wars. Muslim World, which took its share in a very painful way from these wars and had bad days in economic terms, found the chance to behave itself towards the beginning of the 21st century. After the world wars, a rapid transformation occurred in the social, political and financial fields in some countries, including Turkey and except the Western World. These countries faced important changes in 20-30 years and struggled between protecting their traditions established by religious references from their past and modern world arguments -liberal democracy in political life, capitalism in the economic life and individualism in the social life- shaped and dictated by the Western World. Therefore, they neither could maintain their bonds with their past nor they could wholly adopt the rules and principles of modernity envisioned by the West. In a sense, education and the point of view for education have had, or it should have, a vital importance in terms of existence and sovereignty struggle for the geographies having difficulties in determining a clear civilization heritage that they will present to the future generations. Education demonstrates its effects mostly by concrete outputs and it sometimes demonstrates them in an abstract way. For example, the national income calculations were reviewed by a more realistic approach in the period after World War II and it was revealed that national income increase demonstrated an additional increase share which was not possible to be explained by the increase in the production factors. It was understood that this situation was caused directly by the increase in the education level. (Mosino:2002, 3) When viewed from the point mentioned in the assessment of Mosino, education is the basic and most important dynamic of a prosperous society in terms of both economic and other social gains.

It doesn't seem possible that the education-related problems of the societies, especially the ones which have submitted to the West in a sense and suffer from the hegemony of the West by force or unconsciously, can be solved within the pace of life. The way to be followed for education will be a target that will be presented as a result of a serious and planned struggle, which is with strategy. Within this sense, the negative perceptions should be changed and fresh and independent ideas should be formed in minds. Higher education, in which human life is shaped to a great extent, is a very important threshold for this change. New and independent ideas and the individuals who know their essence, are in an endeavor of shaping their future towards this direction can only arouse in the educational institutions that have launched forth with this target. Otherwise, with a perspective of "it was ever so", without any awareness and difference, it is not possible that societies can reflect their essence.

It is certain that a society which has a rooted civilization like Islam civilization, has demonstrated the skill of carrying the humanity around for centuries, used the science and development also for the sake of other societies of the world, has developed a style of

behavior, without being selfish, towards the other societies with a reference of a holy authority while managing and guiding humanity and define itself as Muslim in terms of belonging, is the successor of an ocean of science from Buhara to Cordoba will not leave education to the norms of the West which views science by a routinized, pozitivist point of view.

In our study, we will assess Ibn Haldun University, which finds insufficient to address education completely with the acceptance of the West, tries to establish a system with its own values within the scope of the strategic management model. Each society has sub-systems based on their systems. The systems such as education, economy and law are the subsystems which should be shaped based on the dynamics of a society. Trying to apply these areas by merely copying from other societies will cause great problems for that society. At this point, it is important to examine and assess the educational approach adopted by IHU is important in terms of analyzing university education systems in Turkey. Also, within the scope of this study, it is aimed that the comparison of the educational system applied in Ibn Haldun University with the other universities operating in Turkey becomes an eye-opening point of view in terms of the development of the higher education system in Turkey.

## **2. SITUATION ANALYSIS**

All the operating organizations should be managed. Rapidly developing and changing conditions of the world led the word 'strategy' to be included in the management area. That organizations use "Strategy" in their management approaches to maintain their existence and reach their targets have become an essential approach. Strategic Management is a Management Sciences field demonstrating the road map to reach the target. Strategy in management science is used with the meaning of "the ways to be followed by an organization to reach its targets". The strategic actions performed by businesses to be distinct from their competitors and come to the forefront in competition have resulted in the formation of a discipline firstly named as Strategic Planning and then Strategic Management. (Aktaş, 2019) Strategic management which has become popular in the American schools in the 1960s has been discussed mostly as business policies. Today, strategic management, as we know it, has taken its roots in theoretical and application areas from the studies of academicians, businessmen and consultants of the 1960s and 1970s (Üsdiken and Çetin, 2001, p.119). It was named as Business Policy until the 1980s and then named as 'Strategic Management' by the suggestion of Schendel and Hofer (Eryılmaz, 2016).

With Strategic Management, the inner and outer environment of an organization is discussed comprehensively and, firstly, the weaknesses and strengths of the organization within itself are determined by the analyses made. Then, the opportunities and threats out of the organization are determined by the analyses made and strategic actions are established to have the organization reach the goals it has planned. The above mentioned analysis technique is the SWOT analysis. SWOT analysis is used as a situation analysis. SWOT analysis is also an analysis technique used to determine and estimate the future situation of an organization. According to this second meaning, SWOT analysis is a future situation analysis. (Eroğlu, E. 2009:11.ünite s.3) In our study, the first of the two analysis techniques we applied in Ibn Haldun University is SWOT analysis. We discussed the performance of IHU from its establishment to today by SWOT analysis and we assessed the decisions of the university according to this analysis and also according to unique approaches. In SWOT analysis, the inner and outer situations of an organization are assessed and the weaknesses and strengths for the inner situation and opportunities and threats for the outer situation are determined. To determine the current status in detail, SWOT analysis, which is among the most common types of analysis in this field, was used.

### **Strengths**

- A powerful management approach prioritizing academic development and supporting the use of technology,
- Devoted and solution oriented management personnel,
- Motivating mission, vision and values based on the values of the society,
- A science oriented, silent campus far from the city with a rich library capacity, wide working areas,
- An academic personnel studying at international level,
- An important potential for researchers with its research university identity,
- The number of academic personnel per student is at a high level, the students are qualified and devoted, there is a limited number of students and scholarship opportunities.

### **Weaknesses**

- Its organizational structure has not been completed yet, as it is a newly established university,
- Technical departments, medicine and such programs are not included in the university,
- The academic base of the university has not been shaped yet,
- The transportation opportunities to the campus is limited,
- The values for which the university try to raise awareness has not found a response yet,
- It operates in the social sciences field in which there are limited employment opportunities for graduates,

### **Opportunities**

- There is a need for qualified social scientists in the country,
- The target of being a research university in social sciences,
- The university operates in a centralized city, Istanbul, where its mission, vision and values can be actualized,
- The university adopts a socially comprehensive, comparative education model,
- It applies models alternative to single centered educational systems.

### **Threats**

- The university is far from the city center so this makes difficult for the students to attend classes,
- The success rating is high and the quota is limited so it is perceived as a marginal institution,
- The center of the social sciences is the West,
- The students are unaware of the targets determined as the "Values" by the university,
- Turkey is a developing country and the society is not interested in the academic and scientific studies at the desired level.

The scope and items of the SWOT analysis performed for IHU were prepared after reviewing the SWOT analyses performed for the higher education institutions and IHU Strategic Plan 2020-2025, opinions of the employees and students, observations and the mission, vision and values topics presented by IHU.

When the strengths of the university were reviewed, it is observed that the management and organization structure open to development, work approach compatible with technology and devoted working performance are the triggering factors for the university to reach its targets. Also, that academic personnel adopts an international visionary identity will make a great contribution to IHU for becoming a central research university. It is observed that the abundant number of academic personnel provides great convenience in accessing information and method learning. In addition, the campus and scholarship opportunities provided by the university play an incentive role for the hardworking researchers.

It is observed that the organizational structure is shaped in the direction according to the target of reaching the values such as "futuvvet (generosity, forgiveness, and bravery), independence, the target of being a research university, comparative education, global competition, open civilization". Considering that the above mentioned ideals are the efforts of getting strength from the dynamics of the society, IHU has presented an eye opening way in the higher education area. Because it is inevitable that a society, which has been the follower of the West in scientific terms for more than 2 centuries, needs the science to be produced with its civilization dynamics by showing up with the targets such as "Intellectual Independence, Open Civilization".

Together with its strengths, IHU also has weaknesses needing improvement as it is a newly established university. Universities are institutions providing employment for their graduates as well as being organizations producing science. Students attend universities with a job expectation. The social sciences fields, which have less employment opportunities for graduates compared to the technical departments such as engineering, medicine, pharmacy etc., may be mentioned to be observed as a disadvantage for IHU in the establishment and development stages. In addition, the factors such as that the campus is far away from the city center, high success ranking draw attention as compelling factors for a university. That the "values" ideals, which are addressed by Ibn Haldun University as awareness and included in the establishment purposes, are understood and adopted by the students needs time so this is considered to be the most important item among the weaknesses.

After this stage, we continue by evaluating the opportunities and threats which are the factors of the outer situation. Indeed, seeing that several centuries of Turkey and similar geographies have passed by following the West, needs a skill of awareness in this period. In the 21st century world, where the dynamics separating the nations have become quite nested,

Unfortunately, the West has become the center of science in the period of time we live in. This situation should not be considered as a jealous approach but an analysis. There is an education model in the base of the topics we include in the opportunities field in SWOT analysis, which IHU presents as “values” including the dynamics of Islam civilization in its base. Turkey needs scientists who are raised with its own social dynamics. This need may be defined as a disturbance of Muslims from the fact that many disasters such as oppression, crisis, poverty prevailing like a nightmare all over the world caused by the West and the resistance to it. The definition of “Open Civilization” included among the values of Ibn Haldun University in the IHU website is as follows: Open Civilization will enable the members of Islamic civilization to play a global role again and to pave the way for solutions to the problems of all humanity.

Since Ibn Haldun University moves in light of the belief that historical experience and scientific accumulation of Islamic civilization can inspire us, it continues its academic activities with the vision of “Open Civilization,” and presents, in front of youth, the ideal resurrection of our civilization as “red apple” or a vision of the future. To introduce the open civilization concept and its historical practices to the world; the first thing to do on this path is to create a civilization consciousness by recognizing our own civilization concept and theory, and then to give insight of world literacy taking into consideration the world’s accumulation of leading civilizations.” (<https://www.ihu.edu.tr/acik-medeniyet/>)

The effort of IHU to have Islam civilization gain a rich identity, as it was in the past, by addressing it, is praiseworthy. That this wish and effort steaming from the material tracks of this richness coming from the past, will lead an acquisition of a civilization beyond the target, will be understood when viewed from the point of sociology. The matter placed and explained beyond the richness of civilization may be explained as follows: We should not mix protecting some of our historical richness and the praising of Islam civilization into each other. The cultural richness in the past of Muslim societies is either the richness arising from shaping of material life just like the richness in the past of every society or it is the richness arising from the world perception of Muslims and their attitude towards the world which has not left any material trace. The first, that is the development presenting material existence, is not specific to Islam societies only and it is meaningless to make a comparison with the societies other than Islam societies. The second matter, that Muslims bring an interpretation to the existence of humanity on earth, is specific to Muslims only and it presents a superiority which cannot be reached by any society other than Islam societies (Özel, 1995). The identification of the values produced by the humans who have gained the mentioned superiority with a view of civilization will certainly be a top ideal for humanity.

The last stage to be assessed within the scope of SWOT analysis is the threats factor. That the organization structure of Ibn Haldun University is new causes weaknesses and as well as threats. Also, the negativities such as attending is difficult for the students of postgraduate programs such as Management as the campus is far away from the city center, the limited number of quota accepted with high success ranking are among the threats felt in the first place. The points which IHU locates itself on and differentiates it from the other universities are much more important factors as a threat factor. The risk of these positions are very high. It has a strategically high risk when one tries to express itself to its addresses with a mission, vision and values which have not been presented before.

When the indicators produced in SWOT analysis are assessed, the strategy which Ibn Haldun University should follow will be protecting and developing the strengths. These sides, which will keep IHU distinct and niche position, will contribute to decreasing the effects of the weaknesses and threats on the institution and turning the negativities within the process into advantage.



### 3. BLUE OCEAN STRATEGIES

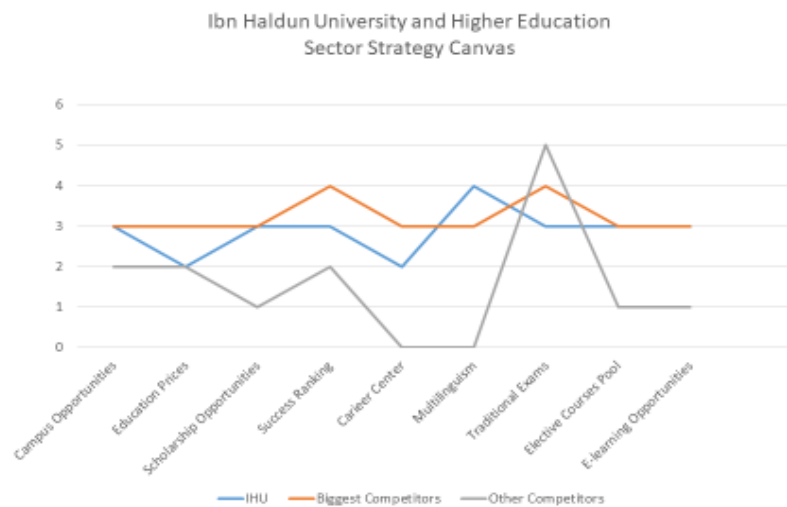
After the situation is determined in detail, in accordance with IHU's target of locating itself in a different area, blue ocean strategies were applied and the position where IHU wants to be at were evaluated. Blue Ocean Strategy suggested in the book named "Blue Ocean Strategy - How to Create Uncontested Market Space and Make the Competition Irrelevant" written by W. Chan Kim and Renee Mauborgne, academic members of France INSTEAD University, in 2004, is a strategy applied by many organizations but not named until these authors (Kim and Mauborgne, 2014; Becker, 2013; Lindic et al., 2012). Blue ocean strategy is a management strategy in which competition is left aside and the activities are focused on differentiation.

From this definition, blue ocean strategy is a management approach that can be used by all organizations. Ibn Haldun University, we assessed within the scope of our study, is among the most effective examples that applies this strategy in an educational institution.

In Turkey, the higher education institutions are encouraged to differentiate and focus on specialties as a mission. Thus, in the Bingöl University, dated June 2015, and Ordu University, dated August 2015, meetings of the Higher Education Council, it was stated that the current organizations in the newly established universities are insufficient in the social and human capital development and they should keep away from the monotype education models ignoring differences: "In the following period, within the scope of our country's targets, these universities are expected to become integrated with the city or region they are located in and develop the financial, social and human capital. To achieve this, there is a need that higher education institutions review their missions, prefer institutional difference and diversity by leaving monotype aside, focus on their strengths and that some of our universities come to the fore in some areas by keeping their holistic university structure" (The Council of Higher Education (YÖK) Office of Press and Public Relations Announcement, 06.08.2015).

Higher education institutions which produce information and contribute directly to the social, human and economic capital of the society have difficulties in producing differentiation due to the factors such as assimilation, standardization and simlizing of missions which are considered to be negative in higher education which are caused by globalization. Most of the universities have preferred to imitate the leading universities of the world regarding the science produced and didactic methods or copied their systems exactly. Blue ocean strategy is the management approach which should be applied in the higher education institutions which have lost their autonomous structures. Universities should prefer the blue ocean mentality in the higher education arena in which the competition area narrows gradually and the maneuver skill decreases (Selskab, 2017).

In the blue ocean strategies applied for IHU, the first step, sector strategy canvas was formed; the decrease, terminate, raise, create steps were followed and the IHU strategy canvas was prepared differentiating IHU from its competitors.



Graphic 1: Ibn Haldun University and Higher Education Sector Strategy Canvas

As seen in the strategy canvas the higher education sector was discussed with , Campus opportunities, Tuitions, Scholarship and other opportunities, Success ranking, Career center, Multilingualism, Traditional examination system, Elective course pool, E-learning opportunities.

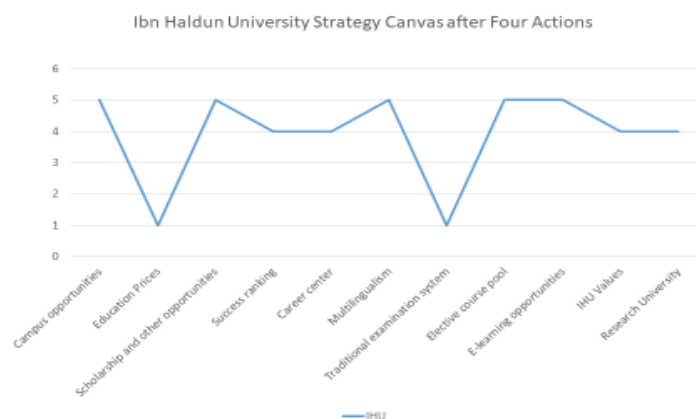
These criteria occurred by considering the fields included in the activities of universities."The greatest competitor" and "other competitors" seen in the sector canvas were scaled based on the universities operating in Turkey and they were located on the canvas.

After this point, the following step is the "four actions" process in the blue ocean application stage. After applying four actions process, it is aimed that the institution functionally reaches a level different from its competitors. Some of the factors accepted by the sectors without dispute will be terminated with this process, some factors will be reduced below their standards and some will be increased over their standards. The create stage is the most important and risky step of the four action process. In this stage, the dynamics which have not been seen in the sector before will be presented to the sector. The factors which have never been used by other organizations and the sector will experience for the first time have started to establish new values for the organization which uses the strategy and the organization sets sail towards the blue ocean.

Four actions were prepared as summarized in the table below. Based on the sector criteria, the decrease, terminate and increase processes were applied and then the last stage which is create step was applied. After completing the four action process, the new values and the new value curve shaped based on these values will be formed.

<b>Terminate</b>	<b>New value curve</b>	<b>Increase</b>
Tuitions		Scholarship and other opportunities
		Campus opportunities
		Success ranking
		E-learning opportunities
		Multilingualism
		Elective course pool
		Career center
<b>Decrease</b>		<b>Create</b>
Traditional Examination System		IHU Values
	Social Sciences Research University	

Table 1: New Value Curve with Four Actions



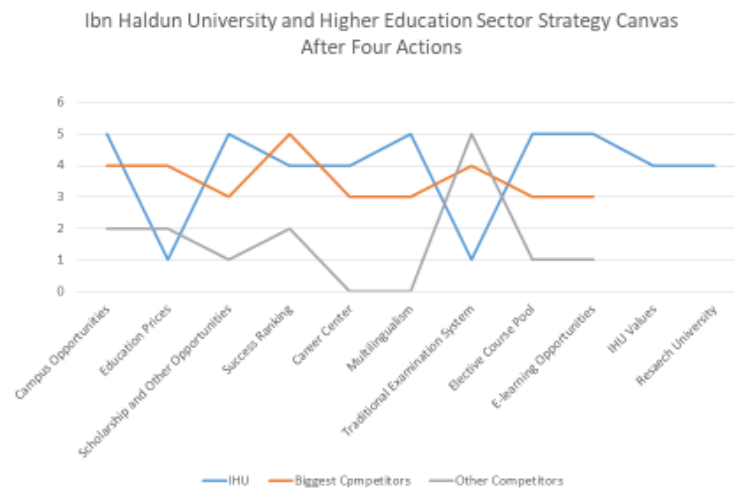
Graphic 2: Ibn Haldun University Strategy Canvas after Four Action

Two new criteria were prepared for IHU in addition to the criteria included in the assessment for the higher education sector. "The IHU values and social sciences research university" criteria prepared in this step is the blue ocean far away from competition, which IHU differs from. Tuitions were terminated within the scope of the four actions process. Tuitions, which pose a load for the students, in the state and foundation universities, have been eliminated and it has been provided that the students are focused on education.

In the other step of the four actions, the traditional examination system has been decreased. It is a fact that the midterm and final examinations lead students to rote learning and do not help a qualified learning. It is aimed that assessment and evaluation vary and the students focus on the meaning and target of the whole course but not the questions that may be asked in exams. The exams prepared with less number of questions and limited time will be insufficient in assessing the knowledge of the students and they are also insufficient in assessing the high level learning products such as analysis, synthesis, evaluation etc. (Türkyılmaz, 2007; Yılmaz, 2007).

After this step, the next step is to increase any kind of factors which affect the learning skills of students. The criteria such as scholarship, campus, e-learning opportunities,

multilingualism, career center and elective course pool are increased and it is provided that the students have their education in a more qualified education atmosphere. It is aimed to reach the students who have demonstrated their success by keeping the success ranking rather high. Finally sector strategy canvas and IHU strategy canvas were combined and the area where IHU located itself and the blue ocean strategies were completed.



Graphic 3: Ibn Haldun University and Higher Education Sector Strategy Canvas After Four Actions

As seen in the new strategy canvas prepared with the four actions process, IHU was differentiated from the sector and formed a working area in the blue ocean far from competition. Although new criteria constitute a risk, these criteria appear as the desired targets when viewed in terms of Turkey. The civilization description target we have mentioned throughout the paper can only be achieved by taking such steps and taking risks. The target of IHU to become a research university in social sciences with its own social values will be the acquisitions which this geography needs most.

#### 4. CONCLUSION

The 20th century in which imperialist hegemony secured its position all over the world, mainly in educational, economical and cultural terms passed by being greatly damaged by the results of the West centered worldview. In the following process, the early period of the 21th century brought disasters to the geographies where Muslims lived, this period resulted in rebellions of peoples, change of the administrations and poverty. Also, the West people started similar insurrections, and the virtual welfare situation was traumatized for these societies. It is seen that this process will evolve to a stage in which various disturbances will gain strength and cause great reactions and continue.

One of the main topics discussed by Edward Said, the famous orientalist, is that the main aim of the imperialists is to form an East image and identity which fall widely behind the West in science, information and development. At this point, it may be observed that this effort has ended with success for the imperialist hegemonic powers. Together with the successful image propaganda, the West has succeeded to present serious concrete studies, comes before Islam civilization in the scientific area. This topic is also among the basic aims of our study. The mission, vision and values targets adopted by IHU were discussed within the scope of

the study and various synthesis were performed with SWOT and blue ocean strategies and the basic issues discussed within the scope of the study were evaluated.

Finally, the target of IHU to become a central and assertive research university in social sciences has a great importance for both its own students, the other researchers studying in Turkey and the other universities. Also, the mission differences and the ideal of distinguishing in special fields which are set as a target by YOK for the universities were addressed within the scope of the study. Accordingly, the mission and values of higher education were separated from standards and explained from a different point of view with SWOT and blue ocean strategies, which are two important factors of strategic management. In the future, the studies to be conducted within this scope and with broader approaches create great hopes in terms of the contribution to the educational mentality and social dynamics of Turkey.

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