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Androniki Kavoura
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Strategic Innovative Marketing and Tourism

Creative Solutions and Digital Transformation Challenges—11th ICSIMAT, Brasov, Romania, 2024

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Editors

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This volume and every of our ICSIMAT COMMUNITY volume is dedicated to Prof. Belch, Prof. Buhalis, Prof. Morgan, Prof. Gretzel, Niki, Diamantis Kitrides, late Prof. Avlonitis, Prof. Kitchen, Prof. Zotos, the scientific and organizing committee, the editors who kindly offered space in their prestigious journals and all the ICSIMAT community, which have contributed to our success. All for one, one for all!

Preface

Aims and Scope of the Conference

The International Conference on Strategic Innovative Marketing and Tourism (ICSIMAT) 2024 was held from the 24th to 30th of October, Brasov, Romania.

ICSIMAT 2024 provided a timely and interactive international platform for academics, government and industry practitioners in order to discuss and develop new perspectives in the fields of marketing, innovative technologies, tourism, communication, education and management. They were able to discuss and debate current trends and future outlook issues that affect the future direction of marketing and tourism research and practice in a digital and innovative era.

ICSIMAT community includes worldwide well known scholars, faculty members, doctorate students, researchers and business practitioners who network and exchange research work and inter-institutional co-operations.

ICSIMAT 2024 finally accepted and hosted 102 original research work, after a double-blinded peer-review process. 7 presentations were part of the established industry session that is organized during ICSIMAT conferences. The sessions that were held aimed to advance and contribute to specific research areas in the field of strategic innovative marketing and tourism.

The sessions that were created under ICSIMAT 2024 were:

Topics RELATED to ICSIMAT on:

Marketing, Social Media Marketing, e-Branding and Brand Experience Management, Digital marketing, Marketing Analytics, Marketing Research, Services Marketing, Integrated Marketing Communications, Consumer Behaviour, New Product Design and Development, Sports Marketing, B2B and B2C Marketing, Pricing Strategies, Art and Cultural Marketing, Mobile Services, Gaming, Gamification and Augmented Reality, Location-based Services, Internet-of-Things, Heritage and Museum Management in the Digital Era, Cross-cultural marketing, Tourism and Destination Marketing, Enogastronomic Tourism, Event Tourism, Health Tourism, Transport Industry Marketing, Social Media, Experiential and Sensory Marketing,

Customer Relationship Management and Social CRM, Collaborative Marketing, Safety Marketing, Economics of Business Strategy, Accounting Marketing, Global Business, Marketing Finance, Healthcare Management, Accounting Education, Skills and Competences, Higher Education, Retail Marketing, Sales Management, Public Relations and Crisis Management, E-commerce, Marketing Strategy, Sectoral Marketing, Safety Management and Marketing, Enterpreneurship.

Aigaleo, Greece — Androniki Kavoura
Brasov, Romania — Victor-Alexandru Briciu
Brasov, Romania — Arabela Briciu

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- The members of the scientific committee that honoured the conference with their online presence and provided a significant contribution to the review of papers as well as for their indications for the improvement of the conference
- All members of the organizing committee for their help, support and spirited participation before, during and after the virtual conference
- The session organizers for their willingness to organize sessions of high importance and for their editorial work, contributing in the development of valued services to the conference
- The Transilvania Unversity of Brasov, Romania, the Municipality of Brasov and all stakeholders who greatly contributed to the organization of this mega event

Conference Details

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Diamantis Kitridis CEO Citrine

Invited Speech: **Embracing Digital Transformation: Strategic Data and Process Preparation for Companies and Public Sector Organizations**

Contents

Progressive Web App of Generated and Geolocated Reviews for Tourism in Mexico City 1
Carlos Paredes Cid, Héctor Enrique Carrillo Estrada, and Idalia Maldonado Castillo

Personality, Theory of Planned Behavior and Entrepreneurship Education Effectiveness: A Comparative Study 11
Panagiotis A. Tsaknis, Alexandros G. Sahinidis, Grigorios Gikas, and Dimitrios Kallivokas

The Effect of E-Customer Experience on Corporate Loyalty 19
Soultana Stefanoglou, Evaggelos Saprikis, and Ioannis Antoniadis

Business Digital Twin—A Crucial Tool for the Public Sector During Human-Made Disasters 29
Vasileios Yfantis, Androniki Kavoura, and Klimis Ntalianis

Managing University Heritage: The Expansion of Athens University's History Museum, Permanent Collection 37
Evangelos Papoulias and Theoklis Petros Zounis

Marketing Strategies for Woodcraft Businesses in Greece 47
Ioannis Papadopoulos and Aikaterini Liaskopoulou

Management of Ceramic Art Festivals: Promoting Cultural Activities at a Global Level 57
Margarita Kefalaki and Paraskevi Danelaki

The Role of Green Marketing on Consumers' Behavior Toward the Environment 65
Eda Yaşa Özeltürkay, Murat Gülmez, Mustafa Öztürkel, and Beste Demirci

The Assessment of Supply Chain Efficiency in the Horticultural Industry 75
Katarzyna Szwedziak, Androniki Kavoura, Adam Busławski, Marcin Pieczyński, and Anna Orzeł

Six Innovative Proposals for an Agrotourism Establishment in the Island of Cyprus 83
Kika Ioannou Kazamia

Enhancing Innovative Sustainability and Social Economy on Aegina Island, Greece 93
Konstantina F. Chatzina and Nikolaos Ch. Marinos

Shortcomings of Sustainable Tourism: A Call for a Socio-Spatial Paradigm Shift 103
Eleonore Zippelius

Safeguarding the Ephemeral: Designing Active Participation in Cultural Events 113
Sofia Mytilinaiou

The Role of Packaging on Consumers' Behavior in Greece 123
Ioannis Nanos, Nikolaos Papadopoulos, Maria Gratsia Oikonomou, Iordanis Kotzaivazoglou, and Garyfallos Fragidis

The Evolving Role of Social Customer Relationship Management: Transforming Customer Engagement 133
Christos Papademetriou, Sofia Anastasiadou, and Harry Sophocleous

Soft Skills in the Greek Public Sector. From Legal Neglectance to Administrative Omnipotence 143
Panagiotis Passas, Dimitrios Stranis, and Sofia Ioannidou

Sculpture Conservation at the National Glyptotheque of Greece as a Promotional Tool for Audience Development 153
Maria Kliafa, Maria Petrou, and Agni-Vasileia Terlixi

Analysis of Consumer Behavior Through Eye-Tracking Monitoring 163
Despoina Taskoudi, Evangelos Kehris, George Karavasilis, and Vasiliki Vrana

Adopting Cloud Accounting: The Opinion of Greek Accountants 173
Sofia Asonitou, Georgios-Alexandros Roussis, Dimitra Kavalieraki-Foka, Chara Kottara, and Fragkiskos Gonidakis

Harnessing Advanced Technologies: Benefits and Challenges in Hospitality Design, Both in Industry and Education 183
Anna Efstathiou, Maria Vergopoulou, and Christina Vergopoulou

The Impact of Measures Related to the Sustainable Development of the Tourism Sector in Poland on Tourists' Opinions 193
Ewa Chomać-Pierzecka and Anna Sobczak

The Role of Sustainable Tourism in Local Development 203
Anna Sobczak and Ewa Chomać-Pierzecka

Political Leaders' Commercialization and Depoliticization: The Case of Greece 211
Harry Sophocleous, Sofia Anastasiadou, Androniki Kavoura, Andreas Masouras, and Christos Papademetriou

Social Networks' Influence on Voting Behavior and Involvement of Cypriot Voters 221
Harry Sophocleous, Sofia Anastasiadou, Androniki Kavoura, Victor-Alexandru Briciu, Andreas Masouras, and Arabela Briciu

Travel Decision-Making and Digital Engagement: The Impact of Attitudes Toward European Destination Websites and Online Co-creation on User Intentions 231
Georgios A. Deirmentzoglou and Eirini Vlassi

News Paywalls: Greek Audiences' Attitudes Toward Paying for Online Newspapers and Magazines 239
Aikaterini Stavrianea, Athanasios Papathanasopoulos, Christina Georgopoulou, Irene Kamenidou, and Spyridon Mamalis

Evolving Dynamics of Advertising Within the Print and Digital Press Sectors of South European Model Countries 245
Athanasios Papathanasopoulos and Aikaterini Stavrianea

Marketing in Turbulent Times: The Impact of Materialistic Values on Consumer Behavior During Economic Crisis 255
Aikaterini Stavrianea, Irene Kamenidou, Spyridon Mamalis, and Ifigeneia Mylona

Segmentation Based on Motives for Attending a Wine Festival in Greece 263
Spyridon Mamalis, Irene Kamenidou, and Aikaterini Stavrianea

The Evolution of Participatory City Branding: A Narrative Literature Review 271
Abderrahmane Mousstain and Ezzohra Belkadi

Flexible Labour Market and Work-Life Balance. The Case of Poland 281
Anna Barwińska-Małajowicz, Radosław Pyrek, and Bagdan Wierzbiński

The Impact of Public–Private Partnerships (PPPs) on the Public Health Sector 289
Sofia Asonitou, Fragiskos K. Gonidakis, Chara Kottara, Dimitra Kavalieraki—Foka, Panagiota Govesi, and Apostolos Giovanis

The Contribution of Audit to the Environmental, Social and Governance (ESG) Information Quality 299
Evangelos Soras, Apostolos Christopoulos, and Theodoros Kounadeas

Exploring the Mediating Role of Trust Between Consumers' Behavioral Intensity and Mobile Commerce Preference 309
Gerasimos Ntarlas, Nikolitsa Koutsogiannopoulou, Efthimios Dragotis, Athina Ntavari, and Despina A. Karayanni

Exploring the Mediating Role of Companies' Communication Between Goal Setting and Market Expansion in Social Media Tourism Marketing 317
Athina Ntavari, Efthimios Dragotis, Nikolitsa Koutsogiannopoulou, Gerasimos Ntarlas, and Despina Karayanni

Multi-Level Benefits of Corporate Social Responsibility (CSR) Adoption and the Moderation of Market Competition 325
Efthimios Dragotis, Athina Ntavari, Gerasimos Ntarlas, Nikolitsa Koutsogiannopoulou, and Despina A. Karayanni

Influencers' Social Power on Social Risk Minimization and Online Purchases. The Mediating Role of Influencers' Page Content 333
Nikolitsa Koutsogiannopoulou, Gerasimos Ntarlas, Athina Ntavari, Efthimios Dragotis, and Despina A. Karayanni

Digital Nomads: Lifestyle, Travel Behavior, and the Work/Leisure Balance 341
Nikolaos Trihas and Eirini Papadaki

Examination of Individual Preferences for Future Security Policy Initiatives at a Mass Tourist Destination 351
Varvara Messaritaki, Alexandros Apostolakis, Dimitris Stergiou, and Shabbar Jaffry

Greek Cruise Ports' Performance Evaluation: A Multi-Criteria Decision Method (MCDM) Approach 361
Aggeliki Sgora, Agisilaos Konidaris, and Spyros Polykalas

Navigating Cultural Boundaries: The Impact of Digital Media and Western Food Industry Campaigns in the Middle East's Virtual Landscape 369
Achilleas Michael Kanellis and Eirini Papadaki

Understanding the Importance of Digital Marketing Techniques for Wine Travelers: The Case of Northern Greece Wineries 379
Maria Salamoura, Lefteris Chatzigeorgiadis, and Anna Kyriakaki

Subjective Prediction and Models for Forecasting Sales in Pharmaceutical Market Demand 389
Dimitrios Kallivokas, Christos Kytagias, and Stavros Tzevelekis

Accessibility of the Greek Museums: A Necessity for a More Holistic Approach 397
Maria Poli and Konstantinos Malagas

Place Brands in the Digital Age: Analyzing Communication Strategies and Audience Engagement of Brands on TikTok 407
Ana-Maria Gulpe and Arabela Briciu

A Bibliometric Analysis on Renewable Energy Sources for Southeastern Europe Countries 417
Madalina Moncea, Stamatios Ntanos, Andreea Claudia Serban, and Nikolaos Tsotsolas

The Transformative Impact of Artificial Intelligence (AI) on Strategic Decision-Making 427
Lambrini Seremeti and Sofia Anastasiadou

Ethical Branding and Digital Marketing: Theoretical Connections and Applications on a Case Study 437
Dimitrios Manoukas, Aggeliki Sgora, and Ella Overkleeft

Influences of Demographics on Fragrance Marketing Purchase Behavior: A Cross-Cultural Investigation 447
Shuvam Chatterjee, Pawel Bryla, and Mahmoud Ibraheam Saleh

The Influence of Health Consciousness, Environmental Concern, and Theory of Planned Behavior (TPB) on the Intention to Purchase Organic Food 457
Georgia J. Tsakni, John Tsaknis, Panagiotis A. Tsaknis, Aliki A. Tsakni, Alexandros G. Sahinidis, Androniki Kavoura, Victor-Alexandru Briciu, and Arabela Briciu

An Analysis of the Social Media Promotion Strategies of Romanian SuperLiga Football Teams 465
Victor-Alexandru Briciu, Arabela Briciu, Florin Grecu, Mihai Lucian Pascu, Androniki Kavoura, Harry Sophocleous, Panagiotis A. Tsaknis, and Alexandros G. Sahinidis

Rising Like a Phoenix: A Bibliometric and Content Analysis of the Regeneration Concept in Business Studies 475
Niki Glaveli, Viktoria Voulgari, and Anastasia Daskalopoulou

Cryptocurrency and Traditional Assets Volatility: Analysis and Comparison with Generalized AutoRegressive Conditional Heteroskedasticity (GARCH) Models 485
Chrisi Boskini, Ioannis Katsampoxakis, and Stylianos Xanthopoulos

Electronic Word of Mouth (eWoM) and Destination Visit Intention: The Case of Greek and Danish Tourists 495
Eleni Tselempi, Eirini Vlassi, Georgios A. Deirmentzoglou, and Sofia Daskou

The Impact of Marketing Through Social Media Influencers: A Case Study on Wine Products in Greece 505
Maria Athanasoglou, Evangelia Arsenou, Michalis Skordoulis, Konstantina Panagiotakopoulou, and Nektarios Stavropoulos

Understanding Healthy Eating Behaviors of Slovak Young Consumers: A Preliminary Study in Bratislava 515
Emel Yarimoglu and Lucia Vilcekova

Pavlopetri "City Beneath the Waves": Attitudes and Perceptions of Residents and Local Authorities Towards the Creation of a Thematic Diving Park 525
Ioanna Anagnostopoulou, Krinanthi Gdonteli, George Kipreos, and Pinelopi Athanasopoulou

Integrating Artificial Intelligence with Gamification Techniques to Enhance Student Motivation and Engagement 533
Emmanouil Choustoulakis, Pinelopi Athanasopoulou, Yannis Pollalis, and Dimitris Nikoloudakis

Leadership in Education: School Leaders and Teachers' Professional Development 543
Stamatios Lourmpas, Miltiadis Chalikias, and Nicos Sykianakis

Predictors of Consumer Knowledge About Brand Origin on the Food Market 553
Paweł Bryła

How Interactive Applets Contribute to Learning Process in Online Statistics Courses 563
Dimitrios Kallivokas

Strategic Influence of Social Media Marketing on Customer Loyalty and Brand Trust: An Empirical Analysis 571
Ioannis Mouratidis, Vaggelis Saprikis, and Ioannis Antoniadis

Artificial Intelligence as a Means of Communication for Greek Museums 579
Pericles Liakakis

The Impact of Non-quantitative Factors on the Quality of Environmental, Social and Governance (ESG) Information 587
Evangelos Soras, Apostolos Christopoulos, and Theodoros Kounadeas

Toward a More Authentic Travel Experience: Exploring the Potential of AI-Powered Recommendations for Unusual Experiences 597
Idalia Maldonado Castillo and Jorge Ferrer Tenorio

FinTech/Blockchain's Significance and Disruptive Impact in Digital Transformation: A Literature Review 605
Vasiliki Basdekidou

Service Innovation Snapshot from the Lens of a Top Journal 615
Carlos Farinha, Sónia Avelar, and Teresa Borges-Tiago

The Cohesion Policy of the European Union for Education and Training 625
Sofia Asonitou, Chara Kottara, Dimitra Kavalieraki-Foka, Fragkiskos Gonidakis, and Marina Syriopoulou

Promotion of Intangible Heritage on Social Media 637
Arabela Briciu, Victor-Alexandru Briciu, Adina Nicoleta Candrea, Mihai Lucian Pascu, Androniki Kavoura, and Lavinia Constantinescu

The Challenges of Digitalization in the EU 647
Sónia Avelar, Carlos Farinha, Josélia Fonseca, and Teresa Borges-Tiago

Gender and Entrepreneurship Education Effectiveness. A Comparative Study 657
Panagiotis A. Tsaknis, Alexandros G. Sahinidis, Stavros Kiriakidis, and Androniki Kavoura

CSR as a Value Creation Strategy: Empirical Evidence from the Marketing Sector 663
Panagiota Xanthopoulou, Alexandros Sahinidis, and Maria Panagopoulou

Generations and Sustainability: Analyzing Preferences and Behaviors for Organic Food Products 673
Cezara-Georgiana Radu, Andreea Claudia Serban, Stamatios Ntanos, and Ioannis Salmon

Strategic Communication in the Era of Digital Transformation and Artificial Intelligence for Leading Telecommunication Brands and Companies 683
Maria Sagana

Reuse of Former Military Facilities Through the Creation of a Historic and Cultural Park in Aegina, Greece 691
Kyriaki Alyfanti

Consumers' Perceptions on Sustainable Fashion Products: The Case of Millennials in Greece 701
Michalis Skordoulis, Nikoleta Desli, Evangelia Arsenou, Petros Kalantonis, and Aristidis Papagrigoriou

Personalizing the Tourist Experience: An Artificial Intelligence Application for Mexico City 711
Idalia Maldonado Castillo and David Ortega Pacheco

The Impact of Mount Athos Cuisine on Religious Tourists Through Experiential Marketing: The Contribution of Monk Epiphanios 719
C. Kyprianou, Chris Vassiliadis, and Sofia Gkarane

Metaverse-Based Marketing Education: Perspectives of Higher Education Students 727
Murat Gülmez, Duygu Gür, and Gülay Güler

Measuring and Analyzing Customer Satisfaction in the Supermarket Industry: The Case of Greece 735
Stamatios Ntanos, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Eleni Gkika

Knowledge Management in the Greek Public Sector: A Case Study 743
Faidon Komisopoulos, Akrivi Gkouma, Stamatios Ntanos, Antonios Kargas, Eleni C. Gkika, and Dimitrios Drosos

Employees' Adaptation to Digital Transformation: A Greek Perspective from the Banking Sector 753
Antonios Kargas, Eleni C. Gkika, Faidon Komisopoulos, Stamatios Ntanos, and Dimitrios Drosos

The Impact of Work Models and Years of Work Experience on Job Satisfaction, Productivity, and Employees' Sense of Job Security 763
Vasileios Paraskevopoulos, Dimitrios Kallivokas, and Faidon Komisopoulos

Employee Job Satisfaction in Greek Ports Using a Multi-Criteria Method 773
Eleni C. Gkika, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Stamatios Ntanos

The International Ship and Port Facility Security (ISPS) Code and Port-Industry Stakeholders Satisfaction 783
Eleni C. Gkika, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Stamatios Ntanos

Emerging Trends and Future Directions in the Mediterranean Coastal Tourism: A Selective Literature Review 793
Sofia Gkarane, Chris Vassiliadis, Iordanis Kotzaivazoglou, Garyfallos Fragidis, and Vasiliki Vrana

Social Media Marketing Usage Effects on Micro- and Small-Sized Enterprises' Performance: The Mediating-Moderating Role of Innovation Capabilities 803
Apostolos Giovanis, Alexandros Sahinidis, Dimitris Kallivokas, Sofia Asonitou, and Dimitris Papakyriakopoulos

Digital Arts Marketing for Cultural Consumption and the Strengthening of e-Cultural Tourism. Examples from Greece and Germany 813
Despoina Tsavdaridou, Eirini Papadaki, and Nikolaos Trihas

Strengthening Primary Healthcare: The Key to Achieving a Sustainable Healthcare System 823
Anastasios Sepetis and George Pierrakos

Tourists' Behavior Toward Hotel Service Robots: Application of the Big Five Personality Traits Framework 833
Georgios A. Deirmentzoglou

(Big) Data Driven Strategic Decision-Making in Overtourism Management 843
Maria Vrasida and Vasileios Vlaseros

Perception of Artificial Intelligence by Generation Z—Results of a Pilot Study in Poland 853
Elwira Gross-Gołacka, Androniki Kavoura, and Krzysztof Pawłowski

Dark Patterns on the Internet Under the EU Consumer Law 863
Odise Xhelita and Apostolos Manthos

The Function of Small and Medium-Sized Enterprises (SME) During Turbulent Periods 873
Teresa Piecuch and Katarzyna Chudy-Laskowska

The Role of Fear of Missing Out (FoMO) on Consumer's Decision-Making in Email Marketing Campaigns 883
Chrysopigi Vardikou, Magdalini Duca Montessantou, Eftichia Kallinikou, Erato Koustoumpardi, Agisilaos Konidaris, and Androniki Kavoura

A Scientometric Analysis on Employee Well-Being in Management Sciences 891
Iwona Oleniuch

Financial Stress and Resilience: The Case of Youth in Attica, Greece ... 899
Vasiliki A. Tzora

Effectiveness of Social Media Influencers in Tourism Marketing: The Case of Eco-Friendly Hotels in Greece ... 909
Michalis Skordoulis, Aikaterini Dimitra Vrentzou, Evangelia Arsenou, Petros Kalantonis, and Aristidis Papagrigoriou

The Impact of Ecotourism on Tourist Behavior in Greece: A Quantitative Analysis of Sustainability and Market Dynamics ... 919
Michalis Skordoulis, Maria Giaka, Andriana Psimopolou, Dionysia Panagopoulou, and Aristidis Papagrigoriou

Integrating Intangible Cultural Heritage in Higher Education—Challenges and Obstacles ... 929
Goran-Pavel Šantek, Androniki Kavoura, and Arabela Briciu

Planning and Programming of Diversity Management Visions and Goals in Organizations—An Empirical Measurement Tool ... 937
Elwira Gross-Gołacka

Strategies for the Convergence of Green Management and Digital Transformation in the Forest Service of Greece ... 945
Aikaterini Liaskopoulou and Ioannis Papadopoulos

Progressive Web App of Generated and Geolocated Reviews for Tourism in Mexico City



Carlos Paredes Cid, Héctor Enrique Carrillo Estrada, and Idalia Maldonado Castillo

Abstract Tourism in Mexico City, a bustling metropolis rich in cultural and historical attractions, often suffers from disorganization and information overload from the most used sources of online reviews. To address these challenges, we propose a Progressive Web Application (PWA) designed to streamline the tourism experience and improve it for visitors. This innovative solution aggregates reviews from multiple public opinion platforms and electronic word-of-mouth sources, consolidating them into comprehensive, single reviews for each attraction. Our research is based on an extensive dataset compiled from two prominent online platforms: TripAdvisor and Google Maps. We collected 1,000 reviews from TripAdvisor and 9,000 reviews from Google Maps, covering 1,908 distinct touristic locations in Mexico City. This dual-source approach leverages the unique characteristics of each platform: TripAdvisor's travel-specific content and Google Maps' broader user base and location integration. The application highlights key points of interest, ensuring that tourists receive the most relevant and concise information distilled from this vast array of user experiences. By integrating advanced data aggregation techniques with this rich corpus of reviews and employing a user-friendly design, this PWA aims to enhance the efficiency and enjoyment of exploring Mexico City. The substantial volume and diversity of our dataset provide a solid foundation for developing a tool that can significantly improve the organization and satisfaction of the tourism experience in this vibrant city.

Keywords Natural language processing · Mexico city tourism · Review synthesis

1 Introduction

In today's world, tourism is a sector of vital importance both economically and culturally. Specifically in Mexico, 8.7% of GDP comes from the tourism sector. The ability of tourism destinations to attract visitors and provide memorable experiences

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not only drives industry growth but also contributes significantly to the development of local communities and the enrichment of cultural diversity [1][1].

Given this scenario, the need arises for an innovative approach that simplifies the decision-making process for travelers when looking for touristic locations to visit. The proposed project focuses on the generation of a single and concise review, which synthesizes the diversity of opinions dispersed on the different platforms presented to users through an interactive map. This intelligent review provides users with a clear, global view of the overall experience of a tourist location or establishment.

The relevance of this project lies in its ability to simplify the search and selection of tourist destinations, optimizing the time and effort of users. By consolidating scattered information and filtering relevant opinions, it offers an effective solution for those who want to make informed and reliable decisions about their travels.

In short, this project addresses a common problem in the digital age: the overabundance of information. By providing a tool that synthesizes and organizes dispersed data, the task of travel planning is facilitated, thereby improving the overall user experience in exploring tourist destinations.

2 Theoretical Framework

For the development of this project, we are using a variety of technologies that help our system gather resources, analyze the reviews and provide the result to the end user—the tourist.

2.1 Web Scraping

Web scraping is the process of automated data extraction from web pages. It consists of using software or tools to collect information in a structured way from websites and then transforming that data into a format useful for analysis, visualization, or storage [3].

Web scraping generally involves the following steps:

- Data collection: Access the desired web page using HTTP or a simulated web browser.
- Data Extraction: Identify and select specific web page elements that contain the desired information, such as text, images, links, etc.
- Data Transformation: Clean and structure the extracted data into a format suitable for later use, such as a CSV file, a database, or an HTML document.
- Data storage: Saving processed data in a storage system for later analysis or visualization.

Web scraping is used in a variety of applications, such as online price monitoring, news gathering, academic research, and generating datasets for machine learning.

2.2 Aspect Based Review Analysis

Sentiment analysis, also called opinion mining, is the field of study that analyzes the opinions, feelings, evaluations, appreciations, attitudes, and emotions of people toward entities such as products, services, organizations, individuals, problems, events, themes, and their attributes [4].

In general, sentiment analysis is investigated at three levels:

Document Level. Classifies entire documents as positive or negative, assuming one entity per document.

Sentence Level. Determines sentiment (positive, negative, neutral) for each sentence.

Entity and aspect level. Focuses on specific entities or aspects within the text, identifying targeted opinions. For example, in "Call quality is good, battery life is short," the positive opinion targets call quality, and the negative one targets battery life, offering a structured summary of sentiment for detailed analysis [5].

In this case we will be evaluating this sentiment through: **Latent Aspect Review Analysis (LARA)** is a natural language processing approach used to analyze product reviews and extract latent aspects or underlying themes present in those reviews. This method combines sentiment analysis and topic modeling techniques to identify not only the polarity of the opinions expressed in the reviews but also the specific aspects of the products being evaluated [6].

The central idea behind LARA is that user opinions about a product can address multiple aspects or characteristics of the product and that each aspect can be associated with a positive, negative, or neutral sentiment. LARA uses topic modeling techniques, such as LDA (Latent Dirichlet Allocation), to identify these latent aspects in the corpus of reviews and then analyzes the polarity of the opinions expressed on each aspect [7].

LARA has been used in a variety of applications, including product sentiment analysis, product and service recommendation, and business decision-making based on customer feedback [8].

To illustrate LARA, let's consider the following example of how aspects can be conceptualized and their relationship to the review rating.

Hotel XYZ

Review 1:

☆☆☆☆☆

"Great location + spacious room = happy traveler"

I stayed for a weekend in July. I walked everywhere, enjoyed a comfortable bed and quiet hallways….

Review Latent Aspect Ratings:

Value: ☆☆☆

Rooms: ☆☆☆☆☆

Place: ☆☆☆☆☆

Service: ☆☆☆

2.3 Review Generation

To further enhance the utility of the aggregated data, we employ a GPT model. GPT models are a class of machine learning models designed to generate human-like text based on the input they receive. By leveraging the capabilities of GPT, we can create a single, cohesive review that encapsulates the most important details from the multitude of individual reviews. This generated review is not only comprehensive but also concise, providing users with clear and relevant information. Including the rating we calculated using LARA.

By combining these advanced techniques, our PWA provides a streamlined and user-friendly solution to the problem of disorganized tourism information. The resulting reviews offer tourists a clear and concise overview of attractions, helping them make informed decisions and enhancing their overall experience in Mexico City. This theoretical framework underscores the innovative fusion of NLP methodologies to transform and improve the way tourists access and utilize information.

3 Methodology

Our research employs a mixed-methods approach, combining quantitative data analysis with qualitative interpretation to gain insights into tourist experiences in Mexico City. The methodology centers on collecting and analyzing a substantial volume of user-generated reviews from popular platforms [9].

To generate the summarized reviews, we use the top 5 reviews from Google Maps, which are fetched directly from their API, which guarantees those reviews to be the most relevant of the review pool of each touristic site. For our latent aspect rating analysis from the reviews, we care more about the number of reviews since we need more data to extract the implicit aspect ratings like service, food, nature, etc. Therefore, we use tools like web scraping to extract a larger number of reviews per site, and we do not include a location for this kind of analysis if the number of reviews extracted was less than 100 to ensure the quality of rating predictions.

3.1 Data Collection

In our study, we compiled a comprehensive dataset of reviews from two prominent online platforms: TripAdvisor and Google Maps. This data collection effort was conducted over a six-month period, spanning from January 2024 to June 2024. From TripAdvisor, we extracted 1,000 reviews, intending to expand this subset in future iterations of our research. The Google Maps component of our dataset is more extensive, comprising 9,000 reviews that encompass 1,908 distinct touristic locations, averaging 5 reviews per site.

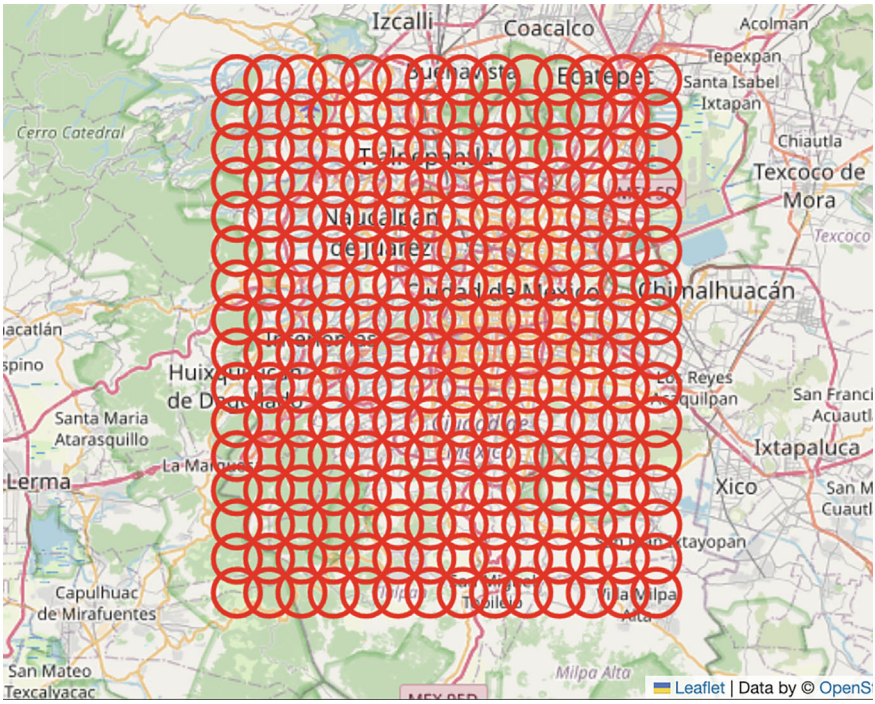


Fig. 1 Visual representation of the search area created for Mexico City using radius segments

For Google Maps data, we utilized the API provided by Google to efficiently retrieve reviews. Since the API only returns the first 60 places that match the labels we are looking for in the given radius, we had to segment the entirety of Mexico City in smaller search areas like shown in Fig. 1.

After doing this and making sure 100% of Mexico City was covered we continued with the statistical analysis to figure out the categories of the places we were dealing with, and we got the following proportions.

In the case of TripAdvisor, we employed web scraping techniques to extract the necessary information. This dual approach allowed us to compile a comprehensive dataset representing a wide range of tourist experiences in Mexico City.

3.2 Data Analysis

Our analytical approach focuses on the application of Natural Language Processing (NLP) techniques, with particular emphasis on Latent Aspect Rating Analysis

(LARA). This unsupervised method enables us to extract key aspects and sentiments from reviews without the need for manual labeling, which is a significant advantage in terms of efficiency and scalability.

The LARA algorithm helps us identify latent aspects within the reviews and associate them with sentiment ratings. This process involves several steps:

1. Preprocessing the review text to remove noise and standardize the data.
2. Applying topic modeling techniques to identify key aspects discussed in the reviews.
3. Utilizing sentiment analysis to determine the polarity (positive, negative, or neutral) of opinions expressed about each aspect.
4. Aggregating the results to provide a comprehensive view of each touristic location.

3.3 Future Development

Though the Progressive Web Application (PWA) is still in development, our methodology sets the foundation for future progress. The analyzed data will generate reviews and personalized recommendations for users. By leveraging large-scale data analysis with unsupervised learning, we avoid manual data labeling while extracting valuable insights from user content. In the next phase, we will integrate these results into a user-friendly PWA, helping tourists make informed decisions about attractions in Mexico City.

4 Results, Discussion, and Conclusion

Based on the agreements and initial research, several solutions for the implementation of LARA could be designed, as well as iterations developed for the synthesis of reviews [6].

With the most relevant reviews obtained with Google Maps and Trip Advisor, proofs of concept were developed in a test development environment to generate summary reviews of a batch of 100 tourist sites, thus testing the economic and processing feasibility of the developed solution. This was done using the OpenAI public API (Fig. 2).

The preliminary development of the LARA model was carried out, which consists of extracting the most relevant topics from the reviews extracted from TripAdvisor, followed by the preprocessing of the complete corpus to then be able to segment the sentences of the reviews by aspects in order to finally carry out an analysis of sentiment on the sentences of the reviews of each tourist site, obtaining a favorable result for the classification of the places by their aspects (Fig. 3).

For the user, we designed these modules to showcase the results with a more interactive interface:

```
{
  "synthesized_review": "Alameda Hidalgo is a beautiful and clean park in the center of Centro. It
  "positive_attributes": [
    "beautiful",
    "clean",
    "friendly people",
    "lots of little stores",
    "fountains",
    "sculptures",
    "street performers",
    "lovely environment",
    "bakery nearby"
  ],
  "negative_attributes": [
    "limited gate access"
  ]
}
```


Fig. 2 Generation of positive and negative attributes for each touristic place

```
Palacio de Bellas Artes: Experience - Average Sentiment: 0.29
Palacio de Bellas Artes: Culture - Average Sentiment: 0.35
Palacio de Bellas Artes: Architecture - Average Sentiment: 0.29
Palacio de Bellas Artes: History - Average Sentiment: 0.29
```

Fig. 3 Generation of the average sentiment for each touristic place

4.1 Map Module

The map module provides users with a visual representation of Mexico City, highlighting the most relevant points of interest based on the aggregated reviews. This interactive map allows users to easily locate and explore various attractions, making their planning process more efficient. The map integrates data from multiple sources, ensuring comprehensive coverage of tourist spots (Fig. 4).

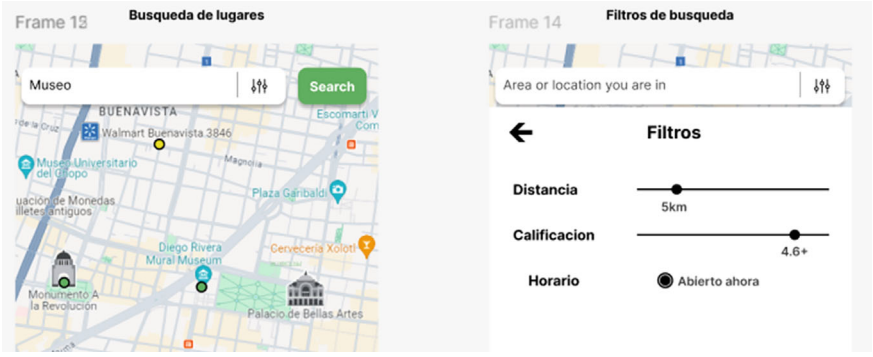


Fig. 4 Main module and search parameters

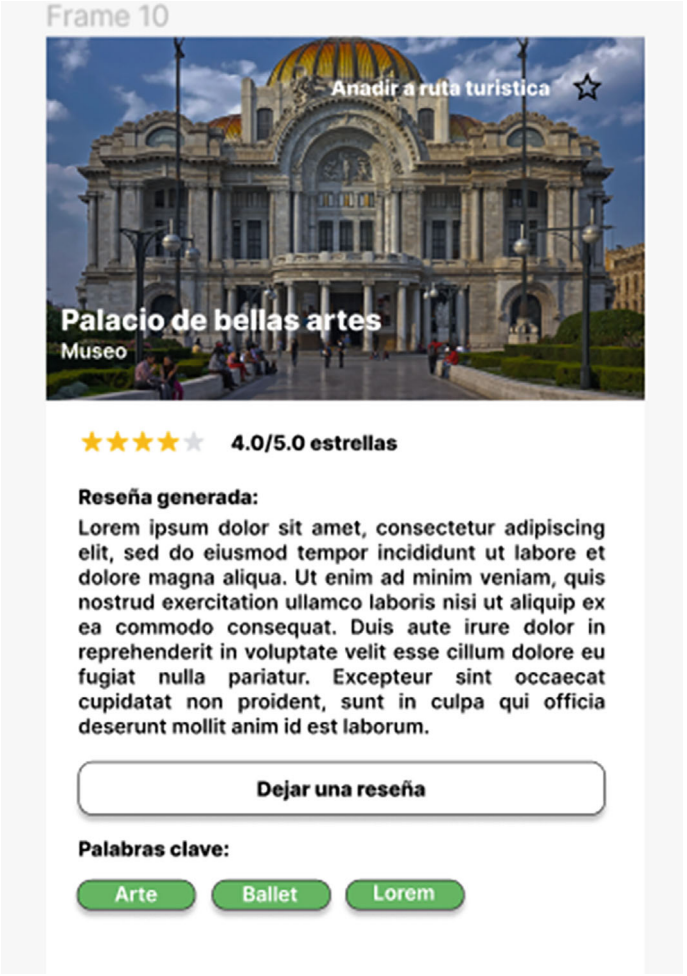


Fig. 5 Touristic attraction review module

4.2 Review Module

The review module generates a summary using a GPT model, synthesizing key aspects from Latent Aspect Review Analysis (LARA) across various platforms. It also provides an aggregated score reflecting overall sentiment and ratings. This helps users quickly understand key aspects of each attraction and make informed decisions (Fig. 5).

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restaurants using mobile apps with registration numbers assigned by the SIP: 20241830. Developed in Instituto Politécnico Nacional.

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Personality, Theory of Planned Behavior and Entrepreneurship Education Effectiveness: A Comparative Study

Panagiotis A. Tsaknis, Alexandros G. Sahinidis, Grigorios Gikas, and Dimitrios Kallivokas

Abstract Studies examining how personality traits influence entrepreneurship education effectiveness regarding entrepreneurial intention (EI) are scarce. This study investigates whether changes in entrepreneurial intention after entrepreneurship education are related to changes in the factors of the theory of planned behavior (TPB). Using a pre-test-post-test group design, this survey utilizes a questionnaire-based approach. A preliminary questionnaire was completed before the start of a university-level entrepreneurship course and a follow-up questionnaire after the semester ended. The survey was completed by 315 university students from a business administration department. The sample was divided into two groups based on the personalities of the individuals. The results revealed that personality can affect differently the changes in entrepreneurial intention after the completion of the entrepreneurship course. Furthermore, these changes are related to changes in TPB factors. This study provides valuable insights by addressing the existing gap in knowledge on this topic.

Keywords Personality traits · Entrepreneurial intention · Theory of planned behavior · Entrepreneurship education

1 Introduction

In recent years, educators and policymakers have been trying to cultivate entrepreneurial skills and mindsets among students in the dynamic field of entrepreneurship education [1–9]. We need to understand the factors that make educational programs effective, so we can develop curricula that not only convey knowledge, but also encourage students to engage in entrepreneurial behavior.

Within the context of entrepreneurship education, this study connects the domains of personality, behavioral theory and entrepreneurial intention. We examine how different personalities affect entrepreneurial intention through the changes of the

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constructs of the theory of planned behavior after an entrepreneurship course in order to uncover insights regarding what makes entrepreneurship education effective [6, 7]. In this paper, we integrate theoretical perspectives and empirical analysis to contribute to the larger discourse on entrepreneurship education. We emphasize the importance of both personality traits and the theory of planned behavior when evaluating the impact of entrepreneurial education programs on entrepreneurial intention.

2 Theoretical Background

There is limited research on the differences in entrepreneurial intention between individuals with specific personality traits (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism and risk aversion) before and after attending an entrepreneurship course [4, 10]. This section describes the theoretical background of the factors that we examine, and we attempt to find new results and combinations with the use of MEMORE macro [11].

The trait of openness to experience involves creativity, curiosity, and the desire for novelty. It is common for entrepreneurs to demonstrate a high level of openness in order to drive innovation and explore new opportunities [8, 9, 12]. A conscientious individual is more likely to follow through on entrepreneurial initiatives and manage businesses effectively because of their high levels of self-discipline, carefulness, and goal-orientation [6, 9, 13]. Extraversion is a characteristic that encompasses sociability and assertiveness. While it can enhance networking abilities and contribute to leadership effectiveness, its influence on entrepreneurship often varies depending on the specific context and environment in which it is applied [8, 14]. Agreeableness refers to how individuals interact with others, characterized by qualities such as empathy, kindness, and a cooperative attitude. Individuals high in agreeableness tend to be compassionate and supportive in their relationships. The entrepreneurial environment includes conflicting interpersonal relationships, and individuals who are altruistic by nature will not be attracted to entrepreneurship. [12–14]. Neuroticism is characterized by individuals' tendency to be stressed psychologically. This personality trait is characterized by sensitivity to negative emotions such as anger, stress, and depression. An entrepreneurial role is unlikely to appeal to individuals who are not emotionally stable, due to the degree of personal responsibility and deprivation this role involves [6, 9, 13, 14]. Risk aversion is a personality trait linked to how individuals approach decisions involving uncertainty. While taking risks is often essential for entrepreneurial ventures, it can sometimes negatively impact the business in the long run if not managed carefully. Risk aversion negatively impacts entrepreneurial intention [12–14].

An important aspect of the theory of planned behavior is that it links beliefs and behavior. Individual behavior is driven by behavioral intentions, which are influenced by three factors (attitude, subjective norms and perceived behavioral control).

An individual's attitude toward performing a behavior is reflected in his or her positive or negative evaluation of that behavior. Positive attitude toward starting a

business can enhance entrepreneurial intention. Subjective norms refer to perceived social pressures or expectations to perform or not perform a particular behavior. It is possible that friends, family and society may influence entrepreneurial intention. Perceived behavioral control relates to the perceived ease or difficulty of performing a behavior. High levels of perceived behavioral control affect positively entrepreneurial intention. Entrepreneurial intentions and actions can be predicted using the theory of planned behavior [15–21].

Educating individuals aims to equip them with knowledge, skills, and attitudes necessary for identifying opportunities and launching and managing their own businesses. In entrepreneurship courses, individuals work in teams and develop teamwork skills (by creating a new circle of friends and acquaintances with entrepreneurial spirit). Successful entrepreneurship education fosters the entrepreneurial mindset and enhances self-efficacy beyond imparting technical skills. Entrepreneurship education will affect positively entrepreneurial intention, attitude, subjective norms and perceived behavioral control [21, 25–27].

Within the context of entrepreneurship education, this study proposes a comprehensive model that incorporates personality traits and the theory of planned behavior. In order to understand the differential impact of educational interventions, we will examine how personality interacts with the effect of education on entrepreneurial intention through differences that occur from education in TPB constructs (attitudes, subjective norms, and perceived behavioral control).

Overall, this type of research highlights the need for multifaceted approaches to entrepreneurship education. It highlights the need to develop personalized educational strategies that take into consideration personality and behavioral traits in order to maximize entrepreneurial intention. As a result of this study, we will be able to create more effective and inclusive practices for entrepreneurship education [8, 21–27].

3 Methods

A questionnaire-based survey was designed (pretest-post-test group design) to address the research question. At the beginning of an entrepreneurship course, students completed a questionnaire measuring the big five personality traits, risk aversion, attitude, subjective norms, perceived behavioral control and entrepreneurial intention. After the course, a second questionnaire measured attitude, subjective norms, perceived behavioral control and entrepreneurial intention. A total of 315 out of 400 students answered both questionnaires.

To classify students based on a set of indicators, including big five personality traits, risk aversion, and entrepreneurial intentions, we used two-step clustering techniques based on log-likelihood distance measurements. A new variable (EI difference) was also created to reflect changes in entrepreneurial intentions because of the educational program. The means of the variables of interest were compared across the clusters using a one-way analysis of variance. A paired sample t-test was used to

test whether entrepreneurial intentions within cluster changed significantly after the education program. Finally, MEMORE macro performed in each cluster (individuals with different personality characteristics) and revealed a new approach between the combinations of entrepreneurship education, entrepreneurial intention, and the factors of the TPB. IBM SPSS Statistics version 24 and MEMORE Macro were used for the statistical analysis.

4 Results

A two-step cluster analysis revealed a solution with two clusters, as well as a silhouette measure of cohesion and separation of 0.3. Table 1 provides a summary of the significance of each input variable and the means of each personality trait. Based on a paired sample t-test, 113 students in the first cluster (cluster 1) showed a significant drop in entrepreneurial intentions after the education program (mean: −0.334, $p < 0.01$). According to a paired sample t-test, 202 students in the second cluster (cluster 2) showed a significant raise in entrepreneurial intention after the education program. Using a one-way analysis of variance, it was shown that the means of the variables (Openness, Conscientiousness, Extraversion, Neuroticism, Risk aversion, and EI difference) were statistically significant between the clusters ($p < 0.01$). In terms of Agreeableness, there were no statistically significant differences between clusters ($p = 0.398$).

According to the above results, students whose entrepreneurial intentions changed positively demonstrated higher statistically significant levels of openness, conscientiousness, extraversion, and lower levels of risk aversion and neuroticism, than those whose entrepreneurial intentions changed negatively [10].

Furthermore, in each cluster we performed MEMORE macro taking into consideration the factors of the theory of planned behavior. Figure 1 represents MEMORE macro for cluster 1 (individuals with statistically significant and lower levels of entrepreneurial intention after the entrepreneurship course) and Fig. 2 for cluster 2

Table 1 Cluster analysis

Input Factor	Importance	Cluster 1	Cluster 2
		113 (36%)	202 (64%)
Risk Aversion	1.00	3.68	2.42
Extraversion	0.31	4.53	5.20
Openness	0.26	4.52	5.08
EI difference	0.26	-0.33	0.36
Neuroticism	0.21	3.75	3.08
Conscientiousness	0.14	5.53	5.86
Agreeableness	0.01	5.13	4.92

(individuals with statistically significant and higher levels of entrepreneurial intention after the entrepreneurship course).

Figure 1 indicates that 113 individuals in cluster 1 (that had lower levels of extraversion, openness, conscientiousness, and higher levels of risk aversion and neuroticism than the individuals of cluster 2), except for the negative change in entrepreneurial intention levels after the entrepreneurship course, had a negative change in perceived behavioral control. Furthermore, MEMORE macro in Fig. 2 indicates that 202 individuals with higher levels of entrepreneurial intention after the entrepreneurship course (cluster 2 that had lower levels of risk aversion and neuroticism and higher levels of extraversion, openness and conscientiousness than the

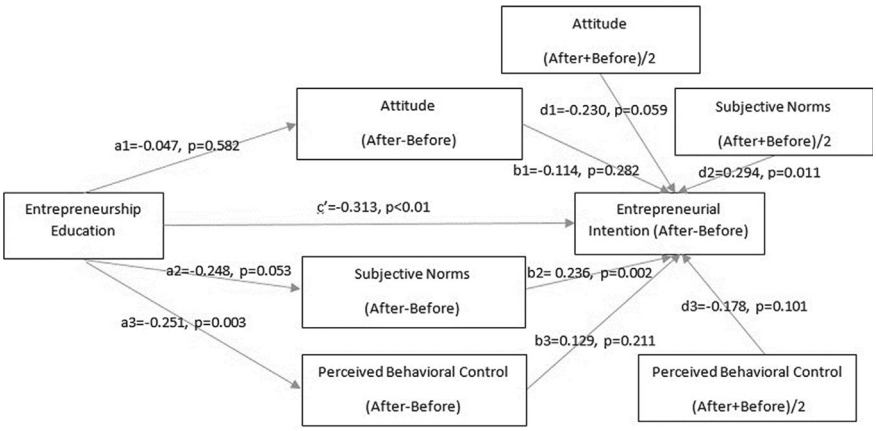


Fig. 1 MEMORE macro for cluster 1

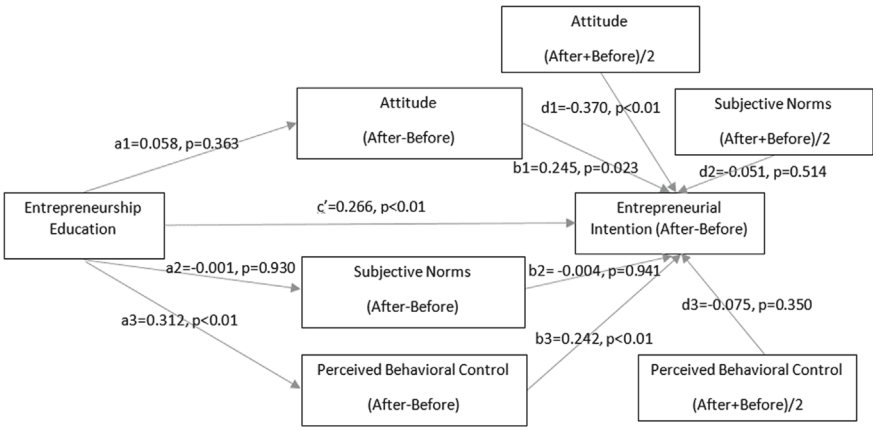


Fig. 2 MEMORE macro for cluster 2

individuals of cluster 1), indicate a statistically significant change in perceived behavioral control. This change, in turn, affected the positive change on entrepreneurial intention.

5 Conclusion

In the field of entrepreneurship, there are few studies that examine how entrepreneurship education can affect changes of entrepreneurial intention, taking into consideration the changes of the factors of the theory of planned behavior and personality traits. Research studies examining the psychological and personality characteristics of those who would benefit most from entrepreneurship instruction have been rare [4, 10, 28]. There is strong evidence to support the conclusion that students who undergo a positive change in their entrepreneurial intention tend to be similar to entrepreneurs in terms of their personality characteristics [10].

It is essential to address a few limitations of this study apart from its importance. A limitation is that more characteristics of the sample such as age, gender, prior work experience and field of studies would be interesting to be examined. In addition, we attempted to explain entrepreneurial intention changes using personality and changes in the factors of the theory of planned behavior; it would be useful to take into consideration additional factors. Finally, it would be beneficial to examine these findings across a variety of ethnic backgrounds so as to obtain further insights [29].

This research offers practical insights for all stakeholders, enabling the development of a new generation of entrepreneurs by aligning entrepreneurship education with the personalities of students. By optimizing entrepreneurship education, we can better nurture successful entrepreneurs. This study highlights the value of the phrase "the right person in the right place."

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The Effect of E-Customer Experience on Corporate Loyalty



Soultana Stefanoglou, Evaggelos Saprikis, and Ioannis Antoniadis

Abstract E-commerce has changed the behavior of online consumers, who now have easier access and availability to a much wider variety of products and services. Retaining online customers is a challenge especially for retail firms, which adopt new strategies, including customer experience management. The purpose of this study is to investigate and further understand the customer experience through its different dimensions; visual, social, real and emotional in retail stores related to specific items including clothes-fashion, shoes, perfumes-cosmetics, jewelry, sports goods, electronics, decoration, books and toys, as well as consumers' attitude of loyalty and behavioral loyalty. The empirical quantitative study was based on a sample of 332 people who make online purchases. The results reveal that social experience has less of an impact than the emotional experience, followed by the behavioral loyalty, the real experience. Moreover, the research shows that visual experience and attitudinal loyalty have the same influence on a potential buyer.

Keywords E-customer experience · Emotions · Loyalty

1 Introduction

Technologies are fundamentally changing consumers' patterns and the way consumers themselves perceive their needs and proceed with purchases. Today consumers are well-informed, demanding, informed, selective and less inclined to brand loyalty [1]. The customers defined themselves as "experientialists," looking for unrepeatable and unique experiences [2]. Price and quality are not sufficient to form a competitive advantage, aiming to retain existing customers [3]. A key element nowadays is customer's experience and satisfaction [4]. The experience, as argued by Gentile et al. [5], is a personal affair, and it is distinguished to six different elements: Sensory, Emotional, Cognitive, Real, Lifestyle and Relationships. Consumers visit online stores not only for shopping purposes but also for entertainment purposes and

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evaluate the service in terms of emotional satisfaction [6]. Businesses pursue the emotional reactions of customers, deepening ties to increase their commitment and sharing of their experience [7].

Loyalty is an important concept for retailers with several advantages, such as repeat purchases, friends and family recommendations and willingness to pay more [8]. Taking into consideration that loyalty is an important concept, this study explores the effect that customers' e-commerce experience has on staying loyal to the business or the brand.

2 Theoretical Background

2.1 Experience of E-Consumer

Today more than ever, the main concern for business executives is the enhanced customer experience, which is a competitive field [9]. Hence, there is a focus on customer experience as a driving force that creates value not only for the customer but also for the company [10]. It is on the firm's power to utilize technology with the aim to provide improved customer experiences [11], which in the long term and cumulatively can lead to loyalty [12]. The term Customer Experience (CX) is widely used and includes all experiences of a consumer related to the company. It has a multidimensional orientation that includes the cognitive, emotional, behavioral and social responses and reactions of the consumer to what the business offers during the customer journey, with the participation of their senses [13]. Customer Experience has been recognized as an internal and subjective response of customers to their interactions with the company. Therefore, the CX consists of the following dimensions:

Visual experience. In e-markets, the absence of physical experience does not stimulate all the senses [14]. Colors are elements that influence the way of perception and reaction to the environment, especially in the case of shopping [15]. Visual aesthetics in the online environment appeal to customers' emotions using graphics and photos. Graphics help create brand identity by attracting certain types of consumers and connecting them emotionally to the brand.

Social experience. CX includes human interaction [16], that is, the social context of the consumer, the relationship with other consumers and the employees. Many online sellers use social networking platforms (Instagram, Facebook, YouTube, etc.) to facilitate interaction with customers and colleagues [17].

Real experience. The criteria of this type of experience are related to product benefit and value for money, convenience relative to effort and time to make a purchase, efficiency in searching for information and speed of service. Overall, real experience has a positive impact on loyalty [16].

Emotional experience. Emotions play an important role. When consumers are satisfied, they are likely to consume more products or use more services [18]. Many

online businesses offer unique experiences to their customers through experiential marketing strategies to keep them happy and coming back for future purchases.

3 Corporate Loyalty

Customer loyalty or faith is a critical factor in enhancing the competitiveness of a business [19]. As customers develop strong loyalty to a company or brand, they are likely to choose it over competitors. It is a long term attitude and behavior pattern, reinforced by the contribution of multiple experiences over time [12]. The relationships that customers create with companies are not only built on logic but also on emotion [20], in addition to the computational factor of commitment, which concerns costs and benefits and distinguishes emotional commitment, as a factor based on trust and an element of sustainable relationships. Customer retention is an effective strategy as it costs five times more to acquire a new customer than to retain an existing one [21].

Satisfaction is a factor that precedes loyalty. Overall satisfaction, which accompanies the entire shopping experience, promoting repeat purchases and positive word-of-mouth marketing (WOM), is related to consumers' intention to be loyal. Building trust and a deep connection where the customer makes repeat purchases and shares their experience is also another factor that leads to loyalty. A loyal customer becomes an advocate of the brand, as they are willingly spread positive word-of-mouth recommendations to family, friends and colleagues and try to convince them [22].

4 Methodology

The empirical analysis of this research focused on the Business-to-Consumer (B2C) category. Customers are more demanding and make purchases not only for product usability, but also for fun. Purchase decisions are made through the influence of emotions [23]. Thus, emotions play an important role and are an equally important area of investigation [24].

The purpose of this research is customer perceptions on different types of online shopping experiences: visual, social, real and emotional. In this context, the following research questions were formulated:

Q1What are the consumer perceptions of each experience dimension for online stores?

Q2Which experience dimension is more effective?

The data was collected through a quantitative survey, namely a questionnaire that consists of three parts and 31 questions. The questions on the dimensions of experience were developed on a 5-point Likert scale based on previous studies [8]. The collection of responses started on 7/12/2023 and lasted until 25/12/2023. A total of

332 questionnaires were collected. To analyze the data, the Cronbach's Alpha reliability coefficient was initially applied. For the exploratory analysis, a representative score was calculated for each research dimension of experience and belief.

5 Results

5.1 Reliability Analysis

Regarding the overall reliability, it was estimated to be at excellent levels with an Alpha value = 0.922.With reference to the individual dimensions, it was estimated that in the dimension "Attitudinal Faith" (Alpha = 0.935) the reliability ranges at excellent levels; in the dimensions "Emotional Experience" (Alpha = 0.873) and "Behavioral Faith (Alpha)" (Alpha = 0.843) the reliability ranges at very good levels; in the dimension "Real experience" (Alpha = 0.783) the reliability ranges at satisfactory levels; while in the dimensions "Visual experience" (Alpha = 0.665) and "Social experience" (Alpha = 0.651), the reliability is at acceptable levels.

5.2 Data Analysis

Demographic characteristics**.** Regarding the demographic characteristics of the participants, it was estimated that 66.27% were female, while 34.64%, 26.51% and 14.46% were aged "45–54," "35–44" and "55 and above" correspondingly. Regarding the place of residence, it was estimated that 77.04%, 12.69% and 10.27% reside in "Urban area (>10.001) inhabitants," "Semi-urban area (2.000–10.000) inhabitants" and "Rural area (<2.000) residents" correspondingly, while regards to the monthly income it was estimated that 27.41%, 25.60%, 19.88% and 16.87% declared the options " > €1.100," "I do not wish to answer," "€900–1.100" and "€700–900" in correspondence. Finally, concerning the level of education of the participants, it was estimated that 46.08%, 26.81% and 26.20% declared the levels "Higher education," "Master/PhD" and "Secondary education" correspondingly.

Investigating the type of products they searched for in the online store that they declared in this survey, it was estimated that 50.30%, 35.24%, 27.40% and 23.80% declared the items "Clothing-Fashion," "Shoes," "Electronic goods" and "Sporting Goods" correspondingly. On the other hand, the items "Perfumes-Cosmetics," "Books," "Decoration," "Toys" and "Jewelry" were valued at levels below 15%, with percentages of 14.80%, 11.70%, 9.90%, 6.90% and 6.90% correspondingly.

Regarding the way of making purchases, it was estimated that 58.13% declared the option "By credit/debit card," 37.65% declared "By cash on delivery," while the remaining 4.22% declared "By depositing into a bank account."

Research Dimensions of Experiences and Beliefs. Visual experience: "7. The online store is in the language of the consumer, favoring the shopping experience" (Mean = 4.47, S.D. = 0.81). "5. The content organization of the portal (by gender, type of products, price) is sufficient and intuitive, stimulating my shopping experience" (Mean = 4.11, S.D. = 0.81). "4. The design of the online store (colors, font size, photos) is attractive" Mean = (4.08, S.D. = 0.88) and "6. There are no links and unwanted ads in the online store, which favors its design" (Mean = 4.02, S.D. = 1.15).

Regarding the investigation of social experience, it was estimated that in the questions "8. Through this online store, I can access social networks (blogs, Facebook, Twitter) to meet or express my opinion with other people." (Mean = 3.33, S.D. = 1.29). "9. The online store is highly valued by people who use different social networks." (Mean = 3.72, S.D. = 1.01). "10. Visiting this online store allows me to get information about my attitudes and lifestyle." (Mean = 2.7, S.D. = 1.23).

Real experience: "14. This online store lists the offers correctly" (Mean = 4.24, S.D. = 0.79), "13. This online store offers attractive offers and discounts from the competition." (Mean 4.13, S.D. = 0.83), "12. In relation to the services provided (online care, guarantees), the price level is good." (Mean = 4.04, S.D. = 0.78), "11. In this online store, I will get good quality products at a good price" (Mean. = 4.01, S.D. = 0.92) and "15. This online store always has products on sale in stock." (Mean 3.81, S.D. = 0.95).

Emotional experience: it was estimated that in the questions: "16. When I buy in this online store, I feel happy." (Mean = 3.97, S.D. = 0.96), "19. When I buy in this online store, I feel encouraged (not afraid)." (Mean = 3.82, S.D. = 1.03), "17. When I buy in this online store, I feel excited." (Mean = 3.76, S.D. = 1.04). "18. When I shop at this online store, I have fun." (Mean = 3.57, S.D. = 1.15). "20. When I buy in this online store, I am amazed." (Mean = 3.12, S.D. = 1.08).

Attitudinal Loyalty questions: "22. I will recommend this online store to family, friends or acquaintances who ask me for advice." (Mean = 4.22, S.D. = 0.85), "21. I will tell other people positive things about this online store." (Mean = 4.18, S.D = 0.85) and "23. I will encourage others to visit this online store." (Mean = 4.14, S.D = 0.9).

Behavioral Loyalty: "24. It is my intention to shop at this online store in the future." (Mean = 4.07,S.D. = 0.96), "25. If I had to choose again, I would choose this online store." (Mean = 4.08, S.D. = 0.96) and "26. Although other new alternatives emerge, I will not give up shopping at this online store." (Mean = 3.42, S.D = 1.23).

5.3 Exploratory Analysis

With the aim to answer the first research question, "What are the perceptions of consumers in each experience dimension for online stores?" for each research dimension a representative score was calculated. The representative score obtained reflects the response behavior in each case. It was estimated that the dimensions with the

highest mean levels of agreement are "Attitudinal loyalty" (Mean = 4.18, S.D. = 0.81), "Visual experience" (Mean = 4.17, S.D. = 0.65) and "Real experience" (Mean = 4.05, S.D. = 0.63), while at lower levels the dimensions "Behavioral loyalty" (Mean = 3.86, S.D. = 0.92), "Emotional experience" (Mean = 3.65, S.D. = 0.86) and "Social experience" (Mean = 3.25, S.D. = 0.91). Finally, the normality of the distributions of each representative variable was examined using the Kolmogorov–Smirnov and Shapiro–Wilk normality tests at a significance level of $\alpha = 0.05$, where in each case normality was rejected ($p < 0.05$).

The comparative results between the levels of agreement in the research variables, the non-parametric test of repeated measurements, Friedman's Related Samples Two-Way Analysis of Variance (Friedman's Test), were used at a significance level of $\alpha = 0.05$. It was estimated that there is a statistically significant difference between the levels of agreement in the examined variables.

As a result, significant differences were observed between the research variables. To highlight the specific pairs exhibiting differences, the non-parametric Bonferroni method was employed to examine the paired comparisons. It was estimated that there is a statistically significant difference between almost all variables, apart from the pair "Visual experience"- " Attitudinal Loyalty" (Adj. Sig. > 0.05) by which follows that Visual experience and are statistically equal. Considering the estimated descriptive measures, the following arrangement is obtained in terms of the overall degree of agreement in the research variables:

Social experience < Emotional experience < Behavioral experience < Real experience < Visual experience = Attitudinal Loyalty.

6 Conclusion

According to the above analysis and the investigation of the type of products that the participants choose to buy from e-stores, it was estimated that they mainly prefer clothes (50.30%), shoes (35.24%), electronics (27.40%) and sporting goods (23.80%), while cosmetics (14.80%), books (11.70%), decoration (9.90%), toys (6.90%) and jewelry (6.90%) are purchased at lower levels. Finally, regarding the way of making purchases, the participants prefer to pay via credit/debit card (58.13%) and cash on delivery (37.65%), while depositing into a bank account (4.22%) is the least preferred method. From the above percentages regarding the use of banking transactions, it can be concluded that consumers feel safe to pay online. The results of the present study show that the customer shopping experience ceases to be a complementary function and has rather become the basis on which the corporate strategy should be structured. Contemporary e-consumers do not make decisions based on brand or price, but experience is an important factor in their purchasing decisions [25].

Regarding the visual experience, the participants argue that the online store is in the consumer's language with an attractive design and intuitive navigation, without distracting ads. For social experience, they agree that they have access to social

networks where they can interact with other customers and employees and express their opinion. As far as the real experience is concerned, they agree that online stores have attractive offers, very good prices and product quality; thus they feel joy, enthusiasm and have fun when they are shopping. The greater the emotional involvement of users, the more likely they are to recommend the product to others (Attitudinal Loyalty) and repeat purchases (Behavioral Loyalty).

Of the experiences explored, the Visual experience and the Attitudinal Loyalty, in this study, prove to be the most important. This means that the two experiences have the same influence on a likely customer.

Particularly:

(a) Visual experience. This includes the colors, photos, as well as the quality of the graphics and the design elements used to create physiological and emotional reactions [19]. Attractive appearance, design, usability, style and the ease of use are reflected in the visual elements that stimulate the shopping experience and have a positive effect on the loyalty of retailers [14].
(b) Attitudinal loyalty. In practice, this means they may become brand advocates and willingly spread positive recommendations to family, friends and colleagues, as well as provide a powerful form of organic marketing because people tend to trust like-minded opinions more than traditional advertising [26].

For consumer repurchase to occur, an unforgettable experience that evokes an emotional response by the customer and facilitates the reward process is necessary [27].

Research limitations. The limitations of this particular study regarding—the sampling, include—the non-probability sample and the combination of convenience and snowball sampling. Regarding the dimensions of the shopping experience, the evaluation is done ex post. Participants are asked to recall the specific experience.

Suggestions for further research. Future research on customer experience could include, in addition to experience dimensions, variables that indicate satisfaction, trust-reliability of an e-store that leads to loyalty, in order to make the experience more complete. Other suggestion for research could be the use of different devices, for example, the use of mobile phones for online shopping.

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Business Digital Twin—A Crucial Tool for the Public Sector During Human-Made Disasters

Vasileios Yfantis, Androniki Kavoura, and Klimis Ntalianis

Abstract Numerous prior studies from multiple fields have emphasised Information and Communication Technologies (ICT) for enhancing disaster management systems. Many nations are attempting to address the problem posed by man-made catastrophes around the world. The paper's identified gaps are (a) that the vast majority of current research, is dispersed and lacks a unified perspective on gathering and analysing financial data and (b) existing research puts emphasis on the private sector. We therefore aim to present a centralised system called business digital twin that collects financial information from multiple sources to represent the financial status of a government, improving accountability. In order for governments to address the problem of financial conflict during catastrophes, this study's effort is to explain how the business digital twin technology operates and why it is necessary. In light of this, the suggested business digital twin concept is presented in this study as an integrative concept that gathers information from many sources that are important for the accountability and the decision-making process of the government during human-made disasters. The identified gaps are important to decision makers and public officials, policymakers, academia, and practitioners, as the findings will assist them in comprehending the significance of this paradigm-shifting technology and creating the path for its acceptance.

Keywords Digital twin · E-government · Public administration

1 The Importance of Data During Human-Made Disasters

Catastrophes that are caused by human action are referred to as man-made disasters, these disasters can be immediate or long-lasting [1]. The term immediate disasters, also known as "socio-technical disasters," is typically used to describe different organisational emergent situations—accidents in factories, failures in transportation, incidents in public spaces, failures in production [2]. Both national and international

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crises are often referred to as long-lasting disasters. The complicated technological, administrative, and information process connected with catastrophe planning, reaction, and recover is synergistic and synonymous with the risk analysis, control, and communication process. The aspects of the system, whether those of the societies or the associated infrastructure, must be recognised by those who design these operations since they serve as basic components for the models that are created [3]. Time-dependent factors determine the physical conditions of all infrastructure and the wellbeing of all populations, therefore the time frame is crucial in modelling, risk analysis, and preparation. Additionally, a system's status may be determined by how responsive and resilient it is to a serious risk. This argues that a particular system's risk from a specific threat depends on the system's status, vulnerability, resilience, time frame, and exact threat. One of the major issues that organisations today are dealing with is data quality. Data quality becomes a bigger problem in management's organisations as they become increasingly reliant on information technology to carry out their tasks [4]. Low data quality is expensive [5] and there is significant evidence that information maintained in business systems is not accurate [6]. Data quality issues may result in actual losses, both financially and socially. Insufficient data quality affects decision-making in a variety of ways. People rely their judgments on the information that is available to them, and those who are confused frequently decide incorrectly [7]. It is obvious that incorrect information will probably lead to incorrect decisions, which is really risky, especially during human-made disasters [8].

This study presents a centralised system called business digital twin that collects financial information from multiple sources to represent the financial status of a government, improving accountability.

2 Using Business Digital Twin to Gather Financial Data

The requirement for a continuous flow of accurate financial information during man-made disasters in order to prevent the collapse of the public sector leads to the adoption of a modern system capable of providing decision makers with accurate information in real time. Technology as a tool seems to be the suitable answer here. The fields of artificial intelligence, cloud computing, edge computing, big data, wireless sensor networks, 5G, cloud computing, and the Internet of Things (IoT) are all expanding quickly and have a lot of promise for the future. All of these technologies enable the merging of the physical and digital worlds, which is an unavoidable tendency in dealing with the market's expanding complexity and high expectations [9]. Our suggestion is an alternate version of the technology called digital twin [10]. According to research from Eric VanDerHorn and Sankaran Mahadevan that reviewed 46 digital twin definitions, a digital twin is [11]: "a virtual representation of a physical system (and its associated environment and processes) that is updated through the exchange of information between the physical and virtual systems." While digital twin is a popular concept, according to the literature review by Fei Tao

and other researchers [12], most of the scientific publications focus on its application in smart manufacturing, and the business sector (application in organisations) is almost completely ignored. There has been interesting research by Venkatesh about the use of digital twins in the sector of public health [13]; however, it partially refers to public health organisations and mainly focuses on the health engineering sector.

An organisation's physical equipment, services, or operations are mirrored virtually via a digital twin. Digital twin may represent a specific item, such as a piece of machinery or even a network of interconnections [14]. In the past, the industry utilised digital twins to monitor expensive physical gear. Sensors included in such gear would provide important performance reports to its digital equivalent (digital twin). Simulations could then be conducted on the digital model to identify improvement opportunities. The original physical object could then be upgraded with these improvements.

A business digital twin is a digital representation of the organisation that may comprise all of its resources, personnel, and processes. In contrast to the industrial digital twin, which gathers data from physical sensors, the business digital twin gets real-time information from the institution's auditing systems (e.g., accounting, human resources and logistics). The combination of the digital and physical environments produces a "virtual factory" setting where managers can conduct business simulations based on man-made disaster scenarios. In regard to a public organisation, the financial managers could conduct experiments to test the stability and resilience of the public organisation's financial system during various man-made disasters. The experiments could lead to predictions about the potential sequences of the disasters and also suggest potential solutions for the continuation of the financial system during the chosen testing scenario.

Business digital twins involve extrinsic elements in their model, such as logistics systems, citizen expectations, and economic conditions. These parameters, when paired with information on the past and current performance of the organisation, result in simulations of the business environment that are accurate. Executives can visualise crucial business information using the results generated by the business digital twin to spot obstacles, assess prospects, and study the consequences of adopting an alternative method or action.

3 The Structure of the Business Digital Twin

A business digital twin system suitable for the protection of public organisations during human-made disasters will consist of three main operations: (1) Data acquisition, (2) Data integration and analysis, (3) Decision-making.

3.1 Data Acquisition

The collection of the data could be implemented by using "virtual sensors" such as a financial sensor, a social media sensor, and a crowdsourcing sensor. A financial sensor is a set of automotive processes that are designed to gather information from the financial resources of a public organisation in real time. The social media sensor will explore social media data to assess disaster phenomena and their socio-economic sequences (e.g., social media posts from citizens looking for fuel stations during the disaster). Social media offers a plethora of data regarding crisis scenarios. Using data science on publicly accessible social media content, it is possible to identify or predict key incidents (such as a demand for specific goods or funds). Moreover, social sensing offers several important benefits. First of all, social media data reporting mostly gathers material produced by the wider population rather than public servants, so there is no demand for the available public personnel for crisis management. Furthermore, all the gathered data can be reported via social media posts in real time. Crowdsourcing is a form of interactive online activity in which a person, a group of people, or a business entity offers to carry out a task of their own desire on behalf of others via an open call [15–17]. The two major functions of crowdsourcing methods in the field of disaster management are data collection and data processing [18].

3.2 Data Integration and Analysis

To truly comprehend disaster events, it is required to combine information from different perspectives due to the diversity of crisis situations, which is impossible to characterise from data from a single medium [19]. Because there are no theoretical methodologies for encoding data sets, the rising demand for multiple forms of data poses challenges for data integration and analysis [20]. The business digital twin's approach to solving these issues is, first of all, to categorise and store the different types of incoming data based on their form (e.g., images, text). The next step is to analyse the data by using artificial intelligence as a tool to create a map of different conceptual entities and the relationships between them. For instance, a "map" would consist of images collected by public social media posts visualising the different locations of the citizens during disasters and their demand for goods (e.g., clothing, food, fuel, etc.) as they were interpreted by using artificial intelligence to make predictions based on the analysis of the text content of the social media posts.

3.3 Decision-Making

Gamification is an important aspect that will lead us to a suitable form of decision-making. Gamification, whose use in the public sector has been widely explored [21], refers to the usage of gaming elements in a non-gaming environment [22]. Through gamification, actors can obtain information about circumstances, pose what-if questions, analyse possibilities, visualise possible outcomes, and engage in a robust and transparent decision-making process [23]. The ability of gamification to model the collaboration, sharing of information, and interconnections in emergency preparedness and emergency planning makes it a crucial component of the business digital twin system.

4 Conclusions

The need for important information during human-made disasters that will prevent public organisations' financial systems from collapsing due to the unpredicted consequences of the disaster; poses a challenge for a central system that will gather and analyse financial information crucial for the business continuation and decision-making processes of the organisation.

Our suggestion for this type of system is a business digital twin, which is an alternate version of the innovative digital twin technology, adapted to the needs of a business entity (e.g., municipality). The advantages of the business digital twin are numerous, including real-time reporting, performance analysis, risk analysis, and decision-making scenarios. However, the digital twin model has also faced criticism due to its questionable ability to extract meaningful information from the acquired data (especially social media data), which tends to include fake information [24]. Moreover, the centralised structure of the business digital twin may face the challenge of slow response time during a disaster due to the many levels of authority required for decision-making, in contrast with the decentralised systems that require fewer levels of hierarchy [25]. According to the previously mentioned research by Jones, other challenges of the digital twin include technical implementations, levels of fidelity, data ownership, and integration between virtual entities.

Nevertheless, we strongly believe that the suggested business digital twin, due to its innovative technological features and predictability for the performance of the financial system during disasters (through simulations), will be instrumental in providing decision makers in the public sector with a transparent means to reduce the destructive consequences of human-made disasters. What is required for the near future is the design of disaster scenarios that we could provide the digital twin system with in order to improve its predictability and practical value.

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Managing University Heritage: The Expansion of Athens University's History Museum, Permanent Collection



Evangelos Papoulias and Theoklis Petros Zounis

Abstract Athens University History Museum (AUHM) was inaugurated in 1987 in the context of the 150th anniversary of the National and Kapodistrian University of Athens (NKUA) Institution since its establishment. Its integration in the cultural center of Athens makes it special on a global level because very few universities have managed to create a museum which highlights the cultural heritage of the university and one that addresses not only the academic community but also the broader public. In 1998, with the decision of the Greek Ministry of Culture, NKUA was granted the right to utilize the property at 16 Tholou Street, Plaka, in Athens for an expansion of its history museum. The reconstruction and expansion of the building was completed in 2019. What was the main aspect of a new narrative of the permanent collection for the new building? Specifically, NKUA's portrait collection includes 347 works of 90 different artists, remarkable examples of modern Greek art narrating the history of NKUA, as well as the important role of those great figures in higher education. The NKUA administration decided to present to the new building the NKUA's growth in its historical space–time. The paper examines the new approaches and perspectives for museologists and cultural managers to create a new storytelling in order to promote and enhance university heritage to public.

Keywords University Heritage · University Museum · Expansion of permanent collection

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1 Introduction

Museum organizations respond to modern requirements for education and entertainment. Especially, the university museums protect, conserve and present the cultural heritage related to education, science and research [5]. The Athens University History Museum (AUHM) is the main cultural organization of National and Kapodistrian University of Athens (NKUA) that promotes and highlights the history of the University of Athens. The AUHM hopes to expand its cultural impact in the broader context of developing the museum's difficult work in multidisciplinary cultural activities of interdisciplinary nature aiming at the extroversion and promotion of the university heritage. In 1998, with the decision of the Ministry of Culture, NKUA was granted the right to utilize the property at 16 Tholou Street for an expansion of its history museum. The Museum personnel designed and proposed two exhibitions of rare items that showcase the University's history, on the ground floor and the first floor. The exhibition "University of Athens: People and Architecture" on the ground floor displays rare photographs of NKUA's buildings. The exhibition on the first floor presents NKUA's growth in its historical space–time and presents the first senate of the NKUA beginning with portraits from the permanent collection of NKUA.

2 Theoretical Approaches for University Museums

In the 80 s, university museums began to recognize the importance of their collections, and in the 90 s more emphasis was placed on the collections and their organization [2]. In the 2000s, numerous studies highlighted the university collections and recognized that universities possess objects of great value, not only national but also international [2]. Universities preserve and enhance their cultural heritage by promoting a sustainable management of their collections and by engaging local community [3]. University museums are a special category of museums as they exist and operate within a university educational unit and are an integral part of the educational process [10]. A University Museum concerned with the history of education, as it is oriented toward many underground or postgraduate university students [5]. The collections of the University Museums testify to the historical development of scientific researches in different disciplines: the several collections are archives of knowledge [6]. The university museums protect, conserve and present the cultural heritage related to education [10]. Presenting a university museum space is hugely important during the latest years, in which museum environments interact with new dimensions in globalization [11]. Within the framework of an exhibition of modern art, the university museum combines academic theory and practice, especially for students who are the first audience to approach various educational topics through museum's collections [11].

There are three basic dimensions of modern museums, that is, research, educational dimensions and entertainment, while extroversion must be developed in the

desired direction [7]. The modern museum perception changes the museum philosophy of both the exhibition practice and the interpretation of exhibits [13]. The museum organizations are responding to modern requirements for education and entertainment and also responding to new challenges [12].

3 The Athens University History Museum (AUHM)

The Athens University History Museum is the main cultural organization of NKUA that promotes and highlights the history of the University of Athens [9]. The museum was inaugurated in 1987 and is housed in the historic building of the historic center of Athens known to the public as "Cleanthis House" or "Old University." The history of the building which housed the first University of the Greek state is long and interesting. The historic building is one of the few that is still standing beneath the Acropolis dating back well beyond the eighteenth century and the idea. During the Ottoman years, the building was a residence, of architects Kleanthis and Schaubert (1831–1836) and afterward it was rented to host the First High School of Athens (1836–1837); finally, it expanded to become the first home of the National and Kapodistrian University of Athens (1837–1841) [8]. Until 1861, when it was sold, it became a teaching center (*didaskalio*) and infantry barracks; then it changed owners again, and the ground floor became a restaurant. Inexpensive amendments and additions were also made to the building, in order to meet the needs of refugees and immigrants who settled in it. Its architecture was constantly developing due to the regular restorations and adjunctions made according to its intended use. The Museum was emptied in 1974 and then restored between 1975 and 1985 to become the first university museum in the historic center of Athens.

The Athens University History Museum on the ground floor has a free space for cultural events and temporary exhibitions. The mission and main purpose of the museum based on strategic planning (2016–2020) are as follows [1]:

- Protection, maintenance, management, and development of the permanent collection of the museum.
- Promotion of the history of the institution and work of the founders of science and research of modern Greece.
- Collaboration and coordination with other museums of the NKUA.

The vision of the museum is summarized as follows [1]:

1. To be the starting point for knowledge and critical thinking in a friendly environment for different types of audiences.
2. To strengthen ties between society and the NKUA enhancing temporary exhibitions in visual arts.
3. To enhance collaborations between museums of the NKUA and other museums in Greece and abroad to highlight the collections through an interdisciplinary approach.

In the last decade (2010–2020), the exhibitions "Sanatorio Project," "The banner of the Athens University, contemporary visual approaches," "Emotions" and "Opy Zouni: In first person" are dynamic cultural actions of the Athens University History Museum that create new perspectives [10].

4 The Expansion of Athens University's History Museum Permanent Collection

In 1998, with the decision of the Ministry of Culture, NKUA was granted the right to utilize the property at 16 Tholou Street, Plaka, in Athens for an expansion of its history museum. The Ministry of Culture had extensively made and detailed plans for a proper restoration of the building and its corresponding architectural peculiarities. Despite the continuous effort, the restoration work was never finished due to multifaceted problems arising and canceling the repair process. The restoration works finally finished, following the determined effort of NKUA's current administration (Rectorship of Meletios-Athanasios Dimopoulos, 2015–2023) which paved the way toward expansion of AUHM and the implementation of the new exhibition. The museological study for the extension of the museum and its new use focused on the presentation of the protagonists of the first senate of 1837 when the new institution was inaugurated and on the presentation of rare moments of the university throughout its operation.

Located at the historical center of Athens, the two-floored building has an open terrace overlooking the sacred hill of Acropolis. The Museum personnel designed and proposed two exhibitions of rare items that showcase the University's history, on the ground floor and the first floor. The exhibition "University of Athens: People and Architecture" on the ground floor displays rare photographs of NKUA's buildings. The exhibition is divided into two sections. In the section "Inside the Walls," visitors have the opportunity to appreciate precious pictures of the university's architecture as well as human resources—professors, students, researchers and administrative personnel—those who continuously instill life and energy to the university's development. The other section, "Outside the Walls" displays snapshots of NKUA's academic community attending scientific, political, and social events that took place outside the University premises.

The exhibition on the first floor presents NKUA's growth in its historical space–time. The exhibition hall displays oil paintings of figures who composed the university's First Senate in 1837 and significantly marked the course of the university's life, all in one display unit, for the first time. Being an important part of the university's collection, those spectacular works of modern Greek art are evidence of the university's tradition of assigning artists the task of portraying its professors. Portraying the university's founders, benefactors, donors and professors usually took place after their deaths. Such tradition has a dual role: firstly, it commemorates their great contribution to education and to the nation; and secondly, those portraits decorate

the historic sites where these important figures lived and acted. Specifically, NKUA's portrait collection includes 347 works of 90 different artists, remarkable examples of modern Greek art narrating the history of NKUA, as well as the important role of those great figures in higher education.

The first Academic Senate consisted of:

- Konstantinos Schinas, Rector (work of Vassilios Skopas [Karoubas], 1866)
- Missail Apostolidis, Scholarch of the School of Theology (work of Vassilios Skopas [Karoubas], 1864)
- George Rallis, Scholarch of the Law School (work of Spyridon Prosalentis, 1884)
- Anastasios Lefkias, Scholarch of the Medical School (work of Dionysios Tsokos, 1853)
- Neophytos Vamvas, Scholarch of the School of Philosophy (work of Dionysios Tsokos, 1856)
- George Gennadios, Senate member (work of Dionysios Tsokos, 1855)
- Ioannis Vouros, Senate member (work of Spyridon Prosalentis, 1878)
- Loudvig Ross, Senate member (work of Georgios Varouchas)
- Pericles Argyropoulos, Senate member (work of Vassilios Skopas [Karoubas], 1861)
- Gikas Dokos, General Secretary (work of an unknown artist)

Apart from the portrait collection, the documentary National and Kapodistrian University of Athens 1837–2017, which was produced on the occasion of NKUA's 180th anniversary, in 2017, directed by Eva Stefani, is also available to visitors at the exhibition. The expansion of the History Museum, to the new building of 16 Tholou St., indicates NKUA's extroversion and its concern for raising public awareness of the university heritage in a modern cultural environment (Images. 1, 2, 3, & 4).



Image. 1 The Athens University History Museum of the NKUA



Image. 2 The expansion of Athens University's History Museum



Image. 3 The exhibition "The university's first senate in 1837"



Image. 4 The exhibition "University of Athens: People and architecture"

5 Conclusion

The expansion of the museum and the new exhibition were completed in June 2019. There was no time to start the new exhibition and in less than a year the museums were closed due to the coronavirus pandemic. The new reality raised new questions about the future and operation of the museums. The digital transformation of everyday life is shaping the new reality on a global scale. In this context, Greece lacked sufficient available digitized cultural material, which increased the awareness of the urgent need for digitization in most cultural organizations [4]. In this unprecedented situation, it is clear that museums are embarking on a new beginning, which requires bold steps to improve their digital products, but also to adopt new operating models by linking culture to new economic sectors. The recently closed museums felt the need to take the one-way road to digitalization. However, digital transformation is not just a temporary solution in times of crisis but a useful tool at all times, contributing to modernization, employing management tools [14], broadening the audience, and fulfilling the important social role of museums. The AUHM, in its attempt to transform itself digitally, expects to use tools to highlight its collections, its buildings and its position in the city, in one of the most special areas of Athens, the historic center. Similarly, it can use the digital environment to highlight its activities, develop new ones and achieve one of its main objectives, which is to open up to a wider public, different age groups, disabled groups, etc. These tools can also be used to promote the institution through the museum's website and social media (Facebook, Twitter, Instagram, and LinkedIn). The AUHM, in the broader context of the development of its strategy, continues to enrich its valuable work with multifaceted cultural activities of an interdisciplinary nature, aiming at extroversion and the opening of university heritage and related cultural organizations to society. Creating cultural activities in university organizations is one of the challenges of university extroversion in modern times. The future of museums is changing radically, and as cultural actors they are called to adapt to a changing environment [15], dominated by new technologies, digital applications, evolving cultural activities, and new educational practices. The spirit of the new era proposes the opening of museums to the public with actions that respond to the new data and can lead to entertainment and the spiritual empowerment of society. As vehicles of culture, museums are expected to adjust to a transforming environment, where new technologies and digital applications thrive, on a par with developing cultural activities and new educational practices. The new era suggests opening the museums to the wider public, with activities adjusted to the new circumstances, to entertain and spiritually strengthen society. The university museums, like all others, are expected to search for the new narrative through cultural activities which highlight their exhibits and the wealth they entail. In this spirit, the AUHM continues to evolve, meeting needs, and taking up opportunities. University museums are invited to look for the new narrative with cultural activities that highlight and promote all of their exhibits and wealth.

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Marketing Strategies for Woodcraft Businesses in Greece



Ioannis Papadopoulos and Aikaterini Liaskopoulou

Abstract The woodcraft industry, a traditional sector of the Greek economy, faces ongoing challenges and opportunities. Despite its strong cultural heritage, woodcraft businesses need to adapt to modern consumer expectations and adopt innovative marketing strategies to remain sustainable. This research examines the marketing strategies used by Greek woodcraft companies, evaluates their effectiveness, and proposes improvements. The data were collected using a structured questionnaire from 70 small companies, from seven regions, covering 80% of the country. The analysis focuses on the use of promotion techniques, customer relationship management, and the utilization of digital media. The results show that the local market is the primary source of revenue for 82.8% of businesses, with 43.8% engaging in exports. Despite export difficulties, such as customs regulations, the COVID-19 pandemic forced 24.3% of businesses to shift to online sales. The internet and word of mouth are the main promotion methods, while 77.6% of businesses indicate a clear willingness to engage in business networks, recognizing the benefits of collaboration. Companies that participate in networks see improvements in innovation and access to new markets. However, some businesses express concerns about maintaining independence. Overall, the study highlights the need for Greek woodcraft businesses to adopt modern strategies and leverage the digital age to ensure their long-term growth.

Keywords Woodcraft · Marketing strategies · Digital sales channels · Exports · Innovation

1 Introduction

The woodcraft industry is one of the most traditional and enduring sectors of the economy, combining art with functionality [1]. In Greece, where woodcraft has deep roots in cultural heritage, the businesses in this sector constantly face challenges and opportunities in a changing business environment [2]. The need to adapt to

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modern market trends and integrate innovative marketing strategies is imperative to ensure the sustainability and development of woodcraft businesses [3, 4]. This paper focuses on exploring the marketing strategies used by woodcraft companies in Greece, analyzing their effectiveness, and suggesting improvements based on the research findings [5, 6].

Even though traditional woodcraft retains significant cultural value, businesses in the sector often face challenges from changes in consumer preferences, economic pressures, and increased globalization [6]. The introduction of new technologies and innovation in production processes can enhance the competitiveness of woodcraft businesses, enabling them to meet modern market demands [4]. These innovations include the use of advanced woodworking tools, improved finishing techniques, and the development of high-value-added products.

Beyond its importance in Greece's cultural heritage, woodcraft significantly contributes to the country's economy. The Cultural Industries, of which woodcraft is a key part, are an emerging sector [7]. Since 2003, the UNESCO Convention for the Safeguarding of Intangible Cultural Heritage (ICH) has included traditional crafts in its categories of intangible cultural heritage [8]. The Greek Government, through the Ministry of Culture and Sports, has signed a Programmatic Agreement with the University of Thessaly for the revival of handicrafts and the support of Greek artisans. The goal is to develop a modern strategy with actions for sustainable development and business enhancement of handicrafts [9].

2 Literature Review

The development of craft entrepreneurship and woodcraft, beyond the knowledge and art of producing handcrafted products, typically using traditional methods—either entirely by hand or with the aid of hand tools or machines—requires both expertise and strategic actions in promotion, branding, and effective market distribution in the market [10–12]. In Greece, related studies [13, 14] reveal structural weaknesses in the traditional methods of promotion and distribution within the woodcraft sector, which should leverage modern digital marketing techniques as part of the digital transformation.

Research has shown that many micro-enterprises (MEs) involved in woodcrafts and the production of wooden art's objects struggle to distribute their products and reach potential customers [15]. Many of these businesses are based in rural and semi-urban areas [16, 17], so their target market is often dispersed, requiring well-focused marketing and distribution strategies.

For micro and small businesses, the online platforms offer a good alternative solution for product distribution [18], by creating their own website and online store, companies can access new markets.

Research took place in Bulgaria [19] indicates that Bulgarian woodcraftsmen continue to rely on the local market and do not take advantage of foreign opportunities. A lack of digital skills and reluctance to embrace new technologies are obstacles, while cyber fraud undermines trust in e-commerce.

Another research [3] examines marketing practices in the wooden furniture sector, adopted by manufacturers and how these affect business's performance. Companies which invest in innovative practices, such as digital media usage and brand development, perform better. The management of customer relationships and production flexibility also improves the results.

Research from Portugal [2] explores marketing strategies for the sustainable development of traditional woodcraft, analyzing challenges and opportunities for adopting sustainable practices. The success requires the integration of sustainable practices across all production and marketing aspects. The transparency and the authenticity are also crucial for attracting conscious consumers.

A useful guide [5] offers practical advice and marketing strategies for small woodcraft businesses, examining promotion, distribution methods and ways to increase brand recognition. The author concludes that small businesses can develop by focusing on product differentiation and expanding strong customer relationships. Also, using local markets and participating in exhibitions can also enhance exposure and sales.

The research [1] analyzes marketing practices and trends in woodcraft, examining strategies for promoting wood products and shows that successful companies focus on innovative practices, product differentiation, and advanced technology use. The participation in international markets and the brand strengthening are key success's factors.

Based on the above, the research questions of this study are the following:

1. What factors influence the willingness and ability of Greek woodcraft businesses to enter international markets?
2. How does the use of digital sales and promotion channels affect the performance of small and medium-sized woodcraft enterprises in Greece?
3. What are the challenges and benefits of collaboration among competitors in the Greek woodcraft industry?
4. What is the role of business networks and clusters in improving the competitiveness of woodcraft businesses in Greece?

3 Methodology

This research aims to investigate the marketing strategies of woodcraft businesses in Greece through quantitative analysis of primary data, using a structured questionnaire based on modern social research methods [20, 21], because it ensures consistency and comparability in responses and greater reliability. This is particularly important for drawing generalizable conclusions and comparing the results with international studies, facilitating the understanding of marketing strategies at an international level.

The data were collected from 70 small woodcraft businesses, across seven regions (Thessaly, Crete, Northern Aegean, Eastern Macedonia and Thrace, Epirus, Peloponnese, and Western Macedonia), covering over 80% of the country. The profile of the participants is presented in Table 1.

The questionnaire included 291 variables to answer the research questions, covering topics such as promotion techniques, customer relationship management, use of social networks, and corporate image management practices. A pilot test of the questionnaire was conducted prior to the main phase to ensure validity and comprehension [22, 23].

The main data collection phase was conducted from June 2022 to October 2023, with interviews conducted either in person or via teleconference, depending on participant's availability. After data collection, the information was entered into an Excel file and subjected to statistical analysis using IBM SPSS Statistics 29, including descriptive statistics, correlation analyses, and other appropriate techniques [24, 25].

Table 1 Demographic characteristics of participants

Variable	Categories	Percentage (%)	Variable	Categories	Percentage (%)
Gender	Male	84.3			
	Female	15.7			
Age	21–30	2.9	Annual Income	< 10,000 €	7.1
	31–40	20.3	(2021)	10–20,000 €	36.8
	41–50	34.8		20–30.000 €	38.5
	51–60	23.2		30–40,000 €	10.9
	61–70	8.7		> 40,000 €	6.8
	> 70	10.1			
Education	Primary school	4.8	Year of	< 1990	26.1
	Secondary school	9.7		1991–2000	10.1
	High school	33.9		2001–2010	17.4
	Technical school	17.7		2011–2020	40.6
	Bachelor's degree	29.1		> 2020	5.8
	Postgraduate	1.6			
	Phd	3.2			

4 Results

The results of the research showed that among the Greek woodcraft artisans surveyed, 82.8% reported that most sales were held in the local market, 72.6% in the national market, and 44.5% at the international level. This indicates that the local market remains the primary source of income for many woodcraft businesses in Greece, followed by the national and international markets. The dominance of the local market is attributed to factors such as close relationships with customers and a better understanding of local needs. The national market provides broader coverage and more sales opportunities, while the international market presents challenges such as transportation costs and customs regulations.

According to the data in Fig. 1, 43.8% of participants engage in exports, showing that nearly half of the businesses have access to international markets. However, 56.3% focused on the domestic market due to export challenges such as high tariffs and complex procedures. The main export countries are England, America, Australia, Germany, the USA, Canada, Cyprus, and many others. Key clients abroad are churches, individuals, hotels, and wholesalers.

The COVID-19 pandemic significantly affected sales for woodcraft businesses in Greece. However, 17.1% of businesses reported increased sales during the pandemic, likely due to adaptability and the adoption of new marketing and sales strategies. The most significant response to the pandemic's negative impacts, reported by 24.3% of businesses of the pandemic, was the development of online sales, responding to increased demand for online shopping due to lockdown measures. The shift to e-commerce was a strategic movement for many businesses, allowing them to maintain or even increase sales through digital channels.

The methods of promoting the products of woodcraft businesses are presented in detail in Table 2. The results show that participants use various promotion channels to enhance their market presence, but they place much greater emphasis on the internet (7.04) and word of mouth (7.02) on a scale of 1–8, with 8 being the most significant. The internet includes the use of websites, online marketplaces such as Skroutz and Best Price, and leveraging social networks to reach customers. They also heavily rely on word-of-mouth advertising, which remains one of the most effective promotion

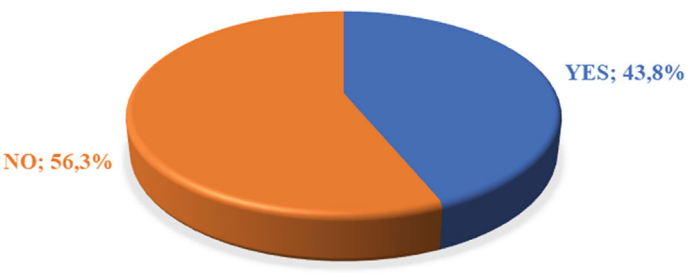


Fig. 1 Export activity among Greek woodcraft artisans

methods, especially in small and local communities. Another important option for promoting their products is participating in exhibitions, showcasing their products at special events and trade shows (5.75).

According to the results of the research on the deficiencies of the participants compared to their competitors, 31.4% pertain to marketing and advertising. This shows that many woodcraft businesses do not have the necessary knowledge or resources to effectively promote their products. This problem can lead to the reduced market recognition and competitiveness. Additionally, 20% of participants stated they are at a disadvantage regarding costs. This may include high production, material, or operational costs, which reduce profitability and competitiveness, while 15.7% of participants believe they don't have enough networking. The inability to create strategic partnerships and the lack of support networks can limit growth opportunities and access to new markets.

Finally, the research results, as shown in Fig. 2, indicate that 77.6% of participants are willing to join business networks, recognizing the benefits of collaboration, such as access to new markets, resource sharing, knowledge and technology exchange, and innovation enhancement. However, 20.7% are not willing due to a lack of trust and fear of losing independence. The hesitations may also be due to unfair competition or previous negative experiences.

Table 2 Ways in which the artisans in the research promote their products (1–8 from least to most important)

Promotion Media	N	Min	Max	Mean	St. dev
Internet	53	2	8	7.04	1.427
Word of Mouth	58	1	8	7.02	1.606
Exhibitions	20	1	8	5.75	2.268
Local event sponsorships	20	1	7	4.45	1.959
Promotional offers	18	1	7	4.44	1.688
Press/Radio	16	1	7	4.19	2.316
Television	9	1	7	2.33	2.179

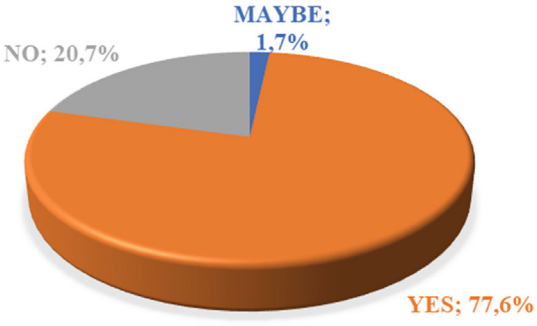


Fig. 2 Willingness of artisans to join business networks

5 Discussion

The willingness and ability of woodcraft businesses to export has vital importance, offering opportunities for growth and customer base diversification, while requiring strategic skills and resources [1]. The researchers [2] point out that businesses who enter into international markets benefit from increased demand and higher profit margins, but the lack of resources and the need to comply with international standards discourage small businesses from exporting.

Research shows that Greek woodcraft artisans focus primarily on the local and domestic market due to direct access to customers and lower distribution costs [1]. Research [2] highlights the difficulties which small businesses face in competing internationally due to limited resources and specialized knowledge, while Hofstrand [5] mentions that local and national markets offer stable opportunities compared to international markets, which require more adaptation and investment.

The use of the Internet and e-commerce is crucial for small and medium-sized businesses. According to Marques and Rocha [3], the businesses that invest in digital channels have improved performance, as the Internet provides broader access to customers and reduces advertising costs. Cohen and Kozak [1] emphasize the importance of online presence, mentioning platforms like Skroutz for selling products. Word-of-mouth advertising is effective for small businesses due to personal relationships [5]. Sponsorships and exhibitions enhance corporate image and create new contacts [6].

Greek woodcraft artisans, as well as those from other countries with strong craft traditions in woodcraft, such as Sweden, Finland, Austria, Germany, Norway, Estonia, Italy, Switzerland, France, and others [26, 27], to participate in business networks or clusters offers significant benefits. According to the previous researchers [1], Business networks improve competitiveness through resource sharing and collaboration in areas such as research and development. Marques and Rocha [2] highlight the advantages of clusters, such as access to new markets and economies of scale, while networking enhances adaptability to market changes [6]. The collaboration in clusters improves access to financing, as banks view businesses in dynamic networks positively. However, a small percentage of participants express reservations due to a lack of trust and a desire for independence [5], which are the common obstacles for small businesses.

The cultural industries of many European countries can benefit from the results of this research [26, 27], in accordance with the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (ICH) [8].

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Management of Ceramic Art Festivals: Promoting Cultural Activities at a Global Level



Margarita Kefalaki and Paraskevi Danelaki

Abstract Ceramic art festivals contribute significantly to the preservation and promotion of ceramic art, supporting the revival of local identities and traditions. Understanding the management strategies used by such festivals, and imitating good practices, can ensure their success and long-term sustainability. This study examines two different ceramic art festivals, the festival «Earth, Water, Fire» in Greece and the festival «Autour de la Terre II» in France, with the purpose to suggest the best management practices for such festivals and propose possible improvements. Semi-structured interviews with a representative of each festival, a SWOT analysis for each festival, as well as an audience research for the «Earth, Water, Fire» festival, are the methodological tools employed in this study. Results illustrate that the presence of festivals in social media, such as Facebook and Instagram, and the utilization of digital communication media in general can help their development and promotion. Additionally, the creation of websites and newsletters, their promotion in the city's cultural events' calendars, and the collaboration with influencers, bloggers, and ceramists are ways to communicate such festivals to a wider public. Implications for management and marketing use are further discussed.

Keywords Cultural heritage management · Digital communication strategy · Heritage tourism

1 Introduction

Cultural festivals contribute to both preserving the heritage of a local culture and promoting economic development [1]. In fact, through local cultural festivals, one can meet with local traditions, local culture and the intangible cultural heritage of a

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place, thus strengthening the tourism industry as many of the cultural festivals are tourist attractions [2]. Understanding the marketing and communication strategies for festival planning is essential to ensuring their success and sustainability. This paper examines the festivals «Earth, Water, Fire» in Greece and «Autour de la Terre II» in France, to suggest methods that can improve their management and marketing strategies.

Public engagement can generally help conservation efforts [3], and cultural heritage management can best take place through a process of community participation [4, 5]. Tourist arrivals and receipts and the creation of employment opportunities for the local community are only some of the heritage tourism benefits [6]. This is the reason why cultural festivals should be considered very important for the development of a community. Information and Communication Technologies (ICTs), and most particularly Social Media also play an important role in Digital Community Engagement (DCE) referring to the cultural heritage management [7], that can help community promotion and development.

2 Methodological Considerations

The research employs both qualitative and quantitative methods. Specifically, semi-structured interviews were conducted with representatives from each festival; a SWOT analysis was prepared for each festival, while audience research was carried out through a questionnaire distributed to the audience, actual and potential, of the «Earth, Water, Fire» festival. The survey, conducted from February to April 2024, involved 62 respondents and focused on their awareness of the festival, media preferences, and participants' engagement levels to examine the festival's promotional strategies.

3 The Festivals

3.1 «Earth, Water, Fire»—Crete, Greece

The «Earth, Water, Fire» festival took place for the second year in July 2023 in Thrapsano, Heraklion, with a pose of four years because of the COVID-19 pandemic. From July 6 to 9, 2024, Thrapsano was filled with people who came to get to know ceramics of Thrapsano region. Thrapsano is 30 km away from Heraklion and the Festival lasts four days. Visitors come with their own vehicles as there is no public transport. Accommodations are also limited. However, the Cultural Association of Thrapsanos financially covers the accommodation of visitors who come to participate in apartments, in Airbnbs and farmhouses.

The festival offers a rich program of events like musical concerts, a tour of the palace of Knossos, workshops for adults and children, screening of a documentary about ceramic art, educational workshops for children as well as pottery cooking, demonstrations of various ceramic techniques and also gives the opportunity to young visitors to participate in the hunt for the lost treasure. The local community treats the festival very positively, although the President of the Cultural Association of Thrapsanos Mr. Giorgos Mavrantonakis, stated that the communication policy of the Festival needs improvement (personal interview with Mr. Giorgos Mavrantonakis on June 2024). The goal is to develop and improve the festival's communication through social media—Instagram, TikTok, YouTube channel—as well as promotion on Greek TV channels. Researchers present the necessity of connecting cultural heritage with new technology [9]. Social media is an important communication tool for performing arts [8].

Promoting the Festival abroad through foreign universities with ERASMUS programs is an important goal for the organizers. Higher Education Students would only add to the festival's promotion and could also be implicated in the organization with the correct managerial efforts from the government, the academia and the students themselves [10–12].

The creation of a page on YouTube with educational videos, the organization of conferences, and the formation of a modern pottery's exhibition, with the financial support of the Region and NSRF programs, are also some of the festival's goals [personal interview with Mr. Giorgos Mavrantonakis on June 2024].

3.2 Festival «Autour De La Terre II»—France

The ceramics festival of Biot in France «Autour de la Terre II», first presented in the summer of 2021, was suspended because of COVID-19 pandemic and took place again in the summer of 2023. The festival aims to showcase the art of Biot ceramics. The Festival consisted of two temporary ceramic works exhibitions dedicated to: (a) French artists and (b) Greek artists. A ceramic market with 30 exhibitors with free admission was presented by both exhibitions. Ceramists exhibited their work and also made them available for sale. It is important to mention that the village of Biot had only one hotel where the Greek ceramists stayed.

4 Results

4.1 Festival «Earth, Water, Fire»—Crete, Greece

The questionnaire we used for the study was posted on the Facebook page of the Cultural Association of Thrapsanos and was also sent via e-mail to the registered friends of the Museum of Modern Ceramics website. It included questions (13 closed-ended and one open-ended) concerning the audience's experience, the social media they use, and their opinion regarding the promotion of the Festival for the creation. For the questionnaire result analysis, we used Google Forms. A total of 62 questionnaires were answered.

We present some of the questionnaire's answers in the form of tables for a better view and understanding for the readers (Tables 1, 2 & 3).

As we see in the tables, the role of the community remains very important. 53.2% of the participants learned about the event from acquaintances and friends. Then the media used mostly by the participants is Facebook and Instagram.

Concerning the festival's promotion proposals, the participants focus on modern digital media such as the creation of a festival website and the production of promotional videos with snapshots of their activities. The development of communication projects (exchanges, etc.) with universities is also proposed. It is very important to

Table 1 Means the participants used to learn about the festival

Means used to learn about the festival	
Acquaintances/friends	53.2%
PSTH Facebook profile	27.4%
Festival's Facebook profile	25.8%

Table 2 Media used to be informed about the festival

Media used to be informed about the festival	
Festival's facebook page	67.7%
Festival's Instagram page	56.5%

Table 3 Suggestions of the respondents to ameliorate the festival's promotional strategy

Suggestions of participants for the festival's promotional amelioration	
A more frequent presence on social media	54.8%
Creation of a festival website	48.4%
Product a promotional video with snapshots of the Festival's activities	40.3%
Develop collaborations with University Institutions	32.3%
Local artists participation in Festivals outside Thrapsanos and parallel activities	30.6%
Collaborate with school units and participate in tourist exhibitions	29%

Table 4 SWOT analysis «Earth, Water, Fire» festival

Strengths	Weaknesses
• Venue • Existence of a communication group • Collaboration with local agencies • Collaborations with artists • Exhibition areas • Museum of History and Ceramics • Free entrance and free actions • Economic activity of artists • Positive response from locals	• No Festival's social media • Low social media presence • No Festival website • Short interval of parallel actions • Lack of communication actions throughout the year
Opportunities	**Threats**
• Creation of social media • Enrichment of actions • Creation of a website • Collaborations with other festivals • Development of communication activities throughout the year • Digital media audience research	• Weather • Absence of important participants • Changing audience preferences • Increased competition • Reduction of resources

share positive examples and co-create with students, academics and people from around the world [13]. This is how the festivals and the community can go further (Table 4).

To better understand which are the strengths, the weaknesses, and additionally the opportunities and the threats of the «Earth, Water, Fire festival», a SWOT analysis is proposed:

The festival has a positive response from the public, and it seems that the weaknesses have been identified in order to be improved. It is important that all actions are offered free of charge to the public, and the possibility of hosting is also provided. The goal of promoting abroad is possible through university institutions and ERASMUS programs. Other ways of promotion throughout the year might be: (a) the contribution of the village workshops to the educational activities of schools and (b) the participation in other festivals.

4.2 Festival «Autour De La Terre II»—France

As part of the study of the management policy of the «Autour de la Terre II» festival, an e-mail interview was conducted with Ms. Isabelle Pitchers, ceramist from Biot and member of the Festival's organizing committee that was also responsible for the organization of the Festival's Greek exhibition. Ms. Pitchers (personal interview with Ms. Isabelle Pitchers on June 2024) explained that the festival organizers wish to bring together artists from all over the world and present the different traditions and techniques of each country.

Table 5 SWOT analysis «Autour de la Terre II»

Strengths	Weaknesses
• Venue • Existence of a communication group • Collaboration with local agencies and artists from abroad • Exhibition areas • Museum of History and Ceramics • Free entrance and actions • Economic activity of artists • Positive response from locals	• Lack of social media • No Festival's website • Short interval of parallel actions • Lack of communication actions throughout the year
Opportunities	**Threats**
• Create social media • Enrich actions • Create a website • Collaborate with other festivals • Develop communication activities throughout the year • Digital media audience research	• Weather • Absence of important participants • Changing audience preferences • Increased competition • Reduction of resources

The media to promote the festival were the internet, local print media, brochures, and posters. In the online space, there were posts about the festival on various websites and social media. Due to the reduced presence in digital media, the need for improvement and development was highlighted. Concerning traditional media, communication could be developed with press, television and radio interviews by the organizers and the artists that participated. A more dynamic use of social media is clearly required (Table 5).

To better understand which are the strengths, the weaknesses, and additionally the opportunities and the threats of the «Autour de la Terre II» festival, a SWOT analysis is proposed below:

Both festivals have a lot in common, in terms of their constitution, organization, presentation and methods of ameliorating their presence. The table below will help us better understand (Table 6).

5 Discussion and Conclusion

According to the audience survey, people would like to be informed about the Festival through the Festival's Facebook and Instagram pages. The public's suggestions for improving communication include more frequent presence and activity on social media and the creation of a website. The research showed that digital means of communication, the creation of a Website and a digital newsletter, can help the festival's promotion. Additionally, the collaboration with influencers/bloggers, the creation of a documentary on the ceramic art of each place, and the provision of

Table 6 Comparison of the festivals

	Festival «Earth, Water, Fire»—Crete, Greece	Festival « Autour de la Terre II», Biot, France
Purpose	*Display of ceramic art*	*Display of ceramic art*
Communication Goal	*Audience growth*	*Audience growth*
Communication means	*Traditional and modern*	*Traditional and modern*
Public	*Local population both inside and outside Crete*	*Local population and audience outside Biot*
Communication actions	*Activities every day of the Festival*	*Limited activities during the Festival*
Accessibility and amenities	*Limited number of accommodations, no routes to and from the Festival*	*Availability of accommodation, absence of routes to and from the Festival*

better public accessibility (public transport, accommodation) would help the same purpose.

Last but not least, the enrichment of festival's actions and finding stable methods of financing can ensure the viability of the festival.

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The Role of Green Marketing on Consumers' Behavior Toward the Environment

Eda Yaşa Özeltürkay, Murat Gülmez, Mustafa Öztürkel, and Beste Demirci

Abstract The Industrial Revolution has led to numerous global problems that became significant for the worldwide public after the 1970s. The growing global environmental issues have heightened consumer sensitivity, emphasized the importance of green marketing, and addressed these ecological sensitivities in the business world. Sustainability and ecological consciousness have a major role in the purchasing decisions made by consumers in today's business world. Green marketing strategies are essential in this situation for both companies and consumers. Examining how eco-labeling, eco-friendly packaging and branding, eco-friendly products, and premium pricing affect consumer behavior is the focus of this research. The survey method was used for a convenient sample of 342 consumers residing in Turkey. Results showed that the other factors, aside from eco-labeling, such as eco-friendly packaging and branding, eco-friendly products, and premium pricing, have been found to influence consumers' environmentally friendly behavior. Implications of these factors are discussed.

Keywords Green marketing · Consumer behavior · Environment

1 Introduction

The idea of "green marketing" is gaining importance today and is frequently included in the literature. The main reasons for this situation are that environmental problems and the concerns raised by these problems are very present in our lives [1]. This concept refers to managing ecological pollution, energy consumption and resource use most effectively and efficiently in marketing processes. Through product development, the use of sustainable manufacturing techniques, and the execution of integrated marketing campaigns, green marketing aims to lessen the environmental impact of products. It aims to meet the growing demand for sustainable consumption by promoting eco-friendly products. Placing these eco-friendly items in a market

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where consumers aware of their influence on the environment will be drawn to them is the main goal of green marketing [2]. Consumers in countries called developing countries have recently become more aware of the contribution of green products to sustainable development, and their interest in brands that care about ethical principles and sustainability efforts in their purchasing behavior is increasing [3]. The effects of various green marketing approaches in Turkey on consumers' environmental behavior are attracting increasing attention. Therefore, the aim of this study is to examine the role of green marketing on consumer behavior toward the environment.

2 Literature Review

Eco-labeling is a system that informs consumers about the environmental impact of their preferred products during their production and life cycle, while also highlighting their product advantages. Eco-labeling is expressed as a strategic communication tool used to identify environmentally friendly products [4]. Although the concept of eco-labeling emerged in the 1970s to support environmentally friendly production, the first eco-label applications were initiated by Germany in 1977, and products with environmental labels "Blue Angel" were launched in 1978 [5].Wojnarowska et al. [6] emphasize that increasing environmental awareness and sensitivity among consumers leads to a decrease in negative environmental impacts through increased production and use of environmentally friendly products. Eco-label systems are increasingly being utilized by the public as a crucial policy tool for sustainable development.

Green packaging, also known as sustainable packaging, is produced using environmentally friendly methods and materials that minimize energy consumption. Green packaging is an environmentally friendly method that utilizes biodegradable and energy-efficient materials [7]. This ecological process is based on avoiding Styrofoam and plastic-type materials obtained from fossil fuels and increasing the use of edible materials obtained from fiber, wood, and agricultural products [8]. Packaging activities increase the brand awareness of businesses and affect logistics activities in terms of shape and size. From a sustainability perspective, design successes achieved in packaging activities are of great importance as they provide effective space [9]. The use of environmentally friendly packaging provides a positive effect on increasing brand loyalty and satisfaction of environmentally concerned consumers [10].

The price that consumers are willing to pay for a product or service is perceived as an indicator of the quality of the relevant product or service, and at this point, the concept of price plays a critical role in the purchasing process. Pricing, which is a very complex and multifaceted process in the field of marketing, is expressed as the most important element of purchasing processes [11]. One of the most important problems for businesses that invest with environmental sensitivity and maintain these investments with respect for the environment is the issue of determining the price of green products. The main reasons for this situation are intensive research

and development studies during the production phase of environmentally friendly products, activities carried out to reduce energy consumption during the production phases, and to use of resources effectively, which brings additional costs [12].

Global pollution from industrialization is a significant environmental concern that encourages consumers to opt for green products. [11]. Consumers who have environmental concerns and are conscious of sustainable living prioritize environmental concerns while carrying out their activities to meet their needs [13]. Consumers with environmental concerns and beliefs alter their purchasing habits, favoring products that minimize or do not harm the environment. Consumers with environmental concerns and beliefs prioritize green products in their purchasing behavior [14]. With the increasing importance of green products in recent years, consumers have adopted a more environmentally friendly attitude. Consumer awareness of green products is expressed as one of the main factors affecting consumers' purchasing attitudes and behaviors [15].

3 Methodology

The data were gathered by convenience sampling technique with Google Docs via online survey, between 28.06.2024 and 22.07.2024. The data of this study, which was carried out with the Ethics Committee Approval, dated 28.06.2024 and numbered 2024/04 was received from Çağ University Ethics Committee. The population of the study consists of consumers living in Turkey. The survey form included two parts, the first part contains the items related to the environment that were obtained and used by Shabbir et al. [16]. The scale was translated into Turkish and applied to a pilot study on 20 people. After finalizing the last version of the survey, it was applied to 342 people through an online survey. Considering the number of people reached and the number of expressions in the scale, it was concluded that the quorum was reached. Kline [17] stated that 10 times the number of expressions in the scale (33 items) is sufficient for the representation of the universe. Therefore, at least 330 surveys were needed. The data was gathered and analyzed with the SPSS 20 package program. The hypotheses developed based on the research purpose are as follows. H_1. Eco-labeling (EL) is affecting consumer behavior toward the environment. H_2. Green packaging and branding (GPB) are affecting consumer behavior toward the environment. H_3. Green product, premium, and pricing (GPPP) are affecting consumer behavior toward the environment. H_4. Environmental concerns and beliefs (ECB) are affecting consumer beliefs toward the environment (CBTE).

4 Results

4.1 Descriptive Statistics

Demographic profile of the participants. The questionnaire form was fulfilled out by 342 individuals. 195 (57%) out of the participants were women, and 228 participants (66.7%) were born between 1980 and 1999. While 151 participants (44.2%) had a bachelor's degree, 176 (51.5%) were single. In addition, it has been determined that 138 participants were public sector employees (40.4%), and 127 participants (37.1%) had an income in the range of 35,001 ₺ - 50,000 ₺.

Descriptive Statistics for the scale items. The normal distribution of the items rated on a five-point Likert scale (5—strongly agree, 1—strongly disagree) has been examined, and the skewness and kurtosis values are within acceptable ranges. Acceptable ranges for these values can vary; some studies consider ± 3.5 to be acceptable, while others extend this range to ± 10. For this study, all items, except for ECB7 (4.336), fall within the ± 3.5 range. However, since the items still fall within the supported range, the normal distribution of the data is considered valid, and analyses supporting normal distribution have been conducted without removing any items.

4.2 Validity and Reliability Analysis

Factor analysis was used to validate the sub-dimensions of the scale. Reliability scores are based on the Cronbach Alpha (CA) coefficient being greater than 0.70. In this context, the CA score of 33 statements on the scale was found to be 0.92. The result reveals the high degree of reliability of the scale. Validity analysis of the data set was conducted with explanatory factor analysis. It was done using principal component analysis and the varimax method. In this context, although the scales were taken from a single research, separate factor analyses were conducted for the sub-dimensions (Tables 1–4).

Table 1 Validity and reliability of the environmental concerns and beliefs (ECB)

	Factor loading	Eigenvalue	% of Variance	CA
ECB1	0.549	3,643	45,543	0,81
ECB2	0.614			
ECB4	0.603			
ECB6	0.801			
ECB7	0.741			
ECB8	0.526			
ECB9	0.749			
ECB10	0.758			

The results of the analysis of the Environmental Concerns and Beliefs (ECB) dimension are given in Table 1. (Kaiser-Meyer Olkin (KMO) is > 0,60 (0,835) and Barlett Test of Sphericity Approx. Chi-Square (876,996 p < 0,005) is at sufficient range. This dimension explains 45,543% of the total variance. The factor loading (<0,50) of each statement is given in the table. ECB3 and ECB5 items were removed from the scale because factor loadings were less than 0.50. The square of the factor loading of an item on a factor shows how much of the variance in the factor it explains. A low factor loading of an item means that the item is insufficient to explain the relevant factor [18].

Table 2 shows the analysis result; KMO (0,920 > 0,60) and Barlett Test of Sphericity Approx. Chi-Square (1699,875; p < 0,005) is significant for CBTE dimension. The reliability analysis result is 0.88, showing that the scale is significant and reliable.

Eco-Labeling Dimension is examined in Table 3. KMO is above 0,60 (0,912) and Barlett Test of Sphericity Approx. Chi square 1559,303; p < 0,05) The factor loading of each statement is over 0.50.

Green Packaging and Branding Dimension is presented in Table 4. The reliability analysis is 0.84, showing that the test is significant and reliable. The factor loading of each statement is over 0.50. According to these findings (KMO test value 0.852

Table 2 Validity and reliability of the consumer beliefs toward the environment (CBTE)

	Factor loading	Eigenvalue	% of Variance	CA
CBTE1	0.694	5,3	58,89	0,88
CBTE2	0.744			
CBTE3	0.819			
CBTE4	0.817			
CBTE5	0.785			
CBTE6	0.842			
CBTE7	0.744			
CBTE8	0.695			
CBTE9	0.753			

Table 3 Validity and reliability of the eco-labeling (EL)

	Factor loading	Eigenvalue	% of Variance	CA
EL1	0.812	4,452	74,195	0,93
EL2	0.869			
EL3	0.898			
EL4	0.889			
EL5	0.872			
EL6	0.824			

Table 4 Validity and reliability of the green packaging and branding (GPB)

	Factor loading	Eigenvalue	% of Variance	CA
GPB1	0.749	3,231	64,619	0,84
GPB2	0.866			
GPB3	0.860			
GPB4	0.853			
GPB5	0.673			

Table 5 Validity and reliability of the green products, premium, and pricing (GPPP)

	Factor loading	Eigenvalue	% of Var	CA
GPPP1	0.880	2,122	70,72	0,78
GPPP2	0.825			
GPPP3	0.817			

and Bartlett test value 793.366; p = < 0.001), it was determined that the data was suitable for factor analysis and the total variance explained was 64.619%.

Table 5 displays a KMO (0.686 > 0.6) and Bartlett's Test (Approx. Chi-Square: 315,785; p < 0,005 with a reliability analysis of 0.78, indicating the test's significant and reliable nature.

4.3 Hypothesis Testing

Regression analysis was used to analyze the hypothesis of the model. Tables 6, 7 and 8 show the results of the tests.

Table 7 displays the ANOVA test results, indicating the statistical significance of the established regression model (F = 48.443, p = 0.000). a. Dependent Variable: CBTE b. Predictors: (Constant), EL, ECB, GPPP, GPBB.

The study found no significant association between the "eco-labeling" variable and the environment, with p = 0.427 > 0.05, indicating H_1 is not supported. However, the relevant hypotheses were supported, with effect levels less than 0.05.

Table 6 Summary of regression analysis

Model	R	R^2	Adjusted R^2	Std. E.of the Est	Change Statistics			Durbin-Watson
					R2 Change	F Change	Sig. F Change	
1	604a	0,365	0,358	0,72,763	0,365	48,443	0,000	1,808

Table 7 ANOVA results

ANOVA[a]						
	Model	Sum of squares	df	Mean square	F	Sig
1	Regression	102,592	4	25,648	48,443	,000[b]
	Residual	178,422	337	0,529		
	Total	281,014	341			

Table 8 Coefficient scores

Model	B	Std. Error	Beta	t	Sig	Tolerance	VIF
1(Constant)	0,588	0,293		2,008	0,045		
ECB	0,058	0,073	0,040	0,796	0,427	0,748	1,337
GPB	0,344	0,076	0,275	4,524	**0,000**	0,509	1,964
GPPP	0,143	0,053	0,151	2,714	**0,007**	0,610	1,640
EL	0,248	0,058	0,260	4,313	**0,000**	0,517	1,935

5 Discussion and Conclusion

The aim of his study is to identify consumers' environmental concerns and beliefs that shape their environmental behavior. According to the reports published by the United Nations Environment Program [20], environmental problems around the world are increasing, and urgent actions are required to solve these problems. Therefore, the importance of the environment is increasingly emphasized. Additionally, articles in various news sources state that environmental awareness should be increased, and sustainable consumption habits should be encouraged [21]. As highlighted in this study, there are many factors influencing consumers' green consumption. Specifically, factors such as eco-friendly packaging and branding, eco-friendly products, and premium pricing impact environmentally conscious purchasing behavior. In this context, consumers are aware of sustainability-related efforts of the companies.

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The Assessment of Supply Chain Efficiency in the Horticultural Industry

Katarzyna Szwedziak, Androniki Kavoura, Adam Busławski, Marcin Pieczyński, and Anna Orzeł

Abstract The rapid development of efficient data transmission networks and information technologies has made it possible to manage supply chains at a high level of detail. Supply chain efficiency is important to industries across sectors. Limited work though has been done on assessing supply chain performance. The purpose of this study is to present the framework for analysis and assessment in the horticultural industry. Basic indicators, logistics costs, divided into general infrastructure costs, transportation costs, delivery time, inventory levels, warehouse management costs and the quality of delivered products, need to be taken into account and analysis needs to take place for more than one year so that comparisons can be made for a company. The company that then can be part of the research needs to employ the latest best available technology production technology. This work seeks to provide guidance for enterprises that wish to increase their operational efficiency by optimizing supply chain management and implications are discussed.

Keywords Supply chain · Management · Optimization

1 Introduction and Background of Research

Companies that use techniques and technologies available today (advanced robotics) [1], blockchain technology [2], and digital transformation [3] can build supply chains that will have a significant competitive advantage [4, 5]. Competition based on supply

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chain efficiency is a reality in many markets. Individual links in the enterprise's supply chain have a common goal, which is to achieve satisfactory efficiency both individually and as a whole network [6–8]. This goal can be achieved through coordinated action and integration that aims to eliminate unnecessary steps in moving goods while maintaining the fluidity of the entire supply chain.

Supply chain efficiency is a measure of effectiveness, i.e., the degree to which planned goals are achieved, and its flexibility, i.e., the ability to use resources to achieve these goals. Supply chain effectiveness means how goals are met, given the resources invested to achieve those goals. Improving the efficiency of the supply chain is possible if there are recipients of given goods [9]. This is possible to achieve by introducing various innovations aimed at distinguishing the company's offer on the market, introducing beneficial activities for customers, optimizing the costs of products and services, maintaining a high level of products or services, speed of response to customer inquiries, and maintaining constant contact [10]. From the perspective of the above factors, it is possible to examine not only the effectiveness of a specific unit, but also the effectiveness of the entire supply chain, including transport, logistic resources, information flow, and supply and distribution [11].

Analyzing the current state of knowledge, there is a lack of practical advice for companies that want to increase their operational efficiency by optimizing supply chain management. This paper presents the framework for one of the methods for optimizing the supply chain in the horticultural industry.

The aim of the work is to present elements used to analyze and assess the effectiveness of the supply chain. This work seeks to provide practical guidance for enterprises that wish to increase their operational efficiency by optimizing supply chain management.

2 The Supply Chain in Polish Companies

Poland is one of the leading producers of tomatoes in the European Union, with annual harvests approaching 1 million tons. The majority of production, around 75%, comes from covered cultivation. The most popular variety in Poland is the raspberry tomato. Poland is among the leading countries producing horticultural products such as apples, currants, raspberries, strawberries, carrots, tomatoes. The horticultural market in Poland is characterized by high autonomy, self-regulation and competition. Field vegetables such as tomatoes are grown on approximately 40% of the horticultural area in Poland. In 2021, Poland exported 396.55 million kilograms of tomatoes to Germany, 142.76 to Great Britain, 58.93 to Sweden, and 58.63 and 41.85 to Italy [1, 12–14]. In Poland, tomatoes are grown under cover on 2.17 thousand hectares and the harvest is estimated at 700 thousand tons. Annual harvest increases by about 3–4%. By analyzing a Polish company from the horticultural sector, which is the largest producer of tomatoes in Poland, we explore the aspects of supply chain efficiency and identify potential problems that the company may encounter in

striving for operational excellence. Other sectors and countries associated with the horticultural sector may follow the framework presented in this study.

3 Methodological Considerations

Basic indicators, logistics costs, divided into general infrastructure costs, transportation costs, delivery time, inventory levels, warehouse management costs and the quality of delivered products, need to be taken into account for consecutive years so that comparisons can be made for a company. The company that then can be part of the research should employ the latest best available technology production technology and is the biggest in Poland in the horticultural sector. This work seeks to provide practical guidance for enterprises that wish to increase their operational efficiency by optimizing supply chain management and implications are discussed. The supply chain performance assessment can be based on qualitative and quantitative data. For this study, in-depth interviews with employees were conducted. Then, a document analysis of the company's reports was conducted. This can initiate triangulation [15, 16]. Any improvements the company has from year to year. The years 2022 and 2023 were analyzed. These years were chosen because in 2023 improvements were can be implemented in the production cycle so that costs may.

4 Results

The interview highlighted that the key issue in relationships is trust, which is why, thanks to long-term cooperation, the company has not been exposed to problems related to late deliveries of the necessary raw materials for many years, thanks to which the greenhouse is always ready for the start of the new production season on time. The cultivation process is developed in the greenhouse, supported by advanced technologies. Climate control systems, intelligent irrigation and plant health monitoring create excellent growing conditions. By taking care of the environment, the company benefits from organic fertilizers, fully approving the idea of sustainable production. Logistics costs were used from the document analysis to assess the supply chain in this company and were divided into:

1. General infrastructure costs—they largely determine the company's operations. These costs include: rent, water and sewage, electricity, mobile telephony, garbage collection, and costs of office supplies.
2. Transport costs—the production and commercial activities of the company involve the need to deliver products to recipients. Thanks to this group, it is possible to analyze its impact on the entire costs incurred by the company. These costs include: fuel, depreciation, labor, liability insurance, repairs and maintenance, and technical review.

3. Warehouse management costs, which include: stock level in the warehouse.

Table 1 shows the overall infrastructure costs; Table 2 shows transport costs.

The above data show that fuel costs constitute the largest part of transport costs and amount to as much as 78.7% of total costs in 2023. Fuel costs increased by euros 5193.21 compared to 2022. The reason for this increase is the increase in fuel prices in Poland. Inventories in 2023 amounted to 4158.01 € and in 2022 36,377.48 €. The company's turnover was as follows: 1987 646.39 € in 2023 and 1 806,048.93 € in 2022. The assessment of the effectiveness of this supply chain was made thanks to data obtained from the company based on the indicators presented in Table 3**.**

Analyzing Table 3 and its results, it can be seen that in 2022 the average order processing time was 3 days, this changed in 2023 and this time was shortened by one

Table 1 General infrastructure costs in euros (€)

	Year 2023	Average costs per month	Total cost for the year	%share in the total cost	Year 2022
Rent	18 178,48	1514,87	38 666, 90	47%	18,178,48
Water and sewage	604,053	50,33		1,6%	482,89
Electricity	11 010,51	917,54		28,5%	10 591,83
Mobile network	1328,67	476,10		14,8%	6359,04
Garbage collection	287,44	23,95		0,8%	287,44
Costs of office supplies	2873,10	239,42		7,3%	3464,26

Source Authors' own study based on interviews with employees from the company's accounting and statistics departments

Table 2 Transport costs in euros (€)

	Year 2023	Average costs per month	Total cost for the year	%share in the total cost	Year 2022
fuel for the cars	18 711,51	1365,49	23 153,81	78,7%	13 518,29
Depreciation	1966,31	163,86		9,4%	1966,31
Third party liability insurance	995,34	82,94		4,8%	995,34
Repairs and maintenance	1248,08	104,00		6%	1115,60
Technical inspections	232,55	1,93		1,1%	232,55

Source Authors' own study based on interviews with employees from the company's accounting and statistics departments

Table 3 Assessment of supply chain efficiency

	Indicator definition	Gauge	Indicator	Year 2022	Year 2023
1	Order processing time	Order acceptance date (dpz) Date of order completion (drz)	$Crz = \frac{dpz}{drz}$	Crz = $\frac{15.02.2022}{18.02.2022} = 3$ dyas	Crz = $\frac{20.07.2023}{22.07.2023}$ = 2 days
2	Delivery flexibility	Number of special wishes fulfilled (lżs) Total number of special requests (sżs)	*E = lżs: sżs * 100*	E = 161: 214 *100 = 75%	E = 196: 220 *100 = 89%
3	Share of defective deliveries	Number of defective deliveries (lwd) Total number of deliveries (ld)	*Uwd = ldw: ld * 100*	Uwd = 388: 4782 * 100 = 8%	Uwd = 248: 4851 * 100 = 5%
4	Transport reliability	Number of transports of raw materials and products (PSP) Number of PSP completed on time (pt)	*Nt = pt: psp * 100*	Nt = 4512: 4782 * 100 = 94%	Nt = 4690: 4851 * 100% = 96%
5	Average stock level	–	–	36 377,48 €	39 739,40 €
6	Logistics costs	–	–	93,569,57 €	101 560,13 €

Source Authors' own study based on interviews with employees from the company's accounting and statistics departments

day as a result of greater packaging efficiency, route optimization and the employment of more people involved in preparing goods for shipment. Then, the improvement in delivery flexibility is visible and increased by as much as 14% in 2023. Activities such as a sudden change in the delivery date by the recipient, a reduction or increase in delivery, and the form of packaging were taken into account as special requests. The improvement in delivery flexibility by 14% indicates the company's willingness to adapt to special customer requests, which contributed to increased customer satisfaction. The share of defective deliveries improved by 3% in 2023 compared to 2022, which is related to increased quality control of the finished product. The company places even greater emphasis on the quality of the received supplies of raw materials or materials and on high-quality shipment of the finished product. Quality control is carried out 4 times during each order fulfillment. Thanks to the application of the JIT rule—just in time, i.e., always on time, the company can enjoy delivery reliability, which in 2022 was 94% and in 2023 as much as 96%.

5 Conclusions

The study aims to offer implications for managers, organizations, and policymakers who are interested in promoting sustainable consumption and increasing supply chain efficiency. The paper describes a framework that gives emphasis on the cooperation of different units. The theoretical approach presented in the paper suggests that these four constructs are interconnected in significant nonlinear ways, providing valuable insights into the theoretical implications of their interplay.

Analyzing and assessing supply chain performance is a difficult process. Supply chain efficiency is not only about optimizing processes but also about cooperation between units, innovative technologies and an appropriate approach to the environment. Conducting a comprehensive assessment of the effectiveness of the supply chain is crucial to understanding, analyzing and improving logistics processes in the company. When choosing performance indicators, you should take into account the key elements of the operation of a given enterprise. An important component in the entire supply chain is primarily the transfer of information, its management and the relationships between the individual links of this chain. Proper cooperation leads to increased competitiveness on the market and can ensure business success.

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Six Innovative Proposals for an Agrotourism Establishment in the Island of Cyprus

Kika Ioannou Kazamia

Abstract The tourism sector has played a vital role in supporting the economy, particularly during economic downturns. In Cyprus, tourism remains a key economic driver, with holidays being the primary purpose of travel. Recently, there has been a surge in new building permits within the hospitality sector, including hotel developments and other tourist accommodations. Consequently, it is essential to specialize in and enhance tourism products to meet guest needs, aiming to provide comfortable and pleasant accommodations. This paper delves into the recent developments in the hospitality sector in Cyprus, focusing on recent trends, economic impacts, and innovative design proposals. The research employs a case study methodology under the "Hotel Design—Agrotourism" project proposed at the University of Nicosia. In support of sustainable development, the study incorporates biodiversity principles for hotel and resort design. Emphasis is placed on respecting traditional architecture and ensuring functional premises to serve hotel guests better. The design proposals draw inspiration from Cypriot culture and nature, encompassing local landscapes, natural materials, light, patterns from the cypress tree, traditional architecture, the pomegranate's seeds, and creating a sense of intimacy through all five senses. The final proposal aimed to design sustainable living spaces using natural materials while maintaining the village's authentic character. The proposals reflect a comprehensive approach to hotel design, integrating culture, sustainability, and contemporary functionality to enhance the tourism experience. This presentation provides a platform to discuss these innovative ideas and their potential impact on the future of tourism in Cyprus and similar environments.

Keywords Agrotourism · Design · Sustainability

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1 Introduction

The role of today's designers is complex. They must consider aesthetics, functionality, and opportunities to explore the potential impacts of incorporating sustainable solutions into different aspects of interior design. It is acknowledged that tourism products in Cyprus need improvement to enhance competitiveness, and designers should stay informed. This paper discusses recent developments in tourism, the hospitality sector, and sustainability issues. It explores students' studio work which is centered around three main themes. The first theme reviews the international hotel design industry, studying different types of accommodations and related topics. The second theme focuses on sustainability issues in hotel design, drawing insights from a report by the International Union for Conservation of Nature and Natural Resources. The third theme emphasizes understanding the local environment, particularly issues relating to locality and agrotourism.

2 Theoretical Framework

This paper discusses issues relevant to the tourism sector in Cyprus and its importance, then refers to agrotourism's future targets, and finally involves some sustainability issues that can enhance hotel design if considered by all the stakeholders involved.

2.1 Tourism Sector

The Cyprus hospitality report provides an overview of the tourism industry in Cyprus. It notes that in terms of price competitiveness, Cyprus ranks the lowest among competitor markets, while the lack of cultural resources remains a significant challenge to Cyprus's competitiveness [1]. However, the tourism sector is considered the backbone of the island's economy, especially during economic downturns. In 2018, tourist arrivals reached 3.9 million, and the numbers were 3.2 million in 2022 and 3.8 million in 2023[2]. The government aims to extend the high tourist season beyond June to September as part of its 2030 strategic vision [3]. The growing demand in recent years has led to investments in new hotel and infrastructure developments as well as renovations of existing hospitality assets. In 2022, 180 new building permits related to the hospitality sector were issued, with the majority (74%) for restaurants, coffee shops, and bars, 14% for hotel developments, 11% for tourist apartments and villages, and 1% for other tourist accommodation. The total value of the newly issued building permits for hotels and similar buildings reached €109 million, with hotels accounting for 84% of the total value. In addition, the main purpose of travel to

Cyprus has historically been holidays, accounting for 81% of total visits in 2022, followed by visiting friends and relatives at 13%, and business purposes at 6% [2].

2.2 Agrotourism

The Deputy Ministry of Tourism noted that the vision of their national tourism strategy 2030 is to develop Cyprus tourism in a sustainable way, which positively impacts our economy, our society and the environment [3]. Away from the tourist areas, the Cyprus countryside has a diverse wealth of its own with traditional villages, vineyards and wineries, tiny fresco-painted churches and remote forests. In the Cyprus Tourism Strategy 2030, it is also noted that over the next decade, we expect tourism to grow. On the one hand, this is an opportunity, because there are a lot of areas in Cyprus which don't yet benefit sufficiently from the socioeconomic boost that tourism offers. On the other hand, such growth could also be a worry, if not managed correctly, because some areas are becoming busy and natural resources are being stretched to their limits. We should aim to combat seasonality and regionality [4] by dispersing visitors to various areas and various places of interest, as site-specific cultural elements and place identity [5] are an advantage for agrotourism development. Over 100 accommodation facilities in about 60 villages in Cyprus complete the tourism experience and operate in the countryside, such as museums, wineries, and farms [6].

2.3 Sustainability Issues

It is crucial to incorporate sustainability considerations into the design decisions for hotel developments. This not only benefits and conserves the ecosystem but also contributes to the long-term financial success of the hotel. The tourism industry heavily relies on healthy ecosystems as they are often the main attraction for tourists [7]. In Cyprus, many hotels and accommodation establishments have embraced environmentally friendly practices and have achieved certifications for sustainable tourism, such as the Travel Life Certification. Sustainability is increasingly becoming a part of the industry's strategies and day-to-day operations [3]. Travelers now seek more sustainable travel options, and a significant percentage of guests, particularly those under 25, actively look for a hotel's environmental and social practices before making a booking. In addition, all sustainable features can be promoted and communicated through relevant applications [8] as large portion of travelers intend to stay in eco-friendly accommodations in the coming year. However, it's essential to acknowledge that traditional building practices can pose risks, particularly in relation to a building's impact on its surroundings and occupants. Therefore, it's crucial to consider sustainability from the planning stage onwards, including the siting, design, and construction materials of the hotel. The operational and closure stages of a hotel

also contribute to its impact on the environment. To address biodiversity and social impacts in hotel and resort development, the International Union for Conservation of Nature and Natural Resources [9] recommends principles such as, one: adopting an ecosystem-based approach in tourism development planning, two:managing impacts on biodiversity, three: designing with nature, four: involving local communities, and five:promoting collaboration among stakeholders.

3 Methodology

The case study methodology provided an opportunity to analyze and evaluate the students' proposals. Fifteen case studies were analyzed and evaluated according to the following design process steps: Research, site, building and space analysis, concept and concept development, program and program development, preliminary drawings, and final design proposal visualization. All students researched hotels, tourism, agrotourism, and the five principles of biodiversity conservation. Students presented diverse proposals, drawing inspiration from Cypriot culture and nature. Six representative proposals are presented here to visualize students' work. Each project is analyzed in two parts a] Research, site/building, and space analysis and b] Concept, program, and design proposal visualization. The figures present parts of the visual results. This methodology allows the presentation and discussion of issues related to agrotourism and sustainability.

4 Results

We analyze and evaluate six representative proposals based on the design process steps. Each figure presents two proposals as a small poster. All six posters display images from the proposals, showcasing findings from student research, site and building analysis, and concept and visualizations of the design proposal.

4.1 Proposal 1

Research + Site Building and Space Analysis. The student researched different types of hotels and Principle two, discussing issues relevant to waste disposal mechanisms, avoiding the use of harmful materials, and acting to prevent pollution during construction. Site analysis consists of a good analysis of the landscape and the surrounding materials. Student notes that "Tochni is a village located about halfway between the cities of Larnaca and Limassol and is among the oldest villages in Cyprus, with a history of more than ten centuries."



Fig. 1 Hotel design—Agrotourism pictures from proposals 1 & 2/ UNIC students Berrotte Marie and Despina Banteka

Concept and Program + Design Proposal Visualization. The main inspiration of this project is nature, the local natural materials, and the landscape around Tochni. The idea is to create a relaxing space. Student notes that "thanks to the landscape the framework is already set" (Fig. 1).

4.2 Proposal 2

Research + Site Building and Space Analysis. The student conducted research on hotels and noted that hotel classification systems were originally created to ensure safe and reliable accommodation and food for travelers when trustworthy establishments were scarce. The student also mentioned that different countries have various hotel classification systems based on chain name and hotel type. When discussing Principle four, she emphasized that hotels and resorts should have a positive impact on the local community, as well as respect land rights and usage. During site analysis, the student highlighted that the village is ideally located between the mountains and the sea, making it a perfect place for couples to relax and enjoy the hotel's amenities.

Concept and Program + Design Proposal Visualization. The design of the hotel is inspired by the patterns of the cypress tree, with colors such as black, brown, cypress green, beige, and gray in harmony with the existing wood and stone materials (Fig. 1).

5 Proposal 3

Research + Site Building and Space Analysis. Research on different types of hotels, and Principle three focusing on nature and environmental solutions, was conducted. This includes waste management during construction, groundwater protection, mitigation measures, and the establishment of an environmental monitoring program before construction on sensitive sites.

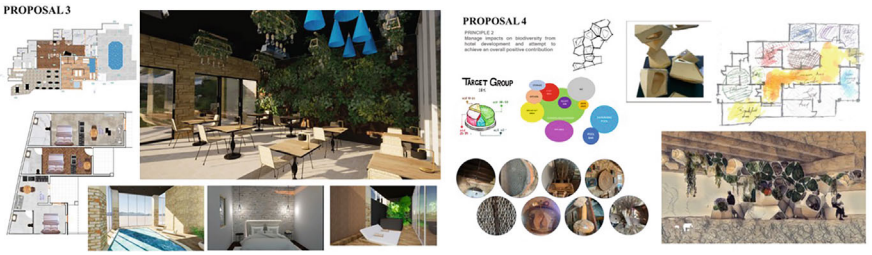


Fig. 2 Hotel design—Agrotourism pictures from proposals 3 & 4/ UNIC students Carla-Marie Paret and Emilia Apostolou

Concept and Program + Design Proposal Visualization. The project draws inspiration from traditional architecture and aims to reflect the culture of the region where the hotel is located. This provides an immersive experience for travelers, allowing them to completely escape during their holidays. The decoration, furnishings, and services are designed to create an intimate and comfortable atmosphere with a character (Fig. 2).

5.1 Proposal 4

Research + Site Building and Space Analysis. The student researched Principle two to manage the impacts on biodiversity from hotel development and aimed to achieve an overall positive contribution. She wrote about the buildings that are made of stone, similar to the rest of the village. Upon arrival, you can see the apartments located on the left, the restaurant on the right as a separate structure, and a swimming pool in the middle. The surrounding area is filled with trees and flowers.

Concept and Program + Design Proposal Visualization. The main inspiration for this project comes from the pomegranate tree, which is an important part of the flora of Cyprus. The student writes that with forms, shapes, and natural rock formations and a sustainable approach, the hotel is expected to be an ideal destination for its guests. The hotel will use sustainable materials and incorporate repaired old elements, creating a connection between the old and the new. Pops of colors detailed between natural earth tones unite the guests with the village and Cyprus tradition (Fig. 2).

5.2 Proposal 5

Research + Site Building and Space Analysis. The student researched different types of hotels and discussed Principles three and four, which address issues relevant to local communities' inclusion and support. The student also noted that traditional

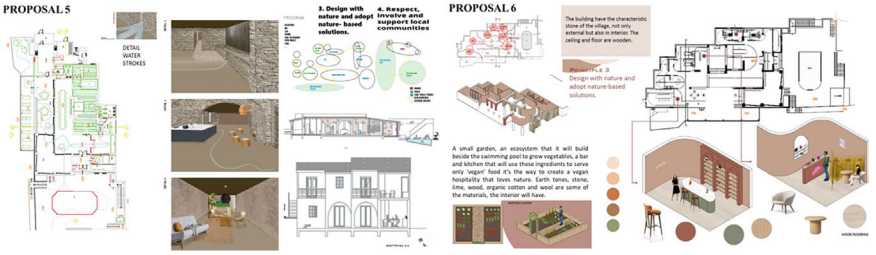


Fig. 3 Hotel design—Agrotourism pictures from proposals 5 & 6/ UNIC students Haegeman Femke and Eleni Giorgalla

Cypriot houses are typically constructed with stone, wood, and plinth, with roofs made of reed and olive wood (or oak planks).

Concept and Program + Design Proposal Visualization. Choose between two different hotel experiences: Relax in Style hotel, providing a serene environment for ultimate relaxation, and the Hideaway and Spa hotel. Upon entering the hotel, all five senses are engaged, providing a complete sensory experience. A small stream running through the main areas enhances the overall ambiance. The student also observed that while it's enjoyable to relax alone, observing others enjoying themselves adds another level of enjoyment. The choice of materials, colors, and forms in the hotel is influenced by traditional and natural elements. Expect to see plenty of ashlar stones and wood, as well as earthy tones, colorful tiles, doors, and shutters (Fig. 3).

6 Proposal 6

Research + Site Building and Space Analysis. The student conducted research on various types of hotels, with a focus on eco-hotels. In discussing Principle three and issues related to site analysis, she noted that the village got its name from the word "art = tehni" because the village residences used to specialize in the art of working with stones.

Concept and Program + Design Proposal Visualization. The main inspiration for this project is to create sustainable living spaces using natural materials while preserving the authentic character of the village. The student writes that in order to reflect the "vegan" concept, the design approach and the interior formation will incorporate biomorphic shapes inspired by trees and other natural and organic forms (Fig. 3).

7 Discussion

Cyprus is a great destination throughout the year, with plenty of sunshine and warm temperatures. Students presented proposals that show an understanding of visitors' needs, as holidays have always been the main reason for travel in Cyprus [10]. They are adapting their proposals to meet the increasing demand for sustainable accommodation, although they haven't thoroughly considered Principles one and five. Principle one involves considering ecosystems, services, and interconnectivity when developing new hotels and resorts and the impacts on the ecosystem. Principle five urges collaboration among stakeholders to support tourism development. It is clear that designers, academics, and others are not often involved in development planning, and their knowledge is not employed. Are those principles out of the sphere of designers' concern? Regarding Principle two and its impact on biodiversity and nature-based solutions, students in proposals 1 and 4, among others, have incorporated these factors into their designs. They aim to make a positive contribution overall by integrating the surrounding landscape, materials, forms, and natural rock formations into the interior. The students have innovated in design by creating shapes that resemble the landscape and by avoiding harmful impacts on habitats and ecosystems. Principle three is to design with nature and to adopt nature-based solutions. This was applied in proposals 3, 5, and 6, where students created an intimate atmosphere inspired by traditional architecture, maintaining the village's authentic character. Additionally, a student added a stream running through the establishment, simulating the small river of the community. Moreover, Principle four, to respect, involve, and support local communities, was applied in proposals 2 and 5, among others, as students suggested using local materials like wood and stone, sourced from and crafted by locals. Also, a student suggested respecting others' relaxation and enjoyment and considering it part of their enjoyment. Design professionals in the built environment have a significant responsibility for the delivery of sustainability [11] and as the increase in tourism demand has resulted in the growth of hotels and infrastructure [1], it's making it crucial to engage various stakeholders in the planning process to ensure that the development contributes to biodiversity. Stakeholders, including contractors, financial institutions, investors, tourism and hotel associations, professional associations, and communities, all have a role to play in ensuring that new hotel and resort developments enhance biodiversity and do not pose a threat. Supplementary higher education can include specialties and projects to develop discipline and give entrepreneurial directions to students [12].

8 Conclusion

As this establishment in Tohni, many traditional buildings were restored, and then converted into tourist accommodations with the provision of financial incentives to improve growth and develop the local economy thus preserving the traditional

architecture of the villages. The aim of the Ministry of Tourism of Cyprus is to create an alternative form of holiday close to man, tradition, and nature. The utilization of principles two, three, and four by students reflects how these seem to be manageable by the designers. In all presented cases, respecting traditional architecture and ensuring functional premises to serve hotel guests better were similarly emphasized. Moreover, results show that case studies were mostly informed by principle three to design with nature and adopt nature-based solutions. This can lead a future study to the creation of good practices framework for others to follow. Nevertheless, as travelers are increasingly seeking for sustainable practices and expect the industry to offer more sustainable travel options, there is a need to overcome barriers—political, economic or social—and promote principle one, the adaptation of an ecosystem-based approach in tourism development planning and principle five to build collaboration among stakeholders that are the two principles less reflected among students' project proposals. In conclusion, as revealed from the results, what is missing to initiate ecosystem recovery and restoration involves innovative thinking and collective action of the public and private sectors. They must function and make investments within and beyond their spheres of control to help develop society's goal toward a sustainable future.

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Enhancing Innovative Sustainability and Social Economy on Aegina Island, Greece



Konstantina F. Chatzina and Nikolaos Ch. Marinos

Abstract The ongoing energy crisis, intensified by the war in Ukraine, tensions in the Middle East, economic challenges, social issues, the COVID-19 pandemic, and the climate emergency, has raised significant concerns about the future of energy. In Europe, transitioning to renewable energy sources is critical for addressing the climate crisis, with energy communities playing a pivotal role. Despite Greece's abundant natural resources, the exploitation of green energy remains limited, resulting in energy insecurity and high costs. This paper explores the promotion of innovative sustainability and the social economy on Aegina Island, Greece, through the establishment of an energy community in collaboration with the DAFNI Network. DAFNI, a network of sustainable Greek islands, will provide essential expertise and support for project implementation. The proposed "Aegina Citizens' Energy Community" aims to generate electricity from photovoltaic systems to meet its members' energy needs. Drawing on a comprehensive review of literature on energy communities and best practices across Europe, this paper analyzes information on energy insecurity and proposes a sustainable energy framework tailored to the island's specific needs. The implications for enhancing energy autonomy and fostering socio-economic resilience on Aegina are discussed, offering a replicable model for other island regions with similar characteristics.

Keywords Energy Community · Sustainability · Synergies

1 Introduction

According to the annual Statistical Review of World Energy by the Energy Institute, 2023 saw four records: energy consumption increased by 2%, fossil fuels represent 81.5% of the energy mix, CO_2 emissions reached 40 gigatons, and renewable energy sources constitute 15% of global production. Despite the growth in solar energy, reliance on fossil fuels has remained unchanged since 1995, indicating that the energy

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transition has not truly begun [1]. Energy insecurity, as defined by the European Economic and Social Committee (EESC), refers to the condition wherein individuals or households are unable to secure an adequate energy supply (primarily natural gas and electricity) necessary for maintaining a minimum level of comfort. This situation arises due to insufficient resources or inadequate housing conditions [2]. The terms "energy insecurity" and "energy poverty" have been in use since 2009, following the directive pertaining to common rules for the internal electricity market. Energy insecurity affects millions of European citizens. Recent data reveals that approximately 40 million Europeans, representing 9.3% of the EU population, were unable to adequately heat their homes in 2022—a significant increase from 2021, when this figure stood at 6.9% [3]. The energy transition in Europe necessitates a comprehensive approach, integrating legislative measures, financial instruments, and active citizen participation through the Social and Solidarity Economy to advance Renewable Energy Sources and sustainable development. The European Union aspires to achieve a climate-neutral economy by 2050 under the European Green Deal. A vital component of this strategy is the promotion of innovative sustainability and the development of energy communities to mitigate energy insecurity [4]. Greece presents a compelling case study, as despite its considerable natural resources, the country has yet to fully exploit its solar, wind, and hydroelectric potential. Consequently, energy insecurity persists, manifesting in frequent power outages and elevated energy costs across various regions.

2 European Legislation and Initiatives for Energy Transition and Innovative Sustainability

In 2015, the United Nations General Assembly approved the Sustainable Development Goals (SDGs), with Goal 7 focusing on ensuring universal access to affordable and reliable energy, increasing the share of renewable energy, and improving energy efficiency by 2030 [5]. Recognizing the urgent need for this transition, the European Union (EU) has implemented legislative measures such as the Renewable Energy Directive II (2018/2001) and the Internal Electricity Market Directive (2019/944). These directives empower citizens, municipalities, and businesses to produce and sell renewable energy, thus fostering innovation and sustainable development while enhancing energy security [6, 7]. Examples from various European countries demonstrate that energy communities can effectively mitigate energy poverty and promote sustainability. In Germany, the Energy Cooperative Odenwald eG, established in 2009, expanded rapidly by investing in renewable energy projects, becoming one of the largest cooperatives in the country. Similarly, Denmark's Middelgrunden wind farm, co-owned by the Municipality of Copenhagen and local citizens, generates significant economic and environmental benefits. On the Scottish islands, small hybrid systems have reduced reliance on fossil fuels while fostering social cohesion

through active citizen participation [8–10]. Energy communities in Europe are experiencing continuous growth, with approximately 9,000 currently operating within the EU [11]. The EU's commitment to innovative sustainability is further supported by robust funding mechanisms such as the Horizon Europe program [12]. These initiatives are designed not only to advance technological innovation but also to ensure that energy solutions are tailored to the specific needs of local communities. The REPowerEU plan [13], introduced in 2022, underscores the EU's strategic focus on diversifying energy supply and accelerating the transition to clean energy in response to geopolitical challenges. By promoting the establishment of at least one Renewable Energy Community in every municipality with a population over 10,000 by 2025 [14], the EU aims to create resilient, decentralized energy systems. Energy communities, by integrating modern technologies such as smart grids and energy storage systems, play a pivotal role in stabilizing the grid and reducing carbon emissions. Through local ownership and active citizen participation, these communities contribute significantly to Europe's broader goals of achieving energy security and sustainability, reducing dependence on fossil fuels, and fostering a more resilient energy infrastructure [15].

3 The Situation in Greece

In 2018, Greece enacted its first legislation for energy communities, aiming to integrate social and solidarity economy (SSE) principles into the energy sector by introducing Energy Communities (ECs). This legislation was established just before the completion of the RED II and IEMD Directives, incorporating their key elements. The SSE represents a different approach to production, emphasizing equitable cooperation and prioritizing common benefit through cooperative ventures. By institutionalizing ECs with the Law 4513/2018, Greece provided an innovative tool with the transformative power to build alternative communities, foster solidarity, and develop ecological relationships with the environment and energy. These ECs are designed to create more sustainable and resilient local energy systems, enhancing energy security and reducing reliance on fossil fuels, while promoting social equity and environmental sustainability [16]. In March 2023, legislation was revised with the incorporation of two Directives. Law 5037/2023 replaced the original 2018 Law and introduced two new models for energy communities: Renewable Energy Communities (REC article 45) and Citizen Energy Communities (CEC article 87), in accordance with the Directives. The new legislation includes provisions regarding participation, activities, and location of these communities [17]. It aims to address issues such as the exploitation of energy communities for profit, grid congestion, and prioritization of commercial projects over self-consumption projects. To bolster self-consumption, 2 GW of the limited available electric space was allocated, and public resources were dedicated to support their development. According to the Energy Communities Observatory by The Green Tank, there are 1,689 active Energy Communities in Greece. Of these, 1,673 were established under the previous law 4513/2018, while 11

Renewable Energy Communities and 5 Citizen Energy Communities were formed under Law 5037/2023 [18].

4 Aegina Case Study

Aegina has struggled with frequent power outages and voltage fluctuations during adverse weather conditions and other external factors, peaking with a significant 20-day outage in the summer of 2010, which severely impacted the local economy and tourism. The island's construction boom from the early 1990s until the economic downturn of 2009 led to electricity demands reaching 19 MW during 2009–2010. The electrical network's capacity stands at 25 MW. Following the decline in construction activities due to the economic crisis from 2009 to 2020/21, the demand for electricity decreased. However, over the past 2.5 years, electricity demand has shown a noticeable upward trend. Aegina is powered by submerged cables from the Methana peninsula, specifically from Agios Georgios to Aegina, Sarpas Bay (on the southwestern part of the island). The Agios Georgios substation in Methana transforms the high-voltage electricity of 150 kV, which arrives from the central transmission network to a medium voltage of 20 kV, suitable for distribution and consumption by local networks. This process is achieved through power transformers designed for minimal losses. Subsequently, the 20 kV medium voltage is transferred to Aegina via four submerged cables, each with a transmission capacity of 20 MVA. These cables are specially constructed to withstand marine conditions, ensuring reliable and continuous electricity supply to the island. Three of these cables branch into three main routes to cover the entire island. The fourth cable is also electrified but is on standby in case of a fault. The Network Development Plan (NDP) 2022–2026, prepared by HEDNO (Hellenic Electricity Distribution Network Operator), proposes a new interconnection for Aegina from the northern part of the island with direct 150 kV submerged supply instead of the current 20 kV per cable. However, this is still in the planning stages by the operator [19]. Aegina, due to its proximity to the capital and unique topographical characteristics, is well-positioned to become a model for implementing innovative renewable energy technologies aimed at reducing reliance on fossil fuels. Since the 2006 legislation encouraging electricity production from renewable energy sources [20], many residents showed interest in installing photovoltaic panels on their rooftops. However, this initiative was stalled as the Public Power Corporation (DEI) was not prepared to integrate these private installations into the grid. Another significant proposal came from the Chinese company Ying Li Solar Systems S.A., which offered to install photovoltaic systems worth €500,000 on school roofs and the Aegina Town Hall for demonstration purposes to potential European buyers. The plan included converting solar energy into electricity to meet the schools' needs, with any surplus (approximately 1.5 MW per month per unit) being sold to DEI. The company eventually withdrew its donation, and the project was never implemented [21].

4.1 The Aegina Citizens' Energy Community

Local citizen organization through the formation of an Energy Community could offer a solution for the island of Aegina. The proposed legal framework for the Energy Community is the Citizen Energy Community, as stipulated by Law 5037/2023 (Article 86). Three scenarios are proposed, with one to be selected after public consultation. The headquarters of the Citizen Energy Community will be on Aegina. This initiative represents a specialized Energy Cooperative, where at least 30 members (Article 88) will collaborate autonomously to fulfill their economic, social, and cultural goals through a collectively owned and democratically managed enterprise (Scenario 1). Additionally, the new law allows for greater flexibility by enabling the establishment of a CEC with only three members, if one is a municipal authority and the others are either similar authorities or organizations under their complete ownership. Scenario 2 proposes the involvement of the Municipality of Aegina, the Municipality of Agistri, and the Aegina Port Fund (a public legal entity). Flexibility in choosing the location for the installation is also available. A third scenario suggests Aegina's participation in the future "Apollo" Program, which aims to reduce energy costs for vulnerable households and local government organizations. The program intends to establish one Citizen Energy Community (CEC) in each Region. This will be achieved by installing Renewable Energy Source plants, with or without energy storage, and implementing virtual net metering [22].

The proposed Citizen Energy Community (CEC) of Aegina will focus on generating, self-consuming, and selling renewable electricity. It will also handle storage, distribution, aggregation, flexibility, energy efficiency, and electric vehicle charging (Article 90). This initiative will reduce electricity costs and provide environmental, economic, and social benefits, prioritizing support for vulnerable households and the energy needs of municipal buildings, schools, and the islands' marinas. The Aegina Citizens' Energy Community will operate under the principles of social and solidarity economy, promoting participatory governance where all members are actively involved in the decision-making process. The CEC of Aegina aims to install photovoltaic systems on households and public buildings, enhancing energy self-sufficiency and reducing energy costs for vulnerable households. Additionally, according to the law, CECs can establish production stations in any region, regardless of the location of consumption installations or the headquarters of the Community. Consumption installations do not need to be in the same region, provided proximity regulations are met. If 50% plus one of the members are in the Attica region, the production station can also be installed in a neighboring region, providing flexibility in installation locations. At the time of writing, the Ministry of Environment and Energy is expected to issue a new Ministerial Decision that will establish the new "framework" for energy self-production. This decision will detail the implementation of net billing (simultaneous compensation), which is set to succeed net metering (energy compensation) for households and commercial consumers who decide to install photovoltaic systems [23]. Law 5037/2023 promotes the use of Net Billing for self-generation and billing, enhancing flexibility and efficiency with Virtual Net

Billing. In the Aegina Citizens' Energy Community, electricity bills will be offset instead of kilowatt-hours, and excess energy will be sold to the grid at a predetermined price, reducing the overall cost of the electricity bill. Virtual Net Billing will also allow the generated energy at one or more locations to be offset against consumption at different locations, even if they are not in the same area. Integrating smart grids will improve performance and reliability by enabling real-time monitoring and control of energy. This combination of net billing and smart grid development will offer significant environmental, economic, and social benefits, making Aegina a model for sustainable development and energy autonomy. While this initiative is specifically tailored to meet the needs of Aegina, the principles and strategies developed here have broader applicability. The success of the Aegina Citizens' Energy Community could serve as a prototype for similar projects on other Greek islands, offering a replicable and adaptable model for enhancing energy autonomy and sustainability in insular regions.

4.2 The Role of Synergies in Shaping a Supportive Policy for Citizens in the Energy Sector

Greek legislation has allowed municipalities and regional authorities to join energy communities as equal members. For the case of Aegina, it is proposed that the municipality either participate in or collaborate with the CEC, after obtaining approval from the Municipal Council. This involvement will enable the municipality to exercise its own energy policies while making it clear that its participation in the CEC will not limit it from utilizing other programs in the future. This strategy has been effectively implemented in the Municipality of Sifnos, yielding positive outcomes [24]. The Municipality of Aegina will also provide the necessary infrastructure and administrative support. Additionally, for technical and scientific support and assistance in securing funding, the DAFNI Network can be instrumental. The DAFNI Network, established in 2006 and transitioning to a Non-Profit Anonymous Local Government Organization under Law 5056/2023, enhances local governance on the islands and promotes sustainable development and tourism. Currently, DAFNI consists of 57 members, including 53 island municipalities in the Aegean and Ionian Seas, the regions of North Aegean, South Aegean, Ionian Islands, Saronic, and the Regional Union of Municipalities of the Ionian Islands. Recognized at both national and European levels, DAFNI provides scientific and technical training and tailored solutions to local needs through its systematic actions and collaborations [25]. The Municipality of Aegina and the DAFNI Network have already established a partnership through the Interreg NEXT MED program, aiming to install hybrid renewable energy systems in remote areas. This initiative includes DAFNI and partners from Greece, Italy, and Israel. The project involves setting up these systems on small islands like Moni in Aegina to enhance energy autonomy and security. Both the Municipality and the DAFNI Network, through their participation in the CEC, can play a significant role

in promoting energy literacy among citizens. This can be achieved through activities and educational programs designed to increase public understanding of energy issues [26].

5 Conclusion

The 2018 legislation on Energy Communities in Greece has introduced an innovative framework that integrates the principles of the Social and Solidarity Economy into the energy sector, offering a robust tool for promoting sustainable development and social cohesion. By disseminating local ownership and participatory governance, Energy Communities demonstrate an effective approach to addressing energy insecurity and enhancing environmental sustainability. The expansion of this model at a broader European level presents a significant opportunity for strengthening energy resilience and fostering local economic development. A strategy for sustainable development within these communities can focus on making them more attractive for retaining active participation and economic engagement [27], as well as for drawing attention to younger generations [28]. The ability of these communities to adapt to technological advancements and regulatory reforms, as well as the securing of sustainable financial mechanisms, will be critical to their long-term success. They may also create online communities to share their concerns [29]. Energy Communities represent a promising model for the future energy transition, with the potential to make a substantial contribution to achieving Europe's climate goals and creating a more just and sustainable energy economy.

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Shortcomings of Sustainable Tourism: A Call for a Socio-Spatial Paradigm Shift



Eleonore Zippelius

Abstract Tourism's positive and negative impacts are losing equilibrium. Sustainable tourism aims to regain an economic, social, cultural and environmental balance. The research pleads for a holistic, urban development, where tourism is one integral aspect. It is based on a review of relevant literature that focuses on the socio-spatial distance between tourists and locals and discusses the importance of human perception and cognition and collocal urban and touristic development. The social and spatial reality are, according to Lefebvre, intertwined, which is why the spatial practice of locals and tourists is shaped by the perception of everyday social activities and the physical properties of space. It is argued that the tourists' experience is, in contrast, more often characterized by exteriority, which results in a marginal understanding of the cultural, social and environmental context, a lack of mutual respect and a relationship far off a host and guest relation. The social and spatial distance intensifies, in addition, due to undesired consequences of tourism such as coastalization, urban sprawl and gentrification. The paper concludes that tourism development should be incorporated into an integrated, locally led, urban planning and management that addresses the socio-spatial dimension in all scales and across all user groups. This could potentially lead to a better place for permanent and temporary residents to live in through cross-cultural and social exchange, which promotes mutual understanding, respect and responsibility, whilst also providing a more immersive experience.

Keyword Holistic urban development · Sustainable tourism · Socio-spatial distance

1 Introduction

The quality of life of the locals and the experiential quality of the tourists are negatively influenced by overtourism. A rise in housing and living prices accelerates gentrification and population decline in popular areas, clears affected neighborhoods

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from permanent residents and changes their appearance and economic and social structure. It dissolves formerly strong networks of neighborly interaction, emotional solidarity and bonding and replaces locally supporting infrastructure. Further negative effects on residents and tourists are overcrowding, chaos, disruption and noise along aggression, strikes and closures [1]. The environmental impacts of overtourism are often an overconsumption of natural resources such as water, which is already scarce in an arid or semi-arid climate and an over-proportional increase of sewage, solid waste and environmental pollution. It is also accompanied by increased use or degradation of land and a consequent loss of agricultural land, natural habitat and endangered species, as well as scenic landscape. An increase in CO_2 emissions accelerates climate change and subsequent natural disasters such as forest fires, of which their probability and danger further increases through inappropriate knowledge and behavior of tourists [2].

Overtourism challenges the social and environmental sustainability. This research aims at understanding the dimension of the socio-spatial distance of tourists with regards to social and environmental issues. It starts with defining sustainable tourism and acknowledging the importance of a holistic, locally led planning and management that recognizes linkages and interdependencies and reappraises the local community and the natural environment. The research continues investigating aspects of social detachment, isolation and exteriority concerning a tourist‘s experience. These are caused by commercialization and consumption, which lead to staged itineraries, and the dominance of the eye, which relies on an instantaneous, visual appearance. Both contribute to social distance as human perception and cognition are impeded to collect information about the social and physical context. Contact theory is used to identify criteria that have the potential to increase social contact, which can foster mutual understanding, cross-cultural exchange and context sensitivity, and promote responsible tourism. The research further investigates the aspects of spatial separation of activities of locals and tourists. This is caused by gentrification, urban sprawl and coastalization. The significance of spatial proximity and overlap is acknowledged that demands a collocal and concurrent urban and touristic development, where the space where locals are living, working and recreating, and the space for visiting guests is interwoven and not looked at as separate entities.

2 Sustainable Tourism

A sustainable approach to tourism takes into account all social, cultural, environmental and economic influences generated by tourism in the present and the future and aspires to balance or, at best, to maximize positive and to minimize negative impacts in the long term. It addresses all needs of the environment, the host community, the visitor and the industry alike [3, 4] and requires sustainably acting destinations and companies as well as responsible tourists.

The Global Sustainable Tourism Council has developed criteria to regain a balance [3]. The criteria deal with aspects related to the local community and the natural environment but are rather vaguely formulated and prescribed measurements that are not integrated in a holistic approach. The European Commission has recently launched the project *Sustainable EU Tourism—Shaping the Tourism of Tomorrow* that aims to improve sustainability and resilience but interim results have not yet materialized. However, it has already been stated that sustainable tourism in Europe is located at the cross-roads of urban development and tourism [5] and that each destination has, despite of tourism's global, national and regional range, its own, local, place-based context, which requires integrated, locally led planning and management [4].

The well-being and needs of the local community and the natural environment have lately been understood as integral parts of a sustainable approach to tourism. Despite of the acknowledgement that sustainable tourism needs to consider the context and promote an integrated approach, it still cuts short in recognizing linkages and interdependencies. A sustainable tourism strategy resembles currently rather a one-sided approach that concentrates on a singular dimension or a patchwork that follows a given list of criteria. It also does not factor in the importance of human perception and cognitive processes with regards to gaining information about the social and physical environment [6] and the simultaneous planning of collocal urban and touristic development. Social and spatial distance is the common denominator of these challenges. On the human-spatial level, it refers to a lack of personal experience that hinders cognitive processing of locally perceived information, whilst on the socio-spatial level, it relates to a lack of collocal and concurrent activities of tourists and locals.

3 Socio-Spatial Distance

3.1 Social Distance

Detachment, Isolation and Exteriority. The social and spatial reality are, according to Lefebvre, intertwined. Space is produced by society to enable social practice and, at the same time, shapes social practice [7]. The spatial practice of locals and tourists is formed by the perception of everyday social activities and the physical properties of space. The tourists' experience is characterized by exteriority, detachment and isolation from the daily life of locals, despite of a certain overlap of activities of locals and tourists in time and space. Exteriority describes the state of being exterior in contrast to being interior [8], which could be related to space as well as state of mind. Detachment goes one step further and describes the state of somebody, who is not influenced by the environment he is living in, whilst at the same time characterizing somebody as not being interested [9]. Similarly, distant refers to being separated in space and time but also denotes not being associated in relevance, association, or relationship [10]. Isolation defines the detachment from other people, the state of

being separated and isolated, which is often externally induced and involuntary [8, 9]. Being detached, distant, isolated, or exterior as a tourist results in a marginal understanding of the social, environmental and cultural context of the destination, which may also cause a lack of respect of tourists or may be perceived as lack of respect by the locals.

The relationship between tourist and tourist destination is often ambiguous; closely linked causing societal and environmental impacts, whilst also socially disconnected in space and time [11]. Stavans and Ellison blame organized and commercialized mass tourism and its staged itineraries that tie in with tourists' herd mentality and passive consumerism for the divide. They claim that touristic experiences are based on prefabricated and inauthentic entertainment offers that are rather shallow in contrast to travel as a rewarding endeavor, where experiences are actively gained and provide profound insight and meaning [12]. This is backed up by MacCannell, who already postulated in the nineties to refill empty meeting grounds with meaning [13]. Stavans and Ellison also associate mass tourism, commercialization and consumption with unsustainable practices with regards to a presumably overarching control of the natural environment [12].

The nowadays dominance of the eye and its characteristic as a remote sense tend to push humans also into detachment and exteriority. Pallasmaa argues that this weakens our rootedness in the world [14]. The fixation on visual, instantaneous appearance results in "contrived depthlessness" [15] that has no sustaining power and leaves our memories, imagination and dreams homeless. Susan Sontag further specifies that we see the world rather as potential photographs, which then tend to constitute our reality and have "an incalculable effect on our ethical sensibility" [16].

The omnipresent distance and exteriority of tourists prevent cross-cultural exchange and understanding [17]. Social distance is used to measure the perceived psychological distance and degree of sympathetic understanding between people [18].

Contact Theory, Interaction and Emotional Solidarity. Contact theory implies that contact between members of different groups can improve social relations and reduce intergroup conflict and prejudice, if conditions like equal status, common goals, cooperation and contact support are met [19]. Interaction between locals and tourists differs from other intergroup interactions, as tourists and locals often do not have the same social status, a tourist's stay in a destination is short and interaction is commonly limited by well-structured touristic activities that restrict intergroup contact in space and time [20]. Woosnam and Norman investigated the relationship between residents and tourists and concluded that face-to-face interaction is important, generating emotional solidarity and reducing the perceived social distance [21]. Ribeiro et al. suggest interactions at key attractions, special events and festivals [22]. Many cities, in contrast, launch civic campaigns such as *Enjoy and respect* or *#EnjoyRespectVenezia* that attempt to improve tourists' behavior, which, when successful, also improve the public image and reputation of the destination [1]. But educational campaigns can never be as successful as direct host–guest interaction that promotes emotional solidarity. Frequency, type, quality and diversity of activities influence the intergroup relation with regards to the intensity of contact and the

degree of emotional solidarity [19] that describes the feeling of identification with each other and supports bonding between people. Three aspects foster emotional solidarity of residents with tourists [23]. The welcoming nature is supported by benefiting from and appreciating tourists, feeling proud and treating tourists fairly, hence, acting as hosts towards guests. Emotional closeness arises from feeling close and making friends, whilst sympathetic understanding includes having much in common, identifying with and feeling affection towards tourists.

Responsible Tourism. Responsible tourism requires understanding and respect for differing customs, traditions and societal rules and, therefore, needs to be culturally more immersive but also provides a more authentic and exciting experience [24]. Responsible tourism aims at "making better places for people to live in and better places for people to visit" [25]. Somebody acts responsibly when fulfilling a legal requirement or acting morally or ethically right [26]. With regards to tourism, it refers to a behavior that prioritizes sustainable practices, minimizes negative and increases positive effects [3].

3.2 Spatial Distance

Tourism strategies were for a long time only based on the market and the development of competitive products. During the second decade of this century, it was acknowledged that the urban development and the provision of more and better infrastructure should also benefit the locals and improve their quality of life [27]. But, a significantly accelerated touristic development led in many popular destinations to a change in balance that impaired the living conditions and the quality of life of the locals [28]. Main negative, urban processes that were intensified through overtourism are gentrification, urban sprawl, and coastalization.

Gentrification. Gentrification refers to the mass displacement of lower income groups during a short time period. A rise in housing and living prices accelerates gentrification and population decline in popular areas. Related to tourism, the shared economy and online booking platforms, it clears affected neighborhoods from permanent residents and consequently changes their appearance and economic, social and urban structure. Due to residents' displacement, it dissolves formerly strong networks of neighborly interaction, emotional solidarity and bonding. It replaces locally supporting infrastructure with restaurants and shops that are targeting tourists [1]. This also affects the appearance and use of public open space. Such a powerful, relatively rapid and quality of life threatening urban and social transformation is predominantly met by locals with civil resistance [27].

Urban Sprawl. Urban sprawl is a rapid and massive, low-density suburbanization that scatters urban development along transportation corridors and shifts the urban fringe continuously outwards. It is generally promoted by economic and social forces along with failed urban management and legislation. Main factors that lead to urban sprawl are rural out-migration and a rise in real estate prices inside cities that triggers gentrification, also caused by tourism and motivates or forces

residents with low income to move to more affordable areas at the urban periphery. This is supported by a continuously developing and expanding road network and a dispersal of business and shopping centers at the urban fringe and the surrounding urban region. This unsustainable and therefore unwanted development comes along with an unbalanced social distribution caused by gentrification and social segregation and consumes valuable agricultural land and cultural and natural landscape. Negative, environmental effects are fragmented and destroyed wildlife habitats, increased noise and air pollution but also an increase in greenhouse gases, which contributes to global climate change. An increase of impermeable surfaces reduces the groundwater level and charges the sewage system with polluted rainwater, which needs to be costly cleaned in sewage treatment plants. This causes high infrastructural costs with regards to extended road, energy, sewage and communication networks but also necessitates additional social, educational and religious infrastructure. In addition, it results in increased individual traffic, traffic congestion and road accidents and, therefore, causes greater economic costs and a loss of work productivity. Moreover, it complicates the development of a cost-efficient and convenient public transport system [29].

Coastalization. Coastalization denotes an intense, urban concentration of population and economy along the coast that exceeds local population growth. It is intensified by mass tourism and second home development, as the seaside is the preferential location. It is no longer just a linear expansion of compact, coastal cities but also a phenomenon of less intensely or not built-up areas. It further progresses spatial separation in relation to economic power and social class [30]. As a specific type of urban sprawl, it is usually unplanned, of low-density and discontinuous, as well as characterized by large-scale infrastructure such as tourist accommodation and leisure facilities. As a form of unregulated development, it is unsustainable because it consumes valuable land in the form of agricultural areas, which are important to support the local population and natural land that hosts vulnerable, coastal and maritime ecosystems. It also pushes the dependency on the car, requires the expansion of technical infrastructure and increases the overall energy consumption [31].

Consequences and Measures. Negative urban developments such as gentrification, urban sprawl and coastalization lead to an overall social and urban transformation, where a progressive spatial distance reinforces the social distance. Instead of improving the quality of life of locals through more and better infrastructure, it degrades their living conditions, impacts the host–guest relationship, reduces interaction between the two groups and impairs their mutual understanding, respect and responsibility. It changes, in addition, the appearance, public life and identity of affected inner city neighborhoods. Altogether, it affects the local community on the economic, social, cultural and environmental level, which is contraindicative to sustainable tourism.

Gentrification can be hindered by regulatory measures that limit the number of tourists‘ shops, restaurants, vacation apartments and hotels. They should also foster the spreading of these tourist facilities throughout the city in a well-balanced manner and in relation to the number of local residences. Alternative accommodation booking platforms such as *Fairbnb.coop,* which only permits one rental by one resident/host

and funds local initiatives and projects and *Santa Monica's Home-Sharing Ordinance*, which bans online platforms and property owners but permits the invitation of guests into homes for profit when a resident is present [32, 33], also successfully combat the proliferation of vacation apartment businesses. The lessening of gentrification already reduces urban sprawl, which can be further hindered by pursuing an urban policy of a compact, urban and mixed development and the introduction of green belts that limit city growth to already urbanized areas. Such a policy would also prevent further coastalization, which would need to be additionally supported by the protection of maritime and coastal habitats, agricultural land and cultural landscape.

4 Conclusion

Sustainable tourism development needs to be incorporated into a holistic urban strategy that balances the needs of the tourists, the local community and the natural environment alike. In addition, it needs to take into account the local context, when pursuing an integrated, locally led planning and management. The socio-spatial dimension is of special importance across all scales and users in order to reduce the distance between tourists and locals on the social as well as on the spatial level. Processes of human perception and cognition and quality of interactions play an important role in gaining information about the social and physical environment. They promote cross-cultural exchange and mutual understanding, where mutual respect and responsibility may thrive. They also provide a more immersive tourist experience and a better quality of life for both, tourists and residents alike [34]. A compact, urban and mixed development and regulations concerning the numbers and spread of tourist facilities decrease spatial distance, amplified by gentrification, urban sprawl and coastalization. These direct measures need to be accompanied by indirect ones, such as the limitation of city growth to already urbanized areas and the protection of valuable habitats, land and landscape.

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Safeguarding the Ephemeral: Designing Active Participation in Cultural Events



Sofia Mytilinaiou

Abstract Intangible Cultural Heritage (ICH) emerges from the dynamics of change and continuity, woven through human experience and participation. The challenge in preserving and promoting this non-material culture lies in its inherently live, transient, and evolving nature. Contemporary art and design strategies focus on creating shared moments and performances that foster collective engagement. Experience Design (XD) along with its notable subsets, User Interface Design (UI) and User Experience Design (UXD), provide innovative methods to safeguard these cultural forms by directly shaping human experiences in both physical and mixed-reality (MR) settings. This paper studies visitors' live and active participation in cultural spaces, like museums, galleries, and art/exhibition places enhanced by MR technologies. Aristotle's Four Causes are applied to compare human participation in MR cultural spaces, with traditional spectatorship in theatrical plays as well as user experience outdated models like primal Human–Computer Interaction. By blending physical and digital spaces, the role of spectatorship transforms into co-creation, enhancing both aesthetic and educational experiences. Through case studies and examples, the research highlights the critical role of participatory design in preserving and promoting cultural heritage, offering new methodologies to engage audiences in immersive cultural experiences.

Keywords ICH · Audience participation · User experience design

1 Introduction

Cultural Heritage (CH) encompasses both tangible and intangible elements inherited through collective practices. Tangible heritage includes physical aspects, while Intangible Cultural Heritage (ICH) covers ideas, customs, beliefs, and communication methods. Many scholars view these elements as intertwined, emphasizing a symbiotic relationship [1] where intangible heritage gives meaning to the tangible.

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Safeguarding ICH often involves documenting cultural events, but this process is limited in capturing its ephemeral and participatory nature. While fields like sociology and anthropology document cultural expressions, they can only preserve a version of these events, as they evolve over time.

Human experience and interaction are essential in understanding and preserving CH [2]. UNESCO's Convention for the Safeguarding of ICH [3] highlights the importance of participation from communities and individuals in preserving cultural expressions. ICH, evolving through personal and collective experiences, is dynamic and continually reshaped. My focus is on audience participation in live cultural spaces enhanced by mixed reality (MR) technologies.

Experience Design (XD) and User Experience Design (UXD) provide new frameworks to preserve and present ICH. These interdisciplinary fields focus on shaping experiences, where interaction and memory take precedence. UXD encourages collective engagement, aiming to blur distinctions between spectator and participant. Designers can create environments conducive to experience, though they cannot fully shape subjective human experiences. Designers can only design for experiences to emerge [4]; they prepare factors and organize conditions that may potentially lead to desirable outcomes. UXD organizes participatory experiences in MR-enhanced cultural spaces, and my work concentrates on how audience participation evolves.

To preserve ICH effectively, it must be experienced firsthand. This paper argues that UXD offers multidisciplinary approaches that enhance visitor participation in cultural spaces using mixed reality (MR) technologies. Aristotle's *Four Causes*—i.e. four explanations to understand the physical and constructed world—are also employed to analyze the direction of visitors' contribution in live events within MR cultural environments, to advance the preservation and presentation of ICH.

2 Aristotle Four Causes in Theater and Primal User Experience

Aristotle's *Four Causes*, discussed in *Physics II.3* and *Metaphysics V.2*, present a framework for understanding causality in the natural world [5]. These causes—material, formal, efficient, and final—offer four different explanations of the reason something exists or was created in a particular way. In detail: The *material cause* refers to the substance *'that out of which'* something is made of. Matter denotes creation through change, and the *material cause* symbolizes the potency of matter in limitless change. The *formal cause* involves the essence, the look of things, and answers to *'what sort of thing it is and why'*, as well as *'why are things arranged in a certain way'*. By extension, the notion of form can be extended to human behavior and interaction, meaning how individuals and communities are organized to co-exist and cooperate, and what do members of the same group have in common. As matter is the principle of *potentiality* (becoming another), form is the principle of *actuality* (being something). Following, the *efficient cause* encompasses the creator's idea,

involving the original conception and inspiration, along with the actual form and material synthesis. Aristotle refers to the *efficient cause* as *'the primary source of things'*. Lastly, the *final cause* stands for *'the reason why something is created'*, meaning *'that for the sake of which'* it reached a final state. While the *material cause* and *formal cause* explain '*how something is'*—setting matters on constitution and function—the *efficient cause* and *final cause* explain *'how something becomes'*—how it develops in time, as well as why it is created.

Audience *conventional participation* entails direct, willing, and undisrupted personal involvement in emotional, cognitive, even incorporeal level. During a typical play (for example, theatrical and dance performance), artists and audience are divided: spatially separated between the stage and the hall while given discrete roles to hold throughout the play. In the context of classical theatrical plays, the Aristotelian *Four Causes* can be applied as follows: the *material cause* encompasses the actors' performance of the script before an audience. Through their dialog and movement within the theatrical space, the actors bring the characters to life, allowing the story to unfold. The *formal cause* refers to the structure and plot of the play, which organizes the actions and interactions of the characters over time. Typically, the narrative follows a linear progression and is pre-determined, thus representing a closed work. The *efficient cause* includes the entire team of actors and practitioners involved in the production, along with the skills and media they employ. The *final cause* is the audience's cathartic experience—the adventure, purification, and reflection on social and universal issues—offering emotional engagement, intellectual stimulation, and enjoyment.

Meanwhile, in her book *Computers as Theatre* [6], Brenda Laurel applied the Aristotelian *Four Causes* to Human–Computer Interaction (HCI). Laurel associated the *material cause* with users' interaction via predominantly digital means. The *formal cause* was linked to the alternative scenarios provided to users, as well as the overall structure of the project. Unlike traditional theatrical plays having a single ending, in HCI, there are multiple possible and predefined outcomes. Users had specific choices to shape their experience, therefore, only predetermined scenarios could be realized. Meanwhile, the *efficient cause* includes the designers, artists, and other practitioners who contribute to the creative process, along with the media and tools they employ. Lastly, the *final cause* involves the goals set by the development team, such as educational, informative, or entertainment objectives. It also encompasses issues of usability and functionality, ensuring that users can engage in meaningful and enjoyable experiences.

The aim of this research is to study the transition of audience participation from spectators to active contributors. Traditional scenic arts (like theatrical plays) and live events in MR cultural spaces are both only realized when acted out repeatedly in front of people, with people. Respectively, HCI as concept and practice also necessitates users' personal involvement and physical activity to achieve its goals. By extension, in live events in MR cultural spaces, the boundaries between artistic experience and everyday life are diffused. Also, physical reality and performance reality are merged and enhanced by the affordances of MR technologies.

3 Audience Participation in Live Events at MR Cultural Spaces

Cultural performances are more than practices and products of culture—they are 'the eye by which culture sees itself and the drawing board on which creative actors sketch out what they believe to be more apt or interesting "*designs for living*"' [7]. The Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005 indicates (in Article 11: Participation of civil society) the significant role of civilians in safeguarding and evolving cultural expressions and inciting common people's active participation to attain these objectives [8]. In the same Convention (Article 7) [7], the role of artists and people involved (creators and supporters) in the creative process is particularly stressed among the methods of promoting cultural expressions.

Contemporary strategies in art and design have long liberated the creative process and the result from the static features of materiality. Instead, the design outcome emerges while experienced by people on the fly. As emphasis is put on abstraction, transformation and change itself, form and shape are of less significance; more dynamic patterns of communication and expression have been generated, exploiting interactivity as the medium. Thorough research has been made over the last decades to comprehend and prioritize visitors' experience in cultural spaces like GLAMs (Galleries, Libraries, Archives and Museums) [9] while promoting CH projects, and UXD aspires to direct meaningful, prolific, and gratifying experiences.

3.1 The End Cause: Safeguarding the Ephemeral via MR Tools

UXD by applying MR technologies aspires to provide fulfilling educational and aesthetic experiences while exploring and learning cultural heritage content. Relevant examples involve initially the Foundation of the Hellenic World (FHW), a CH institution in Greece applying MR technologies that enable visitors to be aware of their own body within the surrounding environment) [10] to preserve and disseminate Hellenic culture. Also, The *Atelier des Lumières (Workshop of Light)* [11] in Paris is a glaring model of immersive multisensory experience of art through MR technology, from Klimt to 'Van Gogh. The immersive experience' [12] providing a unique emotional and sensory experience while walking through the famous artifacts. Also, the Balzi Rossi Museum includes an advanced VR experience to preserve Prince Albert I Grimaldi's archaeological work at the Balzi Rossi cliffs [13]. In parallel, there are some prominent examples of online VR platforms that aspire to provide a multisensory experience of CH sites: *Google Arts & Culture* offers a database of world sites, and *Open Heritage* (where users can explore and download iconic 3D locations of CH, like the Mayan city of Chichén Itzá); *Battle of Dunkirk: From Disaster to Triumph* [14] (a film that immerses the viewer in the Battle of Dunkirk during the

II World War); the *Museum of Other Realities* [15], and *National Geographic* film series offering a VR experience in the Viking culture. Mixing the physical with the virtual in a wide spectrum of combinations, UXD provides with the methodology and the strategy to offer possibilities for immersive participation beyond space and time, beyond spectatorship.

3.2 The Material Cause: Active Participation and Aesthesis

XD, and its subset UI/UX concerning MR environments and interfaces, embrace a participatory and democratic perspective as *designing with the people for the people.* Contemporary UX strategies involve making thorough User Research to empathize with users by understanding their experiences, needs and desires to offer effective design products. They are incited to collaborate with designers during the design process, not only by evaluating the design result, but playing an essential role in most design stages. Through established methodology (interviews, surveys, and A/B tests among others) people are given the power to share their opinion and feelings during the creative process, a key standpoint of contemporary design thinking and practice.

UXD concentrates on shaping the aesthetics of users' experience. *Aesthetics as aesthesis* [16] is not a priori but potential aspect of life, which emerges in use and dialogue with the world *(aesthetics of interaction)* [17]. Contemporary UI/UX strategies introduce audience experience beyond sitting and watching a narrative unfold without them. Conventional participation is not an opposing mode but rather prerequisite basis for active participation to emerge. *Active participation*, in the context of this paper, has twofold meaning: incites individuals to stand up literary and metaphorically from their seats, cross the hall, enter the event space, and interact in somatic level, following both spontaneous paths and scenario-based interactions. The first aspect is associated with the sensual thread, like Norman's visceral aspect regarding human sensory perception [18], and the second with the *compositional thread* of experience according to McCarthy and Wright [19]. The notion active participation simultaneously transcends conventional participation and comprises the *material cause*, i.e. 'that out of which' live events in MR cultural spaces are made of.

3.3 The Efficient Cause: Directing Audience Experience

The efficient cause of live events in MR cultural spaces involves all specialists (designers, UX specialists, and scientists) who contribute to the creative process, as well as MR media and physical props. For Rubidge, 'it is the sense of being, or becoming, that the participants experience through their deeper physiological responses as they become absorbed' underlines the ephemeral and experiential side of their visit [20]. Planning an experience is more about directing events (happenings),

like in case of scenic arts (theatre, dance, film, and performance) within physical and MR worlds. Design integrates *'figures of staging'*, meaning the arrangement in space of static and dynamic aspects, resembling the stage set, involving 'the disposition and movements of an ensemble of actors, putting them in poses and fundamentally regulating them so as to produce patterns and actions' [21]. As the designed product becomes a live event, UX designer supervises and sets on scene *(mise-en-scène)* [22] visitors' experiences within a MR cultural space, like a director.

Designing for experiences though extends staging a play—like in the case of the scenic arts—to include the total design of events (happenings) and (inter)activities. A complete UI/UX team is always evolving to a variety of roles, like designers (interaction, UI, visual, graphic, product, motion, VR/AR, etc.), developers (front end, back end, VR/AR, etc.), researchers, information architect, content strategist, accessibility specialist, and business analyst, among others. The research field depends on the necessities of each project but extends to a wide spectrum of art and science fields: psychology, sociology, design, economics, history of art, ethnography, ergonomics and human factors, philosophy, ecology, computer science, and artificial intelligence, etc. A wide range of scientific and artistic perspectives are merged to offer rewarding educational human experiences.

3.4 The Formal Cause: Open Narrative Structure

Accordingly, the *formal cause* of live events in MR cultural spaces coincides with the *compositional thread* of active participation, meaning the narrative structure. It differs from typical scenarios and past modes of Human–Computer interaction, as open to audience participation embracing the unexpected. Live MR enhanced events (even thoroughly organized) do not comply with the Aristotelian narrative structure: firstly, they are not stabilized in form during the creative process, only when experienced by people; secondly, they reach a predetermined point of completion according to the agreed project objectives; thirdly, there is no longer a single linear narrative with sequent parts/episodes, but rather parallel stories evolving even simultaneously in equal points of action, within a certain period; and finally, participants are offered choices to decide their own experience through the whole event. Visitors are given the opportunity to walk on the borderline of scenario-based and improvised interaction, opening the work to the unpredicted.

Storytelling is one of the oldest interactive methods, and still among the most powerful ones, even in times when MR technologies are immersed in our everyday life. In opposition to traditional narrative structures (like in movies) where the plot remains the same every time played, Murray introduces the notion of *procedural authorship* [23], meaning creating narrative structures with 'gaps' waiting for an every-time-different ensemble of spectators to fill them up with their every-time-different interactivity and participation. In the case of UXD, *Information Architecture* organizes the content within the context and the timeframe for educational and aesthetic experiences to unfold. The designing team interweaves threads of causes

and effects to evoke certain possibilities and build on these possibilities (even the least obvious one) to realization. Information Architecture is narrative-structured, deciding over the structure and presentation of the content. Live participatory events in mixed reality (MR) cultural settings function as organic wholes characterized by the following elements:

1. **One Coherent Synthesis of Stories Evolving Simultaneously.** UX Designers are 'authors' of usually remarkably complicated *Users Flow* (also known as Users' Journey or Map), meaning alternative 'scenarios' of human interaction. Interactive participatory events include numerous possibilities open to audience participation combining scenario-based and free exploration—forming a unique outcome every time performed. Their narrative structure is a synthesis of multiple stories that unfold either simultaneously or sequentially, offering alternative scenarios that the audience can explore and bring to fruition. For example, the *PATHS* [24] (Personalized Access To cultural Heritage Spaces) project offers personalized navigation and interaction to a variety of digital cultural heritage collections. Users can follow a pre-determined path or explore the collection on their own, without a definite beginning and ending point.
2. **Dynamic Stability Within a Framework of Framed Action.** Directing participatory live events involves setting the dynamic context for active participation to emerge. This *dynamic integrity* of the whole entails giving visitors choices to explore shaping their own experience and narration through scenario-based and spontaneous interactions in the frames of the MR exhibition stage. Nonetheless, active participation is not emancipated unconditionally; needs to be framed, but not constrained; become liberated enough to be authentic and guided enough so the narrative structure is sustained; a fragile balance between pliability and consistency.
3. **Each Cultural Event Progresses Toward an Agreed Point of Completion.** This every-time-unique journey molded out of people's active participation has no fixed predetermined final ending; catharsis is not necessary too.
4. **All Components Interact as a Cohesive Unit While Maintaining Their Individual Identities.** Designers take risks as audience members are given the freedom to shape their experience and mode of participation, without losing the narrative coherency. The keystone is to avoid conflict and control over disorder by keeping the flow. Although control and flow seem similarly effective for keeping chaos out, they are different. It is impossible to control a live event where numerous unstable factors affect the overall work in unpredictable ways. Designers cannot control situations or shape experiences but get prepared for all kinds of developments, desirable or not, incited or not. Designers set the frame for the flow of the event to be maintained according to the narrative structure. Designing live events in MR cultural involves directing visitors' active participation, partly scenario-based and partly improvised, linking a series of (aspiring meaningful and desirable) interactions and stories under a complex narrative structure, offering people the opportunity to collaborate and at the same time maintain the overall flow of the event.

4 Conclusion: Designing for Active Participation

By conclusion, the *end cause* of live events in MR cultural spaces is associated with co-creating, preserving, and promoting ICH; the *material cause* involves visitors' active participation, involving interaction with other people and the surroundings; the *efficient cause* refers to the team of designers, scientists, and practitioners who organize the event, meaning not only the props and surrounding environment but also audience overall experience; and finally the *formal cause* comprises a synthesis interactivities and live processes, characterized by fluidity and variability. UXD concentrates on designing *for* audience experience, meaning the *direction* of static (props, interfaces) and dynamic (interactions) aspects in space and time, inciting *fusion of roles* welcoming physical interaction to co-create the live cultural event; *fusion of space* as exhibition space and performance place, stage and hall coincide; and *fusion of realities*, while merging the digital and the physical, the real and imaginative, artistic experience and everyday life, as well as various artistic disciplines.

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The Role of Packaging on Consumers' Behavior in Greece

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Abstract Packaging is an important promotion tool that influences not only the consumers' perception about products but also their purchase decisions. This study aspires to examine the role of packaging on consumers' behavior, filling a gap of similar studies in the Greek context and exploring additional packaging elements, such as innovation and information, which were not adequately examined in previous studies. Its objective is to explore consumers' overall perceptions about packaging, to analyze consumers' perceptions concerning packaging elements and to measure the influence of packaging elements on consumers' purchase intentions. A quantitative research was conducted on a convenient sample of 190 Greek consumers, using an online questionnaire. Findings indicate that packaging color, material, design and innovation influence positively the behavioral intentions of the Greek consumers, while printed information, although considered as important, does not appear to have a similar effect. Results of this study can help managers to better understand the packaging elements that influence consumers' purchase behavior, as well as the versatile functions of packaging, causing them to increase cost efficiency, reduce environmental impact and fulfill consumers' preferences.

Keyword Packaging · Supply chain management · Consumer behavior

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1 Introduction

Packaging is an important marketing tool for companies, which can attract and engage customers, reinforce brand awareness and add value to products [1–4]. Packaging is also crucial in supply chain management, since it protects the products, it prevents losses and damages and it fulfills several functions such as material handling, storage, distribution and transportation [5–7]. Moreover and as consumers are becoming more conscious about the products they purchase and consider issues such as personal health, lifestyle, sustainability, etc., the role of packaging becomes even more important, especially in terms of information provided [8–11]. As indicated by several studies [2, 8, 11–20], consumers' purchase intention is influenced not only by factors such as prior product awareness and familiarity but also by packaging and its physical attributes (size, shape, material, wrapper design, etc.), aesthetics design (shape, color, images, typography, etc.) and printed information (producer/supplier information, area of origin, ingredients, instructions, etc.). However, existing studies focus mainly on physical attributes and on aesthetics-design elements of packaging and not so much on packaging innovations and on the information provided through QR codes. Also, and to the best of the authors' knowledge, there is a lack or relevant studies in Greek context, which would examine the above-mentioned packaging elements and their effect on consumers' purchase intention. Based on the above, the aim of this paper is to explore Greek consumers' perceptions about packaging and to analyze the role of various packaging elements (color, material, design, innovation and information provided) and their influence on consumers' purchase behavior.

2 Research Purpose and Methodology

The objective of the study is to: (i) explore consumers' perceptions about packaging, (ii) analyze consumers' perceptions concerning packaging elements such as color, material, design, information and innovation and (iii) measure the influence of packaging elements on consumers' intentions to buy a product.

Therefore, an online survey was conducted among Greek consumers through convenience sampling and with the use of an online structured questionnaire created with Google Forms. The sample size of the research consisted of $n = 190$ people, aged from 18 to over 64 years old. The development of the questionnaire was based on previous studies [2–5] and was appropriately modified for the needs of the present research. More specifically, the questionnaire consisted of 5 questions about consumers' general perceptions about packaging [4, 5], 2 questions about use and trust of QR code on packaging, 19 questions about the various packaging elements (color: four items [2], material: four items [2], design: four items[2], innovation: four items [2] and printed information: three items [3]), 4 questions about consumers' intentions and finally, 5 questions about demographics (gender, age, education level, occupation and total monthly family income). All questions (except

demographics) were measured with a five-point scale (1: never—5: always, 1: not at all important—5: extremely important, 1: strongly disagree—5: strongly agree).

The statistical processing and analysis of data were carried out with SPSS Statistics. The Cronbach's alpha coefficient is considered satisfactory since values for all the main constructs of the questionnaire were measured above 0.70 (general perceptions about packaging: 0.782, QR code: 0.715, packaging color: 0.757, packaging material: 0.734, packaging design: 0.823, printed information: 0.747, packaging innovation: 0.750 and consumers' intentions: 0.733).

3 Research Findings and Discussion

As far as the demographics of the sample are concerned, 66.8% were women and 33.2% were men. The majority of respondents (59.5%) were in the 25–39 age group, while 16.8% were between 17 and 24 years old, 15.8% between 40 and 54 years old, 6.8% between 55 and 64 years old and only 1.1% over 64 years old. Regarding level of education, 7.4% finished secondary education and 6.8% post-secondary education, while 46.3% have a university degree, 36.3% a master's degree and 3.2% a PhD. Most respondents work as employees either in the private sector (48.9%) or in public sector (13.7%), while 14.7% are freelancers/entrepreneurs and 15.3% are students. A percentage of 6.3% is unemployed and a cumulative percentage of 1% is retired and/or dealing with household activities. Finally, about one third of the sample (33.7%) has a total monthly family income of more than 2.000 euros. 14.2% of the sample stated that the income is between 1.501 and 2.000 euros, while 19.5% were between 1.001 and 1.500 euros, 19.5% between 501 and 1.000 euros and of 3.7% less than 500 euros. A percentage of 9.5% (18 participants) did not answer this question, since it was optional.

Concerning perceptions about packaging (Table 1), the majority of consumers notices the packaging of a product quite often and agrees that it is an important part of the product, thus confirming the significance of packaging as a noticeable sales promotion tool. On the contrary, when shopping online, the percentage of consumers that notice packaging is significantly lower. Most of the respondents stated that they have gone shopping for a product and then changed their mind and bought another product based on packaging, something that confirms the influence of packaging on consumer's purchase behavior. As far as the QR code on packaging is concerned, very few consumers (11%) seem to trust more the products with a QR code comparing to those without a QR code and almost 7 out of 10 respondents (69.5%) have never or rarely scanned it to see the information provided. The above findings show that QR code importance and use in the buying process is rather limited among Greek consumers, something that confirms previous research [21] while in other countries (in Europe and especially in the US) the relative percentages are higher. Finally, consumers stated that the piece of information they notice first is product's expiration date, followed by product name and ingredients, while very few

consumers seem to notice extra information, such as producer/supplier details and area of origin, something that was also found in previous research [21].

Regarding consumers' perceptions about the various packaging elements (Table 2), the most important element seems to be printed information (mean: 4.29), followed by packaging design (mean: 3.71), packaging material (mean: 3.57), packaging innovation (mean: 3.36) and packaging color (mean: 3.30). Concerning the factor-packaging element "packaging color", respondents agree that the color of packaging reminds them of a specific brand, but it does not influence them so much in their decision to buy a product. Regarding "packaging material" the respondents agree that the quality of the packaging material is not only related to the price of the product but also influences their perceptions about the quality of the product contained in the package. It is worth noting that, according to the responses, the material of packaging (plastic, glass, paper, etc.) does not seem to be a decisive factor in the buying decision. Concerning "packaging design", consumers highly agree that design is an important element of packaging and creates a perception about the quality of a product, therefore, it can influence (to some extent) their purchase decision. As far as the element "printed information" is concerned, consumers believe that it is very important to appear on product packaging and influences their purchase decision. Also, consumers read information on the packaging label, even though (as mentioned above) they do not use the QR code to access this information. Furthermore, regarding "packaging innovation", the overall mean score is just above neutral (3), while in other studies this score is higher and packaging innovation practices get more acceptance by consumers. According to our results, reusable, eco-friendly, durable and easy to open packaging do not play an important role in consumers' purchase decisions.

Proceeding to the results of the questions regarding consumer intentions, all mean scores are from neutral (2.99) to rather positive (3.65), denoting that packaging elements do not significantly influence Greek consumers in their intention to purchase a product or not.

Finally, the Spearman's Rho correlation test showed statistically significant and positive (but rather moderate and weak) correlations between consumers' intentions and packaging color ($r = 0.586, p < 0.001$), packaging material ($r = 0.435, p < 0.001$), packaging design ($r = 0.583$, $p < 0.001$) and packaging innovation ($r = 0.397$, $p < 0.001$). The findings are consistent with previous studies [1, 2]. Conversely, there is no statistically significant correlation between consumers' intentions and printed information ($r = 0.112, p = 0.125$). Therefore, it can be concluded that the influence of packaging elements on consumers' intentions to buy a product is overall positive and significant.

Table 1 Consumers' perceptions about packaging

	Never		Rarely		Sometimes		Often		Always	
	N	%	N	%	N	%	N	%	N	%
In general, how often do you notice the packaging of the product when shopping in a store?	7	3.7	24	12.6	73	38.4	55	28.9	31	16.3
In general, how often do you notice the packaging of the product when shopping online?	36	18.9	51	26.8	58	30.5	36	18.9	9	4.7
Have you ever gone shopping for a product and then changed your mind and bought another product based on packaging?	38	20.0	45	23.7	50	26.3	44	23.2	13	6.8
On the products that have a QR code on their packaging, I scan it to see the information	68	35.8	64	33.7	37	19.5	17	8.9	4	2.1
	Strongly disagree		Disagree		Neither disagree nor agree		Agree		Strongly agree	
I trust more products with a QR code	21	11.1	63	33.2	85	44.7	17	8.9	4	2.1
	Not at all important		Low important		Moderately important		Very important		Extremely important	
In your opinion, how important is packaging as a part of the product?	7	3.7	31	16.3	57	30.0	59	31.1	36	18.9

(continued)

Table 1 (continued)

	Never		Rarely		Sometimes		Often		Always	
	N	%	N	%	N	%	N	%	N	%
	Producer / Supplier info		Area of origin		Product ingredients		Product name		Expiration date	
Of the following information on the label of the packaging, which one do you notice first?	3	1.6	12	6.3	34	17.9	45	23.7	96	50.5

4 Conclusions and Suggestions for Further Research

The study examined the role of packaging on consumers' behavior and purchase intentions in Greece. Most importantly, the findings of our survey contribute to the advancement of research on packaging practices in retail by developing a research framework that facilitates the provision of empirical evidence on the effects of these practices on customer purchase intentions.

Our results indicate that packaging elements (such as color, material, design, printed information, innovation) are not only important parts of a product, but also factors that gain consumers' attention, affect their perceptions about the quality of a product and, overall, influence their purchase intentions. However, it is worth noting that although printed information is considered as the most important packaging element (something that also found in other studies e.g. [3, 8]), consumers notice only "basic" product information (such as expiration date, product name, ingredients) and not "extra" information regarding producer/supplier details, area of origin, etc. Consequently, they rarely scan the QR codes in order to access this information. Additionally and according to the survey results, packaging material (plastic, glass, paper, etc.) and packaging innovations (such as reusable, eco-friendly, durable and easy to open packaging) do not play a decisive role in Greek consumers' purchase decisions compared to other countries [9], where sustainability issues get more attention [14, 16] and green consumer buying behavior is more developed [6].

The above findings may prove valuable for managers in the retail industry, in order to (re)think ways of "educating" consumers about information that can be found on product packaging (and how to access this information) or apply new technologies (e.g. smart-intelligent packaging) to provide consumers with adequate product information in a simpler way (comparing to QR codes). The role of media and promotion can prove decisive towards this direction [22]. Future research may include the factor of consumers' perceptions about packaging sustainability and examine the association of this factor with purchase behavior, brand image and corporate social responsibility actions and strategies.

Table 2 Consumers' perceptions about packaging elements and purchase intentions

	Mean	Standard Deviation
Packaging Color	3.30	0.922
The visible elements (color, size, graphics, etc.) of a product's packaging influence my decision to buy a product	3.54	0.852
Vivid, bright colors on a product's packaging influence my decision to buy a product	3.31	0.886
The color of a product's packaging influences my decision to buy a product	2.66	1.014
The color of packaging reminds me of a specific brand (brand name)	3.70	0.937
Packaging material	3.57	0.928
The quality of the packaging material influences my perception of the quality of the product it contains	3.80	0.933
The material of the product packaging (plastic, glass, paper, etc.) influences my decision to buy a product	3.24	1.089
My decision to buy a product of a particular brand is influenced by the material of its packaging	3.31	0.945
The quality of the packaging material is related to the price of the product	3.94	0.746
Packaging design	3.71	0.910
The design of the product packaging influences my decision to buy a product	3.59	0.914
I notice the packaging design before I buy a product	3.55	0.973
The design of the packaging creates a perception of the quality of the product	3.77	0.890
The design of the packaging is an important element of packaging	3.92	0.863
Printed information	4.29	0.786
Printed information on the label (e.g. expiration date, ingredients, etc.) is important to appear on the packaging	4.75	0.579
Information on packaging (ingredients, country of origin, etc.) influences my decision to buy a product	4.13	0.870
I read the printed information on the packaging label	4.00	0.909
Packaging innovation	3.36	1.007
My decision to buy a product is influenced by whether packaging is easy to open	3.21	0.984
My decision to buy a product is influenced by whether the packaging can be reused	3.32	1.057
My decision to buy a product is influenced by whether a product's packaging is environmentally friendly (e.g. biodegradable, etc.)	3.36	1.008
My decision to buy a product is influenced by whether the packaging is durable (doesn't break, doesn't wear out, etc.)	3.54	0.979
Consumer intentions	3.37	0.937

(continued)

Table 2 (continued)

	Mean	Standard Deviation
I would buy a product influenced by the color of packaging	2.99	1,034
I would buy a product influenced by the material of the packaging	3.45	0.917
I would buy a product influenced by the design of the packaging	3.37	0.898
I would buy a product influenced by the innovation of the packaging (e.g. environmentally friendly, easy to open, etc.)	3.65	0.900

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The Evolving Role of Social Customer Relationship Management: Transforming Customer Engagement

Christos Papademetriou, Sofia Anastasiadou, and Harry Sophocleous

Abstract This paper examines the evolving role of Social Customer Relationship Management (Social CRM), aiming to enhance client engagement and fulfillment, through the integration of social media. The study employs a comprehensive review of current literature and examines selective case studies of Social CRM implementations. The results indicate that the adoption of Social CRM has a significant and beneficial effect on consumer engagement, brand loyalty, and immediate feedback. Consequently, this leads to a greater degree of personalized and unique consumer experiences. This paper presents viewpoints on the strategic advantages of Social CRM, emphasizing its ability to revolutionize traditional CRM approaches through the utilization of social media platforms.

Keyword Social CRM · Customer engagement · Brand loyalty

1 Introduction and Background of Research

Social CRM is transforming the traditional approaches to Customer Relationship Management (CRM) by using social media platforms into CRM strategies to improve customer interaction. To undertake a thorough literature review on the dynamic nature of Social Customer Relationship Management (Social CRM) and its influence on the transformation of consumer engagement, the study was based on an in-depth review of scholarly and professional literature sourced from reputable databases such as Emerald, Google Scholar, and EBSCO. This paper examines the profound influence of Social CRM on the management of client relationships, emphasizing its utilization of social media to establish more robust and individualized connections with clients.

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Integrating standard CRM processes with social media dynamics allows organizations to gain immediate understanding of client preferences and habits. Additionally, it enables customers to engage with brands on their own terms. This paper highlights the important significance of Social CRM in modern business strategies and its ability to redefine consumer engagement in the current marketplace by analyzing its essential components and advantages.

2 Literature Review

2.1 Traditional CRM and Social CRM

CRM is a comprehensive philosophy that integrates an advertising idea with a company strategy to efficiently handle client connections. The primary focus and subject of attention is the customer and his requirements, particularly his security in relation to a company. A traditional CRM system is a platform employed by a firm to engage in communication with consumers and store data. In essence, it enables the organization to more effectively oversee connections and information. However, the majority of these conventional CRM systems lack omnichannel capabilities and instead only collect a limited number of customer communication routes [1]. Social CRM, also known as social CRM, refers to the incorporation of social networking channels into existing CRM platforms. CRM software now progressively integrate social media alongside conventional methods, enabling consumers to engage with companies through their chosen communication channels. This implies better client service and enhanced marketing intelligence obtained from client social media data [2].

Social CRM has redirected its attention and supplemented traditional CRM with user-friendly social media platforms. According to Karp [3], following is a thorough analysis of the primary strategies and spheres of impact: roles of the staff, where in traditional CRM, the effectiveness and excellence of customer data determine the allocation of tasks to certain departments or service managers. Social CRM plays a crucial role in ensuring the quality of the material, and all workers utilize the database to effectively engage the intended audience. In regard to functionality priorities, the process-centric approach of traditional CRM enables the establishment of workflows according to a default standard and the definition of each stage of the process. Social CRM utilizes a sophisticated approach that focuses on conversations as the central element. The process performance and number of phases depend on client participation in social networks. Mode of Administration: Contact management enhances traditional CRM by incorporating diverse client histories, which serve as a foundation for messaging and marketing campaigns. Community management provides social CRM with up-to-date data generated by customers. These data provide detailed analysis of project planning and enhance the return on investment (ROI) and conversion rates of campaigns. Communication mediums: the traditional CRM strategy

encompasses a clearly defined set of methods for transmitting emails, notifications, and newsletters. In addition, this procedure is conducted exclusively within designated business hours. Social CRM encompasses the ever-changing and dynamic platforms through which businesses engage with their customers. The scheduling of a campaign can vary based on the prospect's engagement with the blog or social network. The importance of communication: marketing managers in traditional CRM systems determine the timing and substance of their interactions with customers. The communication process is condensed to providing a certain quantity of information without expecting an immediate response. Social CRM focuses on establishing and maintaining long-term consumer involvement. The marketing staff attentively listens to their prospects and gathers the topics that pique the customer's interest in a specific product or service. Configuration of the Processes: The ultimate objective of all operations within the traditional CRM system is to achieve successful closure of business deals. Put simply, the transaction is a primary goal. The intricate dynamics of social CRM involve meaningful and valuable interactions that strive to fulfill the clients' requirements and desires. The Evolution of Customer Engagement: Customer interaction has transitioned from a fixed, unidirectional communication method to a fluid, interactive conversation. Social CRM enables this transformation by offering venues for immediate interactions, customized interaction, and the establishment of communities. They enable organizations to swiftly address customer concerns and complaints, as well as actively connect with clients, resulting in a more engaging and fulfilling experience for clients [4].

2.2 Pros of Social CRM

Social CRM offers several significant advantages: You can discern novel prospects: Social CRM enables the monitoring of clients' purchasing activities on networking platforms such as Facebook and Twitter. This information is highly valuable if you are interested in cross-selling or upselling one of your items. If the individual has recently made a purchase of a smartphone, you have the opportunity to send him/her an electronic message providing a reduction in price for accessories, specifically designed for smartphones [5]. Improved client Experience: A significant portion of your revenue is contingent upon the quality of client experience. Based on a 2024 analysis by PwC, a single unfavorable encounter results in a 32% attrition rate, among loyal clients who cease doing business with a particular brand. By utilizing a social CRM, you have the ability to address customer concerns in a proactive manner, as it provides comprehensive information for every client encounter. This facilitates well-informed reactions and smooth transitions between divisions in order to ensure a cohesive client experience [6]. Enhanced Customer Service: This service facilitates organizations in delivering streamlined and effective client service via social media platforms. Prompt responsiveness, individualized support, and addressing concerns openly showcase a dedication to ensuring client contentment [7]. Customer Feedback: Social CRM has the potential to significantly enhance the client experience.

If an individual buys a product and posts a tweet regarding it, you will promptly be informed. Subsequently, you can capitalize on this opportunity, especially if they possess a substantial number of followers on Twitter, by offering them a complimentary coupon or a reduced price on comparable goods. It is highly likely that the individual would express his/her satisfaction and generate favorable PR for your firm [5]. Competitive advantage: Implementing Social CRM techniques provides firms with a competitive edge by being at the forefront of market trends, comprehending competitor actions, and swiftly adjusting to evolving client demands. The combination of agility and an emphasis on clients is what fuels ongoing development and sets us apart from competitors in the industry [7]. Determine Your Most Valuable Prospects: Several social CRM platforms have the capacity to automatically assess the value of your potential customers by integrating their social profiles and interactions into the prospective client data. To determine your most important leads, you can analyze pertinent details from their social networks, such as their business's name and job title, their previous engagement with your advertisements, or even their firm's revenue. This feature enables you to optimize your outreach endeavors by efficiently targeting and prioritizing contacts that have a higher probability of conversion [8]. Sense Positive or Negative Vibes: Several contemporary social media CRM platforms have features to track sentiment. These programs examine postings from followers and can extract details regarding the tone and intention. Suppose you are the owner of a small lunch establishment and you introduce a new menu. Although you have not received a significant number of explicit reviews on your webpages, the sentiment monitor detects the manner in which consumers are discussing your company online, and the feedback is unfavorable. The modifications you have made are not appreciated by them, and they are longing for some of the familiar items from your previous menu. By promptly addressing this input, you gain the ability to make necessary adjustments before any clients are lost. Why delay till the unfavorable reviews begin to appear? Instead, proactively address concerns by analyzing the language and tone employed by individuals on your website [9].

2.3 Challenges of Implementing Social CRM

Despite its advantages, implementing Social CRM poses several challenges:

- Privacy and security concerns: Social CRM includes the gathering of client information from diverse social media activities and subsequent analysis of said data. While gathering these data, it is equally crucial to safeguard it, which can present difficulties. In addition, clients are increasingly vigilant about the manner in which firms utilize their data, leading to their reluctance in sharing it. Therefore, any indication of mismanagement could result in a loss of their confidence. Implement explicit data usage rules that are in accordance with applicable requirements such as the General Data Protection Regulation (GDPR) [10].

- Data integration: Integrating your social network data with your unified CRM can provide challenges in achieving a smooth and seamless process. The variation in forms, structures, and systems often accounts for such discrepancies. This can result in client profiles becoming fractured [10]. The implementation of social CRM necessitates organizational reform across all departments [11]. Consequently, this work is seen as challenging due to its multifaceted nature, encompassing several organizational, human beings, and technological components [12]. The implementation will result in a significant cultural transformation within the firm. A significant number of CRM projects fail due to inadequate analysis and planning of the backup work. Numerous research studies highlight that the deployment of social CRM is not solely reliant on technology [11, 13]. Ahani et al. [13] assert that social CRM necessitates a harmonious integration of technology, process, and people.
- Lack the systematic and analytical skills: Lamrhari et al. [14] argue that businesses frequently lack the structured and analytical competencies necessary to manage the substantial volumes of data. As the volume of data grows, many firms have major challenges in integrating and managing the data inside their CRM systems. In addition to the requirement of analyzing substantial amounts of data, it is also necessary to perform this task efficiently and promptly [15]. Therefore, it is necessary to incorporate new data analysis methods into the systems [14]. According to Guha et al.[16], social data are often left out of marketing decisions due to the intricate process of collecting and analyzing this type of data.

3 Methodology

The authors utilized a qualitative approach, specifically employing the case study methodology [17–19]). Qualitative approaches enable the analysis and understanding of complex events by conducting thorough investigations and interpreting in-depth data. The case study approach is a research methodology that entails undertaking a comprehensive and thorough assessment of a particular individual, group, organization, event, or phenomenon within its actual real-life setting [20]. Starbucks efficiently utilizes Social CRM to optimize consumer interaction. Starbucks engages with consumers, responds to their inquiries, and advertises new goods via its social media platforms. The organization also uses social media statistics to collect consumer input and enhances its offers, guaranteeing a consistent enhancement in consumer satisfaction. Starbucks utilizes CRM data to generate customized experiences for its consumers, providing individualized suggestions and special offers. The company utilizes customer data to enhance its range of goods and create new things that are in line with customer preferences. Starbucks Rewards, the well-known reward program of Starbucks, serves as evidence of the CRM strategy. The program employs client data to provide customized incentives, reductions, and promotions. Nike employs Social CRM to establish connections with consumers and foster a community centered around their brand. Nike cultivates brand loyalty and promotes

content created by users by actively interacting with consumers on social media sites such as Twitter and Instagram. This method not only improves customer involvement but also offers useful observations into client tastes and habits. Nike has been able to engage with consumers, optimize company operations, optimize Return on Investment (ROI), and facilitate brand development through the use of an efficient CRM system [21]. Coca-Cola has effectively utilized Social CRM strategic approaches to cultivate a worldwide community centered around its brand, leveraging popular social media platforms such as Twitter, Facebook, and Instagram. Through the implementation of personalized content, contests, and campaigns, Coca-Cola has effectively enhanced customer loyalty and fostered brand advocacy. In order to effectively monitor social media interactions, promptly address feedback from consumers, and implement focused marketing initiatives, Coca-Cola employs Social CRM solutions. The campaign known as "Share a Coke" serves as a prominent illustration, wherein customized Coca-Cola bottles were employed to incentivize users to share their impressions on various social media platforms, resulting in substantial user involvement. Zappos, an e-commerce platform specializing in footwear and apparel, has gained recognition for its exemplary service to clients that is also evident in its implementation of Social CRM strategies. Zappos utilizes social media platforms to actively interact with clients in a manner that evokes a sense of personal connection and humanity, strengthening its brand principles. Zappos utilizes Social CRM strategies to deliver immediate assistance on popular social media sites such as Twitter and Facebook. The company actively monitors consumer opinion, immediately addresses problems, and engages clients in an unpretentious and genuine manner, frequently surpassing expectations through the provision of personalized presents or expressions of gratitude. As a prominent multinational cosmetics shop, Sephora has successfully included Social CRM into its marketing approach to foster personalized engagement with its client base. Sephora has effectively elevated its client interaction methods through the establishment of a dynamic online community and the strategic use of user-generated content. In order to foster customer engagement, Sephora's Beauty Insider Community and #SephoraSquad programs actively promote the sharing of beauty tips and product reviews. The business will use Social CRM as a means of monitoring consumer interactions and preferences, thereby providing tailored product suggestions and special offers that are informed by consumer habits and social media engagement.

4 Discussion

Taking into consideration the aforementioned, the companies must pay attention to the following: Personalizing Customer Experiences. Customization is a fundamental advantage of Social CRM. Through the analysis of social media interactions, companies have the ability to customize their communications and offers, based on the specific interests of every customer. This customized approach improves the client

experience, creating a sense of value and understanding among clients, and therefore reinforcing brand loyalty [22]. Enhancing Customer Engagement. Social CRM enables immediate and ongoing engagement with customers, promoting a feeling of connectedness and commitment. Companies have the ability to utilize social media channels to address client issues, resolve problems, and request feedback. This proactive involvement not only enhances customer contentment but also aids in identifying and resolving possible problems before they become more serious [23]. Data Collection and Integration. Efficient Social CRM requires the smooth incorporation of social media data into conventional CRM systems. This connection allows firms to establish a cohesive client profile by merging data from several points of contact [24]. Measuring Social CRM Effectiveness. In order to evaluate the efficacy of Social CRM, firms should monitor essential performance indicators (KPIs) such as client happiness scores, levels of engagement, sales metrics, and sentiment about the brand. These measures are used to assess the influence of social media interactions on consumer happiness and business success [25].

5 Conclusion

The incorporation of Social CRM into contemporary CRM has profoundly revolutionized the manner in which firms interact with their clientele. Through the utilization of social media platforms, firms are able to engage with their audience instantaneously, customize their client experiences, and cultivate a more profound sense of brand loyalty [26, 27]. Social CRM improves customer satisfaction by actively engaging with consumers and resolving issues promptly It also offers important insights by analyzing data from social media. The main drawback of this study is its dependence on qualitative methodologies, which can neglect the quantitative indicators necessary for a thorough evaluation of Social CRM's efficacy. Studies should integrate quantitative data to offer an equitable assessment and more profound comprehension of the influence of Social CRM strategies on business performance and customer relationships.

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Soft Skills in the Greek Public Sector. From Legal Neglectance to Administrative Omnipotence



Panagiotis Passas, Dimitrios Stranis, and Sofia Ioannidou

Abstract Soft skills tend to play an increasingly important role in private companies as well as in public organisations nowadays. Thus, emphasis is being placed on the relevant management and training systems worldwide. The article focuses on the evolution of the importance of soft skills in the Greek public sector. Emphasis is placed on the changes brought about by the relevant recent provisions of the legal framework (Law 4940/14). The research effort focuses on the main aspects of the importance given to the soft skills framework in order to investigate their expected effectiveness in practice. The aim is to investigate the changes and opportunities provided by the soft skills framework in the Greek environment, as described by law 4940/2022, which has recently entered into force (01.01.2023), as well as the ways in which this new framework restructures the recruitment of staff, the evaluation system of civil servants, the training procedures and the selection of Heads of Units and Organisations. In this context, it examines how the newly introduced soft skills system fulfils the conditions required to be effective, promoting the recruitment of the right candidates for each post, objective assessment, tailored training procedures through mentoring and coaching and the selection of appropriate heads of units/organisations in the Greek public administration. The administrative implications are discussed.

Keywords Soft Skills · Evaluation · Performance · Selection of Personnel

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1 Introduction

The post-modern era defines the surrounding socio-economic reality of rapid changes, inherent technological developments and globalisation. Human being is placed at the centre of all reform initiatives in private enterprises and public organisations. Continuous training, lifelong learning, the use of new innovative interdisciplinary tools and the acquisition of soft skills are essential conditions for the development, flexibility and adaptability of modern human resources. At the same time, they are a necessary condition of survival for the effective functioning of organisations [1]. In the context of the Greek public administration, the Law 4940/2022, a system of evaluation of civil servants, has as its central point the Unified Skills Framework, consisting of nine soft skills [2]. In this way, the Greek public administration intends to be in line with the modern reality at the European and global level. The main objective of the new law is to improve the functioning of public sector services and institutions through an integrated approach to the development and empowerment of human resources. Mentoring and coaching are considered as the core procedures for the improvement of soft skills.

2 Methodology

The present study is a literature review and analysis of the references used from well-known databases such as EBSCO, Emerald, Google Scholar with the keywords "soft skills", "Greek Public Administration", "evaluation" and "target setting". Due to the relatively short period of implementation of the Greek law and, consequently, the limited quantitative data, the literature review methodology was adopted.

3 Soft Skills

Hard skills refer to the technical knowledge necessary for the exercise of a profession in the modern labour market [3]. They indicate the education and training a person has in a knowledge content, e.g. a university degree or a foreign language degree, and can be easily assessed, tested, measured and certified. Until recently, they were the basic requirements for the successful performance of job duties. However, in today's post-modern era which is characterised by an ever-changing global economy, the framework of skills required in the labour market is subject to constant transformation. Soft skills are increasingly relevant since occupational demands have changed and working conditions have evolved. For this reason, organisations—public and private—are looking not only for high levels of technical expertise but also for the ability of employees to communicate effectively, manage resources well, work in teams and respond to change and the challenges

of solving multidimensional problems. Furthermore, in the modern workplace, the category of soft skills includes all the personal and inter-personal or otherwise social skills that are necessary for personal development, happiness, personal progress, social participation and success at work [4]. Personal skills are divided into awareness skills (self-awareness, self-assessment) and action skills (self-management, self-activation, adaptability, responsibility, integrity, stress management, courtesy-protocol, moral integrity, critical/analytical/synthetic thinking, goal setting, decision-making, problem-solving) while interpersonal skills are divided into the categories of social sensitivity (empathy, forgiveness, communication skills, active listening, handling diversity, cultural awareness) and relationship management (leadership, cooperation, teamwork, dispute management, sociability, professionalism, work ethic and morality) [5].

4 The Importance of Soft Skills in the Global Labour Market and Public Administration

The modern workplace shows that technical knowledge and hard skills do not suffice for professional success and that soft skills are vital for productive performance as well as for social life in general. Scientific studies indicated the competitive advantage of soft skills in relation to hard skills [6, 7]. The International Labour Organisation (ILO) confirms the degree of usefulness and impact of soft skills in finding and keeping a job. For the ILO, "basic employability skills are based on those developed through basic education, such as reading and writing, the technical skills required to perform specific tasks, and professional/personal characteristics such as honesty, reliability, punctuality, involvement and commitment" [8]. Recent relevant scientific studies by the World Bank [9] and the OECD [10] find similar positive correlations between soft skills and impact on people's working lives. The professions of the future will not require static skills, but a deeper ability of the individual to adapt, learn continuously and evolve. Above all, it is vital to combine knowledge and individual skills as well as to exploit the innate human abilities that differentiate them from machines. Division, organisation and nature of work are changing radically, affecting at the same time the operational and organisational structures, which are more reliant on decision-making and coordination, control and support services [11]. Future jobs in the public sector are expected to be increasingly dependent on technology. However, critical human competencies such as communication, creativity, planning and problem-solving are essential skills for carrying out the work of the future.

Public sector actors seem to be trying to keep up with the growing need created by workers and citizens to adopt and adapt to the new reality and the challenges it creates. Many public bodies worldwide are already responding to these challenges and are redefining themselves through their human resources, with the ultimate goal of serving the citizen and the public interest. In this context, an important dimension

for the human resources of the public sector is the development of the leadership skills of civil servants. Supervisors and managers need soft skills to respond to the new reality, skills which, globally, seem to be less developed than needed [11]. The prospect of improving and modernising the labour market and the public sector to foster and develop competences and skills is one of the key objectives and priorities of the European Union to enable the European economy to meet today's challenges. In this sense, the new soft skills agenda is the most important factor in the list of major initiatives of the European Commission's work programme, launched already in 2016 [12]. It supports a shared commitment of Member States towards a common vision on the strategic importance of soft skills for sustaining employment, growth and competitiveness. This Skills Agenda reinforces and, in some cases, streamlines existing initiatives to better assist Member States in their national reforms, as well as to induce a change of mindset in both individuals and organisations.

In July 2020, the European Commission presented the renewed European Skills Agenda [13] for sustainable competitiveness, social justice and resilience. The Agenda has set ambitious quantitative targets for skills upgrading (improving existing skills) and re-skilling (acquiring new skills) to be achieved by 2025. The Commission also flagshipped 2023 as the European Year of Skills [14], as it has been decided that the European Union should invest much more in vocational training and upgrading of skills, especially those that will help businesses and boost Europe's growth. Businesses and public organisations need workers equipped with the skills needed to make the green and digital transition, and individuals need to be able to acquire the right education and training to get ahead in life. In Greece, with regard to the organisation and development of similar procedures in the public sector, the recent formulation of an evaluation framework for the public administration based on the Single Skills Framework of Law 4940/2022 is a breakthrough that contributes to the improvement of the operation of public sector services and institutions through an integrated approach to the development and empowerment of human resources and the introduction of the concept of evaluation. Furthermore, it defines the soft skills necessary for staff to perform their duties and be assessed them, through objectives, towards both continuous improvement and development and rewarding their performance [2].

5 The Soft Skills in the Targeting of the Current Employee Evaluation System, According to Law 4940/2022

In the legislative framework of the European Union, the development of soft skills is part of innovation field and new policy development. Both of the latter are specified through the Technical Assistance Instrument (TSI). TSI provides technical support instruments and expertise for the design and implementation of a wide range of reforms in European Public Administration, including the development of interpersonal and social skills [15].

In Greece also, the implementation of a modern evaluation system is of particular interest in terms of how the relevant legislative framework is designed and formulated. The way it is applied in the daily operation of public services and the relations between the employees is also of great interest [16]. The aim is to ensure effective and efficient management of human resources in the context of a modern public administration that ensures the common well and the proper functioning of services, in accordance with best practices in the field of human resources development [11].

With this in mind, Law 4940/2022 introduced key innovations, including a focus on soft skills through personalised development plans, a revised target-setting mechanism linked to ministry action plans, a human resources development advisor, and cash incentives to increase productivity [17]. Furthermore, Law 4940/2022 incorporates for the first time in the Greek public administration a single framework of soft skills which consists of the following nine soft skills: (a) citizen orientation, (b) teamwork, (c) adaptability, (d) result orientation, (e) organisation & planning, (f) problem-solving and creativity, (g) professionalism and integrity, (h) knowledge management and (i) leadership. The evaluation system of Law 4940/2022 is a functional tool with a twofold objective. It determines the level of soft skills of each employee in relation to the responsibilities of the organisational unit in which he or she serves. Additionally, it formulates the initiatives necessary for the continuous development and empowerment of the employee [18].

The short-term objective of the regulations introduced in the new evaluation system by the provisions of Law 4940/2022—that came into force on 1.1.2023—is the establishment of a new and functional system of goal setting and performance evaluation of public sector employees. This will lead to the improvement of the services provided to the citizen. The long-term objective is the modernisation and effective operation of the public administration through the effective and meaningful evaluation of human resources towards continuous improvement and development [2]. From the individual provisions of the relevant law, it is clear that the uniform framework of soft skills is the main strategic tool for human resources management, as it highlights the skills that are necessary to improve the efficiency and effectiveness of executives. The nine soft skills that make up this tool are the reference points in all human resource-related processes [19]. An important innovation of the law lies in its emphasis on the achievement of "specific goals" for each employee, which is directly linked to the development of soft skills. The focus shifts to the employee's skill development plans after the evaluation phase. The development plans include actions considered appropriate to enhance the skills of the evaluated employee in the context of his/her role in the team. Development plans also include dialogue and feedback between the Assessor and the Assessed Employee. Heads of organisational units are evaluated both in terms of the achievement of objectives and in terms of the skills they possess and/or develop during the evaluation year. The concept of "team" is promoted and the manager becomes responsible for the implementation of the objectives assigned to the team and, at the same time, for the mobilisation of the employees who make up the team [11]. It is of great interest that each evaluator selects three soft skills of each evaluatee for which he/she feels they can/should be further developed. Emphasising the participatory approach, the law incorporates interaction

and dialogue during the target setting phase, with three mandatory meetings each year between the supervisor/evaluator and the employee/evaluate. Further optional meetings can be held [17]. Personal "Development Plans" set out the actions by the evaluatee so as to develop and improve his/her soft skills [11].

Another innovation of Law 4940/2022 regarding the development of soft skills of public sector employees, concerns their training through the introduction of the practices and methods of mentoring and coaching. According to the most widely accepted definition in the international literature, business mentoring is a personal relationship between an experienced person, usually older, who acts as a teacher, guide and protector (mentor) for a less experienced, usually younger, employee or worker (mentee) [20]. Additionally, in business Coaching, the executive-employee's immediate supervisor gives technical instructions, comments on the employee's behaviour and keeps him/her informed of his/her progress. In practice, the organisation or company can designate specific individuals, experienced and skilled in advising executives, who will take on the trainees [21]. The methodologies of business mentoring and coaching are therefore emerging as leading functions of formative leadership, offering solutions in cases where other leadership approaches fail to deliver the expected results [22]. Through the above procedures, decisions are made in consultation with the employee's supervisor regarding the type of training needed to improve the soft skills to be developed. Ongoing monitoring and evaluation of the training process ensures its effectiveness and its alignment with the organisational objectives. Among other things, the application of mentoring and coaching as a methodology for the development and improvement of soft skills is expected to contribute to the immediate and effective integration of new civil servants in the organisation. Trying to evaluate Law 4940/2022 itself, we note that it introduces a modern evaluation system, based on good practices, focusing on the continuous improvement of employees and supervisors through soft skill Development Plans. It ensures continuous feedback, development and empowerment of the human resources of the public administration, with the ultimate goal of improving the operation of public sector services and institutions for the benefit of citizens and society.

5.1 Mentoring and Coaching According to Law 4940/2022 as Supporting Processes for the Development of Soft Skills of Public Servants

In the context of the Greek Public Administration, the innovative processes of Mentoring and Coaching were included in Law 4940/2022. In particular, two basic manuals on Mentoring and Coaching are posted on the website of the Hellenic Ministry of the Interior. The texts of these manuals note that "…the concepts of mentoring and coaching are introduced for the first time as methods of developing the skills of civil servants…" and that "… coaching, which is being introduced for the first time in the public sector, is one of the proposed methods of developing skills

provided to Heads of General Management or equivalent level of position, through Development Plans, in accordance with the new system of target setting and evaluation of human resources in the public sector (Law 4940/2022)…" [23]. At the same time, the Hellenic National Centre for Public Administration & Decentralisation has been running training and certification programmes in the practices of mentoring and coaching with the following titles: "Special Certification Programme: Mentoring in Public Administration" and the related "Special Certification Programme: Coaching in Public Administration"[23].

6 Discussion and Conclusion

The implementation of the evaluation framework is an innovative institutional step in the Greek public administration. This integrated evaluation system aims to transform civil servants into policy makers rather than mere executors, to enhance efficiency, effectiveness and to safeguard the public interest, while taking into account the interests of civil servants (grade, salary, mobility, selection of heads of organisational units). The development of their soft skills serves as a central reference point. Drawing inspiration from European and international best practices, it is aligned with the objectives of optimising the performance of the public administration. It has incorporated scientific principles, past observations of the system and European practices, making it, in the authors' view, functionally adequate [17]. Evaluating Law 4940/2022 as a whole, the most important finding is its anthropocentric dimension. Human being and, more broadly, the group of people are placed at the core of the concept of soft skills. After all, soft skills refer to the ability to interact effectively with others. In public administration, soft skills are important because civil servants need to work with different personalities, the public, understand their needs and communicate effectively. In this sense, the human factor is the most important in any systemic, procedural or organisational change and the development of personal competencies and skills is seen as an essential process at the personal and team level to support existing changes [24]. Law 4940/2022 demonstrates the need for the immediate implementation of a modern evaluation system. It identifies the critical soft skills for the performance of public sector employees, the enhancement of the efficiency of the public administration and the improvement of the services provided. The establishment of the Unified Skills Framework is expected to enhance citizens' confidence in the credibility of the public administration, transparency and meritocracy in all human resource management processes. The participation of civil servants in self-improvement decisions aims not only at improving the individual performance and of course the overall performance of the public service but also at enhancing self-respect and appreciation [11]. Law 4940/2022 gives professional and personal development its proper meaning by providing the appropriate management tools for self-improvement and teamwork. Public administration empowers the employee, improves his/her skills, invests in him/her and does not expect from him/her to apologise for what he/she did or not [19]. Cultivating a culture of professional

and personal development, annulling the punitive approach to the employee, altering the whole work mindset paves the way. Skills developed at and for work can indicate the pathway to happiness in life generally [25].

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Sculpture Conservation at the National Glyptotheque of Greece as a Promotional Tool for Audience Development



Maria Kliafa, Maria Petrou, and Agni-Vasileia Terlixi

Abstract Museums and cultural organizations employ communication tools to attract the public. The National Glyptotheque of Greece, an annex of the National Gallery-Alexandros Soutsos Museum, had been closed to the public for almost 2 years due to restoration works at the exhibition hall. This research aims to highlight the potential of sculpture conservation activities presented either via social media or by live demonstration, as an effective means of communication policy for the attraction of audience and enhancement of visitors to the National Glyptotheque. A digital campaign was designed to promote its forthcoming reopening in 2022. Twenty-two posts were uploaded on the Facebook account of the National Gallery-Alexandros Soutsos Museum within 1-month period, before the gallery's reopening, all of which referred to the work of sculpture conservators. An online questionnaire followed for the evaluation of the campaign on a convenient sample of 115 followers. The results showed that the audience was very interested in getting familiar with conservation issues and in addition, most of the online visitors stated that the campaign provoked their desire to visit the museum. After the reopening of the museum in 2024, a second campaign was organized, aiming to focus on the Glyptotheque's sculpture garden. This time it was an on-site event, an open lab called "Conservation in the park", where visitors had the rare opportunity to physically attend and watch live conservation of three sculptures from the permanent outdoors exhibition, during a 5-day period. The campaign included the opening posts at the museum's website and social media a few days before the beginning of the event, and then, a few short-period stories were uploaded during the event. The methodology used in each campaign revealed some problematic aspects and good practices. Backstage activities of the museums may come at the forefront, and conservation of works of art may be a powerful tool for raising the audience attraction. Implications for heritage managers are discussed.

Keyword Audience development · National glyptotheque of Greece · Sculpture conservation · Sculpture garden

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1 Introduction

Museums and cultural organizations apply communication strategies to attract audiences and embrace several different tools within the concept of providing an overall experience to their visitors. Human-oriented approach of the museums today includes entertainment, education, knowledge, and participation provided through a variety of events, addressed to multiple smaller audiences according to their preferences and interests. The goal is to attract members of the public, address them with a more personalized connection and produce experiences that will bond them with the museum and maintain their commitment. Subsequently, the visitor's growth will enhance the stakeholders' interest, which is vital for its survival and evolution.

Promotional tools are required to spread out information on the museum or the cultural organization and maintain a two-way communication, which creates a network. Lately, communication is based mostly on digital media, which provides information, interaction, criticism, evaluation, emotional expression, or suggestions, all in real time. Promotional tools encompass digital and live events for audience development. Among others, a promotion tool lately applied is revealing backstage functions of the museums, like the conservation of works of art.

This research aims to highlight the potential of sculpture conservation activities as an effective means of communication policy for audience attraction and development to the National Glyptotheque. The museum is an annex of the National Gallery-Alexandros Soutsos Museum and has been closed to the public for almost 2 years. A digital campaign was designed to promote its reopening in 2022, and an on-site event was organized in 2024, after the opening. Both campaigns revealed good practices and problematic aspects concerning the communication strategy followed each time.

2 Methodology

2.1 Digital Campaign "National Glyptotheque—the Conservator's Viewpoint"

To prepare a strategic plan for audience development, the situation of the museum, its values, vision, and needs should be considered first and then, realistic goals need to set, proposing events that would potentially attract different kinds of audience [1]. In the case of the National Glyptotheque, it is an annex of the National Gallery-Alexandros Soutsos Museum, a rather small museum, situated in an urban park, exhibiting and promoting a unique collection of modern Greek sculptures. Among its visitors are school groups, elderly people, art students, and art loving individuals. After a 2-year period that the museum had been closed for the public, a promotional campaign had to be set, aiming to inform on its upcoming reopening. The campaign was dedicated to the backstage activities of sculpture conservation and goals set included rising interest in conservation actions as part of the preparations for the



Image 1 An example of a Facebook post from the "National Glyptotheque—the conservator's viewpoint" campaign

museum's reopening, highlighting comparative advantages of the Glyptotheque such as its unique collection, the surrounding park, easy access, wheelchair accessibility, and generating visitors' development. The online campaign, called "National Glyptotheque—the conservator's viewpoint" run on the Facebook account of the National Gallery for one month (2/2/2022 to 5/3/2022) (Image 1). The posts concerned various information, including a presentation of the museum and the park, maintenance applications, safety and transportation issues, optimal environmental conditions, decay agents, sculptures before and after their conservation, and collaborations with artists, educational or research organizations. Simple, but accurate vocabulary was used, pictures accompanied by small texts, followed by relevant hashtags. All posts were uploaded both in Greek and English.

An evaluation questionnaire followed the campaign, aiming to detect the public's opinion, preferences, comments, and suggestions, and thus, having a guide for upcoming communication strategy [2]. The questionnaire, consisting of 26 questions, was posted three times in the National Gallery Facebook account aiming to get feedback from its visitors. The fact that the answers were given by 115 people who did not actually visit the museum made their judgment more accurate, since it is considered that the place or the people may affect one's opinion [3], whereas completing a questionnaire while being on your own, makes you more concentrated and truer to your answers [4]. The questionnaire aimed to detect their opinion on the campaign, and mainly to find out whether they were tempted to visit the Glyptotheque. The questions asked were clear, in short sentences, addressing only one theme at each question, without attempt to influence towards particular answers and all closed questions.

2.2 On-Site Campaign "Conservation in the Park"

After the reopening of the Glyptotheque, the relatively limited audience visiting made it clear that promotion campaigns would be essential. Some of the issues that may affect the audiences' limited attendance were that there were not major alterations in the permanent exhibition for more than ten years, the lack of temporary exhibitions, and insufficient communication policy regarding the Glyptotheque. Considering the results from the questionnaire of the digital campaign, in situ sculpture conservation seemed a positive theme for a new campaign and it had the potential to initiate audience development for the Glyptotheque.

The second campaign was an open lab called "Conservation in the park", where visitors had the rare opportunity to physically attend and watch live the sculpture conservation activities. To make the action more stimulating, students from the Department of Conservation of Antiquities and Works of Art from the University of West Attica were invited to participate in the project. Seventeen students, along with four members from the academic personnel, collaborated with the conservators of the museum on the conservation of three sculptures, in a 5-day period. Visitors had the opportunity to watch the procedures of the sculptures' conservation throughout the whole working hours, however, a 2-h explanatory presentation for the public was provided each day. Four of these presentations were set in the morning, and one in the afternoon. The Modern Greek and European Sculpture curator of the National Gallery—Al. Soutsos Museum, who is also the curator of the National Glyptotheque's permanent exhibition, participated in the campaign, giving a small introduction to the museum and the collection in the beginning of every presentation. One of the three artists whose sculpture was part of the event, participated in one of the presentations, giving an insight into the idea and the inspiration of creating the sculpture, how and when it was made, along with decisions on the selection of materials and methods used.

The campaign was communicated to the public by the museum's website and a post in social media a few days before the beginning of the event. It was also advertised by the University's social media, which, however, did not repost the museum's post, but made one on its one. In addition, it was advertised by the social media of the International Committee of Museums (ICOM), in the framework of the International Museum Day 2024, and thus it also appeared in some online newspapers. During the week of the campaign, a few short-period stories were uploaded to the social media accounts of the National Gallery, and a post was uploaded after the event (Image 2).

To evaluate the campaign a questionnaire was prepared, containing 11 short questions, and QR codes with the link that was given to the attendants. The aim was to verify the potential of the sculpture conservation live activities to audience development. Questions included the attendants' relevance with the museum, their interest in attending similar activities in the future, whether the park influenced their decision to come, and how did they find out about the event.



Image 2 The post uploaded on the Facebook concerning the "Conservation in the park" campaign, after the event

3 Results and Discussion

The digital campaign "National Glyptotheque—the conservator's viewpoint" provided results in the awareness of the public concerning the sculpture conservation profession by their reactions to the posts uploaded, and the effectiveness of the campaign to audience development at the Glyptotheque, as recorded at the public's responses to the questionnaire. The on-site campaign "Conservation in the park" was evaluated by the number of attendees and the responses to the relevant questionnaire.

At the time of the first campaign, the museum had not yet assigned its promotion to marketing professionals, the Facebook account of the National Gallery was followed by 43,000 people (2022), and the average *like* reaction to the posts was 400. The posts of the first campaign had an average of 113 *likes* and 13 *shares*, along with a total of 12 *comments*. By the time of the second campaign, a marketing agency cooperated with the museum, followers raised up to 96,000 (2024), average *like* reaction to the posts of the second campaign were 650. The post advertising the campaign had 1,471 *like* responses, 95 *shares,* and 19 *comments*, while a second post that was uploaded after the event, had 510 *likes*, 2 *comments,* and 25 *shares*.

Before each campaign, a content analysis on the Facebook account of the National Gallery was made, concerning a period of 5 months. The results are presented in Fig. 1 and show important changes between the two periods. In 2022, most of the posts referred either to works of art from the collections of the museum or the #OnThisDay category, while on the contrary, only 1% was dedicated to the six annexes of the museum, among which is the National Glyptotheque. In 2024, the posts were more equally distributed among the categories. It is remarkable that posts on annexes increased to 9.5%, while online quizzes were added for more interaction, and the educational programs were quite frequently advertised (8.3%).

In the first campaign, most liked posts were those presenting conservators during their work, as well as those showing sculptures before and after the conservation treatment. Presenting to the audience various aspects of a work of art at the social media enhances people's willing to gain more knowledge on cultural heritage and its

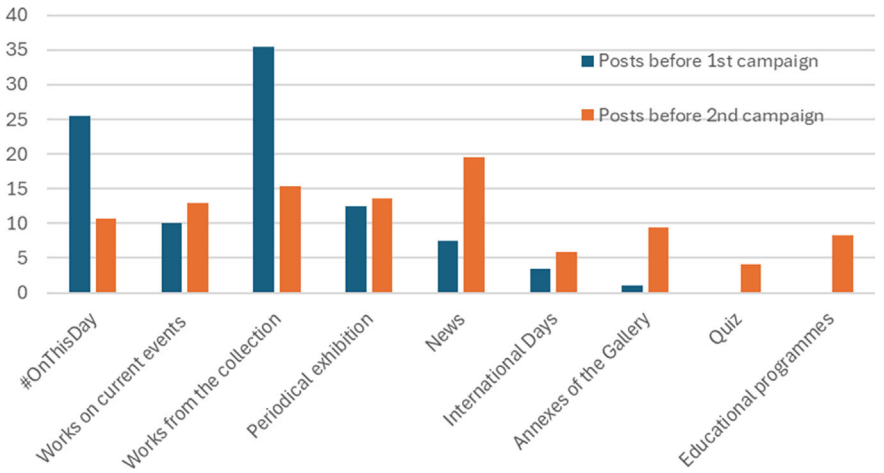


Fig. 1 Comparison between the content analysis of national gallery's Facebook posts during a 5-month period before the reopening of the national glyptotheque and a 5-month period after the opening

survival [5, 6]. Another research on audience reaction and the way they feel about the exhibits in a museum after being informed on conservation issues [7] revealed that people were touched by the effort of the conservators and were positively affected by realizing the resources required to protect cultural heritage. Therefore, conservation projection potentially raises the museum's profile.

A following digital questionnaire was posted three times in a 20-day period and received 115 answers. The great majority of the responders were following the gallery's account (85%), were middle-aged women, many of which live outside Athens (42%). Most of them had not attended any other presentation concerning conservation issues (67%), but more than half (54%) would like to attend one, either online or in the museum. The majority found the content of the campaign very much (63%) or very (30%) interesting and very easy to understand (62%). As to the main goal of this campaign, 53% of the responders answered that the posts provoked them to visit the Glyptotheque, while another 31% said they find it very possible to visit, due to the campaign (Fig. 2).

As for the on-site, second campaign, the approximately 100 people that totally attended the event was not a very satisfying number. It should be mentioned that most of them joined the afternoon presentation. The collaboration between the museum's conservators, the curator, the sculptor, the students, and the tutors, who were all there to communicate, answer questions and exchange knowledge with the audience, along with the other museum's employees who welcomed the visitors in the permanent exhibition, enhanced the experience for the attendants. Collaboration between museum professionals is a critical factor for success in such programs, rather than the conservation actions being the only center of interest [8]. From the people attending, 46 replied to the questionnaire. According to their answers, half of them had visited

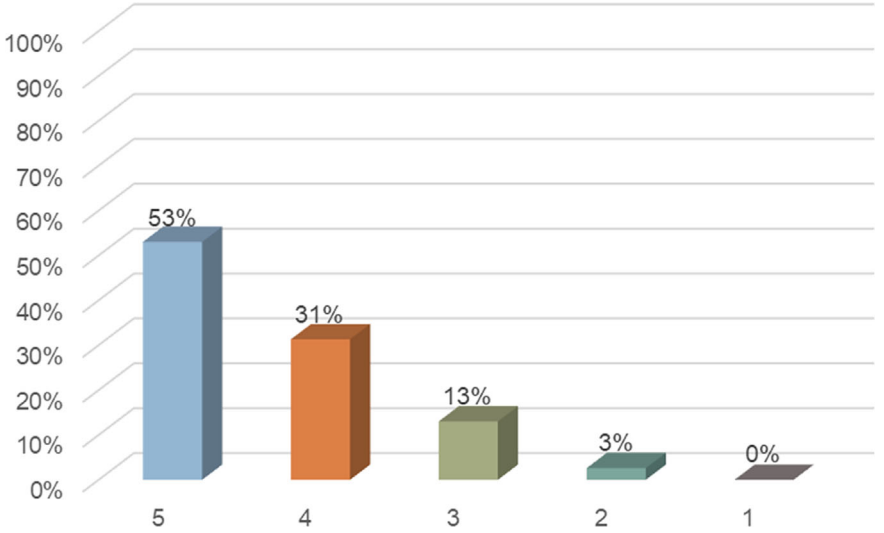


Fig. 2 Replies to the online questionnaire, as to whether the digital campaign provoked the responders' interest to visit the national glyptotheque. The numbers 1 to 5 correspond to: 5 = very much, 4 = very, 3 = quite, 2 = little, 1 = not at all

the Glyptotheque before (50%). Most of them had never attended to any conservation presentation before (70%) but found it very interesting (85%). The majority would like to participate to another presentation on sculpture conservation (80%), again on-site (78%) and not online (only 26%). As for the age groups, half of them (50%) were 45–64 (50%), many were 25–44 (30%), a few 18–24% (16%), and only 2 people over 65 replied. The on-site campaign was advertised at the social media and the website of the National Gallery, those of the University of West Attica, and some online newspapers in the framework of ICOM International Museum Day. However, as can be seen in Fig. 3, 50% of the responders to the questionnaire found out about it from friends (another 24% from the Galley and 13% from the University). Since only 46 people replied in the questionnaire, the results cannot be statistically representative and safe conclusions cannot be raised. An indication seems to appear that some changes in the communication or change regarding the time or period that these energies take place, would help to increase the number of attendants. Some suggestions that could be applied and evaluated are more promotional informative posts, and interconnection with other cultural/educational organizations accounts or communities.

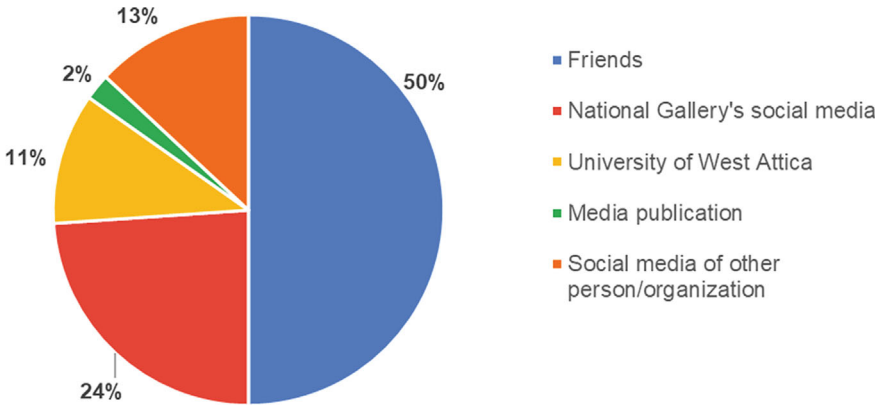


Fig. 3 Answers to the question "how did you get informed for this event"? at the questionnaire provided to the attendants of the on-site event

4 Conclusion

Sculpture conservation acted as a promotional tool for attracting audiences, and the results showed that people are very interested in attending more, mostly on-site events. The two campaigns provoked the visit to the Glyptotheque and similar programs could be the reason for re-visiting. The online campaign was easier to follow, but the on-site one had more positive impact referring to getting the audience to visit the museum. In addition, the second action was beneficial both for the student and the academic personnel that participated, since it created educational material and experiences for future academic years and enhanced the collaboration among two major public institutions. More campaigns for younger followers could be applied, most probably in other social media, which they prefer. For older ages, other campaigns could include podcasts or online presentations. For families or other groups, on-site campaigns taking full advantage of the garden, in suitable timetables, might be more efficient. Overall, sculpture conservation and other "behind the scenes" activities proved potential paths to enhance the audience experiences and establish correlations between audience and the cultural organizations. Marketing policies should consider such themes for their campaigns, taking advance of relevant resources, developing new audiences, and raising the museum's profile.

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Analysis of Consumer Behavior Through Eye-Tracking Monitoring



Despoina Taskoudi, Evangelos Kehris, George Karavasilis, and Vasiliki Vrana

Abstract Eye tracking technology is valuable in consumer behavior research, as it offers measurements of visual attention, which are crucial for understanding purchasing decisions. Previous studies suggest that consumers' gaze plays a critical role in preference formation. However, inconsistencies in findings highlight the need for further investigation. This paper aims to examine gaze behavior, including fixation duration, gaze transitions, and saccades, in the context of product placement. Using the Gaze Recorder application, the study reveals that participants initially focus on the left side of a screen, indicating a preference that marketers can exploit by placing key products there. Additionally, the right side, where participants end their viewing, is ideal for high-impact content to leave a lasting impression. The findings emphasize the complexity of interpreting visual attention and the necessity of complementary methods to fully understand consumer behavior and decision-making.

Keyword Consumer behavior · Eye-tracking · Gaze recorder

1 Introduction

Eye tracking is a technique used to identify a user's visual focus by monitoring the direction of their gaze [1] and determining where and how they direct their attention [2]. It also measures the duration of time a user spends looking at something of interest and tracks their eye movements [1], which are often classified as fixations and saccades. Fixation happens when a user gazes at and concentrates on a particular element, showing their interest in certain images or text while navigating a web page. In contrast, saccades are quick eye movements between fixation points. They indicate how many fixations occur from the starting point until the user finds their target. A large number of saccades suggests a longer search process [3].

Eye-tracking technology has been widely used in consumer behavior research due to its ability to provide objective and precise measurements of visual attention and

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has numerous implications in terms of understanding consumer purchasing decisions [4, 5]. Previous studies [6, 7] suggest that the consumer's gaze is actively involved in preference formation. Goyal, Miyapuram, and Lahiri [6] claimed that a consumer is more likely to purchase the item they spend the most time viewing. This creates a positive feedback loop between what consumers focus on and what consumers come to prefer. Numerous studies have also explored various parameters, attributes, and potential determinants of consumer attention and decision-making [8–10]. However, the findings are often inconsistent, highlighting the need for further research [10]. The aim of this study is to investigate gaze characteristics (number of fixations, fixation duration, number of gaze transitions, Saccades) when potential consumers look at products.

2 Methodology

The experiment is based on a gaze-tracking application which (a) displays two products on the computer screen, one on the left side of the screen and one on the right and (b) records the participant's gaze using a webcam as they look at the two products. Before the experiment, clear instructions were given to each participant. All sessions were recorded without violating any personal data.

To conduct the experiment, a convenient sample of 50 skilled participants with extensive computer experience were selected. The sample consists of 25 men and 25 women. The participants were university students aged between 18 and 25 years old. The products (boxes of cereals) were chosen to have distinctive differences in their appearance: one product package employed vivid colors and a cartoon figure while the other package displayed a photograph of the product against a white background (Fig. 1).



Fig. 1 A representation of the two product boxes that demonstrates the basic elements and colors

Once the participant is seated in front of the screen, the camera is adjusted to focus on their eye, ensuring they are positioned at the correct height and distance. Detailed explanations about the upcoming procedure are then provided. The approach leverages the Gaze Recorder application, a tool known for its accuracy and reliability in capturing eye movement data [11]. The Gaze Recorder application is launched after completing the calibration process. Calibration involves several markers that the participant must follow with their gaze without moving their head, allowing the program to automatically adjust to each individual's characteristics. Once the calibration is complete, the image of the two products under observation is displayed.

The duration of each session is measured from the moment the image of the two products appears until the user completes the task, which is recorded with a precision of 20 ms.

During the experiment, the Gaze Recorder system uses the user's camera to track and record their gaze, pinpointing the areas on the screen where their focus is directed. After the experiment, the system generates both a static image and a dynamic heatmap (video) to visualize the user's gaze movements. Additionally, the system enables the experiment administrator to define areas of interest on the experimental image, represented as rectangular regions. Figure 2 illustrates three such areas of interest: the yellow areas surrounding each box and the green area in the middle, between the two boxes.

For each area of interest, the system provides the following information: (a) the dwell time in the area (b) the timestamp of the first glance, and (c) the number of participants who viewed the area.

This allows to capture the total dwell time and the fixation time for both the left and right areas.

In addition, the experiment administrator also has access to a file that records the gaze movements of each participant. Specifically, the log file generated by the program contains a set of tuples (id, t, x, y), where: id is the experiment code, t is

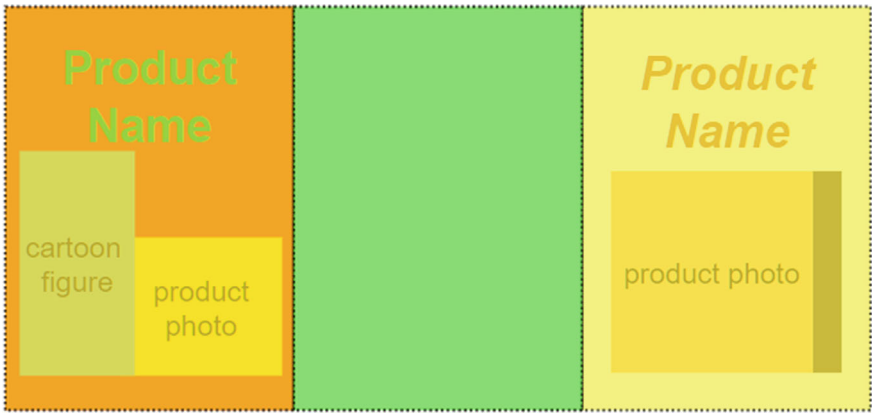


Fig. 2 Encircling the boxes to record the viewing times and the first glance

the time in milliseconds from the start of the experiment at which the recording was made x, y are the coordinates of the point where the user's gaze was focusing at time t. Based on the recorded data file, various metrics related to viewing time, fixation time, and quick movements were calculated for each of the three areas of the image (left box, central space, right box).

The following metrics were calculated:

- The number of gaze transitions between areas.
- The first area the user viewed at the beginning of the experiment.
- The last area the user viewed at the end of the experiment.
- The total fixation time in each of the three areas (i.e. when the gaze was stable, having a dwell time greater than 100 ms).
- The total time of rapid gaze movements in each of the three areas, calculated as the sum of durations where the gaze moved quickly, with a dwell time of less than 100 ms.

3 Findings

To analyze how users' gaze traversed the image, graphs were created to depict the variation in the x-coordinate over time. First, detailed graphs were generated to capture the precise changes in the x-coordinate. The right area (right box) corresponds to the upper part of the diagram, the left area to the lower part, and the middle area to the center (Fig. 3—left). These were followed by graphs highlighting only the transitions between different areas. Red indicates long-duration gazes, green denotes medium-duration gazes, and gray represents short-duration gazes (Fig. 3—right).

Figure 4a (left) depicts the first area that participants look at. This indicates that 36 out of the 50 participants first observe the left side of the screen, while none look at the center. Figure 4b (right) illustrates the final area observed by participants at the end of the experiment. The majority appear to focus on the right side of the screen as the session concludes.

One of the most critical parameters examined was the average viewing time of the two boxes, left and right. Hypothesis H1 is central to the research, as it aims to elucidate participants' preferences for the two products.

H1: The average viewing times of the right box and the left box are equal.

As it is evident from Tables 1 and 2 and Fig. 5a, the viewing time of the left box and the viewing time of the right box are approximately equal. The H1 is accepted.

The Pearson correlation coefficient between the left and right box viewing time (sec) indicates a rather moderate negative linear relation between the two variables (Fig. 5b).

The duration of the first gaze at an object is a critical indicator of an individual's attention and initial impressions. Given the significance of visual attention in decision-making and behavior, analyzing the differences in first gaze duration can

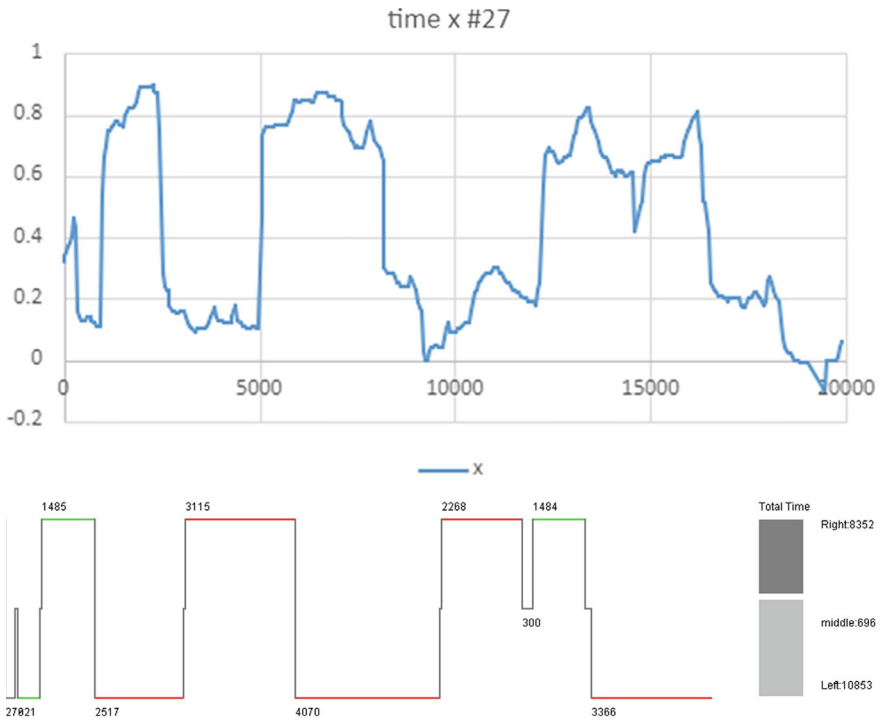


Fig. 3 Gaze movement from one area to another for user 27

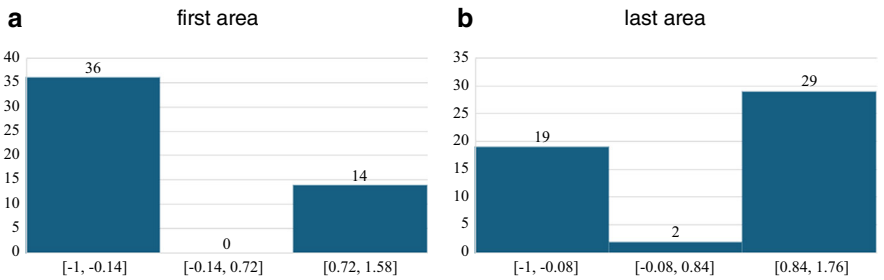


Fig. 4 Area of the **(a)** first **(b)** last look

Table 1 Analysis of viewing time (sec)

	Left box viewing time	Right box viewing time
Mean	7.7600	8.0522
Median	7.4350	7.7450
Standard Deviation	2.7926	2.6108

Table 2 Pair sample correlations of viewing time

	N	Correlation	Sig
Left–right box viewing time	50	-0.562	0.000

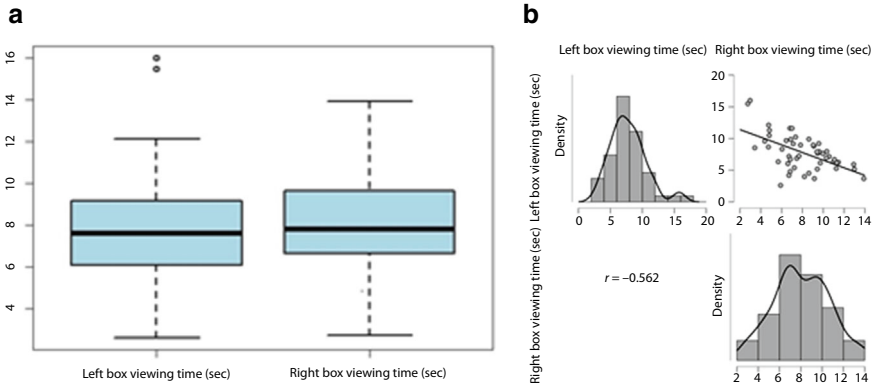


Fig. 5 **(a)** Box plots of left and right box viewing time in sec. **(b)** scatter diagram, Pearson correlation coefficient, and densities of left and right box viewing time (sec)

offer valuable insights into the underlying cognitive processes and preferences of individuals.

H2: The average duration of the first gaze among participants is equal for both boxes.

The difference between the time of the first gaze at the left box and the right box is statistically significant. Therefore, the H2 is rejected. Even though the average viewing times are similar, the longer initial gaze duration on the right box (H2 rejected) suggests that the right box might have a stronger initial draw.

Table 3 Analysis of first gaze

	Time of the first gaze at the left box	Time of the first gaze at the right box
Mean	0.7092	1.3716
Median	0.4750	1.0300
Standard deviation	0.6020	1.4344

Table 4 Paired samples t test

	t	Degrees of freedom	p value
Left–right box viewing time	−2.769	49	0.008

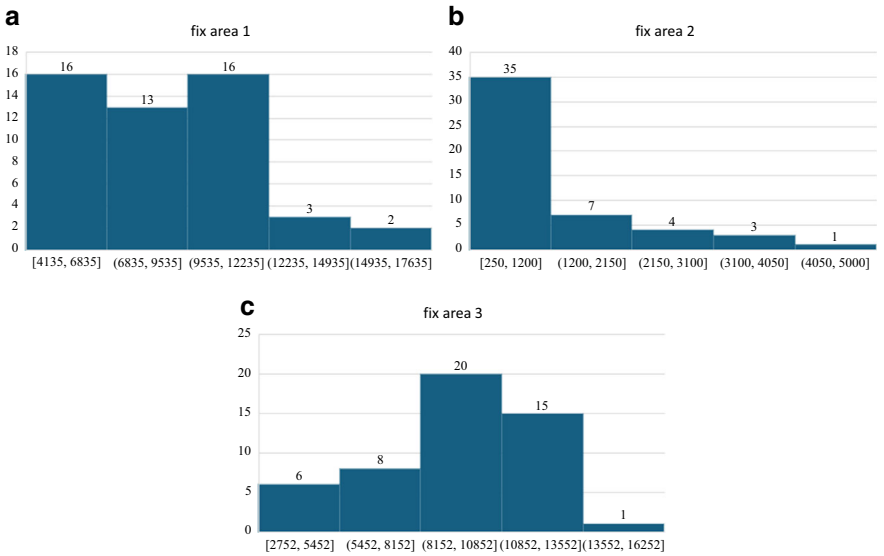


Fig. 6 Fixation time (>100 ms) for the **(a)** left, **(b)** middle, and **(c)** right area

Figure 6 presents the fixation time (>100 ms) in the left, middle, and right area, respectively. Most participants seem to fix their gaze on the left area for a relatively constant amount of time.

An independent samples t-test was conducted to investigate the following hypotheses:

H3: The average fixation time for the boxes on the right and left are equal between men and women.

H4: The average time of the first view for the boxes on the right and left are equal between men and women.

Both hypotheses were supported, indicating that there is no significant difference in average fixation time or average time of the first view between men and women for the boxes on either side.

At the end of the experiment, the number of participants who looked at the left, center, and right areas was 19, 2, and 29, respectively.

The next hypothesis examined was:

H5: The participants' gender and the direction of their last view at the end of the experiment are independent variables.

The results showed that 16 out of 25 men focused their last view on the right area, while none of the 25 women looked at the center. This suggests that both men and women tend to focus more on the right area at the end of the experiment, a trend consistent across the overall sample.

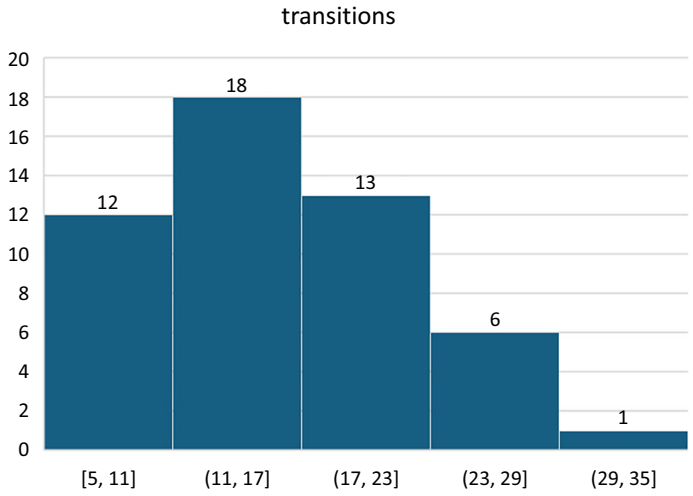


Fig. 7 The number of gaze transitions from one area to another

The lack of significant gender differences in viewing behavior indicates that consumer designs should cater to all users equally, avoiding assumptions that different genders have different preferences for visual content or layout.

Finally, differences in the number of gaze transitions made by participants during the experiment were analyzed. Most participants, specifically 18 individuals, had between 12 and 17 gaze transitions, while only one person exhibited more than 30 transitions (Fig. 7).

Finally, the saccades of participants in the left, middle, and right, areas were recorded. In the middle area, a greater number of rapid movements are observed, ranging from 0 to 258 (Fig. 8).

4 Conclusions

Eye tracking is a powerful tool in understanding consumer behavior because it provides direct insights into what catches a consumer's attention. By tracking where, for how long, and in what sequence consumers focus on different elements of a visual display, a deeper understanding can be gained of the factors that drive consumer preferences and choices. Previous studies have investigated various parameters, attributes, and determinants of consumer attention and decision-making. However, the findings are often inconsistent, underscoring the need for further research to clarify these relationships. This paper seeks to contribute to this area by examining gaze behavior in the context of product placement. The analysis of initial gaze behavior indicates that a significant majority of participants first focus on the left side of the screen. This suggests a clear preference for the left area when participants start

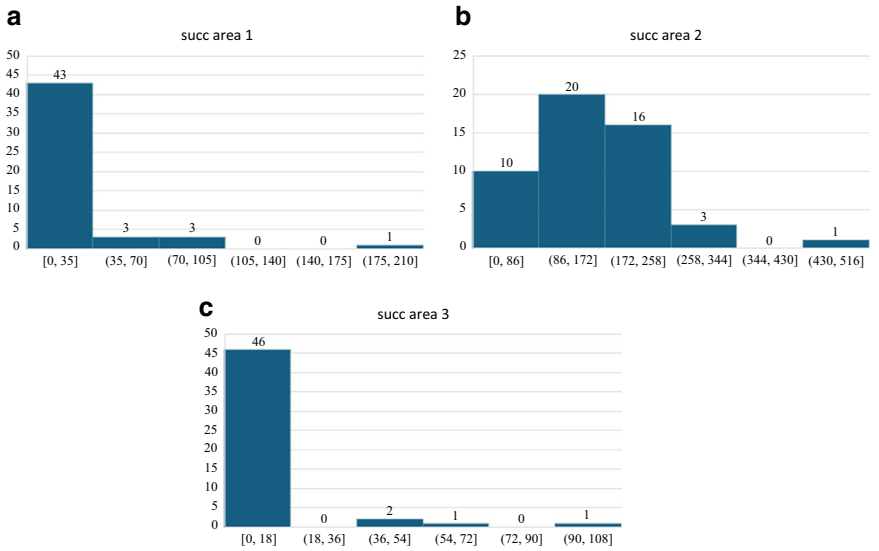


Fig. 8 Saccades of participants in the **(a)** left, **(b)** middle, **(c)** right areas

viewing the image. Marketers can use this insight to position key products in this area to maximize visibility and engagement from the start. The tendency for participants to end their viewing on the right side suggests that the final area of focus might be where the most important content should be placed. Given the longer initial gaze duration on the right side and final focus tendency, this area is ideal for content that needs to make a lasting impression. However, interpreting these results is complex, as visual attention alone does not fully explain consumer behavior. Questionnaires can assess consumers' willingness to purchase and help identify which information they focus on when making buying decisions. Current research focused on consumer behavior studied in a laboratory environment. Research has reported discrepancy in the results between studies performed in the lab and studies conducted in a real supermarket environment [10]. Future research combining a laboratory setup with a real shop environment might be useful in drawing more conclusive conclusions.

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Adopting Cloud Accounting: The Opinion of Greek Accountants



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Abstract Cloud accounting offers unprecedented flexibility and accessibility, revolutionising financial data management. Accountants are adopting these technologies to streamline operations and enhance client service. Real-time data access improves decision-making and efficiency. The need for dynamic, scalable and secure processes drives this adoption. As a result, the accounting profession is transforming towards more innovative practices. The purpose of this study is to investigate the opinions of Greek accountants regarding the adoption of cloud accounting systems. A questionnaire was used on a convenient sample of 104 accountants to implement the research based on the technology acceptance model (TAM). Results showed a positive correlation between the TAM variables such as perceived usefulness, perceived ease of use and intention to use. Additionally, the research uncovers that while accountants recognise the benefits, data security and privacy concerns can hinder acceptance. This research offers actionable insights for developers, policymakers and firms to address these concerns and promote the benefits, facilitating broader adoption of cloud accounting practices.

Keywords Cloud accounting · Technology acceptance model · Accountants' opinions

1 Introduction

The future of accounting requires professionals to possess various attributes related to human factors and emotions, communication, security, business structure and elements that can influence decision-making and enable an interactive communication process between stakeholders [1, 2]. The foundation for creating capable future accounting professionals is the responsibility of accounting educators, who must modernise curricula and closely monitor developments to bridge the gap between accounting education in new technologies and current developments in the profession

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[3–5]. Among the current developments in the accounting profession and teaching, there are gaps in cloud accounting, the adoption of blended learning, big data, and blockchain [6]. Accounting has evolved over the past few decades, and with new technology, accounting methods are continually changing, making accounting much easier [7, 8].

Cloud accounting or electronic accounting means that data are sent to the "cloud," where it is processed and returned to the user at any time, from anywhere, and from any device with an internet connection. The development of cloud accounting is changing how accountants work, prompting them to reconsider their operations to meet new demands and work faster and more efficiently. Technology helps them achieve better integration into professional life. For example, accountants can perform tasks from mobile devices by approving transactions, authorising payments, updating financial data and preparing financial statements without necessarily being in an office where accounting software is installed on a desktop. This mobility provides accountants with the advantage of timely information exchange, increasing the speed of decision-making [9]. As part of cloud computing, cloud accounting becomes a viable option for businesses mainly due to significant cost savings and reduced implementation phases, which create further cost savings. Although cloud computing has steadily increased over the past decade, there are substantial differences in penetration levels worldwide. Europe is leading, and the market is approaching maturity in several countries, while Africa still lags behind. The volume of financial or accounting applications running in the cloud varies from very low in Greece, Bulgaria and Poland (up to 3%) to relatively high in Slovakia, Lithuania and Croatia (10–13%). Denmark and Finland are far from the EU average, with adoption rates of financial or accounting applications running in the cloud at 25.3% and 33.8%, respectively [10].

Considering the aforementioned, and as there is a lack of research on the subject in Greece, the objective of this paper is to explore the opinions of Greek accountants regarding the adoption of cloud accounting systems.

2 Literature Review and Theoretical Framework

The study by Rao et al. [11] examined the impact of cloud accounting on professional accountants. The research found that while 90.9% of accountants are aware of cloud accounting, only 12.1% use it due to a lack of awareness and education. Cloud accounting offers efficient, low-cost services adaptable to business needs and is expected to become a standard practice in daily accounting processes. Moreover, Asatiani et al. [12] studied business decisions regarding outsourcing accounting tasks between traditional and cloud accounting firms. They found that cloud accounting's easy access, scalability and integration reduce the negative impact of process frequency on outsourcing decisions. This encourages the outsourcing of routine tasks. Accountants should expand their services to include daily tasks and specialised processes requiring advanced data analysis.

Lutfi et al. [13] studied 186 Jordanian SMEs and found that factors like compatibility, competitive pressure, organisational readiness and government support significantly influenced AIS usage, with greater effectiveness in medium-sized enterprises. Al-Okaily et al. [14] explored cloud-based accounting systems during COVID-19, identifying expected performance, social incentives, and trust as key determinants of usage, which improved communication and decision quality. Obiad et al. [15] found that factors such as competitive advantage, security, top management support and supplier backing influenced cloud accounting adoption in 156 SMEs, though initial resistance remained a barrier.

Le and Cao [16] applied the TAM model to cloud accounting adoption in Vietnamese businesses, finding that perceived usefulness and ease of use positively influenced the intention to adopt, while security and privacy concerns had no significant effect. Similarly, Handayani et al. [17] surveyed 41 SMEs and confirmed that ease of use and usefulness positively impacted adoption, while perceived risk affected the intention to use but not perceived usefulness.

Lutfi's [18] study identified factors influencing the intention of Jordanian SMEs to use cloud accounting systems. The results showed that perceived usefulness, security issues, top management support, organisational readiness, competitive pressures and supplier support positively affected this intention. However, a lack of familiarity with cloud systems made them less attractive to Jordanian SMEs.

To summarise, the studies collectively highlight that while cloud accounting systems offer numerous advantages and the potential to become standard practice in accounting, their adoption is influenced by several factors. These include perceived usefulness and ease of use, organisational readiness, competitive pressures, and support from top management and suppliers. Barriers such as lack of awareness, education and initial resistance among SMEs need to be addressed to fully realise the benefits of cloud accounting, especially in the context of the increased reliance on digital solutions.

Over the past decade, empirical research has predominantly utilised theoretical frameworks such as the Theory of Planned Behaviour (TPB) and the Diffusion of Innovations (DOI). The Technology Acceptance Model (TAM) and the Technology, Organization, Environment (TOE) framework have also been frequently used. In this study, our interest is focused on the attitudes and intentions of accountants regarding adopting cloud accounting systems to complete their daily tasks. It was found that the most appropriate framework to interpret this research is the Technology Acceptance Model (TAM) [19–23].

TAM is a model proposed by Fred Davis to explain user acceptance behaviour towards a technology or information system based on the Theory of Reasoned Action [24]. The initial model focused on two central beliefs: perceived ease of use and perceived usefulness, which determine user behaviour towards the technology in question [25]. The model is completed with two additional variables: the intention to use and the actual use of the technology/system [26]. More specifically, perceived ease of use can be defined as the belief that using a particular technology or system will require minimal effort. Similarly, perceived usefulness is the belief that using a specific technology will enhance productivity and performance. These two beliefs

influence the intention to use the technology and ultimately determine the actual acceptance and usage of the technology or system being studied [27].

3 Methodology

For the research, convenience sampling was used, which means a non-probability sample was collected. This sampling technique was chosen because random sampling was not feasible for the research population, i.e., individuals who have studied accounting and practice the profession. Through convenience sampling, a sample of 104 employees/accountants was gathered from Attica region. The sample was collected via the Google Forms electronic platform from 15.6.22 to 22.7.22 and transferred to the SPSS V22.0 program for statistical analysis.

The study is quantitative, a questionnaire based on the Technology Acceptance Model (TAM) and its related questions was used, constructed on a 5-point Likert scale. A synthesis of questionnaires from previous international research was carried out to achieve the best possible correlation with our research subject, which is professional accountants' use of cloud accounting. For the final form of the questionnaire, a translation and cultural adaptation process from English to Greek was followed [28, 29]. The study aimed to answer the following research questions:

- How does cloud accounting applications' perceived ease of use affect accountants' intention to use them?
- How does the perceived usefulness of cloud accounting applications affect accountants' intention to use them?

The construction of the questionnaire is based on concepts such as perceived usefulness and its' indicator PU from the initial letters and accordingly perceived ease of use and indicator PEU and intention to use with the indicator IU. The conceptualisation and operationalisation follow (Table 1):

Regarding the reliability of the questionnaire, very good results were found for all variables through the Cronbach's alpha index, all above 0.7.

The suitability of the data for exploratory factor analysis was investigated using the Kaiser–Meyer–Olkin (KMO) index and Bartlett's test of sphericity. Given that the KMO value is 0.890, greater than 0.50, and Bartlett's test is statistically significant ($p < 0.001$), the data are suitable for factor analysis.

4 Analysis and Findings

According to the results of the statistical analysis, the gender ratio in the sample is 45.2% male and 54.8% female. The age distribution of the sample is as follows: 47.1% are 35–44 years old, 25.9% are 25–34 years old, 21.2% are 45–54 years old, 2.9% are 55–64 years old, 1.9% are 18–24 years old and 1.0% are over 65 years

Table 1 Questionnaire's conceptualisation and operationalisation

Concepts	Definitions	Indicators	Items	References
Perceived usefulness	Perceived usefulness is a level where a person believes that the use of the CA will help him in improving performance in an organisational context	PU1	Cloud accounting system usage enhances good decision-making	AL Shbail [30]
		PU2	I think adopting cloud accounting system will improve my performance	Tarhini et al. [31]
		PU3	I think adopting cloud accounting system will improve my productivity	Tarhini et al. [31]
		PU4	Cloud accounting system provides tools which facilitate easier accounting work during the COVID-19 period	Le and Quynh [32]
Perceived ease of use	Perceived ease to use is defined as the degree to which a person perceives how easy it is to use the CA	PEU1	Training is required to use cloud accounting system	Souza et al. [33]
		PEU2	It is easy to learn how to use cloud accounting system	Le and Quynh [32]
		PEU3	I have clear and understandable interactions with cloud accounting system	AL Shbail [30]
		PEU4	Cloud accounting system is easy to operate to achieve tasks	AL Shbail [30]
Intention to use cloud accounting system	Intent to use is defined as the intension towards using the CA in the future in carrying out its work	IU1	Overall, cloud accounting system use is a positive aspect for me	AL Shbail [30]
		IU2	I intend to use cloud accounting system in the future	Tarhini et al. [31]

(continued)

Table 1 (continued)

Concepts	Definitions	Indicators	Items	References
		IU3	I will likely continue to use cloud accounting system	Pankowska et al. [34]
		IU4	I highly recommend cloud accounting system to use it in the pandemic time	Al-Maroof et al. [35]

old. Regarding education, 32.7% of the sample holds a degree from a Technological Educational Institute, 31.7% have a master's degree, 30.7% hold a university degree, 2.9% have a high school diploma, 1.0% have a doctoral degree, and 1.0% have a title from a Vocational Training Institute.

Regarding work experience as an accountant, 37.5% of the sample has more than 16 years of experience, 24.0% have 6–10 years of experience, 21.2% have 11–15 years of experience, and 17.3% have 1–5 years of experience. The professional roles within the sample are as follows: 81.7% are accountants-tax technicians, 11.5% are financial accountants, 3.8% are administrative accountants, and 2.8% are auditors. Regarding the work environment, 67.3% work in accounting offices, 21.1% in business accounting departments, 2.9% in auditing firms, and 8.7% in other types of companies. Additionally, 51.9% of the sample work in sole proprietorships, 26.0% in public limited companies, 6.7% in general partnerships, 6.7% in private capital companies, 5.8% in limited liability companies and 2.9% in limited partnerships.

Table 2 shows a statistically significant positive correlation between perceived usefulness and perceived ease of use ($r = 0.487$, $p < 0.01$) and the intention to use the cloud accounting system ($r = 0.728$, $p < 0.01$). Additionally, there is a statistically significant positive correlation between perceived ease of use and the intention to use the cloud accounting system ($r = 0.506$, $p < 0.01$).

For more reliable conclusions, multiple regression analysis was conducted. In the multiple linear model, the dependent variable was the intention to use the cloud accounting system, and the independent variables were perceived usefulness and ease of use. The variables of gender, age, educational level, work experience, current employment (type of work), current employment (type of company) and the legal form of the office/business were used as confounding variables. The backward

Table 2 Correlation between variables

	Perceived usefulness	Perceived ease of use	Intention to use cloud accounting system
Perceived usefulness	1	0.487**	0.728**
Perceived ease of use	0.487**	1	0.506**
Intention to use cloud accounting system	0.728**	0.506**	1

method was used to find the optimal model. The model was statistically significant, F (5, 95) = 31.839, $p < 0.001$, $R^2 = 0.623$. Additionally, the model did not have problems with autocorrelation (Durbin-Watson = 1.513, acceptable values 1–3) and multicollinearity (VIF < 10). Furthermore, the assumptions of normality and homoscedasticity were satisfied. Statistically significant predictive variables for the intention to use were perceived usefulness ($b = 0.773$, $p < 0.01$), perceived ease of use ($b = 0.192$, $p < 0.05$) and gender ($b = 0.283$, $p < 0.05$). The educational level was not a statistically significant predictive variable ($b = -0.132$, $p = 0.067$).

5 Discussion and Conclusions

From the analysis conducted above, it was found that the perceived usefulness of the cloud accounting system and the intention to use it were evaluated at fairly good levels. Additionally, the perceived ease of use of the cloud accounting system was evaluated at moderate levels. Possibly, the low level of education and familiarity of accountants and businesses with new technologies [4, 36–38] and cloud accounting may hinder the ease of use [11, 39].

From the inferential statistics, specifically the bivariate analyses, it was initially found that there is a positive correlation between the variables: perceived usefulness, perceived ease of use, and the intention to use cloud accounting. These results are consistent with previous research findings [16, 17]. This means that when one of these variables increases/improves, the other variables also improve.

The regression analysis revealed that the intention to use the cloud accounting system is predicted by perceived usefulness (second research question), perceived ease of use (first research question) and gender. The most significant impact was from perceived usefulness, followed by gender and then perceived ease of use. Perceived usefulness and ease of use positively impacted the intention to use cloud accounting. Additionally, women were more positive than men about using the cloud accounting system. Perceived usefulness is predicted only by the ease of use of the cloud accounting system. Furthermore, the perceived ease of use of the cloud accounting system was found to have a positive impact on the perceived usefulness of the cloud accounting system, meaning that when respondents' perception of the ease of use of the cloud system improves, their perception of the usefulness of the cloud accounting system also improves.

6 Limitations and Recommendations

An initial limitation of the results of this study is the small number of accountants collected from a specific region Attica, as well as the fact that the sample is not representative in terms of the accountants' specialisation, that is, their work field and the legal form of the companies they work for. Consequently, the results cannot

be extrapolated to the research population. In addition, the study questionnaire did not include questions about the technological infrastructure of each company, which might have influenced the adoption of cloud accounting. Finally, the possible resistance from employees other than accountants, who will also be users and will affect the overall acceptance or not of accounting in the cloud, was not calculated.

Future researchers could expand their interest to factors such as the cost of installing and using cloud accounting systems and whether the transition to the cloud has the right personnel to implement it. Another exciting area is to explore the coexistence of cloud accounting systems with other technologies such as artificial intelligence, blockchain and big data analytics, and especially how this confluence may potentially affect accounting practices and decision-making.

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Harnessing Advanced Technologies: Benefits and Challenges in Hospitality Design, Both in Industry and Education

Anna Efstathiou, Maria Vergopoulou, and Christina Vergopoulou

Abstract The integration of advanced technologies such as Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and the Metaverse, is revolutionizing hospitality design in both industry and education. The primary aim of this paper is to explore beneficial uses, collaborative methods, strategies, and inherent limitations of the implementation of advanced technologies in Hospitality design. The paper seeks also to identify how these technologies can enhance the learning experience, the design processes, and the engagement of Hospitality Design students. The impact of this on professional practice will be more creative, innovative, dynamic, functional and problem-solving proposals. However, the new ground is not without challenges: significant limitations in virtual environments, real-world constraints such as availability, durability, and installation challenges of certain materials, need for training and infrastructure, as well as potential ethical concerns related to privacy and security and potential job displacements are among them. This investigation refers to the implications in both educational and industry contexts and aims to contribute to the ongoing debate on the role of advanced technologies in the design process and specifically in hospitality design.

Keyword Advanced technologies · Hospitality design · Design education

1 Introduction

The integration of advanced technologies is revolutionizing many disciplines, among them hospitality design, impacting both practices in industry and educational methodologies [1]. This paper aims to explore the transformative potentiality of advanced technologies, possible benefits and inherent limitations, collaborative methods and

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strategies under development. It seeks also to investigate how this framework could enhance learning experiences and design processes improving the engagement of students who will respond successfully and efficiently to the evolving demands of this sector. Guest experience, personalized, efficient, innovative, and sustainable design solutions that meet the dynamic and diverse needs of contemporary guests have their impact on professional practice [2]. Conventional design methods often are overcome by the technology-driven landscape of the hospitality industry [3]; however, education should not just simply follow market trends. Educators should develop and provide a revised teaching environment that would lead efficiently to technological innovation, considering and discussing benefits, collaborative methods, strategies, potential challenges and ethical concerns. Design education should provide the tools to future practitioners to cope, control and govern conscious decisions, being aware, as much of the benefits, as of ethical issues and concerns related to privacy and security. The implementation of advanced technologies also includes the need for training and infrastructure. By addressing these aspects, the paper aims to contribute to the ongoing debate on the role of advanced technologies in the design process and specifically in hospitality design.

2 Theoretical Background and Overview

The theoretical overview for this paper is based on the concept of technological innovation and its influence on service industries [2]. By situating the analysis on literature review the paper explores the ways these technologies are reshaping the hospitality sector in general, and hospitality design in particular, providing a foundation for understanding their potential and limitations, discussing data for optimizing operations [4] and supporting a subsequent analysis of benefits, challenges, and educational implications. Although there are several sources on the use of advanced technologies in the hospitality sector applied to management, marketing, and maintenance, there is not much information and discussion so far on their use on hospitality spatial design.

Advanced technologies mostly referring to Artificial Intelligence (AI), Virtual Reality, and the Internet of Things (IoT), became a significant part of the hospitality design process [3]. The use of those technologies has been increasingly evolving during the last decade and their primary application on operational efficiency expanded gradually to enhance guest experience, personalized environments, and sustainability initiatives.

AI is used for predictive maintenance and reducing downtime but is further applied to provide personalized services and recommendations, automated check-ins according to guest preferences [5].

Virtual Reality (VR) provides design simulations and allows spatial experience and virtual tours. It is extensively used in museums offering the chance to visitors to explore a space and its content without physically being there. Moreover, it is a valuable tool for architects and designers to visualize their proposals, discuss them

with clients, even guests, and modify them before construction. It is a great spatial experience tool providing new opportunities for enhancing guest experience [3].

Internet of Things (IoT) enables smart design, energy management systems, optimization of use of resources, monitoring and controlling systems such as lighting or heating, creating on the one hand a personalized guest experience and on the other minimizing energy waste [4].

Besides those, the Metaverse is a collective virtual shared space that incorporates Virtual Reality (VR), Augmented Reality (AR), and the Internet. It can be utilized in Hospitality design enhancing collaboration and implementation processes [6].

3 Benefits of Advanced Technologies in Hospitality Design

The use of advanced technologies in hospitality design is a promising tool with significant benefits and a means to keep up with market demands [7]. For some time now, according to market research, one of the top trends in hospitality design is personalized experience [8, 9]. Besides this, operational efficiency, control of energy waste and a sustainable environment are major priorities in Hospitality both for managers and clients.

3.1 Improvement of Guest Experience and Personalization

AI systems collect and analyse data from various sources, such as booking histories, social media, feedback and can understand individual preferences and behaviors. Consequently, they can support the analysis of guest preferences and desires towards tailored recommendations on spatial designs, colors, projections, furniture and amenities, as well as interactive environments [10]. At the same time, they can be combined with IoT to create a smart personalized environment easily reconfigured and adaptive by adjustment of spatial arrangement, lighting and temperature. For the design team, advanced technologies are tools to ensure a unique, personalized, adjustable interior environment according to users' needs. Tailored recommendations could be related not only to personalized amenities, but also to activity suggestions or customized itineraries.

The Radisson Red Hotel in Brussels is a relevant case study that provides a variety of advanced technologies to tech-savvy travelers, among them a mobile app that allows them to control check-in and out, room settings and services. Radisson's AI driven services provide optimized room settings based on guests' preferences and consequently the design enhances guest experience [11].

3.2 Operational Efficiency and Better Cost Control

Automation and data-driven decision making, use of AI and IoT significantly improve operational efficiency and reduce energy waste and cost in the running of a hotel [2]. Their use is dependent on spatial design not only for being accessible and effective, but also for being user friendly and incorporated efficiently in the overall layout. The Sinclair Hotel in Texas has integrated smart technologies in its design allowing IoT devices to control lighting, heating, and environmental settings optimizing energy use and users' comfort [4].

The role of the designer and the architect is crucial here, and an increasing number of hotels realize the effects of a fruitful collaboration with the design teams. The Metaverse enables real-time collaboration between stakeholders, designers and constructors or suppliers [6]. The successful outcome in hospitality design is that of an interdisciplinary collaboration. The Marriott Innovation Lab is a relevant case study. Marriott International has created an innovation lab that allows designers and architects to explore new concepts and applications of technologies such as VR and IoT and test them in a controlled environment before actual application [12].

3.3 Sustainability and Impact on the Environment

One of the key trends and issues of major importance is sustainability related to traveling and hospitality. According to the quarterly report of the European Travel Commission: European Tourism 2024—Trends & Prospects, sustainability concerns both travelers and hotel owners. An emerging trend for fewer longer trips is noted, but more experiential travel, avoiding as much as possible the high carbon emissions linked with long-haul flights. Moreover, according to the same report, accommodations receive twice the relative proportion of reviews compared to the attractions. Guests spend much time in their temporary accommodations, so, all efforts made towards sustainability are likely to be noted. "The top destinations for the first quarter in terms of Sustainable Travel all hold many establishments that receive near perfect scores in terms of the polarity of written reviews on this topic, some which also hold eco-certifications that guarantee their actions as sustainable" [13].

Optimizing resource use and reducing energy waste, using construction methods and materials that prevent waste production, adaptive reuse, minimizing transportation of raw materials, re-discovering local traditional heating and cooling systems, are among the key areas that could be better achieved with the support of AI and advanced technologies towards environmental sustainability.

Maintenance needs and management of inventory levels can be identified by AI data analysis ensuring the interior remains in optimal condition. Furthermore, sensor networks, supported by AI, enable real-time monitoring, and early warning systems, promoting, as a result, sustainable operation [14].

3.4 Design Optimization and Collaborative Design

Designers and Architects could be significantly facilitated in their job referring to the input of AI and other advanced technologies [3]. The brief analysis they receive at the beginning of their contract, if based on focused market research and AI predictive analytics, could facilitate enormously the first analytical research stage of the design process. Emerging or future trends predicted by datasets would act as parameters in the design process.

Building Analysis and assessment could also be an area that could be greatly supported by advanced technologies. The use of data for the analysis of the structural integrity of existing buildings could be a cost-effective and reliable method, while the analysis of historical data in relation to original construction methods and materials would be an additional aid.

Space utilization and layout planning can also be improved by AI algorithms related to specific criteria of space use, traffic flow, and aesthetic preferences.

Virtual Reality (VR) and Augmented Reality (AR) integration in the design process is a powerful tool in the hands of designers to communicate in advance their proposals visualizing the design elements and layout in a real-world setting. Virtual tours or overlaying virtual design elements onto physical spaces present a hybrid view of the potential designed space. Stakeholders but also users can experience the space before construction and implementation and provide valuable feedback. Virtual prototyping of the proposed design allows for experimentation with a variety of materials, layouts, and aesthetics. This could have as a result reduced costs and an optimization of budget and resource allocation. Virtual showrooms in the Metaverse could showcase the work of designers and allow the interested parts to interact [6].

AI-based Regulatory Compliance could be an additive valuable tool in the hands of Architects and Designers. It can reassure that local building codes and regulations comply with legal requirements and can allow for automated documentation and submission. The advanced and enhanced design part could be included in marketing campaigns and virtual tours could be a competitive interactive sales tool to engage target groups.

4 Challenges of Implementing Advanced Technologies in Hospitality Design and Ethical Considerations

Advanced technologies, AI, VR, AR, and Metaverse are powerful tools in the hands of hospitality stakeholders and designers. However, there are limitations, concerns and challenges that need to be addressed to allow the best potential implementation. Sociological, financial, technical, and functional constraints, as well as privacy and security issues still need to be investigated [1].

Financial and resource constraints are among the expected difficulties in the implementation. In parallel, technological integration and compatibility issues is not an

easy task because the integration to the existing infrastructure could be problematic. The cost of the investment in technology could be substantial, so many businesses could not follow. Moreover, staff training and the development of adequate skills for the use of advanced technologies is time and money-consuming [15].

One of the main limitations concerning specifically the design process is the absence of tactile and olfactory feedback in the virtual proposal of hospitality spaces [10]. Tactile experience and olfactory experience are significant elements of what we sense and feel in an interior environment. Smell and touch create memories and are among the strongest parameters of characterizing a space. Through touch, humans approach and feel, understand texture, weight, density and temperature. Smell is the sense with the most memorable associations, a fact that should be investigated when designing a space as it is a significant element in controlling mood, memory, behavior and emotion. Feelings create bonding and therefore touch and smell lead to memorable designed environments and situations [16]. Those parameters are not yet met by advanced technologies.

Integration of haptic feedback technology, improvement of AI databases to incorporate detailed information about materials could provide potential solutions, so, further research on the matter is needed. Additionally, hybrid methods integrating physical samples, with virtual simulations, or Augmented Reality (AR) visualizations that show how different materials will complement an actual space could be an alternative.

Besides those challenges, additional ethical considerations arise in the general public, academia and the market. Data privacy and security are of major importance [2]. The collection and storage of personal data through advanced technology systems raises major privacy issues. Therefore, data protection measures, specific legal procedures and strict regulation need to be developed. Automation and task optimization could potentially lead to extensive job displacements, or a broad change of qualification demands for the working staff in the hospitality sector [1]. Both the stakeholders and the architects or designers should investigate the above challenges to develop strategies and guide research towards an even more advanced and safe implementation. The development of ethical guidelines is crucial to allow the safe, responsible, and sustainable implementation of advanced technologies in the Hospitality sector.

5 The Role of Education, the Impact on Professional Practice and Future Directions

Education has a significant role in the development of the new generation of hospitality designers, who will be requested to enter this technology-driven era [15]. It is not only the curriculum and the educational programs that have to be evolved to respond to the market trends, but also the awareness of the challenges, the constraints and the ethical considerations. The new trends of the market need control

and guidance and should direct academia to research further and prepare for this unprecedented technological innovation and its effects on society.

Courses in the curriculum both on theoretical knowledge and practical implementation related to advanced technologies should be developed and integrated in Hospitality design programs. Immersive learning environments based on simulations could be used to allow experimentation and trial–error learning [17]. However, faculty itself should have continuous training and development opportunities to be updated on the ever-changing trends, demands and innovations and consequently be able and efficient to transmit knowledge. Teaching staff should be encouraged to participate in research and industry collaborations, workshops and online training.

Collaboration between Industry and Academia is essential for the adaptation of advanced qualifications, competencies and skills. Among them technical skills related to AI, AR, and IoT, but also soft skills of problem solving, creativity and adaptability will be on demand [17]. Project-based learning and hands-on methods are valuable tools for successful professional practice. Universities should seek to establish partnerships with leading companies both in the technology and in the hospitality sectors. Internships and co-op programs could provide the opportunity to students to experience real-world conditions. Those insights can be further enriched with field trips and site visits to give students the opportunity to refer to real-world settings and understand the application of these technologies to industry.

Moreover, interdisciplinary collaborations between academic fields such as Computer Sciences, Engineering and Business with Architecture and Interior Design ones, is significant as it can prepare students for a broader understanding of opportunities and challenges in the application of advanced technologies and introduce collaborative strategies for an inclusive world [15, 18, 19]. Student competitions with or without multidisciplinary teams and hackathons focused on advanced technologies in relation to hospitality design can encourage creativity and innovation. Guest lecturers, both from collaborating academic fields and industry professionals, invited to give lectures or organize workshops, can provide students with valuable industry insights. Enhanced learning experiences and design processes reassure an impact on professional practice and a valuable student engagement with the industry demands well in advance before their involvement as professionals in the field.

6 Conclusion

The technology-driven landscape has created vast opportunities to stakeholders, designers, and architects in the hospitality sector to promote their product and satisfy guests and guest experiences, and make the hospitality environment operationally efficient, cost effective, and sustainable. However, further research and multidisciplinary collaborations are needed to overcome the variety of financial and training constraints and ethical issues. The support of educational institutions is vital to ensure a well-grounded development. Introducing advanced technologies in Hospitality Design Academic Programs requires a comprehensive approach that includes

curriculum development, collaborations with the industry and multidisciplinary partnerships, hands-on opportunities and continuous development and assessment of students and teaching staff. It is then that educational institutions will be able to prepare efficient, reliable and socially sensitive future professional practitioners.

By considering the trends, the benefits and the opportunities, the constraints and the need for further development of the theoretical framework, the paper aims to explore the transformative potentiality of advanced technologies in hospitality design. It aims to mention future research directions and encourage active academic involvement. Those achieved, then architects and designers would use innovative technology in their professional practice successfully, creatively, respectfully, and reliably.

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The Impact of Measures Related to the Sustainable Development of the Tourism Sector in Poland on Tourists' Opinions



Ewa Chomać-Pierzecka and Anna Sobczak

Abstract The available literature insufficiently discusses the issue of assessing sustainable development of the tourism sector in Poland. Therefore, the aim of the article is to analyse the impact of activities related to sustainable development of the tourism sector in Poland on the opinions of domestic tourists. The convenient sample of respondents consisted of tourists staying in Uniejów during the organisation of the Earth Festival, this in the limitation in the conclusion. The results of the research that employed PQstat programme revealed a significant impact of activities in the sphere of sustainable development of the Polish tourist services sector on shaping the opinions of domestic tourists regarding the implemented activities. The key determinant of sustainable development in this segment—influencing the opinions of consumers of tourism services—is environmental protection activities. Importantly, this aspect is closely related to the economic dimension of activities in the sphere of sustainable development, ultimately influencing the price of offered tourism services. The obtained results enrich source material that can be used by decision-makers in making decisions in shaping the development strategy of the tourism services sector in Poland.

Keywords Sustainable Tourism · Tourism Economics · Consumer Reviews

1 Introduction

The socio-economic importance of tourism is undeniable. It involves the movement of people in geographical space determined by the purpose of the trip, its duration, mode and cost [1]. The network of economic relations providing the opportunity to

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carry out human movement ventures creates the economic dimension of tourism—sectoral entrepreneurship. The driving force behind tourism is the geographic attractiveness of the region, supported by the distinctive conditions of the area, creating a set of tourist assets and triggering the propensity to travel. Importantly, these inclinations are reinforced by a set of norms and values of modern societies, among which development orientation, nurturing of cognitive functions and openness to the world are marked. Modern values [2] also include an orientation towards sustainable activities, minimising interference with the environment and harmful impacts on the environment. These are aspects of choices determined by responsibility for future generations. The outlined context triggers a discourse in the sphere of tourism safety and actions balancing the negative impacts of tourism processes on the environment. In this respect, it is justified to study the public perception of sustainable actions in the tourism sector in Poland, important for assessing the effectiveness of sustainable actions, considered from the perspective of a potential consumer. This aspect determines current and future consumer choices in purchasing tourism services. This is an important aspect of measurement, as social awareness of corporate responsibility is growing and the idea of sustainable actions is becoming more and more prominent in decision-making processes. In the context outlined, it is essential to take care to meet market expectations linked to appropriately tailored policies of the region in order to offer tourists safe, sustainable tourism services. The above was the source of inspiration for undertaking research aimed at investigating the impact of sustainable development of the tourism sector in Poland on the opinions of domestic tourists regarding the activities carried out.

2 Sustainable Tourism Development in Poland and Worldwide—A Literature Review

Nature plays a key role in decisions in the sphere of human movement [3]. Caring for nature as a common good brings nations together with the common goal of minimising human interference with nature and the environment. The idea oriented towards the creation of business benefits (economic aspect) in harmony with nature (environmental aspect) and the expectations of the activity stakeholders (social aspect) is sustainable development. Balancing activities in the tourism sector [4] in the three spheres, according to this trend, is to ensure economic and social efficiency by offering products and services in line with current market requirements and stakeholder expectations, while ensuring the safety of activities for future generations [5]. The above goals [6] unite global aspirations, being an outgrowth of the global struggle for a secure future, constituted in the 2015 United Nations Sustainable Development Goals. In response to these challenges, the Global Sustainable Tourism Council, the United Nations World Tourism Organisation and the European Commission have defined a formal and legal framework in the sphere of integrating sustainable tourism into economic practice, providing a basis for monitoring efforts

in this regard [7, 8]. Importantly, it is the tourism sector that has been identified as a driver of change towards sustainable activities, to be realised through the implementation of sustainable business models and the promotion of sustainable practices to shape sustainable, healthier communities [9]. According to the above, sustainable tourism objectives revolve around the integration of the provision of current and future economic benefits, with defined environmental and social impacts. In this context, it is important to simultaneously and responsibly meet the objectives of tourism businesses—by stimulating the economy at the service sites [1, 10], as well as responding lucratively to the expectations of tourism consumers [1, 11] and host communities [12] and environmental requirements [13]. In the context outlined, the problem of over-tourism [14] and its impact on the environment is not insignificant. The layout of the challenges of sustainable development makes this concept legitimate and important on a global scale, and the considerations cited confirm that tourism plays a very important role in this area. Hence, the idea of sustainability in this industry is actively supported by UNESCO through, among others, the World Heritage and Sustainable Tourism Programme [15]. Sustainable tourism is tourism with low environmental impact at its core.

The implementation of sustainable development at the level of global economies is a very serious challenge [16]. The sustainability policies of countries play a key role in terms of the pace at which sustainable actions are taken. Adapting to the requirements of sustainable actions also involves investments, hence it is not yet standard in individual spheres. At the same time, it is worth noting that elements of the modern standard and lifestyle, are associated with a constant increase in demand for tourism services. Hence, it is an extremely important challenge to be able to carry out tourism processes without negative impacts on the environment [17]. It is important to evaluate the activities carried out by consumers of tourism services in this respect, which is the subject of this study.

3 Materials and Methods

The analytical level of the study presented in this paper was directed at analysing the opinions of tourists shaped by the influence of measures taken in the area of sustainable development of the domestic tourism sector in Poland. The impact of actions in the area of sustainable development on the opinions of tourism market consumers has not been sufficiently explained in the literature. In response to such a diagnosed gap, a study was undertaken to verify the research threads included in the hypotheses:

H_1: Activities for sustainable development of Polish tourism significantly shape the opinions of customers of the Polish tourism sector.

H_2: Sustainability activities influence the consumer choices of Polish tourists.

H_3: Customers of the Polish tourism market attribute the most significant importance to environmental protection activities in the sustainable development of Polish tourism.

The paper was based on face-to-face diagnostic survey and statistical survey techniques, assisted by the PQstat programme, enabling in-depth analysis. The survey was conducted in the Polish town of Uniejów (Poddębicki County, Łódź Province) in July 2024, during the organisation of the Local Earth Festival (6–7.07.2024). The guiding principle of the festival is to promote action for the protection of the planet—mutual inspiration and care under the motto 'For Earth For Us' [18], which through the support of artists enjoys great interest and recognition. A total of a convenient sample of 312 tourists took part in the survey, with 288 correctly completed questionnaires qualified for analysis. The survey was open and anonymous.

The content of the questionnaire referred to the study of the impact of sustainability activities in the tourism industry on the opinion of Polish tourists. The scope of the questionnaire in this problem strand included six questions, 4 of which were closed-ended and 2 open-ended. The research questions referred to the evaluation of sustainable tourism development activities in Poland, and their impact on the opinion of tourists.

The study of the survey results adopted a qualitative and quantitative dimension. The in-depth dimension of statistical analysis involved determining the degree of correlation of variables, establishing a logit function model and an odds ratio to estimate variables. The methodology of the study was appropriately selected in terms of the characteristics of the data and the problem threads adopted, as included in the hypotheses. Explanatory and explanatory variables were established for in-depth explanations, with the explanatory variable being the area of sustainable tourism development in Poland. The results of the diagnostic survey according to the adopted sample revealed that the main opinion-forming aspect in the group of Polish tourists is the sustainability of the sector (explanatory variable: Y_1, of a dichotomous nature, i.e. with a score of 0 it does not occur, with a score of 1 it occurs). The identified variable determines consumer decisions, so three explanatory variables were adopted based on the findings of the diagnostic survey: X_1—responsible place to stay (opinion on the facility being managed sustainably), X_2—safety of stay (opinion on the extent and quality of sustainable solutions in the facility), X_3—other sustainability activities (opinion on sustainable relationship management, sustainable employee management, other sustainability exchanges).

The variables X_1–X_3 take a numerical character: a scale of 1–3, with a score of 1 indicating an insignificant influence of the studied factor on the variable, a score of 2 indicating a significant influence, while a score of 3 indicates a very significant influence on consumer choice. All explanatory variables determine consumer choice of the tourism market in Poland. The above reveals the relationship between consumer opinion on sustainability measures and physical consumer choices creating turnover in the sector. The presented methodological concept was successfully applied in the author's alternative research based on the results of a diagnostic survey [1, 19, 20]. The PQStat software completes the cognitive side of the study in detail.

The research sample consisted of Polish tourists who stayed in Uniejów during the organisation of Earth Festival Uniejów 2024. The results obtained relate only to the sample of people covered by this event and therefore cannot be transferred to the general population. The strongest group of respondents consisted of respondents aged up to 30 years (65.4%), followed by those aged 31–50 years (28.4%) and those aged over 51 years (6.2%). Respondents from the Łódzkie Voivodeship accounted for 18.8% of the study population, with the remaining 81.6% representing other regions of Poland. It should be noted that the characteristics of the respondents were not taken into account as differentiating variables in the study.

4 Results

Learning about the impact of sustainable development measures on the opinions of tourists provides information on the awareness of this group of consumers, determining future purchasing choices in the tourism industry. Therefore, the research presented in this paper oriented the analysis of the impact of sustainable development activities on the opinion of Polish tourists staying in Uniejów during the organisation of the Earth Festival. The results of the research indicated that:

- an absolute majority of the surveyed population (97%) indicates that activities aimed at sustainable development of Polish tourism is important and to a significant extent influences the assessment of the changes taking place. A positive assessment of the progress of the sustainable development process in the tourism sector in Poland was given by 54% of the respondents, 27% gave a negative opinion, indicating the availability of a number of solutions, inter alia, in the area of environmental protection and too slow a pace of their implementation, such as renewable energy (photovoltaics or heat pumps). The remaining 19% of respondents from the surveyed group, while generally supporting sustainable development in the tourism industry in Poland, refrained from giving a clear opinion on the matter.
- 72% of respondents indicated that the level of sustainable solutions applied is important in their consumer decisions. Interestingly, 34% of them indicated that they make their choice of a responsible destination regardless of a possible higher purchase price guided by tourists' opinions on the matter. The remainder of this group (66%) confirmed that price is a decisive factor in their consumer choice, with sustainability attributes expressed in tourists' opinions being the deciding factor for 21% of them in choosing a safe stay offer within a certain price range—considered from the perspective of the extent and quality of sustainable solutions practised. In contrast, the remainder of the respondents in this group (89%) clearly indicated that they are only guided by price in their choice and that opinions on the topic of sustainable management are of very limited significance here.

– Only 17% of respondents in the surveyed population associated sustainability with themes other than environmental aspects, however, indicating environmental protection as a fundamental and necessary action, as well as important in consumers' opinion of the offer. An interwoven theme was economic (37%), but this related to the investment side of the business rather than to the benefits generated by sustainable management. The social aspect of sustainability was mentioned by 11% of respondents and mostly (63% of this group) referred to secure employment in a secure workplace, which means that this dimension of sustainability is the least important for consumers in the sector studied.

The research indicates that the following aspects assume the greatest importance in shaping respondents' opinions on sustainability measures and subsequent consumer choices: responsible place to stay (opinion of a sustainably managed facility), safety of stay (opinion of the extent and quality of sustainable solutions in the facility) and workplace safety (opinion of safe employment and safe working conditions). These indications were taken as explanatory variables in the in-depth study (X_1—X_3), and were contrasted in relation to the impact factor that sustainability was taken as (explanatory variable Y_1). Table 1 presents results from descriptive statistics and Correlation the variables.

The correlation analysis of the variables revealed their homogeneous nature. The correlation test indicates a positive result. The strongest correlation result is 0.329 for the relationship Y_1–X_1 indicates low correlation strength (collinearity < 0.5). Table 2 presents the logistic regression results for the Y_1 factor.

Information about sustainable measures reinforcing a responsible stay most strongly shapes tourists' positive opinions, which form the basis for further consumer choices. Opinions about a safe stay, considered through the prism of the quantity

Table 1 Results from descriptive statistics and correlation the variables

Results from descriptive statistics							Correlation the variables				
	Mean	SE	SD	SD^2	Min	Max		Y1	X3	X2	X1
Y1	0.72	0.03	0.49	0.24	0	1	Y1	1.00			
X1	0.18	0.02	0.42	0.18	0	3	X3	1.10	1.00		
X2	0.24	0.02	0.47	0.22	0	3	X2	0.19	0.18	1.00	
X3	0.27	0.03	0.49	0.24	0	3	X1	0.32	0.29	0.15	1.00

Table 2 Results from descriptive statistics

Variables	β	Error b	−95% CI	+ 95% CI	Wald stat	OR odds ratio
X3	1.286	0.466	0.190	2.006	5.228	3.028
X2	1.423	0.398	0.612	2.012	12.342	4.402
X1	2.031	0.272	1.371	2.001	48.010	10.389
Pseudo R2	0.598					

and quality of sustainable solutions, have a subsidiary effect on consumer choices. Information about other sustainable activities has an impact on reinforcing tourists' positive opinions, with these opinions assuming an auxiliary character in the process of consumer decisions in the tourism industry in Poland. A responsible stay with an accentuated environmental theme most significantly influences tourists' opinions, determining further purchase choices. The relationship expressed in the variables Y_1–X_1 obtained the highest degree of correlation, and also reached the level of highest probability of occurrence compared to the other variables, with an OR score of 10.389 chances. The other variables are influenced by inflation to a slightly more limited extent.

5 Summary and Conclusions

Tourism drives the economy, being an important link of the economy in highly developed countries. On the other hand, it constitutes a service sector that is very sensitive to changes in environmental conditions, hence the consideration of the impact of current trends of change on tourists' opinions determining future purchasing decisions in this service sector is fully justified. With the above in mind, the findings of this article were oriented towards a diagnosis of the impact of the sustainable development of the Polish tourism sector on tourists' opinions and their consumer choices. The findings in question may support the process of shaping a strategy for the development of the national tourism services market in Poland, with particular emphasis on actions for sustainable development in this sector. This is because the research, the results of which are presented in this paper, indicate a significant impact of actions for sustainable tourism development on consumers' opinions and their further purchase choices. The high awareness of the need for responsible behaviour among Polish tourists, confirmed by this study, provides an opportunity to intensify efforts to enhance the sustainable development of domestic tourism. However, the price of the offer assumes an important role in the decisive choice. Hence, government support of efforts to increase the level of sustainable management (its scope and quality of solutions) may contribute to easing financial constraints on final purchase decisions towards sustainability, in situations where the economic aspect expressed in the price of the offer is the main obstacle in this respect [21].

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The Role of Sustainable Tourism in Local Development

Anna Sobczak and Ewa Chomać-Pierzecka

Abstract The development of tourism has undoubtedly brought many benefits to regions often visited by tourists, such as increased employment, infrastructure development and even cultural revival. However, not all effects of this phenomenon are positive. In recent years, there has been a growing dissatisfaction of local communities with the attitude of tourists and their impact on the quality of life. Scientific research confirms the existence of groups of local communities that have different opinions on the implementation of tourist goals in a given region. Some groups may see the economic benefits resulting from the development of tourism, while others may focus on the negative effects, such as excessive crowding, environmental pollution or an increase in housing rental prices. Strong connections can be seen between the quality of life of the local population and participation in the tourism product. The problem of sustainable development of tourism is becoming more and more important in terms of the growing problems of local communities. Local communities express their opposition to mass tourism and its uncontrolled activities, which cause problems that local authorities have to face. The restrictions introduced are intended to control tourism and reconcile many interests of market participants. The aim of the work is to examine the activities of local authorities in the aspects of sustainable tourism that they can undertake in tourist areas. The analysis focuses on the activities undertaken by local authorities to regulate tourism and ensure the sustainable development of tourist areas. An important element of the analysis is the assessment of the effectiveness of these activities in the context of sustainable development and protection of tourist resources. The work aims not only to identify the activities undertaken by local authorities, but also to assess their impact on tourist areas and the possibility of improving the activities in the future. In this way, the work makes an important contribution to the discussion on sustainable tourism and the role of local authorities in promoting and regulating it. The study uses the method of studying scientific literature, analyzing the results of secondary research

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and survey that was conducted in Poland. Results were illustrated with the Cronbach's alpha coefficient defining the consistency of the responses. This shows that legal regulations and economic factors implemented by local government authorities can significantly affect sustainable development in the region.

Keywords Sustainable Development · Mass Tourism · Regional Development

1 Introduction

Sustainable development of tourism with the increasing demand for it is becoming a problem to be solved by decision-makers. The problem is becoming mass tourism, which threatens not only local communities, the environment and tourist attractions, but also tourists themselves. Currently, the most talk about sustainable tourism is in relation to the largest attractions or monuments, and it concerns the entire industry. The phenomenon of sustainable tourism should be particularly desirable in peripheral or marginalized areas, where the growing demand for tourist services translates into the creation of new jobs and, as a result, an increase in employment among the local community. These areas are, by the way, due to their location, the most attractive and have the greatest potential for the development of this type of tourism. The fact of combining top attractions with lesser-known ones seems important. Due to the significant disproportions caused by mass tourism by visiting popular places and using niche forms of activity and places—it seems important to combine them with each other and propose visiting them together, which should relieve overloaded places and result in the sustainable development of larger areas. The task of local government administration is to take care of the local community and its needs to cultivate the traditions, culture and achievements of the local population. Such actions will result in the protection of heritage and will prevent the local population from becoming an enemy of tourists. As long as the local community profits from tourism, it will support and develop it. When the functionality of tourism decreases, decision-makers must seek other ways to develop tourism while maintaining profits for the local community.

2 Literature Review

The local community plays a key role in the process of planning sustainable tourism through its involvement and contribution to shaping decisions regarding the development of tourism in a given area. Without its participation, it is difficult to achieve a balance between the needs of tourists and the preservation of the natural and cultural environment. Research conducted by many researchers has shown that the lack of involvement of the local community in the tourism planning process can lead to conflicts between residents and tourism operators, which negatively affects the

quality of the tourism services offered and the relations between the local community and tourists [1–8]. In turn, the works of scientists Zhang and Li show that the active involvement of the local community in the process of planning sustainable tourism can bring both economic and social benefits by creating better living conditions for residents and increasing the attractiveness of a given region for tourists [9–11]. The conclusions from the above studies emphasize the important role of the local community in planning sustainable tourism and the need to take into account its opinions and needs in the decision-making processes regarding the development of tourism in a given area. This is a key element in building positive relationships between tourists and the local community, which translates into the quality of the tourism services offered and the sustainability of tourism development in the long term. Scientific studies conducted by researchers have shown that tourism development can bring economic benefits to the local community, improving the standard of living of residents [12–16]. However, excessive burdening of tourism infrastructure can lead to an increase in real estate prices and deterioration of living conditions for the local population.

In addition, researchers have noted that aggressive tourism development can lead to degradation of the natural environment, which can negatively affect the quality of life of residents [17–20]. Therefore, tourism management should take into account both the needs of tourists and the local community in order to minimize the negative effects of tourism activities [21, 22]. The local community plays a key role in the development of tourism in a given area. Its involvement not only promotes building positive relationships between tourists and residents, but also contributes to the protection of the natural environment and cultural heritage of the region [23, 24]. Therefore, it is important to take into account the opinions, needs and preferences of the local community when planning tourism-related activities [25, 26].

Research shows that harmonious relations between tourists and residents have a significant impact on the quality of tourism services provided. Thanks to mutual understanding and acceptance, it is possible to create an atmosphere conducive to the development of tourism in the long term. It is therefore worth building a partnership with the local community in order to jointly create an attractive tourist offer that will be beneficial to all parties involved [15, 27–29].

The involvement of residents in the process of planning sustainable tourism is fundamental to maintaining a balance between the development of tourism and environmental protection [15]. It is the local community that knows the specifics of a given area best and is able to assess what activities will have a positive or negative impact on the environment and local residents [30–32]. Therefore, it is worth listening to their voices and involving them in the decision-making process regarding the development of tourism.

Cooperation with the local community is the key to success in the development of tourism in a given area. Only through dialogue, partnership and joint actions is it possible to create a lasting and sustainable tourist base that will benefit both tourists and residents of a given area. Therefore, it is worth investing in relations with the local community and taking into account their opinions and needs in decision-making processes regarding tourism. There is a complex relationship between tourism and the

quality of life of the local community, which requires an interdisciplinary approach and close cooperation between the tourism sector and local authorities [29]. In this way, it is possible to ensure sustainable tourism development that will benefit both tourists and local residents [33].

The following research questions were formulated:

P1: How can regional decision-makers protect the interests of the local population so that tourist assets have a positive impact on the quality of their lives?
P2: How can tourism development be limited so that it does not adversely affect the quality of life of the region's inhabitants?
P3: What regulations should be introduced on a national scale to minimize the unfavorable factors of tourist areas threatened by mass tourism?

3 Methodology and Results

For the purposes of the study, a survey was conducted among local government authorities. The questionnaire was sent to all municipalities in Poland, of which there are currently 2477 as of January 1, 2024. This number includes rural municipalities-1464, urban–rural municipalities-711, urban municipalities-302 and municipalities with county rights-66. Almost 22% of the entire population, or more precisely 604 communes, participated in the study. Respondents assessed their answers using a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was designed to contain statements related to the decisions that local government authorities can make to implement sustainable tourism, which has an impact on the quality of life of residents. The use of observable variables for measurement is related to determining the mutual relationship between the latent variable and observable variables and choosing a combination of these relationships. As part of the processing of statistical data, the reliability of variables was assessed in order to determine the dimensions of sustainable development in municipalities. Factor analysis was used to assess dimensionality in the study due to the detection of structure in the relationships between variables and their presentation in a more concise and readable form. The result of factor analysis will be the number of dimensions that are independent of each other and have a clear interpretation. Principal component analysis for nonparametric variables will be used to isolate the main factors. The index was calculated as an average variable that included each dimension (independent variables). Table 1 presents the scaling of the index items of local government solutions for the local community in the context of sustainable tourism. Reliability methods are used only after assessing unidimensionality. In this case, Cronbach's Alpha coefficient was determined, which informs whether the way of answering individual questions was consistent. The coefficient measures the ratio of the variance of individual items to the variance of the entire scale (the sum of these items). Reliability tells us how accurately a given dimension measures what it measures. High scale reliability is indicated by values of this coefficient greater than 0.7 (Table 1).

Table 1 Scaling the index position of local government solutions

Index	α 0.71	Mean 4.45
Creating a law that limits environmental interference	6.84	
Investments available only to a limited (local) community	4.65	
Access fees	7.23	
Restricting places	5.21	
A diverse offer	4.01	

The validity and reliability of the obtained research results are indicated by the analyzed data. The results of Cronbach's Alpha are the highest for the legal dimension, which indicates that local government authorities see opportunities in legal regulations that can help implement sustainable tourism in a given region. The economic dimension also obtained a high index, which indicates that activities related to the appropriate correlation of fees for using attractions or monuments may affect the regulation of the number of people using this element. The marketing dimension obtained the lowest value, which indicates that local governments do not see a solution in this factor in the near future. This is an important factor for the potential consumer; therefore it is worth considering the implementation of activities within it with local institutions and organizations related to tourism, because as beneficiaries they should be interested in this aspect.

4 Discussion and Conclusion

The research shows that political decision-makers play a key role in moderating interventions in the field of political guidelines, regulatory frameworks and budget support in tourism. However, ensuring inter-organizational synergy in planning and implementing tourism strategies, protecting the environmental resource base and preserving natural ecosystems requires the involvement of both the government and the local community. Long-term environmental protection and maintaining the socio-cultural values of the local community are key to achieving sustainable ecotourism development. Threshold criteria that are established by policymakers can influence standards for responsible travel and tourism [34]. By promoting "responsible behavior" in destination management and supply chain management, a balance can be achieved between economic business interests and environmental protection. Adhering to social responsibility protocols throughout the tourism value chain can help to increase consumer environmental awareness and improve the potential of destinations. Environmentally friendly infrastructure and appropriate policy parameters are necessary to support environmental sustainability. Implementing strategies that are aligned with the Sustainable Development Goals requires engaging the local community in decision-making and enacting structural policies. Collaboration

between community and value chain managers can help maximize the benefits of responsible tourism while developing cultural exchanges and planning leisure and tourism opportunities [35, 36]. Regulatory measures, such as controls on the number of tourism activities and the movement of visitors in protected areas, can help to offset the negative effects of tourism on the ecosystem. It is necessary to set limits after thorough analysis to maintain the integrity and viability of the protected area. In addition, research conducted in one destination can serve as a valuable source of information for other similar destinations, supporting sustainable management of destinations. Based on the literature and the presented research results, it seems important to recommend more decisive actions taken by decision-makers, because the local community should not be allowed to force actions. Decision-makers should try to anticipate threats caused by mass tourism and create laws that will protect the local community and its interests from predatory actions caused by excessive tourism. Economic factors and fees that local governments can introduce in relation to tourists should reduce the costs that arise and burden the local community. Sustainable development of tourism should protect the local community as much as possible, so that they can live and work in a given region.

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Political Leaders' Commercialization and Depoliticization: The Case of Greece



Harry Sophocleous, Sofia Anastasiadou, Androniki Kavoura, Andreas Masouras, and Christos Papademetriou

Abstract The leadership patterns that prevail in a country reflect not only its socio-economic and political circumstances, but also the characteristics and democratic reflexes of its citizens. Since the establishment of Greece as an independent state to the present day, we have witnessed changing trends and popular preferences regarding the prevailing leadership models. In this context, the paper provides a conceptual analysis of the commercialization/consumption of the leader's image as a political marketing tool and in particular, as a political product, taking into account the evolving voting behaviour and the changing perceptions of the electoral body. Quantitative research and more specifically survey with Greek voters was used to measure the changing perceptions of the electorate and to reflect the depoliticization of the leaders' image. Comparisons were made both with the context and previous research on the specific Greek case by making a historical reference and with cases from other European states. Implications and limitations of the research are discussed.

Keywords Political Leader's Image · Commercialization of Political Leader

1 Introduction

In terms of political marketing, the image of the political leader is one of the main dimensions of the political product and therefore one of the vital components the wider political marketing mix. Moreover, the dominant characteristics of leaders in a particular country (political market) reflect the political circumstances, the level of political involvement and thus, the perceptions and behavioural patterns of voters.

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In this context, this paper gives examples from other countries and references and meanwhile focuses on the Greek case by making a historical analysis of the image of the dominant leader of the Greek political market from the era of political transition (post-colonization) to the modern era and examines the implications and contextual distortions that evolve and transform the image of the dominant leader [1, 2] in doing so, the aim is to give a clearer and a more spherical context for the particular research.

1.1 Research Context and Examples from Other Countries

The average age of a European head of government is now around 5 years of age. In the 1980s, it was over [3]. French President Emmanuel Macron only entered formal politics five years before becoming president in 2017 at the age of 39, making him France's youngest leader since Napoleon. Rishi Sunak, three years his junior, spent just seven years in the House of Commons before becoming British prime minister last October. Italy had its youngest-ever prime minister in 2014, Ireland in 2017 and Ukraine in 2019. In 2017, Sebastian Kurz became chancellor of Austria at the age of just 31, setting a record as the world's youngest head of government, a title inherited two years later by the then 34-year-old Marin of Finland [4].

Previous research [14] compared the backgrounds of European prime ministers between 1945 and 2019 uncovered that about half of those who took office between 2000 and 2019 had served less than six years as a member of parliament, a fact that may support the argument of the depoliticization of Leader's Image. Accordingly, the professional experience of Europe's leaders has become less political and more technical. In that sense, Europe's leaders are no longer, nor the career politicians, neither the highly politicized personalities they once were. The particular fact supports the particular research hypothesis, which examines the depoliticization of Leader's Image in the contexts of Greece. Appropriately, if we consider the average Leader's Image in the Greek Political scene, we may clearly recognize the gradual decline of Political Leaders Politicization.

More specifically, in Greece, during the first years of the transition from the Colonial Junta to democracy, we saw leadership models/prototypes such as that of Constantine Karamanlis, with his long political involvement in democratic affairs, or that of Andreas Papandreou, with a deep ideological orientation towards socialism and social democracy and deep political slogans, prevail. These prototypes have gradually been changed, starting in the mid-90 s, with the transition from Papandreou to the more compromised and less idealism Konstantinos Simitis. The second step can be seen in the rise of Alexis Tsipras, who was politicalized but distanced from the traditional political families of the country. The third and decisive milestone in this direction was the rapid rise of Stefanos Kasselakis as the leader of the leading opposition, winning the Syriza party leadership elections just days after his appearance in the country and his unpoliticized declaration: "I am Stefanos, and I have something to tell you". The aim of this research is to provide a quantitative analysis of the commercialisation/consumption of the leader's image as a political marketing

tool and in particular, as a political product, taking into account the evolving voting behaviour and the changing perceptions of the electoral body The Greek case is expected to fill the current research gap by converging on the impact of voting patterns on the political product and in particular the personal and political identity of political leaders.

2 Literature Review

2.1 Human Branding and Product as an Element of Political Marketing Mix

Human branding is an ascending issue in the sphere of the conventional marketing. The value as a brand of an individual who is well known, and the subject of explicit marketing communication efforts is being explored in many fields. The notion has clear potential value in political marketing, as well, where the role of a political leader as a commercialized element and as a part of the political marketing, has been extensively recognized. Additionally, there is a responsive/circular relationship between leaders and parties, each of which has some unique brand associations, also provides a unique context in politics [2, 5].

The way of investigating the purpose of human branding and product as a marketing element in politics also delivers a context for reconnoitering and emerging certain connections between party and leader, human brand and organizational brand. Party leaders need brand accuracy as promoters of the party's brand authority to control the association and deliver the policies promoted [2, 6]. Considering the contemporary political reality of a country, is openly associated with the image and the broader characteristics of the political leader and is the principal methodological aspect of evaluating his/her action, coordinating the activity of the political institutions [5, 6].

Political marketing is the promotion of the features, concepts, values and procedures of a specific party, leader or candidate to form voting perceptions [2, 5]. In other words, political marketing it is the set of practices consumed to cover a political party, a leader, or candidate appear appropriate to potential voters in order to reach the highest number of voters and to highlight the differentiation between him and others in order to win elections. Accordingly, political marketing considers the use of marketing mix (Product, Place, Price and Promotion), in the same manner like in conventional marketing. In this specific manner, the context of the particular paper, concentrates on the leader's image, as a Political Product and as a substantial part of the wider marketing mix. Furthermore, the previous research, provides a conceptual outline and experiential means for understanding and evidently denoting what motivates the acceptance and accomplishment of contemporary political leaders by mirroring on the interconnections between perceptions of authenticity, regularity and

capability. Accordingly, the particular instrument it is acknowledged as the Triangle of Leadership [6].

What is a Leader? However, it may be useful to define the concept of a leader and summarize some of its main characteristics, in order to be able to assess the leader's image as an element of human branding and as a component of the political product. "A leader is a person who influences other people, gains their trust (by whatever means) and gets them to follow him voluntarily and willingly". [7] Nevertheless, another impression reveals this: The ideal leader is the one who challenges the establishment and, through vision and values, inspires and leads people, organizations or peoples to progress accordingly, making substantial cuts and leaving as a legacy a perfect governance framework, infrastructure and prospects for continuity. Douglas McGregor [8] moved on to develop two basic leadership orientations: Theory "X" and Theory "Y". In general, Theory "X" is based on the fact that "under-leadership" groups are over-assertive about their rights while failing in their responsibilities, and at the same time are passive and lazy recipients of manipulation. On the contrary, the "Ψ" theory is based on the fact that the "led" groups understand both their responsibilities and their rights and can influence the "leadership direction". McGregor's theory was based on Maslow's hierarchy of needs. Specifically, McGregor divided Maslow's hierarchy into "lower order" needs (theory "X") and "higher order" needs (theory "Y") [9]. In this way, it becomes clear that, as a rule, leaders worthy of the visions and values of their electorate emerge.

3 Methodology

3.1 Problem Statement

The particular study investigates how Greek political leaders are commercialized and perform as a political product by taking into account the notion of human branding and the qualities and the characteristics of leading politicians. It provides a conceptual analysis of the commercialisation/consumption of the leader's image as a political marketing tool and in particular, as a political product, taking into account the evolving voting behaviour and the changing perceptions of the electoral body. **Research Context.** Within a year, between May 2023 and June 2024, Greeks went to the polls four times (two for parliamentary elections, one for local elections and one for European elections). At the same time, the main opposition party of Greece, Syriza, had its own internal election battle, which led to the victory of the then newly appeared and unconventional Stephanos Kasselakis. In such a critical situation, the Greek voters were called upon to vote four times in a short period, a circumstance that undoubtedly had an impact on voting behaviour and, consequently, on their perceptions upon political marketing, and in particular, political product and leadership image. **Research Questions/ Hypothesis.** To facilitate the interpretation of well-defined aims and objectives, and thus enable the proposed research to be carried

out, the following specific hypotheses could be identified from the above indicative overview Hypothesis 1. The Leader's political Image as a political product, as it is perceived by the average Greek Voter and therefore the human branding of leading politicians, is commercialized and has become les politicalized than it used to be. Hypothesis 2. Leader's qualities and the characteristics and in particular, personal and political and personal identity qualities, values and characteristics, are perceived in a non-political manner [1, 5].

3.2 Quantitative Research Consideration

To meet the requirements of the proposed research objectives, certain research methods were considered essential. Primary research is therefore the only means of finding answers that are relevant to the company. It has been considered as necessary to carefully specify the research population and clearly identify the sample that represents this population in the actual research process in order to be able to approach a particular question in a thorough manner. The survey was carried out for the Greek electorate of a convenient sample of 492 Greek citizens with the right to vote, just after the European Elections. This particular timetable was selected with the aim of ensuring that only voters were consulted and that the evident influence of political product could be monitored.

3.3 Survey Result (Political Product-Personal and Political Identity)

Leader as a Political Product. Firstly, the survey examined the electoral impact of leader as Political Product and is reflected human branding [5, 10], by considering three elements: The Political Records, The Image as a Leader and The Image as a Social Entity (See Fig. 1). Accordingly, The Image of the Leader as a social rather than a political entity, appeared to have the highest mean value (3,91), while, The Image as a Political Leader and The Political Records, scored 2,46 and 3,28, respectively. The particular fact could indicate the depoliticization of the leader as political product and the decreased palatalization of Leader's Image. As for the demographic parameters, the survey indicated that "the electoral Impact of leader as political product" is higher for women rather than men. In addition, the results reported that the particular impact is decreasing as the age and the educational level is increased.

Political leader's Personal and Political Identity. Moreover, the survey involved the examination of 9 items (See Fig. 2), which tested the political (5 items), and personal identity of a Leader and which reflect his/her personal characteristics and qualities (4 items).

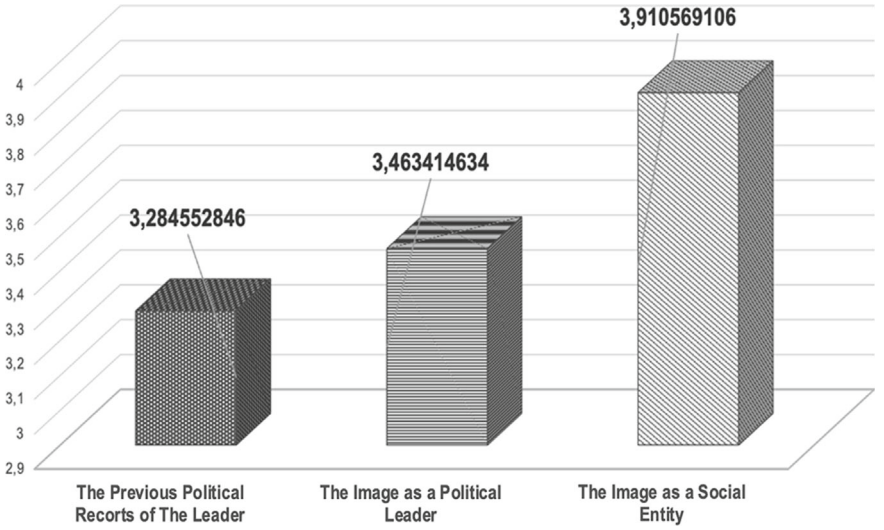


Fig. 1 Leader as a Political Product

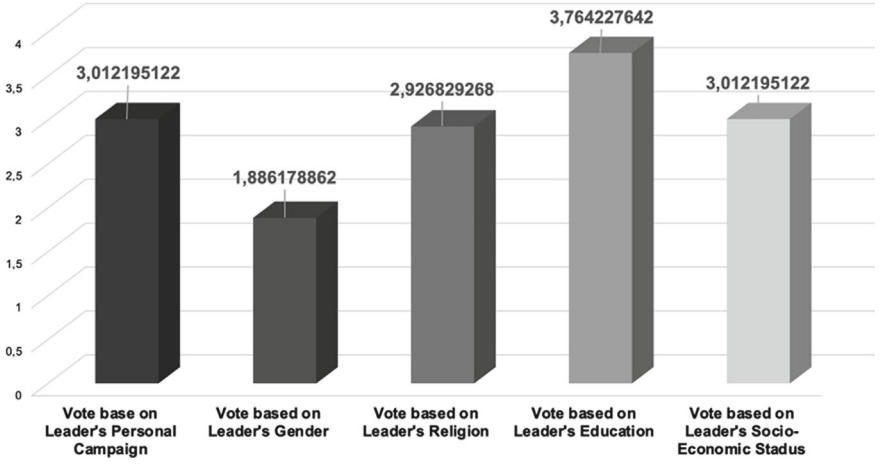


Fig. 2 Personal identity of a political leader

The personal identity of the Political leaders as candidates which reflects the human branding of the particular politician, shows a diversity of mean values between its different elements (personal campaign, gender of the leader, education of the leader, and socio-economic status of the leader). More specifically, the leader's gender (with a mean of 1.89) appears to be the element with the least clear statistical picture, since for the vast majority of respondents this fact could indicate the diversity of the way in which respondents perceive religion in relation to their overall voting

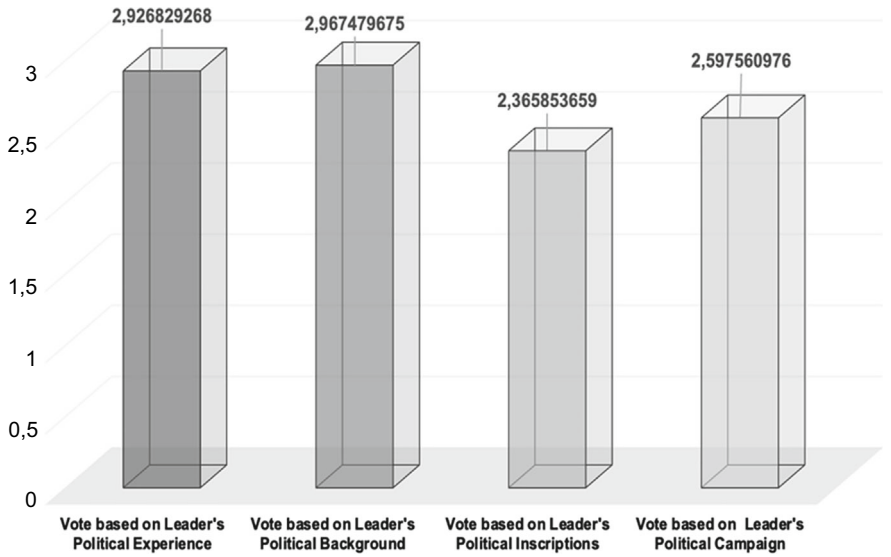


Fig. 3 Political identity of the political leader

behaviour. Furthermore, the leader's education (with a mean value of 3.76) appears to be the most important element of the leader's personal identity, followed by personal campaign and socio-economic status (3.01 each). Thus, "Leader's campaign" as an element of "personal identity" concentrates a mean value of 3.01, while as an element of "political identity" it concentrates only 2.60. In contrast to the case of the leader's personal identity, none of the elements of political identity has a mean value higher than 3. (See Fig. 3.) This may also be an indication of the depoliticization of the leader.

4 Research Implications

The average values of the three major examined elements (Pollical Product [3,4.6], Leader's Personal Identity [2, 9] and Leader's Political Identity [2, 10], as they arise from the gathered result seem to be higher (Product and Personal Identity) and lower (Political Identity), than those collected by previous research [1, 10], which were 3, 49, 2.79 and 2.90 respectively. From the three elements that are composing the wider element of Political Product, Previous Political Records, and Leadership Image, appeared to be slightly lower than last years, while the Image as a Social entity is slightly higher than Last years [10]. This may indicate that an individual leader's campaign is perceived more as a personal image than as a political statement. Moreover, in contrast to previous studies [11–13], the specific study emphasises on the element of political leader and shows a marginal impact of leader's political

background with a mean of 3.22 in contrast to the higher mean of 3.44 obtained on other studies [14, 15].

5 Conclusions and Limitations

According to the discussion points of the specific research, this may reflect the fact that the so called "Leadership Image" as it is perceived by the average the Greek voter, is mainly influenced by non-political factors. This particular fact confirms the paper's research hypotheses which suggested depoliticization of leader's image. In a rather similar way, the variance that was mirrored from the conclusions of the specific research regarding the appreciation of the importance of the electoral activity and the actual reflection of voting, is in line with previous research [1, 12] and indicates that voters (especially the younger ones) understand the importance of voting. However, their lack of participation to a certain extent is either a result of disapproval of the political system or a result of the general gratitude that their vote will not manage to change the current situation [8]. This stresses differences among the behaviour of different demographic segments of Greek voters. Finally, it can be argued that a number of research limitations have emerged, even though the reported research findings are consistent with the achievement of the stated objectives and generally confirm the basic hypotheses of the project. In addition, it is beyond the scope of this study to further apply the findings on "voter participation", "information seeking" and "stability", and therefore the data collected on "word of mouth" may not be as representative and may not reflect the actual impact of word of mouth on the electoral process.

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Social Networks' Influence on Voting Behavior and Involvement of Cypriot Voters

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Abstract Digital media and social networks in particular are increasingly influencing voters and penetrating the range of political products aimed at them. For years we have seen established mainstream political forces progressively using social media in their election campaigns and their wider political marketing. At times, unpolitical individuals with influence and high impact on social media, may promote themselves as a political product even if the political agenda is missing. In the context of the 2024 European elections in Cyprus, this paper examines whether this increased influence of social networks on the electorate represents a democratization, a popularization, or simply a depoliticization of the political product. In this specific context, the paper provides a historical indication and a theoretical analysis of the way in which the impact of social networks on electorates has evolved. Quantitative research was used with a convenient sample of 247 voters to measure the impact of social media (and specifically YouTube) upon voting behavior, as well as the extent to which the particular impact is influenced by the level of voters' political involvement and the shift towards a more depoliticized voting behavior. Findings highlight that the use and therefore the impact of social media, it's a major differentiator of voting behavior. In a rather similar manner. Finally, the paper discusses management implications and suggests further research.

Keywords Voters' Behavior · Social Networks · Depoliticization of the Political Product

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1 Introduction

Digital media, especially social networks, are progressively shaping electorates and penetrating the choice of political submissions targeted to voters. For years we have seen traditional and conventional political forces and recognized political personalities, progressively practice social media in their pre-election operations and their broader political marketing [1–3]. More lately, nevertheless, we have perceived personalities with influence on social media using that influence to promote themselves as a political product, even when the political agenda is absent. In the context of the 2024 European elections, this study examines the case of the Cypriot YouTube presenter Phidias Panayiotou, who, without a political agenda and under the pretext of reacting to the political system, used his influence on social networks to achieve the impossible and be elected as a member of the European Parliament for the next term, with the result of 19%.

Is Phidias Panayiotou really a phenomenon, as is often said, this Phidias with 19% and something? Or is he simply a new, fresh person who has absorbed the devaluation of the political system in a syncopated and monopolistic way? If there were 10 Phidias, would it be impossible for them to get 19% each? The question is by how much would they be outvoted, or would they each get 1.9%; similarly, if there were 100, would they each get 0.19%? Is it possible that the rapid and blatant spread of the non-party/alternative vote and the rise of the far right is, apart from the defeat of the party system, also a direct and profound reflection of the electorate?

In answering these questions, we may provide more insight into the impact of political promotion as an element of political marketing [4–6]. In addition to the constructive timing, and the phenomenon of Phidias Panayiotou, another reason for choosing the Cypriot case is that there is a promising ground for the particular case is projected to fulfill the existing research gap by congregating on the impact of promotion and social media and the role of the political involvement.

2 Literature Review

2.1 Social Media and Political Agenda Setting

Previous research argues that social media as a communication platform creates new challenges and opportunities for political agenda setting. Social media are not just adding complexity to agenda-setting dynamics. They may be reshaping its essence. While these changes have been acknowledged in the previous research, their implications are not fully captured. Social media has become an increasingly important tool for political communication [4, 5]. Candidates and politicians use social media to correspond with the press and the community [6] and to engage with (or even attack) their political opponents [7]. Politicians are less constrained in expressing their views than, for example, in parliamentary speeches or parliamentary questions [6, 8, 9].

Legislative and in general political activity is often regulated, for example, through rules on speaker selection [10], limited speaking time or top-down control by party leaders. In social media, though, candidates do not face these restrictions. Therefore, social media channels are an ideal tool for politicians to structure their own profile and establish their knowledge in specific areas of high interest to them [11]. Thus, we deliberate social media messages as an appropriate substitute for candidates' issue focus during the legislative cycle and during election campaigns [12].Through social media, political actors can potentially reach audiences far beyond social media users. The fact that journalists rely on Twitter to decide which events and voices are newsworthy is well established in the literature. As previous research states: [13] "…Journalists use social media in a variety of ways in the course of covering political contests, from documenting public reaction to media events to evaluating the performance of candidates". In an experiment, [13] found that journalists rate the newsworthiness of tweets on a par with associated press headlines. Therefore, political actors can realistically hope to influence the traditional media agenda through social media. Social media are changing the dynamics of political agenda-setting for three reasons: first, they are a relevant channel for political communication; second, they expand the number and types of actors who can potentially shape the agenda; and third, through social media, political actors can potentially reach the wider public through traditional media.

2.2 The Concept of Depoliticization

If the twentieth century is considered as the era of liberal democracy's accomplishment, the twenty-first century is, for many, the era of its collapse. Narrow-mindedness and mistrust of the political classes is growing, as is the distance between citizens and institutions. New populist political actors are appearing, and they are changing the sense of how we get elected. The same social movements that used to be aggressive, identifying an opponent in the political elite, now generate conflict regardless of the structure of political possibilities. In this overall picture, we have decided to devote our thinking to the key concept of depoliticization. Among scholars of governance and public policy, depoliticization has become a topic of growing interest. As previous research [14] stated, there is a need to explore the relationship between depoliticization and its context, agency, structure and impact on the wider context of representative democracy. As stated in previous research [14], there is a need to explore the relationship between depoliticization and its context, agency, structure and impact on the wider context of representative democracy. Depoliticization describes "the set of means, processes and institutions through which politicians can endeavor to build an intimate relationship with the state", in the words of [14]. This research aims to shed light on this relationship.

3 Methodology

The study aims to investigate how and at what extent Cypriot voters are influenced by social media and how this is influenced by the level of political involvement. The specific research examines the phenomenon of the Cypriot YouTuber Phidias Panayiotou within the circumstances of the 2024 Cypriot European Elections, who succeeded to be voted as an M.E.P. with the remarkably huge percentage of 19%. In this particular context, this paper discusses this fact and tries to answer whether this increased influence of social networks on the electorate represents a **democratization**, a **popularization** of social networks, or simply a **depoliticization** of the political product and a lower level of political involvement, for at least a particular segment of the voters. Furthermore, the paper measures the impact of social media on the Cypriot electorate in general and compares it with the impact of social media on the segment of voters who voted for Phidias, as well as to associate the scale of political involvement with the particular impact [3]. To facilitate the interpretation of well-defined aims and objectives, and thus enable the proposed research to be carried out, the following specific hypotheses could be identified from the above indicative overview. Hypothesis 1. The candidate's promotion and in particular the use of social media, has an extensive impact upon voters. Hypothesis 2. The level of the political involvement and its association with the voting preferences of Cypriot voters. The research population of the survey was the Cypriot electorate, of a convenient sample of 247 Cypriot citizens between 19 and 25th of May 2024, just before the European Elections [15] ensuring that only voters were accessed and that the influence of social media could be monitored.

4 Results and Discussion

From the element of Promotion, sub-element of the broader political marketing scale, the meetings and the public appearance of the candidate are likely to have the higher impact on voters with a mean value of 3.03, followed by the central slogan of the campaign and the use of social media with mean values of 2.47 and 2.24, respectively (Fig. 1).

In addition, the posters and banners of the candidate, along with the candidate's music, reported mean values of 1.93 and1.92, respectively. This may suggest that social media reflect a basic impact upon the general voting segment. However, it may be worth noting that among voters who claim to vote for Phidias Panayiotou, the use of social media reported a significantly higher mean value of 3.38, while the remaining elements of political marketing promotion reported slightly lower mean values than the general sample of Cypriot Voters. Social media's role [16] is evident (Fig. 2).

The wider construct of political involvement reported a value of 3.18. From the specific sub-elements of political involvement, systematic participation with 3.84

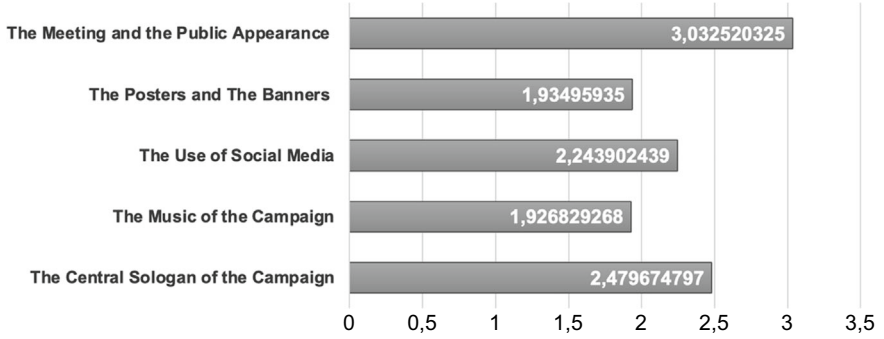


Fig. 1 Political marketing promotion

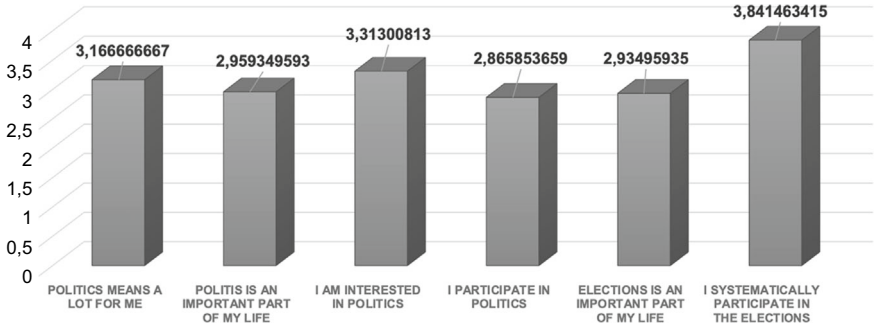


Fig. 2 Voters Involvement

and general interest in politics with 3.31 reported the highest mean values, while the rest of the sub-elements reported around the same level as the main value of the wider element of political involvement (Fig. 3).

It might be noteworthy to point out that the political involvement of the voters that claimed to have voted for Mr. Panayiotou reported as the notably lower mean value of 2.55.The general sample's broader element of subjective knowledge reported a mean of 2.97. With this level of subjective knowledge about politics, the highest mean value of the remaining sub-elements of the specific scale was reported. At the same time, the specific sacrament of waters that claims to vote for Phidias Panayiotou reported a value of 2.9 for the wider element of subject acknowledgment (Fig. 4).

The third construct examined by the survey was political opinion leadership. This particular construct included five sub-items that represented equivalent statements and presented a range of mean scores between 2.67 and 3.978, and an average mean score of 2.97: I spend a lot of time talking about politics, I am considered a good source of information, People come to me for information about politics, I sometimes influence friends, and Friends ask me about politics. At the same time, voters who

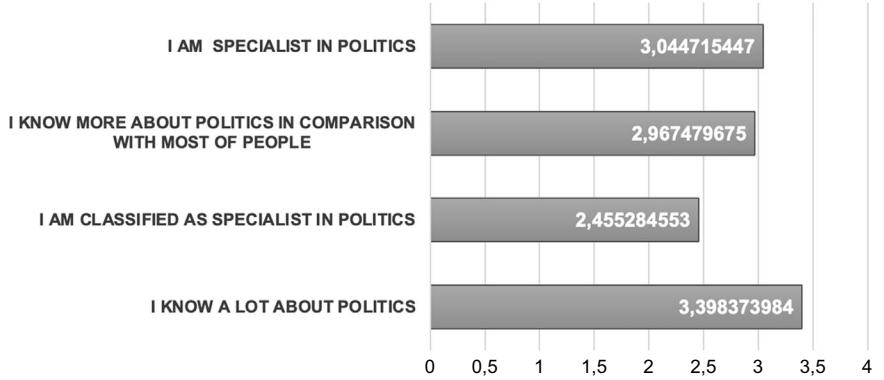


Fig. 3 Subjective knowledge

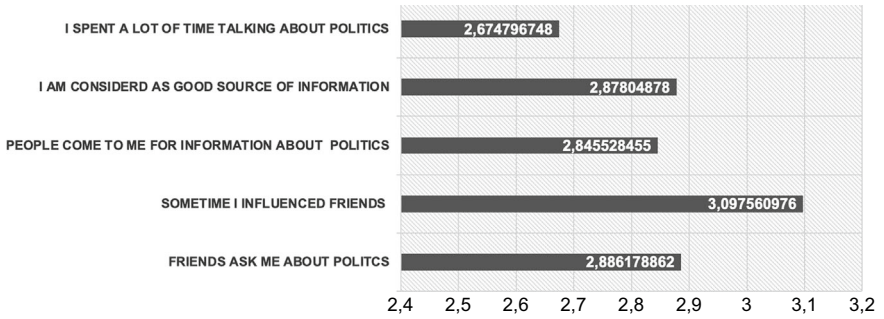


Fig. 4 Political Opinion Leadership

said they voted for Phidias Panayiotou showed an even lower level of political opinion leadership with an average mean score of 2.6 (Fig. 5).

5 Research Implications and Conclusions

The key research implication, and therefore the principal conclusion of the particular research, is the fact that the particular segment of voters who claimed to have voted for Phidias Panayiotou [17], presented a slightly different and rather lower level of political involvement with lower main values on one of the three constructs of the particular scale. This fact indicates that the main reason for the particular diversification of voting behavior along the particular segment of voters is their lower level of political involvement. Another implication of the particular research is the different ways in which the particular segment of voters perceives the political promotion of candidates. More specifically, the particular segment presents a significantly higher

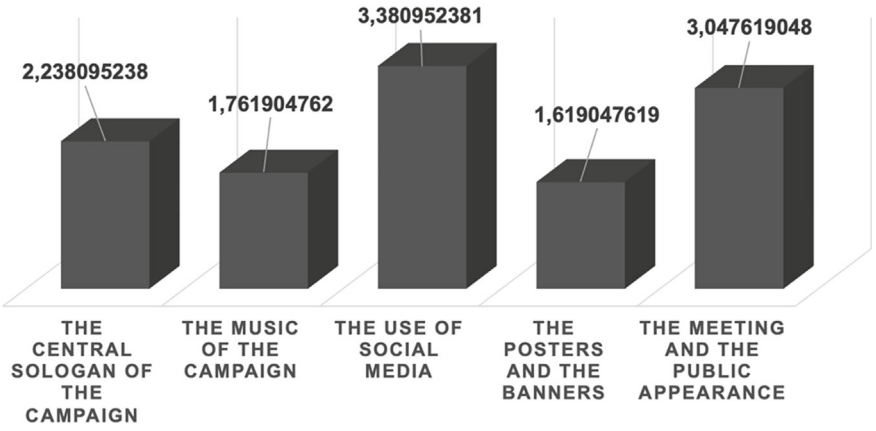


Fig. 5 Promotion as perceived by Phidias' voters

level of use of social media, while the particular segment presents a lower level of influence in the 45 swap elements of the particular construct. This particular fact may suggest that the use and therefore the impact of social media, it's a major differentiator of voting behavior. Results of similar research [18] show both that the EU needs to be seen as a composite, and that different grounds, including media and in particular social media, tend to perceive the EU differently and therefore shape different voting patterns [18]. Apart from the apolitical tendency, another trend that is rocking Europe is the tendency towards the far right. This fact, in particular, is reflected by the results of Austrian Elections. This is part of the broader context of European questioning of the traditional frameworks that have been in place until now but are changing because of diverging and inclusive issues that have been recently raised. Additionally, the occurrence of similar phenomena in different country cases, may suggest that the European Union Institution is not believed to be so significant. Moreover, the literature stress that the particular phenomena of different voting patterns from the users of social media is not only a European matter but exists and in other cases such as in Pakistan [19, 20], India [21] and Turkey [22]. Last but not least, issues of diversity and inclusion emerge in the interdependent world we live [23].

Even though the reported research outcomes respond to the accomplishment of formulated aims and objectives, it can be argued that a number of research limitations have emerged, even though the reported research findings are consistent with the accomplishment of the specified objectives and mostly verify the basic hypotheses of the project. It is beyond the scope of this study to further apply the findings on "voter participation", "information seeking" and "stability", and the data collected may not be as representative and may not reflect the actual impact of social media on the electoral process.

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Travel Decision-Making and Digital Engagement: The Impact of Attitudes Toward European Destination Websites and Online Co-creation on User Intentions



Georgios A. Deirmentzoglou and Eirini Vlassi

Abstract The increasing significance of digital engagement in the tourism sector has led to a heightened interest in the ways in which Destination Development, Management and Marketing Organizations (DDMMOs) websites influence travel decision-making processes. Specifically, there is a need to explore the role of user attitudes toward these websites and their willingness to engage in online co-creation experiences. This research employs a quantitative survey on business students in Cyprus to investigate the influence of their attitudes toward two Northern European destination websites and their engagement in online co-creation activities on their intention to visit a destination. The findings indicate a statistically significant impact of user attitudes and their willingness to engage in online co-creation on their intention to visit the destinations under examination. These findings highlight the pivotal role of positive user experiences and active engagement on DDMMO websites in influencing travel decisions.

Keywords Online Co-creation · Destination Websites · Intention to Visit

1 Introduction

In the contemporary landscape of the tourism sector, digital engagement has emerged as a critical factor influencing travel decision-making processes [1]. The advent of Destination Development, Management and Marketing Organizations (DDMMOs) has revolutionized how potential travelers interact with and perceive destinations [2]. These platforms serve as pivotal touchpoints, offering not just information but also opportunities for interactive engagement [3]. As the tourism industry increasingly integrates digital tools and strategies, it is essential to understand the dynamics between user attitudes, website engagement, and travel intentions.

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A significant aspect of this digital transformation is the concept of "co-creation." This collaborative process involves users actively contributing content, sharing personal experiences, and interacting with both the destination and fellow users [4]. Such interactions not only enrich the content available on DDMMO websites but also foster a sense of community and personal connection to the destination. The potential for enhanced user engagement through co-creation presents a valuable opportunity for DDMMOs to influence travel behaviors and preferences.

Due to the importance of this topic, this research aims to extend the study of Jiménez-Barreto and Campo-Martínez [5], who examined the quality of DDMMO websites, users' attitudes toward these website, and their inclination for co-creation. Our aim is to go one step further and examine whether attitudes and willingness for co-creation have an impact on the intention to visit the actual destination. Thus, the research question is whether users' attitudes toward a destination website and their willingness to engage in online co-creation experiences have a significant impact on their intention to visit the actual destination.

2 Literature Review

In the modern business environment, innovation and digital development are crucial elements [6, 7]. Consequently, websites, social media, and digital platforms in general have become integral components of the tourism industry [8–11]. The evaluation of these tools, especially websites, is of paramount importance, as evidenced by numerous studies on DDMMOs, hotels, and online travel agencies [5, 12, 13]. The predominant assessment methodologies concentrate on the quality and persuasiveness of the websites, adapting the conventional service quality dimensions, such as tangibles, reliability, and empathy, to the digital environment. Website quality, defined as the overall opinion of a website's excellence held by customers, is crucial for consumer satisfaction, loyalty, and positive online behaviors [14].

According to Elliot and Speck [15], an individual's attitude toward a website serves as an indicator of the website's overall effectiveness. Previous studies have shown that this attitude is positively correlated with the individual's attitude toward the brand or destination in question, as well as their intentions to act accordingly, make a purchase from the website or visit the destination [16, 17]. Loureiro [17] investigates the effect of the DDMMO websites quality and the user's attitude on the intention to visit and suggest the destination. By surveying individuals in Portugal who have previously visited an island destination website, he shows that participants' has a significant positive impact on their intention to visit and recommend the actual island destination.

The digital challenge for destination branding today arguably arises from the content generated by travelers, tourism professionals, and other stakeholders who post, comment and share information on social media channels and DDMMO websites [18]. A growing body of research suggests that tourists have become more

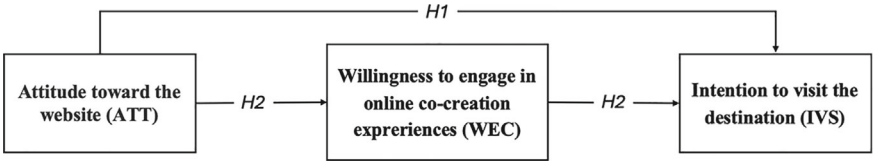


Fig. 1 Conceptual framework

reliant on reviews from other tourists who have been to a destination as an important source of information [19, 20]. By surveying international travelers in Kuala Lumpur, Lam et al. [20] find that the website co-creation experience has a significant indirect effect on overall satisfaction, as destination's image plays a mediating role in this relationship. Furthermore, Jiménez-Barreto and Campo-Martínez [5] with a survey of Spanish residents show that respondents' attitude toward an island destination website has a significant positive effect on their willingness to be involved in co-creation activities online.

Based on the above, the following hypotheses are developed (Fig. 1):

H1: Users' attitude toward the destination website (ATT) has a significant positive effect on their intention to visit the destination (IVS).

H2: Users' willingness to engage in online co-creation experiences (WEC) mediates the relationship between the attitude toward the destination website (ATT) and the intention to visit the destination (IVS).

3 Methodology

The objective of this study is to investigate the influence of an individual's attitude toward a specific destination website and their willingness to engage in online co-creation experiences on their intention to visit that destination. To this end, a self-administered questionnaire was provided to a convenient sample of 261 business students in Cyprus for completion following navigation of the destination website, either Helsinki (https://www.myhelsinki.fi/) or Copenhagen (https://www.visitcopenhagen.com/). The two destinations were selected from a list of European capital cities based on the results of a preliminary survey of participants. The survey indicated that the participants had not previously visited these cities and did not intend to do so within the next five years, thus eliminating any potential bias. Furthermore, participants who had prior experience with the websites were excluded from the study.

The questionnaire consisted of eleven items. The first three questions were demographic (gender, age, and frequency of travel), while the rest were related to the three main variables of the study. Attitude toward the destination website (ATT) and willingness to engage in online co-creation experiences (WEC) were measured with three items each, borrowed from Jiménez-Barreto and Campo-Martínez [5]; while

intention to visit the actual destination (IVS) was measured with two items borrowed from Noh and Vogt [21]. The main variables were measured with a five-point Likert scale from 1 = totally disagree to 5 = totally agree.

4 Findings

A total of 261 students participated in the study. The majority of the participants belonged to Generation Z. Among them, 126 (48%) were males, while 135 (52%) were females. In addition, 4 (2%) of the participants travel more than 5 times per year, 35 (13%) participants travel 4–5 times, 94 (36%) participants travel 2–3 times, 65 (25%) participants travel 1 time, while 63 (24%) participants travel less than 1 time. Regarding the destinations, 137 (52.5%) questionnaires were about Helsinki and 124 (47.5%) about Copenhagen.

A series of reliability and validity tests were conducted (Table 1), which indicate that the latent variables of our study are appropriate for further analysis.

A statistical analysis of the two destination groups revealed no significant difference between them. Consequently, the two groups were analyzed together. The correlation matrix (Table 2) shows that the independent variable IVS has a significant positive correlation with ATT ($r = 0.47, p < 0.001$), WEC ($r = 0.41, p < 0.001$), and frequency of travel (FRQ) ($r = 0.14, p < 0.05$). However, IVS is not significantly correlated with gender (GND) ($r = 0.12, p > 0.05$).

Multiple regression analyses were performed to test the hypotheses developed (Table 3). Model 2 shows that ATT ($\beta = 0.49, p < 0.001$) has a significant positive effect on IVS; therefore, H1 is supported. For H2, we used Baron and Kenny's [22] mediation test. According to Baron and Kenny [22], the independent variable, in our case ATT, must have a significant effect on the dependent variable IVS, which is true based on Model 2. In addition, the independent variable must have a significant effect on the mediator. Model 3 shows that ATT ($\beta = 13.04, p < 0.001$) has a significant

Table 1 Factor loadings, CR, AVE, Cronbach's alpha and Square Root of AVE

Variables	Items	Factor Loadings	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's alpha	Square Root of AVE
ATT	ATT1	0.92	0.96	0.88	0.93	0.94
	ATT2	0.95				
	ATT3	0.94				
WEC	WEC1	0.76	0.88	0.70	0.79	0.84
	WEC2	0.89				
	WEC3	0.86				
IVS	IVS1	0.96	0.96	0.92	0.93	0.96
	IVS2	0.96				

Table 2 Correlation matrix

Variables	IVS	ATT	WEC	GND	FRQ
IVS	–				
ATT	0.47***	–			
WEC	0.41***	0.59***	–		
GND	0.12	0.02	−0.08	–	
FRQ	0.14*	−0.02	0.01	0.05	–

Note * $p < 0.05$; *** $p < 0.001$

positive effect on WEC. Finally, the mediator must have a significant effect on the dependent variable. This is the case as WEC ($\beta = 0.18$, $p < 0.01$) has a significant positive effect on IVS. Since the three criteria are met, H2 is supported.

Table 3 Multiple regression analyses

Independent variables	Dependent variables			
	Intention to Visit (IVS)	Intention to Visit (IVS)	Willingness to engage in online co-creation experiences (WEC)	Intention to Visit (IVS)
	Model 1	Model 2	Model 3	Model 4
Control path				
FRQ	0.14 (2.27)*	0.14 (2.70)**	0.01 (0.22)	0.14 (2.69)**
Direct effect path				
ATT		0.49 (9.22)***	0.63 (13.04)***	0.38 (5.54)***
Mediating path				
WEC				0.18 (2.70)**
Goodness-of-fit statistics				
R^2	0.02	0.26	0.40	0.28
F	5.16	45.95	85.08	33.81
VIF	1.00	1.00	1.00	1.44

Note Standardized coefficients are outside parentheses. t-values are reported in parentheses. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5 Discussion and Conclusion

The aim of this study is to examine the role of users' attitude toward destination website and their willingness to engage in online co-creation experiences on their intention to visit the destination. The results show that both attitude and willingness to engage in co-creation has a significant positive effect on the intention to visit the destination. Users who perceive the website as good and they like it are more likely to state that they are going to visit the destination. This finding is in line with Loureiro [16] who examined the relationship between user's attitude toward a DMDMO website and intention to visit the destination.

In the same strand, our results show that users who are willing to share content on the website and request information from the website are more likely to state that they are going to visit the destination. This finding supports the study by Lam et al. [20] who reveal a positive effect of platform co-creation experience on travelers' satisfaction of the destination. Finally, our results demonstrate that users who have a positive attitude toward the destination website have a higher willingness for co-creation experiences. This finding is in accordance with the results of Jiménez-Barreto and Campo-Martínez [5].

The findings of this study offer substantial theoretical implications for the understanding of user engagement and its impact on travel decision-making processes in the digital tourism domain. The study builds upon existing frameworks by underscoring the importance of user willingness to engage in co-creation activities, thereby enriching the existing literature on digital engagement and co-creation in tourism. This integrated perspective provides a more comprehensive understanding of the relationship between user attitudes, co-creation, and travel intentions, establishing a valuable foundation for future research in the domain of digital tourism and destination marketing.

The practical implications of this study are significant for destination marketers and policymakers seeking to enhance user engagement and stimulate tourism through digital platforms. The research highlights the importance of DDMMOs fostering positive user experiences on their websites, as this directly influences potential travelers' intentions to visit. By prioritizing website quality and user-friendly interfaces, DDMMOs can effectively enhance positive attitudes toward their destinations. Furthermore, encouraging online co-creation activities, such as content sharing and interactive engagement, can significantly strengthen users' connection to the destination, thereby increasing visitation rates.

A significant limitation of this study is that the sample was restricted to students in Cyprus. Given the pivotal role of cultural characteristics and values [23, 24], future research should examine individuals from other countries to test the present results. Furthermore, future research should incorporate additional variables into the model, such as the cognitive and affective image, perceived risk [21], user satisfaction [25], and the influence of other industries on destination perceptions, including the film and fashion industries [26].

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News Paywalls: Greek Audiences' Attitudes Toward Paying for Online Newspapers and Magazines

Aikaterini Stavrianea, Athanasios Papathanasopoulos, Christina Georgopoulou, Irene Kamenidou, and Spyridon Mamalis

Abstract The significant shift toward the consumption of news media content on online platforms presents considerable challenges for news media organizations. Online news providers face challenges in enticing audiences to read content behind their paywalls, aiming to enhance advertising revenue with additional income. This raises important questions regarding consumer perceptions of paying for online news content that was previously accessible at no cost, as well as how these influence their payment behavior. The current study examines the perceptions of Greek users regarding paywalls of media organization and explores their preferences and the factors that are associated with the intention to buy content. Quantitative research on a convenient sample ($N = 280$) was used with an online questionnaire. The findings of the research reveal the audiences' preferences regarding the type of news content, the factors that influence their intention to purchase and the role that trust toward the online news provider plays. The results have both theoretical implications as they add to the academic research in the field and provide managerial guidelines for online media organizations who need such information to better understand consumers' needs and plan marketing strategies and tactics to make their customers more willing to pay for news content.

Keywords Paywalls · Online Newspapers and Magazines · Marketing Communications

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1 Introduction

The significant shift toward the distribution and consumption of news media content on online platforms presents considerable challenges for media organizations [1]. This is largely due to the longstanding practice of offering a substantial amount of digital journalistic content for free, relying on advertising revenue rather than distribution income to sustain operations. The assumption was that traditional subscription or pay-per-view models would not apply to online news, given the predominant "freebie" mentality [2]. However, many providers now face the challenge of rendering their online products profitable, especially given the significant investments required by digitalization [1]. Online news media providers face challenges in enticing audiences to read content behind their paywalls, aiming to enhance advertising revenue with additional income.

In Greece, even though news media organizations have begun to incorporate this change, they have been very slow in adopting such models. For this reason, the current study investigates the underexplored Greek audiences' attitudes toward paywalls and their willingness to pay in regard to the type of news content they most value. Additionally, the current research examines the level of trust the audience has toward media that employ such subscription models.

2 Literature Review

The digital transformation of the news media has significantly impacted production, distribution, monetization and consumption of news content. News publishers have experienced substantial declines in revenue from traditional sources, e.g., subscriptions and advertising [3]. Additionally, the initial availability of free digital news content on the internet has cultivated a "free mentality" among consumers [4], leading to a low willingness to pay for news [1]. As online advertising revenue has not been able to compensate for lost revenue, news media organizations have turned to digital paywalls as a means of monetizing content. Paywalls regulate users' access to news by distinguishing between free and paid content [3, 5]. Incorporated into the publisher's IT infrastructure, paywall systems function by identifying users and determining their access to content [3].

Although various paywall strategies exist and continue to evolve, particularly through the use of artificial intelligence, and algorithms [6, 7], their widespread implementation has raised concerns among scholars regarding their broader societal implications and potential impact on the public interest. For example, [8] and [9] argue that paywalls create a division between the general audiences and wealthier ones who can afford access to high-value news content. Consequently, paywalls may challenge the principle of internet openness by excluding those unable to afford "such subscriptions" [8, p. 7], and this is a societal concern that has to be taken into consideration Furthermore, the commercialization of news production and dissemination

through paywalls may restrict the diversity of perspectives presented in the news, ultimately limiting the range of views available to audiences [7–9].

Previous research has explored various factors and attitudes related to paying for digital news, provided insights into the general news consumption habits of younger audiences [10–12], investigated in qualitative studies users' motivations and reasons for not subscribing [12, 13], examined users across different age groups and platforms [14], focused on specific newspapers [15, 16], or concentrated on individuals who either do not engage much with news or actively avoid it [13, 17]. Still there is the need for better understanding of how potential subscribers perceive news subscription services [12].

3 Materials and Methods

Data were collected online, and a structured questionnaire—developed through extensive literature review—was used as pertaining questions to address the attitudes toward paywalls, the type of content they would be willing to pay for and the level of trust toward media that use such practices. All items were rated on a 5-point Likert scale. Also, socioeconomic and demographic characteristics of participants were reported A non-probability mix-method approach employing convenience and snowball sampling was utilized. The questionnaires' link was active from July 1st to July 30th, 2024. A sample of a convenient sample of 280 participants were used for analysis (SPSS ver.29). Data analysis included descriptive statistics.

4 Results-Discussion

4.1 Sample Profile

The analysis revealed that males consisted of 45.1% of the sample and females consisted of 54.9%. 58% of the participants were 18–30 years old, 14.3% were 31–35 years old, 15.4% were 36–45 years old and 13.1 were over 46 years old. Most of the participants live in urban areas (94.3%). Additionally, participants have net monthly personal income in euros, up to 1000 (66.4.7%), 1001–1500 euros (15.7%) and over 1501 euros (17.9%).

4.2 Results

Participants were requested to report how often they are getting informed from online media. 79.6% of the respondents stated that they use online media to get informed

frequently and very frequently, while an additional 14.3% answered that they are getting informed sometimes from online media. Furthermore, regarding the different sources that participants use to get informed online, 23.9% answered they prefer Facebook, 61.4% answered they use Instagram, 43.6% prefer the TikTok, 16.1% use the platform X and 50.7% prefer news website and news applications (7.9%).

Furthermore, respondents revealed that they prefer to get informed from online news media rather than traditional ones, mainly because of the ease of use (e.g., smartphones) (51.4%), the free content (15%), the fast rotation of content (10.4%) and frequent news updates (16.1%). Regarding the type of content that they think it is worth paying for, 43.2 of the respondents stated content related to entertainment, 33.9% investigative journalism, 23.6% interviews, 18.2% news, 9.6% opinions, 8.6% reviews and 8.2% variety content. Moreover, 77.8% of the respondents stated that it is important and very important to have access to quality content.

When asked about the reasons they would not purchase news content through paywalls, 44.6% of the respondents answered that they would prefer the free content available, 27.9% because of the price, while 28.6% stated that they would like additional incentives to do so. Finally, 11.1% of them would not purchase news content because of the lack of quality content, and 8.9% because of the procedure required.

On the contrary, when asked about the reasons they would purchase news content through paywalls, 47.1% of the respondents answered that they would purchase because of the unique content, 37.9% because of personal interest in the topic, 25.1% because of the high-quality journalism, investigative journalism (22.9%), in-depth coverage of the subject (17.9%), experts' opinions (12.5%) and support on the journalistic work (8.2).

When asked about the level of trust toward the media that use paywalls, 41.4% of the respondents answered that they neither trust nor distrust media that support paywalls, 40.7% are more reluctant toward these types of news media and 17.9% are positive or very positive in matters of trust toward media that use paywalls. Finally, when asked if they believe that such initiatives would be successful in a greater scale in Greece, 13.4% were positive or very positive, 33.2% neither agreed nor disagreed and 53.6% were reluctant or very reluctant about the success of such practices.

5 Conclusion—Implementations

This study expands the existing research by offering a comprehensive analysis of consumers' attitudes toward paid online news, their attitudes regarding trust toward the media that offer such options, and the factors underlying their willingness to pay. It contributes both to the academic field of journalism and media economics and to the practical field of media management and marketing [11, 12]. By considering the specific reasoning of consumers, the study also offers practical recommendations for news media organizations.

The findings of the research showed that the majority of Greek consumers are being informed through the internet and social media platforms. This trend is being

observed because of the ease of using online platforms through mobile apps, the regular updates to online content and the free use of these platforms. However, even if paywalls are not currently well integrated into the Greek mentality, the respondents of the research stated that they would purchase journalistic content that would be unique, of high quality, containing in depth analysis or that has applied investigative journalism.

Two additional elements affecting the respondents' willingness to pay for paywalls are the reasonable prices and additional promotional incentives that news media organizations would offer. The combination of high-quality content and creating economic incentives for consumers may constitute a powerful marketing and communications strategy for Greek news media organizations—in order for them to develop new business practices [1, 3].

6 Limitations

The present study increases our knowledge regarding the attitudes of the Greek audience toward their intention to pay for news content through paywalls and the factors that influence their decision. Therefore, it provides with insight that Greek news media organizations could apply these findings to formulate marketing strategies and communications promoting their paywalls content. However, a key limitation of the present study stems from the non-probability sampling method (conducted online), which limits the ability to generalize the findings. Additionally, demographic factors such as age were not examined in this research. It is important to note that these results are preliminary and part of an ongoing study.

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Evolving Dynamics of Advertising Within the Print and Digital Press Sectors of South European Model Countries

Athanasios Papathanasopoulos and Aikaterini Stavrianea

Abstract This study explores advertising dynamics within the print and digital press sectors in Southern European countries—France, Greece, Italy, Portugal, and Spain—between 2017 and 2023, using Hallin and Mancini's Polarized Pluralist Model as classification. The research addresses three main questions: the factors influencing advertising expenditure, the primary revenue drivers in the press industry, and the comparative performance of digital versus print sectors in terms of revenue and readership. The study uses data sourced from Statista and employs descriptive statistics and Two-Stage Least Squares (2SLS) estimation models to analyze advertising expenditure and revenue dynamics. Our findings reveal that digital press revenue and readership significantly boost digital advertising expenditures, while print advertising relies heavily on print readership and faces challenges due to declining audience numbers. Additionally, the study highlights that digital press platforms are outperforming print media in both revenue and readership, reflecting a broader shift towards digital content consumption. The study also reveals a notable positive relationship between print press revenue and digital press revenue, suggesting that strong performance in print media can complement and support digital growth within the same media organizations.

Keywords Media Advertising · Media Press · South Europe

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1 Introduction

The distribution of news has undergone a major transformation as the press has shifted from traditional print to digital formats. In the past, newspapers were the primary source of information, as the media relied heavily on print [1]. However, with the advent of digital technology and the internet, this model has changed dramatically, introducing new dynamics in news production, consumption, and monetization [2]. The transition to digital press has presented both opportunities and challenges. Media organizations have embraced online platforms, implemented paywalls, and introduced subscription models [3]. Despite these efforts, the financial stability of many news organizations remains at risk, as revenue from digital advertising often falls short of what print advertising once generated [2, 3]. Furthermore, although total revenue from digital subscriptions has grown, it still does not suffice to offset the decrease in print circulation [4].

In Southern Europe, the newspaper industry has faced a sharp decline in both advertising revenue and circulation over the last decade. From 2007 to 2015, advertising expenditure fell by about 51% in France, 43% in Portugal, 39% in Spain, and nearly 60% in Greece, while the Italian publishing sector saw a 50% drop in total advertising revenue. This decline led to the closure of many historic newspapers. Despite attempts to develop digital business models, a vast majority of publishers' revenue in these countries still relies on traditional print sources [5]. Furthermore, in Southern Europe, the press market is facing declining newspaper circulation and a significant shift towards digital media consumption. Economic factors, such as lower investment in media infrastructure and varying levels of government support, are impacting the market's sustainability. Digitalization has eroded traditional media business models, with new platforms reshaping content production and consumption [6].

This paper examines the advertising dynamics within the print and digital press sectors in Mediterranean/Southern European countries, following the Polarized Pluralist Model as defined by Hallin and Mancini [7]. This study examines France, Greece, Italy, Portugal, and Spain to identify factors affecting readership, revenue, consumer spending, and digital adoption, and their impact on advertising expenditures and press consumption. It highlights the differences in performance between digital and print sectors, as well as the challenges and opportunities for the press in these Mediterranean countries in the digital age.

2 Background Information

2.1 The Role of Advertising and the Market Transition from Print to Digital Press

Print press revenue has traditionally relied on two main sources: advertising and circulation sales, with advertising historically playing a crucial role in sustaining newspapers financially [1, 8]. However, the rise of digital media has significantly disrupted this model, leading to a decline in print revenues as readers and advertisers shift to digital platforms [8, 9]. Research indicates that while market concentration and competition in the print sector have some effects, direct competition from digital media is a major factor contributing to the reduction in print revenues [8, 9].

Digital platforms, offering free and easily accessible content, have drawn both readers and advertising dollars away from traditional print, especially with the widespread use of smartphones and other digital devices [3, 10]. This shift has been further accelerated by economic pressures, such as those from the COVID-19 pandemic, causing many print outlets to reduce publication frequency or cease operations altogether [3]. In response, newspapers have increasingly turned to digital editions and online content, exploring new revenue models like subscriptions and digital ads to counter the decline in print advertising revenue [11, 12]. *The New York Times*, for example, has successfully diversified its revenue through digital subscriptions, events, partnerships, and a strong online presence, helping it adapt to the digital age while maintaining its commitment to high-quality journalism [3].

Online newspapers primarily generate revenue through digital advertising, including banner ads, which continue to grow as digital readership expands [13]. Digital advertising offers advantages such as precise targeting, real-time feedback, and performance analytics, but also presents challenges like ad fatigue and ethical concerns [13, 14]. Despite the shift towards digital, print media continues to offer a unique sense of prestige that can positively influence consumer behavior, leading many brands to use both digital and print formats to reach a wider audience [12, 15].

As newspapers adapt to the digital age, trends suggest a move towards "PDF subscriptions" and other digital content monetization strategies, particularly among outlets with a strong offline presence [12, 16]. To thrive, online publishers should emphasize the unique benefits of digital subscriptions, such as personalized content, community engagement, and support for independent journalism, to attract and retain readers [17].

2.2 The Press Media Landscape in Southern Europe: The Mediterranean/Polarized Pluralist Model

The media systems of Southern Europe, including France, Italy, Spain, Greece, and Portugal, are characterized by Mancini and Hallin as the Mediterranean or Polarized Pluralist Model. This model contrasts with others like the Liberal or Democratic/Corporatist models, reflecting different historical, political, and socio-economic contexts. In Southern Europe, media outlets are often aligned with political parties, leading to a press landscape where political loyalties overshadow journalistic objectivity. The model is marked by weak commercial development, low newspaper circulation, and significant political influence over broadcasting [7].

Critics argue that the model's focus on political parallelism and weak professionalization overlooks other factors like regionalism and media ownership concentration [18]. McQuail suggests that the model needs to consider additional factors influencing media professionalism and country size [19]. Despite the model's limitations, the Southern European press faces significant challenges, including declining newspaper circulation and a shift towards digital media [5]. The 2008 financial crisis worsened these issues, leading to sharp declines in print sales and a push towards digital subscriptions. Due to the shift towards digital media, advertising revenues for traditional print continue to fall, impacting newspaper sustainability, even though the cost of print advertising remains high due to its perceived value for certain target audiences or limited availability [20].

Southern European media are now investing in digital infrastructure and experimenting with new revenue models like paywalls. However, converting digital readers into paid subscribers remains a challenge, as the region adapts more slowly to these changes compared to Northern Europe [6]. The rise of digital-only platforms reflects a broader shift towards online news, highlighting ongoing pressures on traditional media [21].

3 Methodology

This study investigates the advertising dynamics within the print and digital press sectors in Mediterranean/Southern European countries, focusing on France, Greece, Italy, Portugal, and Spain from 2017 to 2023. The guiding research questions are:

1. What factors influence advertising expenditure in the press industry?
2. What are the key drivers of revenue in the press industry?
3. Does the digital sector perform better in terms of revenue and readership compared to the print sector?

Data for this study were sourced from Statista, covering 2017 to 2023, including variables such as digital and print advertising expenditure, readership, internet usage, consumer spending, and revenues. Descriptive statistics and Two-Stage Least

Squares (2SLS) estimation models are employed to address potential endogeneity issues, which can arise from factors like omitted variable bias or measurement errors. Using 2SLS ensures more accurate representation of relationships, such as those between advertising expenditure and revenue performance, thereby providing robust results. Additionally, descriptive statistics compare digital and print sector performance in revenue and readership.

The regression models for analyzing advertising and revenue dynamics in the press industry can be summarized as follows:

$$\begin{aligned}\text{Independent Variable} &= \beta 0 + \beta 1(\text{Variable 1}) + \beta 2(\text{Variable 2}) \\ &\quad + \beta 3(\text{Variable 3}) + \ldots + \beta \text{n (Variable n)} +\end{aligned}$$

4 Results

Estimation Models (Table 1) highlight key dynamics in advertising and revenue for digital and print media in the region. For digital press, digital revenue ($\beta = 1.111$) significantly boosts advertising spending, suggesting that monetization strategies like paywalls and subscriptions attract more investments. Conversely, consumer spending ($\beta = -0.132$) and print advertising ($\beta = -0.238$) negatively impact digital ad spending, showing competition for advertising budgets between digital and traditional media.

In the print sector, higher print readership ($\beta = 0.967$) strongly correlates with increased print advertising, while greater digital readership ($\beta = -0.442$) decreases print ad attractiveness. Consumer spending ($\beta = 0.179$) also positively affects print advertising, though less significantly. Digital Revenue is primarily driven by digital advertising ($\beta = 0.752$), while the negative correlation with internet users ($\beta = -0.337$) suggests market saturation. A positive relationship between print and digital revenues ($\beta = 0.106$) indicates a complementary dynamic between the two, rather than competition. Print revenue remains heavily dependent on print advertising ($\beta = 1.281$), underscoring the challenges faced in diversifying income sources.

Between 2017 and 2023, digital media consumption and revenue in Mediterranean/Southern European countries grew significantly (Table 2). Digital advertising increased from €1.7 billion to €2.5 billion, while print advertising dropped from €4.9 billion to €2.8 billion. Digital revenue rose from €2.5 billion to €3.8 billion, while print revenue fell from €13.4 billion to €9.0 billion. Digital readership grew from 42.8 million to 55.6 million, while print readership declined from 105 million to 81.5 million, highlighting a shift from print to digital formats. The data shows a clear shift to digital media, with digital advertising, revenue, and readership all rising, while print counterparts are declining.

Table 1. 2SLS estimation models

Variables	(1) Digital Press Advertising	(2) Print Press Advertising	(3) Digital Press Revenue	(4) Print Press Revenue
Constant	176.029 (2.489)**	−412.381 (−2.714)**	−281.190 (−3.959)	−1280.745 (-0.901) NS
Internet Users	0.015 (0.170) NS	–	−0.337 (−2.128)**	–
Print Press Readers	0.215 (1.602) NS	0.967 (10.810)*	–	−0.515 (−1.500) NS
Consumer Spending	−0.132 (-2.595)**	0.179 (2.576)**	0.135 (3.771)*	0.150 (0.956) NS
Print Press Advertising	−2.38 (-2.304)**	–	–	1.1281 (3.849)*
Digital Press Revenue	1.111 (20.715)*	–	–	–
Digital Press Readers	–	−0.442 (−3.622)*	0.374 (1.895) NS	–
Digital Press Advertising	–	0.144 (1.678) NS	0.752 (12.103)	−0.018 (−0.102) NS
Print Press Revenue	–	0.170 (2.761)**	0.106 (3.643)*	–
R Squared	0.988	0.973	0.992	0.805

* = significant at 1%, ** = significant at 5%, NS = not significant, t-statistics are in parentheses. The dependent variable is in parenthesis in each model.

Table 2 Overview of the total Digital and Print Advertising, Revenue, and Readership (2017–2023) in Mediterranean/South European Countries

Year	Digital Advertising (Billions)	Print Advertising (Billions)	Digital Revenue (Billions)	Print Revenue (Billions)	Digital Readers (Millions)	Print Readers (Millions)
2017	1.7	4.9	2.5	13.4	42.8	105
2018	1.6	4.4	2.5	11.5	42.3	101
2019	1.8	4.2	2.7	16.6	43.4	95.3
2020	1.7	3.2	2.5	10.5	48.6	82
2021	2.0	2.9	2.9	9.7	49.7	82.3
2022	2.2	2.9	3.2	9.0	53.6	79.8
2023	2.5	2.8	3.8	9.0	55.6	81.5

5 Discussion and Concluding Remarks

An interesting insight from the results is the complex relationship between digital and print media, which reveals that they may not be purely competitive but in effect complementary. The positive correlation between print press revenue and digital press revenue suggests that strong performance in print media can support and enhance digital operations. Conversely, the negative relationship between digital and print advertising expenditures indicates that as digital media grows, it competes more intensely for advertising revenues, impacting traditional print media. This dynamic underscores that while digital and print media are interconnected, they also vie for limited advertising budgets. Media organizations that successfully integrate both platforms could navigate this evolving landscape more effectively.

In our first research question, we aimed to explore the factors that influence advertising expenditure in the press industry. Our findings, reveal that in the digital press sector, digital revenue significantly boosts advertising expenditures indicating that successful monetization strategies, such as paywalls, ad banners and subscriptions, attract more advertising investment [13]. Furthermore, higher digital readership levels correspond to increased digital advertising spending; a trend consistent with the existing literature that highlights the growing importance of digital platforms for advertisers [11, 17]. Conversely, the decline in print readership is associated with reduced advertising revenue for traditional media, reinforcing the idea that the digital transformation is reshaping the advertising landscape [2].

In our second research question, we sought to identify the key drivers of revenue in the press industry. The study found that digital advertising is a critical revenue driver for the digital press sector. The strong positive relationship between them suggests that digital platforms are successfully monetizing their content through various methods such as subscriptions, paywalls, and digital ads [13]. For the print press sector, revenue relies heavily on print advertising emphasizing the traditional dependence of print media on advertising as a primary revenue stream. An interesting fact is the positive relationship between print press revenue and digital press revenue, suggesting that print and digital revenues can be complementary, with strong print performance supporting digital growth within media organizations. Some media organizations like *The New York Times* are operating in this model [3].

Finally, we aimed to compare the performance of the digital and print sectors in terms of revenue and readership. The results indicate that the digital sector outperforms the print sector on both fronts. The increase in digital revenue and the decline in print readership highlight a significant shift in consumer preferences towards digital content, which is often more accessible and convenient. This trend is consistent with the broader industry movement towards digitalization, as observed in previous research [10, 11].

This study has utilized Hallin and Mancini's "Polarized Pluralist Model" to analyze advertising dynamics in the press industry across Southern Europe [7]. While the model has been critiqued for its limited attention to factors such as country size and media ownership concentration [19] it remains relevant for understanding

the political and economic influences on media practices in these countries and for distinguishing based on shared characteristics. Our paper reaffirms the model's applicability, particularly in classified the European countries when studying the media consumption.

However, the study does have limitations. The reliance on data from 2017 to 2023 may not fully reflect the nuanced realities of the media landscape in these countries. Furthermore, there are other models like this of Perusko's that classified the media in the European Countries in a different way [21]. Perusko's media system models—South-Eastern European, Nordic, and European Mainstream—differ from Hallin and Mancini's frameworks in their emphasis on political influence and media professionalism. [21]. Future research could explore how advertising dynamics and press growth vary across these models, providing valuable insights into media system development.

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Marketing in Turbulent Times: The Impact of Materialistic Values on Consumer Behavior During Economic Crisis



Aikaterini Stavrianea, Irene Kamenidou, Spyridon Mamalis, and Ifigeneia Mylona

Abstract During periods of economic crisis, consumers' behavior typically changes; however, research on financial crises predominantly focuses on consumers' spending behavior, often neglecting other personal characteristics. The purpose of this research is to examine the impact of the economic crisis on consumer behavior and explore how personal characteristics such as materialistic values may influence and to which extent consumer response in periods of economic crisis. Using quantitative research on a convenient sample ($N = 587$) the authors develop a structural equation model to assess the effect of materialism on consumers' behavior in periods of financial crisis. The findings of the research show that materialism affects some of the consumers' adjustments to key marketing stimuli (i.e. product, promotions). The results have both theoretical implications as they add to the marketing research in an underexplored field and provide managerial guidelines for marketers who need such information to better understand consumers' needs and plan marketing strategies and tactics during hazardous times.

Keywords Economic Crisis · Materialism · Marketing Communications

1 Introduction

In the last few years, we witnessed some serious economic crisis in different areas of the world. A crisis of great severity and persistence, with an intensity unfamiliar to any other in the recent years is the Greek economic crisis and the following recession due to the Covid-19 pandemic lockdown. The global economy has been profoundly impacted by COVID-19, leading to widespread economic recessions, the collapse of

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various industries and businesses, and a consistent rise in unemployment rates [1]. An economic crisis can be a painful situation that affects the life of the family and is associated with a significant and unexpected deterioration of income [2]. Still, a limited body of research has studied consumers' behavior during periods of economic crisis. [2–4] and this research area, needs to be further explored [4–6]. Furthermore, research focused on financial crisis examines mainly consumers' spending behavior, ignoring other personal characteristics [4, 7].

Changes in consumer behavior that originate from an economic crisis may be moderated by personality characteristics [8]. Materialism, the central focus that the acquisition of goods has on the lives of many people [8–10].

The present study aims to cover the need for a better understanding of the influence of materialistic values on Greek consumers' behavior towards marketing stimuli, at a period of hazardous economic condition due to the Covid-19 pandemic lockdown. By addressing this unexploited research area, the study aims to contribute both at a theoretical, and at a practical level.

2 Literature Review

The recent Covid-19 pandemic that followed, resulted in adverse socio-economic and financial conditions like the previous Greek economic crisis [11]. For instance, the US GPD shrank by 4.8% in the first quarter of 2020 while the GPD in the European Union decreased by 3.8% for the same period [12].

Previous research has resulted that in financial crisis situations, consumers spend less, reduce impulse buying, postpone purchases, focus on cheap and necessary products, compare prices, change brands for better prices and offers [2, 13–17]. More recently, researchers explored consumer behavior changes due to the economic crisis resulting in the Covid-19 pandemic and supported that consumer increased the purchase of basic goods while decreased the purchase of non-basic ones [1, 4, 18–20].

Limited research applies to the Greek economic crises and consumer behavior. Researchers examined factors that can affect the consumption of Greek domestic food products and pro-environmental behavior during the crisis. Other research focused on counterfeit purchase behavior, food consumption patterns and brand switching and purchase intention decisions in the Greek banking sector [5, 11, 21–25].

The concept of materialism attracts the attention of researchers around the world [4, 10]. In consumer behavior literature, materialism is defined as the central focus that the acquisition of goods has on the lives of many people, the importance people place on them as means to reach their goals in life and the end states that are important to them [8–10, 26–29]. Research has shown that materialism is also closely connected to anxiety and depression as well as with the acquisition of goods for prestige and the status they bring [28, 30, 31].

Studies have shown the willingness of people to work more hours to be able to acquire more goods, often with the expectation of changing their lives [10, 32]. Since this is the guiding force for materialistic peoples' choices and behaviors, one can

assume that materialism will affect consumption and, also that people who value greatly material possessions will behave in a different way from non-materialistic ones. [8] suggested that some personality characteristics such as materialism are sensitive to economic changes and therefore may influence the impact of an economic crisis on consumers and the way that consumers cope with the new situation. [31] found that materialism can facilitate consumers to cope with stressful situations such as crises.

Materialists are seen as self-centered and unconcerned about other people. Previous research has shown that materialists prefer to keep their resources for their own needs and are more reluctant to share with others [8, 26, 27, 33, 34]. [34] and [12] argued that materialistic consumers buy more since they believe that this will make them happier, express how successful they are and improve their self-esteem. In this term, one could assess that the impact of the economic crisis on materialistic consumers could be harsher and more frustrating than it will be for other groups.

Therefore, it is hypothesized that:

H1: The greater the level of materialism, the greater the general impact (eg., job insecurity, frustration about financial matters) of the economic crisis on that person.

H2: The greater the level of materialism, the less adjustments the customer will make regarding the product.

H3: The greater the level of materialism, the less adjustments the customer will make regarding price.

H 4: The greater the level of materialism, the less adjustments the customer will make regarding promotion.

H 5: The greater the level of materialism, the less adjustments the customer will make regarding distribution.

3 Materials and Methods

A structured questionnaire was used pertaining items by [14] and [8] to address the impact of the crisis on consumer and adjustments on consumption behavior. For the measurement of materialistic values, items from the MVS scale of [27] were used. A non-probability mix-method approach employing convenience and snowball sampling was utilized. The questionnaires' link was active from March 1st to May 30th, 2021. Reliability analysis of the scales produced a Cronbach a > 0.7. Descriptive statistics and Structural equation modeling (SEM) were used to access the results.

A sample of 587 individuals residing in Greece was recruited. From the 587 respondents, 256 (44%) were men, and 331 (56%) were women. As far as their age, 16.9% were 18–25 years old; 22.5% were from 26 to 35 years of age; 23.8% were between 36 to 45 years old; 20.1% were 46–55 years old; 12.4 were 56–65 years old and 4.3% were 66 years old and above.

4 Results

After examining convergent and discriminant validity, structural equation modeling (SEM) was used to evaluate construct validity. The model indicated a good fit. X2 was 1.095 (df 260, $p = 0.000$). The root mean square error of approximation (RMSEA) was 0.074 as suggested by [35]. The GFI and AGFI indices were 0.86 and 0.83 respectively. The effect of materialism on the general impact of the economic crisis -contrary to our expectations- was non-significant ($r = 0.035$, $p > 0.05$). Therefore, H1 which stated that the more materialistic someone is, the greatest the impact of the financial crisis would be, is rejected. This finding may be due to the severity and persistence of the crisis, which seems to have affected greatly most of the population. The effect of materialism on product adjustments showed a strong, statistically significant but negative relation ($r = -0.148$, $p < 0.05$). The result indicates that materialistic people are less willing to alter their preferences regarding the products they prefer. Materialistic consumers tend to resist switching to private label products or pay more value to the durability of the product. Therefore, H2 is supported.

Results indicated the positive and statistically significant effect of materialism on promotional adjustments ($r = 0.166$, $p < 0.05$). Therefore, the findings suggest that materialism has a strong effect on paying attention to advertisements that offer information about the product's benefits or asking the salesperson more questions than in the past, before buying a product. Thus, H4 that pertained that materialistic consumers will not make as many adjustments regarding the promotional activities was not supported. One the contrary, a higher materialism level seems to urge consumers to make more informed decisions and pay attention to all promotional opportunities. H3 concerned the price adjustments of materialistic consumers. Results indicated that the effect of materialism on price adjustments is negative but non-significant ($r = -0.044$, $p > 0.05$) and therefore H3 is not supported. Contrary to our predictions, materialistic people do not make fewer adjustments regarding the prices, are careful with money and look for sales. Finally, H5 suggested that materialistic people will make fewer adjustments regarding distribution. Results indicated that the effect of materialism on distributional adjustments is negative but non-significant ($r = -0.003$, $p > 0.05$) and, therefore, H5 is not supported. It seems that materialistic people do not make fewer adjustments than non-materialistic ones regarding the areas or the types of stores they prefer (Fig. 1).

5 Discussion- Implementations

Consumers' adjustments and behavior in periods of severe economic crisis is a topic scarcely addressed. Nevertheless, it consists an area of great interest and importance, both at a theoretical as well as at a managerial level. A better understanding of consumer behavior during a crisis period can add to our knowledge on how to respond

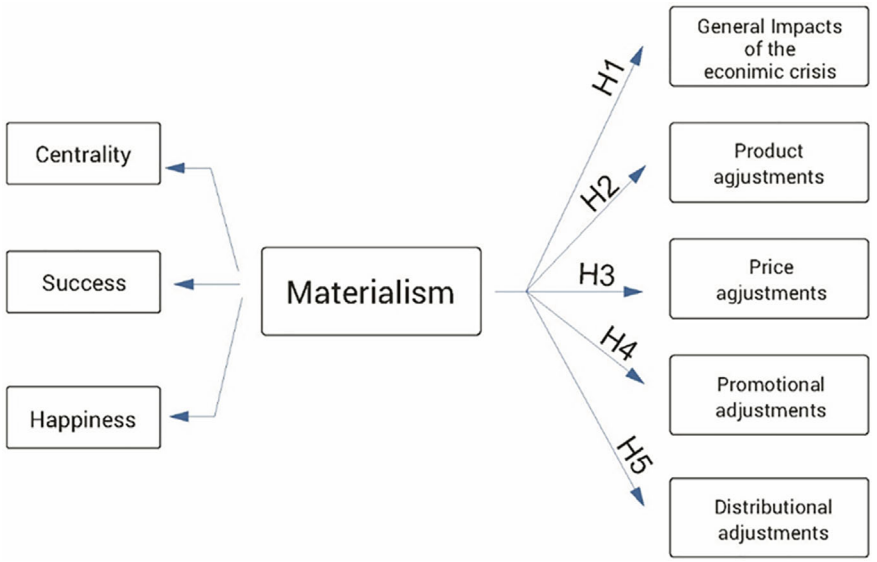


Fig. 1 The conceptual model

in similar future situations [4]. Thus, businesses can form strategic plans and better meet consumer attitudes and needs.

The purpose of this study was to shed light on the effects of materialistic values on the impact and the adjustments to marketing stimuli of the Greek consumers due to the severe economic recession related to the Covid-19 pandemic.

The research is significant both practically and academically, as it examines the unexploited association between the impact of the crisis on consumers and their reactions, with personal characteristics, such as their materialistic values. Results indicated that the effects of this hazardous economic situation on consumers were so profound that even people who appreciated more material goods had adjusted to the new situation. Materialistic people were found to be more resilient in making changes regarding product decisions (less willing to change into private labels, choosing a product based on durability) but make more adjustments regarding promotional decisions [31]. These people rely a lot on communication and want to get as much information as possible before making a purchase by asking the salespersons or by paying attention to informative advertising) and this is an element that marketing managers should take into consideration and focus on planning effective communications. A closer examination of the influence that personality characteristics have on the impact of the economic crisis to Greek consumers and on their behavior, provides valuable guidance to all those who must make informed decisions regarding their target customers [1, 2]. Thus, marketing practitioners can implement strategies and tactics that will better meet the needs of the consumers and help their companies survive in turbulent periods.

6 Conclusions-Limitations

The present study increases our knowledge regarding the effect of materialistic values on consumer behavior during periods of severe economic recession. The main constraint of the current study originates from the sampling method (non-probability; online) which restricts the generalization of the results. Future research should employ probability sampling and test the results in different countries since materialistic values may differ in different cultures. Future research should consider examining materialism in combination with other personal factors and demographic characteristics.

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Segmentation Based on Motives for Attending a Wine Festival in Greece

Spyridon Mamalis, Irene Kamenidou, and Aikaterini Stavrianea

Abstract Wine festivals are an integrated part of wine tourism. This study presents the preliminary results of an ongoing research that deals with motives to visit a wine festival in Greece and segments wine festival attendees based on their motives. Through an online non-probability data collection method with the help of a questionnaire, a convenient sample of 787 wine festival visitors was collected. Twenty-eight motives were rated on a 7-point Likert scale. Main motives were to try local wine (MV = 5.79), to have fun (MV = 5.78) and to try a variety of different wines (MV = 5.70). Factor analysis of the 28 motives produced five factors accounting for 71.5% of total variance. These factors were named as "Tasting experience", "Sense of belonging" "Entertainment and fun", "Socializing", and "Family togetherness". K-means cluster analysis provided with three distinct groups of festival attendees based on their motives. The first cluster ($n = 348$) has as main motives to try local wine, have fun and socialize. The second cluster ($n = 261$) considers all factors as motives to attend a wine festival. Lastly, the third cluster ($n = 178$) considers trying local wines as their only motive (and neutral rated) to attend a wine festival. Implications of the results are discussed for wine festival organizers and wine festival marketing staff in order to increase tourist attendees and satisfaction.

Keywords Wine Tourism · Segmentation · Marketing Communications

1 Introduction

Wine tourism and wine festivals are fundamental mechanisms of the tourism sector in many wine-producing areas worldwide, contributing to the local economy directly and indirectly as well as in cultural preservation, social cohesion, sustainable tourism

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development, increase regional wine sales, stimulate wine tourism, and regional branding [1, 2].

According to the (Greek) law 4582/2018 [3] "Wine tourism is the special form of tourism that concerns the provision of reception, guided tours, hospitality and catering services in areas functionally integrated with winemaking or winemaking facilities (vineyards). These services are offered in combination with activities related to viticulture and wine production." Hall & Johnson [4, p. 73] define wine tourism as "visitation to vineyards, wineries, wine festivals and wine shows for which grape wine tasting and/or experiencing the attributes of a grape wine region are the prime motivating factors for visitors", therefore linking wine festivals directly to wine tourism making it part of the total tourism experience.

Wine festivals are significant in the wine tourism experience [5] and Park et al. [5] assess, knowing wine tourists' motives to attend a wine festival assists in developing a marketing strategy to create favourable experiences and satisfaction for targeted markets. On the other hand, Williams and Dossa [6] point out the need to explore the characteristics of wine tourist sub-groups, because motivations could differentiate subject to the visitor segment an individual is a member of [5].

Segmentation assists festival organizers to understand attendees' behaviour and allows them to develop and specific effective for each segment marketing strategies [7], though attention to wine festivals has been limited.

There are many studies that report motives for attending a wine festival in various regions that focus on wine tourism, though, there is a scarcity of studies referring to Greece. Nella & Christou [8] state that there is generally a limited number of empirical studies focusing on wine tourism in Europe, while these studies are extremely scarce in Greece; considering that Greece is a wine production country, therefore empirical studies on wine tourism are important.

Therefore, this research is exploratory in nature and investigates Greek tourists' motives to attend a wine festival and also groups attendees based on their motives and makes a theoretical contribution to the extant studies by providing new insight of wine attendees motives and their segments.

2 Literature Review

Motives to attend wine festivals has been extensively researched, as it is a crucial element of developing an effective marketing strategy for the wine tourism destination. Previous studies reveal that there is a plethora of motives for attending a wine festival. These can be grouped as social interaction and networking, cultural and heritage interests, sensory and experiential appeal, escape and relaxation, entertainment, learning and education and prestige and status [e.g., 9–13].

Segmentation studies on wine tourism (in general) based on motives have produced different segments. For example, Hernández et al. [14] found four groups of wine tourists (Mexico) based on their motives: the "Educational Segment", the "Entertainment Segment", the "Wine Focus Segment", and the "Aesthetic Segment".

Bruwer et al. [15] segmented wine tourist visitor's cellar doors based on motivation and destination image (Australia) and found five segments: "Wine learners", the "Dining Enthusiasts", the "Wine Buyers", the "Wine Enthusiasts", and the "Wine Connoisseurs".

As regards segmentation studies based exclusively on motivation to attend a wine festival, Shi, et al. [7] in their study ($n = 1{,}800$; China) found three clusters: the "wine-novice fest-newbies", the "occasional drinker fest-goers", and the "wine-lover fest-enthusiasts". Payini et al. [10] in their study in India with 400 wine festival attendees and based on their hedonic motivation identified two distinct segments and named those as "Elite Visitors" and the "Informal Visitors". Alebaki and Iakovidou [16] in their study ($n = 133$; Greece) found four groups: the "Wine lovers", the "Neophytes", the "Occasional visitors" and the "Hangers-on". Yuan et al. [17] found three different types of wine festival attendees ($n = 501$; Vintage Indiana Wine and Food Festival), based on their motives namely, "Wine Focusers", "Festivity Seekers", and "Hangers-On". Yuan et al. [18] in their segmentation of wine festival attendees' motives identified three segments the "Wine Focusers", the "Festivity Seekers", and the "Hangers-On".

3 Materials and Methods

Data were collected online with a questionnaire that was adopted from Payini et al. [10], Dodd et al. [12], and qualitative research via depth interviews with five participants. Motives incorporated 28 motivations for visiting a wine festival and were rated on a 7-point Likert scale. Also, socioeconomic and demographic characteristics of visitors were reported. A post-questionnaire development, qualitative research, validated the items of wine festival motivations and a pilot test established face validity. A sample of 787 wine festival participants were used for analysis (SPSS ver.29). Data analysis included descriptive statistics, factor and reliability analysis, and hierarchical and k-means cluster analysis for motivational segmentation.

4 Results

4.1 Sample Profile

The analysis revealed that the sample's profile is that males consisted of 54.1% of the sample and females consisted of 45.9%. Participants' birth year ranged from 1934–2005, while single and married attendees were almost equal in percentage (47.6% and 45.2% respectively). Additionally, most participants had at least a university degree (53.8%), lives in a city (74.6%), with their families (54.4%), receives a monthly

salary (65.4%), and has net monthly family income in euros, ranging from 1000.01–2000.00€ (35.7%).

4.2 Motives for Visiting a Wine Festival

Participants were requested to report when they had lastly visited a wine festival, 2.7% answered before 2016, 15.8% answered between the years 2016 to 2019, and 81.5% answered between the years 2020 to 2024. All of them (100%) reported that they visited a wine festival in Greece, while two reported that they also visited a wine festival in Italy.

Results revealed that from the 28 motives, all motives had mean value (MV) MV < 6.00. One half of the sample ($n = 14$) had: 5.00 < MV < 6.00, ten had 4.00 < MV < 5.00, and four had 3.00 < MV < 4.00. The three motives with the highest MV, were "To taste local wine" (MV = 5.79), "To have fun" (MV = 5.78) and "To taste a variety of different wine" (MV = 5.70). On the other hand, the three least motives for attending a wine festival were "To go because my friends went and so I wouldn't be alone" (MV = 3.61), "I feel like I belong to a group and I'm not alone" (MV = 3.78), and "To be among attractive people" (MV = 3.81).

4.3 Factor and Cluster Analysis

Factor analysis (Principal Component Analysis with varimax rotation) of the 28 motives produced five factors/dimensions accounting for 71.5% of total variance (TV). These factors were named as "Tasting experience" (16.8% TV), "Sense of belonging" (15.7%TV) "Entertainment and fun" (15.4%TV), "Socializing" (12.7%TV) and "Family togetherness" (10.9%TV). In factor analysis no item was discarded due to multiple loadings on factors or loading < 0.4. Cluster analysis implemented at first hierarchical cluster analysis to get a first "picture" of the segments that are meaningful, and then k-means cluster analysis was implemented producing four distinct factors (Table 1).

The first cluster is named "Sensory seekers" and is the largest cluster of all, describing 31.1% of the sample. This cluster has members that care mainly about the tasting experience of wine festivals. The second cluster are named as "Multi-purpose seekers" and describes 30.2% of the sample and consists of the demanding visitors, since all the dimensions constitute motives for attending a wine festival. The third cluster is named "Festivity Seekers", describes 19.8% of the wine festival attendees, and they are motivated to attend a wine festival for the entertainment and fun, tasting experience, and socialization. The fourth cluster is named as "Hangers-on" and describes 18.9% of the sample and consists of the demanding visitors, since all the dimensions do not really constitute motives for attending a wine festival.

Table 1 Results of the k-means cluster analysis

Factors/dimensions	Cl.1 $N = 244$	Cl. 2 $N = 238$	Cl. 3 $N = 156$	Cl.4 $N = 149$	ANOVA F	Sign p
Tasting experience	5.16	6.18	5.98	4.41	97.439	< 0.001
Sense of belonging	3.63	5.60	3.63	2.08	383.611	< 0.001
Entertainment and fun	4.74	6.12	6.08	3.87	301.835	< 0.001
Socializing	4.73	6.23	5.56	3.23	414.841	< 0.001
Family togetherness	4.67	5.98	2.90	2.22	676.748	< 0.001

"Hangers-on" are considered as the people that go to a wine festival without having any apparent interest for it [16].

5 Discussion—Conclusion—Implementations

The three motives with the highest MV, are "To taste local wine", "To have fun", and "To taste a variety of different wine". Both To taste local wine" and "To taste a variety of different wine" deal with wine tasting and are in line with previous studies [e.g., 10, 19, 20]. The second most agreed motive is to have fun. This is also in line with previous studies [e.g., 5, 19].

For all clusters, the tasting experience was rated as a first or second motive to attend a wine festival, secondly being having entertainment and fun. Therefore, since these two motives are very important for participants, wine festivals need to communicate wine diversity/tasting and provided entertainment. Entertainment as noted is a very significant motive for two of the four clusters for attending a wine festival, this find is in line with previous studies [e.g., 9]. Socializing was also rated high for two of the four clusters. Socializing is considered by previous studies as important factor in wine festival motivation. Getz [21, p. 144] asserts that wine festivals "facilitates socialising and appeals to escapism and novelty seeking". As to derived clusters, these are in line partially with previous studies. For example, the "Hangers-on" are found in other studies that reveal people that do not have motivation interest in wine festivals [16]. This group is similar to the "Hangers-on" group of Yuan et al. [17] and Yuan et al. [18]. The third cluster, the "Festivity Seekers" is quite similar to the "Festivity Seekers" of Yuan et al. [17] and Yuan et al. [19].

Based on the derived most significant motives and the segments of wine festival attendees, wine festival organizers should communicate the specific attributes of the wine festival per segment. Festival organizers must use integrated marketing tools to effectively, consistently, and thoroughly communicate all aspects of the festivals that can motivate prospect attendees and host communities. Online platforms, including festivals' websites and social media, offer an efficient way to share the wine festivals' attributes since they are cost-effective, have the ability to reach a wide audience and

create awareness. Also, effective communication, apart from a well-planned content focusing on motivational factors as well as proper media allocation must be timely and sufficiently funded so that communities of similar like interests can be created to exchange ideas [22–28] and not just attend because friends go to these festivals.

6 Limitations

The present study increases our knowledge regarding the motives of wine festival attendees and groups them based on their motives where there is a scarcity of studies especially in Greece. Therefore, it provides with insight that wine festival organizers and local officials may use to develop a marketing communication strategy for their wine festivals and products and services offered. The main constraint of the current study originates from the sampling method (non-probability; online) which restricts the generalization of the results. Also, other motives such as social status and education were not included in this study. Though, it must be taken into account, that these results are preliminary of ongoing research, therefore, the results presented here may be different from the final sample.

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The Evolution of Participatory City Branding: A Narrative Literature Review



Abderrahmane Mousstain and Ezzohra Belkadi

Abstract The concept of "city branding" emerged from various influences. It has shifted from focusing mainly on attracting people and businesses to involving more members of the community in a shared and collaborative way. This paradigm has undergone a significant transformation with the emergence of a user-centric approach, emphasizing co-creation and expanding the focus to encompass a broader spectrum of stakeholders. Thus, it redefined city branding as a more inclusive and collaborative process. This paper provides an extensive narrative literature review on the progression of participatory city branding (PCB). The study highlights a significant paradigm shift in citizen involvement within city branding, showing the movement from perceiving residents as passive consumers to recognizing them as proactive co-creators of place identity. This evolution is framed within broader theoretical frameworks, such as stakeholder theory and co-creation. This work provides a deeper understanding of the intricacies, challenges, and opportunities of PCB. It contributes to the growing literature on participatory approaches to place branding, offering crucial insights for policymakers, practitioners, and academics. By addressing the historical development, theoretical frameworks, and practical consequences of PCB. This paper stresses the necessity for inclusive, authentic, and resonant city brand identities in an increasingly competitive global environment.

Keywords Participatory City Branding · Place marketing · Evolution

1 Introduction

In the late twentieth century, globalization heightened competition among places, pushing countries, regions, and cities to create distinct identities [1]. This led to strategies enhancing their appeal to attract global resources like tourists, investors, and businesses [2]. Place promotion, dating back to the nineteenth century, established the groundwork for competitive advantages [3]. Modern place branding now

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focuses on image and reputation, targeting investment, talent, and tourism [4]. A comprehensive approach, considering economic, social, cultural, and environmental aspects, is vital [3]. Originating in the private sector, place marketing has expanded to cities in recent decades [5].

Place branding, a subfield of place marketing, focuses on shaping a place's image and identity. Francophone scholars view it as a strategic tool within place marketing [6], while Anglophone scholars see it as a distinct discipline [7]. Zenker and Braun [8] define it as a "network of associations in consumers' minds" influenced by both tangible and intangible elements.

City branding, shaped by national and place branding frameworks, has evolved through influences from tourism and leisure marketing [9]. The shift toward a user-centric, co-creation approach expands stakeholder engagement beyond traditional boundaries [10]. This paper explores the evolution of participatory city branding through a traditional narrative review.

2 Methodological Considerations

This study adopted a traditional narrative review methodology. While the search was guided by general terms like "participatory city branding," "collaborative city branding," and "inclusive city branding" a formal systematic database search was not conducted. Instead, relevant literature was identified through existing knowledge networks, seminal works, and references from key publications within the field.

In selecting articles, a primary criterion was the number of citations within the academic community. Recognizing that citation counts can serve as a proxy for impact and relevance, the review prioritized highly cited publications. This approach ensured the inclusion of foundational research that has significantly shaped the discourse on participatory city branding. However, more recent studies, even if less cited due to their recency, were also considered if they offered innovative perspectives or critical advancements in the field.

This methodological approach allowed for a comprehensive and interpretive review of the evolution of participatory city branding. By focusing on the most influential contributions, the analysis was able to provide a cohesive understanding of the field and its development over time.

3 Conceptualizing City Branding

City branding, emerging in the early 2000s, complements urban marketing by aligning city activities with target audiences' needs [11]. It involves the intentional symbolic representation of a city's information to create associations, enhancing its economic, political, and cultural value, and showcasing competitive advantages, history, and lifestyle [9, 12].

Unlike product branding, city branding involves numerous organizations, diverse stakeholders, and multiple target audiences, making it more complex [3, 13, 14]. It shares similarities with corporate branding, addressing multiple stakeholders and integrating social responsibility, but it differs in prioritizing the city's intrinsic identity [10]. City branding reflects the authentic identity of a place, rooted in historical, cultural, and economic characteristics, rather than relying solely on image creation [8, 14]. Additionally, place branding must cater to a broad range of stakeholders—visitors, investors, residents, and more—requiring a nuanced strategy compared to commercial branding's customer focus.

4 City Branding Literature: A Multidisciplinary Landscape

City branding is a multidisciplinary research area with diverse perspectives. Oguztimur and Akturan [15] categorize city branding into four main areas:

- Concept, Process, and Measurement: Theoretical foundations, implementation, and effectiveness.
- Branding Strategies: Approaches to managing city brands and their impact.
- Culture and Tourism: The role of cultural identity and tourism in shaping a city's image.
- Social Urbanism: How branding promotes social development.

Within the sub-domain of branding strategies, six thematic areas are identified: brand attributes, practices, event-based strategies, communication, online branding, and stakeholder studies.

The figure below summarizes the information presented above (Fig. 1):

Building upon the established multidisciplinarity and diverse research spheres within city branding, a crucial concept emerges: participative city branding (also referred to as inclusive city branding or collaborative city branding) [3, 8]. This

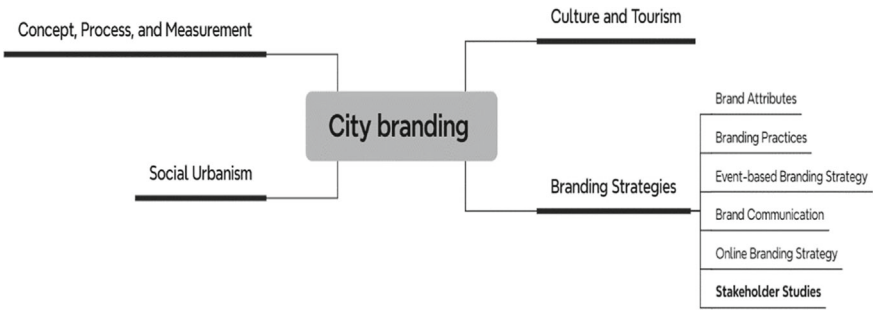


Fig. 1 A city branding literature categorization (Adapted from Senay Oguztimur and Ulun Akturan, 2015) [15]

strategy, prevalent within the place marketing literature, emphasizes the active involvement of various stakeholders in the city branding process [7].

5 The Participatory Approach in Place Marketing

The participatory approach in public management involves citizens collaborating on public initiatives. Political crises fueled "participatory democracy" [16], extending to place marketing as public-initiative marketing [15]. Place branding emphasizes stakeholder co-production, aligning with co-creation and stakeholder theory [17].

5.1 Co-Creation and Stakeholder Theory: Foundations for Participatory City Branding

Stakeholder theory, popularized by Freeman [18], has expanded business studies to include stakeholders beyond shareholders. It has two main interpretations: a broad view, including nearly all entities linked to the organization [18], and a narrower view, focusing on the legitimate interests of those involved in decision-making. In place branding, adopting the broader definition is crucial, as numerous stakeholders, including governments, residents, businesses, and visitors, influence or are affected by place outcomes [19].

The significance of stakeholders and co-creation has received increased attention recently [20]. Kavaratzis [7] even speaks of a new conceptualization of place branding strategy, wherein stakeholders play a leading role. These elements will be elaborated upon in the following paragraphs.

Since 2013, co-creation has gained prominence, defined as an "active, creative, and social process" involving collaboration between companies and stakeholders to generate value [21]. Co-creation, particularly in product development, emphasizes consumer empowerment and stakeholder participation in value creation [22]. In place marketing, co-creation is essential for successful place branding [23], with multiple stakeholders playing key roles in brand development [24].

The recognition of stakeholder involvement has led to frameworks supporting collaboration in branding. Research highlights the need to engage diverse stakeholders for successful branding [7, 25]. Treating stakeholders as strategic partners fosters participation and shared responsibility, contrasting with top-down approaches that can face resistance. A brand's essence emerges through stakeholder discussions, emphasizing diverse perspectives in shaping identity [26]. Braun et al. [25] and Warnaby [17] stress the importance of service delivery and co-creation in effective place branding.

5.2 The Service-Dominant (S-D) Logic: A Framework for Collaborative Place Branding

Stakeholder engagement in place branding is supported by the Service-Dominant (S-D) logic, a key marketing perspective [27, 28]. S-D logic distinguishes between operand resources (tangible, like raw materials) and operant resources (intangible, like skills and knowledge) that generate value. It positions stakeholders as co-creators of value, emphasizing the integration of their resources with those of the place.

Warnaby [17] highlighted S-D logic as a valuable framework for place marketing, incorporating both tangible and intangible resources. Tangible resources focus on attracting investment, while intangible ones, such as relationships, emphasize the importance of personal connections.

S-D logic enables the integration of these resources to build positive associations and foster collaborative brand creation. Technology also plays a vital role in developing diverse narratives [28]. In conclusion, S-D logic provides a comprehensive approach to place branding, promoting co-creation and stakeholder engagement, particularly from residents, whose values shape a city's identity.

6 Residents as Stakeholders of a City Brand

Traditional place marketing approach was top-down, often overlooking community needs [7]. The participatory approach now highlights stakeholder dialogue, co-creation [29], and aligning brands with residents' aspirations [30]. Engaging citizens fosters authentic brand identity, ownership, and innovation, surpassing conventional strategies [31, 32].

Residents play a key role in participatory city branding. First, they shape the city's social fabric and character through interactions with outsiders [17]. Campaigns like "Be Berlin" show how resident stories enhance authenticity [33]. Second, residents act as brand ambassadors, with their word-of-mouth crucial for communication [32]. Engaging them fosters passionate ambassadors who co-create value [34]. Lastly, residents, as citizens with political agency, legitimize branding efforts, and their involvement is essential for success [19].

In conclusion, recognizing residents as integral to the brand, ambassadors, and active citizens enhances the authenticity and success of city branding. New technologies are further empowering residents, offering exciting opportunities to deepen engagement and co-create city brands [35].

7 Technological Advancements and Participatory City Branding

Technological advancements play an increasingly crucial role in enabling citizen participation in place branding [36]. The accessibility, global reach, and interactivity of new media tools can empower residents and promote more inclusive, innovative place branding initiatives, thereby enhancing the legitimacy of these efforts from the residents' perspective.

Over the past decade, developments in Web 2.0, user-generated content (UGC), and mobile technologies have amplified citizen voices, reshaping city branding into a more open, bottom-up process. Interactive tools enable citizens to act as co-creators of their city's image, fostering a more participatory and inclusive branding approach.

According to Hereźniak [35], digital technologies facilitate citizen participation in place branding at multiple levels:

- Brand Analysis and Conceptualization: Tools like surveys, social consultations, and online voting (crowdsourcing) engage residents in brand analysis. The "B-Berlin" project, for instance, used digital platforms and physical installations to gather citizen input on the city's values.
- Brand Expression/Experience: Digital platforms enable residents to promote their city's brand. Initiatives such as "Curators of Sweden" and "Play Melbourne" highlight the power of citizen-driven brand promotion through social media and interactive experiences.
- Brand Delivery and Evaluation: Online platforms allow residents to participate in brand delivery and provide feedback. In Jun, Spain, citizens use Twitter to engage with authorities, demonstrating the role of digital tools in ongoing brand evaluation.

Citizen involvement transforms place branding. Platforms like "Neighborland" in the U.S. connect organizations with residents to shape neighborhoods, while participatory budgeting in Łódź, Poland, lets residents propose and vote on projects [35]. New media tools enhance participation, making city branding more inclusive and empowering residents to shape their city's identity.

8 Conclusion

This narrative review outlines the evolution of participatory city branding, focusing on the increasing role of resident co-creation [7, 10, 26]. Residents are recognized as vital to brand identity, acting as ambassadors and active contributors. The review highlights the transformative impact of technology in amplifying resident voices, enhancing their involvement in every stage of city branding. Case studies illustrate how technology enables residents to participate in brand analysis, conceptualization,

expression, and evaluation, leading to a more authentic and inclusive brand narrative. Participatory city branding has become central to place branding, emphasizing the importance of co-creation and stakeholder involvement [7]. Residents, deeply connected to their city's identity, must resonate with the brand before it appeals to outsiders [37–40]. Future research can further explore the long-term effects of resident co-creation on brand loyalty, satisfaction, and city success, along with ethical considerations for integrating diverse perspectives.

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Flexible Labour Market and Work-Life Balance. The Case of Poland

Anna Barwińska-Małajowicz, Radosław Pyrek, and Bagdan Wierzbiński

Abstract The paper addresses an important issue related to labour market flexibility and work-life balance, using Poland as a case study. Flexibilization of the labour market occurs in the context of specific expectations and needs related to the balance between professional and private life, especially among young workers. The study presents an analysis of the level of labour market flexibility in Poland in the years 2023–2024, as well as Poland's position in comparison to other European countries in terms of work-life balance, citing the OECD Better Life Index ranking. The research results indicate that labour market flexibility can contribute to improving work-life balance, but it also carries risks related to excessive employee burden and job insecurity. The article emphasizes the need to develop appropriate regulations and policies that would support the sustainable development of the labour market in Poland, benefiting both employees and employers.

Keywords Work-Life Balance · Labour Market · Poland

1 Introduction

A flexible labour market and Work-Life Balance (WLB) are two concepts that are increasingly viewed as complementary in modern human resource management research. A flexible labour market plays a crucial role in the contemporary economy, enabling companies to quickly and effectively adapt to changing market conditions. Its essence lies in the ability to adapt employment structures and working conditions to the current needs of the economy, which in turn translates into greater competitiveness and economic stability. Characteristics of a flexible labour market include diversified forms of employment, ease in establishing and terminating employment contracts, and employee mobility. This allows for quick responses to crises and maximizes efficiency during periods of economic growth. On the other hand, WLB focuses on maintaining a balance between employees' professional and personal

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lives, which is crucial for their well-being and long-term effectiveness. WLB assumes that employees should have the opportunity to balance their professional duties with their personal lives in a way that does not lead to excessive stress or burnout. The benefits of maintaining a balance between professional and personal life are numerous, including better mental and physical health, greater satisfaction, and motivation, which translates into productivity at work. The introduction of flexible forms of employment, such as the possibility of remote work or flexible working hours, can be a significant factor in supporting WLB. Thanks to flexibility, employees have more control over their time, allowing them to better balance professional duties with personal life. The integration of a flexible labour market with the WLB concept suggests that organizations offering flexible working conditions can not only increase their competitiveness and adaptability but also improve employee satisfaction and productivity. As a result, labour market flexibility can be a key tool in creating a work environment that promotes a balance between professional and personal life.

Poland, like many other countries, faces the challenge of adapting its labour market to rapidly changing economic and social conditions. In this context, the integration of flexible forms of work with the WLB concept is playing an increasingly important role in the country [1]. Flexible forms of work, such as remote work, flexible working hours, part-time work, or project-based employment, are becoming more common in Poland. Employers, recognizing the benefits of such solutions, are implementing them to increase their competitiveness and attract and retain talented employees. Meanwhile, employees, especially younger generations, are increasingly expecting the ability to tailor their working hours to their individual needs, allowing them to better balance professional duties with personal life. In Poland, the introduction of flexible forms of work gained particular importance during the COVID-19 pandemic, which forced a rapid transition to remote work models. Although initially treated as a temporary solution, many employers and employees have recognized the long-term benefits of greater employment and working time flexibility [2, 4].

Currently, many companies in Poland are considering maintaining certain forms of flexible work as a permanent element of their employment policy. However, to fully harness the potential of flexible work arrangements in the context of Work-Life Balance (WLB), support from the state is necessary, through appropriate legal regulations and incentives for employers to implement such solutions. Additionally, organizational culture within companies must evolve toward greater openness to flexibility, allowing for the full utilization of employees' potential without compromising their well-being.

The main objective of this study is to present the level of labour market flexibility in Poland and to determine Poland's position compared to other European countries in the context of WLB.

2 Methodological Considerations

The primary research methods adopted for this study included desk research and meta-analysis of current research reports presented by various research entities in Poland and the EU. Quantitative analysis methods and frequency distributions of responses to questions from diagnostic surveys, which served as research instruments in the analysed reports, were also used. The methods used included literature research from well-known databases such as Google Scholar, McKinsey.com, Deloitte.com, and Re-searchGate.com, including surveys and reports with Polish cases such as Google, stat.gov.pl, Randstad.pl. Keywords searched included 'WLB', 'flexible forms of employment', 'labour market'.

3 Selected Legal Solutions for a Flexible Labour Market in Poland

The concept of flexible work organization has been defined in EU directives [3]. In Poland, the amendment to the Labour Code, which took place in April 2023, also addressed the issue of flexible organization of working time, including the introduction of so-called remote work. The current provisions of the Labour Code [4] include regulations aimed at increasing the flexibility of work organization. It is accepted that flexible work organization includes, among other [4]; individual work schedules, flexible working hours, and the task-based work time system. The introduction of flexible work organization into the Labour Code stems from the adaptation of Polish law to the directive [3] of June 20, 2019, on work-life balance for parents and caregivers [5], commonly referred to as the "WLB directive." The Act of December 1, 2022, amending the Labour Code and certain other acts [4], introduced remote work into the Labour Code, simultaneously repealing the provisions regarding telework.

The new regulations governing remote work came into effect on April 7, 2023. The legislator introduced a definition of remote work into the Labour Code, which reads as follows: remote work is performed entirely or partially at a place indicated by the employee (including the employee's home address) and agreed upon each time with the employer. The Labour Code provides for both fully remote work and hybrid work (partly at home, partly at the company), depending on the needs of the specific employee and employer.

4 Flexible Forms of Employment and Work Organization

Flexible forms of employment have become very popular in recent years in the public discourse regarding changes in the working conditions and employment of modern employees. The emergence and further development of flexible forms of

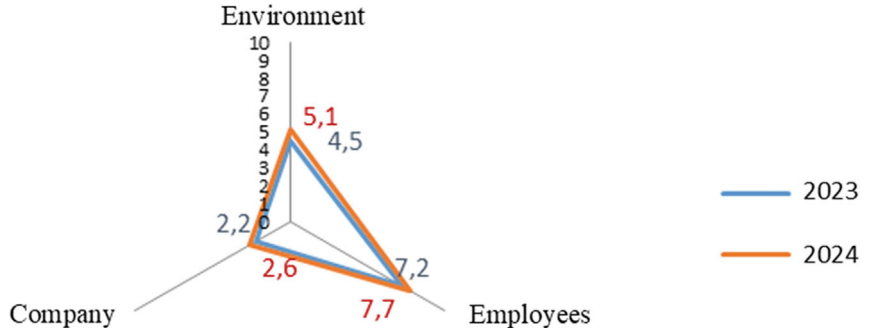


Fig. 1 Labour market flexibility in 2023 and 2024 (*Source* Own study based on: [6, 7])

work organization and working hours began in most OECD countries in the 1980s. In Poland, there is a lack of data on employment through flexible forms. This situation is partly due to the absence of a coherent and unified definition of this concept and the issue of which forms of employment are considered flexible. The introduction of various solutions enabling the management of remote work has led to an increasing number of companies and employees opting for B2B contracts.

In Poland, the index representing the level of labour market flexibility in 2023 reached 4.5 on a scale from 0 to 10, where 10 represents maximum labour market flexibility (see Fig. 1). The report indicates that in 2023, as many as 58% of Polish companies utilized flexible forms of cooperation, including civil law contracts and B2B agreements. The largest enterprises were the most open to such forms, with 68% of representatives from large companies believing that the importance of flexible forms would increase over the next 12 months. Representatives of SMEs were much more sceptical [6].

The same study was repeated in 2024 (see Fig. 1). The average rating of the impact of the environment on labour market flexibility increased from 4.1 in 2023 to 5.1 in 2024 (on a 10-point scale), indicating a positive trend in the market's openness to flexible forms of cooperation. This increase is likely due to improved sentiment regarding the current economic situation. One in four medium-sized companies surveyed perceives the economic situation as more favourable to labour market flexibility (vs. 10% in 2023). Large organizations are less optimistic about the positive impact of the economic situation on labour market flexibility (33% of companies indicated a positive impact in 2023 vs. 18% in 2024). More than one-third of surveyed companies (34%) consider the implemented corporate policies (e.g., hybrid work policy) as having a positive impact on labour market flexibility, particularly in the IT sector (64%) [7].

Summarizing the research findings, according to the surveyed companies, the economic situation has the greatest impact on the development of a flexible labour market. Compared to 2023, the impact of this factor increased from 4.0 to 5.1 among small and from 4.8 to 5.8 among medium-sized organizations. Flexible forms of employment and work organization offer both benefits and challenges for employers

and employees. It is crucial to understand these forms, manage them skillfully, and consider legal and financial aspects. In a world where the dynamics of the labour market are constantly evolving, flexibility is becoming a key element of human resource management strategies. However, success requires balancing flexibility with responsibility, both on the part of the employer and the employee.

5 Work-Life Balance

A review of the literature shows that there is no single agreed-upon definition of WLB [8–10]. It is generally recognized as a harmony in achieving goals in professional and personal/family life, a state in which an employee finds a balance between professional duties and private life [11, 12]. This balance has been defined as full engagement in all life roles. It is worth noting that the lack of a consistent definition of this concept complicates the interpretation of research results [13], especially given the growing research interest in the WLB phenomenon, both theoretically and practically. It is a concept whose "popular use has outpaced its theoretical development" [14]. Measuring WLB is also not easy. However, there are some ways to measure this phenomenon, such as using indicators related to work and leisure time (average number of hours worked per week, number of overtime hours and work outside standard hours, average number of vacation days taken by an employee per year), measures related to physical and mental health (levels of absenteeism and employee turnover, number of sick leave days), or indicators related to work flexibility (the percentage of employees using remote work or flexible working hours). One of the indicators often used in international comparisons is the OECD Better Life Index. Although this index primarily measures quality of life, it includes various variables in its assessment, including WLB (see Fig. 2).

In the OECD Better Life Index, Poland ranks roughly in the middle of the surveyed countries regarding the measurement of WLB. According to the Randstad Workmonitor study (see Fig. 3), which included 27,000 employees from 34 countries worldwide, WLB is at the top of the list of the three most important factors influencing satisfaction with a current or potential workplace (94% of respondents in Poland and 93% globally).

The data analysis presented in Fig. 2 also shows that salary is in second place (92% and 93% of respondents, respectively), followed by a sense of job security (89% in both cases). Moreover, when people consider the next step in their career, work-life balance (57%) slightly surpasses higher pay (55%). A clear majority (60%) consider their personal life more important than their professional life [16].

In Poland, work-life balance was not a key research issue for many decades. Those born directly after World War II (between 1945 and 1960) faced many daily challenges, and as a result, factors related to "earning a living" were more important

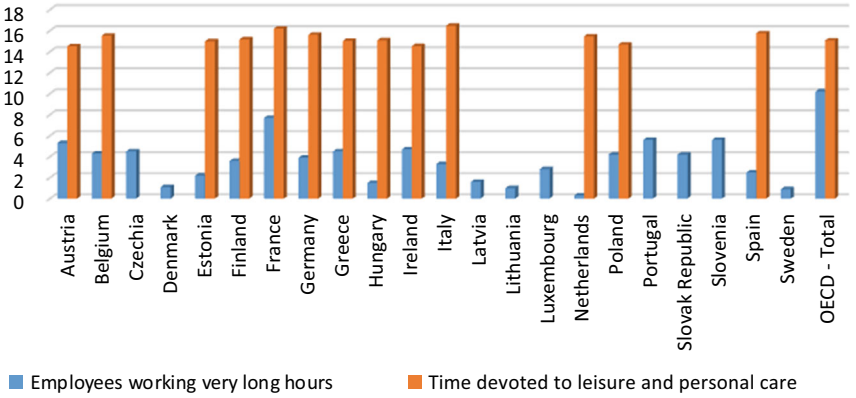


Fig. 2 Work-life balance: Employees working very long hours and time devoted to leisure and personal care in the OECD better life index (selected EU countries) (*Source* Own study based on: [15])

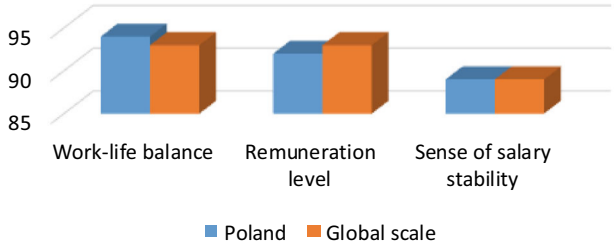


Fig. 3 The most important factors affecting workplace satisfaction 2024 (%) (*Source* Own study based on: [16])

than balancing work and private life. However, the next generation (Generation X—those born between 1961 and 1980) began to recognize the importance of work-life balance, seeing their parents (the Baby Boomer generation) struggle with long working hours.

As a result, the pursuit of work-life balance became increasingly important for this generation. For Generation Y, employers were forced to compensate and treat work-life balance as a critical issue [17]. On the other hand, Generation Z is very aware of what they want, can directly communicate their expectations, and respond when those expectations are not met. WLB, particularly the possibility of remote work, is important to them when choosing a job. Generation Z wants to perform their tasks well but expects this to happen within clearly defined time frames. Overtime work intrudes on their comfort zone and personal life. Generation Z is changing the perception of work culture. They reject toxic work environments and instead prioritize a healthy work-life balance. They strive for personal development, value open discussions about mental health, and recognize the importance of holistic fulfillment outside of a

career. Generation Z seeks to create a work-life balance where work enriches personal life rather than consuming it. In their view, the workplace should meet personal needs and support overall well-being, promoting healthier and more satisfying professional experiences [18]. It is also worth noting that another trend is gaining popularity: work-life integration. This concept suggests that the boundary between personal and professional life can be flexible. This concept has become the subject of research conducted by various entities in different countries [19].

6 Conclusions

The flexible labour market in Poland presents both opportunities and challenges in the context of maintaining a work-life balance. On one hand, flexible forms of employment, such as remote work or flexible working hours, can significantly facilitate the combination of professional duties with personal life. On the other hand, the lack of clear boundaries between work and private life, as well as job insecurity, can lead to burnout and a decrease in quality of life. The example of Poland shows that the key to effectively combining labour market flexibility with WLB is appropriate legal regulation and the promotion of an organizational culture that supports employees in managing their time and commitments. Only in this way will it be possible to achieve harmony between a flexible labour market and the need to maintain a work-life balance. In Poland, despite some progress, there is still much to be done in promoting and implementing flexible forms of employment that support work-life balance. Extensive research and collaboration between the government, employers, and employees are necessary to create a more sustainable and supportive work environment that addresses the challenges of the modern world.

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The Impact of Public–Private Partnerships (PPPs) on the Public Health Sector



Sofia Asonitou, Fragiskos K. Gonidakis, Chara Kottara, Dimitra Kavalieraki—Foka, Panagiota Govesi, and Apostolos Giovanis

Abstract Changes at the economic and social level affect the public health sector. In the last few years, the need for quality health services among citizens has increased while worldwide efforts are being made to find funding resources. There is a need to find new mechanisms to provide these services to those who need them. One of the most important mechanisms is public–private partnerships (PPPs). The main goal of PPPs is to implement projects for the benefit of citizens in a short time with private funding and to transfer operational costs from the public sector to the private sector. PPPs have advantages and disadvantages. In some countries where the PPP model has been implemented in public health, it has been successful, but in others, it has not. This paper examines public–private partnerships (PPPs) and their application in public health through a literature review, qualitative research, and data analysis using in-depth interviews. The interviewees were four from a hospital's human resources department in Greece. This research shows that PPPs may contribute to the health sector because the private sector can provide capital, know-how, and experience, and this study sheds light on further research. However, there is still a need for a clear institutional framework and audit mechanisms. Implications for policymakers are also discussed.

Keywords Public–Private Partnership · Health Sector · Private Sector · Greece

1 Introduction

Health is a supreme social good for a country's citizens. Governments are trying to cope with the ever-increasing demand for quality health services and find ways to meet this need. For this reason, it is imperative to find sources of funding that will

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help the health system cope with the citizens' needs [1]. PPP is an essential tool that can bring growth to the health sector, where there is a massive need for medical and non-medical equipment and the reconstruction and renovation of various facilities. According to the Organization for Economic Co-operation and Development (OECD) [2], PPPs are partnerships between the public and private sectors [3].

Through public–private partnerships, an effort is made to develop and upgrade the public health sector by improving existing or new infrastructure, thus improving the health services provided to citizens. The objectives of these partnerships are primarily to raise private investment capital to build public works, which will be completed more quickly. Operational risk will be transferred from the public sector to the private sector, as the private sector has greater flexibility and efficiency in project implementation, administration, and management [4].

In Greece, these partnerships were established by Law 3389/2005 [5]. This law introduced the necessary regulations favouring the public sector's choice of PPPs and encouraging private parties to participate in such partnerships. These could find the funds required to cover both public works and services. This research examines public–private partnerships (PPPs) and their application in public health. The aim is to explore whether these partnerships are a tool for improving the public health sector and under what conditions these partnerships are sustainable and cost-effective. For that purpose, the following questions will be examined:

RQ1: Which countries have already adopted this partnership model, and how successful has this been so far?
RQ2: Could the public–private partnerships (PPPs) be successful in Greece, and under what conditions?
RQ3: In which areas of the public health sector could the PPP model be applied in Greece?

2 Literature Review

Over the last decades, the PPP model has been applied in various countries worldwide to improve different sectors of Public Health. Through this literature review, we present the prism under which the results of this synergy are visible.

Tabrizi et al. [6] explored the effectiveness of private sector involvement in the health system over 20 years, studying 108 articles from 2000 to 2019 in English and Persian, focusing on low—and middle-income countries. They found that private sector involvement improved health supply levels, access to care, economic benefits, and service quality. Gharaee et al. [7] investigated PPPs in East Azerbaijan, Iran. They found that PPPs enhanced services and infrastructure, though participants noted a lack of infrastructure as a significant barrier. The partnership was deemed beneficial for both investors and the state. Sadeghi et al. [8] examined PPPs in hospital services across countries like the UK, Canada, Turkey, Australia, and Iran. The study showed that PPPs improved clinical and non-clinical services, building management, and repairs, with partnerships lasting 12 to 40 years, depending on the country. McIntosh

et al. [9] studied PPPs in Lesotho, comparing a hospital network managed by the government to one managed by a PPP. They found that PPPs significantly improved clinical services and suggested such models are particularly effective in developing countries, providing better outcomes and serving as a leadership tool.

Roehrich et al. [10] conducted a comparative study on the sustainability of public–private partnerships (PPPs), analysing around 1,400 previous articles. They found that PPPs are increasingly common in Europe, combining the private sector's innovation, technical knowledge, and administrative skills with the public sector's focus on social responsibility, fairness, and knowledge. Zarei et al. [11] highlighted the benefits and challenges of PPPs in the health sector. They identified 12 key issues: system complexity, poor quality assessment, lack of transparency, insufficient coordination, and inadequate financial resources. The authors emphasised the need to understand the nature and complexity of such partnerships. Ovcharova and Grabowska [12] examined whether PPPs in the medical sector can create a win–win scenario for both sectors. Focusing on global models and the Ukrainian system, they concluded that PPPs offer new opportunities for social development and problem-solving but require political support, legislative frameworks, and sufficient staffing to be successful.

Kosycarz et al. [13] evaluated the viability of a public–private partnership (PPP) programme in Poland's health sector. They identified challenges, including the country's complex healthcare system and insufficient funding. However, they noted that PPPs could still be viable if critical factors are addressed, such as revising contracts between private entities and health services, stabilising economic and legal conditions, conducting proper risk assessments, leveraging the experience of both sectors and ensuring adequate funding. Krivenko et al. [14] analysed the effectiveness of PPPs in addressing health sector problems at the local level, focusing on Russian and global models. Their study showed that PPPs benefit healthcare services and local economic and social systems, with partnerships proving particularly successful locally.

Due to the particularity of the health sector, PPPs offer great diversity in terms of the services they offer; however, they are for the benefit of the Health System and Hospitals.

3 Theoretical Framework

3.1 Public Health in Europe and Greece

The public sector leverages the resources available to the private sector for the benefit of citizens, resulting in reduced fiscal costs, faster project delivery, and better services, improving citizens' quality of life [15].

The European Commission aims to ensure high social protection and cohesion across EU countries. While health systems differ, a shared challenge is the ageing population and rise in chronic diseases, which strain healthcare services and lead

to unequal distribution of professionals and unequal access to care [16]. Public–private partnerships (PPPs) are common in European health systems, with variations based on economic and socio-political factors. PPPs manage private wings in public hospitals and finance healthcare facilities through private funds in countries like the UK, Denmark, Spain, Italy, Germany, Portugal, Sweden, and France [17]. The UK introduced PPPs with the Private Finance Initiative (PFI) in 1992 under Margaret Thatcher's government. This model focused on building and renovating public hospitals, with businesses responsible for construction and management benefiting from favourable financial terms. When older facilities are consolidated into new structures, the public sector often sells the vacated buildings to private companies at preferential rates [17–19]. The success of PFIs in the UK is disputed. While refurbishing old hospitals is necessary, critics argue that PFIs burden taxpayers and often cost more than public sector projects would have [17, 18].

Spain adopted PPPs after 2008 to reduce public spending, with mixed outcomes: improved access to modern facilities, but issues of opacity and corruption arose [17]. Portugal began PPPs in the 1990s, formalising them in 2002. A survey found no significant differences in quality, safety, or speed between public and PPP-run hospitals, showing shortcomings [17, 20]. In Italy, PPPs were introduced in 1998 to construct and renovate health facilities. Private parties often manage these facilities post-construction, improving cost control, while the public sector benefits from quicker completion and risk transfer [21, 22]. Germany also uses PPPs, with private entities buying financially troubled hospitals and operating them as franchises [17, 23]. In Greece, PPPs were formalised by Law 3389/2005 but are rare in health due to alternative funding and scepticism from professionals and citizens [24]. The "Greek paradox" highlights high outpatient spending due to a lack of primary care in rural areas [25–27].

3.2 Advantages and Disadvantages of Public–Private Partnerships (PPPs)

PPPs offer significant advantages for all parties. The public sector benefits from reduced debt as private funds finance projects, easing fiscal pressure. These partnerships also lead to faster construction, lower costs, and payments linked to service delivery, ensuring results. PPPs boost economic growth by increasing revenue, employment, and efficiency while utilising private sector expertise. The key benefits for the private sector include high-profit margins, better lending terms, and reduced unemployment through participation in public projects. However, challenges exist, such as reduced public sector control, political costs, potential service quality issues, limited competition, and the complexity of contractor selection based on qualitative factors.

4 Research Methodology

We approached these questions using qualitative research through a literature review and in-depth interviews. Through the interviews, we investigated whether PPPs can be applied in the Public Health sector and in which areas such projects can be used. The qualitative research methodology of in-depth interviews was preferred because the hospital sector in Greece is small, with few experts in the field, and quantitative research would not be meaningful.

Data were collected by analysing relevant literature sources and articles and conducting research through in-depth interviews. The literature, articles, and legislation were searched through reliable databases such as Google Scholar and Scopus. The publications searched are from 2000 to date. Keywords such as "Public–Private Partnerships," "Public Health," "Health Sector," and "PPPs" were used.

The in-depth interview method was then used in a case study design. The interviewees belonged to the top hospital management. The qualitative research was conducted using an in-depth questionnaire. The interviewees were four executive members of the hospital's management. The interview structure had three strands. The questions they were asked to answer were related to four general questions, four specific questions related to outsourcing services, and three final questions.

The interview process consisted of three parts: general questions about the appropriateness of PPPs in Greece's health sector, specific questions on outsourcing services in hospitals, and final questions on potential changes to outsourcing contracts and recommendations for future PPP projects. Direct interaction between interviewer and interviewee ensured accurate data collection, with trust established to facilitate open communication. The collected data were transcribed, categorised, and analysed for better understanding.

5 Data Analysis and Results

PPPs have the potential to help raise capital from the private sector as most private companies have the know-how and experience to implement large projects with better efficiency and quality, provide high-quality services, and stimulate economic growth. All four interviewees considered that PPPs:

- They are appropriate for the implementation of infrastructure projects in Greece because private companies have the expertise and experience to execute large projects
- The opportunity is offered to exploit the expertise and efficiency of the private sector through PPPs
- The economic development of the labour sector is stimulated
- A high level of service and quality in construction is provided
- Emphasis should be placed on infrastructure

PPPs can be beneficial at multiple levels in the health sector, both in terms of logistics and infrastructure. With suitable regulations and proper supervision, such a model could be highly cost-effective in various areas of health, whether we are talking about access, quality, or efficiency of health services. Bureaucracy and complex legislation are significant obstacles to implementing PPP projects in Greece. The lack of an explicit reference framework for PPPs and extensive bureaucracy are the main obstacles to the launch of projects in Greece. On the other hand, some consider health to be a public good and believe that it is a good thing that PPPs have not penetrated the health sector in Greece.

There is a general feeling of insecurity in the outsourcing sector, primarily related to the need for a proper and fair selection of the private sector involved in the process. On the contrary, everyone believes that outsourcing can benefit the hospital if the choice is made transparently and according to critical criteria. Indicatively, we present the answers of two interviewees below.

Interviewee 2: "They would be beneficial, but with long-term contracts and international Tenders, for more transparency and breadth of tenders".
Interviewee 4: "Outsourcing is often the only solution without a better alternative for Hospitals. All tenders should be conducted fully transparently, and the quality of all services provided should be guaranteed".

Outsourcing would not be necessary if Greek hospitals could have the appropriate trained staff and equipment. Perhaps this is where PPPs in Greece would be more helpful in equipping hospitals with the proper machinery and infrastructure. Indicatively, the 2, 3, and 4 interviewees believe that the needs could be met by the hospital, purchasing a specific machine, or preparing meals in the central kitchen.

Since there is an apparent lack of a framework for PPPs in Greece, there is doubt about their usefulness and adequacy. Interviewee 3 believes that PPP projects can replace them, while Interviewee 2 does not think that PPP projects can replace outsourcing services.

If institutionalised in a sound framework, PPP could improve health services, resource management, and the implementation of infrastructure projects. Of course, some believe that the Greek health system should meet its needs without the help of the private sector.

Interviewee 1: "PPP projects can offer a range of benefits that can contribute to better organisation and improvement of health services and better management of resources".
Interviewee 4: "PPPs could be a tool to achieve faster implementation of infrastructure projects, better budget management and effective infrastructure maintenance".
Interviewee 2: "would be no benefit to the hospital through PPPs and would lose its public nature and accessible health care provision".

The initial goal should be to comply with the General Data Protection Regulation (GDPR) to ensure the privacy of patient information. Interviewee 1, in particular, believes compliance with the General Data Protection Regulation (GDPR) is critical

when outsourcing services to hospitals, as they manage patients' susceptible personal data.

It is essential to increase the timeframe and the number of companies offered.

Interviewee 2: "The outsourcing contracts should be longer, with more offers, more terms".

Interviewee 3: "The contracts should be for a longer time, with more terms and the possibility to terminate the contract if necessary".

Creation of a clear institutional framework to enable PPPs to be implemented in the healthcare sector. There should be safeguards to reduce bureaucracy. Indicatively, interviewee 3 proposed the implementation of PPPs with adequate analysis, strategic approaches and an appropriate institutional framework, and interviewee four proposed creating the required institutional framework for implementing PPPs in Health, which would include systematic controls and multiple safeguards to achieve full transparency and reduce bureaucracy.

There is also the opinion that PPPs in the health sector would only apply in the infrastructure sector. Interviewee 2 suggested that only infrastructure should be developed, and health should remain a free public good.

6 Discussion and Conclusions

Public Health is one of society's most essential pillars and one of the basic goods offered in Greece. The government should aim to facilitate the functioning of the health sector and improve the health system in any way possible.

The research questions posed at the paper's beginning were answered through in-depth interviews.

According to the first research question, this study concludes that public–private partnerships have been flourishing worldwide in recent decades. In countries governed by an appropriate institutional framework, they have proved beneficial both in terms of infrastructure and in the operation of hospitals. Private expertise combined with investment capital has brought countless benefits to health systems. On the contrary, countries lacking an appropriate institutional framework and control by the relevant state institutions have failed to adopt the PPP model.

The 2nd research question concludes that PPPs in the health sector are still embryonic in Greece. While a legal framework for PPPs has been established, there is no clear framework regarding the PPP model in healthcare to define the boundaries within which a PPP will integrate and operate. There are also many bureaucratic procedures which cause delays and a lack of assurance that the procedures are transparent.

According to 3rd research question, the conclusion is that private companies have know-how and experience in implementing large projects with better efficiency and quality and providing high-quality services. PPPs can provide financing and expertise for constructing and maintaining new facilities, ensuring high-quality infrastructure

without the exclusive burden on the public sector. Finally, they can bring together and coordinate hospitals, government agencies, pharmaceutical companies, universities and research centres, promoting innovation and the development of new medicines and treatments.

There is a general feeling of insecurity about existing outsourcing, which concerns the need for a proper and fair selection of the private parties involved in the process. Outsourcing can benefit if the choice is made transparently and according to specific criteria.

For PPPs to be effective, a key objective should be creating a clear legislative framework that sets out the terms and conditions of PPPs in the health sector and the steps to be followed to ensure transparent and open procedures for selecting the most qualified companies. Synergies already exist in other industries, and education may contribute to people's change of mindset [28, 29].

A limitation of this research is the relatively small sample size of four interviewees, which may limit the generalizability of the findings. Nonetheless, this research informed us about the institutional and operational framework.

Based on the survey's findings, several possible suggestions for further research and consideration are suggested. Future research with a more extensive and diverse sample from more hospitals is recommended to validate and extend these findings. If PPP projects in Greece's health sector are approved and operational, future research could yield more and more precise results. It would then be possible to determine whether such a project is beneficial both for the state and for citizens as users of health services.

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The Contribution of Audit to the Environmental, Social and Governance (ESG) Information Quality



Evangelos Soras, Apostolos Christopoulos, and Theodoros Kounadeas

Abstract The aim of this paper is to determine, if certified public accountants (auditors), by conducting the statutory audit of the financial statements at year ending, contributes to the improvement of information quality on ESG criteria, which must be reported by companies. Greek commercial legislation stipulates that from 1st January 2019 Management Reports of Directors' Board to Shareholders' General Assembly must include how environmental, labor-social, corporate governance issues and related business risks have been managed. In our research we examine 84 companies from the agricultural supplies sector in Greece to find out to what extent they comply with Greek commercial legislation on ESG issues. Emphasis is given to the contribution of the auditors in the improvement of the ESG information quality. We have evaluated the compliance of each company for the years 2019–2022, by assessing the ESG information in management reports compared with the ESG information required by Greek legislation. Although the average compliance rating of the whole sample is continuously improving, the average compliance rating of audited companies is clearly higher than the corresponding rating of non-audited companies and the zero-compliance rating cases per pillar are significantly fewer for audited companies, so we conclude that the auditors improve the quality of ESG information. This research helps to provide information about the role of the auditor not only for quantitative data, but also for non-quantitative data, such as ESG information.

Keywords Audit · Compliance · ESG Reporting

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1 Introduction

Sustainability encompasses responsible and ethical business practices under a holistic way. ESG practices focus on assessing company performance against environmental, social and governance factors. The emergence of many serious global problems, like climate change, water crises, wars in Gaza and Ukraine, COVID-19 pandemic and energy crisis, has heightened concerns for the necessity of the corporate sustainability [1]. Christopoulos et al. [2] examined the ability to predict financial distress, using a survival model based on dynamic logit as the financial crisis of 2007–2008. This model can be applied for different types of crises, like climate change, water crises, wars, pandemics or energy crisis [2]. Due to the uncertainty caused by global problems, investors as a significant group of stakeholders, have preferred funding investments that meet ESG criteria during periods of extreme conditions [3]. Sustainable development is the prerequisite of the creative economy development, which has evolved and covered, gradually, all economic activities. The creative economy considers, as expected, the creativity as the engine of technological progress and innovation, leading firms to identify, capture and pursue business opportunities and gain strategic advantages [4]. The reports on environmental, social and governance (ESG) issues show the progress of companies to achieve sustainability. Sustainability reporting is the main accountability mechanism of the company's management to all stakeholders [5]. Although, ESG reporting is the cornerstone of sustainability and there is a growing interest for ESG practices, relevant studies show that still the ESG reporting is poor not only in developing countries [6], but also in developed countries [7]. As today ESG report is typically voluntary [8] and the ESG reporting practices remain inconsistent [9]. This inconsistency due to the lack of the reporting standardization and the diversity of data, in combination with the complexity of the key performance indicators, leads to a required holistic oversight of information about ESG issues [10].

The Non-Financial Reporting Directive (NFRD) 2014/95 (EU) [11] has specified the disclosure of non-financial information from banking institutions, insurance companies and large companies with more than 500 employees and requires their reporting for year ending 31 December 2024 and afterwards. The Sustainability Reporting Directive (CSRD) 2022/2464 (EU) [12], which has introduced mandatory ESG reporting requirements with slight variations according to the type and size of different companies, has been entered into force for groups of companies or large companies that meet at least two of the following three criteria: (i) total assets higher than € 20 m, (ii) revenues over € 40 m and (iii) more than 250 employees. In such case, companies are required to reporting for the year ending 31 December 2025 and thereafter. For the small and medium-sized listed companies there is a grace period until 31 December 2028. This means that EU directives on disclosure requirements have not yet been applied to improve companies' ESG performance reporting.

Greek commercial legislation has already incorporated the EU directives and mainly consists of the laws 4548/2018 [13], 4308/2014 [14], 4336/2015 [15] and the circular 62,784/2017 [16], stipulating that since 1/1/2019 the management report of

Directors' Board to the Shareholders General Assembly should mention how environmental, labor-social, corporate governance and related business risks have been managed. In accordance with the article 179 of the law 4548 [13] if the management report does not include this information, large penalties can be imposed on members of the Board of Directors.

The purpose of our research is to determine, if the certified public accountant, hereinafter referred to as the auditor, by conducting the statutory audit at year ending contributes to the improvement of information quality on ESG. Therefore, it will be very interesting and necessary for a sustainable economy to highlight the role of the auditor.

2 Literature Review

The agency theory [17] assumes that the various groups of stakeholders have different selfish interests. The existence of groups with different selfish interests, in combination with the information asymmetry problem, results in conflicts between the various groups of stakeholders. The resource owners, i.e. the shareholders, appoint the board of directors to control and monitor the actions of the resource managers, i.e. the company's management, who have much more information than the resource owners and other stakeholders' groups. The board of directors tries to minimize the information asymmetry problem, by establishing various monitoring procedures within the company. The first monitoring procedure is ESG reporting, because reporting is the main accountability mechanism of the company's management to all stakeholders [7]. The second monitoring procedure is the appointment of the auditor, who will contribute to the overall improvement of company's information quality and especially on ESG information quality, by conducting the statutory audit of the financial statements at year ending.

Stakeholder theory considers that some groups, for example the shareholders, employees, suppliers, local communities, creditors, namely the stakeholders' groups, are affected directly by business entities [7]. The decisions and actions of the company's management do not concern only the shareholders, who want to increase their profits, but also the society, in which the company is operating. Reporting, especially ESG reporting, is the main accountability mechanism of the company's management to the stakeholders' groups. The social and, mainly, the environmental disruptions are increasing the interest of the stakeholders for ESG information. The company's management can decrease the negative results arising from the information asymmetry problem, by reporting ESG information [18]. It is very important that the company' management informs the stakeholders about ESG practices and issues, because the stakeholders will understand better the accounting—costing systems, the reporting system, the internal rules—routines and, finally, the necessary changes [1].

The basic assumption of legitimacy theory [19] is that the company's activities must be socially well-accepted and be continually complied with the criteria, which are set by the society, where the company is operating. The only way to ensure, that

these activities are acceptable, is to report adequate, relevant and meaningful information. If the activities do not meet the expectations of society, there is a legitimacy gap [19], which must be filled not only by the legislators, who draft the relevant laws and regulations, but also by the regulatory authorities, such as the auditors, who will audit and report, if the companies are complying with the legal framework of Greek corporate laws and United Europe mandatory regulations.

3 Data and Methodology

In accordance with the circular 62,784/2017 [16] all companies in Greece with a double-entry bookkeeping system, should publish their financial statements, namely balance sheet, profit and loss statement, notes and management report of Directors' Board, within 20 days after their approval from the Annual General Meetings of Shareholders, in the Register of Greek General Chamber (G.E.MI. https://www.businessportal.gr), a database easily accessible to any stakeholder.

The study has been focused on the management report, which is prepared annually for the General Meeting of Shareholders, in accordance with the article 150 of the law 4548/2018 [13] and includes a comprehensive analysis of the evolution and performance of the company, related to the size and complexity of its activities. The management report should also include financial and non-financial key performance indicators relevant to the company's activities, with a particular focus on ESG information. It should be noted that the law 4548/2018 [13] entered into force on 1 January 2019, earlier than the EU directives [7].

We have examined to what extent the management report complies with the minimum requirements of Greek legislation for reporting information on ESG issues and, in particular, we have examined whether information is provided on environmental, social and corporate governance topics, as required by the circular 62,784/2017. Each company was given a score rating, according to its compliance with the required reporting, e.g. if the management report covers all above ESG topics, the company will receive a 100% compliance rating. The given ratings do not have the same weighting for all ESG topics and the maximum compliance rating for each topic depends on its classification by the circular 62,784/2017 [16].

In this study, we have examined the extent to which 84 companies active in fertilizers for plants, plant protection for crops and propagation materials for crops, which cover 90% of the total market share, comply with the requirements of Greek legislation for reporting information on ESG issues and if the involvement of the auditor improves the compliance rating of the companies. We retrieved the data for our research in April 2024 and we have selected to review this sector, because:

- It is a heavy chemical industry. It uses a lot of chemical materials for the production of the fertilizers and the plant protection products, with significant impacts on humans, fauna and flora of the area, in which it is operating. Generally, it has a strong environmental footprint.

- It is the cornerstone of the food chain.
- It employs a large number of workers, who are classified as heavy and unhealthy professionals, due to their exposure to the chemicals, used in production.

4 Results and Discussion

The sample concerns the published financial statements of 84 companies for years 2019—2022 in G.E.MI, i.e. we have a population of 336 financial statements for this research. The year 2019 has been chosen as the starting year of this research, because the article 150 of the law 4548/2018 [13], which is requiring ESG information from the management report, has been mandatory applied since 1/1/2019. The year 2022 was chosen as the ending year of this research, because the financial statements of year ending 31/12/2022 have been published in G.E.MI until November 2023, therefore we have no other financial statements available for this research, which has been started in April 2024.

Having completed the scoring of all companies of the sample for the years from 2019 to 2022, depending on the information provided by their management reports on sixteen ESG topics, as required by Greek legislation, we have found the average compliance rating of each company per year. Table 1 presents the average compliance rating of the whole sample, including companies subject and not subject to audit, per pillar (Environmental, Social, Governance) for years 2019–2022, as well as the overall (total) average compliance rating.

We observe that for the period 2019 to 2022 there is a continuous improvement in the average compliance rating of the sample for all ESG criteria, regardless the involvement of the auditor.

Table 2 presents the overall average compliance rating of the audited companies (173 management reports—51.49% of the sample), which is obviously higher than the overall average compliance rating of the non-audited companies (163 management reports—48.51% of the sample).

We have found that the involvement of an auditor is significant for the overall average compliance rating at a 5% level (adjusted $R^2 = 0.8129$, significance $F = 0.000005$ and P-value < 0.005). The same trend of the average compliance rating is

Table 1 Average compliance rating of sample per year

Year	Average environmental compliance rating	Average social compliance rating	Average governance compliance rating	Overall average compliance rating
2019	17.592%	17.417%	21.825%	56.834%
2020	18.122%	17.725%	22.846%	58.692%
2021	19.312%	19.401%	23.583%	62.295%
2022	20.106%	20.150%	24.017%	64.273%

Table 2 Overall average compliance rating in relation to Audit

Year	Rating of companies subject to audit	Rating of companies not subject to audit	Comparison per year (Audited vs Non-Audited Companies)
2019	75.606%	41.327%	1.83
2020	74.456%	42.160%	1.77
2021	75.262%	47.334%	1.59
2022	78.273%	46.489%	1.68

Table 3 Zero average compliance rating per pillar in relation to audit (2019—2022)

Group of companies	Number of ESG topics per pillar with zero compliance rating	Total number of ESG topics per pillar	% of ESG Topics per pillar with zero compliance rating
ESG Topics Reported by Companies Subject to Audit	36	519	6.94%
ESG Topics Reported by Companies Not Subject to Audit	180	495	36.36%

observed in all three ESG pillars, i.e. the average environmental, social and governance compliance ratings of the audited companies are higher than the corresponding ratings of the non-audited companies. Although there is a continuous improvement in the ESG reporting information, it is clear that the involvement of the auditor increases the compliance ratings and therefore improves the quality of ESG information.

We have related the zero—compliance average rating cases per ESG pillar, which means that no information about this pillar has been reported by the company, with the involvement of the auditor. Table 3 shows that zero-compliance average rating cases per ESG pillar are fewer for the audited companies. We note that only 6.94% of zero-compliance average rating cases arising from audited companies versus 36.36% of corresponding cases arising from non-audited companies.

5 Conclusion

The aim of this research is to determine, if an auditor, by conducting the statutory audit of the financial statements at year ending, contributes to the improvement of ESG information quality, which must be mandatory reported by the companies.

Regardless the existence of a statutory audit, we have found that the overall average compliance rating of the sample covering all ESG pillars, shows a continuous improvement in period from 2019 to 2022. Companies must reduce the complexity of their information systems, to include ESG report, sales and cost analysis. Due to the rapid technological advances, and the increasing global competition, the cost of

information and the ever-increasing need of stakeholders for information [1]. Despite this continuous improvement in ESG reporting, considering that Greek legislation requires simple reporting and information on ESG issues and not complex benchmarks and KPIs [7], we conclude that the sector needs improvement in ESG reporting. The results of this research verify the findings of previous researches for other sectors, for example, the paper processing sector, which has poor results in ESG reporting [20].

Further, we have found that there is a high correlation of the overall average compliance rating with the existence of the statutory audit. The average compliance ratings of audited companies are higher than the corresponding ratings of non-audited companies. We have also compared the zero—compliance average rating cases per ESG pillar, which means that no information about this pillar has been reported by the company, arising from audited companies with the corresponding cases, arising from the non-audited companies. For the audited companies, the zero-compliance average rating cases are clearly fewer.

The above findings, arising from the positive correlation of the average compliance rating with the audit, verifies the representation theory [17], because the audit of the company's financial statements is an element of an effective internal audit system, and this means an effective governance [7].

Concerning theory of legitimacy [19] shows that legislators, using the commercial laws have required from the companies to report on sixteen ESG topics, thus they believe that they have filled the legitimacy gap in three ESG pillars. However, this is not enough, because regulatory authorities, which in this case is the auditors, must perform an audit to verify, whether the companies are implementing the requirements of the legislation to fill the gaps in environment, social and governance [19].

Like previous studies, our study has limitations, as we use a sample of companies of a specified sector and thus, an extension of the research to other sectors is necessary. In a future work, it will be interesting to use results in ESG issues reporting of other sectors to compare with the results of this research.

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Exploring the Mediating Role of Trust Between Consumers' Behavioral Intensity and Mobile Commerce Preference



Gerasimos Ntarlas, Nikolitsa Koutsogiannopoulou, Efthimios Dragotis, Athina Ntavari, and Despina A. Karayanni

Abstract Mobile commerce (M-commerce) is escalating at exponential rates worldwide. Companies can engage in 360° marketing, integrating communication messages within a networked context via social media and interactive virtual stores, on a 24/7/365 basis. This networked, interactive communication becomes a valuable asset, providing added value and new opportunities for consumers. Thus, m-commerce market escalates rapidly at exponential rates. The preference of smartphones over alternative means (i.e., desktops) seem to be due to the former' idiosyncratic characteristics, such as ease of use and app integration that provide competitive advantage. On the other hand, security concerns and lack of trust, seem make customers more skeptical about it use. Moreover, certain motivating and deterrent factors seem to play the role of moderators between e-commerce and smartphone use, as they seem to differ among countries, as their m-markets' growth rates are increasing unevenly across the globe. In this study, we select trust in order to study its moderating capabilities between behavioral intensity and smartphone preference. Thus, although that in the pertinent literature, trust is regarded to have mediating effects between e-commerce and smartphone use, it has not been yet examined in the Greek e-commerce context on behavioral intensity. We focus on trust, which, according to marketing literature, can significantly enhance the preference of commerce through smartphones over alternative means, when effectively integrated into marketing strategies. To this end, we conducted an extensive literature review, specifically examining the Unified Theory of Acceptance and Use of Technology (UTAUT) model related to the adoption of new Information Technology (IT) systems. This preliminary research led to the development of a quantitative research instrument, which was distributed online and served as the primary data collection platform. The study utilized a convenience sample of 907 Greek consumers who are active on social media and the Internet, resulting in 23.4 response rate. The findings suggest that trust may moderate the impact of behavioral intensity upon preference

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of smartphones use compared to desktops. The paper also discusses the implications for academics and practitioners.

Keywords Mobile Commerce · UTAUT Model · Trust · Behavior Intensity

1 Introduction

The use of mobile phones for online purchases has increased significantly over the past few years, as the global mobile business-to-consumer commerce market is expected to reach $3.44 trillion by 2027, reflecting steady growth from the $2.16 trillion in 2023 [1]. As of 2024, mobile commerce continues to expand significantly in the business-to-consumer sector. This growth is driven by increased smartphone penetration and changing consumer preferences. By 2023, mobile devices contributed to 63.7% of global e-commerce site traffic and accounted for 54% of e-commerce sales. This share is expected to increase to 62% by 2027, reflecting the growing reliance on mobile platforms for shopping activities [2].

Moreover, the mobile remains an essential tool for consumer engagement, particularly in emerging markets where smartphone use is rising rapidly, as, in specific markets like South Korea, Mexico, and China, mobile business-to-consumer commerce adoption is notably higher, than the worldwide average. Likewise, in the business-to-business online commerce, the use of mobile platforms has become essential, as 60% of U.S. businesses now leverage m-commerce, and 97% of these businesses report improvements in sales and customer satisfaction as a result (Offshore IT Services, Capital One Shopping). Especially in Greece, mobile commerce has experienced rapid growth, particularly during and after the pandemic. Platforms such as Skroutz and efood have reported significant revenue increases, with Skroutz surpassing €1 billion in turnover in 2021 and efood achieving €64.4 million, a 49% rise from the previous year. This surge is attributed to the increasing reliance on mobile devices for shopping and enhanced delivery and payment innovative services (i.e., Viva wallet and Wolt) [3].

Despite the growth of mobile e-commerce, challenges remain, such as high cart abandonment rates (83.3% on smartphones) and lower average order values compared to desktops, primarily due to the idiosyncratic characteristics of the smartphone perse, and security concerns [4, 5]. For example, mobile shopping interfaces often present more challenges than desktop, including smaller screens, slower loading times, and difficult-to-navigate designs. Furthermore, consumers may hesitate to make larger purchases on mobile devices due to concerns over security or the inconvenience of entering payment and shipping details. These concerns can push consumers to abandon carts on mobile devices for smaller purchases, contributing to a lower average order value [5]. This raises the question of whether is it the content itself that drives behavioral intensity, or whether trust plays a more significant role in keeping customers engaged and active as information contributors, thereby influencing their use of a company's mobile interface.

On the other hand, a few scholars suggest that e-commerce behavioral intensity, or the frequency and nature of interactions with an online platform, may significantly impact trust, as frequent interactions increase familiarity, which reduces perceived risk and uncertainty, thus leading to stronger trust [6].

To our knowledge, marketing literature has not yet explored the relationships between behavioral intensity, trust, and the use of smartphones for online purchases, in a business-to-consumer, especially for as far as the Greek market is concerned.

This paper presents exploratory research, aiming at shedding some light upon this issue. Specifically, this study focuses on the Greek business-to-consumer market context and aims to explore whether:

a) behavioral intensity of e-commerce may have an impact upon trust, and
b) trust may moderate the impact of behavioral intensity of e-commerce upon the intensity of smartphones use for making online purchases.

2 Background and Hypotheses

In e-commerce, behavioral intensity refers to how actively and frequently a consumer engages with a platform. It includes factors like visit frequency, time spent, depth of interaction (e.g., clicks, adding items to a cart), purchase behavior, and engagement with advanced features like wishlists [7]. This measure helps businesses assess customer loyalty and the likelihood of converting browsing into purchases, with higher behavioral intensity indicating better retention and sales potential [7]. Specifically, in the m-commerce business-to-consumer context, behavioral intensity is defined as consumer readiness and likelihood to use mobile commerce services for market search and purchasing of products [8]. Thus, in the context of mobile commerce behavioral intensity might refer to the frequency of purchases made via mobile devices and the depth of interaction with mobile applications (i.e., exploring multiple features, or spending significant time browsing) [9]. Unlike online commerce, m-commerce operates over mobile networks, which may be more susceptible to hacking and the interception of private and confidential information. The risk is further heightened by the potential presence of viruses and Trojans on mobile devices, leading to increased user concerns about account and payment security [10].

Previous studies on online shopping have primarily focused on trust as a major component of consumer behavior and alleviator of uncertainty. For instance, Hou and Elliott [11] demonstrated that trust may affect consumers' online bidding behavior, including the likelihood and frequency of participation. Trust is defined as "the objective quality governing the degree to which transactional obligations will be fulfilled in situations characterized by risk or uncertainty" [12].

In a study conducted by Chong [13] found that a lack of trust had the highest negative influence on customers' intention to use mobile banking among Saudi Arabians. However, the effect of trust-based factors on m-commerce was not investigated in this study.

Another study conducted by W. DeLone [14] investigated factors influencing customer intentions towards m-commerce in Malaysia and China, utilizing the Technology Acceptance Model (TAM) and Diffusion of Innovations (DOI) theory. According to this research, the three main factors that can predict customers' decisions in using smartphones for purchasing purposes are trust, cost, and social influence. The study underscores the need for further research into the key factors influencing the usability of m-commerce.

Online transactions are characterized by increased uncertainty and risk, making trust a critical focus for e-commerce researchers. Trust has been shown to significantly impact users' adoption of services, including online news services [15], internet banking, health websites [16], and mobile shopping [15]. Initial trust is particularly important for shaping user behavior, and numerous factors have been identified as influential in this regard. The first category of factors relates to the website itself. Users with limited prior experience tend to rely on their perceptions of website quality to develop initial trust [17]. Additionally, information quality has been found to impact initial trust in the context of health infomediaries [18], alongside other factors such as website appeal and usability [19].

Trust is an essential component for long-term success in online markets, and higher behavioral intensity helps in establishing stronger trust relationships between consumers and e-commerce platforms. Indeed, delving into the marketing literature we elicit that e-commerce behavioral intensity has a multifaceted impact on trust, primarily through familiarity, consistency, social proof, service recovery, shopping motivations, and risk perception [6]. For example, Gefen [6] argues that familiarity derived from frequent online interactions reduces the perception of risk and increases the level of trust, as consumers are able to form accurate expectations about future behavior based on past experiences [6]. Moreover, McKnight et al. [20] argues that a customer's behavioral intensity can also be seen through consistency in interactions, such as making repeated purchases, or frequently browsing the site. This consistency may signal to both the platform and the consumer that there is a stable, predictable relationship in place [20]. Thereinafter, behavioral intensity may form the basis of trust, because individuals prefer to rely on predictable and repeatable patterns when deciding whom to trust in online environments.

Moreover, when users frequently engage with a platform, (i.e., through sharing reviews, ratings, and comments), they contribute to the social proof that influences the trust perceptions of other users. For example, Kim et al. [5] suggests that social factors, such as user-generated content and peer recommendations, which are facets of intensity of behavioral intensity may significantly affect consumer trust in e-commerce [20]. Thus, the more user engagement there is, the higher the likelihood that new customers will trust the platform, given the volume of feedback available. Along similar lines Childers et al. [21] emphasizes that consumers driven by utilitarian motivations may trust e-commerce platforms based on consistent performance and delivery, whereas those driven by hedonic motivations may build trust through engaging and enjoyable experiences during frequent interactions [21]

Furthermore, Pavlou and Gefen [24] discuss that high behavioral intensity provides opportunities for consumers to witness how a platform may demonstrate

effective service recovery mechanisms that can reinforce trust among frequent users, as these platforms seem to be able to manage uncertainty and risk competently [22]. Along similar lines, as consumers engage more frequently with a platform, their perceived risk may diminish, fostering greater trust. Intense users are likely to have a deeper understanding of the platform's risk landscape, which reduces their cognitive uncertainty and allows them to trust the vendor more [23].

Thus, we hypothesize that the use intensity of smartphones for online purchases would be moderated by trust, as an essential link between behavioral intensity and smartphone use. Stated formally:

H1: Trust will mediate the impact of behavioral intensity upon the mobile e-commerce, (i.e., smartphones' use intensity).

Below we present the Conceptual Framework of the study.

3 Methodology and Measurement

The research comprised two phases: preliminary and main research. In the preliminary phase, we relied on secondary data from academic literature related to Internet marketing, mobile commerce marketing and the Unified Theory of Acceptance and Use of Technology or UTAUT for new technologies. Concurrently, we collected primary qualitative data through personal interviews with 10 key individuals in the social media tourism marketing sector. This phase facilitated the development of the quantitative research instrument.

In the main phase, we administered a questionnaire to a convenience sample of 907 Greek consumers who are active on social media and the Internet resulting in 23.4 response rate. Data collection occurred between October 1, 2019, and March 31, 2020. The research measures utilized multi-item, 5-point Likert scales, with the exception of the measure of mobile commerce that was tapped by a ratio scale 0–100%, according to the estimated percentage of online purchases made via the smartphone.

Following assessments of reliability and validity, we tested the research hypotheses using Structural Equation Modeling (SEM) and bootstrapping controls.

4 Analyses, Findings and Discussion

To test the mediating role of trust between the independent variable, which is behavioral intensity, and the dependent variables of the study, we developed a mediation conceptual framework (see Fig. 1).

According to the guidelines of Wang et al. [24] on mediation analysis, a variable is considered a mediator if the relationship between the dependent and independent variables no longer exists when controlling for this variable.

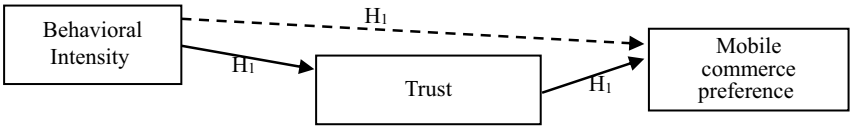


Fig. 1 Conceptual framework of the study

Table 1 Standardized total effects with two-tail sig.—Bootstrap confidence

	Behavior intensity	Trust
Trust	0,196*	
Mobile e-commerce	0,219***	0,478**
* = p < 0.5, ** = p < 0.01		

The mediation model generally explores the relationships among the dependent variable, independent variable, and mediator variable. SEM analysis revealed a statistically significant relationship between the independent variable, behavioral intensity, and the dependent variable, smartphone use intensity. Additionally, the mediator variable, trust, significantly linked the independent variable to the dependent variable, with a significance level of $p < 0.05$ as shown in Table 1. This indicates that trust acts as a partial mediator. To further validate these relationships, we conducted a bootstrap analysis. As presented in Table 1, the two-tailed bootstrap confidence interval was below 0.05, supporting the robustness of our findings.

Overall, the research findings supported our hypotheses. It appears that a behavioral intensity can be a valuable asset for business planners, provided it aligns with the system's trust strategies. The data suggest that this orientation is directly related to the use of mobile commerce and may even be considered crucial. For a company to achieve behavioral intensity, it must integrate these goals with effective trust strategies. This approach not only facilitates the use of mobile commerce but also uncovers new development opportunities. Specifically, trust in mobile commerce is highlighted as a significant factor for businesses in this sector, helping them to expand their use of mobile commerce and enhance their potential.

Based on our study's measurements, mobile commerce marketing must improve its trust efficiency. Trust, when aligned with the behavioral intensity of mobile marketing, plays a crucial role in market development. As highlighted by our findings, trust can significantly contribute to increased mobile commerce usage, efficiency, and potentially greater profitability for businesses. It is a key factor in both business and industry development, serving as an essential intermediate variable that all businesses should prioritize and cultivate.

To be effective, mobile commerce must be interactive, allowing the target audience to express themselves and be easily identifiable. This interaction enables companies to tailor their products and services to meet personalized needs, reflecting niche or one-to-one marketing strategies. Our research findings indicate that mobile commerce marketing, when goal-oriented and co-created through customer trust, can enhance profitability in mobile commerce.

5 Conclusion, Limitations and Future Research

On the whole, we found that the more the consumers make various activities of browsing, sharing comments, likes, managing wishlists, etc., the more their trust to the system is empowered, as they get more confident and less uncertain about their transactions, thus, the more they use the smartphone for online purchases. Trust is the necessary mediator to translate behavioral activity into purchases through the smartphone (mobile commerce).

These results should be interpreted with caution, as this research is still in the exploratory phase. We should avoid overgeneralizing based on a single study. Further research with larger sample sizes and across various environments is needed to achieve more reliable generalizability.

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Exploring the Mediating Role of Companies' Communication Between Goal Setting and Market Expansion in Social Media Tourism Marketing



Athina Ntavari, Efthimios Dragotis, Nikolitsa Koutsogiannopoulou, Gerasimos Ntarlas, and Despina Karayanni

Abstract The world is witnessing remarkable advancements in modern technology and electronics, particularly in social networking sites, which have become integral to many sectors, including tourism. Companies can now perform 360° marketing, integrating communication messages within a network context through social media and interactive virtual stores, on a 24/7/360 basis. The Internet has fundamentally reshaped the distribution of tourism information and the way people plan and carry out their trips. Most tourists now use the Internet to search for information about travel destinations. Given that tourism is a crucial economic sector for Greece, it is important to investigate how Greek tourism businesses utilize social media. Focusing to pertinent marketing literature, by effectively using social media, these businesses can gain a competitive advantage, create value for their products, and increase their profits. In this paper, we focus on the efficiency-oriented communication goal approach, which, when properly incorporated into social media tourism marketing strategies, can lead not only to efficiency, but also, to market expansion. To this end, we constructed a quantitative research instrument based on Technology Acceptance Model (TAM) and disseminated it through the Internet to a convenience sample of 700 social media and Internet tourism managers working at respective Greek companies, yielding a 28.15% response rate (197 responses). The research findings imply that certain companies' communication strategies may have mediating effects on the relationship between goal setting oriented towards efficiency and market expansion. Implications for social media managers and academics are also discussed.

Keywords Social media tourism · TAM model · Communication mediating effects

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1 Introduction

Social media is also considered one of the most prominent modern tools in electronic marketing. It plays a crucial role in attracting tourists and helping them choose their destinations by providing valuable information [1]. The role of social media in tourism has become an increasingly discussed research topic [2–4]. Social media plays an essential role in various aspects of tourism, particularly in reservations, the exchange of knowledge and experiences, and marketing tourism sites [5–7]. Social media networks have surpassed the traditional functions of regular websites in exchanging and disseminating information [6]. Moreover, social media contributes to shaping governments' futures and assisting them in re-engineering their structures and the services they provide [6, 8].

To support this new way of doing business, an efficiency-oriented goal approach has been established to provide consumers with the information they seek, leading to the emergence of the concept of efficiency-driven goals. Indeed, this approach is committed to engaging with the community by exchanging information, ideas, and experiences that benefit others without expecting anything in return. Efficiency-driven marketing shares product and brand information to attract and engage consumers, creating a link between consumers and companies. Additionally, fostering efficiency can contribute to a healthier business environment.

More recently, with the rise of social media, these dynamics have begun to influence brand reputations, the development of brand communities, and the co-creation of brands. Co-creation requires interaction—specifically, interactivity—within brand communities to take place.

Delving into the literature on Internet marketing, "communication" has emerged as a crucial element in the social media tourism environment, playing a vital role in successful social media tourism marketing strategies [6, 8]. Several researchers have suggested that the communication strategies employed by a tourism company can significantly influence its efficiency and market expansion [9]. For instance, Marzuki et al. [10] found a positive relationship between communication and a goal-oriented approach to efficiency within a business context, particularly through the use of a website. Consequently, it can be inferred that a company's objective should be to engage customers and other key market actors in dialogue, promoting active and, more importantly, interactive participation within its online network to achieve its marketing goals.

However, to our knowledge, the marketing literature has not yet explored the relationships between a goal-oriented approach to efficiency, communication, and market expansion within the context of social media tourism marketing. Specifically, the question remains whether it is the goal-oriented approach to efficiency that keeps the customer engaged, or, if it is the interactive dialogue that not only engages the customer, but also transforms them into active contributors of information to the company's social media interface. This, in turn, may influence market expansion.

This paper presents exploratory research aimed at shedding light on this issue. Specifically, this study examines the following hypotheses within the context of social media tourism marketing:

a) A tourism company's social media strategy, focused on efficiency-oriented goals would have an impact on communication, and
b) Communication would moderate the impact of efficiency-oriented goals upon market expansion.

The paper deploys as follows: First, we discuss the theoretical background, along with the hypotheses of our research. Following is the presentation of the study's methodology, together with the research sampling and measurement validation. Next, we depict the SEM analysis that supported our research hypotheses. The paper ends with discussion of the findings, implications, limitations, and directions for future research.

2 Background and Hypotheses

The internet has fundamentally reshaped how tourism information is distributed and how people plan and carry out their trips [11]. Most tourists often use the internet to search for information about travel destinations [12]. The tourism industry is crucial for Greece and serves as a key source of income, it is important to investigate how Greek tourism companies are active on social media. By leveraging social media effectively, these companies can gain a competitive advantage, create added value in their products, and increase their efficiency.

In Greece, as well as, throughout the European Union, social media tourism is on the rise. The purpose of our research is to investigate whether tourism businesses utilize handheld devices for reservations and, more specifically, which applications they employ in tourism marketing to promote their products and services [13]. Additionally, we aim to explore whether factors, such as goal orientation toward efficiency, that may influence the outcomes of social media tourism marketing, in terms of bookings, competitiveness, and market expansion. It is also crucial to examine mediating effects, of companies' communication activities, upon the relationship between goal setting and outcomes, in the context of tourism industries.

Social media conceptualizes the web as a platform that enables multidirectional communication and empowers users to contribute both collaboratively and individually, transcending traditional time-related and geographical barriers [14]. The tourism industry has similarly embraced this trend, advancing into a 2.0 version. In this spirit, Lenka Švajdová have argued that social media marketing seems to be the best way for mass tourism destination to communicate with potential visitors. As for real time marketing, it could be quite difficult to apply it, because the destination management authorities don´t have very often databases of clients' contacts to communicate with them [15]. Vitor Roque and Rui Raposo [16] argue that two distinct observation periods were considered for this study: a high season period and

a low season period. This division allowed the study to analyze whether Destination Management Organizations (DMOs) employed different communication strategies on social media during these varying periods. The findings indicate that all observed DMOs utilized social media as part of their marketing and communication strategies. However, the results suggest a significant variation in user interaction across these periods. Notably, the Australian DMO stands out as particularly effective in leveraging the communication and marketing opportunities presented by social media. Di Pietro et al. [17] demonstrated that social media networks are essential and effective tools for quickly obtaining detailed information about touristic destinations. Based on the study's findings, the following recommendations are made:

Social media networks should offer sufficient, accurate, and user-friendly information that is easily accessible to all individuals interested in tourism sites. This approach will facilitate informed purchase decisions, ensuring that tourists receive the desired services that meet their expectations.

The Ministry of Tourism and Antiquities, along with the tourism sector, board members, and all travel agencies, should develop strategic plans to effectively utilize social media networks. This includes focusing on information accuracy, ease of use, and efficiency, as these factors play a crucial role in increasing tourist interest, attention, and desire. Ultimately, this will assist tourists in making decisions about the services that best suit their needs [18, 19]. We hypothesize:

H1: A tourism company's social media strategy focused on efficiency-oriented goals will have an impact upon communication.

Social media is a broad term encompassing platforms that offer vastly different social interactions. For instance, Twitter is designed to let users share short messages or "updates" with others, while Facebook is a comprehensive social networking site that allows users to share updates, photos, join events, and engage in a variety of other activities [20].

The advent of internet-based social media technologies has made it easier and faster for travelers to share their experiences. Information shared on social media is recognized as a significant source that can influence the travel decisions of potential travelers. Research indicates that identification and internalization are key factors that positively enhance the sharing of actual travel experiences on social media, with perceived enjoyment acting as a mediator [21].

Modern digital marketing techniques, such as social networks and mobile applications, are increasingly dominating the market. An ideal medium of communication is one that effectively reaches and impacts the consumer. Social networks, in particular, are distinguished by two key features: they allow communication with a broader audience, and opening an account is completely free and straightforward. Additionally, social networks are characterized by interactivity, encouraging active participation and consumer engagement in communication with a tourist destination.

Social networks have thus become one of the essential tools for creating successful relationships with users of products and services. Through interactive, content-based social networks, consumers recognize that a tourist destination values their opinions and satisfaction. This approach not only increases consumer awareness but

also enhances their willingness to follow the tourism brand's profile and participate actively in discussions.

The ability to respond quickly to users' needs through digital marketing fosters trust between consumers and the brand of a tourist destination, facilitating easier market entry, precise segmentation, and long-term loyalty. Travelers investing in digital marketing, new technologies, and tracking international trends positively influence the destination's image and the competitiveness of the tourism market. This, in turn, leads to increased visitor numbers, cost reductions, and higher overall revenue.

In conclusion, social networks and mobile applications, as the most dominant forms of digital marketing, directly influence the perception of a destination's brand image, contributing to its credibility and competitiveness [22]. We hypothesize:

H2: Communication of a company's social media tourism marketing will mediate the impact of efficiency-oriented goals upon market expansion.

3 Methodology and Measurement

The research comprised two phases: preliminary and main research. In the preliminary phase, we relied on secondary data from academic literature related to Internet marketing, tourism marketing, social media, and the Technology Acceptance Model (TAM) for new technologies. Concurrently, we collected primary qualitative data through personal interviews with 10 key individuals in the social media tourism marketing sector. This phase facilitated the development of the quantitative research instrument.

In the main phase, we administered a questionnaire to a convenience sample of 197 volunteers, who were selected from LinkedIn, the research field of our study. Data collection occurred between May 1, 2020, and July 31, 2021. The research measures utilized multi-item, 7-point Likert scales, with the exception of demographic data, which was collected using categorical multiclass measurement.

Following assessments of reliability and validity, we tested the research hypotheses using Structural Equation Modeling (SEM) and bootstrapping controls.

4 Analyses, Findings and Discussion

To test the mediating role of communication between the independent variable, which is goal orientation towards efficiency, and the dependent variables of the study, we developed a mediation conceptual framework, as illustrated in Fig. 1.

Following the guidelines of Wang et al. [23] on mediation analysis, a variable is considered a mediator if the relationship between the dependent and independent variables no longer exists when controlling for this variable.

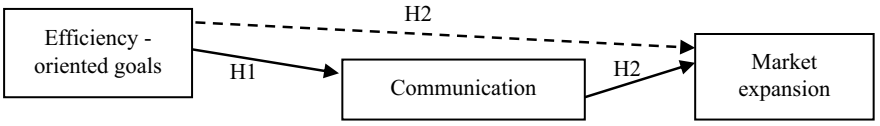


Fig. 1 Conceptual framework of the study

The mediation model generally explores the relationships among the dependent variable, independent variable, and mediator variable. SEM analysis revealed a statistically significant relationship between the independent variable, goal orientation towards efficiency, and the dependent variable, market expansion. Additionally, the mediator variable, communication, significantly linked the independent variable to the dependent variable, with a significance level of $p < 0.05$ as shown in Table 1. This indicates that communication acts as a partial mediator. To further validate these relationships, we conducted a bootstrap analysis. As presented in Table 1, the two-tailed bootstrap confidence interval was below 0.05, supporting the robustness of our findings.

Overall, the research findings supported our hypotheses. It appears that a goal orientation towards efficiency can be a valuable asset for business planners, that this may align with the system's communication strategies. The data suggest that this orientation is directly related to market expansion and may even be considered crucial. For a company to achieve its efficiency goals, it must integrate these goals with effective communication strategies. This approach not only facilitates market expansion, but also uncovers new development opportunities. In particular, the use of social media communication is highlighted as a significant factor for businesses in the tourism sector, helping them to broaden their market and enhance their potential.

Based on our study's measurements, social media tourism marketing must enhance its communication efficiency. Effective communication, aligned with the efficiency goals of tourism businesses, plays a crucial role in market development. As highlighted in the literature review, this can significantly contribute to increased competitiveness, efficiency, and potentially greater profitability for businesses. As a matter of course, communication is a key factor in both business and industry development. It is an essential intermediate variable that all businesses should prioritize and cultivate.

To be effective, a social media tourism marketing application must be interactive, allowing the target audience to express themselves and be easily identifiable. This interaction enables companies to tailor their products and services to meet personalized needs, reflecting niche, or one-to-one marketing strategies. Our research findings

Table 1 Standardized total effects with two-tail sig.—bootstrap confidence

	Efficiency—oriented goals	Communication
Communication	0,284*	
Market Expansion	0,519***	0,278**
* = p < 0.5, ** = p < 0.01		

indicate that social media tourism marketing, when goal-oriented and co-created through customer communication, can enhance business performance in terms of market expansion, competitiveness, and profitability [19].

5 Limitations and Future Research

These results should be interpreted with caution, as this research is still in the exploratory phase. We should avoid overgeneralizing based on a single study. Further research with larger sample sizes and across various environments is needed to achieve more reliable generalizability.

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Multi-Level Benefits of Corporate Social Responsibility (CSR) Adoption and the Moderation of Market Competition



Efthimios Dragotis, Athina Ntavari, Gerasimos Ntarlas, Nikolitsa Koutsogiannopoulou, and Despina A. Karayanni

Abstract Numerous studies have focused on the economic impact of CSR adoption and the financial performance of businesses. However, there are benefits that extend beyond financial performance, such as enhancing corporate image, improving customer relations and boosting employee performance. This research aims to track the impact of CSR adoption in these areas. We use a holistic approach that includes various fields of engagement such as workforce, environment, suppliers, community, market, stakeholders, charities, business values and leadership. Additionally, the research aims to track the impact of market competition as a moderating variable in the relationship between CSR adoption and the anticipated benefits. The study employs a primary quantitative methodology, with a convenient sample via the LinkedIn business platform, consisting of a convenient sample of 568 employees from Greek small and medium-size businesses, that have adopted CSR. Results support existing evidence as they imply that CSR adoption positively impacts corporate image, customer relations and employee performance. Furthermore, we found that market competition moderates this relationship, as, it negatively impacts customer relations, corporate image and employee performance. Findings underscore the diverse benefits of engaging in CSR activities and highlight the necessity for marketing practitioners to include CSR in business practices.

Keywords Corporate social responsibility adoption · Market competition · Corporate image

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1 Introduction

In recent years, Greek businesses are integrating their engagement with Corporate Social Responsibility (CSR) that shows their commitment in society, fostering its sustainability and its growth. The adoption of CSR is a challenge because it is a complex concept that can be applied to various areas of business operation. Existing literature has shown that businesses who adopt more CSR activity tend to receive greater benefits [1–3]. In order to reach greater benefits, businesses usually adopt CSR in various fields, covering all the range of their activities. The Holistic Approach of CSR Adoption is a multi-dimensional concept, an integrated framework of adopting CSR in a wide range of the business practices [4, 5]. According to this approach, the businesses may adopt CSR for their Workforce, the Natural Environment, the Supply Chain, their Stakeholders, the Community, the Market, the Business Values, Vision and Leadership. Adopting a Holistic CSR Approach, business expects to experience greater benefits. Following this approach, we track CSR Adoption in Employee Training, Environmental Responsibility, Local Community Responsibility, Corporate Philanthropy, Product Responsibility, Supplier CSR Commitment, Stakeholder Engagement, Ethical Vision and Values. CSR has evolved from being a peripheral consideration into a central component of business strategy and marketing. In the contemporary business landscape, where consumers are more informed and conscious of their ethical and social choices, CSR offers a strategic advantage. Research has shown that the adoption of CSR is connected to numerous benefits. The most commonly researched benefit is the financial performance of the businesses who adopt CSR, since profit maximization is the ultimate goal of rational businesses. Since literature shows a number of additional benefits, this research attempts to go beyond the financial performance and study the impact of CSR in areas such as Corporate Image, Customer Relations and Employee Performance.

2 The Moderation of Market Competition

Market competition is a factor that has a significant role within literature, moderating the impact of CSR Adoption on different aspects of benefits. Intense market competition may constitute a barrier to adopt CSR. The relationship between CSR adoption and expected results is highly dependent on the sector in which the firm operates, while similarities can be observed in similar industries [6]. One of the most prevalent sector characteristics is the competition within sector. A similar view on competition is shared by other research studies in the relevant field that underline the moderating role of competition between CSR adoption and expected benefits [7]. Studies report that the intensity of competition is a complicated variable with mixed results. Competition impedes the relationship between CSR adoption and financial performance [8, 9]. Specifically, CSR activities significantly increase stock returns when competition in the industry is low. Moreover, costs associated with CSR initiatives can become

more burdensome in a competitive environment where price competition is fierce, and firms may be less able to pass these costs onto consumers [10]. Apart from financial performance, this may also have a negative effect on consumers for passing the cost on them. Moreover, in such high competition environments, businesses may be led to superficial CSR activities, where they exaggerate or falsely claim sustainable actions. Such misleading efforts, when detected by aware consumers, can significantly damage customer relationships. A similar effect exists in relation to employee performance. In competitive environments, the pressure on employees may be greater due to performance pressures. CSR can play a role in maintaining or enhancing morale and commitment under these circumstances, fostering a sense of pride and purpose that can offset the stress of a competitive environment [11].

The aim of this study is to track the impact of CSR adoption in multiple areas. We use a holistic approach that includes various fields of engagement such as workforce, environment, suppliers, community, market, stakeholders, charities, business values and leadership. Additionally, the research aims to evaluate the impact of market competition as a moderating variable in the relationship between CSR adoption and the anticipated benefits.

3 Study Methodology

The research model has five main constructs: CSR Adoption, Consumer Relations, Corporate Image, Employee Performance and Market Competition. The CSR Adoption—the independent variable—is measured in eight different fields, based on relevant studies and classifications [5, 12, 13]. The Consumer Relations, the Corporate Image and the Employee Performance—the dependent variables—are measured by eight, three and two statements, respectively [13, 14]. The Market Competition is measured by three statements, based on relevant research [15]. All items were measured on five-point Likert scales, ranging from 1 = completely disagree, to 5 = completely agree. Based on the theory, the research hypotheses are:

H1. CSR Adoption will have an impact upon Customer Relationships improvement.
H2. CSR Adoption will have an impact upon Corporate Image enhancement.
H3. CSR Adoption will have an impact upon Employees Performance.
H4. Market Competition is moderating the relationship between CSR Adoption and Customer Relationships.
H5. Market Competition is moderating the relationship between CSR Adoption and Corporate Image enhancement.
H6. Market Competition is moderating the relationship between CSR Adoption and Employees Performance.

4 Findings

The research focuses on small and medium-size companies, operating in Greece that declared having adopted CSR practices. The LinkedIn business platform was used as the research frame and the final sample is composed of 568 valid responses. Confirmatory Factor Analysis (CFA), using the IBM SPSS and AMOS statistical packages, was conducted simultaneously for all the variables of the study. The results of CFA were deemed satisfactory and acceptable (CMIN/DF = 2,251; CFI = 0,914; NFI = 0,9; TLI = 0,909; RMSEA = 0,047; PCLOSE = 0,994) [16, 17]. The internal consistency (Alpha and Construct Reliability > 0,6) and Convergent Validity (AVE > 0,5) levels are presented on Table 1, showing satisfactory levels.

The 58% of the sample are male and the 42% are female. The 21% of the sample has completed secondary education, the 10,5% college education, the 46,5% have a BSc degree and 22% has an MSc or PhD degree (Table 2). The Mean Scores of the main study variables are hereby presented:

In order to evaluate the interaction between the study latent variables, we used Structural Equations Modeling (SEM) and AMOS statistical package. The results in SEM indicate that the second order latent variable CSR Adoption is significantly related to all the reflecting first order latent variables: CSR Adoption in Employee Training, Natural Environment, Society, Philanthropy, Product Quality, Stakeholders, Supply Chain, Vision and Values. At the same time, the latent variable CSR Adoption has a positive and significant direct impact on the latent variables Customer Relations (H1, b = 0,629, p < 0,001), Corporate Image (H2, b = 0, 7250, p < 0,001) and Employee Performance (H3, b = 0,749, p < 0,001). Moreover, Market Competition latent variable has a significant moderating role in the relationship between CSR Adoption and Customer Relations (H4, b = -0,094, p < 0,035), CSR Adoption and Corporate Image (H5, b = -0,106, p < 0,016), CSR Adoption and

Table 1 Reliability and convergent validity of the latent variables

Variables	Alpha	CR	AVE
CSR Adoption in Employee Training	0,85	0,60	0,65
CSR Adoption in Natural Environment	0,91	0,91	0,63
CSR Adoption for Society	0,83	0,82	0,54
CSR Adoption for Philanthropy	0,82	0,77	0,54
CSR Adoption in Product Quality	0,79	0,84	0,51
CSR Adoption for Stakeholders	0,88	0,87	0,58
CSR Adoption in Supply Chain	0,84	0,84	0,64
CSR Adoption in Vision and Values	0,94	0,93	0,70
Customer Relations Enhancement	0,92	0,85	0,50
Corporate Image Empowerment	0,83	0,83	0,50
Employee Performance Enhancement	0,82	0,79	0,50
Market Competition	0,60	0,62	0,51

Table 2 Descriptive statistics of research variables

Variables	Mean	Std. Dev
CSR Adoption in Employee Training	3,52	1,09
CSR Adoption in Natural Environment	3,17	1,17
CSR Adoption for Society	3,25	1,12
CSR Adoption for Philanthropy	3,41	1,25
CSR Adoption in Product Quality	3,77	0,97
CSR Adoption for Stakeholders	3,58	1,01
CSR Adoption in Supply Chain	3,80	0,89
CSR Adoption in Vision and Values	3,70	1,03
Customer Relations Enhancement	4,16	0,69
Corporate Image Empowerment	4,30	0,63
Employee Performance Enhancement	4,09	0,64
Market Competition	3,86	0,74

Employee Performance (H6, b = -0,126, p < 0,012). The hypothesis support and the overall results are presented on Table 3.

Table 3 Structural equations modeling interactions

Relationship	b	SE	P
CSR ADOPTION → CUSTOMER RELATIONS	0,629	0,173	***
MARKET COMPETITION MODERATION → CUSTOMER RELATIONS	-0,094	0,045	0,035
CSR ADOPTION → CORPORATE IMAGE	0,750	0,171	***
MARKET COMPETITION MODERATION → CORPORATE IMAGE	-0,106	0,044	0,016
CSR ADOPTION → EMPLOYEE PERFORMANCE	0,749	0,193	***
MARKET COMPETITION MODERATION → EMPLOYEE PERFORMANCE	-0,126	0,050	0,012

5 Discussion and Conclusion

The above research aimed to test the hypothesis of moderation of market competition in the relationship between CSR adoption and potential benefits. We deployed an empirical model based on the Holistic CSR Approach that measures CSR Adoption in terms of employee training, environmental responsibility, local community support, philanthropy, product quality commitment, supply chain focus, stakeholders' relationships and vision and values' focus, Market Competition, Customer Relations Enhancement, Corporate Image Empowerment and Employee Performance Enhancement. The research results showed that the CSR Adoption may have a positive impact on all the three variables, implying that businesses can measure benefits on these fields. However, the research also has shown that these relationships may be moderated by the market competition, decreasing the benefit of CSR Adoption on each of the above-mentioned benefits. The research results are aligned to previous research, that showed the moderating effect of Market Competition [8–10]. The results indicate that in highly competitive markets, the CSR Adoption may not have an impact upon companies' differentiation strategy [18]. According to the relevant literature, market competition is found to be a significant moderator in determining the impact of CSR on corporate image, customer relations and employee performance. In highly competitive markets, CSR can serve as a key differentiator, as companies are pressured to distinguish themselves from rivals. This competition heightens the visibility and perceived value of CSR activities [12] In contrast, in markets with low competition, where few alternatives exist for customers or employees, CSR may not offer the same competitive edge, limiting its overall impact [3]. The literature also suggests that the relationship between CSR adoption and the benefits that businesses gain from CSR is more robust in competitive markets. For instance, in industries where product differentiation is minimal, CSR may act as an additional lever for gaining a competitive advantage. Conversely, in monopolistic or oligopolistic markets, CSR might be perceived as less critical for performance outcomes, as customers and employees have fewer choices [19]. Consequently, the impact of CSR adoption may be higher when competition is low to medium, than in highly completive environments. Overall, businesses who that aim to achieve comparative advantage leading to greater economic benefits may adopt CSR in their innovative business strategy. The managerial implications of the findings show that when business executives adopt the CSR concept in a sincere, innovative and holistic way, may have augmented benefits. These augmented benefits occur from the multiple impact on the increase of Customer Relations, the empowerment of Corporate Image and the enhancement of Employee Performance. These benefits may have additional positive impact on other sides of the business operation that would apart a further study on the specific field of research.

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Influencers' Social Power on Social Risk Minimization and Online Purchases. The Mediating Role of Influencers' Page Content



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Abstract In the evolving landscape of digital commerce, social media influencers have emerged as pivotal agents in shaping consumer behavior and driving online purchases. This study delves into the mediating role of influencers' page content in the relationship between influencers' perceived power to affect consumer behavior and the minimization of social risk associated with online purchasing decisions. Drawing on social influence theory and risk perception models, this research employs quantitative survey data of a convenient sample of 1300 respondents, to explore how influencers' content strategies can mitigate social risks and enhance consumer trust. Advanced statistical analysis, based on confirmatory factor analysis, path analysis, and bootstrapping analysis (AMOS), produced findings implying that influencers' page content based on visual product presentations and followers' comments may mediate the effect of their perceived authority on consumers' risk perceptions, ultimately fostering greater confidence and facilitating online purchase intentions. This research advances the theoretical understanding of the interplay between influencer social power, content creation, and consumer behavior, providing actionable insights for digital marketers and influencers, seeking to optimize content strategies for improved consumer engagement and commercial outcomes.

Keywords Social media influencers · Social theory · Social risk

1 Introduction

Consumer behavior has completely changed in the rapidly changing environment, with influencer marketing being at the center of this transformation in the traditional roles of buyers and sellers. Indeed, influencer marketing has experienced significant growth over the past decade, reflected in both budget increases and market size

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expansion, as this industry was valued at $1.7 billion, on 2016, soaring to $21.1 billion, on 2023, with estimates predicting further growth to $24 billion, by 2024 [1]. In this way, influencer marketing emerges as a successful strategy that enables companies to establish a discourse with consumers, through trust and psychological bond that social media influencers establish with their followers [2].

Such strategies are related to influencers' social power of a referent type, that stems from such personal characteristics, as attractiveness (likability), similarity, credibility, informational fairness, and popularity, that is exercised through identification with the followers, and may influence consumer attitude and purchase intention [3].

Moreover, Influencers communicate with their followers through the content that they develop, regarding products and services promotion strategies in several formats, such as videos, photos, and blogs [4]. In this way, the rapid influencer marketing evolution reflects the growing demand for authentic influencer content, such as, video content. Thereinafter, some suggest that social commerce has become more integrated into campaigns and highlight the increasing importance of influencers in digital marketing [5]. This importance is reflected upon their notable social power on consumers' purchase decisions [6].

Along similar lines, the influencers upload content on their pages that plays a crucial role in building strong relationships with their followers [7].

Nevertheless, from the perspective of risk theory, it seems unlikely that an influencer's followers do not foresee any kind of possible anticipated loss related to the purchase of a product [8]. For example, Mitchell [9] discussing perceived risk theory, cites that consumers are driven by the desire to minimize risk, rather, than maximize benefit when making a purchase. Indeed, Deshbhag and Mohan [10] recently showed how perceptions of risk influenced attitudes and intentions to purchase consumer goods.

However, relevant research that examines whether influencers may minimize the perceived risk, through specific recommendations and associated mechanisms, still remains largely scarce, to the best of our knowledge [10–12].

This study makes an attempt to shed some light upon this issue. To this end, we employed social influence theory and perceived risk theory to study a piece of recommendations and mechanisms that influencers may use, in order to minimize consumer perceived risk and affect buying behavior.

Specifically, we focus on influencers' followers and examine their perceptions on:

a) the ability of influencer's page content (tapped by product visual presentation and followers' comments) to mediate the effect of influencers' social power, stemming from attractiveness (in terms of similarity and likability) upon their followers' perceived risk (in terms of financial and social risk).
b) The ability of followers' perceived risk to mediate the effect of influencers' page content upon online purchases.

The paper evolves as follows. First, we provide the literature review and the hypotheses development. Next, we develop the methodological research details, and discuss the analyses, the findings, and the implications of the study.

2 Background and Hypotheses

In the modern marketing era, social media influencers may engage in online communities and are recognized as a new type of independent third-party endorsers who shape audience attitudes through blogs, tweets, and the use of other social media [13–15]. These use their referent power to trigger desired behavioral outcomes [16].

As a matter of fact, academic research on influencer marketing has increased recently, giving us a deeper understanding of how it may affect consumers' behavior and decisions [17]. Specifically, social influence theory offers a useful theoretical lens to understand the underlying mechanisms of influencers' relationships with their followers and how they may affect their consumer behavior and decisions [18]. This theory helps to identify influencers who play a vital role in a communication network and have the power to significantly influence others. Influencers' social power may derive from their expert power, informational power, and referent power, along with their personal characteristics [3].

For example, researchers have emphasized that an influencer's similarity with the followers, may affect the latter's purchase intention [19]. Furthermore, social interaction through the influencers' page between followers and influencers (i.e., as this may deploy through the followers' comments) may have also the potential to affect followers' buying interest [20].

As a matter of fact, in order to serve the above narrative strategies, influencers generate content that is based on quality, value, and specific content characteristics [21].

However, the above relationship, between page content and buying behavior may be mitigated by the consumers' risk perceptions. Specifically, consumer behavior may be considered as an instance of risk-taking, based on the fact that any action of consumers will produce consequences which they cannot anticipate and at least some of which are likely to be unpleasant [22]. However, empirical studies report mixed findings regarding the impact of influencers on followers' perceived risk. Thus, for example, Chopra et al. [12] extracted findings that risk has little impact on the influencers' followers, while, others, such as Deshbhag and Mohan [10], reached to different conclusions, suggesting that audience perception of risk may influence their tendency to make a purchase.

In this study, we consider two types of perceived risk, financial and social risk, to test the mediating effects among the research constructs. Specifically, financial risk can be defined as the probability of an internet shopper suffering monetary losses from purchasing a product that fails to work, or is not worth the money paid [23]. At the same time, social risk is a crucial component of perceived risk, since it assesses how society influences the choices made by consumers. It involves the concern about how one's social group, or society might react to the purchase, often associated with the potential for social disapproval or loss of status [24].

To mitigate perceived risk, customers often seek advice from influential sources they consider reliable. Consequently, the endorsement of a product by a well-known figure in a specific domain, such as video games, sports, or fashion, may reduce the

perception of risk. While this does not eliminate the risk entirely, it provides an additional means of mitigating it [26]. In this context, Dean and Biswas [25] highlighted that product endorsements can inform consumers and enhance a product's credibility. This is also implied by previous research suggesting that influencer marketing is based on the confidence and self-esteem of consumers acquired by influencers, through content engagement, thus alleviating perceived social and financial risk, and facilitating buying decision-making [27].

In this way, the influencers' content may mediate the effect of similarity and likability upon followers' perceived risk, thus facilitating their buying decisions. According to the above, we hypothesize that:

H1: Influencers page content (in terms of product visual presentation and followers' comments) will mediate the effect of influencers' social power (as expressed by Influencer's similarity and likability to the followers) upon followers' perceived social and financial risk.

In turn, perceived risks are key determinants of consumer behavior, influencing the purchase related decision-making.

Moreover, Featherman and Pavlou [28] examined perceived risk in e-commerce, emphasizing how financial risk influences other risk perceptions, such as social risk. The study suggests that when consumers feel uncertain about the financial implications of a purchase, they may also become concerned about the social consequences, particularly in online shopping environments where there may be a stigma associated with being "scammed", or making poor purchasing decisions. Thus, we expect that financial risk will have an impact to social risk. Based on the above discussion, we provide the following hypotheses:

H2a: Followers' perceived social and financial risk will mediate the effect of Influencer's page content (in terms of product visual presentation and followers' comments) upon online purchases.

H2b: Followers' perceived financial risk will have an impact upon perceived social risk**.**

On Fig. 1, below, we present the conceptual Framework of the study, together with the Hypothesized Relationships.

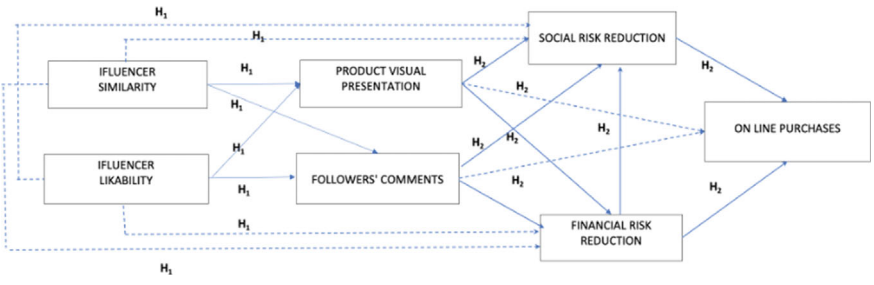


Fig. 1 Conceptual framework of the study

Table 1 Descriptive statistics and reliability analysis of the study's constructs

Constructs	Mean	Std. Dev	Alpha
Influencer likeability	2,82	0,998	0.92
Influencer similarity	2,89	0,708	0.76
Product visual presentation	3,83	0,894	0.69
Followers' comments	3,73	1,025	0.85
Financial risk reduction	3,64	0,742	0.78
Social risk reduction	3,41	0,778	0.80
Online purchases	3,68	0,643	0.76

3 Methodology

The initial research phase involved extended literature review and qualitative primary research, in order to assess the research variables of the research model. The so constructed research instrument was uploaded on the Internet and then disseminated through the social media, urging the respondents to participate in the survey.

The respondent sample comprises a convenient sample of 1300 respondents who voluntarily filled in the electronic research instrument. In regard to gender, female and male is represented by 69% and 31%, respectively. Considering the age range, 18,6% of the respondents are below 25 years old, another 46,7% lays between 26–30 years of age, while the remaining 34,7% reported to be over 31 years old. Table 1, below, presents the Mean and St. Dev. scores, together with the Cronbach alphas of the scale variables, implying adequate reliability of the multi-item constructs.

4 Findings, Discussion, and Conclusion

In order to test our study's hypotheses, we used Path Analysis through the AMOS26 statistical package. All the model fit indices are within satisfactory range (CMIN/DF = 0,648; GFI = 0.99, CFI = 0,99; TLI = 0,95; RMR = 0.07, RMSEA = 0.06; PCLOSE = 0,238), indicating robustness of the empirical model. On Fig. 2, we present the significant standardized total effects among the latent variables, thus implying discriminant and convergent validity of the empirical model. Furthermore, we performed bootstrap analysis that assessed the significant mediating effects among the model's constructs, as depicted on Fig. 2.

First, all but one direct total effects of antecedent upon decedent constructs were significant, as shown on Fig. 2, thus implying that both our research hypotheses would be partially supported. Specifically, influencer similarity has a significant impact upon both influencer's page content constituents, i.e., product visual presentation ($b = 0{,}18$, $p < 0{,}001$) and followers' comments ($b = 0{,}09$, $p < 0{,}001$). Likewise, influencer likeability has a significant impact on followers' comments ($b = 0{,}23$, $p < 0{,}001$) and on product visual presentation ($b = 0{,}16$, $p < 0{,}001$). The visual

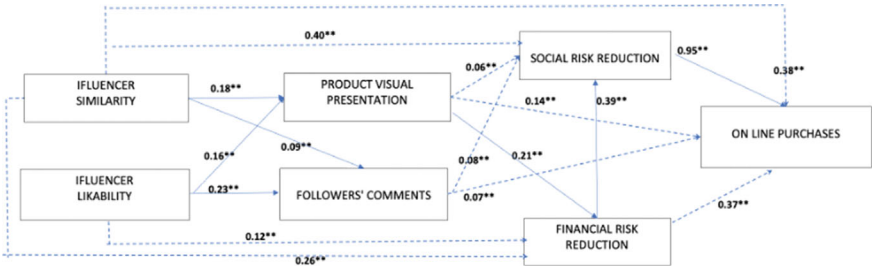


Fig. 2 Empirical model of the study

product presentation has a significant impact on financial risk reduction (b = 0, 21, p < 0,001), and a marginal, though significant, impact on social risk reduction (b = 0,06, p < 0,001). As far as, its influencer page content counterpart, the followers' comments construct, is concerned, we found that it had only a marginal direct effect upon only the one out of the two perceived followers' risk variables, that is the social risk reduction. In turn, both perceived followers' risk reduction variables appear to affect online purchases.

Moreover, the impact of financial risk reduction on social risk reduction was also found significant (b = 0,39, p < 0,001), thus supporting H2b and further indicating robustness of our study's model.

Overall, the statistical findings largely supported our theoretical model.

Relating H1, this was partially supported. The product visual presentation was found to partially mediate the impact of influencer's similarity upon both followers' perceived risk reduction variables (as it has both direct and indirect relationships upon the perceived risk reduction variables). Furthermore, we found a full mediation of followers' comments between influencer likability and social risk reduction (i.e., as we found no direct significant relationship between influencer likability and social risk reduction, while, the same constructs are indirectly related through the followers' comments construct). Thus, although that throughout the marketing literature the followers' network communication is considered to be compelling in shaping consumer decision-making, it appears that influencer's similarity and likability may play the catalyst role in alleviating her followers' perceived risk, thus facilitating consumer behavior.

Furthermore, our findings imply that an influencer's ability to shape followers' purchasing decisions is influenced by factors, such as, her likeability and perceived similarity to her followers, which may reduce social risk, by fostering trust and confidence upon the endorsed products. Likewise, the research findings partially supported H2. It appears that the effectiveness of product presentation through visually compelling videos and detailed explanations of product features may be more influential than network communication, as expressed in terms of followers' comments, in mitigating perceived financial and social risk, ultimately leading to more favorable consumer purchasing decisions.

Further research is needed to study more user-generated content aspects as mediators between influencers' capabilities and followers' risk perceptions and inclination to buying behavior.

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Digital Nomads: Lifestyle, Travel Behavior, and the Work/Leisure Balance



Nikolaos Trihas and Eirini Papadaki

Abstract A modern global trend that was reinforced during the COVID-19 pandemic period is digital nomadism. Digital nomads are people who travel constantly and work remotely using technology and the internet. The aim of this paper is to investigate the characteristics of digital nomads, their travel behavior, and destination choice criteria. In addition, issues related to their lifestyle and work–life balance are addressed. In order to meet this aim, a survey was conducted via an online questionnaire in a convenient sample of 101 digital nomads from 26 different countries. Results indicate that the majority of digital nomads belong to the 25–44 age group, are single, and have a high level of education. They are mainly remote employees, but also freelancers and entrepreneurs. They are experienced travelers and mostly travel outside their country of residence. The five main criteria for choosing destinations are (1) connectivity and available digital infrastructure, (2) quality of life, (3) cost of living, (4) safety, and (5) visa policy and restrictions on entry and stay in a country. Most of them are satisfied with their lifestyle as digital nomads and intend to continue this lifestyle in the future; however, several of them acknowledge that this lifestyle is a deterrent to have a family. Findings and discussions of this study provide valuable insights into this new tourism segment, thereby serving as a significant source of information for Destination Management Organizations (DMOs), tourism businesses, and academic researchers interested in digital nomadism.

Keywords Digital nomads · Travel behavior · Motives

1 Introduction

The travel restrictions, quarantines, social distancing measures imposed due to the COVID-19 pandemic, led to the mandatory implementation of teleworking [1]. Teleworking in turn, together with globalization and digitalization, led to the rise of digital nomadism [2]. Digital nomads are location-independent remote workers who

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are simultaneously engaged in extensive leisure travel with no break form work [3]. The term 'digital nomad' was first introduced by [4]. The main motivation of those who choose digital nomadism is freedom and autonomy in both work and personal life [5, 6]. The boundaries between work, leisure, and travel often seem blurred [7].

The number of digital nomads worldwide has been growing rapidly in recent years, which makes them a new market segment and an attractive target group for many tourism destinations and businesses, who are reshaping their marketing strategy by promoting their 'ideal' living and working conditions. In fact, digital nomads are creating opportunities and challenges for tourism businesses and destinations [8]. In order to successfully attract digital nomads, a study of their profile, lifestyle, motivation, and behavior is considered essential. In this context, the aim of this paper is to investigate the characteristics of digital nomads, their travel behavior and destination choice criteria, and to seek and propose policy measures that will enable tourism destinations and businesses to attract this new market. In addition, issues related to their lifestyle and work–life balance are addressed.

2 Literature Review

The benefits that digital nomads offer to the destinations they visit are multiple, not only financially, but also by enriching and diversifying the social and cultural life of the place [6]. Destinations are competing to attract this new market segment, based on factors such as culture and history, nature and climate, infrastructure, work facilities, service amenities, economic/financial aspects, and social/political aspects [8]. Moreover, digital nomads are driven in their destination choice by factors such as quality of life and technological connectivity among with job flexibility, the attraction of travel, and cultural immersion [9]. The availability of co-working [10] and co-living [11] spaces has also been cited by some authors as important factors in attracting digital nomads. Safety [12], gastronomy [13] and leisure features [6] are also considered important factors that influence the destination choice. Based on the above, it seems that the criteria for selecting destinations by digital nomads are largely similar to those of traditional tourists. Conversely, concerns about connectivity and visa management, as well as feelings of isolation and emotional adjustments, are seen as deterrents to choosing a destination [9]. The most popular destinations of digital nomads are spatially concentrated in Asia, Europe, and the Americas [12].

3 Methodology

This paper aims to explore the profile, lifestyle, travel behavior, and destination choice criteria of digital nomads. For the purposes of the research, a self-completed structured questionnaire consisting of two sections and fourteen questions (closed and 5-point Likert scale questions) was designed on the Google Forms platform.

The first section includes questions about the travel preferences, destination choice criteria, and travel behavior of digital nomads. The second section focused on the demographic information of the participants, i.e., gender, age, marital status, educational level, occupation, and nationality. Based on the fact that digital nomads create online communities [14, 15] and are very active on social media, the questionnaire was posted to various social media groups related to digital nomads. The survey conducted from June to August 2024. A total of 101 valid questionnaires were collected from a convenient sample. The collected data were statistically analyzed using the Statistical Package for the Social Sciences (SPSS) version 26.0.

4 Results

Table 1 presents the demographic characteristics of the participants. Of the 101 participants, 56 are men (55.4%) and 45 are women (44.6%). The majority of the participants belongs to the age groups 35–44 (43.6%) and 25–34 (39.6%) and are single (68.3%). The educational level of the participants is remarkably high, as 45 of them (44.6%) are graduates of tertiary (higher) education, while 50 of them (49.5%) hold a Master's or PhD degree; 46 of the participants (45.5%) identify themselves as remote employees, 35 are freelancers (34.7%), and 20 are entrepreneurs (19.8%). The participants come from 26 different countries.

Initially, the research focused on the travel behavior of digital nomads. More than half of the participants are experienced digital nomads, with 25 of them (24.8%) traveling as digital nomads for more than three years, while 31 (30.7%) have been traveling for one to three years. The rest, are relatively new digital nomads, as 18 of them (17.8%) travel from 7 months to one year, 15 (14.9%) from 3 to 6 months, and the remaining 12 (11.9%) for less than three months. Of the participants, 59 (58.4%) usually travel outside their country of residence, while the remaining 42 (41.6%) choose destinations both inside and outside their country of residence. It is noteworthy that none travel exclusively within their country of residence. One of the main objectives of the research was to investigate the selection criteria of destinations by digital nomads. According to their responses (Table 2), these criteria are multiple, with the top five being connectivity and available digital infrastructure (e.g. high speed internet) (Mean = 4.03), quality of life (Mean = 3.94), cost of living (Mean = 3.83), safety (Mean = 3.79) and visa policy (Mean = 3.78) in the destination. At the time of the survey, the 101 digital nomads were living and working in 21 countries, with the most popular being Greece (9 participants), the USA (8 participants), Georgia (6 participants), Spain (5 participants), and Colombia (3 participants). Nevertheless, the majority of digital nomads seem to change destinations frequently, with more than half (58.4%) staying in a destination for 1 to 3 months, 15 (14.9%) stay for 4 to 6 months, 6 (5.9%) for 7 to 12 months, while only 2 participants (2%) stay in a destination for more than a year. Approximately 19 participants (18.8%) reported that the length of stay in a destination is not the same each time but depends on the destination itself and what it offers.

Table 1 Respondents' profile—demographic characteristics

		N	%
Gender	Male	56	55.4
	Female	45	44.6
Age	18–24	4	4.0
	25–34	40	39.6
	35–44	44	43.6
	45–54	11	10.9
	55 +	2	2.0
Marital Status	Single	69	68.3
	Married without children	17	16.8
	Married with children	7	6.9
	Divorced/Widow	8	7.9
Educational Level	Basic	2	2.0
	Technical/vocational training	4	4.0
	Bachelor's degree	45	44.6
	Master's/PhD degree	50	49.5
Occupation	Remote employee	46	45.5
	Freelancer	35	34.7
	Entrepreneur	20	19.8
Total		101	100.0

In the next part of the survey, participants were asked about what factors they consider important to further increase the number of digital nomads worldwide. In order of importance, the factors that would push digital nomadism the most are digital transformation of businesses (Mean = 3.85), incentives from destinations to attract digital nomads (e.g., tax cuts) (Mean = 3.68), improving the technological infrastructure of destinations (Mean = 3.50), internationalization of businesses (Mean = 3.40), reducing the cost of air travel (Mean = 3.27), and increasing the security of digital transactions (Mean = 3.14). The development of smart technologies (Mean = 2.60) and the reduction of air travel time (Mean = 2.38) seem to be of less importance.

Subsequently, the participants' views and perceptions of both digital nomadism and their personal lives as digital nomads were explored. To begin with, almost all agree that the nature of their work is such that they can perform it completely remotely using digital tools and the internet (Mean = 4.56). They intend to continue living and working as digital nomads in the future (Mean = 4.21), as they are completely satisfied with this lifestyle (Mean = 3.89) and to a large extent with their income (Mean = 3.55), while most of them cannot imagine themselves working in a steady place with a fixed schedule (Mean = 3.42). They admit that working in low-cost countries allows them to save money to finance their travel (Mean = 4.08), but disagree that their priority is travel rather than their career (Mean = 2.70). Although

Table 2 Criteria for choosing a destination to live and work

	Mean	SD
Connectivity/digital infrastructure	4.03	0.866
Quality of life	3.94	0.988
Cost of living	3.83	1.011
Safety	3.79	1.033
Visa policy/restrictions on entry and stay into the country	3.78	1.180
Climate (temperature, humidity, air quality, etc.)	3.75	1.024
Nature	3.51	0.879
Food/cuisine	3.24	1.106
Tourist infrastructure (hotels, Airbnb, restaurants, etc.)	3.22	1.145
Entertainment/fun/activities	3.18	1.209
Hospitality of the locals	3.15	1.052
General infrastructure (hospitals, road network, etc.)	3.11	0.989
Tourist attractions/culture	3.07	1.160
Existence of an international airport/easy access	3.05	1.344
Tolerance of diversity (racial, sexual, ideological, etc.)	2.84	1.255
Existence of a community of digital nomads	2.64	1.293
Cost of internet services	2.55	0.954
Image of the destination	2.45	1.261
Level of taxation	2.07	1.235
The locals speak my language	2.05	1.108
Existence of co-working spaces	2.02	1.086
Educational level of the locals	1.88	0.920
Free Wi-Fi in public areas	1.82	1.090
Common currency with my country (e.g., Euro)	1.61	1.140

Note 1 = Not at all important, 5 = Extremely important

they agree that the COVID-19 restrictions (quarantine, reduction of human contacts, etc.) have encouraged teleworking and therefore boosted digital nomadism (Mean = 4.11), for most of them it was not the pandemic that led them to become digital nomads (Mean = 2.67). In relation to work–life balance, many of the participants admit that this lifestyle and work is a deterrent to starting a family (Mean = 3.22). However, the lack of meaningful relationships, the constant instability and loneliness of this lifestyle does not seem to deter them from continuing to live as digital nomads in the future (Mean = 2.97). In any case, they agree that digital nomadism is a strong trend (Mean = 3.96) and that the proportion of remote working will increase in the future (Mean = 3.94) (Table 3).

Table 3 Statements about digital nomadism

	Mean	SD
I am completely satisfied with my way of life and work as a digital nomad	3.89	0.799
Restrictive measures due to the COVID-19 pandemic (quarantine, reduction of human contacts, etc.) have strengthened forms of teleworking and therefore the number of digital nomads	4.11	1.009
The COVID-19 pandemic and the teleworking that was imposed on me was the reason for me to become a digital nomad	2.67	1.662
The remote working rate will increase in the future	3.94	1.038
Digital nomadism is a strong trend	3.96	0.824
I plan to continue living and working as a digital nomad in the future	4.21	0.887
This way of living and working is a deterrent to starting a family	3.22	1.180
I cannot imagine myself working in a steady place with a fixed schedule	3.42	1.235
My work is such that it can be performed completely remotely through the use of digital tools and the internet	4.56	0.699
I am satisfied with my income	3.55	0.974
My priority is travel and not professional development	2.70	1.162
Working from low-cost countries allows me to save money to finance my travels	4.08	0.880
My productivity increases when I travel less	2.97	1.360
The lack of meaningful relationships, the permanent instability and the loneliness of this way of life are deterrents to continuing to live as a digital prefecture in the future	2.97	1.300

Note 1 = Strongly Disagree, 5 = Strongly Agree

5 Discussion and Conclusion

Advances in technology and the 'new normal' brought about by the COVID-19 pandemic have transformed the way we work and travel. Digital nomadism is a modern trend in the global travel industry. In this context, this article contributes to the existing body of knowledge on digital nomads, focusing on their lifestyles, motivations, and travel behavior.

The survey revealed some interesting findings regarding the similarities and differences between digital nomads and other types of travelers. A typical digital nomad belongs to the most productive age groups (25–44 years old), is single, highly educated, and remote worker. A large percentage of digital nomads started this practice within the last year which shows that this trend is strong. In terms of their travel

behavior, the majority travel outside their home country, stay in the destination for a short period of time and choose their next destination based on a variety of criteria. Some of these criteria are common to those of other tourists, while others are linked to the specific nature of digital nomads. The main destination selection criteria are connectivity and digital infrastructure, quality of life in the destination, cost of living, safety, visa policy, and climate. Popular destinations include Greece, Spain, Georgia, and the USA.

As it turns out, digital nomadism is not a passing fad but a rather strong trend that was significantly strengthened during the COVID-19 period, although for most of the participants it was not the pandemic that led them to become digital nomads. This trend perhaps marks a transforming process in the nature of work as we have known it to date, a path of no return. Participants do not intend to change this way of living and working, as they are satisfied with their lifestyle and income. Moreover, working from countries with low living costs allows them to save money to finance their future travel. However, this lifestyle also has some disadvantages in terms of work–life balance, as for many of them the constant travel and lack of stability do not allow them to start a family, often leading to meaningful relationships and loneliness.

Some practical implications emerge from the research for tourist destinations and businesses interested in attracting this group of travelers, pushing further the development of digital nomadism. Initially, the digital transformation of businesses is important. The integration of digital technologies into all business functions and the adoption of remote working will lead to a new generation of digital nomads. Incentives from tourist destinations are also very important. Already many countries have introduced the digital nomad visa [16], a type of visa that allows digital nomads to live and work in a foreign country for a longer period of time than a normal tourist visa would allow. According to recent data [17], 42 countries worldwide already offer or plan to offer visas to digital nomads. Regions and municipalities have started to launch their own campaigns promoting the advantages offered to digital nomads. The results of the survey showed that the well-known tourist pull factors are also important for digital nomads. Moreover, the existence of a business ecosystem supporting remote workers in the destination is considered essential. Of course, all of the above will have no effect if destinations and businesses do not invest in their technological infrastructure. Digital nomads work remotely by leveraging technology, so the existence of 5G networks is critical. High internet speeds can be a game changer.

Although this study provided valuable insights into digital nomadism, it has one basic limitation. The sample is relatively small. In addition, the survey was conducted through social media, excluding digital nomads who may not have profiles on these networks. A repetition of the survey with a larger and more representative sample might have yielded different results.

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Examination of Individual Preferences for Future Security Policy Initiatives at a Mass Tourist Destination

Varvara Messaritaki, Alexandros Apostolakis, Dimitris Stergiou, and Shabbar Jaffry

Abstract The travel and tourism industry is dependent upon air transport. Especially peripheral island tourism destinations are almost exclusively dependent upon air transport. At the same time, the travel and tourism industry is particularly vulnerable to exogenous factors and influences. Hence, safety and security levels are of particular importance to policy makers and practitioners alike, since they bear a direct and significant effect on tourism arrivals. The paper makes use of stated choice experiments to evaluate individual preferences, utilizing a sample of 500 respondents. The paper utilizes a systematic heterogeneous preference specification approach in order to relax some of the restrictive propertied of homogeneous preference specification approach, and thus unmask a greater degree of variation in preferences among visitors. This alternative preference specification structure provides interesting insights on the preference of individual travelers belonging at different demand segments. The empirical findings derived from the systematic heterogeneous preference specification indicate that young visitors (younger than 25 years of age) have opposing preferences for future security related policy initiatives at an aviation setting, as compared to older visitors (older than 65 years of age). Based on this observation, more temporal specific policy initiatives could be developed. At the same time, due to familiarity and other psychological factors, managers and policy makers have to adopt more age and family friendly security policies. Overall, a bottom—up and reactive approach to aviation security policy-making could provide more efficient allocation of resources and more effective policy-making in the field.

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Keywords Systematic heterogeneity · Crete · Security

1 Introduction

As island tourist destinations are by default almost exclusively dependent upon airlines and airport infrastructure for their development, they have to ensure the safe and secure transportation, landing and ground management of air passengers. At the basic level, this observation implies that destinations and policy makers should cater for visitors' and travelers' preferences [1]. Considering the fact that airports are of critical importance in shaping tourists' memories and image of a destination, safe and secure airports and related infrastructure are of paramount importance for the competitive advantage of a tourist destination. Thus, safety and security policy initiatives are of paramount significance for policy makers and government officials. Thus, according to the literature, the better and closer one approximates visitors' preferences for safety and security policy initiatives at an airport management framework, the more successful the tourism destination would be [2, 3]. The current research endeavor examines tourists' preference patterns for future policy initiatives regarding the new international airport in Heraklion, Crete. The present study adopts a stated preferences discrete choice modeling (SPDCM) framework. The main objective of the paper is to capture preference heterogeneity in a systematic manner. In other words, this empirical investigation offers an insight on how individual preferences differ among different segments of the population (visitors), differentiated in terms of their socio-demographic characteristics (i.e., age or nationality). Accordingly, the paper has one overriding research objective. This research objective concerns the translation of visitors' preferences for future and/or hypothetical security related policy initiatives into actionable decision-making in the field. According to [3] this represents *a pro-active* form of policy-making in the field, that even though it is highly contestable and intrusive as an idea [4], yet its *bottom-up approach* makes it particular relevant to the society [5].

2 Literature Review

In travel and tourism research, understanding the varying preferences of individuals is crucial for predicting and enhancing travel behavior and destination choice. Traditionally, preference models in tourism have relied on homogeneous assumptions where all individuals are treated as if they exhibit similar tastes and decision-making processes. However, such models fail to capture the complex and diverse preferences that exist among tourists. Systematically heterogeneous preference specification models, which allow for the incorporation of individual variability in decision-making, have emerged as a valuable alternative in tourism research. These models have significantly improved the ability to predict travel choices, understand tourist

behavior, and aid in the formulation of more effective marketing strategies and policy interventions. Systematically heterogeneous models are rooted in random utility theory [6], which posits that individuals derive utility from different travel choices, influenced by personal preferences and external factors. In traditional models, preferences are treated as fixed across individuals. However, this assumption often leads to biased or incomplete conclusions because it ignores individual-level variability [7]. These models acknowledge that travelers have different sensitivities to factors like price, convenience, environmental sustainability, and cultural offerings, and that these preferences vary systematically based on socio-demographic and contextual factors.

One of the key advantages of systematically heterogeneous preference models is their ability to improve the accuracy of travel demand forecasting. By accounting for individual-level variations, these models provide a more nuanced understanding of how travelers make decisions, thereby leading to more precise predictions. This is especially important in tourism, where external factors such as seasonality, economic conditions, and cultural trends can have a significant impact on travel behavior. Furthermore, heterogeneous models offer valuable insights into policy-making. For instance, studies using these models have shown how different tourists respond to environmental taxes or congestion pricing, with eco-conscious travelers being more willing to pay for sustainable tourism options [8]. Such findings can guide the development of policies that not only enhance the sustainability of tourism but also cater to different tourist segments without alienating key demographics.

3 Research Methods

3.1 Research Methodology

The current study collected empirical data from a SPDCM experiment conducted during April to August period of 2021. The study was conducted in person. Data was collected over a sample of 500 individual tourists traveling to Crete for holiday purposes. Respondents were selected through convenience sampling.

The dependent variable in our study involved asking individual participants to state their preferred setting when traveling by air (i.e., the most preferred airport setting from a security/safety perspective). What is more, each alternative setting was described in terms of seven (7) product or policy attributes, all related to safety and security processes within an airport. These policy attributes included the ‘type of security personnel at the airport’ (qualitative approach), the ‘type of CCTV cameras at the airport’, the ‘security processes’ at the airport, the ‘time required for a passenger to go through security checks’, the ‘number of visible security personnel at the airport’, ‘who has access to information collected at the airport’, and finally a ‘security surcharge (equivalent to the price coefficient). The process of selecting the attributes and their respective levels was informed by focus group discussions, and a small

qualitative study that included various stakeholders (citizens, industry experts, as well as academics in the field).

Furthermore, each one of the abovementioned seven policy attributes was described based on four (4) levels or configurations. For example, the 'type of security personnel at the airport' attribute is described in terms of 'airport security personnel (status quo, or base)', 'airport police department personnel', 'undercover police department personnel', and 'military personnel'. Random configurations of levels across all seven attributes differentiated one airport setting over another in a given choice scenario. Each choice scenario was generated randomly through a main—effects routine in SAS. The random generation of choice scenarios through the experimental design ensured that each scenario would appear only once in the whole choice experiment and that it would facilitate the trade—off between different attributes and their configurations. Table 1 below presents a SPDCM (choice) experiment faced by a participant.

Table 1 Example of a SPDCM experiment

	Option A		Option B		Option C
People	Airport police dept. personnel		Airport security personnel		I would choose neither of the two options
Technology	No cameras		Smart cameras		
Security Process	Random pat-downs of people and luggage		Random pat-downs of people and luggage		
Time to security checks	10 min to go through security checks		5 min to go through security checks		
Number of Security Personnel	15 people		20 people		
Access to Information	Disclosure of information to airport police departments only		Disclosure of information to all EU police departments		
Security Surcharge	A surcharge of 1.50 €		A surcharge of 2.00 €		
	Option A		Option B		Option C

4 Empirical Findings

4.1 Systematic Heterogeneous Preference Specification

The empirical findings in Table 2 were estimated using Limdep statistical software. Table 2 reports the homogeneous preference specification model. The examination of the homogeneous preference specification model indicates that the type of security personnel is particularly important to them. The empirical findings from the homogeneous preference specification have been discussed extensively elsewhere [9].

The upper part of Table 2 reports the empirical findings from the homogeneous preference specification model. The lower part of Table 2 reports the interactions of product attributes and their levels with a number of respondents' socio-demographic variables. The empirical results are categorized under three major variables, namely the lack of cameras at the airport (policy deterioration), the existence of military personnel at the airport, and travel security processes (passengers carrying a personal biometrics card). According to the empirical findings, males and British nationals exert positive and statistically significant preferences for the existence of no cameras at the airport. On the other hand, visitors with children and visitors originating from Germany tend to be negatively disposed toward this policy initiative. Thus, we can observe that contrary to the evidence derived from the homogeneous preference specification model, where tourists *in general* exhibited significantly negative preferences for a policy deterioration involving the removal of all cameras from an airport setting, the systematically heterogeneous preference specification indicate that this particular policy appeals to males and visitors traveling from Britain.

The results from Table 2 also indicate that *all visitors* tend to prefer, up to a certain extent, safe and secure airports, and certainly not to a degree that causes them anxiety and distress (presence of military personnel at the airport). This is certainly the case as far as young visitors (up to 25 years of age), frequent visitors (visited Crete twice before), and repeat visitors are concerned. Yet, the empirical finding on Table 2 indicate that males and those over 65 years of age are more likely to express positive preferences for the presence of military personnel at the airport. Hence, we observe a digression from the general norm due to mainly psychological factors and reasoning (familiarization and increased exposure for male visitors and the reassurance of security for older travelers.

At the same time, Table 2 below indicates that whereas under the homogeneous preference specification model *all visitors* exerted a positive and stat. significance preference toward biometrics cards for passengers, the systematically heterogeneous preference model specification suggests that visitors with two children, single and young (up to 25 years of ages) visitors are particularly opposing this policy initiative. Thus, we can conclude that the homogeneous preference specification while its usefulness in providing information about respondents preference patterns for future policy initiative, yet it masks important differences and divergent priorities among

Table 2 Homogeneous and systematically Heterogeneous preference specification models

Attributes	Attribute levels	Betas
ASC	Alternative Specific Constant	*-0.700 (0.001)**
People	Airport security personnel	
	Airport police department	*0.248 (0.020)***
	Undercover police personnel	*0.189 (0.039)***
	Military personnel	*-0.369 (0.000)**
Technology	Standard CCTV cameras	
	No cameras	*-0.725 (0.000)**
	Smart Cameras	0.153 (0.148)
	Cameras capturing Biometric info	*0.213 (0.043)***
Security Process	Passengers to go through metal detectors in random	
	Random pat-down of people and luggage	0.089 (0.418)
	European passenger recording system	0.149 0.177)
	Personal biometrics card	*0.198 (0.070)****
Time to security checks	5 min to go through security checks	
	No delays	0.158 (0.142)
	10 min to go through security checks	0.085 (0.434)
	15 min to go through security checks	*0.234 (0.034)***
Number of Security Personnel	10 persons	
	5 persons	*0.167 (0.028)***
	15 persons	*0.289 (0.008)***
	20 persons	0.118 (0.284)
Access to Information	Disclose information to airport policy depts. only	
	Disclose information to police depts. in Greece	0.156 (0.441)
	Disclose information to all EU police depts	0.141 (0.200)
	Disclose information to all police depts. worldwide	*0.201 (0.041)***
Price	Price coefficient (Security Surcharge)	-0.181 (0.044)**
LL test		*-801.562*
Interactions		
No cameras	No cameras* Germans	-0.856 (0.000)*
	No cameras*British	0.398 (0.048)**
	No cameras*2 kids	-0.682 (0.007)**

(continued)

Table 2 (continued)

Attributes	Attribute levels	Betas
	No cameras*males	0.742 (0.001)*
Military personnel	Military Personnel*1 previous visit	-0.583 (0.052)**
	Military Personnel * 2 + previous visits	-0.764 (0.033)**
	Military Personnel*65 +	0.481 (0.085)***
	Military Personnel *Up to 25 years	-0.877 (0.003)**
	Military Personnel*males	0.396 (0.39)**
Biometric Info	Cameras capturing Biometric info*Up to 25 year	-0.765 (0.000)*
	Cameras capturing Biometric info*Single	-0.539 (0.0.52)***
	Cameras capturing Biometric info*2 kids	-0.497 (0.020)**
LL test		-852.593

visitors and travelers. This certainly does have important implications for policy and decision-making among managers, policy makers and investors later on.

5 Discussion and Policy Implications

The analysis of individual visitors' preferences from a systematically heterogeneous preference specification perspective reveals a number of key policy-making directions. *Overall,* and on top of the conclusions that have been derived from the homogeneous preference specification in [9], the current research endeavor indicates that there is indeed a significant degree of heterogeneity across respondents/visitors to Crete in terms of their preferences for future policy initiatives in the area of aviation and airport security. From this perspective the paper aligns with the conclusions drawn by [10, 11], and [2]. In terms of the projection of respondents' preference patterns into policy initiatives, there are three (3) main areas of significance. *First*, the empirical findings confirm the fact that travelers are particularly sensitive about security issues at airports these days. This is evident by the fact that there is wide opposition toward the removal of CCTV cameras from airports. However, we observe that male visitors and those traveling from Britain are actually quite favorable toward this policy direction. Clearly, the assessment of personal safety and security differs between national markets [12] and [2].

Second, the empirical findings indicate that there are certain groups of visitors to Crete that are particularly sensitive to safety and security issues. For example, young visitors seem to value extremely high their liberty and civil rights. Hence their negative and stat. significant preferences for biometric cards and the presence of

military personnel. At the same time, older visitors (older than 65 years of age) seem to be quite happy for the presence of military personnel at the airport. Considering the fact that the majority of younger visitors tend to travel to Crete during the early part of the summer season, whereas older individuals tend to travel during the past part of the summer season, this could help policy makers, managers, and practitioners allocate resources more efficiently at the airport.

Finally, the empirical evidence from the bottom half of Table 2 earlier on indicate that young travelers and families with dependents are more likely to prefer less intrusive security policy initiatives (no military personnel, and no biometric cards) at an airport setting. These findings could signify the need to airport managers and decision makers to develop family friendly and age appropriate security processes at an airport setting. This could include policy initiative like the creation of dedicated family and children screening lanes, or the deployment of younger security teams at airports (so that younger passengers feel more familiar and at ease with their presence).

6 Conclusions

The current research endeavor has utilized a SPDCM framework to evaluate individual preferences for future security related policy initiatives at the new international airport of Crete. Using a systematic heterogeneous preference specification, the article evaluated visitors; preferences for future and hypothetical policy developments at an airport setting. The evidence presented in this paper provides an interesting platform for policy makers, aviation managers and practitioners. The overall conclusion to be drawn is that there is indeed a considerable degree of variation in preferences that can be explained through visitors' socio-demographic characteristics. In other words, policy-making in the field could become more efficient through appropriate demand segmentation policy initiatives.

While indicative policy initiatives have been proposed on the basis of the empirical findings presented here, the discussion concludes that more effort has to be directed at capturing heterogeneity in preferences. Correspondingly, this bottom—up and reactive approach to aviation security policy-making could provide more efficient allocation of resources and more effective policy-making in the field.

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Greek Cruise Ports' Performance Evaluation: A Multi-Criteria Decision Method (MCDM) Approach



Aggeliki Sgora, Agisilaos Konidaris, and Spyros Polykalas

Abstract Cruise tourism is one of the fastest-growing sectors in the leisure industry and has become increasingly globalized over the years. In Greece, cruise tourism shows an upward trend. In 2022, 48 Greek ports were added to cruise lines' itineraries. However, as competition between cruise ports intensifies each year, the pressure to improve their performance increases. This paper presents a performance evaluation method for Greek cruise ports. It combines the Analytic Hierarchy Process (AHP), the entropy weighting method, and the Total Order Preference by Similarity to the Ideal Solution (TOPSIS) method. Specifically, we use a case study involving four of the top Greek cruise ports—Santorini, Mykonos, Piraeus, and Corfu—to demonstrate the application of the method. Numerical results show that Multi-Criteria Decision-Making (MCDM) methods are useful tools for addressing performance issues when multiple parameters with different levels of importance are involved. Moreover, combining the AHP with the entropy weighting method makes the results more realistic and reliable. The study's findings suggest that, by using the evaluation criteria, port managers can allocate resources more effectively and focus on areas that yield the greatest impact on overall performance.

Keywords Cruise tourism · Greek ports · Evaluation. AHP · Entropy · TOPSIS

1 Introduction

Tourism is a catalyst for the economic growth and social development of a region, a state or a country [1]. Cruise tourism is the fastest-growing sector of the global tourism industry, with the Mediterranean to be the second most popular cruise destination after the Caribbean [2]. For 2022, Greece is ranked third among the most popular cruise destinations in the Mediterranean [3]. More specifically, according to the Hellenic Ports Association (ELIME), the 48 Greek ports welcomed 4614 cruise ship arrivals and 4.38 million passengers in 2022, with top cruise destinations the ports of

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Santorini, Mykonos, Piraeus, Corfu, and Rhodes. Moreover, according to the Bank of Greece, cruise passengers visiting Greece in 2023 generated 908.4 million euros in travel receipts, representing an 84.1 percent increase compared to 2022 [4].

However, since the cruise traffic demand increases, continuously new cruise destinations will appear in the market. In this context, the need for a cruise port evaluation method is imperative, as well as, the identification of the criteria for evaluating cruise ports. Port managers can use the evaluation criteria to allocate resources more efficiently and focus on areas that will have the greatest impact on overall performance. Lorenčič, Twrdy, and Lep [5] have identified and classified several criteria in the following categories/aspects:

- Traffic–technical criteria that consider parameters such as the traffic flow, the infrastructure, and the accessibility of the ports.
- Safety–environmental criteria, such as the pollution and the crime level in the port city and waste-related issues, etc.
- Touristic criteria, such as the number of attractions, the destination ranking, etc.
- Socio-economic criteria, such as the employment rate, the passengers' expenditures, etc.

Moreover, Lorenčič, Twrdy, and Lep [5] proposed an MCDM-method that combines the Analytic Hierarchy Process (AHP) [6, 7] and the Total Order Preference by Similarity to the Ideal Solution (TOPSIS) method [8]. However, since the AHP method is a method for accessing subjective weights of the criteria we propose in the current study, a multi-criteria method that combines the AHP method and the entropy weighting method [9] used for objective assessments of criteria's weights to make the results more realistic and reliable.

2 The Proposed Evaluation Method

Our proposed method used to evaluate the cruise ports is described by the following steps:

- Step 1: Indicate the list of ports and construct the decision matrix D. Suppose there are m alternative cruise ports and n evaluation criteria, then we can construct an m × n matrix where element d_{ij} denotes the value of the *j*th criterion of the *i*th port.
- Step 2: Normalize the initial decision matrix D to make data comparable and dimensionless. We call the normalized matrix P, where

$$p_{ij} = \frac{d_{ij}}{\sum_{i=1}^{m} d_{ij}} \tag{1}$$

- Step 3: Calculate the subjective weights (SW) by applying the AHP method.

- Step 4: Apply the entropy weighting method to compute the objective weights (OW) of the decision factors.

$$OW_j = \frac{E_j}{\sum_{j=1}^{n} E_j} \tag{2}$$

where

$$E_j = -\frac{\sum_{i=1}^{m} p_{ij} ln\left(1 - p_{ij}\right)}{\ln(m)} \tag{3}$$

- Step 5: $\forall$ j {1,…,n} calculate the combined weight (CW) as

$$\mathrm{CW_j} = \alpha \mathrm{SW_j} + (1 - \alpha)\,\mathrm{OW_j} \tag{4}$$

- Step 6: Apply the TOPSIS method to rank the cruise ports in decreasing order.

Figure 1 overviews the proposed method.

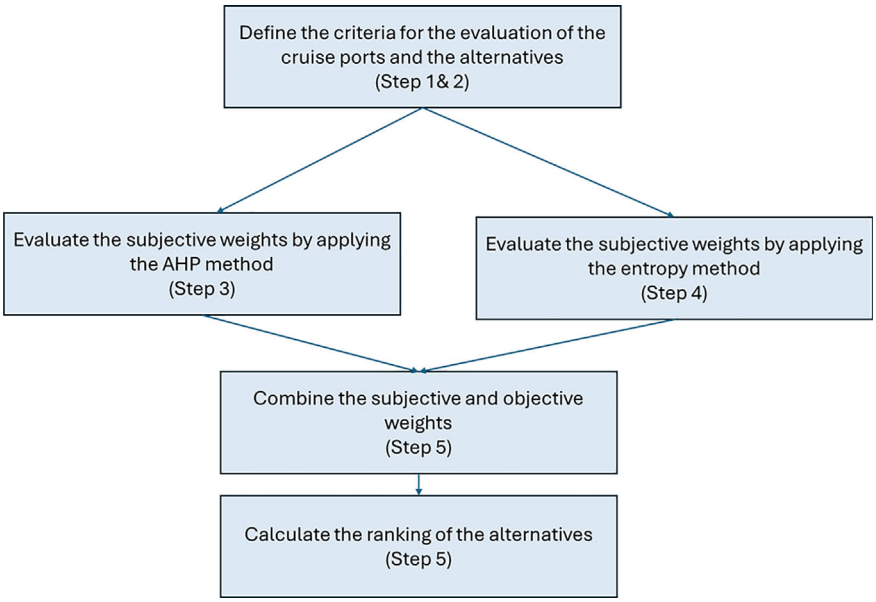


Fig. 1 The proposed method

3 Numerical Results

For our case study application, we consider the following four Greek cruise ports: Santorini, Mykonos, Piraeus, and Corfu. Table 1 shows the number of cruise ship calls and cruise passengers of the 10 most popular Greek cruise ports in 2022, according to statistics kept by the Hellenic Ports Association. As depicted in Table 1, the four Greek cruise ports selected in our case study are at the top of the list.

Moreover, the following criteria are used for the cruise port evaluation, as:

- Traffic–technical criteria: the Number of cruise passengers and the walk distance from the town center (in km).
- Safety–environmental criteria, the emissions values (i.e., NOx, SO_2, and PM2.5) in tons [11] and the level of crime (values taken by https://www.numbeo.com/crime).
- Touristic criterion, the destination ranking (source: timeout.com).
- Socio-economic criterion, the labor force rate of the region (source: the Hellenic Statistical Authority)

Table 2 shows the corresponding values of the four Greek ports for each criterion.

Table 3 shows the normalized values by using Eq. 1. As concerns the AHP method, we use the same weight values as in [5]. As Fig. 2 depicts, according to the answers given by 22 experts (representing port authorities) from 22 different Mediterranean cruise ports the most important category for the evaluation is the socioeconomic aspect.

Then, the entropy weighting method is applied in order to calculate the objective weights (OW) of the criteria, using Eq. 3. The combined weight for each criterion (calculating by Eq. 4) is depicted in Fig. 3. It should be noted that in our case study, the α value in Eq. 4 is set to 0.5.

As Fig. 3 depicts by combining the objective and subjective methods the results are different, since the AHP method takes into account the subjective preferences of

Table 1 Greek cruise ports statistics (year 2022) [10]

Port	Number of cruise ship calls	Number of cruise passengers
Piraeus	677	880.416
Santorini	686	826.602
Mykonos	608	685.918
Corfu	392	527.609
Rhodes	381	370.343
Herakleion	227	304.257
Katakolo	198	250.793
Chania (Souda)	121	179.681
Kefalonia—Ithaca	132	145.373
Patmos	214	98.530

Table 2 Greek cruise ports data

Port	Traffic–Technical		Safety–Environmental		Labor force rate (%) in the region	Touristic
	Number of cruise passengers	Walk distance (km)	Emissions (NOx, SO_2, and PM2.5)	Level of crime		
Santorini (Old Thira Port)	826.602	1.4	619	23.1	44.7	3
Mykonos (Tourlos Port)	685.918	6.9	475	64.73	44.7	11
Piraeus (Cruise Terminal A	880.416	2.1	927	39.56	54.6	1
Corfu (Cruise Port)	527.609	2.8	467	21.69	46.6	7

Table 3 The normalized values

Port	Traffic–Technical		Safety–Environmental		Labor force rate (%) in the region	Touristic
	Number of cruise passengers	Walk distance	Emissions (NOx, SO_2, and PM2.5)	Level of crime		
Santorini	0.283	0.106	0.249	0.155	0.235	0.136
Mykonos	0.235	0.523	0.191	0.434	0.235	0.500
Piraeus	0.301	0.159	0.373	0.265	0.286	0.045
Corfu	0.181	0.212	0.188	0.145	0.244	0.318

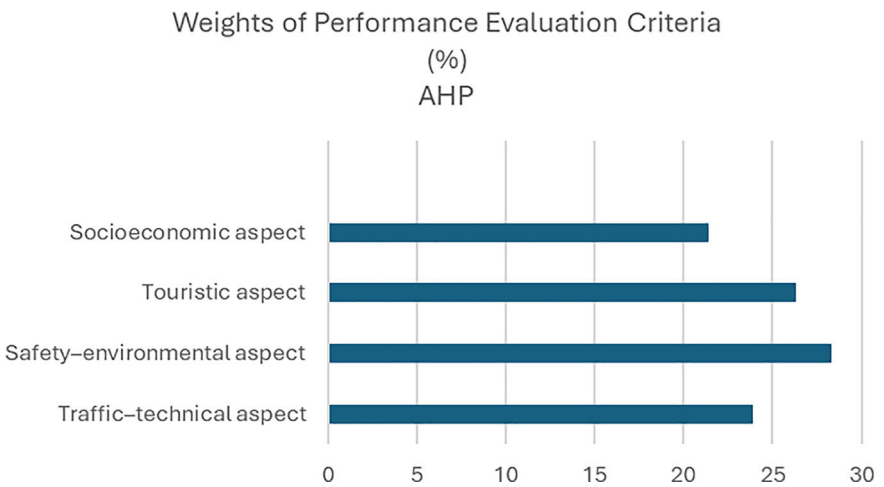


Fig. 2 AHP weights (as percentage) for each criterion

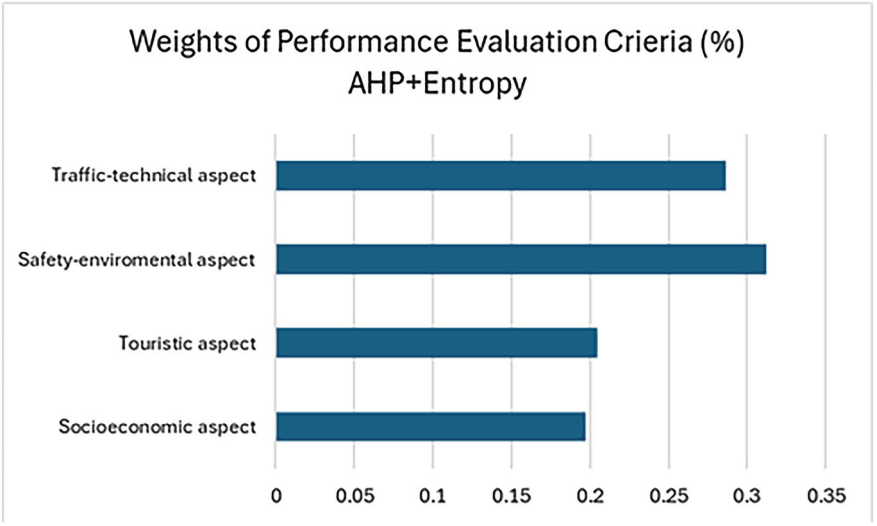


Fig. 3 Combined weight (as percentage) for each criterion

Table 4 Ranking results

Port	AHP + entropy + TOPSIS	AHP + TOPSIS
Santorini	4	2
Mykonos	1	1
Piraeus	3	4
Corfu	2	3

the experts, and the entropy weighting method considers the amount of information provided by various parameters.

Finally, the TOPSIS is applied to assess the Greek ports. As Table 4 shows the order of the ranking of the ports, depends on the weights value of each criterion. Moreover, by taking into account the objective weights the ranking of the cruise ports is changed.

4 Conclusions

Evaluating the performance of a cruise port is a challenging task. MCDM methods can be a useful tool to deal with this issue. They provide an effective framework for evaluating the cruise ports by means of their ratings with respect to multiple factors. In this paper, a method that combines both the AHP and the entropy weighting methods to determine the importance of factors and the TOPSIS method to assess the most popular Greek cruise destinations is presented. As is the case in other sectors, social

media and online communities can better promote the different performance criteria [11–14].

Future work involves assessing the efficiency of the proposed method when additional criteria are considered, as well as, assigning varying weights to the AHP sub-hierarchies.

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Navigating Cultural Boundaries: The Impact of Digital Media and Western Food Industry Campaigns in the Middle East's Virtual Landscape



Achilleas Michael Kanellis and Eirini Papadaki

Abstract This paper explores the impact of digital media within the digital world in the theocratic Islamic context. The study's distinctiveness lies in its focus on campaign messages through internationally imported food and drink products from the Western World countries to the Middle East. This aspect is underscored by the widespread promotion of the food industry's digital messages on social media. To reach conclusions, the authors use content analysis of 215 social media posts from six social media accounts, on the same social media platform (Instagram), owned by food and beverage companies from Western World countries. The posts have been accrued between March 2022 and April 2023, while the accounts were selected based on the companies' activities within the geographical region studied. The specific accounts have been selected due to the higher availability of data following the digital footprints of the food and beverage sector. The primary objective is to determine the nature of the relationship between the two cultures by examining the messages conveyed by the companies' social media advertising campaigns. This analysis considers the messages that are allowed to be displayed according to the techno-politics of the region, as well as the degree of appropriation affected by the mutual respect between Western and Eastern cultures. Finally, the research's results can contribute to the understanding of the challenges of promoting long-term effective intercultural communication in the real world, the digital media, and the virtual world and suggest potential strategies for improving this communication, consisting of co-production of messages in the digital and virtual worlds, in this multi-dimensional realm.

Keywords Digital Media · Intercultural Communication · Cultural Barriers

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1 Introduction

It has been almost 30 years since Hoffman and Novak (1996), as well as Venkatesh (1998), conceptualized "hypermedia environments" and "cybermarketspace" respectively, focusing on their implications for marketing [1, 2]. The concept started with virtual worlds combining the power of social networking with the technology of multiplayer computer games, allowing new forms of collaboration [3–5] through a kind of "virtual reality" [6, 7]. Virtual worlds are no longer just games but potentially transformative technologies. They allow avatar users to socialize and work as employees, start businesses, hold international conferences and events, attend lectures, plan battle scenarios for the military, and provide post-combat stress relief [8, 9]. For example, Bell & Barber (2016) [8] define virtual worlds as a synchronous, persistent network of people, represented as avatars, facilitated by networked computers. Often, the realm of the virtual world engenders a similar expansionist frontier spirit, encouraging a disciplinary view of marketing as boundary-breaking, boldly going forth to research, explore, and master new territories [8]. Nevertheless, the 'new marketing landscape' of virtual worlds is experienced by people in the bricks-and-mortar world, too, not only in so-called cyberspace [9, 10], while scientific debates discuss whether various related developments—new market arenas, technology platforms, applications, and formats—signify fundamental changes in market behaviors or are mere extensions of existing trends. Even if virtual worlds are not entirely separate from their physical forms, they are distinct and permit a new perspective on market phenomena and associated market behaviors. The aim of the study is to investigate the impact of social media marketing campaigns on Western Companies' food and beverage products in the Islamic Middle East. It is important to explore intercultural conversation, examining how digital messages are acquired within cultural and political constraints. The study additionally addresses technopolitical challenges in the intercultural transition from real geographical limited world to digital world and then to the virtual world. Ultimately, it seeks to decorate information on the connection between Western and Islamic cultures through virtual media.

2 Literature Review

With thousands and thousands of customers on those platforms, companies can promote their products and services to a large target market. Social media marketing offers many advantages over conventional advertising, which include targeting abilities, value-effectiveness, and overall performance tracking in real-time through interplay. Advertising on social media platforms like Instagram has ended up vital for businesses to attain their target audience [11]. However, the impact of the metaverse on advertising is still relatively unknown. The metaverse is a virtual world where users can interact with each other and digital objects in a virtual space. At the same

time, it is expected to impact various industries, including advertising. One potential impact of the metaverse on advertising and marketing is the capacity to create more immersive experiences for users. Advertisers may be able to create interactive ads that allow users to interact with their products in a virtual environment. This could increase brand awareness and customer loyalty [12–15]. In addition, the metaverse can offer new opportunities for targeted advertising. Advertising in a virtual world has potential benefits, but challenges must be addressed.

Food can be seen as a sign of popular culture within a globalized environment driven by market forces. In addition to perceiving food as a way to fulfill the daily need for sustenance, food studies focus on understanding consumption according to the metaphorical notion of symbolic and economic appropriation [16]. Critics argue that exporting from the country of origin will lead to further disruption of more traditional forms of food and drink, thus acting as another form of what Heldke refers to as cultural food colonialism [17]. With the concept of virtual worlds still in development, challenges occur to big markets such as the Middle East, the theocratic countries, and their nations governed by religious leaders and institutions. In such countries, there may be restrictions on how people can interact not only in the digital environment, including virtual worlds such as the metaverse, but also in the conventional world with each other. Specific policies and regulations depend on the country in question and the religious beliefs that govern it [18, 19]. For example, in a few theocratic nations, there can be regulations on the varieties of content allowed in virtual worlds, and the structure and guidelines will be accrued from the already existing digital world, together with depictions of certain religious figures or practices [20, 21].

Finally, Marshall McLuhan's theory of the "global village" and the metaverse share similarities in exploring the effects of communication technologies on human connectivity and shrinking spatial and cultural distances. McLuhan established the term "global village" to describe the idea that advances in communication technologies would create a sense of an interconnected global community. He argued that these technologies would allow people worldwide to connect and communicate instantly, just like in a small village where everyone knows each other [22, 23]. The metaverse can be seen as the "digital" embodiment of McLuhan's global village, as it allows individuals to communicate, collaborate, and share experiences on a global scale, breaking down traditional barriers of distance and time and facilitating direct and immersive interactions between cultures and continents [8, 22–25]. As social media advertising, digital marketing and emerging digital structures such as the metaverse reshape the dynamics of worldwide advertising, expertise in their effect on the intercultural realm, especially within the context of food and beverage promoting in theocratic regions, it is essential to examine both possibilities and challenges that might emerge. This sets the framework for the discussion of the research results in the next chapter. Through the study of the digital advertising messages of the dataset, the cultural obstacles, and the technological improvements in the selected online environments, the authors examine the ways food industries based in Western countries choose to communicate with their audiences in the Middle East.

3 Methodological Considerations and Discussion of the Results

The authors focused on four parameters: (a) the influence of posted material from the Western world to the receivers in the Middle East, (b) the number of seasonal posts during Christmas, Easter, and Ramadan seasons, (c) the existence of patterns and formulas, and (d) the engagement rate (ER) in each account.

The social media platform that was chosen is Instagram, due to its widespread use both in the Western world and the Middle East. There are several reasons why Instagram is popular in the Middle East as a tool for communicating campaigns and advertising by companies in the Western world [26–29]. The Middle East has one of the highest social media usage rates worldwide. There is a preference for visual content, and Instagram provides a perfect platform for companies to highlight their products and services with creative and personalized content through photos and videos [26, 27, 30, 31]. Furthermore, influencer marketing through Instagram is a popular strategy in the Middle East. Companies can partner with influencers to promote their products and services and even target their ads to specific audiences based on demographics, interests, and behaviors. These strategies are also used by food, beverages/soft drinks, and fast-food companies. Regarding the research sampling, content analysis will be performed on posts of popular food companies, such as Coca-Cola, M&M's, Oreo, Snickers, Gatorade, and Pringles.

The data collection process for this study commenced on March 24, 2022, and concluded on April 25, 2023, encompassing a complete calendar cycle that includes two celebrations of Christian Easter, one Christmas celebration, and two Ramadan celebrations. Social media posts and relevant online content were the primary sources of data, selected through purposive sampling to ensure relevance to the specified analytical categories. These categories included: (a) the appearance of the creators' own culture in the posts, (b) the frequency of presenting women separately, (c) the presence of easily marketable features such as clothing and music, indicative of a minimum common culture, (d) Western characteristics, (e) the association of posts with seasonal celebrations, and (f) patterns observed in the posts, such as the use of contests or the strategy of splitting significant announcements into shorter posts. This categorization aimed to facilitate the extraction of meaningful insights and conclusions from the collected data. Coca-Cola, one of the most well-known companies in the food and beverage industry worldwide, on its official Instagram account for the Middle East, has 124.9 K followers and has posted 370 photos and videos, with an engagement rate of 0.56%. This rate is very low, compared to the average interaction when it comes to video views, which is 2%. The company's main account has 3.02% with 309 posts and 2.8 million followers. It is important to mention that out of the 375 photos and videos, 103 are included in the survey sample, almost 1/4 of the total posts (Table 2). M&M's, with 116 posts and 8161 followers, has a higher engagement rate in the Middle East (0.47% ER) than the company's main account, which has 1364 posts and 1.2 million followers (0.15% ER). It is important to mention that they use most of the company's characters and

not some actors or models in their ads. Snickers' official page has an ER of 0.09%, with 690 posts and 685 thousand followers, while the page in the Middle East has an ER of 5.06%, with 3500 followers and 134 posts. For an analysis of the remaining company accounts, see Tables 1 and 2.

It seems that companies that are quite famous for their products in the Western world do not adapt properly when they create messages for the Middle East, as often they do not promote a single sign of the Eastern culture or a seasonal religious celebration. Still, only very few posts (under 10) were uploaded about Ramadan and a few about the change of the year (under 10, and without mentioning the word Christmas

Table 1 Comparative Analysis of Coca-Cola Middle East and Other Food and Beverage Brands in the Middle East

Company	Number of Posts (Total)	Number of Posts (Sample)	Engagement Rate (ER) (%)	Main Account ER	Average Interaction
Coca-Cola Middle East	370	103	0.56	3.02% (309 posts, 2.8 M followers)	15,861 (with views), < 5000 (without views)
M&M's	116	21	0.47	0.15% (1364 posts, 1.2 M followers)	94 per post
Snickers Arabia	134	23	5.06	0.09% (690 posts, 685 K followers)	48 per post
Oreo	41	41	0.29	0.47% (1509 posts, 3.5 M followers)	425 per post
Gatorade	28	14	0.57	1.38% (541 posts, 1.2 M followers)	14,000 (over 14 posts)
Pringles Arabia	102	13	0.75	0.10% (743 posts, 743 K followers)	2,255 per post

Table 2 Comparative Analysis of the Frequency of parameters of the 6 social media accounts

Parameters	M&M's	Snickers	Oreo	Gatorade	Pringles	Coca-Cola
Local Culture	0	0,17	0,12	0	0,36	0,83
Women	0,04	0,34	0,29	0,21	0,18	0,11
Men	0,09	0,68	0,09	0,78	0,36	0,72
Commodification of Culture	0,04	0,04	0,24	0	0,18	0,89
Seasonal messages	0,05	0,08	0,19	0	0,27	0,04
Western World traits and attributes	0,86	0,13	0,56	1	0,63	0,97
Patterns	0,5	0,73	0,78	0,5	0,45	0,87

or Easter). This lack of adaptation could be due to a lack of understanding of the local culture. Factors such as the influence of globalization and the homogenization of cultures in the collaboration of strong traditions may affect the companies' choices for posting messages in the virtual environment. As companies expand their products and brands across borders, they may choose to adopt a standardized marketing approach that is consistent across markets, instead of tailoring their message to each region. For example, there were too many posts, if not the majority, about the World Cup 2022, without Arabic captions or local elements, even though the event was organized for the first time in the Middle East region. The sample also included many reposts, with the only differentiation being the caption of the post. This fact creates a high degree of standardization, which is not found in the official accounts of the companies. Some accounts had a much smaller average interaction, as there was no adaptation of the company to local culture. Also, the presence of women was significantly small compared to the presence of men. In addition, when a woman figure appeared in posts, she was rarely without a man's presence or even at home with her children.

4 Conclusions

This study examined six social media accounts from Western food and beverage companies with digital activity in the region of the Middle East. The data analyzed in Tables 1 and 2 was collected between March 2022 and April 2023. The analysis showed that there is a lot of standardization of the uploaded content, as the companies regularly repost certain posts, or forward past posts from the main account to the regional ones. In general, the outcome of the analysis of the 215 posts gathered is that Western food and beverage companies seem to be struggling to effectively adapt their social media campaigns to the Middle East due to the different cultural contexts. There is a noticeable absence of local cultural elements and regional celebrations such as Ramadan, despite the whole region being Islamic. The posts studied lack elements of the local culture, entailing mere Western characteristics, which did not properly bridge the appropriation on social media, regardless of how sales move in the area. The influence of globalization and cultural homogenization might lead companies to adopt a common marketing approach, without considering local characteristics, traditional habits and/or social norms. These communication strategies in the digital environment will most probably be copied in the future virtual mediascape, with companies promoting their products in a 3D "living" world, creating cultural noise—that is obstacles in the communication process. The receivers of Westernized messages in the Middle East, for instance, might not be familiar with the Western gastronomy signs and that might lead to incomprehensible or even easily discarded messages. The women's position in the Instagram campaigns included in the research dataset is perhaps the only example of the Western companies' messages adopting the receivers' cultural background. The traditional role of women in the Middle East is well-known. The promotion of women's traditional status to sell products in the

age of the internet should be met with a critical eye, as people are now claiming rights in these areas, requiring better living conditions for women. Better practices should be found to adapt campaigns to the cultural context of the Middle East. Having been established as social signs, brands represent ideas that people have in common, while bringing personal aspirations in mind. Big Western brands, like Coca-Cola, "serve as meta-symbols of global culture" [32], highly associated with such desired situations as a happy family dinner [33]. In this respect, posting similar or even identical messages in all the social media accounts of a brand follows two important marketing goals: (a) it highlights the identity of the brand, through a stable, internationally recognizable sign system, and (b) it forwards the origin, the producer's cultural context, rather than adjusting to the consumer's personality. Cultural differences, rooted in religious and social practices, may nevertheless hinder—or even break—the communication process between Western producers and consumers in the Middle East. The digital and virtual marketing worlds are not socio-politically co-constructed but rather follow the norms of Western/big brand imperialism. However, in order to enhance audiences' engagement and intercultural communication, it is necessary to adopt more tailored marketing strategies, respecting the norms of each targeted region. The communication gaps between two—or more—different cultures, distant in many ways—geographically, religiously, socially, etc.—in the digital semiosphere should be bridged, with a sincere respect to every person involved. McLuhan's vision seems relevant and rather timely here, as the digital world has allowed communication flows with no geographical, time, or space boundaries. Apart from a daily, basic human need, food practices can also be seen as carrying meaning, as a sign system of cultural practices or as cultural "text" [34]. Therefore, our research highlights that exposure to Western food images and practices relates both to strong brand-building, and issues of power—the dominance of Western culture and the convenience food market over traditional Eastern cuisine.

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Understanding the Importance of Digital Marketing Techniques for Wine Travelers: The Case of Northern Greece Wineries

Maria Salamoura, Lefteris Chatzigeorgiadis, and Anna Kyriakaki

Abstract During the last decades, the wine industry has involved many regions competing with each other to gain market share and build their brand. In this sense, innovative marketing strategies have been used to improve their competitive advantage. The objective of this paper is to investigate the effect of digital marketing strategies in the wine industry, in the case of visitors at Northern Greece Wineries. The research also aims to explore wine tourists' preferences and attitudes toward the digital presence of wineries, regarding wine tourism activities. For this purpose, a quantitative survey was conducted, using a structured questionnaire, distributed to a convenient sample of 193 visitors from twelve wineries in six regions of northern Greece, during their visits. Visitors were asked about attractive content on websites and social media, preferred types of online advertising, and desired features in wine tourism applications. In addition, specific online actions before their visit, such as booking methods, were investigated. The demographic profile and the type of visitors, the main reason for visiting the area, as well as future visit intentions, were also examined. The results showed that most wine tourists found the information they needed in the wineries' digital media, and the wineries' digital presence influenced several of them in their decision to visit the specific winery. Regarding social media, about one out of three visitors follow the winery's page or account, with Instagram being the most popular, and wine events and relevant information being the most attractive content categories. Furthermore, social media followers showed more intention to revisit the winery in the future.

Keywords Wine Tourism · Digital Marketing Techniques · Northern Greece Wineries

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1 Introduction and Background of Research

The wine tourism industry, like many others, has increasingly relied on the Internet as a primary source of visitors gathering information [1]. At the research level, numerous studies have been published focusing on wine tourism and digital marketing, or specific subfields within digital marketing. These studies address various topics, including the necessity of integrating digital marketing strategies within wineries, the role of social media marketing, content analysis of winery websites, the use of mobile applications to attract visitors, and the importance of e-storytelling [2–8].

The current research aims to investigate the impact of digital marketing techniques on wineries' visitors, as well as visitors' digital attitudes and preferences regarding the online presence of wineries.

2 Literature Review

Online wine tourism is defined as the practice of internet users visiting websites to obtain information about a winery's products or services [8]. By adding wine tourism-related information on their websites, wineries can educate potential consumers, facilitate connections with informational networks, provide a secure platform for transactions, and ultimately encourage visits to the physical winery.

Furthermore, significant differences exist in the effectiveness of website design for attracting visitors, through a content analysis of winery websites from five wine regions: Australia, Canada, Chile, France, and the United States [6]. These differences were evident in the availability of specific information related to the visit, such as opening hours, directions to the winery, and winery maps. Similarly, a website content analysis was conducted on wineries in the La Rioja region, testing whether their content belongs to the main types of the orientation of a website [1]. The four key factors representing these orientations, which are necessary for the development of wine tourism are informational, interactive communication, transactional, and integrative. The research concludes that communication and interactive communication are the most frequently observed features, though both require improvement. In addition, wineries are recommended to develop e-commerce capacities and expand business networks with other organizations and companies offering related services and activities in the region.

Using the Marzo-Navarro and Pedraja-Inglesias typology, some authors investigated the extent to which wineries in Crete and Santorini fall into these different categories according to the strategic orientation of their websites [2]. Their research also identified key characteristics of the wine landscape that are important for social media marketing strategies, particularly on Facebook, by performing a comparative analysis between two wine destinations. Similarly, some authors also employed a content analysis methodology in their research, which focused on the websites of wineries in Northern Greece [3]. The most prominent themes on these websites included family

tradition and authenticity, with frequent references to local history, sustainability, the rural landscape, technological progress, and product quality. Wineries are also focusing on building emotional and experiential connections with users, rather than a more commercial approach to communication, as shown by a content analysis of tweets from wineries in the Okanagan Valley, Canada, and So Montano, Spain [4].

The wineries recognize the advantages of social media, as demonstrated by studies on wineries in Langa, Northern Italy, and Moldova; however, these advantages remain underutilized [9, 10]. In a survey of 50 wineries across Serbia, Facebook and Instagram were identified as the primary platforms utilized by Serbian wineries to engage with consumers and visitors [11].

The characteristics of tourism applications were analyzed by comparing the content and functionality of applications from the Alto Douro wine region in Portugal with those from other international wine destinations [12]. The results revealed that, although differences exist in the features offered, there is no significant variation in overall content and functionality. Finally, in another analysis of the convergence between brand identity and brand image, differences were identified between the image projected by the wine destination and the image portrayed by bloggers [13].

3 Methodology

Quantitative research was selected to fulfill the research objectives. To collect data, a questionnaire specifically designed for the research was used [14]. The questionnaire was divided into three main sections: (a) demographic characteristics, (b) features and motivations of the winery's travel, and (c) the effect of the internet and social media on the visit to a winery. The main part included six variables with 3 key items, on a 5-point Likert scale, that measure visitor attitudes and behaviors related to digital marketing, as well as visit intention. The bibliographic sources of the key variables are referred to in Table 1.

The questionnaire was distributed to winery visitors during their visit, with most completing it on-site from September to November 2023. A small percentage accessed the questionnaire via a barcode link and completed it later. The population of the research included visitors to wineries in Northern Greece. For the selection of

Table 1 Variables of the main part of the questionnaire

Variable	Number of items	Bibliographic Sources
Information	3	[2, 15–17]
Personalization/Customization	3	[16–19]
Interaction	3	[2, 16, 17]
e-Wom	3	[16–18]
Integration	3	[1, 2]
Intention to visit	3	[16, 20]

the wineries to be visited, the list of wineries with the "Visitable Winery" mark of the Ministry of Tourism and the list of members of the "Wine Producers Association of the Northern Greece Vineyard" were used. The research sample, using convenience sampling [21] consisted of 193 people who visited wineries in 6 different regional units in Northern Greece (Drama, Imathia, Pieria, Chalkidiki, Florina, Ioannina). The research data has been analyzed in the SPSS statistical package. For this purpose, eight hypotheses were formulated:

H1: There is a relation between "motivation to travel" and "type of visitor".

H2: There is a relation between "wine knowledge" and "number of visits".

H3: There is a relation between "pre-visit social media exposure and influence of the winery's digital presence" and "decision to visit the winery".

H4: There is no relation between the "pre-visit social media exposure" and "age of visitors".

H5: There is a statistically significant difference between "visit intention" and "organized or individual visitors".

H6: There is a statistically significant difference between "interest in personalized suggestions" and "gender of visitors".

H7: There is a statistically significant difference between the "influence of the winery's online presence on the decision to visit" and "read reviews by the visitors".

H8: There is a statistically significant difference between "intention to visit a winery soon" and "social media followers and other visitors".

4 Results and Discussion

4.1 Descriptive Statistical Analysis

Concerning the respondents' profile, most of them were female, of Greek nationality, aged between 26 and 35, employees (in public or private section), with moderate knowledge about wine, having visited a winery 2–5 times in the past, in a day trip and wine tourism as their main motivation of the trip.

Regarding the online actions made by wine tourists before their visit, survey results indicated that digital media play a significant role in shaping visitors' decisions, given that 38,9% of visitors accessed the wineries' website, 33,7% of the wineries' social media, and 32,6% searched for relevant information via search engines. Those who did not perform any of those online pre-visit actions were mainly visitors who participated in organized tours. On the contrary, when it comes to booking methods,

traditional methods such as telephone reservations remain the most popular, with digital booking tools showing minimal usage. Only 6.8% of visitors made reservations through digital means. This percentage is significantly lower than the 63% reported for online bookings of wine tourism activities in Spain in 2023 [22]. Additionally, it was observed that during special wine tourism events, such as open cellar days, visitors do not make reservations. Approximately one-third of respondents answered that they follow a winery's account or page on social media. This element highlights the growing influence of social networks on wine tourism, while also offering insight into the profile of visitors who seek to stay connected and informed about the world of wine and wineries. Instagram and Facebook are the most popular social media, with Instagram followers reaching 24,5% of the sample.

Finally, "Winery events" and "wine-related information" were found to be the most attractive content categories on social media, followed by "new product announcements" and promotional offers". "Suggested Wine Itineraries", "Information about the wineries", and "Winery events" were the most popular answers to a question about features that could be included in an online wine tourism application although only 13% of respondents have ever used an application related to wine tourism.

5 Inductive Statistical Analysis

The Cronbach Alpha value for the 20 main Likert variables is 0.856 and is therefore considered satisfactory for internal consistency. Inferential tests were performed to test the independence of variables (chi-squared test) and the difference in responses between groups (Student's t-test). Six categories of variables, each comprising three items, were developed to perform the inferential analysis. On a 5-point Likert scale (1: strongly disagree and 5: strongly agree), information search is more related to the "ease of finding information" and the "accuracy of information" with a mean of 4.5 and 4.2 respectively. As an interaction factor, "making online reservations" has the highest mean = 4. "Reading online reviews before visiting a winery" and "the need to share experiences on social media" are the variables with the higher mean of 3.6 and 3.5, respectively, in the case of e-WOM. "Information about the wine destination", with a mean of 3.8, is the most important variable for the integration factor. Finally, there is a strong intention to visit the wine destination and wineries, as the respondents indicated that "they want to and are likely to visit a winery soon" (mean = 4.1).

After conducting the chi-square test to test hypotheses of independence between variables, the following results were obtained. There is a statistically significant relationship between the variables "motivation to travel" and "type of visitor" ($p < 0.05$, x^2 (1) = 59.66) (where the type of visitor distinguishes tourists that made at least one overnight stay in the area and the day-trippers), "wine knowledge" and "number of visits" ($p < 0.05$, $x^2(8) = 43.31$), "social media visit before the visit" and "influence of the winery's digital presence on the decision to visit" ($p = 0.017$

< 0.05, x^2 (4) = 12.08), and "social Media Visit before Visit" and "age Group ($p = < 0.05$, x^2 (5) = 38.149).

Additionally, a t-test was employed to evaluate differences in the mean values of responses from independent samples. A t-test examined the mean values for the variable "I wish to revisit this wine destination in the future" across two independent groups: visitors who participated in an organized excursion and those who did not. T-test revealed a statistically significant difference ($p < 0.05$, $t(181) = 4.007$) between the two groups. A second t-test examined whether there was a difference in the mean responses between men and women regarding the statement, "I would be interested in receiving personalized suggestions based on my preferences as a visitor". No statistically significant difference was found ($p = 0.84 > 0.05$, $t(182) = 0.202$), indicating similar levels of interest between men and women. Regarding the influence of the winery's online presence on the decision to visit, a statistically significant difference was identified between those who read reviews and those who did not ($p = 0.007 < 0.05$, $t(164) = 2.740$).

Lastly, the intention to visit a winery soon was compared between visitors who followed the winery's social media page or account and those who did not. By rejecting H0, it was found that there is a statistically significant difference between the means of the responses of the two subgroups, indicating that followers of the winery's social media were more likely to express intent to revisit ($p = 0.005 < 0.05$, $t(169) = -2.844$). In summary, 7 of the 8 initial hypotheses were confirmed. More specifically H1, H2, H3, H4, H5, H7, and H8 were validated, while H6 was rejected.

6 Conclusion, Limitations, and Suggestions for Further Research

The current paper investigated the effect of digital marketing on wineries' visitors, as well as the attitudes and preferences of visitors regarding the digital presence of wineries. A quantitative survey was carried out using a questionnaire distributed to visitors to wineries in northern Greece. It is important to note that the sample was selected through convenience sampling, which limits the ability to generalize the findings to all visitors. Additionally, since the survey was conducted within a specific geographic region and during a particular time of year, caution is advised when making comparisons with other studies. Despite these limitations, the data remains highly valuable, meeting the research objectives and providing meaningful insights into wineries' digital marketing strategies, the influence of digital media on visitors, and visitors' preferences regarding the digital communication tools employed by wineries.

Each winery can use the research to design its digital marketing strategy. Firstly, wineries need to provide easy access to key information related to the visit, such as location, opening hours, and contact details. The website should display the services and products available, be user-friendly, and incorporate storytelling elements to

engage visitors. Wineries can also integrate articles related to wine and wine tourism activities in the form of a blog on their websites, as well as collaborate with external sites to create advertisements in the form of informative articles. In addition, search engine optimization (SEO) is crucial to ensure that potential visitors can easily find the winery when searching for relevant topics. The ability to make online reservations was considered very important by visitors, yet only 6.8% of the sample booked online. Therefore, wineries that do not offer online booking should consider integrating this service, while those that do should focus on promoting it. In terms of personalization, visitors showed great interest in being able to customize their visit online. So, in addition to offering online booking, wineries could implement features that allow visitors to select specific services and create personalized experiences based on their preferences. Furthermore, building a comprehensive email list of visitors and prospects would enable wineries to conduct targeted email marketing campaigns, offering content that is both relevant and engaging to their audience. In terms of social media, wineries should fully recognize their potential, as they appear to be the most popular advertising channel in visitors' preferences and the platform where most advertisements are seen. In addition, pre-visit social media use is related to the influence of the winery's digital presence on the decision to visit, while visitors who are followers of social networks show a higher intention to visit a winery soon than the rest of the visitors. It is therefore important for wineries that do not have many followers to increase their numbers, as one in three visitors follow the winery they have visited on social media. The growing popularity of Instagram should not be ignored, as it is the preferred social media among visitors—followers.

Wineries can take advantage of wine tourism events, such as open cellar days, to grow their social media community, as younger visitors show a growing interest in these events. Additionally, it is recommended that wineries should focus their digital communication strategies on topics such as "winery events'" "wine-related information", and "new product announcements", which have been identified as the most attractive categories of social media content.

Wineries could further explore the possibility of online sales as well as the creation of online communities for members and people with similar interests [23, 24].

Future research could explore similar issues in different wine tourism destinations and compare the results. It could also extend the research to the level of industry professionals such as wine tourism marketers, wine tour guides, and winery owners.

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Subjective Prediction and Models for Forecasting Sales in Pharmaceutical Market Demand



Dimitrios Kallivokas, Christos Kytagias, and Stavros Tzevelekis

Abstract A business's utilization of historical data can support decision-making and is a necessary process for modern enterprises. Enterprises today can estimate short-term sales by using appropriate forecasting techniques and leveraging sales data. In some cases, however, and in some markets such as the pharmaceutical demand market, the targets for sales as well as the temporary or extraordinary demand that can be created for specific medicines are very important factors that influence these forecasts. In this paper, a five-year sales data of a pharmaceutical company operating in Greece is used for three medicines and a combined sales forecasting model is used. The selected medicines have different characteristics so that various factors such as seasonality, extraordinary events, and randomness are taken into account for generalizability purposes by similar enterprises. The predictions of this model are compared with actual sales data. They are also compared with the subjective forecasts of the company executives with the sales targets. The process of estimating demand can contribute to more effective decision-making and avoid financial losses for the organization. The proposed model, if used appropriately, can help particular industry predictions can be made with greater accuracy and less chance of error. It also can help similar companies that may be active in sectors outside the pharmaceutical industry.

Keywords Subjective Predictions · Forecasting of Pharmaceutical Market Demand · Forecasting Techniques

1 Introduction and Literature Review

In business management, forecasting is a necessary and basic operation. Forecasts help and contribute supportively to a company's decision-making on issues such as the quantities produced, the company's needs in human resources, the amount of advertising expenditure, etc. The pharmaceutical industry provides goods and

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services that are of central importance to the health sector. Forecasting needs for specific products is important for the company. In some cases, a pharmaceutical company is likely to exclusively market the importance of a medicine in disease management. Therefore, in this case, the need to reduce the probability of failures in the context of demand is even greater. For example, producing more than the actual demand of a medicine can be disastrous for a company, due to the high cost of production and the inability to change the medicine's price. Conversely, if the quantity of a drug produced is less than the actual demand for a drug, then there will be a shortage in the market, as a result of which the drug will not be easily obtainable.

The aim of this paper is to create more accurate forecasts through the combination of forecasting methods and the targeting of pharmaceutical company executives as well as to improve the operation of a pharmaceutical company. The purpose is to compare and adapt the main and most appropriate demand forecasting models for the pharmaceutical company's medicines and their comparison with the goals set by the company's executives. This paper examines whether the pharmaceutical industry predictions for medicine needs and sales can be made with greater accuracy and less chance of error.

Independent demand is influenced by internal and external factors. The internal factors that can affect the demand are the price of the product, the quality offered and in general, all the parameters that a company can decide [1]. The external factors consist of the events that come from the external environment of the business and can affect the demand, such as, for example, the political and economic environment, competitors, new products, market preferences, etc. Repeated observations of independent demand, in the order in which they appear, form a time series. Regarding how demand forecasts are evaluated, regardless of how they are formulated, a demand forecast is considered "good" when it is accurate, that is, when it achieves the goal for which it was formulated. The basic criteria for evaluating these forecasts is whether they are worth the cost and time required for their preparation. These predictions can be supported by the subjective judgments and targeting of the executives or based on the analysis of data. For small and medium-sized enterprises, it is usually preferable to apply simple methods that utilize the personal judgments of executives and relevant data that can be easily collected [2, 3]. Many methods, both qualitative and quantitative, can be applied to demand forecasting. But it is important to use the appropriate methods so that the prediction error is the minimum. In case when there are recorded repeated observations of independent demand then these, in the order in which they appear, form a time series. There are several forecasting models which are applied depending on the case under consideration for forecasts in time series [4, 5].

2 Research Methodology

In this work, demand forecasting methods were applied to the sales data of three medicines of a Greek pharmaceutical company, recorded for a five-year period from 2017 to 2021. These three medicines were chosen to have different characteristics in a way to cover all cases and to take into account various factors such as seasonality, extraordinary events, and randomness for the purpose of generalization from similar enterprises. The medicines' demand forecasts resulting from the application of appropriate methods were compared and combined with the target set by executives of the company for these three medicines. Targeting for the same years that the demand forecasting models were applied, had been subjectively performed based on the executives' estimates, derived from market knowledge, the investments made and/or planned to be made in the company where they will favor growth of sales etc. We also examine if the average demand resulting from the subjective demand predictions of the executives and the target set by the enterprise differ significantly from the forecasts given by appropriate scientific forecasting methods were used in this work.

First, for each of the selected medicines separately, the exponential smoothing method [6], the Holt method, and the Holt-Winters method [7, 8] were used. Quantitative methods were compared with each other based on the error measures of mean absolute deviation [9, 10], mean square error (MSE), and mean absolute percentage error (MAPE) [9, 11, 12]. To perform the comparison of quantitative prediction methods and subjective targeting, the same error measures were applied to the targeting of the three medicines. The quantitative method which gave the lowest error [13, 14] for each individual medicine was compared to the corresponding target location to establish if prediction with quantitative prediction models can produce more accurate estimates compared to subjective targeting [15]. Next, the quantitative method with the smallest error was combined with targeting in order to perform a combined forecast model and to see if, through the combination, the resulting forecasts have a higher accuracy and a lower probability of error. This combination is obtained by considering the optimal weighting between the two methods, using the Solver tool in MS Excel where the minimization criterion is the mean squared error (MSE). The results are shown in Figs. 1, 2, and 3.

Taken into account historical data of the sales of three medicines in the last five years, also examined if the average demand resulting from the subjective demand predictions of the executives and the target set by the enterprise differ significantly from the forecasts given by appropriate scientific forecasting methods. A correlation test and statistical hypothesis test were performed for paired samples between the actual sales of the five years from one side and the forecasts obtained from each of the three forecasting methods used, targeting and the combination model from the other side. The results showed that a higher degree of correlation with actual sales is presented by the combined model ($r = 0.951$, $p = 0.000$) and that the average sales given by the combined model do not differ significantly from the average number of actual sales ($p = 0.690$).

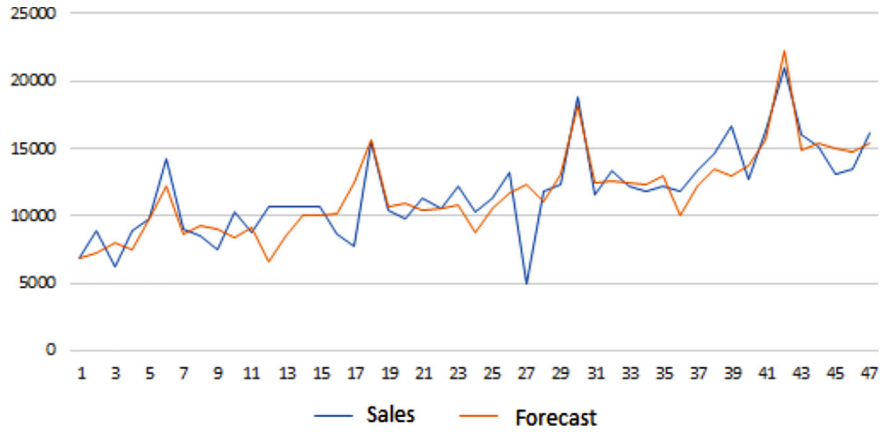


Fig. 1 Forecast Diagram for Medicine (1) based on a combined model and comparison with actual sales of Medicine (1)

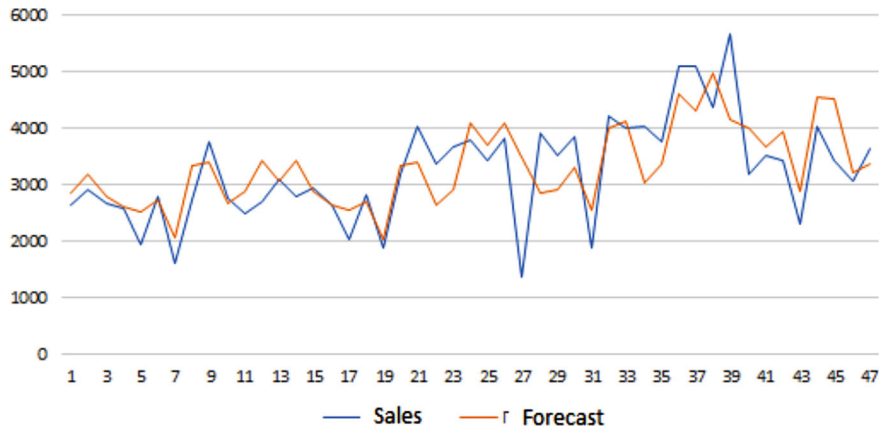


Fig. 2 Forecast Diagram for Medicine (2) based on combined model and comparison with actual sales of Medicine (2)

3 Discussion and Conclusion

In this paper, a combination of forecasting methods was carried out with the target location that had been defined with subjective criteria by the company's management. From the used forecasting methods, the Holt-Winters method is the one that yielded the smallest error for all three medicines under investigation. The reason the Holt-Winters method is more accurate is due to the trend and seasonality that all three medicines exhibit. However, monthly demand forecasts for products such as medicines may yield larger errors, because small changes in the external environment, such as, for example, in climatic, economic, public health conditions, etc.



Fig. 3 Forecast Diagram for Medicine (3) based on a combined model and comparison with actual sales of Medicine (3)

are able to influence seasonality patterns by bringing demand a few period before or after the expected timing. In conclusion, the use of properly adapted forecasting methods can predict medicine demand better than empirical forecasts.

The combination of the Holt-Winters method and targeting yielded a lower error for all three investigational medicines compared to the individual models and targeting. Similar results were observed in a simulation carried out with other medicines of the company where there is no seasonality. The simulation combined targeting with the most appropriate quantitative method for each medicine separately and the result in all cases was a smaller error. Therefore, in all cases, the prediction error was smaller when a quantitative method was combined with subjectivity. It is important to note that in the process of combining targeting with the quantitative forecasting method to be used, it is necessary to adjust the weight to be given to both targeting and the quantitative method for different medicines. With the carried-out approach in this work, it is not possible to create a stable combined forecasting model. For a more accurate prediction, it is necessary to readjust the weights given to the targeting and the quantitative method when new data are introduced into the model. In some periods when something happens that affects the business's ability to meet demand, perhaps there is a big difference between sales and demand. Therefore, during this periods, there are large discrepancies between sales and demand that affect the accuracy of forecasting models. Also, must take into account that the way in which demand is created in this industry is much more complex than in consumer products. In the pharmaceutical industry, patient demand for medicines is primarily driven by physicians, healthcare professionals, and pharmacists. Also, the factors that may affect the demand in this industry are more than in other industries. Nevertheless, by using appropriate methods and by fitting empirical data into predictions, a safe prediction can be made both within the specific industry and for companies operating in a different industry.

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Accessibility of the Greek Museums: A Necessity for a More Holistic Approach



Maria Poli and Konstantinos Malagas

Abstract Museums play a vital role in preserving and promoting different cultures' history, art, and traditions, and their contribution to social, tourism, and regional development is significant. For this reason, museums should be fully accessible to all citizens, especially those facing certain types of disabilities. The current paper focuses on the accessibility and inclusion of museums in Greece, a country with a strong tourism industry. Eight (8) interviews were conducted with experts and disabled people to collect the relevant data. The key findings of the interviews showed that significant improvement actions have been taken in recent years, but the need to do more is urgent and of utmost importance. It was also emphasised that a more holistic approach is not just desirable, but necessary to improve the experience of disabled people. Moreover, improvements in means of transport are highlighted so that these people can visit cultural destinations safely and efficiently, and digital technologies are necessary for them to adopt. Findings underscore the importance and impact of further improvements to the services provided in museums for disabled people. This ensures the audience is well-informed and enlightened about the current state and future potential of museum accessibility in Greece. This research provides valuable information to stakeholders to improve the services provided to visitors of the Greek museums, which would significantly benefit all (visitors, society, and economy).

Keywords Accessible Museums · Accessible Tourism · People with Disabilities

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1 Introduction

The number of people with mobility and communication difficulties is increasing rapidly worldwide. More than 1.3 billion people live with some form of disability, representing 16% of the world's population or 1 in 6 of us, and constituting the largest minority group. At the same time, these figures are expected to increase in the coming years due to the ageing of the population and various epidemics and health issues in general [1]. People with a mild form of disability and those over 65 years of age are, in many cases, still active, feel alive, and seek participation in various activities, where with the provision of appropriate services, significant benefits can arise regarding the daily life of these people including the positive effects on the country's GDP. The way to do this is through integration and inclusion in goods and services. Accessibility must be universal for all citizens and include reliability. In a different case, where the provided services are not good or partially good (pseudo-accessibility), the value of the offered cultural product is affected by multiple adverse effects [2].

Visiting archaeological sites and museums is essential for all citizens; all citizens should have access to all parts of museums, especially people with some form of disability. Therefore, the museum should be open to the public, accessible and inclusive, promote diversity and sustainability, and 'operate and communicate ethically, professionally and with the participation of communities, offering diverse experiences for education, entertainment, reflection, and knowledge sharing' [3]. Today's societies are made up of various social groups, such as the elderly, people with disabilities (PwD), families with young children, and more broadly, 'disabled people'. A museum, to be considered successful, must serve the needs of all social groups without at the same time offending any of their characteristics. This is achieved with an audio tour, descriptions of exhibits, and, in Braille, replicas that visitors can touch, setting up exhibits with complete visibility from the visitor's side [4]. Therefore, new technology facilitates the visiting experience of PwD to museums.

With its rich cultural tradition, Greece has several museums throughout the country, offering high-level services to all visitors. Providing appropriate services to meet the needs of all visitors is essential. Different groups of PwDs, the elderly, and other people with specific characteristics have different needs and must be satisfied to a large extent by museums' provided services. This is also the purpose of the present research, which focuses mainly on the museums of Greece. Accessible museums that provide high-quality services may contribute to the further growth of tourism, and more emphasis should be placed on this specific form of tourism ('accessible tourism') repetition.

2 Literature Review

According to the World Health Organization (WHO) [1], the 1.3 billion people who have some significant disability, experience blockades in many cases; it is typically reported that transporting them is 15 times more difficult than for healthy people. Also, globally, 360 million people have moderate to profound hearing loss, 285 million people have a significant visual impairment (39 million of whom are blind), and 75 million people require a wheelchair (of which only 5–15% can access it) [5]. Furthermore, suppose we add to the PwD the personal assistants they usually have and the elderly, who typically increase. In that case, they all form an essential population group with different needs compared to the rest of the population and also each other. They require various services to satisfy their needs and to participate more in social life [6]. Although the majority of PwD face exclusion in their daily social life, some with mild forms of disability actively participate in this.

In recent years, the 'social model' treats disability as a problem created by society and mainly as a matter of the lack of full integration of individuals into society. Disability is not a characteristic of an individual but rather a complex mix of conditions, many of which are created by the social environment [1]. Disability is a complex phenomenon, and the characteristics of the society in which the relevant person is active are reflected. In addition, interventions are needed to overcome the difficulties faced by PwD, including environmental barriers related to access to health and rehabilitation services [6]. Cultural spaces and museums are essential social activities for all citizens, especially for the PwD. People with any disability should be able to visit this space, and a museum to be considered successful must serve all social groups without at the same time offending any of their characteristics. In general terms, museums provide the following benefits: (a) they offer essential learning from the past, (b) they are a meeting point for different communities, (c) they accept different points of view and criticism, (d) they are centres of digitisation, innovation, and interaction, and (e) they educate the next generations [7]. Creating accessible cultural spaces emphasising museums contributes to social integration, highlights social cohesion and inclusion, mitigates exclusions through multinational influences, and generally improves well-being and, more broadly, health [8].

Accessible museums can welcome PwD into galleries, exhibitions, and programmes. Their buildings, by providing appropriate services for the disabled community, increase the attractiveness of a museum for all who visit it and, therefore, enhance the possibility of greater inclusion/participation in the museum. Also, creating an accessible museum requires an institution-wide commitment. A museum must integrate accessibility into its operations—governance, management, human resources, education, records, or collections and curatorial departments, visitor services, information technology, and security. For example, without this broad commitment, a museum may have an accessible building but not accessible exhibits—or vice versa [8]. The museum to be fully accessible to PwD should adopt the 'philosophy of universal design', whose roots can be traced to the demographic, legislative, economic, and social changes throughout the twentieth century

concerning the integration of older people as well as those who have some disability [9]. In addition, for a museum to be considered accessible, it must provide consistent building access, signage, and orientation, opportunities to understand the objects, texts, exhibitions and programs, and cultural material that addresses the interests and desires of different audience groups, to have a welcoming atmosphere and sufficiently well-trained staff [10]. Modern technology is essential in making museums more accessible, as it provides the necessary information to meet visitors' different needs. For example, recorded guided tours in the form of portable equipment or with headphones are essential for people with vision problems, and access to audiovisual performances or installations is made using subtitles for the hearing-impaired [10].

3 Greek Reality

The Ministry of Culture has carried out various actions to create accessible cultural content. Within the framework of the National Recovery and Resilience Plan GREECE 2.0, accessibility actions in archaeological sites and monuments are included—with a completion horizon of 2025—such as ramps and routes for disabled people, elevators, electric wheelchairs, and electric vehicles. In recent years, through the process of open invitations of the Ministry of Culture, actions to create accessible cultural content with traditional and digital media have been subsidised. The construction of elevators within archaeological sites is planned and implemented, with the primary example being the slope elevator in the archaeological site of the Acropolis that is already in operation and new ones planned for Dikteo Andron, Crete, and the Upper Town of Monemvasia, Peloponissos. It is estimated that from June to October (2021) an average of 300 people (disabled and physically challenged) visited the Acropolis Rock daily. In addition, the Acropolis and its monuments are accessible to the blind and visually impaired. In collaboration with the Tactual Museum of the Lighthouse 'Pharos', printed material in 4 languages, unique signs, and props are being prepared. Also, disabled people are facilitated with electric golf carts in Ancient Messina, while similar care is taken for Ancient Olympia, Pella, and Nicopolis places [11]. Some examples of accessible museums are worth mentioning, such as the Tactual Museum of the Lighthouse 'Pharos' an organization that protects and promotes the needs of the blind people for the blind people of Greece, unique in the Country and one of the five museums of its kind in the world, offering essential services to blind or partially sighted visitors, of all ages, from Greece and other countries, using the sense of touch and through this the equal access of these individuals to the ancient Greek culture is achieved [12]. Another example of an accessible museum is the one located in the home village of Nikos Kazantzakis in Myrtia, Heraklion, Crete; being a green and modern digital museum staffed by AR digital applications and interactive screens, new video projections about Kazantzakis in 10 languages, audio tours, and digitised material in high resolution and 3D. The visually impaired can touch and listen to the station's material with the specially designed, autonomous audio tour, significantly enhancing their museum experience.

An important initiative is the implementation of the programme 'Increasing universal accessibility to the Nikos Kazantzakis Museum', which is expected to be completed in the period 2024–2025, as well as the design of special programs for people with dementia or Alzheimer's [13].

4 Bibliography Related to Accessible Museums in Greece

Kanari [14] proposes a holistic approach to the accessibility and participation of PwD, where 'universal design' and 'universal learning design', develop sustainable practices and initiatives such as relevant educational programmes, emphasising the needs of disabled people. Kanaris and Papaioannou [15] focus on 5th-grade students regarding tactile access to objects while participating in a theatre pedagogical educational programme at the Timeless Museum of Larissa. Organising museum spaces and programmes offering significant benefits for all visitors. Koutsikos states that the primary purpose of operating accessible museums is to educate the society in which they are located. He mentioned the actions of the Benaki Museum for people with memory difficulties and dementia in collaboration with the museum's educational department and a neuropsychology scientific consultant. The Pottery Museum in Volos organised an educational programme for families with members on the autism spectrum in collaboration with the Cultural Foundation of the Piraeus Group and the Sensory Accessibility organisation 'The Happy Act'. Koutsmani, examining 15 museums in Thessaloniki and 15 in London, found that the last is slightly more accessible than those of Thessaloniki. Buildings of the recent past are more accessible, while buildings of great cultural and historical heritage find it challenging to adapt to new conditions due to the law on the protection of historical and cultural heritages. Filippoupoliti [16] emphasises the development of museum education, which contributes to the development of dialogue, develops the strategy of interpretation of the exhibits, and, in the long term, leads to the self-realisation of the visitor. Poli et al. [17] investigated the opinions of visually impaired people about museum accessibility. They found that almost all research participants rarely visit museums, and the reason for visiting them is to gain additional knowledge. Also, the biggest obstacle visually impaired people seem to face in museums is the absence of tactile exhibits. At the same time, they would be facilitated by providing autonomous audio information, more tactile exhibits, and others. Concerning accessibility in Greece, they assess it as average, and the state is responsible for this situation. According to Chaidemenaki & Kolokytha [18], examining the access of people with intellectual disabilities to museums, they found deficiencies in the provision of accessibility to cultural heritage in terms of information content, exhibitions, and visitor experience, as well as opportunities for participation and co-creation for this particular audience. The above shows that continuous research on accessibility and inclusion in museums and related improvement proposals is imperative.

5 Methodology

The present study is part of a bigger project and we present the results of a pilot study that employed interviews. Respondents were purposively selected based on their knowledge of the subject matter. Eight (8) specialists and PwD participated in this research, all with sufficient knowledge and experience. Specifically, a person with mobility problems (no. 1) and his companion (no. 2), a person with vision problems (no. 3), a person with hearing problems (no. 4), a high-ranking official of the Ministry of Culture on museums (no. 5), a Museum Manager (no. 6), a museum worker (no. 7), and a wheelchair user with kinetic problems and accessibility expert (no. 8). Three were conducted in person, and the rest used the online Zoom platform. Valuable information has been collected and is presented below.

6 Results

All respondents agreed that accessibility in Greece is a complex issue. The critical issue is that for a space to be considered accessible, it should be both inside it, and the whole visiting experience should be comfortable for all, like the easy transportation of the citizens to archaeological spaces and museums. The participants (no. 1, 2, 3, 4, 8) pointed out that Greece is unfortunately not famous for the accessibility of its means of transport. As a result, disabled citizens and visitors do not move quickly outside, reducing their integration into the rest of society. The availability of some days dedicated to PwD to visit some or all museums must be done and promoted appropriately. The employee at the museum (no. 7) pointed out that PwD does not visit the museum as often as they should because they always need an escort and a person who can solve the access issues that arise. These have to do mainly with the exterior space. It is important to note that it is much more difficult to access places and museums near archaeological sites because Greece is characterised by rugged and rocky terrains that are not welcoming to people with sensory or mobility problems. The external spaces of the villages and the countryside of Greece and the anarchic urban planning with dozens of obstacles do not help the easy movement of PwD. Towards this, the improperly planned access policy of means of transport creates significant problems, resulting in an unfriendly environment. Regarding accessibility, the situation in the museums of Athens is better than that of the province, although significant efforts exist (see N. Kazantzakis Museum in Crete). It is noteworthy the lack of accessibility in many smaller archaeological places in the Greek provinces. For the visually impaired participant (no. 3), Athens is a dangerous city with open road construction ditches and accident traps for blind people. The important thing is that there is relevant legislation, as pointed out by the Executive of the Ministry of Culture (no. 5), for access to places of culture. A lot has been done to improve accessibility in museums in recent years. The disabled escort (no. 2) emphasised that the organisational culture in each museum must involve all employees, from the Management to

the security staff. Attracting disabled visitors from foreign countries is essential and requires proper promotion, and 'accessible tourism' must be emphasised more by the Greek state. In addition, the museum worker (no. 7) emphasised that cooperation with educational institutions to introduce new innovative services is essential.

7 Discussion and Conclusion

Museums are essential places of culture and universal access to them is a priority. PwD is the largest minority group in the world's population, and museums must consider these 'often forgotten visitors' by acquiring relevant knowledge and the necessary synergies. The accessibility of all areas of a museum, i.e., the exhibition area, the café, the restaurant, the shop, and the sanitary areas, the appropriate lighting, the easy orientation and mobility in the area, the correct signage, the tactile, or multisensory approach to exhibits are essential issues for people with various kinds of disabilities [19]. The present research focuses on the issue of accessibility and inclusion, mainly for the museums of Athens. However, more general opinions were expressed by the participants in the research. Accessible means of transport, fully accessible spaces inside and outside museums, friendly and knowledgeable staff in serving the needs of the PwD, and 'accessible information' are some of the requests of the disabled community. In the case of Greece, much has been done in this direction in recent years, but even more can be done. The museums of Athens are, in many cases, in better condition than those of the province in the field of accessibility. Greater cooperation with educational institutions and private organisations contributes to the provision of improved and innovative services. Museum management needs to take into consideration diversity and inclusion issues for visitors and personnel alike and create online communities with the use of emerging technologies for people with similar needs and interests [20–22]. A key ingredient for success is identifying the real needs of all visitors, especially of each category of PwD, and planning the appropriate services. Museum websites should provide appropriate information and collect various suggestions and problems. Providing the necessary services, which are properly promoted, can contribute to the growth of accessible tourism, with significant economic benefits [23]. Greece should invest more in this direction, and the provision of more accessible museums and archaeological places must be a significant part of this. In conclusion, a more holistic approach is required to provide appropriate services to enhance the PwD visit experience in a museum, inside and outside, before, during, and after the visit [24]. Museum organisations have an essential role in this direction. The present research presents essential limitations as it examines some general issues regarding including PwD in Athens and other Greek museums and therefore, more detailed research is required [25].

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Place Brands in the Digital Age: Analyzing Communication Strategies and Audience Engagement of Brands on TikTok

Ana-Maria Gulpe and Arabela Briciu

Abstract Place branding has gained significant visibility in recent years as a strategic approach to attract vital resources such as tourists, investors, and residents, which is crucial for a place's sustained development. As a strategic tool, nation branding promotes national appeal and supports diplomatic efforts within a competitive global landscape. TikTok, a social media platform launched in 2017, has revolutionized digital communication by 2023, amassing 1.9 billion users, predominantly from younger demographics. Within this framework, the study aimed to analyze the communication strategies employed by nations on the platform. The research sample comprised ten European nation brands selected due to their status as the only ones currently actively utilizing TikTok to connect with their audience. Employing content analysis as the primary methodological approach, the study identifies key identity elements commonly used by nations on the platform and evaluates their influence on audience engagement. The findings underscore a growing trend of digital place branding on TikTok, highlighting the strategic use of dynamic, trend-oriented content to enhance national visibility and connection with younger audiences. This research contributes to the understanding of emerging digital place branding practices, offering valuable insights for specialists into the evolving strategies and implications of national representation in the rapidly changing social media landscape.

Keywords Place Brands · Nation Branding · TikTok

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1 Introduction

In the context of globalization, place branding has rapidly gained prominence as a strategic response to the merging of cultures, cities, and countries. As global integration accelerates, places are increasingly required to provide distinct identities and cultivate positive images to attract financial investment and foster economic growth [1]. Place branding focuses on building local, regional, or national brand equity [2] through commercial strategies to foster urban development [3]. Similarly, nation branding has emerged as a powerful tool for enhancing a country's global competitiveness by shaping its image and supporting diplomatic initiatives [4].

In 2023, Europe received 707 million international tourists, crucial to the region's economic growth and development [5]. The travel and tourism sectors contributed approximately €2.25 trillion to Europe's GDP (*Gross domestic product* = total value of economic output), with projections indicating an increase to €2.4 trillion in 2024 [6]. This highlights the significant impact of tourism on the European economy.

The concept of identity is inherently dynamic and characterized by its multidimensional nature. When it comes to place identity, multidimensionality is also reflected in related constructs such as place image, local and national identity, and national stereotypes, to which we should add individual identity and tourists' experiences, all of which shape the perception of a place [7] (see Fig. 1).

Place brand management requires a customized approach due to the complex and multifaceted nature of places, their diverse identities, and the varying perceptions based on their nature and size [8]. This is particularly relevant when managing social media communication of place brands. Social media channels provide a platform for place brands to communicate and interact globally, where this personalized approach enabling complex interactions can be applied [9].

In the information era, a strong digital presence has become a fundamental requirement for brands to maintain competitiveness. The digital environment serves as a critical source of information [10]. According to a 2023 study, there are 5.18 billion users worldwide [11]. Regarding new communication media, some scholars contend that electronic communication is rapidly overtaking traditional methods [12]. In contrast, others assert that branding principles remain consistent across online and offline environments, making online transactions more transparent and immediate [13]. As an outcome of Web 2.0 technologies, social media enables brands to enhance visibility [14] and engage with users across various online platforms and communities [15]. TikTok is a social media platform for creating and sharing short videos. Launched by ByteDance in 2018, it gained popularity rapidly and is used primarily by a younger audience. It enables users to add music, effects, and filters while facilitating diverse content creation. [16]. Communication on social media represents a vital tool for collaboration between businesses and consumers and facilitates effective engagement through feedback and idea sharing [17].

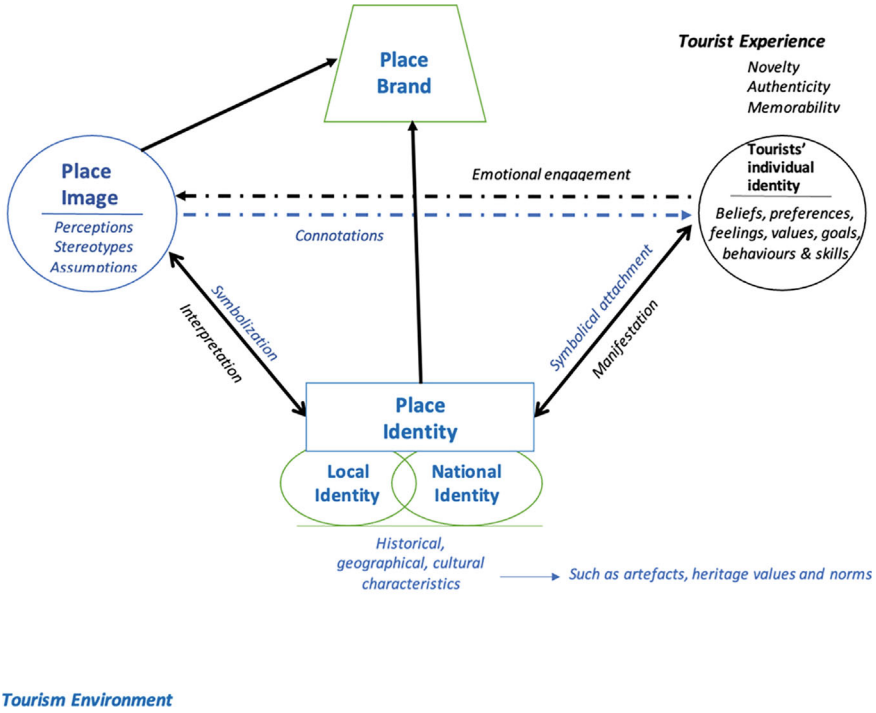


Fig. 1 The multidimensionality of Place Identity [7]

2 Literature Review

Branding is a complex phenomenon that differentiates goods and services through functional, rational, tangible, symbolic, emotional, and intangible dimensions [18–20]. In this context, place branding is "a powerful tool for achieving competitive advantage" while delivering value through the reputation and perception of a place [21]. It involves employing diverse practices and strategies to create a positive image of the location [3].

Many approaches and perspectives on place brands have been developed over the last three decades, ranging from initial perspectives in local marketing theory and place management approaches around the world [23] to defining and resolving some of the confusion surrounding the use of the term [22], to the specific application of place terms and interdisciplinary mapping of them [1, 24], to complex ways of measuring success in place marketing [25], and to place image through thematic analysis of social media data [26–30]. A systematic overview of the scientific literature on place branding and place marketing research was outlined by Vuignier [31]. Many facets can be studied in analyzing the identity and reputation of places. On the one hand, we have the national and local characteristics, i.e., the place's historical,

geographical, and cultural aspects. On the other hand, we have the individual experiences of those who interact with the place brand (see Fig. 1). The experience a person has with a place significantly shapes the understanding of its identity, encompassing psychological, emotional, and sentimental dimensions [32].

Nation branding encompasses multiple dimensions: country of origin, destination branding, national identity, and public diplomacy. It shapes local, multinational, political, and economic images [33]. According to scholars, nation branding is defined as the strategic self-presentation of a country aimed at generating a positive reputation by promoting economic, political, and social interests; it is noted that it extends beyond tourism; therefore, it includes investment attraction, export promotion, and public diplomacy. Additionally, nation branding aims to positively influence a nation's identity and image [34].

When examining place branding, a key focus is on place identity and image. Place identity encompasses the intrinsic and intangible elements of a location, while place image reflects the associations and promises individuals hold about that specific place [35]. Taecharungroj states that place identity refers to the objective reality of a location, encompassing its physical, cultural, and historical characteristics [9]. While place physics refers to the physical aspects of a location, such as landscapes and buildings, place practice involves the activities conducted in a place and place personality denotes the emotional traits associated with it [36]. Place branding encompasses the physical attributes, resident behaviors, and personality of a location, including its tangible landmarks, cultural practices, and the overall character of its people and environment [9].

While technology and the internet are increasingly important for place branding, they should be used to communicate authentic place values rather than generic notions of modernity [25]. Understanding a place's "habitus"—its symbols, meanings, attributes, and behaviors—is crucial for building a sustainable place brand that meets stakeholder expectations [37]. Online branding fundamentally differs from traditional branding in presenting information, as consumers scan rather than read content [38]. This evolution fosters two-way communication, empowering consumers and allowing brand managers to transition from "brand guardians" to "brand hosts" [13]. Online brands must also ensure transparency, user-friendly websites, and emotional connections with various audiences to meet consumer needs effectively [13]. Social media is essential for two-way communication among brands and users, significantly influencing perceptions and consumption behaviors through shared experiences [39, 40]. With over 4.9 billion global social media users, including 2.9 billion on Facebook and 2 billion on Instagram, brands must prioritize a strong online presence to remain visible and competitive [39]. Social media promotes advanced places by integrating technological and creative elements, shaping consumer perceptions [41]. Social evolution has led to a segmentation of social media preferences, allowing companies to target specific audiences effectively. TikTok's unique algorithm, which prioritizes user interaction and rapid content circulation, has broadened its appeal beyond teenagers and made it an effective platform for businesses to reach wider audiences [42].

Effective place branding on social media requires active engagement, co-creation with consumers, and a cohesive strategy that combines user-generated content with government initiatives to create a distinct and compelling place image [30]. Skinner [29] showed that User-generated content on social media plays a key role in shaping a positive and consistent place identity, with users often promoting common iconic elements. Naturally, there is also the reverse of the medal. Wengel et al. [43] demonstrate how TikTok popularized two destinations in Hainan, China, necessitating strategies to manage overtourism. They highlight the importance of user-generated content and place brand promotion in tourism planning for protected areas.

Lastly, the social networking framework has evolved significantly, and understanding how interactive platforms, such as TikTok, substantially alter marketing strategies becomes essential. Ortiz, De Los, Santos Corrada, Lopez et al. [44] highlight new insights into the continuing evolution of social networks and their impact on consumer engagement and behaviors.

3 Methodological and Research Approach

This research analyzes how nations use TikTok to strategically promote their unique identities in a globalized world. The study sample consists of 630 TikTok videos published between January 1st 2023 and December 31st 2023 by the most active and visible European nation brands on the platform: France, Spain, Germany, Finland, Greece, Iceland, Czech Republic, Switzerland, Turkey, and Cyprus. The research questions are: "What are the main place identity elements used in the communication strategies of the place brand on TikTok?" and "What is the impact of the communication strategies as reflected in engagement metrics such as likes, comments and views?."

To answer the research question, we adapted the Place Brand Identity diagram, which comprises three main pillars: place physics, place practice, and place personality [29]. By integrating this theoretical framework with the data collected, we have developed a personalized grid that allows for accurate analysis. The research method used is content analysis, as it represents a powerful decoding system that enables the comparison between multiple data, and it aims to describe with the utmost objectivity, precision, and generality the phenomenon analyzed [30].

4 Results

The first step in this analysis was to determine the main identity elements employed in the communication strategies of place brand on TikTok. The results reveal that the pillars of brand identity are not distributed evenly. While 97% of posts feature messages related to Place physics, only slightly more than half (57%) include Place practices and a mere 11% showcase Place personality. In specific to the analyzed

nations, half of them feature place physics elements in all their videos posted on TikTok (Greece, Iceland, Czech Republic, Finland, Turkey, and Cyprus). The remaining countries display over 90% of these elements, highlighting the significance of effectively communicating this aspect on this platform. Regarding the place practices, we observed an uneven distribution of elements among the nations analyzed. The most features occur in the videos published by Finland and Greece, over 90%. They are followed by Cyprus, Turkey, Switzerland, Iceland, and France, which display these elements in approximately 50–70% of their content, while Spain and Germany only include them in about 30% of their posts. Regarding brand personality, Cyprus and Turkey exhibit the highest representation, with approximately 20% of posts featuring this element. In contrast, other nations range from 5 to 15%, indicating that this aspect is not a significant focus for communication on this platform.

The second step of the analysis was to determine which specific elements from the main identity pillars are most frequently utilized by nations on TikTok. Starting with place physics pillar, over 60% of posts prominently feature landmarks, while 38% highlight cultural aspects. In stark contrast, the representation of business and hospitality elements is significantly lower, at only 4–8%. Turning to the place practices pillar, social relations emerge as the most prevalent element, comprising approximately 36% of posts. In comparison, lifestyle and rituals account for around 11–12% of the content. Lastly, the place personality pillar primarily encompasses information related to the emotional connection associated with the place (place feeling), yet it appears in only 11% of the posts. This indicates a significant opportunity for improvement in future communications, as enhancing this aspect could foster a deeper connection with the audience.

Key highlights from nation brand communication strategies on TikTok in regard to place physics reveal that all countries emphasize landmarks with Cyprus, Turkey, Finland, and Greece showcasing them in 70–100% of videos, while others exceed 40%, indicating their importance for all nations. Cultural elements feature in around 50% of posts for France, Spain, Germany, and Switzerland. Hospitality is moderately represented by France, Switzerland, Finland, and Cyprus (around 15%), though still limited. Business elements are the least represented, with most nations sharing no information in this category. The main findings regarding place practices for specific nations show that social relations are highlighted in around 50% of posts for Greece, Iceland, the Czech Republic, and Turkey. Lifestyle elements are predominantly featured in France, accounting for 42% of posts. Rituals are slightly less emphasized, with Switzerland and France leading with 10–20% of posts showcasing these elements.

In terms of the communication impact on TikTok, the analyzed videos garnered over 172 million views, generating significant audience engagement. This includes 2 million reactions, 1.9 million likes, 13,000 comments, and 45,000 shares. These impressive figures underscore the platform's substantial influence and the effectiveness of its engagement strategies.

5 Conclusions

This research provides valuable information into the evolving strategies of place brands' digital communication within the rapidly changing social media landscape. The novelty of this paper lies in the introduction of the TikTok platform in the digital communication mix with a focus on place identity elements. The analysis demonstrates a growing interest from nation brands in establishing an active presence and disseminating engaging content on TikTok. However, the findings suggest that this practice is still in its early stages, as one of the three identity pillars, "place personality," is underrepresented (11%), while "place practices" account for 57%. Most nation brands prioritize showcasing "place physics." This research offers valuable insights for communication specialists, emphasizing the need for place brands to adapt to the evolving trends within the social media landscape.

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A Bibliometric Analysis on Renewable Energy Sources for Southeastern Europe Countries



Madalina Moncea, Stamatios Ntanos, Andreea Claudia Serban, and Nikolaos Tsotsolas

Abstract This study conducts a bibliometric analysis of research on Renewable Energy Sources (RES) in Southeastern Europe, focusing on countries within this region that are transitioning toward sustainable energy systems. Using data from the Scopus database, this analysis identifies critical trends, influential publications, and the most active researchers and institutions contributing to the RES field from 2014 to 2024. The paper highlights the growth in research output over the past decades, the collaboration networks between countries, and the thematic evolution of topics related to renewable energy. Additionally, it examines the regional challenges and opportunities in adopting RES, particularly concerning policy frameworks, technological advancements, and economic factors shaping the energy landscape in Southeastern Europe. The findings offer valuable insights into the future directions of research and development in renewable energy and its implications for energy sustainability in the region.

Keywords Renewable Energy Sources · Photovoltaic Panels · Hydroelectric

1 Introduction

Renewable energy is obtained from the use of natural resources that are transformed in a very short time into electrical energy and are continuously replenished on a human timescale [1]. Renewable energy can be examined in the context of sustainability [2] and through the prism of specific economic and technical characteristics [3]. Thus, aspects such as the ability to satisfy market demand, technical characteristics such as integration with other sources and economic feasibility derived from energy

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efficiency and operating costs assist decision-makers in choosing a specific renewable energy source [1].

Considering the need for European countries to adapt to renewable energy in line with commitments made through the Paris Agreement, this research will address the most used sources of renewable energy, which are biomass, photovoltaic panels, hydroelectric energy, and wind energy, in the Southeastern European countries.

More specifically, we performed a bibliometric analysis of the various types of renewable energy sources, highlighted the research that has contributed to the field's development, and discovered the main areas of research interest in the case of the Southeastern European countries.

2 Literature Review

The practical applications of the various forms of renewable energy sources and their association with the economy have been widely discussed in the literature [4–8]. However, more research is needed to identify the most suitable form of renewable energy, especially for the case of Southeastern Europe, according to the geographic and weather characteristics of the specific area. Further investigation is needed regarding the analysis of variables such as geographical location [5], smart villages and mixed renewable systems [6], renewable crops and methods multicriteria used to select the optimal renewable energy for each area [7].

As a result, faced with the various sources of renewable energy available, decision-makers are faced with options within each source, including the emergence of new technologies to improve the efficiency of already existing sources [8, 9].

Wind energy generation represents an essential element in the decarbonization process and the promotion of the energy system's sustainability, contributing significantly to the objectives of sustainable development [10].

Integrating wind energy into the energy system diversifies the energy mix, reducing dependence on traditional sources and contributing to constructing a more robust and flexible network infrastructure [10]. Hydropower is an area-dependent renewable energy source with multiple advantages, including clean operation, low GHG emissions, and long-term sustainability [10, 11]. Solar energy is a widely used renewable energy available in abundance in most regions, and it can be efficiently transformed into a valuable form of energy through photovoltaic (PV) panels [12]. Energy crops and biomass are renewable resources that can reduce reliance on fossil fuels, lower greenhouse gas emissions, and come from organic materials such as plants, agricultural waste, and forestry residues [13].

3 Research Methodology

In this research, we performed a bibliometric analysis to explore the main topics addressed in the specialized literature regarding renewable energy sources and to analyze the interdependencies of the variables of this sector. The research focused on the four predominantly used renewable energy sources: wind energy, photovoltaic panels, biomass, and hydropower. This study provides a descriptive and evaluative analysis of the academic discourse on renewable energy sources in Southeastern European countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, North Macedonia, Romania, Serbia), utilizing articles indexed in the Scopus database. Graphs were created by MS Excel.

The primary research questions included:

1. What is the distribution of descriptive information (years, authors, countries, journals) in renewable energy research?
2. How do networks of co-authors, co-citations, and keyword co-occurrences develop in this context?
3. What are the current research trends in renewable energy?

The study performs the bibliometric analysis through the Scopus database using the VOSviewer tool [14]. Recent research [15] emphasizes the importance of these methods in visualizing connections in energy research, particularly in identifying trends and regional focus areas. The VOSviewer tool allows for a clear graphical representation of relationships between authors, keywords, and research clusters, facilitating a deeper understanding of the trends in renewable energy sources, especially in Southeastern Europe.

The data source plays a crucial role in conducting a comprehensive bibliometric study. This research searched the keywords in the "Title, abstract, keywords" section of the Scopus international database, ensuring a focused and systematic approach. Five primary keywords were used: (1) renewable energy sources, (2) biomass, (3) hydroelectric, (4) photovoltaic panels, and (5) wind turbines. The data was collected over an extended period from January 2014 to September 2024. This large-scale search yielded 22,659 documents in the initial stage (see Table 1). The selected criteria ensured that only relevant articles contributing to understanding renewable energy trends in Southeastern Europe were retained for analysis. In the second stage, only English language documents were selected. Thus, the number of the documents decreased to 22.659. In the final selection step, the country for which the searches are carried out was established, and a filter was applied to analyze publications from the Southeastern European countries. At the end of this step, the number of publications was reduced to 944 from the analysis of the specialized literature.

This bibliometric analysis offers a detailed insight into the scholarly discourse surrounding renewable energy sources and their development over the past decade.

Table 1 Distribution of articles in journals

Position	Journal name	Number of documents
1	Energies	62
2	International Multidisciplinary Scientific Geoconference Surveying Geology and Mining Ecology Management Sgem	46
3	Sustainability	24
4	Renewable And Sustainable Energy Reviews	23
5	Renewable Energy	18
6	European Biomass Conference and Exhibition Proceedings	16
7	Iop Conference Series Materials Science and Engineering	15
8	E3s Web of Conferences	14
9	Energy	14
10	Lecture Notes in Networks and Systems	14

4 Results and Discussion

4.1 Descriptive Results on Years, Authors, Institutions, Countries, and Journals

The evolution of the 944 selected articles on renewable energy sources conducted between 2014 and 2024 is highlighted in Fig. 1. The analysis of the graphical representation shows a fluctuating trend in the number of publications over the analyzed period. A slight decrease was observed in 2017, with 26.31% fewer publications than the previous year, followed by a significant increase in 2018, reaching 98 articles. Between 2019 and 2020, there was a slight decline, with a rebound in 2021, reaching 115 articles. The highest number of studies was recorded in 2023, indicating growing researcher interest in contributing to environmental sustainability, a key challenge in this period.

Figure 2 highlights the top 10 countries that contributed research on renewable energy sources. Romania ranks first with 372 publications, reflecting the country's efforts to align sustainability practices with European policies. Greece follows in second place with 263 publications, leveraging its rich natural resources for renewable energy applications. Croatia, Serbia, and Bulgaria also contribute fewer publications, while Denmark ranks last with 22 publications during the analyzed period.

Table 1 highlights the top 10 journals with the most publications on renewable energy sources. These journals account for 246 publications, representing 26.05% of the 944 studies conducted between 2014 and 2024. The "*Energies*" journal ranks first with 62 studies (6.56% of the 944 publications), followed by the "*International Multidisciplinary Scientific Geoconference Surveying Geology and Mining Ecology*

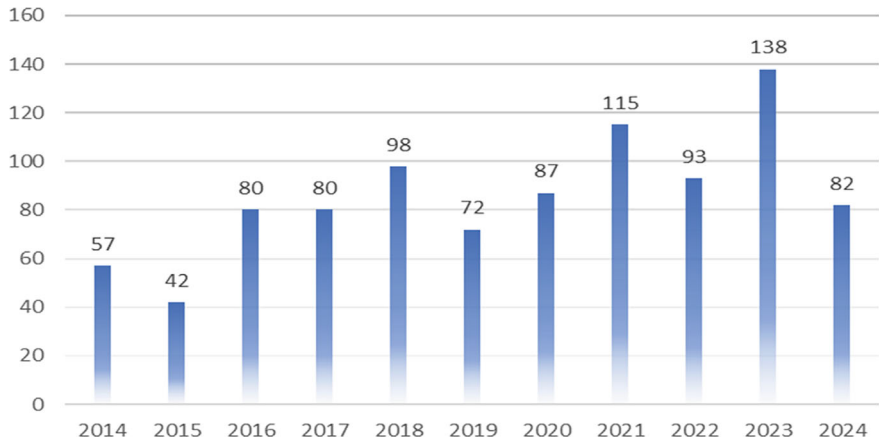


Fig. 1 Number of articles published by year (*Source* Authors after research on Scopus (Search conducted during Sep 2024)

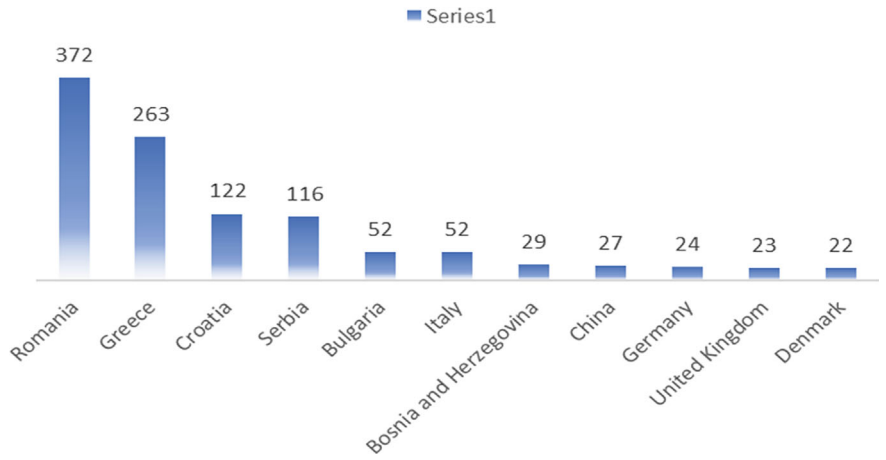


Fig. 2 Number of articles published by country (*Source* Authors after research on Scopus (Search conducted during Sep 2024)

Management SGEM," with an impressive 46 studies. The "*Sustainability*" journal also makes a significant contribution with 24 studies.

Figure 3 shows the co-occurrence of keywords on the network visualization map. The minimum number of occurrences was set at 2; from the total of 191 keywords, only 15 met this threshold. The results indicate three keyword clusters: Cluster 1 (red) with six elements centered around "renewable energy," including terms like "energy transitions" and "biomass." Cluster 2 (green) focuses on "alternative energy" and contains terms like "global warming." Cluster 3 (blue) includes terms like "renewable energies" and "energy policy." These clusters reveal interdependencies between the

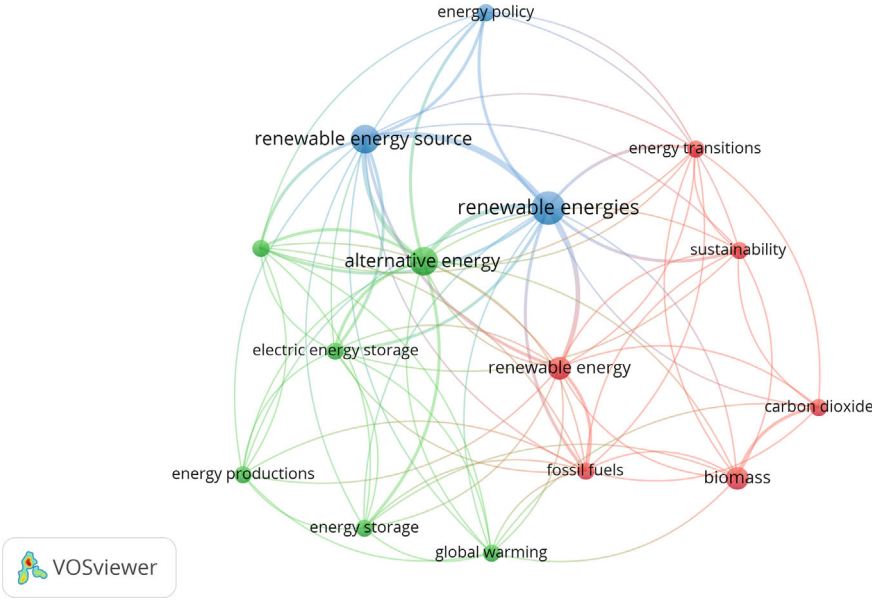


Fig. 3 Network visualization map of co-occurrence of keywords (*Source* Created by authors with VOSviewer)

primary keyword "renewable energy sources" and related concepts like "biomass" and "wind turbines."

4.2 Synthesis of Concerns Regarding Renewable Energy Sources

Several critical concerns have been synthesized using a bibliometric analysis of renewable energy sources. The academic discourse emphasizes the increasing importance of renewable energy technologies, like wind, solar, and biomass, which are at the forefront of global efforts to combat climate change and reduce dependency on fossil fuels. This synthesis highlights key themes like energy transitions, sustainability, and reduction of carbon emissions. Moreover, the analysis reveals strong collaborations across disciplines and countries, reflecting a growing global effort to develop and implement cleaner energy solutions in response to environmental and economic challenges.

The research further suggests that the most studied aspects involve technological innovations, policy frameworks, and the economic feasibility of renewable energy projects, signaling a holistic approach to addressing the complex energy landscape in the coming decades. This demonstrates how the scientific community contributes to shaping the future of energy in alignment with global sustainability goals. According

to a relevant bibliometric analysis [16], it can be observed that there was a constant increase in the interest of researchers in the field of renewable energy sources in the period 2006–2020, the subject being increasingly approached and relevant, mainly in developed countries that make significant investments in this sector. The emphasis was placed on the economic trends generated by the use of renewable energy as well as the technology used for its production.

As a result, faced with the various sources of renewable energy available, decision-makers are faced with options within each source, including the emergence of new technologies to improve the efficiency of already existing sources [17]. The global spread of adopting more sustainable paradigms has been driven by increased awareness of the adverse environmental impact of economically unsustainable growth patterns [18]. The efficient and sustainable use of energy resources represents a way to ensure sustainable economic growth for various regions [19].

5 Conclusion

In this research, through bibliometric analysis, trends related to renewable energy sources were examined. A total of 944 publications from the Scopus database were analyzed, applying inclusion and exclusion criteria based on geographic focus (Southeastern Europe), search language, and the period of 2014–2024. The study addressed initial hypotheses, revealing research trends during the reference period and highlighting the leading Southeastern European countries, with Romania, Greece, and Croatia as the most significant contributors. The analysis also identified the top journals contributing to the field of renewable energy.

Using VOSviewer software, a network visualization map of keyword co-occurrence was created to observe the interdependencies among the key terms from the 944 analyzed studies, highlighting the main areas of research interest. Emphasis was placed on the transition to green, sustainable energy, how this can be achieved, energy storage methods, and public policies that support the application of these practices.

Future research suggestions include expanding the bibliometric analysis by using more databases such as Google Scholar, expanding the search to more countries in the Balkan region, and applying statistical analysis to associate the bibliometric findings with data such as RES penetration in the energy mix to identify whether scientific research is associated with the application of RES technologies.

This research is helpful to researchers and policy-makers by providing a method for in-depth bibliometric analysis of renewable energy trends. It enables the identification of critical research areas and aspects of RES, influential publications, and leading contributors for the case of Southeastern European countries. However, it can also apply to other countries or regions.

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The Transformative Impact of Artificial Intelligence (AI) on Strategic Decision-Making



Lambrini Seremeti and Sofia Anastasiadou

Abstract Effective decision-making largely relies on decision maker's capacity to analyze, process, and interpret large datasets—often of uncertain quality—while recognizing patterns and generating actionable insights. Artificial intelligence (AI) has fundamentally transformed this process by enhancing decision maker's ability to shift through vast amounts of data, identify trends, and provide recommendations that lead to more informed choices. This paper explores the transformative impact of AI on strategic decision-making at individual, organizational, and societal level, offering a nuanced perspective on how AI is reshaping modern "decision-making manifold". Indeed, by utilizing the capabilities of AI, individuals can analyze vast datasets with remarkable speed and precision, uncovering patterns and insights that were previously inaccessible. In organizations, AI facilitates strategic planning by providing real-time analysis and forecasts. On a societal level, AI-driven decision-making contributes to better policy making and resource allocation in critical fields like healthcare, education, and urban planning. Although, the integration of AI into decision-making process offers numerous benefits, it also presents challenges and risks associated with legal, ethical, technical, and social concerns that researchers, practitioners, and policymakers need to be aware in order to effectively leverage its potential.

Keywords Artificial Intelligence · DecisionMaking · Strategy Transformation

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1 Introduction

Making private, group, or public routine choices and judgments or strategic decisions means engaging in a process that involves evaluating options, considering various factors, and determining the best course of action based on specific criteria and objectives [1]. The decision-making process can be both simple (routine choices by individuals that are often guided by habits, or group decisions that require collaboration among members to arrive at a consensus opinion) or complex (public decisions which usually involve a wider audience and are influenced by social, political, or economic factors, requiring transparency and accountability, or strategic decisions which typically involve extensive research, forecasting, risk assessment, and alignment with long-term goals since they significantly impact the prosperity of an organization or societal system). In all cases, effective decision-making involves critical thinking, weighing pros and cons, considering ethical implications, seeking expert advice, using decision-making planning frameworks, and employing tools to aid the process [2].

Regarding planning frameworks, making decisions often include specific structured steps such as defining the problem or goal, gathering relevant information, identifying potential solutions, evaluating the alternatives, selecting the best option, developing an action plan and monitoring and evaluating the results [3]. Difficulties in decision-making strategy often arise due to complexities that emerge during planning steps. These complexities create challenges that hinder effective decision-making and they can include the vast amount of incomplete or inaccurate data that needs to be analyzed in order to uncover underlying patterns, anomalies, or emerging trends, the interdependencies between conflicting decision alternatives, the rapid pace of change in geopolitical, socioeconomic, and technological landscape, the determining factors like time, money, reputation, or satisfaction, and the unforeseen variables such as bias in interpretation, and trust among diverse stakeholders that can influence decision-making reliability [4].

In this intricate landscape of decision-making, the capacity to process and analyze data rapidly, responsibly, and accurately is the most valuable factor in addressing these complexities. Data holds the insights that can enable better decisions, but data processing is the series of operations on data to extract those insights and take actions [5]. In this vein, cutting-edge advances in AI are fundamental transforming data-driven decision-making, where humans with the aid of analytical tools are considered as the main data processors. While data-driven approaches rely on the analysis and interpretation of historical data by human analysts, AI-driven decision-making leverages advanced algorithms and machine learning (ML) models to automate and enhance this process [6].

AI and ML together drive significant advancements in decision-making processes [7]. AI encompasses a broad range of techniques aimed at creating systems capable of performing tasks that traditionally require human intelligence, while ML focuses on developing algorithms that allow systems to learn from and make predictions based on data. Each technology contributes uniquely to decision-making processes [8]. More

precisely, ML algorithms, including supervised and unsupervised learning, enable systems to learn from historical data and make accurate predictions about future events. Deep learning (DL), a subset of ML excels in processing unstructured data such as text, images, and audio, uncovering intricate patterns that inform strategic decisions [9]. Natural language processing (NLP) techniques facilitate the extraction of insights from textual data, enabling sentiment analysis and automated content summarization [10]. Reinforcement learning (RL) optimizes decision-making in dynamic environments by continuously improving strategies based on feedback. Additionally, AI techniques like expert systems (ES) and fuzzy logic (FL) provide frameworks for handling complex decision rules and uncertainty [11]. Indeed, the integration of AI and ML into everyday activities is profoundly transforming decision-making processes in healthcare, finance, retail, smart home, transportation, and education [12].

Despite the numerous benefits of integrating AI in decision-making processes, challenges remain, including concerns about data quality and quantity, downskilling of individuals, non-compliance with regulatory standards, technical barriers, as well as ethical implications related to privacy, algorithmic bias, and societal risks, such as workforce displacement, digital divide [13, 14]. This paper aims to synthesize current research and insights on the transformation of decision-making processes through AI integration across various contexts, by examining the changes in the scope, dynamics, and cardinality of the "decision-making manifold".

2 Methodological Considerations

A growing body of literature on the transformation of decision-making processes by employing AI advances has emerged, spanning several disciplines and areas of study, including psychology, human–computer interaction, AI ethics, and general and explainable AI. Rather than providing a systematic review of this literature, this paper attempts to synthesize some of the insights that have emerged by conceptualizing the "decision-making manifold". The main steps toward this conceptualization involve the identification of the core domains transformed by AI, the key factors influencing decisions, the role of AI in enhancing decisions, and their thematic cross-linking. It offers a holistic understanding of the opportunities and challenges of AI integration into the decision-making realm, based on three axes: scope, dynamics, and cardinality, which are the main characteristics that differentiate private, group, and public decision-making.

3 Decision-Making Manifold

Scholarly work on how individuals, organizations, and society makes decisions has notably expanded, exploring various aspects (e.g. the bases, principles, types, theories, and methods of decision-making) and evolving in independent directions (e.g. psychological, technological, cultural, and functional). The recent line of work has mainly focused on factors influencing on-the-fly individual decision-making within organizations [15], models and frameworks aimed at guiding ethical decision-making processes within IT governance contexts [16], the transformative impact of AI on strategic business decision-making [17], ethical implications of AI integration in decision-making processes [14], and challenges related to AI-assisted decision-making [18–21].

In this paper, the term "decision-making manifold" is used to provide a holistic understanding of the synthesis of the above research directions that complement each other. The "decision-making manifold" can be defined as a conceptual framework that represents the complex, multidimensional nature of decision-making across various contexts (private, group, or public decision-making). This manifold encompasses various factors influencing the decision-making process and integrates different elements. It serves as a flexible model to understand and analyze how decisions are formulated, evaluated, and executed within diverse environments, whether at individual, organizational, or societal levels. By considering the manifold's dimensions and their interrelationships, one can better grasp the intricacies of decision-making and the impact of factors such as AI, human judgment, and environmental conditions on the overall process. It is structured along three critical axes: scope, dynamics, and cardinality. Each axis represents a different dimension of the decision-making process, providing a comprehensive framework for understanding and analyzing decisions.

The scope of decision-making refers to the range and extent of issues that a particular decision must address. It involves defining the boundaries and areas that will be affected or considered during the decision-making process. Understanding the scope helps in determining the resources needed, the stakeholders to be involved, and the potential impact of the decision.

The dynamics axis addresses the temporal and adaptive aspects of decision-making. It considers how decisions evolve over time, influenced by changing information, feedback mechanisms, and adaptive responses. Recognizing the dynamic nature of decision-making is crucial for developing flexible and resilient decision-making models that can accommodate uncertainty and change.

The cardinality axis refers to the range and number of possible decisions and outcomes within the decision-making manifold. High cardinality implies a large number of potential choices and pathways, reflecting the complexity and diversity of real-world scenarios. Understanding the cardinality of decision-making allows for the development of comprehensive models and simulations that can explore different scenarios, assess risks, and optimize decision outcomes across a broad spectrum of possibilities.

Together, these three axes—scope, dynamics, and cardinality—provide a robust framework for analyzing and improving decision-making processes. By considering the breadth of decision contexts, the temporal evolution of decisions, and the complexity of potential outcomes, this conceptualization enables a deeper understanding of the multifaceted nature of decision-making and supports the development of more effective and adaptive decision-making strategies.

4 AI is Transforming Decision-Making Manifold

AI significantly influences the scope, the dynamics, and the cardinality of decision-making at various levels—individual, organizational, and societal—by enhancing capabilities and expanding possibilities in each context. However, in tandem with these AI benefits to decision-making processes, emerging issues related to data quality, privacy, integration, ethical considerations, transparency, and public trust must be addressed.

4.1 AI Extends the Scope of Decision-Making Manifold

While AI enhances the scope of decision-making across different contexts by providing more data-driven insights, automating complex processes, and enabling more informed and strategic choices, several challenges must also be considered.

At the individual level, AI-powered tools, such as personal assistants and recommendation engines, analyze user behavior and preferences to offer tailored advice, helping people make more informed decisions in areas like health, finance, and daily planning. However, this can be limited by issues like data quality, privacy concerns, and the lack of transparency in AI algorithms, which may lead to distrust and reduce the effectiveness of AI-driven recommendations.

In organizations, AI enhances decision-making by analyzing large datasets to uncover trends, predict outcomes, and optimize processes, allowing companies to make strategic decisions with greater precision. This expansion from operational to strategic decision-making improves efficiency and competitiveness. However, challenges such as integrating AI with legacy systems, the risk of over-reliance on AI, and ethical considerations around bias and fairness can hinder its effectiveness.

On a societal level, AI supports more informed public policy and community planning by analyzing diverse data sources and simulating policy impacts. Yet, the complexity of these systems and potential biases in data can pose risks, requiring robust governance, transparency, and public oversight to ensure AI-driven decisions are fair and trustworthy.

4.2 AI Reshapes the Dynamics of Decision-Making Manifold

AI reshapes the dynamics of decision-making by introducing real-time data processing, automation, and enhanced interaction, thereby improving responsiveness, efficiency, and engagement across individual, organizational, and societal levels. While AI has the potential to enhance decision-making dynamics at different contexts, addressing challenges related to trust, transparency, bias, integration with human judgment, and adaptability is crucial for its effective and equitable implementation.

At the individual level, AI-powered tools like personal assistants and recommendation systems provide dynamic, data-driven support, adjusting in real-time to user behavior, and preferences. This enhances decision-making by offering continuous feedback and automating routine tasks. However, over-reliance on AI can erode personal decision-making skills, and the complexity of AI systems may reduce trust and usability. Algorithmic bias also poses a risk, potentially perpetuating existing prejudices.

In organizations, AI enables real-time analytics and data-driven insights, allowing for quicker, more informed strategic decisions. Automation improves agility and optimizes workflows, but integrating AI with human expertise is crucial to maintain a balance between automation and human judgment. Additionally, resistance to change and the need for continuous upskilling present significant challenges.

On a societal level, AI enhances decision-making by analyzing large-scale data and engaging the public. However, ensuring transparency, accountability, and fairness in AI-driven public decisions is essential, as AI can exacerbate social inequalities if not carefully managed. Adaptability to changing societal conditions is also crucial for the successful implementation of AI systems in public governance.

4.3 AI Influences the Cardinality of Decision-Making Manifold

AI significantly influences the cardinality of decision-making at the individual, organizational, and societal levels. Despite the numerous advantages of increased cardinality in decision-making introduced by AI, there are also significant challenges that need to be managed carefully.

At the individual level, AI-driven tools, such as recommendation systems and personal assistants, expand decision-making possibilities by tailoring suggestions based on personal preferences and needs. While this enriches the range of choices, it can also lead to decision fatigue, where too many options overwhelm individuals. Additionally, relying on AI may narrow the diversity of experiences, as users might focus only on AI-suggested options.

At the organizational level, AI enhances decision-making by enabling comprehensive data analysis and strategic planning. By processing large datasets and identifying

trends, AI expands the range of strategic options, fostering innovation and efficiency. However, the increased cardinality can lead to analysis paralysis, where the abundance of data overwhelms decision-makers, delaying action. Over-reliance on AI insights may also undervalue human intuition and creativity in decision-making.

On a societal level, AI allows policymakers to consider a broader spectrum of policy options and outcomes, leading to more informed and precise decisions. However, the complexity and high cardinality of AI-driven decision-making raise concerns about transparency, accountability, and the potential for algorithmic biases. These biases can perpetuate inequalities and negatively impact vulnerable populations, underscoring the need for careful management.

5 Conclusions

The integration of AI into decision-making processes across individual, organizational, and societal levels presents a paradigm shift with both significant opportunities and substantial challenges. While the integration of AI into decision-making processes offers vast potential for enhancing decision quality and efficiency, it also requires a balanced approach that incorporates ethical considerations, human oversight, and critical evaluation of AI-driven insights. Future research should continue to refine the proposed decision-making manifold framework, exploring ways to mitigate the challenges and maximize the benefits of AI in diverse decision-making contexts.

Two arguments can be raised against our introduction of the concept "decision-making manifold". First, one might argue that this concept, which can be considered ambiguous, does not contribute to the decision-making realm. We argue that the "decision-making manifold", inspired by mathematics, is used to highlight the complex, multidimensional nature of decision-making processes. This conceptual framework intends to employ the mathematical concept of manifold to conceptually model the continuous and interconnected influences of various stimuli on decisions. By representing decision variables within a manifold, it becomes possible, in future work, to visualize and analyze the intricate pathways and interactions that govern choices. This approach will not only enhance the understanding of how different factors converge to influence decisions but will also allow for the application of mathematical techniques to explore and predict decision-making behavior.

Another argument against our conceptualization might be that the axes of scope, dynamics, and cardinality are too broad and abstract to effectively capture the nuances of decision-making across different contexts. Critics may assert that these dimensions, while theoretically appealing, fail to account for the specific, contextual variables that significantly influence decision processes in private, group, and public spheres. For example, private decision-making might be heavily influenced by personal biases and emotions, group decision-making by social dynamics and power structures, and public decision-making by political and cultural factors. By focusing on the generalized axes of scope, dynamics, and cardinality, the framework might overlook these critical context-specific elements. In response, while the axes of

scope, dynamics, and cardinality provide a broad structure, they are intended to serve as foundational pillars that can be further elaborated with context-specific details. The purpose of the decision-making manifold is to offer a flexible yet comprehensive framework that can be adapted and enriched with additional layers of context as needed. By starting with these three axes, we can systematically build a more detailed and nuanced understanding of decision-making processes that incorporates specific variables relevant to different contexts. This approach allows for both a high-level overview and a detailed analysis, making the framework versatile and applicable across various decision-making scenarios.

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Ethical Branding and Digital Marketing: Theoretical Connections and Applications on a Case Study



Dimitrios Manoukas, Aggeliki Sgora, and Ella Overkleeft

Abstract The ethical economy framework values customer co-production, promoting an inclusive, participatory, and sustainable business model. It emphasizes transparency, authenticity, and shared responsibility, engaging customers as partners in shaping ethical practices. This paper explores the role of User Experience (UX) design, servicescapes, influencer marketing, and social media in promoting ethical branding. Using Rural Radicals, a cultural startup, as a case study, it highlights gratitude's role in cause-related marketing and its impact on consumer behavior. The discussion centers on authenticity, ethical tourism, Community-Based Social Marketing (CBSM) in digital marketing, offering strategies for meaningful connections, value co-creation, and ethical collaboration. Practical recommendations for enhancing ethical branding and fostering emotional connections with audiences are provided.

Keywords Ethical Branding · Digital Marketing · Customer co-production · Ethical Tourism

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1 Introduction

Ethical branding comes from the general context of corporate social responsibility (CSR), which began gaining prominence in the late twentieth century. CSR underscored the need for businesses to engage themselves in the ways and manners in which they could bring benefit to society and the environment. The principles of CSR morphed into a more sophisticated practice—ethical branding—alongside the development of digital technologies. Ethical branding is not only about meeting or exceeding the legal and regulatory provisions but the actual value coming from the brands being honest and integral while ensuring a promising future for society. In contemporary times, information and communication avenues, such as social media spaces, search engines, and other digital commercial promotions, are considered to have been prominently used in current brand promotional channels. Recent Statistics show that over 50% of consumers now discover brands through social media platforms rather than traditional search engines (https://sproutsocial.com/insights/social-media-statistics/).

This paper approaches as a case study a new cultural venture that commits to solutions in rural development. The case study is a startup initiative, Rural Radicals (ruralradicals.com) that works on transforming empty buildings all over non-urban Europe into alive and meaningful spaces that contribute to the cultural landscape and enable the sustainable development of communities. It proposes a solution to the depopulation problem in rural areas, primarily due to the migration of the youth to urban centers, leaving tens of thousands of buildings empty and underutilized. By activating such spaces, it is possible to bring back life close to nature and foster a sustainable and creative way of living outside urban environments. The emphasis on ethical branding weaves its way through their mission: the engagement of the community, transparency in the operational process, and the promotion of sustainable development practices. Rural Radicals lies at the intersection of cultural innovation and rural regeneration; hence, it is a beautiful opportunity to understand the practical application of principles of ethical branding in the digital age. Such commitment to ethical issues is inherent in an ability to transform rural areas by creating spaces that will be incubators for creative and social enterprises. This, therefore, does not only answer some of the severe problems of making a living as an inhabitant of a rural area but also of developing in a more balanced and sustainable manner.

2 Ethical Value Co-Creation in the Digital Economy: Consumer Engagement and Marketing Strategies

In today's ethical economy, consumers play an increasingly active role in shaping brand values and meanings. Rather than being passive recipients, they are now co-creators who engage with brands through digital platforms, influencing both

marketing strategies and the overall value creation process. This shift has redefined the relationship between consumers and businesses, blending the lines between production and consumption.

Arvidsson [1] highlights this transformation by introducing the notion of "consumer publics", consumer groups that actively engage and collaborate with companies in an interactive process of co-creation and diffusion of brand meanings and values, mainly through digital and social media. This challenges the traditional view of consumption as passive, instead highlighting its role as a productive activity that can establish new ethical standards. As a result, participation of consumers in production blurs the line between production and consumption, contributing to value creation by participating in brand-related activities and communities.

Within this ethical economy framework, Arvidsson [2] also discusses the "customer co-production" where consumers' active involvement reshapes marketing and branding strategies. He explains that charismatic leaders (or brands) attract affective investments from their community, which translates into ethical capital. This capital can then be used to mobilize resources and organize productive processes. On the contrary, the increasing transparency afforded by digital technologies means that brands must align their actions with their ethical claims. Consumers can easily hold brands accountable for any discrepancies between their stated values and actual practices. All in all, production emphasizes the importance of brands authentically engaging with their consumers and prioritizing ethical considerations in their value creation strategies.

The connection between ethical marketing and digital marketing further reinforces these ideas [3, 4]. Some key connections between the two begin with the values of transparency and authenticity. Digital marketing provides brands with various platforms to communicate their ethical practices and values transparently. Digital marketing channels also offer opportunities for brands to educate and raise awareness among consumers about social and environmental issues. Through blogs, videos, social media campaigns, and interactive features, brands can involve consumers in ethical initiatives and gather feedback on sustainability efforts. This engagement fosters a sense of ownership and strengthens the consumer-brand relationship [5]. It is not uncommon for digital marketing practices to often involve collaborating with influencers who align with the brand's ethical values. Influencers can help amplify the brand's message and reach a targeted audience that is receptive to ethical considerations. By partnering with influencers who genuinely support the brand's ethical practices, brands can enhance their credibility and connect with consumers who value ethical choices [6]. Table 1 summarizes the key aspects of value co-creation for ethical digital marketing campaigns [7].

Table 1 Antecedents and consequences of value co-creation in general and sharing economy contexts (adapted from [7]

Antecedents of Value Co-Creation	Consequences of Value Co-Creation	Context of a Sharing Economy Platform—Antecedents	Context of a Sharing Economy Platform—Consequences
Customer engagement: Active participation in co-creation	**Customer satisfaction:** Leads to ownership and satisfaction	**Consumer engagement:** Active participation with the platform	**Enhanced experience:** More personalized and satisfying
Customer empowerment: Tools and resources for participation	**Customer loyalty:** Strengthens emotional connection and loyalty	**Perceived ethical marketing:** Positive consumer perception of ethical practices	**Increased loyalty:** Stronger emotional connection and loyalty
CSR: Adoption of responsible practices	**Innovation:** Co-creation drives product/service improvement	**Relationship quality:** Strong consumer-platform relationship	**Positive word-of-mouth:** Leads to recommendations and brand awareness
	Positive word-of-mouth: Generates positive experiences	**Social support:** Positive interactions with other users/ platform	Improved performance: Innovation, satisfaction, and performance boosts
	Competitive advantage: Provides a unique edge		**Sustainable advantage:** Differentiation from competitors

3 Case Study: Ethical Branding in Rural Radicals

3.1 Methodology

Rural Radicals is connected to the notions of space, nomadism, and tourism. For this reason, an approach to what is called "Ethical Tourism" was deemed necessary to be incorporated into the proposed strategy. Ethical tourism is simply tourism practiced with consideration for its impact on the social, cultural, environmental, and economic scenes of travel. Being responsible and making conscientious choices while touring reduces all negative impacts and maximizes positive reasons for visiting destinations. Ethical tourism may further be rendered through support for local businesses, respect toward local cultures and traditions, minimal environmental footprint, or involvement in sustainable and responsible activities. It generally tries to promote sustainable development, maintaining and upholding the quality of life of local communities and their way of life [8].

Rural Radicals' target audience are Millenials and Generation Z persons who decide not to leave rural areas or to move to the periphery during or after the pandemic. These generations, especially Generation Z, are tech-savvy, using mobile devices and social media for travel planning, communication, and sharing.. Social connections and responsible, sustainable travel practices are important to them, with value-led behavior influencing their travel choices, such as supporting local communities and seeking authentic experiences.

Following the above, customer participation in a service encounter co-creates value, Customer participation co-creates value in ethical tourism, influencing authenticity and sustainability by supporting businesses, respecting culture, and reducing environmental impact [9]. Moreover, empowered consumers, especially Millennials and Gen Z, vocal advocates of responsible tourism, often express these values on social media. Rural Radicals can leverage this by engaging these generations as co-creators of authentic, socially responsible tourism experiences.

Behzadinasab et al.'s [10] ethical social media marketing model emphasizes tools and practices for promoting sustainable tourism. Rural Radicals should adopt this model to engage its tech-savvy audience. Additionally, Community-Based Social Marketing fosters local-level participation in sustainable tourism, and a decentralized narrative approach [11] helps communities shape their identity as ethical tourism destinations. The Consumer-Value Brand Relationship Sustainability (CVBRS) strategy also emphasizes long-term emotional connections and shared values between brands and consumers, essential for promoting authenticity and trust [12]. Rural Radicals can build strong relationships that encourage repeat visits, word-of-mouth, and social media advocacy through cause-related marketing [13].

4 Applications on the Rural Radicals Online Channels

Branding and Rebranding—Website. A new ethical branding strategy for Rural Radicals can focus on clearly presenting ethical practices on the website through case studies, testimonials, and certifications to build credibility. Interactive features like QR codes, virtual tours, or maps could boost engagement. A clear Call to Action (CtA) encouraging users to share stories or offering incentives like free consultations would foster participation. An impact section with stats or infographics (e.g., jobs created, footprint reduction) and testimonials or media quotes would add social proof.

The website could function as a "servicescape," [14] blending real-life encounters like markets, festivals, and workshops into the digital platform, enhancing UX and reflecting Rural Radicals' mission of promoting sustainable, culturally rich environments.

Aspects of ethical branding could also be applied to the core elements of the Rural Radicals brand. The existing black logo, depicted in Fig. 1 and designed by Maslow Studio Amsterdam (located at Bentinckstraat 10F, 1051 GK Amsterdam, Netherlands), effectively symbolizes progress and rural settings. Using the COOLORS tool, the main branding palette was recreated (Fig. 2) and a new neon variation (Fig. 3) was added. The neon palette, appealing to Millennials and Gen Z, can be used to target different audiences and for various content like social media posts and announcements, capturing younger generations' attention (Table 2).

Fig. 1 The Rural Radicals main logo





Fig. 2 Main branding palette



Fig. 3 Alternative neon palette

Table 2 Palettes

Main branding palette	5CA9EF, F6941B, EEE5E5, B307E3, 280003
Alternative neon palette	258AE3, 96E6B3, CD160B, DAE52, 927FD5



Fig. 4 The Rural Radicals alternative logos

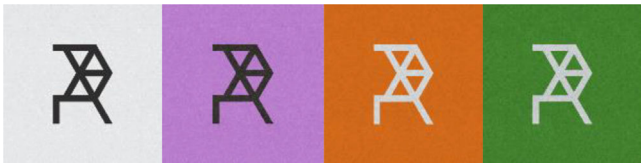


Fig. 5 The Rural Radicals initial R variations

Inspired by the main and the new alternative palette, the logo was recreated as well, using Adobe Express (Fig. 4). These logo variations can be used in signatures, visuals, videos, and posts, reflecting the brand's ethical aspects as part of a transparent strategy. The older palette represents nature, while the new one captures the brand's youthful energy and activist spirit.

The diverse colors and logos symbolize the values of diversity and inclusion, which should be promoted on the website and through public relations to highlight the initiative's ethical focus. Additionally, initials (R) designed with Adobe Express (Fig. 5) can be used for signatures or on products like recycled stickers and cards. Overall, these strategies enhance Rural Radicals' ethical branding while promoting inclusivity, diversity, participation, and community-led sustainability.

5 Building a Co-Creation Culture on Instagram

The Instagram strategy will actively encourage User-Generated Content (UGC). Rural Radicals should regularly showcase content from their followers—such as photos, reels, and stories—that highlight their experiences with the team or the countryside. UGC creators can be rewarded with a dedicated highlight section on the Instagram profile. Additionally, creating branded hashtags like #RuralRadicalsStories, #RuralCreatives, and #RuralImpact will encourage users to tag their posts, making it easier to find and share UGC. A highlight section for #RuralIdeas or #Call-forActions should also be established to gather qualitative feedback. To enhance audience engagement, posts can include open-ended questions, polls, or surveys. Furthermore, inviting influencers or brand advocates for Instagram story

takeovers can provide behind-the-scenes content and encourage follower interaction, empowering clients, colleagues, and rural enthusiast.

Playful co-creational activities and interactive online events like the following (Fig. 6) should also be considered. The Miro tool was used to create the posters, in a simple yet appealing way, dressing them with a retro aesthetic while keeping the neon palettes. The sessions could take place during an Instagram live or could be hosted on another platform like Zoom. These activities could involve the audience with topics related to the mission, such as sustainable living, community development, and the importance of creative spaces. There should always be an educational, skill-building, or networking aspect in online gatherings, to create an essence of impact and reward for the participants.

Regarding the content, the clients and the project partners should be rewarded by content featuring their achievements and endeavors and bringing them to the spotlight. Tagging and active interaction by replying to comments is a supplement to this strategy. Behind-the-scenes reels, bringing the Rural Radicals team closer to the user will create a connection of authenticity and a sense of transparency while focusing on the ethical idea of open-source knowledge. Storytelling from the communities of the Rural Radicals projects is crucial to be included, in the form of reels mainly, in order to showcase the impactful work of the startup. The cultural and creative aspects of most projects should be utilized as an advantage, creating a platform of variety, colors, and sounds. The natural settings are also included in the pros, attracting new followers and possible clients who feel the need to evade the urban pressure.

6 Conclusions

Ethical branding is particularly important for businesses due to the direct and long-term benefits it offers in terms of building consumer trust and loyalty, enhancing brand reputation, differentiating in competitive markets, attracting investors and partners, fostering employee satisfaction, mitigating legal risks, creating sustainable business practices, and driving innovation and growth.

The proposed strategies for Rural Radicals aim to enhance the ethical and participatory dimensions of the brand. Central to these efforts is the focus on transparency, authenticity, and community engagement. By integrating ethical practices such as case studies, testimonials, and certifications, the website will establish credibility and demonstrate its commitment to sustainable tourism. The use of interactive features like virtual tours and QR codes fosters consumer engagement and provides a platform for clients and community members to contribute to the narrative, aligning with co-creation theories. Visually, the incorporation of diverse color palettes and logo variations reflects the brand's commitment to inclusivity and diversity, key elements of ethical branding as described in [5]. The integration of UGC and behind-the-scenes content, reels, and storytelling also reinforces transparency and strengthens the emotional connection between the brand and its followers. In summary, Rural

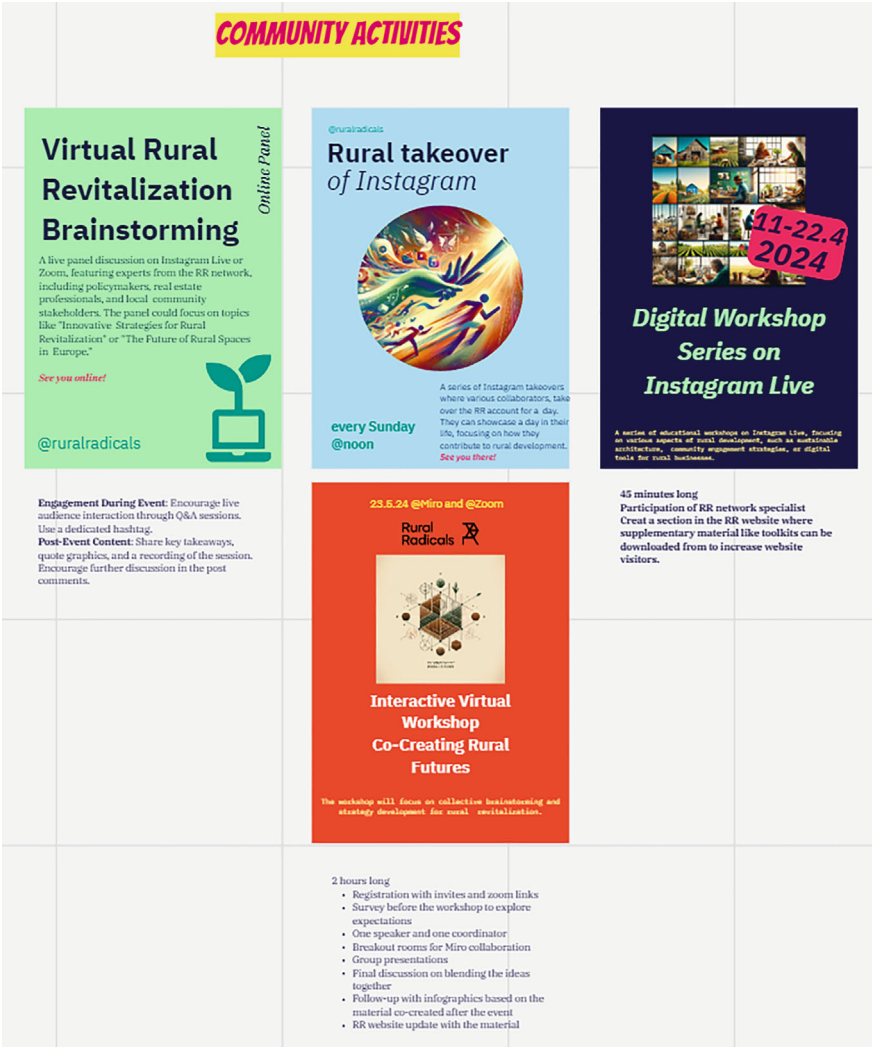


Fig. 6 The Community online activities to be promoted

Radicals' proposed rebranding, based on ethical and community-centered practices, effectively aligns with the values of its target audience, promotes sustainability, and fosters an inclusive brand identity. This approach is not only essential for building long-term relationships with consumers but also for positioning Rural Radicals as a leader in ethical tourism and community development.

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Influences of Demographics on Fragrance Marketing Purchase Behavior: A Cross-Cultural Investigation

Shuvam Chatterjee, Pawel Bryla, and Mahmoud Ibraheam Saleh

Abstract Previous research has examined the effects of individual demographic factors such as gender and age, but limited insights have analyzed their intersectional impacts across different cultural contexts. This study addressed gaps by examining how gender and age influence the impact of ambient retail fragrances cross-culturally between Indian and Polish consumers. Hypotheses suggested that women and younger individuals would be most susceptible to fragrances' effects on shopping behaviors. A quantitative methodology was employed with mall-intercept surveys administered in shopping centers in Lodz, Poland, and Kolkata, India. Samples included 300 consumers in India and 279 in Poland. Results showed mixed support, with some gender hypotheses partially confirmed: Polish women reported that fragrances impacted certain behaviors more than men, though inconsistently across countries. However, age-related hypotheses were contradicted as Polish agreement on fragrances' effects increased with age. Cross-country divergence emerged, with fragrances influencing younger Indian spending patterns more than Polish. This study contributes to the theoretical understanding of how population diversity influences consumer variability across different economic and social contexts.

Keywords Cross-Cultural · Ambient Fragrances · Demographic Variables

1 Introduction

Fragrance marketing plays an important role in influencing consumer purchase intentions in the retail industry. Manufacturers strategically design fragrances targeting different consumer demographic segments to impact their shopping behavior and purchasing decisions [1, 2]. Previous research has examined how intrinsic product

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qualities like aroma profile and extrinsic brand characteristics shape consumers' preferences [3]. However, individual traits also determine how people perceive and respond to scents in retail environments. Biological differences lead to variances in olfactory abilities between men and women, with females generally demonstrating better detection and response to fragrances [4]. Younger consumers below 35 have also been found to be more encouraged in their spending by fragrances compared to older populations [5].

Cross-cultural research indicates consumer characteristics tend to vary substantially depending on divergent socialization processes across societies. Societal norms dictate prescriptive gender roles and age-related expectations that mold cultural preferences, attitudes, and behaviors over the lifespan [6]. For example, women in some communities may experience stronger pressures to focus on emotions, while older individuals see a natural decline in olfactory capacity [6]. However, few studies have distinguished between gender variations or considered how younger and older consumers differentially respond to ambient scents [7, 8]. While some studies have examined how culture affects hedonic reactions to atmospheric signals in retail settings [9], less research has examined the ways in which culture influences shopping behaviors in relation to demographic variables like age, gender, and ambient fragrances. Cross-cultural consumer assessments of retail experiences can be learned from Poland and India, two developing retail markets with different demographics [10, 11]. The purpose of this research is to analyze the role of gender and age on the effectiveness of fragrance marketing across cultures. While previous work has established these demographic factors shape olfaction abilities and preferences for scents [6], limited cross-cultural investigations have been conducted. Analyzing variances in the impacts of scents on shopping behaviors based on individual traits may provide new insights.

2 Literature Review

2.1 Fragrance Marketing in Retail

Previous studies have significantly advanced the understanding of atmospheric signals' impact on consumer decision-making [12, 28]. Atmospheric factors have been shown to influence emotions, attention, and behaviors in various retail contexts [13]. Leenders et al. [14] discussed how scent in a store can improve customers' mood. Retail marketers should focus on enhancing the internal shop atmosphere to highlight the value of their goods and services and encourage more repeat business [15]. According to [14] noteworthy findings, when consumers are exposed to high-intense aromatic settings, they tend to underestimate the amount of time they spend in retail stores and end up making both unplanned and actual purchases. Research has established that retail atmospheric elements like ambient scents can significantly

influence shopper behaviors and purchase decisions [12]. The literature also indicates individual consumer characteristics such as age and gender play a role in how people perceive and react to atmospheric stimuli.

3 Control Variables

For this study, gender and age were included as control variables. According to Neomániová et al. [16], women are more sensitive to aroma at retail establishments than males are. In addition, women are often better than men at detecting and responding to fragrances [17]. Nonetheless, few studies distinguish between gender variations in how people react to ambient smells [7]. According to Chebat et al. [8], fragrance has little effect on older consumers and encourages spending for younger consumers under 35. Simultaneously, variations in the respondents' sensitivity to ambient scent may be associated with their olfactory capacity, which varies over an individual's lifespan and declines significantly with age in older generations [6]. According to Correia et al. [6], olfactory performance peaks between 20 and 40 and then sharply drops beyond that.

Regarding cross-cultural differences in the demographics, in this study, we focused on the Polish and Indian contexts. There are several reasons why fragrance perception and effects may vary for consumers in India compared to Poland [18], given the divergent socio-cultural environments between the two countries. India has a largely warm, tropical climate where the use of scented products like essential oils and fragrant flowers are woven into cultural traditions for purposes such as worship, meditation, and celebrating auspicious occasions. On the other hand, cooler weather in Poland has led to less historical emphasis on fragrance in daily life. In India, scents play a role in fostering feelings of familiarity, tradition, and belonging to social groups. However, Polish society adheres more to individualistic values where personal independence and unique identities hold precedence [19]. The role of culture influences the way consumers behave and react [20–22]. Consequently, ambient fragrances may be perceived relatively more emotionally and socially in India than in Poland, evoking deeper cultural associations tied to community and tradition. Considering the discussions above, the following hypotheses are proposed:

H1: The impact of fragrance on time spent in the shop is stronger among women than among men in both Indian and Polish retail markets. H2: The impact of fragrance on money spent in the shop is stronger among women than among men in both Indian and Polish retail markets. H3: The impact of fragrance on impulsive buying inside the shop is stronger among women than among men in both Indian and Polish retail markets. H4: The impact of fragrance on time spent in the shop is stronger among younger individuals than the older population for both Indian and Polish retail markets. H5: The impact of fragrance on money spent in the retail store is stronger among younger individuals than among the older population for both Indian and Polish retail markets. H6: The impact of fragrance on impulsive buying inside the

shop is stronger among younger individuals than among the older population for both Indian and Polish retail markets.

4 Methodology

4.1 Survey Measures and Data Collection

The current study took a quantitative approach to develop valid and reliable measures for important constructs based on prior research. Measures for time spent, money spent, and impulsive purchases for shopping drew from studies examining these factors in retail environments, employing a 5-point Likert scale [14, 23]. Pilot tests with consumers refined wording and ensured sufficient reliability, with Cronbach's alphas exceeding the 0.7 standard [24]. Surveys were administered through intercept methods at two sizable shopping malls, one in Lodz, Poland, and one in Kolkata, India from March to August 2023. Shopping malls provided a natural context for this study as they commonly serve social and shopping functions in both countries [25]. Clothing retailers within the malls were selected as survey locations according to their influence on attitudes and intentions [26]. To obtain representative samples, respondents were randomly selected through stratified sampling of mall quadrants and time slots [27]. A pre-test ensured olfaction provided an appropriate atmospheric cue distinguishing store before administering surveys in local languages to the final samples of 300 Indian and 279 Polish respondents, who were analyzed using SPSS 24.

This study aims to address two research questions:

1) How do gender and age influence fragrance effects on purchase intentions across societies?
2) How do divergent cultural norms shape these moderating relationships?

Addressing these research questions is crucial as it can provide valuable insights for fragrance marketers seeking to optimize their strategies across global consumer segments.

5 Data Analysis and Findings

5.1 Hypotheses Tests

As for hypothesis H1, based on the crosstab results, hypothesis H1 is partially supported. For Polish consumers, women were more likely than men to agree that fragrance made them spend more time in the retail store. In Poland, 55.8% of women agreed/strongly agreed versus 54.0% of Polish men. In India, 98.7% of women

agreed/strongly agreed with the statement, compared to 99.9% of men. So, while most Indian men and women felt fragrance increased time spent, slightly more Polish women than men expressed this sentiment. For Polish consumers, the gender difference was more pronounced—1.8 percentage points higher for women. This provides evidence that the influence of fragrance on prolonging in-store time is more vital for women than men, consistent with H1. However, the gender differences appeared only in Poland, not in India, which makes us conclude that our hypothesis H1 is only partially supported by the collected empirical evidence.

As for hypothesis H2, it was partially supported, concluding fragrance had a significant impact on money spent in shops for both genders in Poland, but the effect was not significant in India. This could be because women and men are equally susceptible to impulse buying due to scents or marketing appeals that have converged across genders. The crosstab results provide partial support also for hypothesis H2 as well. For Indian and Polish consumers, women were more likely than men to agree that fragrance influenced them to spend more money in the retail store. In India, 68.8% of women agreed and 5.6% of women strongly agreed that fragrance increased spending compared to 69.2% of men agreed and 6.4% of men strongly agreed. The difference is small. However, in Poland, 14.5% of women agreed/strongly agreed versus only 13.4% of Polish men.

As for hypothesis H3, the results provide mixed support for hypothesis H3. For Indian consumers, the impact of fragrance on impulsive buying was slightly lower among women versus men. In India, 37.5% of women agreed/strongly agreed that fragrance led to impulsive purchases compared to 40.4% of men. However, the opposite effect is seen for Polish consumers—11.6% of Polish women agreed/strongly agreed compared to 10.0% of men. Thus, H3 was confirmed in Poland, but not in India.

As for hypothesis H4, based on the crosstab results, it is not supported. For Indian consumers, there is little difference between age groups, with 95–96% of all ages agreeing that fragrance increased time spent. However, for Polish consumers, there is more variance, as the agreement rises steadily with age. This is the opposite of what the hypothesis predicted. Regarding the total sample across both countries, the agreement is highest among 31–40-year-olds at 79.8%, followed by 21–30-year-olds at 78.7%. So, the middle age groups show the most substantial effect, contradicting H4.

As for hypothesis H5, the data shows some key differences between Poland and India in terms of how age impacts perceptions of fragrances and supermarket spending. In India, over 70% of 18–20-year-olds and 21–30-year-olds agreed fragrances made them spend more, ranging from 72.9–79.1% agreement. Meanwhile in Poland, only 27.3% of 18–20-year-olds agreed, compared to just 11.2–27.3% agreement among the other age groups. Polish respondents were also more negative overall, with 27.3–53.3% of 18–20- and 41–50-year-olds disagreeing. Meanwhile, neutral opinions ranged more widely from 20–43.4% across Polish age groups. The data therefore indicates fragrances have a stronger influence on younger Indian consumers in their late teens and twenties. But in Poland, fragrances are perceived to have a weaker impact on spending for all ages, particularly those under 30 years

old. So, there are noticeable cross-country differences in how supermarkets' scents variably impact shopping behaviors according to respondents' life stages.

As for hypothesis H6, it is not supported. It did not have disproportionate sway over the young as expected. This could be because marketing tactics utilizing scents engage varied age demographics rather than just youth. The results clearly show that hypothesis H6 was not supported. For both Indian and Polish consumers, fragrance's impact on impulsive buying was not stronger among younger individuals as predicted. The data directly contradicted H6. For Indian consumers, the agreement percentage was higher for the older 31–40 age group at 40.7% versus the younger 21–30 group at 38.3%. Among Polish consumers, the older 31–40 group's agreement was 13.3% compared to only 7.7% for the younger group. Even considering the total sample, the highest agreement was for the 31–40 group at 27.2% followed by 21–30 age group at 24.7%. So unambiguously across both national samples, older consumers consistently reported an equal or stronger influence of fragrance on impulse purchases compared to younger consumers. These divergences from H6 were present not just marginally but in the direction of effects as well. Therefore, the results provided no support whatsoever for the hypothesis that fragrance's impact on impulsiveness would be stronger for younger individuals. H6 received no validation from the data and must be rejected entirely.

6 Discussion and Conclusion

The study discovered some evidence in favor of the theory that women spend more time in stores than men do, with India's cultural modernization balancing the impact of sensory marketing on both sexes. More women than men claimed that fragrance extended their shopping hours. Fragrance had a noticeable effect on purchasing habits and impulsive purchases, especially with Polish customers, confirming the theory that women are more sensitive to sensory cues. But only Polish males displayed impulsive, scent-influenced buying. Fragrances caused older Polish customers—not younger ones—to prolong their shopping hours. Fragrances had a greater financial influence on younger Indian consumers, suggesting that they were open to trying out new stores. It was shown that older customers reported a larger influence from fragrance than younger customers, dispelling the notion that younger customers are more susceptible to it.

7 Study Implications and Limitations

This study advances atmospheric effects and sensory marketing by demonstrating that ambient fragrances' influence on shopping behavior depends on demographic factors like gender and age, varying by cultural context. The findings challenge assumptions of uniform fragrance effects across demographics. For managers, the

results offer guidance on using ambient scents in different regions. Polish retailers should target middle-aged and older women, while Indian retailers should focus on younger consumers. As consumer acculturation and gender roles evolve, scent marketing strategies must adapt to remain effective. The study's limitations include reliance on self-reported survey data, potential social desirability biases, and the focus on retail environments in Poland and India. Future research should expand to more countries, examine specific scent varieties, and consider additional demographic factors like personality traits and sensory abilities. Despite these limitations, the study provides valuable insights into ambient scent's complex effects across global markets.

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The Influence of Health Consciousness, Environmental Concern, and Theory of Planned Behavior (TPB) on the Intention to Purchase Organic Food

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Abstract The purpose of this paper is to examine the effects of health consciousness environmental concern and the factors of the Theory of Planned Behavior (TPB) (attitude, subjective norms, and perceived behavioral control) on the intention to purchase organic food. The data for this study were collected using a questionnaire that contained 18 items. A convenient sample of 210 Greek individuals was included in the study (among the 1000 employees of a Greek university). Data analysis was conducted using SPSS version 24 and Jamovi. Results illustrate that health consciousness affect indirectly and positively the intention to purchase organic food through attitude. Attitude, subjective norms, and perceived behavioral control have a positive and direct relationship with intention to purchase organic food. Furthermore, health consciousness and environmental concern affect positive attitude. This study can provide insight into the key factors that contribute to the intention to buy organic food. In different contexts, additional variables may enhance the validity of these findings, and latent variables might confound them. Based on the findings of this study, society, organizations, and policy makers could support organic food producers.

Keywords Intention to Purchase Organic Food · Theory of Planned Behavior · Health Consciousness · Environmental Concern

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1 Introduction

Nutrition is an important factor in maintaining good health. Over the past few years, consumers have switched from conventional to organic food and changed their eating habits accordingly [1, 2]. The purpose of this paper is to examine the effects of health consciousness environmental concern and the factors of TPB (attitude, subjective norms and perceived behavioral control) on the intention to purchase organic food. Using theoretical perspectives and empirical analysis, we contribute to the larger discourse on the intention to purchase organic food. A key factor that we consider to be important when evaluating the intention to purchase organic food is health consciousness, environmental concern, and TPB [1, 3].

Although previous research has tested factors such as health consciousness, environmental concern, and the TPB framework [1–5], our study distinguishes itself by applying these concepts in a novel context. Specifically, we focus on Greek consumers, a demographic that has not been extensively studied in the existing literature on organic food purchasing intention. By utilizing both SPSS and Jamovi program for data analysis, we ensure efficient and accessible processing, enabling us to draw meaningful insights into the purchasing intention of organic food. This methodological approach, combined with the cultural context, sets our study apart and contributes fresh perspectives to the discourse on organic food consumption.

2 Theoretical Background

The health of consumers is an important factor to consider when purchasing food products. Health-conscious consumers tend to have the intention to purchase organic food [1, 4]. The concern an individual has for the environment plays a significant role in environmental research, which is directly related to their behavior toward the environment. Environmental concerns directly influence the intention of consumers to purchase organic food [1, 5]. In light of the above, the following hypotheses are proposed.

H1: Health consciousness affects positively the intention to purchase organic food

H2: Environmental concern affects positively the intention to purchase organic food

TPB is a common expectancy-value model used to predict and explain food choice. Behavior is determined by behavioral intention, which is comprised of attitudes, subjective norms, and perceived behavioral control [6–9]. Based on the findings of this study, an extended TPB model is effective in predicting or explaining food purchase intentions for organic foods [10, 11]. A consumer's attitude toward organic food can be characterized by their beliefs about its health benefits, environmental sustainability, and ethics. A positive attitude toward organic food is associated with a stronger intention to purchase it. Positive attitudes toward organic food are associated

with an intention to buy it. According to subjective norms, if someone perceives that important people in their lives expect them to buy organic food, they are more likely to do so. Several studies indicate that subjective norms influence positively consumers' intentions to purchase organic food. Individuals are more likely to purchase organic food if they feel that their peers or social circles support the purchase of organic food. An individual's perceived behavioral control reflects how they perceive their ability to perform a behavior. Individuals intend to purchase organic food taking into consideration factors like availability, affordability, and knowledge about organic foods. Having reduced barriers to purchasing organic food (e.g., greater affordability and availability) leads to an increased intention to purchase it [1, 12–19]. As a result of the above, we propose the following hypotheses.

H3: Attitude affects positively the intention to purchase organic food

H4: Subjective norms affect positively the intention to purchase organic food

H5: Perceived behavioral control affects positively the intention to purchase organic food

Individuals who are health conscious take proactive measures to maintain and improve their health. Health consciousness shapes consumers' attitudes toward organic food. Environmental concern refers to an individual's awareness of environmental issues and their actions. In addition to being environmentally friendly, organic food often aligns with the values of environmentally conscious consumers, leading to positive attitudes toward them. Attitudes mediate the relationship between environmental concern and health consciousness purchase intentions. Positive attitude toward organic food, based on its environmental and health advantages, leads to a higher intention to buy these products [1, 7, 12, 13, 17, 20–22]. Based on the above mentioned, we propose the following hypotheses.

H6: Health consciousness affects indirectly the intention to purchase organic food through attitude

H7: Environmental concern affects indirectly the intention to purchase organic food through attitude

3 Methods

In this study, 210 Greek individuals selected (118 females and 92 males) among the 1000 employees of a Greek university. Statistical analysis was conducted using SPSS version 24 and Jamovi [8, 9, 14]. Using the principal component analysis (PCA) with Varimax rotation, the linear components were tested. The Jamovi program was used to examine the direct effects of TPB (attitude, subjective norms, perceived behavioral control), health consciousness, and environmental concern on intention to purchase

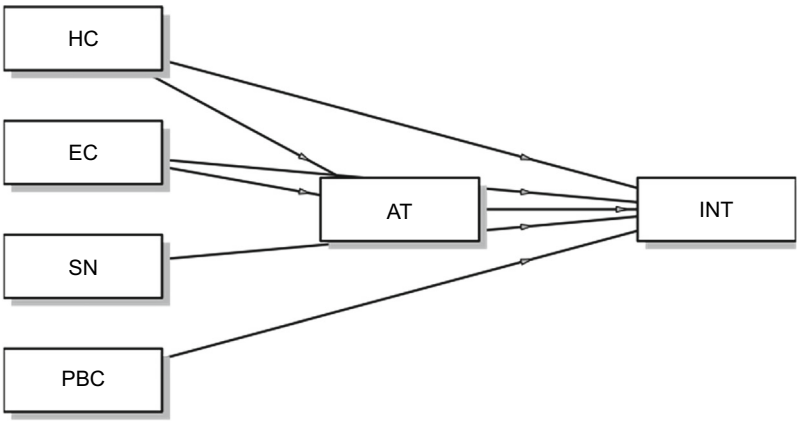


Fig. 1 Statistical model

organic food. Additionally, we examined indirect effects of health consciousness and environmental concern on intention to purchase organic food through attitude (Fig. 1).

4 Results

For each variable, the weights of the components were greater than 0.7 according to PCA analysis (KMO = 0.764, $x^2 = 1216$, $p < 0.01$). Cronbach's alpha reliability rating of 0.86 was found for attitude, 0.912 for subjective norms, 0.703 for perceived behavioral control, 0.776 for intention to purchase organic food, 0.777 for health consciousness, and 0.845 for environmental concern.

The results (Table 1) indicate that health consciousness affects indirectly and positively the intention to purchase organic food through attitude. Attitude, subjective norms, and perceived behavioral control have a positive and direct relationship with intention to purchase organic food. Furthermore, health consciousness and environmental concern affect positively attitude. We accept the hypotheses H3, H4, H5, and H6 and we reject the hypotheses H1, H2, and H7.

Table 1 Effects

			95% C.I. (a)			
Effect	Estimate	SE	Lower	Upper	β	p
HC ⇒ AT ⇒ INT	**0.095**	**0.032**	**0.033**	**0.157**	**0.119**	**0.003**
EC ⇒ AT ⇒ INT	0.096	0.050	-0.002	0.195	0.073	0.056
HC ⇒ AT	**0.195**	**0.060**	**0.076**	**0.313**	**0.244**	**0.001**
EC ⇒ AT	**0.197**	**0.100**	**0.001**	**0.393**	**0.149**	**0.049**
AT ⇒ INT	**0.488**	**0.061**	**0.368**	**0.609**	**0.488**	**< 0.001**
HC ⇒ INT	0.002	0.052	-0.100	0.104	0.002	0.975
EC ⇒ INT	0.119	0.082	-0.043	0.280	0.090	0.150
SN ⇒ INT	**0.156**	**0.048**	**0.062**	**0.249**	**0.201**	**0.001**
PBC ⇒ INT	**0.196**	**0.055**	**0.089**	**0.304**	**0.219**	**< 0.001**

5 Conclusion

By analyzing the results of this study, organizations, policy makers, and society can gain a better understanding of the key factors that influence the desire to purchase organic food. The consumption of organic food will have a strong environmental impact (reduced fertilizer use, water conservation, and biodiversity preservation), benefits for consumers (lower chemical exposure and higher nutrient content) and promotes sustainability (preserving resources for future generations). In order to make organic food available to consumers, society, organizations, and policy makers could support organic food producers (provide fair wages, ensure farmers' well-being, and ensure safe working conditions) [1, 5, 10, 12, 23, 24].

It is important to consider several limitations in this study. This study does not measure actual purchases of organic food but rather purchase intentions [1]. It is essential to evaluate the results of this study across different socio-demographic or ethnic groups before making more conclusive generalizations [11, 14]. This study also has the limitation of measuring organic food in general, whereas earlier studies have shown that organic consumption differs among products, such as milk, fruits, etc. [1]. It would be interesting to investigate whether latent variables may be confounding the relationships discussed above with additional variables, not included in this study [9].

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An Analysis of the Social Media Promotion Strategies of Romanian SuperLiga Football Teams

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Abstract This chapter examines the promotional strategies of Romanian SuperLiga football teams on social networks, analyzing their presence and activity on the online platforms Facebook, Instagram, TikTok, and YouTube. The study begins by contextualizing the growing importance of social networks in modern communication and especially in the sports industry, highlighting their role in building relationships with fans, increasing brand awareness, and generating revenue. A comprehensive analysis of the online presence of all 16 teams in the Romanian SuperLiga reveals an almost universal adoption of these platforms, with Football Club FCSB dominating in terms of audience. The study then focuses on a qualitative examination of the content posted in March 2024, a period characterized by intense sporting activity and increased efforts by teams to connect with fans via social networks, classifying it into nine categories relevant to sports marketing. The results show a variety of approaches, from club and player information and facts to behind-the-scenes stories, match announcements, and promotional content and activities. In addition, the study highlights the strategies of different teams, suggesting both strengths and opportunities for improvement. In conclusion, this chapter provides a valuable insight into how Romanian football teams are using social networks to achieve their marketing and communication objectives. The results of the study can be useful for both sports clubs and sports marketing specialists, providing relevant information for the development and optimization of promotional strategies on social networks.

Keywords Promotion strategies · Sports marketing · Fan engagement

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1 Introduction

The Internet has changed people's lives in many ways, the ease with which people can access the information they want, the way they choose to spend their free time, the ways they keep up to date with the latest news and updates from around the world, are just a few of the changes brought about by the advent of the Internet. In addition, the way people choose to communicate and keep in touch with other people has been radically changed by the social networks that have emerged over the years.

Throughout the 1980s and 1990s the Internet experienced steady growth, but the real explosion of the Internet took place in the mid-1990s when it became accessible to people thanks to the advent of the browser. In November 2000 there were no less than 407 million users on the Internet, of which 113 million were in Europe [1]. The number of Internet users continued to grow significantly reaching 5.35 billion in 2024, which represents 66.2% of the total global population [2] and in Romania the percentage of households with Internet access at home was 85.7% in 2023, 3.6% more than in 2022 [3].

Boyd and Ellison [4] define social networks as web-based services that give users the ability to build a public or semi-public personal profile, establish a list of users with whom they form a connection, and be able to view and access the list created by both them and other users. Another definition of these is stated by Carr and Hayes [5] as web-based channels that provide users with the opportunity to interact and present themselves individually and selectively, either in real time or asynchronously to a large or small audience, deriving value from user-generated content and the perception of interactions with others. Based on these definitions we can say that the defining feature of social networks is the ability of users to create a personal profile through which they can interact with their acquaintances or form new connections with other users.

Social networks have been around since the 1990s, some examples of which are Classmates.com which appeared in 1995 and SixDegrees.com in 1997. They are the first social networks where users could create a profile and view their friends' pages. SixDegrees.com was successful reaching several million users in 200 when it was also closed. Over the years, such websites continued to pop up: Ryze (2001), Friendster (2002), LinkedIn (2002), Shirky (2003), and Facebook (2004). Of those listed above only LinkedIn and Facebook have managed to remain relevant to this day [6, 7].

The most significant change that social networks have brought about is the shift of power from institutions to individuals. They give users a voice and an open platform where they can connect, collaborate, and create content for themselves and others. User-generated content has more influence on consumers and their purchasing decisions [8].

Given the major impact of the Internet and social networks on consumer communication and behavior [9], it is essential to take a closer look at how they are used in marketing strategies, especially in the sports field, as we will explore in this chapter. To further understand the context in which this research takes place, the

following section will explore the relevant literature on the use of social media in sports marketing, with a focus on how clubs can build strong relationships with fans and achieve their communication goals.

2 Literature Review

Football is a phenomenon of global importance; it is the most popular sport in the world and interest in the sport has been growing in recent decades. There are soccer teams and competitions for all age groups from juniors to seniors, for both men and women and the number of players and supporters is increasing [10].

For sports fans, a sense of belonging to a larger community is a key element, and they often identify with others and with the team. Fans communicate this sense of belonging through their words and actions. Social networks have expanded the ways we communicate with those around us, creating new virtual spaces where people can interact directly with brands and each other. This trend accelerated in 2020 around the time of the COVID-19 pandemic, when people around the world were isolated in their homes and this led to a shift in communication online, this shift allowed sports clubs to reach new audiences and interact with existing audiences in new ways and even encourage higher levels of physical activity [11].

Today, social networks have a powerful impact on industries and people around the world. They are an important communication channel for both organizations and individuals. Social networks allow followers to receive information quickly over the Internet, so creating a social media strategy is now a common task within organizations. Especially in the sports industry, it is used by teams to promote themselves and communicate with fans. Social networks are a fundamental part of the activity of sports clubs and presence on them is necessary if they want to communicate with their fans and build their brand online [12].

Sports organizations are well-positioned to benefit from the use of social networks because of the existing fan base [13]. They have changed the way fans interact with sports teams and other fans. With the rise in popularity of social platforms, clubs are investing more time and resources to gain visibility on these networks and capitalize on the loyal attitude that fans have toward the team they support. However, in order to effectively use social media and properly manage their online presence, teams need more information about their fans and what they want [14].

Based on the importance of social networks in sports marketing and the need to understand fans' preferences, this research aims to analyze the promotion strategies of Romanian Superliga teams on Facebook, Instagram, TikTok, and YouTube, evaluating their presence and activity on these platforms.

3 Research

The main objective of any football club is to satisfy its fans and generate profits. Social networks offer fans a direct way to connect with their favorite soccer leagues and clubs, providing a sense of comfort and belonging. Teams benefit from this interaction with their fans by receiving feedback that helps shape marketing campaigns and increase the value of the club. The most common reasons for developing a social media strategy are to build brand equity, increase online revenue, and attract as many fans as possible from around the world. They show unconditional attachment or even sport fan superstition to a particular club by providing it with monetization opportunities [15].

Football teams in the Romanian SuperLiga have started to focus more and more on social networks, investing more resources to promote themselves online and interact with fans. To analyze this in more detail, the most popular social networks were first documented, and then each team was searched to see if they were present on these platforms and generates relevant content in Romanian. Facebook [16] was chosen for this analysis because it is the social network with the largest number of users, namely 3.049 billion active users [17], Instagram because it is the preferred social network for users aged 16–64 [18–20], TikTok [21, 22] because of the huge popularity it has quickly gained both nationally and internationally, and is now the app that Android users spend the most time on [23], and YouTube [24] because it is the only social network for long-form video content, and is also the app that Internet users spend the most time on in a single session on average [25].

Having established the research context and identified the relevant platforms, as well as the presence of Romanian Superliga teams on them, we can proceed to a detailed analysis of the promotion strategies used in March 2024, as presented in the next section of this chapter.

4 Results and Discussion

Thus, according to the analysis conducted in March 2024 (an important period in the Romanian SuperLiga season, characterized by intense sporting activity and increased efforts by teams to connect with fans through social networks), all the football teams of the Romanian SuperLiga are present on the above-mentioned social networks, except for *FC Voluntari*, which does not have a YouTube account. The most followed football team in Romania is *FCSB*, which has no less than 1.7 million followers on Facebook, and on the rest of the social platforms, *FCSB* is also in first place, with 278,000 followers on Instagram, 110,000 followers on TikTok and 73,000 subscribers on YouTube. The team with the fewest followers is *FC Voluntari*, which has 17,000 followers on Facebook, 9,900 on Instagram and only 665 on TikTok, but the activity on the TikTok account is very low, with a total of six videos posted, losing the opportunity to promote themselves and interact with fans on this platform.

Social media activity can contribute to the growth of the sports club and the number of its supporters, depending on the content posted, fans may become more interested in the team and follow it, or they may distance themselves from the club if social media posts do not attract them. To understand what teams post, we will analyze the content posted by Romanian SuperLiga football teams in March 2024, which will be classified into nine categories, following the model used by Obradović et al. [26] for their analysis on English football teams. The nine categories are as follows:

1. Game announcements.
2. About game (new/live info)—team members on field, changes and injuries, scored goals.
3. The best moments (from the game)—the most attractive moves, goals, score.
4. Players and coach announcements/interviews.
5. Behind the scene—players on training, arrivals to stadium, hanging out, and stories from the locker room.
6. Interesting facts/info about players and club—past event reminders in history of club, player birthdays and interesting statistics.
7. Fan support—arrivals to stadium and cheer/support.
8. Promotion activities which are not directly connected with football—charity events and ceremony.
9. Sponsors and partner promotions.

In March, the Romanian Superliga teams showed an active presence on social media, using various platforms to connect with fans and promote the club's activity. Here is an analysis of each team's activity:

AFC Hermannstadt: posted 238 times, focusing on Facebook and Instagram. Posts included information about the club and players, behind-the-scenes live match information and interviews.
Dinamo Bucharest: had 121 posts on Facebook and Instagram, focusing on club and player information, match announcements, and behind-the-camera scenes.
FC Botoșani: was active on Facebook, Instagram and YouTube, with a total of 166 posts. Interviews with players and coaches were an important component of their social media strategy.
FC CFR 1907 Cluj: had a strong presence on Facebook and Instagram, with 317 posts. Information about the club and players dominated, followed by match announcements and behind-the-camera scenes.
Farul Constanța: they were the most active team on YouTube, with 58 posts. They excelled at match announcements, live information, and interviews.
Petrolul: had 241 posts, shared on Facebook, Instagram, and TikTok. Information about the club and players was prioritized, followed by behind-the-camera scenes and promotional activities.
FC Rapid 1923: topped the ranking with 507 posts, with an active presence on all platforms. Information about the club and players, behind-the-camera scenes, and promotional activities were the most frequent.

FC Universitatea Cluj: had a similar strategy to Rapid, with 380 posts on Facebook, Instagram and TikTok. Information about the club and players were predominant.
FC Voluntari: had less activity, with 51 posts on Facebook and Instagram, focusing on club and player information, and match announcements.
FCSB: posted 93 times on Facebook and Instagram, promoting club and player information, promotional activities, and match announcements.
FCU 1948 Craiova: had 285 posts on Facebook and Instagram, with a focus on club and player information and behind-the-camera scenes.
Poli Iași: had a moderate presence with 140 posts, including interviews, club and player information and match announcements.
SC Oțelul Galați: focused on Facebook, with 173 posts, featuring club and player information, match announcements, and promotional activities.
Sepsi OSK: favored Facebook, with 157 posts, focusing on club and player information, match announcements, and behind-the-camera scenes.
Universitatea Craiova: had an active presence on all platforms, with 496 posts. It stood out with a high number of fan-supported posts and promotional activities.
UTA Arad: had 281 posts on Facebook and Instagram, promoting information about the club and players, behind-the-scenes details, and promotional activities.

In conclusion, we can see that most teams have an active presence on Facebook and Instagram, as these are the preferred platforms for communicating with fans. TikTok is used to a lesser extent, but is growing in popularity, and YouTube is mainly used for interviews and longer videos. Club and player information are the most popular posts, followed by behind-the-scenes footage and promotions. Match announcements and live information are essential to keep fans up to date with the team's activities. Some teams, such as *Universitatea Craiova* and *FC Rapid 1923*, stand out with a more diversified and active social media strategy.

This analysis provides an overview of the social media activity of the Romanian Superliga teams. Each team has a specific approach tailored to its resources and objectives.

5 Conclusion

This study analyzed the promotional strategies of the Romanian Super League teams on social networks, focusing on their activity in March 2024 on Facebook, Instagram, TikTok, and YouTube. We found an almost universal use of these platforms, demonstrating their importance in modern communication and the sports industry.

The analysis revealed a variety of approaches to the content posted, from club and player information to behind-the-scenes stories, match announcements, and promotional content. Each team demonstrated a specific strategy tailored to their resources and goals, with some teams excelling in certain content categories.

While *FCSB* dominates in terms of number of followers, other teams such as *FC Rapid 1923* and *Universitatea Craiova* stand out for their intense activity and diversified content strategy. These examples show that success on social networks depends not only on the size of the audience, but also on the quality and relevance of the content and the ability to create a real connection with the fans.

The study also highlighted the importance of tailoring promotional strategies to the specifics of each platform. Facebook and Instagram remain the main platforms for communicating with fans [27, 28], while TikTok [29, 30] and YouTube [31] offer opportunities to reach a wider audience and experiment with innovative content formats.

In conclusion, this research provides valuable insights into how Romanian football teams use social media to achieve their marketing and communication objectives. The results can be useful for both sports clubs and sports marketing specialists, providing relevant information for the development and optimization of online promotion strategies. It is important that teams continue to invest in creating engaging and relevant content, monitor the performance of posts, and adapt strategies as fan preferences change. By using social media effectively, clubs can strengthen their relationship with fans, increase their visibility, and generate new revenue opportunities.

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Rising Like a Phoenix: A Bibliometric and Content Analysis of the Regeneration Concept in Business Studies



Niki Glaveli, Viktoria Voulgari, and Anastasia Daskalopoulou

Abstract In recent years, firms are called to contribute to regenerative sustainability. This concept entails applying a systems thinking perspective to the operation of businesses and transforming their business models to promote the restoration and regeneration of natural resources and social systems. The present work is a systematic review that examines the publications that have investigated the role of business as an agent of positive impact and growth, documents the relevant progress, and suggests future research avenues. Using as keywords the terms "regeneration" or "regenerative" and "business," 151 research articles were retrieved from the Scopus database and thoroughly examined. Following bibliometric and content analysis were conducted. The bibliometric analysis identified the most influential and productive authors, as well as the most used author keywords, discovering 10 research clusters. Also, content analysis demonstrated the patterns and trends relating to the identified clusters in the specific research domain. The findings facilitate practitioners' understanding and familiarize researchers with progress in this research area.

Keywords Regeneration · Regenerative business · Bibliometric and content analysis

1 Introduction

Mounting ecological degradation and escalating social problems call for our attention. Given that business actions play an important role in this context, firms are increasingly faced with societal pressures to move toward more sustainable strategies and business models (BMs). Nonetheless, while business sustainability has its origins in systems thinking and care about the degradation and loss of vital ecosystems, the theory and practice of sustainability in the business world do not follow a systems approach but remain focused on the organization and its business logic [1]. More closely grounded in a systems approach to business is the notion of regenerative

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business, i.e., businesses that improve and flourish through the "wellbeing" of socio-ecological systems via a co-evolutionary process and under the "restore-preserve-enhance" triplet idea [2]. Therefore, the regeneration concept can be useful in our attempt to reconceptualize and reorient business sustainability toward its systemic roots [1]. Recognizing this dynamic, research interest has drawn to the concepts of regeneration and regenerative business and BMs.

This work intends to apply bibliometric and content analysis to the regeneration and regenerative business/BMs literature to accomplish the following research objectives (ROs):

RO1. Determine which papers and authors have been the most influential regarding the concept of regeneration and regenerative business.
RO2. Expound upon the important keywords and produce new research trends and ideas on how to advance further the research on regenerative business/BMs.

2 Regenerative Business and Business Models

A BM describes how an organization creates, delivers, and captures value in economic, social, cultural, or other contexts. The conventional approach to BM prioritizes immediate financial gain over long-term environmental and societal effects, negatively impacting the sustainability of natural resources, the protection of the environment, as well as social prosperity [3].

The transition from conventional to sustainable, circular, and more recently to regenerative business and BMs reflects a significant shift in how companies approach value creation. According to [4] there are main differences between these three types of BMs. Sustainable BMs focus on reducing the footprint and resulting harm to a business. Circular BMs strive to close, slow, and narrow resource loops, making business and consumption systems as resource efficient and self-sustaining as possible. Regenerative BMs represent a noteworthy evolution from both sustainable and circular models. "They create and deliver value at multiple stakeholder levels—including nature, societies, customers, suppliers and partners, shareholders and investors, and employees—through activities promoting regenerative leadership, co-creative partnerships with nature, and justice and fairness. Capturing value through multi-capital accounting, they aim for a net positive impact across all stakeholder levels. (They) recognize that nature is an irreplaceable foundation of human health and wellbeing, that human societies are deeply embedded in the biosphere, and that they depend on the health of the biosphere for their own health" [4, p. 375].

3 Methodological Approach

The present work is a systematic review that utilizes bibliometric and content analysis to synthesize the literature on regenerative business. Documents were obtained from the preeminent scientific repository Scopus scientific database. Before the literature search, specific inclusion and exclusion criteria were set for the selecting documents. First, only English language documents were included. Second, the search terms "regeneration" or "regenerative" and "business" (in the title or abstract or keyword field) were used to locate articles and reviews that were published during the last decade (up to 30 August 2024) in scientific journals. Third, only the contributions in the business, management, and accounting fields in Scopus were included. VOSviewer software was employed to analyze the bibliographic sources. But most importantly, the bibliometric assessment facilitates the identification of unique patterns and evolving trends, as well as the investigation of understated evolutionary trends [5]. As a consequence, a total of 151 articles were downloaded and found to be pertinent to our research objectives. We analyzed the 125 ones with at least one citation.

4 Results and Discussion

The bibliometric analysis showed important information regarding the included studies. It was found that in the last 10 years, 364 authors have worked in this area, producing 125 papers with at least one citation, which are considered here. Nevertheless, out of a total of 125 articles, only 10 are linked to each other, and out of 364 authors, only 28.

Additionally, the frequency of research papers (see Fig. 1) is a manifestation of the escalation of the relevant academic research. In the last decade, the number of published papers has been constantly evolving, reaching its peak in 2024 (26 papers). The rise in the number of documents may be linked to the growing exogenous pressure put on organizations by the ongoing worldwide emphasis on sustainability goals and ethics.

Next, in line with the study's ROs, the analysis was conducted based on the following axes: citations (based on documents and authors) and author keywords. In detail:

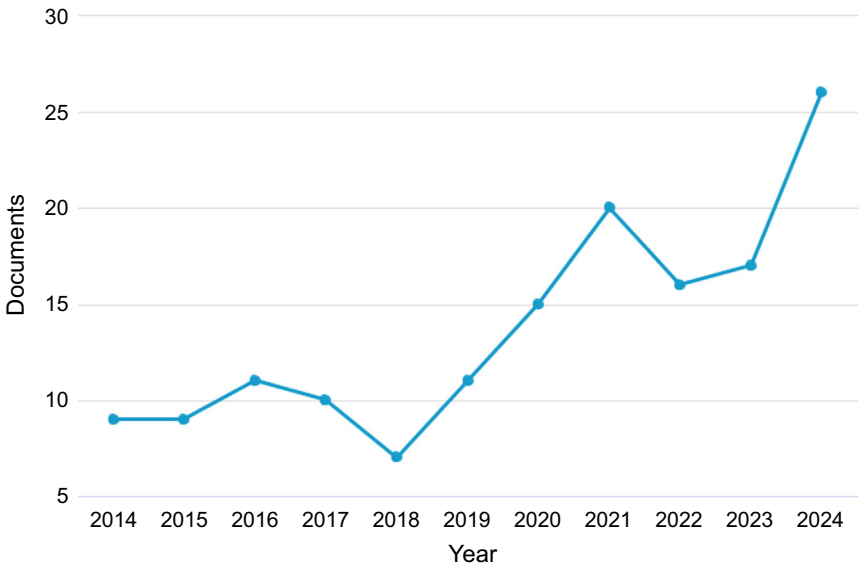


Fig. 1 The trend of publications. *Source* Scopus

4.1 RO1: Citations Analysis Based on Authors and Documents

According to RO1, the initial form of analysis was centered on the detection of the documents and authors that scholars consult in developing their profound understanding of regenerative business and its relevance to society and the business world.

Citations Analysis Based on Authors. To trace the most prominent authors, author analysis was conducted (see Fig. 2). *Hopkinson P., Howard M., and Miemczyk J.* are the most influential authors with 136 citations each. Among the leading authors are Hahn T. and Tampe M. with 51 citations, followed by Mazutis D., Schouten J. W., Slawinski N., Smith W. K., and Winsor B. with 45 citations each. Nonetheless, almost everyone has a single publication, implying that authors in the field do not continuously invest time and effort to empirically investigate themes and ideas in this area.

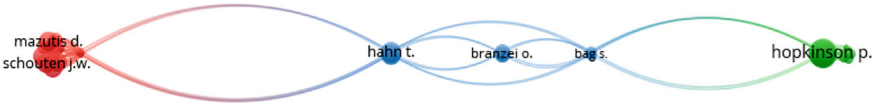


Fig. 2 Network visualization of the most cited authors

Table 1 The 10 most influential contributions in the regenerative business research field

Title	Authors	Citations	Link
1. "The regenerative supply chain: a framework for developing circular economy indicators"	[6]	136	3
2. "Strategies for Regenerative Business"	[2]	51	3
3. "Managing the Paradoxes of Place to Foster Regeneration"	[7]	45	1
4. "Regenerative Organizations: Introduction to the Special Issue"	[8]	23	2
5. "A Tale of Two Food Chains: The Duality of Practices on Wellbeing"	[9]	15	1
6. "Recognizing the regenerative impacts of Canadian women tourism social entrepreneurs through a feminist ethic of care lens"	[10]	12	1
7. "Navigating Circular Economy: Unleashing the Potential of Political and Supply Chain Analytics Skills Among Top Supply Chain Executives for Environmental Orientation, Regenerative Supply Chain Practices, and Supply Chain Viability"	[11]	8	3
8. "A circularity-based quality assessment tool to classify the core for recovery businesses"	[12]	6	1
9. "The Rise of Regenerative Hospitality"	[13]	1	4
10. "Broadening the circle: creativity, regeneration and redistribution in value loops"	[14]	1	1

Citations Analysis Based on Documents. Table 1 incorporates the 10 most influential documents in the regeneration/regenerative business research field.

4.2 RO2: Keywords—Cluster Analysis

Research hotspots can be found by delving into high-frequency keywords, permitting readers to rapidly identify and prioritize research topics and facilitating an in-depth assessment of the included content [15].

To discover the major author keywords, a co-occurrence network analysis was applied to the data set. From this type of processing, a pool of 55 words was created. The primary 22 are displayed in Table 2. The analysis demonstrated that sustainability is the most common keyword, with a frequency of 18 and total link strength of 18 with other keywords. The second and third most important keywords are regeneration and circular economy, with 16 occurrences each.

Subsequently, prominent keyword cluster analysis was done by setting a threshold limit of two occurrences. Figure 3 illustrates 4 dominant research hotspots with 10 clusters. Additionally, content analysis was applied to recognize the research emphasis in the clusters.

The 4 dominant research hotspots, i.e., sustainability, circular economy, regeneration, and urban regeneration are distinct but overlapping, which suggests that these approaches do not exist in isolation. Regarding the clusters, the light green cluster

Table 2 Co-occurrences and total link strength per keyword

No	Keyword	Occurrences	Total link strength
1	Sustainability	18	18
2	Regeneration	16	15
3	Circular Economy	16	13
4	Urban Regeneration	9	11
5	Climate Change	5	12
6	Community	5	3
7	Corporate Social Responsibility	4	6
8	Circular Business Model	4	4
9	Regenerative Tourism	4	3
10	Tourism	3	8
11	Education	3	6
12	Collaboration	3	3
13	Gentrification	3	3
14	Transformation	2	5
15	Place	2	4
16	Triple Bottom Line	2	4
17	COVID-19	2	3
18	Entrepreneurial Learning	2	3
19	Business District	2	2
20	Business Strategy	2	2
21	Creative Industries	2	2
22	Strategy	2	2

revolves around sustainability (central node) and collaboration, suggesting that business sustainability is inclusive and participatory by incorporating local communities and other stakeholders in the transformation process [16]. The light green cluster is closely associated with the orange and pink clusters that incorporate keywords like business strategy, triple bottom line, and corporate social responsibility (CSR). Undeniably, the idea that businesses can flourish only through the "wellbeing" of the socio-ecological environment can be traced back to the early CSR literature. Studies in this cluster, like [17], discuss the evolving role of CSR, arguing that businesses must go beyond mere compliance and adopt a regenerative approach to sustainability.

The red cluster has studies related to the circular economy and circular BMs underlying that the adoption of circular economy principles is a necessary proactive business strategy that requires the transformation of the production, distribution, and consumption processes to promote economic, as well as environmental sustainability, at the micro and macro levels [12]. Restorative strategies based on reuse, remanufacturing, and recycling (3R) are proposed for value creation maximization and resource utilization efficiency and restoration [6, 7].

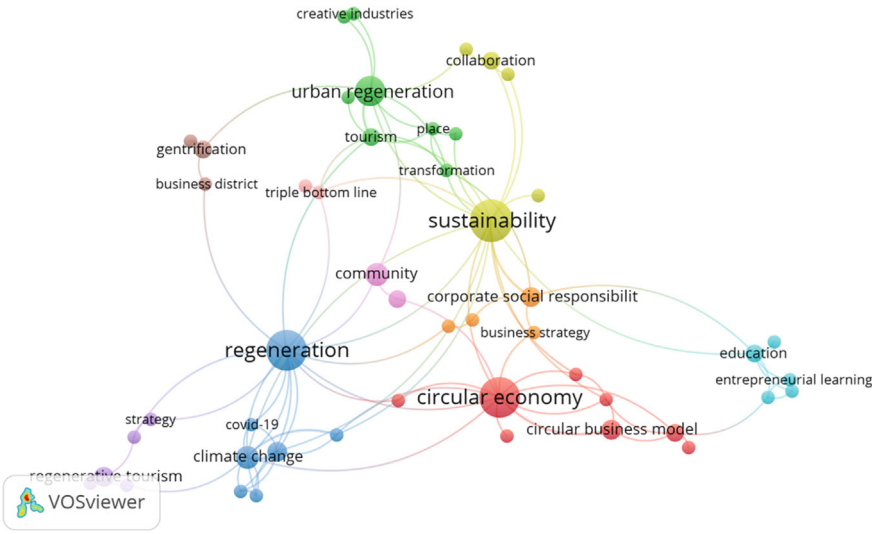


Fig. 3 Network visualization of authors' keywords

The light blue cluster incorporates the keywords education and entrepreneurial learning. Studies in this cluster underscore the role of learning, experiential learning, unlearning, and structural changes to management education in building the new generation of entrepreneurs.

The green cluster has its focal point on the key term urban regeneration and consists of four relevant keywords, i.e., tourism, creative industries, place, and transformation, which emphasize the systems thinking perspective of regeneration and the need for business and societal transformation. This cluster revolves around the role of tourism, arts, and culture in urban regeneration [18]. Also, urban regeneration is closely associated with the keywords gentrification, business district (found in the brown cluster), and community (located in the light purple cluster). Studies in these clusters examine the spatial and social processes in the restructuring of (deprived) city areas (gentrification), highlighting the importance of community-led [16].

Regeneration is the central node in the dark blue cluster that incorporates keywords like climate change and COVID-19. Delving into this cluster's studies, an association between the expansion of literature within the line of regeneration research and climate change and COVID-19 origin crises was detected. This might come as no surprise due to the great impact these two emergencies had on many industries, such as tourism and agriculture [8]. This cluster is also closely related to the deep purple cluster that includes two keywords: regenerative, tourism, and strategy. The studies in this cluster emphasize the regeneration tourism model [11].

On the basis of the above discussion, we propose the following research questions in order to advance further the research on regenerative business and BMs:

1. How do regenerative organizations respond to place-based tensions? And how do these responses contribute to regeneration?
2. What are the antecedents, mechanisms, and consequences of regenerative organizing?
3. What traits, skills, competencies, and mindset should regenerative leaders possess?
4. How can businesses report on their regenerative BMs and monitor, report, and communicate progress toward regenerative sustainability?
5. What is the future of the tourism and hospitality sector (and of other sectors) in relation to the multidisciplinary field of regenerative economy?

5 Implications, Limitations, and Conclusions

The present research articulated the state of knowledge in the regeneration/regenerative business field by synthesizing the body of literature that was produced over the last decade and appears in Scopus. Bibliometric analysis, conducted using the VOSviewer software, assisted in tracing and graphically depicting the most influential authors, documents, and keywords. These outcomes are useful to future researchers in the field by enlightening them about how this stream of research thought has progressed and how research structures have expanded, offering also opportunities for networking and collaboration with experts in the field.

Moreover, bibliometric and content analyses have revealed research hotspots and gaps, permitting readers to rapidly discover and prioritize research topics and facilitating an in-depth assessment of the reviewed content. Furthermore, the present work highlights several practical implications. It emphasizes the need for companies to transform their business models by integrating regenerative practices. This involves adopting a systems thinking approach to not only sustain but actively restore and regenerate natural resources and social systems.

For business leaders, the findings provide strategic guidance on how to align operations with regenerative sustainability principles. This includes making informed decisions about where to implement regenerative practices to maximize their positive impact. The article also identifies future research directions, which can assist both academics and practitioners in advancing the regenerative sustainability field. Overall, the article enhances understanding of regenerative sustainability and its practical applications, helping businesses to effectively integrate these practices into their operations.

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Cryptocurrency and Traditional Assets Volatility: Analysis and Comparison with Generalized AutoRegressive Conditional Heteroskedasticity (GARCH) Models



Chrisi Boskini, Ioannis Katsampoxakis, and Stylianos Xanthopoulos

Abstract The rise of cryptocurrencies, led by Bitcoin, has transformed the financial landscape. In this paper the volatility characteristics of cryptocurrencies are studied and their relation to traditional financial assets is explored. The study investigates the volatility of four major cryptocurrencies—Bitcoin, Ethereum, Cardano, and Litecoin—over three distinct time periods using various GARCH-type models, including EGARCH, TGARCH, and IGARCH. Additionally, using Dynamic Conditional Correlation (DCC) GARCH models, the study explores the relationships of these cryptocurrencies with eight traditional financial indices and commodities, namely Gold, Brent Oil, Gas, Economic Policy Uncertainty (EPU), Standard's and Poor's 500 (S&P 500), Nasdaq, VIX and EuroStoxx 50. The best-fitting models are determined using the Akaike Information Criterion, the Bayesian Information Criterion, and the Hannan-Quinn Criterion as these are considered by the literature as the appropriate criteria. The results show that IGARCH frequently provides the best fit for cryptocurrency data, highlighting thus the impact of new information on variance. Furthermore, significant long-term correlations are revealed, between certain cryptocurrencies and traditional financial assets, suggesting potential hedging opportunities. The practical implications of our findings extend to portfolio managers and investors, who can use our results to plan a strategy to mitigate their risk exposure. The significance of this study lies in its potential to provide valuable insights for investors and policymakers by identifying the most suitable models for analyzing cryptocurrency volatility under different market conditions.

Keywords Cryptocurrencies · GARCH models · Financial markets

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1 Introduction

The rise of cryptocurrencies, led by Bitcoin, has transformed the financial landscape. The cryptocurrency market exhibits high volatility, which poses both challenges and opportunities for investors. Recent Bitcoin price fluctuations underscore the need to understand cryptocurrency volatility and its implications for global finance, crucial for risk management, and portfolio optimization.

This study addresses the research issue of how well different GARCH-type models can capture the volatility of major cryptocurrencies in different time periods that reflect differing market conditions and what is their relationship with traditional financial assets. Specifically, we compare the effectiveness of five GARCH-type models—SGARCH, EGARCH, IGARCH, APARCH, and TGARCH—in modeling the volatility of four key cryptocurrencies: Bitcoin, Ethereum, Cardano, and Litecoin. Additionally, using the Dynamic Conditional Correlation (DCC) GARCH model, we explore the correlations between these cryptocurrencies and a selection of traditional financial indices and commodities, namely Gold, Brent Oil, Gas, E.P.U., S&P 500, Nasdaq, VIX, and EuroStoxx 50.

By examining the relationships between cryptocurrencies and traditional financial assets, this research contributes to the broader understanding of how these digital currencies interact with established financial markets.

The methodology that is used involves the application of GARCH-type models to historical price data for the selected cryptocurrencies and financial assets, spanning different time periods characterized by varying levels of volatility. The best-fitting models are determined using the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the Hannan-Quinn Criterion (HQC).

2 Literature Review

Various studies have applied GARCH-type models to understand and predict the volatility of cryptocurrencies, with differing results depending on the models and the specific cryptocurrencies analyzed.

[1] examined the daily closing prices of various cryptocurrencies from 2014 to 2017, comparing the predictive abilities of different GARCH models. Their findings indicated that IGARCH and GJR-GARCH provided the best fit for the cryptocurrencies studied.

[2] used several GARCH models (GARCH, EGARCH, TGARCH, APARCH, CGARCH, and ACGARCH), to assess their fit-on Bitcoin's volatility from 2010 to 2016. The study concluded that the CGARCH was superior, emphasizing the importance of both short-term and long-term components of conditional variance.

[3] used GARCH models to study the influence of Bitcoin, Ethereum, and Ripple to the volatility of a broader set of cryptocurrencies during the bear market from January to September 2018. They used Dynamic Conditional Correlation (DCC)

GARCH models to compare the volatility of 12 cryptocurrencies to that of the three major cryptocurrencies of reference. Their results suggested that most of these 12 cryptocurrencies were "complementary" to the 3 major digital currencies, with no evidence of hedging opportunities between the main currencies during critical periods.

[4] provided an early exploration of Bitcoin's relationship with traditional financial instruments, using GARCH models to analyze data from 2010 to 2015. The EGARCH model showed that Bitcoin could be utilized as a risk management tool, particularly by risk-averse investors, given its potential to act as a hedge similar to gold.

[5] focused exclusively on Bitcoin, used GARCH, SGARCH, IGARCH, and TGARCH models, and tested them in combination to three different error distributions (t-student, generalized error, and normal inverse Gaussian) to account for the thick tails and skewness in Bitcoin's returns. The study used daily Bitcoin closing prices between 2014 and 2019 and concluded that the TGARCH model, particularly when applied with a Normal Inverse Gaussian distribution, was the most effective for modeling Bitcoin's volatility.

While the existing literature has made significant strides in applying GARCH-type models to cryptocurrencies, there are still gaps remaining, either regarding the focus mainly to Bitcoin, or the limited period of comparison between cryptocurrencies and traditional financial assets or the impact of different market conditions on the performance of GARCH models.

This study aims to fill these gaps by expanding the analysis to include multiple cryptocurrencies and comparing their volatility with that of traditional financial assets across different time periods. By employing a range of GARCH-type models and the DCC GARCH model, this research seeks to provide a more comprehensive understanding of how cryptocurrencies interact with traditional financial markets, particularly in terms of volatility and correlation dynamics.

3 Data and Methodology

The data consists of daily closing prices for various cryptocurrencies and traditional financial instruments. The cryptocurrency data was sourced from Investing.com as follows:

1. Bitcoin: Data collected from January 1, 2016, to November 11, 2022.
2. Cardano: Data collected from January 31, 2018, to November 11, 2022.
3. Ethereum: Data collected from April 10, 2016, to November 11, 2022.
4. Litecoin: Data collected from September 24, 2016, to November 11, 2022.

In addition to cryptocurrencies, we analyzed the following eight stock market indices and commodities: S&P 500 (Standard & Poor's 500), Nasdaq (National Association of Securities Dealers Automated Quotations), VIX (CBOE Volatility Index), EuroStoxx 50, EPU (Economic Policy Uncertainty Index), Gold, Brent Oil and Natural Gas.

The study is segmented into three distinct periods, primarily based on significant changes in Bitcoin's volatility:

1. First Period: January 1, 2016, to March 5, 2020
2. Second Period: March 26, 2020, to November 8, 2021
3. Third Period: November 9, 2021, to November 10, 2022

These periods were selected to capture different phases of market volatility, providing a comprehensive analysis of the cryptocurrencies' behavior across varying market conditions.

Given the high volatility and non-linear behavior of cryptocurrency returns, this study employs five GARCH-type models to model and forecast volatility. The Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models, introduced by [6], are particularly well-suited for financial time series data, where volatility clustering and excess kurtosis are common characteristics. The models chosen for this analysis include:

1. Standard GARCH (SGARCH): The baseline model, which assumes symmetric effects of past shocks on future volatility [6].
2. Exponential GARCH (EGARCH): Accounts for the asymmetric effects of shocks, allowing for the possibility that negative shocks have a different impact on volatility compared to positive shocks [7, 8].
3. Integrated GARCH (IGARCH): A special case of the GARCH model where the effects of past shocks on volatility do not decay over time, implying that shocks have a permanent effect on volatility [9].
4. Asymmetric Power ARCH (APARCH): Extends the GARCH model by allowing for a flexible form of volatility asymmetry and incorporating a power term for volatility dynamics [10, 11].
5. Threshold GARCH (TGARCH): Another asymmetric model that differentiates between the effects of positive and negative shocks, particularly useful for financial data where bad news tends to increase volatility more than good news [12].

To ensure stationarity, which is a prerequisite for GARCH modeling, the logarithmic returns of the asset prices were calculated. Stationarity of the return series was tested using the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests.

The Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Hannan-Quinn Criterion (HQC) were used to select the best-fitting model. These criteria balance model fit with model complexity, penalizing models with more parameters to avoid overfitting. The model with the lowest AIC, BIC, or HQC value is considered the best fit for the data.

To analyze the correlations between cryptocurrencies and traditional financial assets, the Dynamic Conditional Correlation (DCC) GARCH model, proposed by [13], was applied. This model is advantageous because it allows for time-varying correlations while retaining the benefits of univariate GARCH models in estimating the volatility of individual time series.

The models were implemented using the R packages rugarch for GARCH modeling and rmgarch for multivariate GARCH models. All statistical tests and model estimations were conducted at a 5% significance level. To ensure the reliability of the model estimates, several diagnostic tests were conducted: The Weighted Ljung-Box Test on Standardized Squared Residuals tables to test for autocorrelation within the standardized and squared residuals of the GARCH model, the Weighted ARCH LM Test to check for serial dependence (i.e., autocorrelation) by controlling for autocorrelation within the quadratic residuals, and the Pearson's adjusted goodness-of-fit test to compare the empirical distribution of the standardized residuals with the selected theoretical distribution.

4 Empirical Results and Discussion

The analysis is segmented into distinct periods, based on the volatility patterns observed in Bitcoin, thereby allowing for a better understanding of market behavior over time. The selection of the optimal GARCH model was guided by the evaluation of the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the Hannan-Quinn Criterion (HQC).

The results obtained concerning the cryptocurrency Bitcoin for the time period 2016 to 2020, after the Weighted ARCH LM, show correlations in the squared residuals. It seems necessary to use a different distribution as the Pearson goodness-of-fit test reveals a mismatch between the theoretical and the empirical distribution. Similar results are obtained in the period 2021–2022. While in the period 2020 to 2021 the application of the Egarch model seems to prevail with an important observation being the absence of ARCH effects.

From the results obtained concerning ETHEREUM it is worth noting in the 3rd time period, i.e., 2021–2022, is the non-identification of the empirical distribution with the theoretical distribution. A fact that suggests a legitimate change of the normal distribution we used and a repetition of the results.

The overall results concerning the Cardano cryptocurrency indicate the IGARCH model, with an important feature of the interpretation of new information to continuously affect the variance.

Furthermore, in the overall results for Litecoin no autocorrelations in the residuals are observed. The theoretical and empirical distributions appear to be identical and the need to apply a different model over time is established.

The relationship between cryptocurrencies and traditional financial assets was analyzed with the aid of the DCC GARCH model and the detailed results are shown in Table 2. In addition, robustness tests were performed, including the Weighted Ljung-Box Test and Weighted ARCH LM Tests confirming the reliability of the GARCH models used. Table 1 summarizes the results of the selection of the optimal GARCH model for each period and for each cryptocurrency.

Table 1 Summary of the results

Date	Bitcoin	Ethereum	Cardano	Litecoin
January 1, 2016–March 5, 2020	TGARCH			
April 10, 2016–March 5, 2020		TGARCH		
September 24, 2016–March 5, 2020				TGARCH
January 31, 2018–March 5, 2020			IGARCH	
March 26, 2020–November 8, 2021	EGARCH	IGARCH	IGARCH	EGARCH
November 9, 2021–November 10, 2022	IGARCH	EGARCH	IGARCH	IGARCH

Overall, the empirical results underscore the importance of selecting appropriate GARCH models to capture the unique volatility dynamics of different cryptocurrencies. The IGARCH model's consistent performance across multiple periods highlights its effectiveness in modeling persistent volatility. The DCC GARCH model's results suggest that while some cryptocurrencies may serve as hedges or diversifiers against traditional financial assets, their relationships are complex and vary over time. Regarding the volatility dynamics of the cryptocurrencies, the study indicates that no single GARCH model universally outperforms others across all cryptocurrencies and time periods. The TGARCH model was particularly effective during the moderate volatility period 2016–2020. The model's ability to account for asymmetric volatility—where negative shocks have a greater impact than positive ones—aligns with the speculative nature of early cryptocurrency markets, where investor sentiment and market reactions to negative news were particularly pronounced. In contrast, the IGARCH model emerged as the most suitable model during periods of sustained high volatility. The IGARCH model's persistence parameter, which remains close to one, suggests that shocks to volatility have long-lasting effects, underscoring thus the importance of considering long-term memory in volatility when analyzing established cryptocurrencies. The EGARCH model proved to be effective during periods of extreme market turbulence, such as the COVID-19 pandemic. The model's ability to capture leverage effects—where volatility increases more following negative shocks—was crucial during this period, highlighting the heightened sensitivity of cryptocurrency markets to adverse economic conditions.

Regarding the comparison to traditional financial assets, the results in Table 2 reveal varying degrees of correlation between these asset classes. Bitcoin exhibited a notable correlation with Gold, particularly during periods of high volatility, suggesting its potential role as a hedge against inflation or economic uncertainty. In contrast, the correlations between Ethereum, Litecoin, and traditional financial assets were generally lower, indicating their potential for portfolio diversification. This distinction is crucial for investors and policymakers alike, as it suggests that cryptocurrencies cannot yet be treated as a homogeneous asset class. For example, Ethereum's value is more closely tied to its utility within the decentralized finance (DeFi) ecosystem, making it more susceptible to technological developments and innovations within that space.

Table 2 Results of best DCC GARCH MODEL

	Bitcoin—S&P 500	Bitcoin—Gold	Cardano—Nasdaq	Cardano—Brent Oil	Ethereum—VIX	Ethereum—Gas	Litecoin—EuroStoxx 50	Litecoin—E.P.U
GARCH MODEL	TGARCH	EGARCH	APARCH	TGARCH	TGARCH	EGARCH	TGARCH	EGARCH
dcca1	0.010449	0.015780	0.015352	0.039287	0.010660	0.000000	0.000000	0.000000
p-value	0.092057	0.010620	0.276406	0.130943	0.156428	0.998608	0.996591	0.999864
dccb1	0.988435	0.972216	0.905155	0.090282	0.955641	0.947242	0.886417	0.915069
p-value	0.000000	0.000000	0.000000	0.861049	0.000000	0.000000	0.000000	0.697865

5 Conclusion

This study contributes to the literature on cryptocurrency volatility and its interactions with traditional financial assets, offering guidance on the use of cryptocurrencies as hedging and diversification tools. Various GARCH models were applied to examine the volatility dynamics of four major cryptocurrencies in three periods of different market conditions and the most suitable models were identified. The TGARCH model was effective in early, speculative markets, while the IGARCH model was better suited for periods of sustained volatility. The EGARCH model was particularly valuable during market turbulence, such as the COVID-19 pandemic.

Moreover, the study's exploration of the correlations between cryptocurrencies and traditional financial assets revealed that Bitcoin may serve as a hedge similar to gold against market risk, while other cryptocurrencies exhibit weaker correlations with traditional assets, offering potential diversification benefits.

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Electronic Word of Mouth (eWoM) and Destination Visit Intention: The Case of Greek and Danish Tourists



Eleni Tselempi, Eirini Vlassi, Georgios A. Deirmentzoglou, and Sofia Daskou

Abstract Given the intangible and information-sensitive nature of the tourist industry, it has been proven that the expansion of WEB 2.0 and eWOM influence the destination decision-making process. Recent research attempts to identify the influence of argument quality and source reliability on travelers' intention to visit a place in the pre-travel phase. In this study, the impact of eWoM on young Greek and Danes visitors' intentions to visit two cities, Odense and Athens, respectively, is examined. The influence of cultural aspects, information adoption criteria, and pre-existing attitudes were assessed. The 147 questionnaires of a convenient sample have been analyzed using PLS-SEM with SmartPLS V 4.1. According to the research outcomes, the impact of the cultural aspects was not considered as significant, even though information quality and source credibility increase potential visitor's readiness to adopt the provided information and increase their interest to visit the place. This research provides implications for destination management and marketing organizations and destination marketing experts by demonstrating the global nature of eWoM.

Keywords eWoM · Destination visit intention · Online destination marketing

1 Introduction

The fast-paced environment where people live and work today, raises a need for escape. The number of long and short breaks have increased the last decade, and the travel and tourism sector appears to be in place to recover (in terms of arrivals and receipts) very quickly from severe external shocks like the 2009 economic crisis, the Covid-19 pandemic etc. [1]. The expansion of low-cost airlines enhanced tourism

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democratization, made travel affordable, accelerated tourism growth, and empowered the economic, social, and environmental development of the host destinations, but at the same time it made competition among places more intense [2]. Although, destination offering can create a competitive advantage and may raise potential visitors' interest, it is not enough reason for a destination to be chosen from the visitor's choice-set [3]. People living, working, and exploring the place may together combine unique experiences [4]. Thus, the service-oriented nature of travel and especially the intangible, inseparable, variable aspects that characterize the tourism sector, highlight other factors that may lead one to choose or reject a place.

At the same time, the widespread use of social media, with more than five billion users, made travel choices easier as it reduced the risk of buying something without tasting it first [5]. With production and consumption occurring simultaneously, electronic word-of-mouth (eWoM) provided potential visitors with a testimonial and a sense of the place [5–7]. In this vein, potential travelers today suggest social media as credible sources of information and tend to trust them more than information given by tour operators, travel agents etc. Thus, eWoM plays a decisive role in the choices of travelers' and shapes their consumer behavior. While empirical research attempts to detect the impact of eWoM in potential visitors' intention to visit a place it fails to take into consideration the importance of cultural differences. This research attempts to investigate the role of eWoM on young people's destination visit intention and to include the cultural differences in the developed model.

2 Literature Review

Since the 1960s, researchers have been studying consumers behavior and the factors that influence their intention to buy goods and services [8, 9]. Except from the product characteristics (price, quality, availability etc.) and their symbolic power deriving from the brand positioning efforts, other factors such as information that the consumer receives from his/her own social environment (word-of-mouth), a past experience that the consumer had from the brand and the communication and marketing messages proved to influence consumer's intention to buy. In terms of travel and tourism consumer behavior models have been developed trying to explain the choice of travel destinations [10–13]. Although the process of buying might follow the same steps with products it might take a longer period of time to complete each of them. This is due to the intangible return, the high expenditure in relation to the earned income and the gap between the time of purchase and the time of consumption. In this process some of the factors that are perceived as of high importance are travel trade publications, advertising and promotion, quality/quantity of information, recommendations from friends and relatives, personal and social determinants of travel behavior (socioeconomic factors, personality, social influences, attitudes and values), destination image, previous experiences. The latter is considered as a motivator and a reason to include or reject a destination from the set of potential choices [14]. Marketing advertising, information provided by travel and

tourism business, recommendations coming from friends and relatives have great importance especially when previous experience does not exist.

H1: *A previous positive destination experience increased intention to visit a place.*

Since the advent of WEB 2.0, intention to travel was strongly linked with eWoM [6, 7, 15]. Litvin et al. [15] highlight the importance of eWoM as an essential tool of influence in marketing strategy of hospitality and tourism businesses. Wang [6] suggests that both intention to visit and recommending a place are positively associated with eWoM. In the same vein, Gonzalez-Rodriguez et al. [7] reveal the role that eWoM can play in mitigating perceived risk associated with travel destination choice and intention to visit. Although, published literature indicates that recommendations on social media are among the most reliable sources of information when it is to choose travel destination, further research is needed into the factors that may determine their level of influence [16].

First of all, eWoM source credibility in terms of expertise, trustworthiness and knowledge seems to positively influence the attitude toward the destination and the intention to visit the place [5–7]. Then, literature supports that up-to-date and helpful information are perceived of high quality and can increase WoM and visit intentions [4, 6]. Moreover, as consumers today are receivers of mass information production (paid and organic) due to the increased time spent on social media, information reception and adoption is under discussion. The potential visitor encounters eWoM as a source of information every day, but further analysis is required to fully understand how this information is adopted. The reasons formulating potential visitor willingness to adopt eWoM are of high importance for destination development management and marketing organizations (DDMMOs) and other destination marketing experts [4]. Thus, this research attempts to examine if

H2: *There is a positive relationship between information credibility and information adoption.*

H3: *There is a positive relationship between information quality and information adoption.*

H4: *There is a positive relationship between information credibility and intention to visit a destination.*

When it comes to products, Hussain et al. [16] propose homophily as a factor influencing source credibility and personal correspondence to the provided information, even though eWoM is perceived as more reliable than static content (online and offline) produced by tourism sector businesses.

H5: *There is a positive relationship between homophily and information adoption.*

H6: *There is a positive relationship between information adoption and intention to visit a destination.*

3 Methodology

To test the research model Greek and Danish citizens who have visited Odense or Athens respectively, aged between 18 and 30 years were asked to participate in the survey. The questionnaire developed for this research had two parts. In the first section, respondents were asked if they consider Instagram to be a source of travel information and if they have utilized Instagram to find travel information within the past 12 months. The second section of the questionnaire, which asked respondents about their opinions about the study's primary constructs, was only accessible to those who had provided a positive response. The study's items were measured in a five Likert scale from "Strongly Agree" to "Strongly Disagree" [6] and are displayed in Table 1. A total number of 200 questionnaires were collected but only 147 were used for data analysis after eliminating those with incomplete answers. The questionnaire was disseminated through social media (Facebook and Instagram).

Table 1 Latent variable and measurement items

Constructs	Items (five-score Likert scale)	References
Information Quality (IQU)	IQU1: Travel information offered on Instagram are helpful	[4, 6]
	IQU2: Travel information offered on Instagram are updated	
Information Credibility (ICR)	ICR1: Travel information offered on Instagram are trustworthy	[6]
	ICR2: Travel information offered on Instagram are accurate	
	ICR3: Travel information offered on Instagram are persuasive	
Homophily (HOM)	HOM1: I rely on travel information that has been written by people who are in my age group	[7]
	HOM2: I rely on travel information that has been written by people who have my same gender	
	HOM3: I rely on travel information that has been written by people who travel in the same way that I travel	
	HOM4: I rely on travel information that has been written by people who travel in the same interests as I have	
Information Adoption (IAD)	IAD1: Information on Instagram makes me more confident in my destination choice	[4]
	IAD2: Information on Instagram enhances my effectiveness in selecting the travel destination	
	IAD3: Information on Instagram makes destination choice easier	
	IAD4: Information on Instagram promotes me to select the travel destination	
Formulated Attitude (FAT)	FAT1: Your attitude toward travel to Athens/Odense is very good	[6]
	FAT2: Your attitude toward travel to Athens/Odense is pleasant	
	FAT3: Your attitude toward travel to Athens/Odense is enjoyable	

The current study tests the aforementioned hypothesis and the relationships that among the dependent and independent variables by using confirmatory equation modeling through a partial least squares (PLS) analysis via SmartPLS [6, 7].

4 Data Analysis

4.1 Reliability and Validity

Factor loadings, Crombach's alpha values, composite reliability (CR), and average variance extracted (AVE) were used to investigate reliability and convergent validity of the construct values (Table 2). CR values are above 0.7 implying that the construct validity is good. As the AVE values exceed 0.5 meets convergent validity requirements. Factor loadings are above 0.7 [17]. The Crombach's alpha values that are higher than 0.7 imply that the adopted questionnaire has a good reliability.

Discriminant validity was also evaluated by using Fornell and Larcker's critirion [17]. Thus, discriminant validity was supported as all the values were lower than 0.851 (Table 3).

Table 2 Convergent validity and reliability

Variables	Items	FL	CR	AVE	a
Information Quality (IQU)	IQU1	0.906	0.916	0.845	
	IQU2	0.933			0.818
Information Credibility (ICR)	ICR1	0.782	0.887		
	ICR2	0.865		0.724	0.808
	ICR3	0.901			
Information Adoption (IAD)	IAD1	0.796	0.923	0.751	0.888
	IAD2	0.867			
	IAD3	0.916			
	IAD4	0.883			
Formulated Attitude (FAT)	FAT1	0.955	0.965		
	FAT2	0.958		0.903	0.946
	FAT3	0.938			
Intention to Travel (ITR)	ITR1	0.849	0.912		
	ITR2	0.894		0.776	0.856
	ITR3	0.899			

Table 3 Discriminant validity: latent variables correlation and the square roots of AVEs

Variables	FAT	IAD	ICR	IQU	ITR
FAT	0.950				
IAD	0.261	0.866			
ICR	0.274	0.645	0.851		
IQ	0.264	0.683	0.438	0.919	
ITR	0.344	0.682	0.611	0.571	0.881

4.2 Hypothesis Testing

Before exploring the relationships of the structural mode we proceed with the goodness of fit measures. Thus, the standardized root mean square residual (SRMR) is 0.08 (<0.10) and indicates model's adequate fit [18]. Concerning the place of origin, in order to its effect in all the parts of the model (check if the two groups follow the same type of conceptual framework, compositional ingredients, means and variances) a multigroup analysis has been conducted (MGA The *p*-values of all the permutations were check (>0.05) and thus, compositional invariance was detected. Then the standardized coefficients of both groups were compared. The *p*-values of the path coefficient difference between the two groups were higher than 0.05 for H1, H4 and H5 and lower than 0.05 for H2, H3, and H6. So, both groups prove to have the same path coefficients. Then the relationships in the structural model were analyzed by using 5.000 subsample bootsrapping procedure to assess the significance of the path coefficients [7]. Figure 1 shows the results of the model and includes the hypothesis that were tested.

According to the model four of the six hypothesis are perceived as significance as *p*-values are lower to 0.05. Two hypothesis failed the test as the *p*-value was higher than 0.05. Thus, formulated attitude from previous experience (FAT) have a positive effect on potential visitor's intention to travel (ITR) ($\beta = 0.148$ $p < 0.05$) (H1). Information credibility (ICR) has a positive effect on potential visitor's intention to adopt the information given on Instagram ($\beta = 0.405$ $p < 0.001$) (H2). In addition, information credibility (ICR) proves to have a positive effect on potential visitor's intention to travel (ITR) ($\beta = 0.056$ $p < 0.05$) and H4 could not be supported. In the same vein, information quality (IQU) is detected to have a positive effect on potential visitor's intention to adopt the information given on Instagram ($\beta = 0.498$ $p < 0.001$) (H3). With regard to Hypothesis 5, homophily seems to have insignificant effect on potential visitor's intention to adopt the information provided by peers on Instagram. Lastly, potential visitor's intention to adopt the information provided by peers on Instagram (IAD) has a significant positive effect on their intention to travel (ITR) ($\beta = 0.472$ $p < 0.001$).

Moreover, considering R square values, 61% of the IAD and 53% of the ITR latent variables variability can be explained by the model.

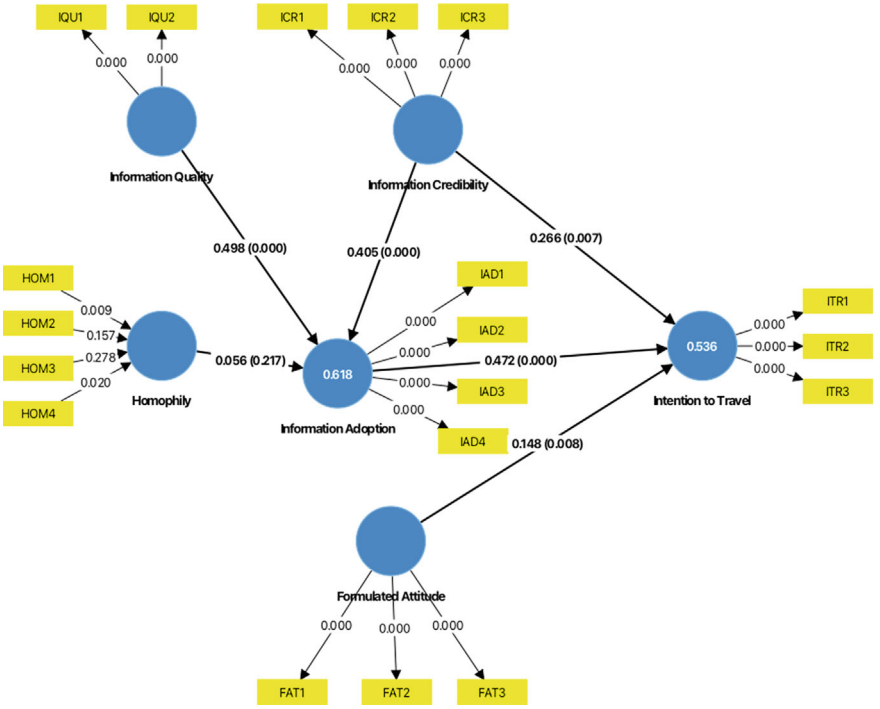


Fig. 1 Model showing structural path coefficients of hypothesized relations

5 Discussion and Conclusions

Following the research results, Instagram information adoption seems to have a direct effect on young people intention to visit a place. The research results indicate that the country of origin and the cultural characteristics of the respondents do not have any influence as the aforementioned relationship proved to be significant even in a blended sample of respondents. Of course a happy and enjoyable prior experience of a place can raise the intention to revisit it in the future. On the other hand potential visitor willingness to adopt travel information offered on Instagram has a higher effect on intention to travel than that of the formulated attitude. At the same time, while published research supports that homophily is a factor of great importance on travelers' perceived risk and visit intention of this research do not confirm the previous argument and it Homophily's influence was small on users willing to adopt travel information found on Instagram [7].

The outcomes can help DDMMOs and marketing experts when formulating the marketing strategy of the destination. First of all, marketing messages developed for Instagram must be informative and up to date. While considerable effort is put into identifying the right influencers to promote the destination to their audience, content quality appears to be more important. Moreover, the influencing power

of Instagram needs to be considered when DDMMOs and marketing experts are to choose the dissemination platform that they will use. As users willingness to adopt the provided information is of greater importance than the formulated attitude coming from previous experience it seems that Instagram need to be included in the media set of the promotion mix. Bearing in mind the limited resources that destination marketers and managers can invest in destination marketing further research is needed. Thus, it is suggested to repeat the current survey in a larger and diverse sample.

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The Impact of Marketing Through Social Media Influencers: A Case Study on Wine Products in Greece



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Abstract The rise of social media has transformed the marketing landscape, and influencer marketing has emerged as a key strategy in promoting wine products in Greece. This study explores the role of influencers in shaping consumer perceptions, behaviors, and purchase decisions, specifically in the context of Greek wine products. This research, based on questionnaires distributed to a convenient sample of 423 Greek consumers, investigates how influencer marketing influences brand awareness, consumer engagement, and brand loyalty in the wine industry. Findings reveal that influencers, particularly on platforms like Instagram, play a significant role in educating consumers about wine varieties, enhancing brand recognition, and encouraging wine tourism. Furthermore, influencers are instrumental in creating compelling narratives around wine products, tapping into cultural and experiential aspects of wine consumption. This study also highlights the challenges and opportunities for wine producers in Greece, offering insights into optimizing influencer strategies to boost visibility and sales. By analyzing the effectiveness of influencer campaigns, the paper provides recommendations for leveraging social media as a powerful marketing tool to enhance the global presence of Greek wine products.

Keywords Influencer marketing · Greek wine industry · Social media promotion

1 Introduction

Global wine production is a significant agricultural activity, with Europe dominating the industry. The leading wine-producing countries include France, Italy, and Spain, which together account for more than 50% of global output. In 2023, France emerged as the top producer with 48 million hectoliters (mhl), or about 20.2% of the global

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total, followed by Italy with 38.3 mhl (16.1%) and Spain with 28.3 mhl (11.9%) [1]. The Greek wine industry, with its deep historical roots and cultural significance, has adapted to global market shifts through innovations in marketing strategies, including the use of social media and influencer marketing. In recent years, the global wine market has undergone a transformation, with growing consumer demand for authentic, culturally rich experiences. This shift has encouraged wineries to explore new marketing avenues, including the strategic use of influencer marketing. Social media platforms, particularly Instagram, have emerged as powerful tools for creating and disseminating content that not only promotes wine products but also enhances consumer engagement through visual and experiential storytelling. This paper examines the influence of social media and influencer marketing in promoting wine products in Greece, with a focus on their role in fostering wine tourism and shaping consumer behavior.

Influencer marketing has become a vital tool for Greek wine producers, especially in the context of wine tourism, which has gained traction in recent years. Wine tourism, a specialized form of agritourism, has seen rapid growth as a means of promoting local wines and vineyards through direct consumer experiences. In the Greek context, where wine tourism is still relatively new, influencers play a critical role in bridging the gap between traditional marketing and digital engagement. Their ability to highlight the experiential aspects of wine production—such as vineyard tours, wine tastings, and the natural beauty of wine-producing regions—has helped increase interest in Greek wines and wine tourism [2]. Research has shown that influencer marketing on platforms like Instagram is particularly effective in engaging younger consumers, who are more likely to use social media for product discovery and decision-making [3]. The effectiveness of influencer marketing is also linked to the authenticity and credibility of the content shared. Authentic experiences, such as personal visits to Greek vineyards and insights into the winemaking process, resonate strongly with consumers, fostering trust and loyalty.

This research emphasizes that influencers who offer genuine, culturally immersive experiences are more successful in shaping consumer preferences and encouraging wine tourism [4]. This aligns with broader trends in marketing, where consumers, particularly millennials, value authenticity and transparency in brand communication [5]. In this way, influencers serve not only as promoters but also as trusted intermediaries between consumers and wine brands, helping to demystify the winemaking process and create a more personal connection with the product. In addition to enhancing consumer engagement, influencer marketing also plays a strategic role in the global expansion of Greek wine brands. With growing competition in the international wine market, Greek wineries are increasingly turning to digital marketing strategies to differentiate their products. Influencers, with their ability to reach broad and diverse audiences, offer a cost-effective means of increasing brand visibility and market penetration, particularly in foreign markets [6]. Moreover, campaigns that emphasize the sustainability and cultural heritage of Greek wine production appeal to modern consumers who prioritize environmental responsibility and ethical practices in their purchasing decisions [7].

Building on these insights, the current study seeks to explore the specific mechanisms through which social media influencer marketing impacts consumer behavior and decision-making in promoting Greek wine tourism. By examining the role of influencers in shaping perceptions and choices, this research investigates how digital content drives engagement with wine-related experiences and influences potential visitors' travel decisions. Additionally, the study aims to assess the extent to which influencer marketing can enhance the visibility, engagement, and overall brand presence of Greek wine tourism destinations. Understanding these dynamics is crucial for Greek wineries, as effective influencer strategies not only boost brand recognition but also create meaningful connections between consumers and the cultural richness of Greek wine regions. In this context, the research examines both the immediate effects of influencer marketing on consumer decisions and its long-term impact on fostering brand loyalty and expanding the global footprint of Greek wine tourism.

2 Methodology

A structured questionnaire was employed as the primary tool for data collection. The questionnaire, distributed online through platforms, targeted Greek adults who engage with social media and have varying levels of familiarity with wine tourism. This demographic was selected to provide insights into consumer preferences in Greece, where wine tourism is growing in prominence, and to assess how influencer marketing influences consumer behavior within this context. A total of 423 valid responses from a convenient sample were collected between January and May 2024. The questionnaire was divided into sections to gather comprehensive data on participants' demographics, social media usage, perceptions of influencer marketing, and engagement with wine tourism. It included both closed-ended and Likert-scale questions to facilitate categorical and scaled responses, which allowed for both descriptive and statistical analyses. Participants were informed of the research purpose, ensured anonymity, and participation was voluntary, leading to a diverse sample in terms of age, gender, income, and education level.

Statistical analyses such as chi-square tests and ANOVA were applied. The chi-square test assessed how demographic factors influence engagement with influencer marketing, while ANOVA compared mean differences across groups, focusing on social media engagement and familiarity with wine tourism. For ordinal or non-normally distributed data, Kendall's correlation coefficient was used to evaluate correlations between variables like social media engagement and trust in influencers. The research employed a 5% level of significance.

3 Results

3.1 Respondents' Demographics

The sample consisted of Greek adults, with a majority identifying as female (62.5%), while males represented 37.5% of the respondents. In terms of age distribution, the largest group of participants (42.5%) fell within the 25–35 age range, followed by 25% in both the 18–24 and 35–45 age groups. Only 7.5% of respondents were between 45 and 55 years old. These results indicate that the sample skews toward a younger demographic, which aligns with the profile of social media users who frequently engage with influencer content. In terms of annual household income, 37.5% of respondents reported earning up to €10,000, with 22.5% earning between €10,000 and €15,000. Smaller portions of the sample fell into higher income brackets, with 15% reporting annual incomes of over €25,000. The educational background of the respondents revealed that half of the participants (50%) held postgraduate or doctoral degrees, indicating a highly educated sample.

3.2 Engagement with Influencer Marketing and Wine Tourism

The analysis shows varying levels of engagement with social media content related to travel and wine, with Instagram being the most popular platform (85%) for engaging with such content. TikTok followed, though with significantly less engagement at 30%. This indicates that visual-centric platforms are highly influential in shaping consumer perceptions and decisions regarding wine tourism. Literature shows that Instagram is the most influential platform for promoting travel and wine tourism due to its highly visual nature, with significant engagement from users. TikTok, though popular, sees less engagement in this niche but holds potential for growth, especially among younger audiences. Both platforms shape consumer perceptions, but Instagram remains dominant in fostering brand loyalty in tourism [8]. Most respondents (50%) reported engaging with social media influencers who share content related to travel and wine, suggesting that influencers play a significant role in the promotion of wine tourism (Table 1).

Table 1 Engagement in travel or wine-related content on social media platforms

Platform	Engagement (%)
Instagram	85.0
TikTok	30.0
Facebook	42.5
YouTube	20.0

Table 2 Influence of social media on wine tourism decision-making

Decision-making influence	%Percent
Strongly agree	7.5%
Agree	30.0%
Neutral	47.5%
Disagree	12.5%
Strongly disagree	2.5%

The influence of social media content on decision-making was also notable. Approximately 47.5% of respondents expressed neutrality regarding the extent to which influencers impacted their decisions about visiting wine destinations. However, a significant proportion (30%) agreed that influencer content did influence their destination choices, underscoring the role of digital influencers in shaping tourism behavior (Table 2).

3.3 Consumer Preferences and Influencer Credibility

Respondents' preferences for influencer-generated content related to wine tourism were divided. A notable portion (37.5%) remained neutral when asked if influencers motivated them to visit specific wineries or wine regions, while 25% agreed that influencer content did encourage them to do so. This highlights the potential of influencer marketing to promote wine tourism destinations, though it also reflects the need for more targeted and authentic content to fully engage potential (Table 3).

The credibility of influencers was found to be critical in shaping consumer behavior. Around 60% of respondents were neutral about the authenticity of wine tourism experiences shared by influencers, while 25% disagreed with the idea that such experiences were fully authentic. This skepticism suggests that while influencers can draw attention to wine tourism, the perceived authenticity of their experiences plays a significant role in determining the impact of their content (Table 4).

Table 3 Influence of influencers on visits to wineries

Influence on visits	%Percent
Strongly agree	7.5
Agree	25.0
Neutral	37.5
Disagree	17.5
Strongly disagree	12.5

Table 4 Perceived authenticity of influencer content

Authenticity perception	%Percent
Strongly agree	10.0%
Agree	10.0%
Neutral	60.0%
Disagree	25.0%
Strongly disagree	2.5%

3.4 Influencer's Impact Analysis

Chi-square tests and ANOVA revealed significant associations between demographic variables and engagement with influencer marketing. Younger respondents (aged 25–35) were more likely to engage with influencer content and to be influenced by such content in their decision-making regarding wine tourism. In contrast, older respondents were less likely to engage with influencers, highlighting a generational divide in the effectiveness of influencer marketing for promoting wine products and experiences.

Kendall's correlation coefficient was used to assess the relationship between social media engagement and consumer trust in influencers. The results showed a moderate positive correlation ($t = 0.42$, $p < 0.05$), suggesting that increased engagement with influencer content is associated with higher levels of trust in the authenticity of the shared experiences. This indicates that influencers who are perceived as credible and authentic are more likely to have a meaningful impact on consumer behavior.

3.5 Consumer Behavior in Wine Tourism

The frequency of engagement in wine tourism activities revealed that 45% of respondents had never participated in such activities, while 37.5% reported rarely engaging in wine-related tourism. This suggests that while influencer marketing has the potential to raise awareness of wine tourism, a significant portion of the audience has yet to convert this awareness into action. However, the respondents who had engaged in wine tourism activities reported positive experiences, with many indicating that the scenic beauty of the wine regions and the availability of wine-related activities (such as tastings and vineyard tours) were key motivators in their decision to visit.

4 Discussion

The findings of this research highlight the increasingly pivotal role of social media influencer marketing in promoting wine products in Greece, particularly within the emerging sector of wine tourism [9, 10]. As influencer marketing continues to shape global marketing strategies, its application in the Greek wine industry offers valuable insights into consumer behavior, engagement, and the efficacy of digital promotion techniques. In alignment with existing literature, the results demonstrate that influencer marketing significantly impacts consumer decision-making processes, especially in sectors where cultural and experiential elements are crucial, such as wine tourism [11].

A key observation from the research is the profound influence of visual and experiential storytelling through social media platforms, especially Instagram. Influencers are capable of creating compelling narratives that resonate with both local and international audiences, effectively positioning Greek wine regions as attractive destinations. This confirms earlier findings by McCluskey and Loureiro [12], who noted that visual appeal and cultural richness are key motivators in destination marketing. Through curated content that highlights the beauty of vineyards, the intricacies of wine production, and the unique cultural aspects of Greek wine regions, influencers act as intermediaries who bridge the gap between wineries and consumers, fostering a personal connection that traditional marketing methods often fail to achieve.

The role of authenticity in influencer marketing emerged as a critical factor in shaping consumer trust and engagement. Consumers in the study indicated a preference for influencers who present genuine, culturally immersive experiences, reinforcing the importance of trust, and transparency in modern marketing [13]. This finding aligns with broader marketing trends, where millennials, in particular, value authenticity in brand communications and are more likely to engage with content they perceive as sincere. Influencers who provide firsthand accounts of their experiences, such as participating in wine tastings or vineyard tours, foster a sense of trust that can lead to increased consumer loyalty and a stronger brand presence. This dynamic suggests that Greek wineries should prioritize partnerships with influencers who can present authentic and culturally rich narratives to enhance their digital marketing efforts.

In terms of consumer behavior, the results suggest that influencer marketing plays a significant role in driving interest and visitation to wine tourism destinations. This is consistent with previous research, which found that social media influences tourism choices, with potential travelers using influencer content as a source of inspiration for their trips [14]. For Greek wineries, this represents an opportunity to leverage influencer partnerships to tap into the growing market of experiential tourism, which is increasingly popular among younger demographics seeking more immersive and culturally meaningful travel experiences.

However, the research also reveals some challenges and areas for further improvement. While influencers have proven effective in generating interest, there remains

a gap between consumer awareness and actual participation in wine tourism activities. A significant portion of respondents in the study indicated that they had not yet engaged in wine-related tourism, despite expressing interest in the experiences presented by influencers. This gap suggests that additional efforts are needed to convert social media engagement into tangible visits.

Moreover, the findings indicate that the visibility of Greek wine brands could be further enhanced through more targeted international campaigns. While influencer marketing has helped raise awareness domestically, expanding the reach of these campaigns to international markets remains a key opportunity for growth. Greek wineries can benefit from collaborating with international influencers or leveraging global social media trends to position themselves more competitively in the global wine market [15]. A community of people with similar interests can be created [16–19] where synergies can be initiated but also among wine users.

5 Conclusion and Future Research

This study emphasizes the crucial role of social media influencer marketing in promoting Greek wine products and wine tourism, particularly on platforms like Instagram, where influencers have proven effective in engaging consumers and boosting destination visibility. Authentic and culturally immersive content fosters consumer trust, though the challenge remains in converting online engagement into actual participation in wine tourism activities. To address this, Greek wineries could expand their digital marketing efforts and form long-term, authentic influencer partnerships, especially to reach international markets. Future research could examine the long-term effects of influencer marketing on brand loyalty, explore the relative impact of micro-versus macro-influencers, and investigate how influencer campaigns can be integrated with other digital marketing strategies. Cross-cultural studies could also shed light on the global impact of influencer marketing in the wine tourism sector, helping wineries refine their international strategies.

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Understanding Healthy Eating Behaviors of Slovak Young Consumers: A Preliminary Study in Bratislava



Emel Yarimoglu and Lucia Vilcekova

Abstract The European Union and United Nations have been working on promoting healthy eating behaviors and increasing physical activity for years. The aim of the study was to get insights about young consumers' healthy eating behaviors and understand their perspectives regarding healthy eating for young people in Bratislava which is underrepresented in literature. Within this aim, a preliminary study of a qualitative research was conducted with a convenient sample of 16 students and data were collected by written text. Data were analyzed by content analysis. These preliminary findings that are part of a broader research, showed that participants' macronutrient consumption is not sufficient for their ages. In terms of healthy eating, they have several patterns which can be comparable among students. Promoting healthy eating behaviors should be tailored to the specific needs and preferences of young consumers. Targeted educational campaigns to promote healthy eating behaviors, to make healthy food more affordable and accessible to young consumers and to create a supportive environment for healthy eating among young consumers should be implemented.

Keywords Eating habit · Healthy diet · Eating behavior · Macronutrient · Young people

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1 Introduction

Nowadays, European Union (EU) has been working in the fields of healthy eating, physical activity, and healthy body weight [1] and supporting the United Nations Sustainable Development Goals (SDG), especially Goal 3: Good Health and Well-Being (SDG3) by improving nutrition. SDG3 is aimed at ensuring health and well-being for all people at all ages and interrelated with all SDGs in terms of health [2]. Healthy eating, food preferences, and dietary habits such as daily breakfasts and eating enough vegetables and fruits are directly a part of a lifestyle [3, 4] and closely associated with the main reasons of morbidity and mortality such as cancer, metabolic diseases, diabetes, and cardiovascular diseases [4–7]. Cardiovascular diseases, obesity, and circulatory system diseases are main illnesses observed among Slovak people. In 2017, the share of circulatory system diseases in all deaths was 43.1% in Slovakia, higher than the EU average (36.7%) [8]. Cardiovascular disease is found as the main reason of death [9] and obesity rate (19%) was found as one of the major public health issues, higher than the EU average (16%) [10]. Since unhealthy eating will lead terminal illnesses in long term, learning healthy eating habits and following healthy nutritious diets have been becoming more important for young people.

The aim of this research was to examine healthy dietary patterns and macronutrients consumed by young consumers in Slovakia. Within these aims, the study focused on Generation Z as young consumers. Because of different ethnicities, cultures, and climates affect eating behavior, Slovakia as a European country, which has unique dietary patterns due to Slav ethnicity, continental climate, and not having a Mediterranean culture, was selected in the research. The study used qualitative research methods since there are many studies conducted by quantitative methods in analyzing eating behaviors [3, 4, 7, 9, 11–13]. This study was designed to fill in the gap on conducting a qualitative content analysis by focusing on young consumers' eating behaviors.

2 Literature Review

A healthy diet shown in literature mostly focused on how ingredients, foods, and calories in a particular diet meets macronutrients. Diet quality refers to both food variety and nutrient adequacy [7]. A healthy diet should include macronutrients, micronutrients, and hydration [14]. Macronutrients such as protein, carbohydrates, and fat should be taken daily for healthy eating and have been started to be discussed as an indicator of healthy eating in literature [15–17]. The Dietary Guidelines for Americans offered MyPlate to provide advice on what should eat and drink to meet nutrient needs, promote health, and prevent diseases, and it emphasized the importance of an overall healthy eating pattern with all five groups as key building blocks, plus oils. The five main food groups and subgroups were shown as follows [18]: Fruits, Vegetables,

Grains, Protein, and Dairy. Growing evidence shows that the Mediterranean diet is a healthy diet, and reduces the risk of coronary heart diseases, cardiovascular diseases, obesity, cancer, diabetes, and total mortality [19, 20]. Besides Mediterranean diet, plant-based diet, seen as one of the most preferred healthy dietary patterns [21, 22]. Plant-based diet excludes all foods which are animal originated [23]. It was revealed that healthy nutrients are higher in plant-based diets compared to the Western diets [14].

Eating habits of young people in Slovakia were examined and it was stated that young people, who did not meet dietary suggestions, generally consume foods with low nutritional value and high energy instead of high nutritious foods such as legumes, vegetables, and fruits [13]. Excessive intake of low nutritious foods was seen as one of the main factors of nutritional problems [6]. Another nutritional problem that has been seeing among young people is related to skipping breakfast, which is concerned as one of the important unhealthy eating behaviors [6]. It was found out that young people do not have enough information about healthy eating, so they develop unhealthy eating behaviors such as skipping breakfast, eating low nutritious foods, drinking soft drinks with added sugar, replacing lunch with unhealthy snack foods [6, 25].

Being a university student, which strongly affects individuals' lifestyles, can often lead to unhealthy eating habits, and college students who are away from home have unhealthy eating behaviors with compared to those who live at a family home [24]. It was found out that obesity and overweight rates have been increasing in Slovakia, particularly in adults and adolescent girls [13]. It was obtained that only 63% of participants regularly eat breakfast and suggested that Slovak schoolchildren should eat dairy products, vegetables and fruits more, and increase daily physical activity [26]. It was revealed that exercise and physical activity have positive influences on decreasing obesity and overweight in young people [27]. There have been significant relationships among hypertension, obesity, and physical activity among Slovak university students were found out in a research conducted in Slovakia [28].

3 Research Methodology

This study is a preliminary research that was designed based on qualitative methods to understand the latest perspectives regarding eating habits and behaviors of young consumers living in Slovakia. Understanding characteristics of young consumers' healthy eating behaviors, two research questions were developed as follows:

RQ1: How are macronutrients consumed by Slovak young consumers?
RQ2: What are the healthy eating habits of Slovak young consumers?

Text analysis was used in the research and written texts were collected from research subjects based on their previous experiences and ideas about the topic. Three approaches of text analysis such as positivist, linguistic, and interpretivist were explained in literature [29]. Positivist text approach was followed in the study

since it supposes that understanding of participants' thoughts and ideas occur by identifying nonrandom variations in the text. In the research, one of the researchers delivered the question protocol to the participants via face-to-face and online delivery techniques without any interaction of them, then waited them to write their thoughts and ideas.

Question protocol was prepared with close-ended questions in a systematic manner, which enables easy analysis and comparison of data and developed by researchers based on the questions in literature. The Food based Dietary Guidelines for the European Region [30] was followed in the protocol. Data were collected via convenient sampling of students at different levels of study at Comenius University in Bratislava. The announcements regarding the research were made, and research subjects' willingness to participate in the study was asked. The question protocol was distributed via face-to-face and online delivery techniques to the research subjects who give positive feedback about their participations. 16 participants took part in the research. The sample size was found sufficient to understand young consumers' healthy eating behaviors in this qualitative study since repeated answers began to be received from the participants.

Data were analyzed via content analysis, which is used to analyze the data on written text, verbal interactions, transcribed speech, nonverbal behaviors, and visual images [31]. The written primary text was read by researchers deeply then the researchers started to develop the coding frame and coded the data. The coded data was analyzed and the results were demonstrated in tables with each participant's codes. In qualitative methods, to ensure the reliability and validity of data, it was advised to use an independent experienced researcher, outside from the research team [29, 32]. In analysis, two experienced researchers CA and ZB, who conduct research in the same area, were invited to analyze data due to the fact that positivist approach needs the formalized evidence of validity and reliability [29]. The researchers found the same codes and themes that were obtained in the research and justify research findings, which supports the reliability of the research.

4 Findings

Demographic profiles of the participants according to their codes were shown in Table 1.

50% of the sample is formed by female and college students, the mean of age is 23.25 years old, 62.5% of them have more than 100€ weekly, 56.25% of them have been living with their families. After presenting demographics, the results related to macro intakes were explored and shown in Table 2.

Then, healthy eating habits of young people were analyzed. One of the new trends as skipping breakfast was asked to the participants. Nine participants (S3, S4, S5, S6, S9, S10, S12, S14, S15) said that they do not skip breakfast and have breakfast every morning. Two of the participants (S2, S7) said that they clearly skip breakfast. The participants, who skip breakfast, expressed the reasons of skipping breakfast as

Table 1 Demographics of the participants

Code	Gender	Age	Education	Weekly income/ allowance	Live with	No. of people
S1	Male	28	Master student	More than 100 €	Family	3
S2	Female	25	Master student	More than 100 €	Friends	2
S3	Male	23	Master student	Less than 100 €	Family	4
S4	Female	24	Master student	More than 100 €	Family	4
S5	Female	25	Master student	100 €	Family	3
S6	Female	27	Master student	Less than 100 €	Friends	2
S7	Male	25	Master student	More than 100 €	Friends	2
S8	Male	28	PhD student	More than 100 €	Alone	1
S9	Male	21	College student	Less than 100 €	Family	3
S10	Male	21	College student	More than 100 €	Family	4
S11	Female	20	College student	Less than 100 €	Family	4
S12	Male	22	College student	More than 100 €	Alone	1
S13	Female	20	College student	More than 100 €	Family	3
S14	Female	20	College student	More than 100 €	Friends	2
S15	Male	23	College student	More than 100 €	Alone	1
S16	Female	20	College student	100 €	Family	4

Table 2 Macronutrients consumed by the participants

	Low	Normal	High
Carbohydrates	S1, S2, S5, S8, S15, S16	S3, S4, S6, S9, S10, S13	S7, S11, S12, S14
Vegetables	S1, S3, S7, S10, S11, S13, S14, S15, S16	S2, S5, S8, S9	S4, S6, S12
Fruits	S1, S3, S7, S8, S9, S15, S16	S2, S5, S14	S4, S6, S11, S12
Protein	–	S1, S2, S3, S4, S5, S6, S7, S8, S11, S13, S14, S15, S16	S9, S10, S12
Dairy	S1, S4, S7, S11, S14	S3, S5, S6, S10, S12, S15, S16	S2, S8, S9, S13
Fat	S5	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10 S12, S13, S14, S15, S16	S11

follows: (1) not feeling hungry (S1, S2, S7, S11, S16), (2) no enough time to eat (S7, S8, S13, S16), (3) no habit of breakfast (S1, S7, S11), (4) not want to prepare (S13). Participants' lunch habits were asked and half of them (S2, S3, S4, S6, S7, S8, S14, S16) said that they eat homemade sandwich or meal at lunchbox. Three participants (S1, S5, S9) said that they prefer going out and eat healthy foods such as meat and rice. Fast-food consumption of the participants was asked and they stated

that they eat fast-food products but the frequency of eating fast food is rare like once a month. Only S1, S7, S15 said that they eat fast-food products every week. Participants were asked if they follow any particular diet. Some participants said that they occasionally follow some particular diets as follows: sugar-free (S3, S10, S14, S9), lactose-free (S3, S7, S10, S14), intermittent fasting (S2, S7, S11), vegan (S3, S6, S11), Mediterranean (S12), low-carb (S9), and gluten-free (S3). Lastly, health level of following foods were asked. The participants ranked healthiest foods as follows: Salad (9,12), grilled meat (7,18), rice (6,75), pasta (5,75), noodle (5,12), kebab (4,56), pizza (4,50), schnitzel (4,12), hamburger (3,87), dessert (3,81), and French fries (2,87).

5 Discussion and Conclusion

The study was developed to understand young Slovak consumers' eating behaviors. It was explored that the participants take less macronutrients than suggested, supporting in literature [6, 9]. For women between 19–30 years old, 1.5–2 cups fruits, 2.5–3 cups vegetables, 3–4 oz-equivalent wholegrains, 5–6.5 oz-equivalent protein, 3 cups dairy, and for men between 19–30 years old 2–2.5 cups fruits, 3–4 cups vegetables, 4–5 oz-equivalent wholegrains, 6.5–7 oz-equivalent protein, 3 cups dairy are recommended as daily intakes [33]. It was revealed in the study that Slovak young consumers may eat enough protein whereas they consume very low levels of fruits and vegetables. In Slovakia, dietary risks, including high salt consumption and low consumption of vegetables and fruit, formed 26% of all deaths, higher than EU average (17%) and it was advised to Slovaks to eat healthy nutritious foods by decreasing high salt and fat consumption, and increasing vegetables and fruit consumption [10].

It was revealed that most participants do not skip breakfast, most of them prefer eating homemade sandwich, lunchbox meal, or eating lunch at school cafeteria. Half of them stated that they do not follow any particular diets. Salad, grilled meat, and rice were found as the healthiest food. In parallel with this, it is advised to Slovak young consumers improve health knowledge on healthy eating since insufficient intakes of vegetables, fruit, and legumes may cause chronic diseases [9]. It is inevitable to educate young consumers regarding healthy eating. University courses can be added to the curriculum and seminars can be given by scholars who have knowledge on healthy eating habits and behaviors.

Healthy dietary patterns should be implemented by especially young people in order to prevent diseases and ensure long life. It can be advised that students should decrease daily fat consumption, increase daily vegetable and fruit intake, and eat healthy foods with higher nutritional values instead of snacks such as sweet and fatty foods [6]. Young people should take whole grains with high fiber, legumes, white meat, vegetables, fruits, dairy products with low fat, and healthy fats such as nuts and avocados daily. Since unhealthy eating behaviors and intake of low nutritious foods cause chronic diseases such as cardiovascular diseases, obesity, and cancer in

later life [5, 6], the care on healthy eating behavior should be developed at early ages and continued throughout life among young people.

It is important to note that many of the studies cited in this study are descriptive and statistical cross-sectional studies. This study focused on qualitative methods and the research was conducted with a small number of young consumers based on exploratory techniques, so the results cannot be generalized. Besides this, the study only focused on macronutrients and healthy eating habits. The other factors affecting healthy eating behaviors were not searched in the study.

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Pavlopetri "City Beneath the Waves": Attitudes and Perceptions of Residents and Local Authorities Towards the Creation of a Thematic Diving Park

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Abstract Diving tourism is an alternative form of tourism with low environmental impact and many socioeconomic benefits for the local communities**.** The unexplored seabed is a mystery for the lovers of diving tourism. Pavlopetri or otherwise "City beneath the waves" is located at Viglafia of Laconia Region, Greece and is an archaeological treasure for diving enthusiasts. The creation of a thematic diving park can become a major tourist attraction. The purpose of this study is to investigate the perceptions and attitudes of residents and stakeholders of Viglafia and Neapolis Region regarding the creation of a scuba diving thematic park in Pavlopetri Laconia, as well as the perceived role of the local authorities in the management of both existing and future diving tourism activities. This is a mixed method study. A survey was administered on a convenience sample of 274 permanent residents of Viglafia and Neapolis region of the Prefecture of Laconia. Also, personal interviews were initiated with 21 local stakeholders. Results show that the local community and local stakeholders maintain a positive attitude towards the creation of a thematic diving park in Pavlopetri and consequently the increase of tourists in the region. Residents believe that negative effects of increased tourism could be traffic congestion, unsustainable waste production, reduction of fauna, more traffic accidents, overcrowding by tourists in the coastal zone, and an increase in municipal fees. Implications for the significancy of the development of a thematic diving park in a small urban area such as the Prefecture of Laconia are discussed.

Keywords Pavlopetri · Diving tourism · Tourism effects

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1 Introduction

Pavlopetri is the world's oldest unexplored underwater city since it dates back 5.000 years and is situated in Elafonisos, Laconia Region of Greece, next to the village of Viglafia [1]. According to the archaeologists, the submerged city or "City beneath the waves" includes a complete street plan with houses, gardens, building structures, and a complex water supply system. It was inhabited in the Bronze Age and was destroyed by two major earthquakes. Nowadays, Pavlopetri's reputation is growing rapidly, as social media are increasingly used as a marketing tool to promote tourist locations [2]. The creation of a diving park in the specific area can upgrade the touristic product of Laconia and create a new form of alternative tourism that will bring an increase in tourist activity and provide significant benefits to the residents of the area [3].

Host communities play a vital role in the diving tourism industry. For host communities with unspoiled natural beauty, increased tourism activities can bring significant benefits to residents [3]. The diving tourism industry creates new opportunities for employment and business development. Also, it creates positive social and cultural outcomes as well as sustainable development. However, many residents react to this change arguing that the creation of a diving park can cause contamination and destruction of the natural environment. Also, the tendency of divers to remove various important finds as souvenirs is viewed negatively by residents [3].

The purpose of this study is to investigate the perceptions and attitudes of the residents and stakeholders of Viglafia and Neapolis Region regarding the creation of a scuba diving thematic park in Pavlopetri Laconia, as well as the perceived role of the local authorities in the management of both existing and future diving tourism activities.

2 Theoretical Framework

Diving is a form of alternative tourism that is increasing in many countries. The forms of special and alternative tourism in Greece are new innovative and complex tourism products that are characterized by dynamic demand and respond to special incentives and a powerful branch for the economy [4]. Pavlopetri is a submerged city in water in the prefecture of Laconia, a city that has gained visibility lately due to the rise of social media. Therefore, the creation of a diving park can bring an increase in tourism in the area. As a result, it is important to find out whether residents have positive or negative attitudes towards the development of a diving park.

Most studies of attitudes and perceptions of the local community are based on Butler's theory on social exchange. The main assumption of the theory is that residents in a social exchange, value the exchange and expect to benefit mutually and equally from the exchange. Specifically, people evaluate an exchange based on the

benefits and costs associated with that exchange [5]. Whether or not the expectation is met will determine whether one or the other continues the interaction [6].

Social exchange theory suggests that residents of a city consider the expected benefits and costs incurred in exchange for the resources and services offered [7]. The essence of this proposition is that residents' attitudes are positive when rewards are perceived satisfying and balanced. In an exchange, the perceived costs should not exceed the perceived benefits, and local communities who view tourism as a potentially valuable factor and perceive that the costs do not exceed the benefits will favor the exchange and consequently support tourism [8].

Residents who perceive tourism positively are receptive to tourists by creating a positive experience for it and when this happens, tourists will want to return to the specific destination [9]. Also, residents who receive greater benefits from tourism have a more positive perception than residents who receive less or no benefits from tourism [8]. On the other hand, tourism negative effects for residents include overcrowding, lack of access to a tourist area and entertainment centers, crime as well as prostitution. In fact, these effects threaten residents' quality of life and affect the level of tourism tolerance and sustainability of tourism in a destination [10]. The purpose of this study is to investigate the perceptions and attitudes of the residents and stakeholders of Viglafia and Neapolis Region regarding the creation of a scuba diving thematic park in Pavlopetri Laconia, as well as the perceived role of the local authorities in the management of both existing and future diving tourism activities.

3 Methodology

The methodology used in this study is mixed, integrating quantitative and qualitative research within a specific context. In the first phase, a survey questionnaire was administered to a convenience sample of 274 respondents, permanent residents of the area near Pavlopetri during September 2022. The participants were verbally informed about the reason for their participation in the study research, about their full rights and signed a consent form. The structured questionnaire included 15 questions and was divided into three sectors. Six close-ended questions were designed to explore participants' demographic characteristics including gender, age, marital status, education level, professional activity, and income level. The scales used are based mainly on Nejati et al. [11], and explore the social (10 items), economic (6 items), and environmental effects (14 items). A five-point Likert Scale is used ranging from strongly agree to strongly disagree. The final questionnaire developed was translated into Greek since residents understand Greek better.

In the second phase, qualitative interviews were conducted with a purposive sample of 21 local stakeholders (ex-Mayor of Viglafia, Police officers, hotel owners, restaurant owners, retail owner, and employees from Neapoli's municipality) in September 2022. The interview questionnaire is divided into four sections. The first section includes four open-ended questions to explore issues related to future tourism in Pavlopetri. The second section includes four open-ended questions to explore the

strengths, weaknesses, opportunities, and threats of Viglafia for sustainable tourism development. The third section includes three open-ended questions to investigate the current state of tourism in the Viglafia area, while the fourth and last section includes five questions. The first four are open-ended while the fifth is a closed-ended question to investigate residents' attitudes towards the development of a new tourism activity in their area.

Data analysis involved descriptive statistics for the survey data and thematic content analysis of interview data.

4 Results and Discussion

Results show that most survey respondents are between the ages of 40–49 (36.86%), women (56.2%) are more compared to men (43.7%), half of the sample is married (50,73%), and almost half (49.64%) hold a high school diploma, while only 6.20%, held a master's degree. Lastly, the main occupations of respondents include agricultural work (23.72%), owning a business (20.80%), and fishing (11.68%).

Most participants are positive towards the creation of a diving park in Pavlopetri (90.88%). Also, a high percentage (59.85% strongly agree and 22.26% agree) agrees that tourism has considerable negative effects for the local community while a minority disagrees (13.5%) or strongly disagrees (1.82%) and believes that the effects of tourism are small and tolerable for the local community. Levels of agreement do not show a statistically significant difference according to age group ($p = 0.493$), level of education ($p = 0.3$) and years of residence ($p = 0.594$).

Table 1 lists the perceived effects of the creation of a diving park in Pavlopetri. The effects are categorized into environmental, socio-demographic, and economic. Results indicate that the most important environmental effects are traffic congestion (77.37%), unsustainable waste production (70.43%), and reduction of fauna (75.18%). Also, the most important socio-demographic impacts are increase in traffic accidents (87.95%) and overcrowding by tourists in the coastal zone (82.11%) and the most important economic effect is an increase in municipal fees for tourism utilization (75.91%).

The content analysis of interview data revealed six distinct categories of effects (1) increase in traffic accidents, (2) increase in litter, (3) antiquarianism, (4) lack of drinkable water, (5) destruction of marine antiquities, and (6) tourist overcrowding in the area.

Furthermore, in exploring the strengths, weaknesses, opportunities, and threats for sustainable tourism development in Pavlopetri, the interviews provide a lot of insights. Business owners stress the increase in financial income from their businesses, such as an increase in hotel reservations, while the rest of participants point out the general increase in the income of the local community and the Region of Laconia. Furthermore, most participants refer to the lack of a good quality road network, lack of five-star hotels, lack of tourist facilities, and lack of training and knowledge of staff working in the tourism industry.

Table 1 Perceived effects

Environmental effects	Yes %	No %
Uncontrolled development (buildings, ports, etc.)	28.46%	71.54%
Traffic jam	77.37%	22.62%
Unsustainable waste production	70.43%	29.62%
Unsustainable use of energy resources	26.64%	73.35%
Pollution of the marine environment	15.69%	84.30%
Noise pollution	1.45%	98.54%
Visual degradation of the landscape	6.20%	93.79%
Reduction of the area's flora	9.12%	90.87%
Reduction of fauna	75.18%	24.82%
Destruction of cultural heritage	20.07%	79.92%
Erosion (submarine soil, beaches)	22.99%	77.01%
Biodiversity	28.10%	71.90%
Destruction of marine antiquities Pavlopetri	6.56%	93.44%
Socio-demographic effects	Yes %	No %
Abandoning traditional activities	22.62%	77.38%
Overcrowding of tourists and removal of residents	25.91%	74.08%
Conflicts between tourists and local society	18.97%	81.03%
Overcrowding of tourists and irritation of residents	13.86%	86.13%
Increase of crimes	28.10%	71.90%
Increase in accidents/traffic accidents	87.95%	12.05%
Change in the lifestyle of the local community	30.29%	29.71%
Overcrowding by tourists in the coastal zone	82.11%	17.80%
Increase in drug use	20.07%	79.93%
Adaptation of residents to the lifestyle of tourists	12.04%	87.96%
Economic effects	Yes %	No %
High dependence on tourism	13.50%	86.50%
Rise of black market	10.58%	89.42%
Work seasonality and income decline	1.09%	89.91%
Increased cost of living for the local community	20.07%	79.93%
Increase in municipal fees for utilization	75.91%	24.09%
Increasing dependence on imported products	28.46%	71.54%

The main income of the region comes from agricultural work as the Region of Laconia is famous for its olive oil and oranges while there are opportunities for new types of alternative tourism such as ecotourism and gastronomic tourism. Also, other opportunities emerge from the increased advertising and promotion of the area as well as from the financial subsidies provided by Local Region and the Government.

On the other hand, a major threat is the visibility of Elafonisos Island. The Municipality of Elafonisos does not wish to develop the area of Pavlopetri as there is a risk that the island will lose tourism.

Finally, participants stressed the relative lack of legislation and operation of diving parks as it is a relatively new tourist product for Greece. Therefore, there is a need to develop new policy measures that will deal with the increase in tourism and provide better security in Pavlopetri to prevent the robbing of antiquities and illegal diving and ensure the sustainability of cultural heritage and the environment.

Similar results to the literature review stated that residents who receive greater benefits from tourism have a more positive perception than residents who receive less or no benefits from tourism [8]. Furthermore, similar results to the literature review on tourism negative effects the study showcased residents include overcrowding, lack of access to a tourist area and increase of accidents. In fact, these effects threaten residents' quality of life and affect the level of tourism tolerance and sustainability of tourism in a destination [10].

5 Conclusions

This study highlights the positive attitude of residents and local agencies towards the creation of a diving theme park in Pavlopetri. The diving park will promote the history and cultural heritage of the unexplored submerged city. The utilization of the coastal environment in terms of sustainability, the creation of high added value as well as the promotion of the cultural and touristic product are some of the expected benefits.

The creation of the diving park represents innovation while at the same time, through the identification of risks, has the potential to reduce the negative effects of diving tourism.

Residents and local authorities facilitate and at the same time hinder sustainable tourism development. The low educational level of the residents of Laconia Region is an inhibiting factor in the adoption and promotion of new forms of alternative tourism and in the general tourism development of the region. Therefore, it is proposed to train both employees involved in the tourism sector and residents with an aim to prevent future negative tourism effects and overcrowding.

6 Implications

Alternative forms of tourism and specifically diving tourism at the "City Beneath the Waves" is in the early stages of development but has a potential for further growth. This study attempts to identify the attitudes and perceptions of residents in the Laconia region regarding the effects of scuba diving tourism in the area. Practically, the results of the study are significant for the development of scuba diving

tourism in a small urban area such as the Prefecture of Laconia. Environmental, socio-demographic, and economic effects are identified so that the local authorities can mitigate these effects and reduce the dissatisfaction of the local community as is the case in other alternative forms of tourism [12, 13].

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Integrating Artificial Intelligence with Gamification Techniques to Enhance Student Motivation and Engagement



Emmanouil Choustoulakis, Pinelopi Athanasopoulou, Yannis Pollalis, and Dimitris Nikoloudakis

Abstract This study investigated the integration of Artificial Intelligence (AI) with gamification techniques to enhance student motivation, engagement, and academic performance in management education. A non-probability sample of 200 undergraduate students from Greece was randomly assigned to one of two groups: an experimental group that experienced AI-driven gamification, or a control group that followed traditional instructional methods. Quantitative analysis revealed that students in the experimental group demonstrated a statistically significant increase in active participation and a statistically significant improvement in course completion rates compared to the control group. This was complemented by significant enhancements in academic performance, with final grades showing a notable difference. The AI-driven gamified environment, which included personalized challenges and real-time feedback, effectively boosted engagement and academic outcomes. Qualitative feedback from students indicated that the AI system's ability to adapt to individual learning needs was particularly valued. Students appreciated the personalized support, which helped them stay on track and better understand complex concepts. The study highlights the potential of combining AI with gamification to create a more interactive and tailored educational experience, addressing diverse learning needs and preferences. These findings highlight the transformative impact of AI-driven gamification on management education and emphasize the critical role of courses in integrating these innovative methods. They also suggest avenues for future research to further optimize these approaches, enhancing both educational practices and student outcomes in management training.

Keywords Artificial Intelligence · Gamification · Management education

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1 Introduction

The integration of Artificial Intelligence (AI) and gamification in education represents a significant advancement in tackling student motivation and engagement challenges [1]. Disengagement and passive learning have long plagued educational systems, prompting the exploration of innovative strategies like gamification, which applies game design elements such as points and leaderboards to non-game contexts [2, 3]. Gamification has shown promise in increasing student participation and fostering a sense of achievement through competition and collaboration, particularly in fields like management education [4, 6].

Research suggests that gamification can transform traditional learning by encouraging active engagement and improving learning outcomes [5, 7]. However, the addition of AI further enhances these benefits by personalizing learning experiences based on individual student needs [8]. AI-driven gamification adapts challenges to a student's performance level, ensuring that content remains engaging and appropriately challenging, thus promoting deeper understanding and sustained interest [9, 11].

Moreover, AI enables educators to monitor student behavior and engagement patterns in real time, allowing for timely interventions to prevent disengagement [10]. This targeted approach is especially valuable in higher education, where student motivation often fluctuates, affecting retention and success rates [7, 8]. AI-driven gamification also supports collaborative learning by fostering teamwork and social interaction among students, contributing to a more dynamic learning environment [6]. Thus, AI-enhanced gamification offers a transformative opportunity to address disengagement by creating personalized, engaging, and adaptive educational experiences. This study examines the synergies between AI and gamification, highlighting their potential to revolutionize student motivation and engagement, particularly in management education.

2 Literature Review

2.1 Gamification in Education

Gamification, which incorporates game design elements like points and badges into education, has been shown to enhance student motivation, satisfaction, and performance when aligned with learning objectives [12–14]. However, its effectiveness varies depending on the context, such as audience, subject matter, and game mechanics, necessitating careful design [15]. Cultural and social factors also influence student responses to gamification, with poor implementation potentially leading to disengagement [15, 16].

The integration of AI into gamification addresses the limitations of static models by creating adaptive learning environments. AI-driven systems analyze real-time data

to adjust challenges and feedback, sustaining engagement and enhancing learning outcomes [9]. While some critics argue that gamification promotes superficial engagement focused on rewards [17], AI's personalization mitigates this by fostering a balance between competition, collaboration, and meaningful learning. AI-enhanced gamification thus offers a more tailored and effective educational approach.

2.2 AI in Personalized Learning

AI has revolutionized personalized learning by using algorithms and data analytics to adapt content, pacing, and feedback to individual student needs in real time. This adaptability enhances engagement and achievement, particularly for students who struggle with traditional methods [18], offering a more tailored educational experience. Studies confirm that AI-powered platforms improve learning outcomes through real-time feedback, which fosters student motivation and deeper engagement [19].

When combined with gamification elements like points and badges, AI-driven learning amplifies these benefits by creating more interactive, engaging environments [20]. This synergy between AI and gamification enhances motivation and supports adaptive learning, offering a more comprehensive educational experience.

However, challenges such as data privacy, algorithmic bias, and infrastructure limitations remain. Further research is needed to understand how AI-driven personalization can effectively align with gamification strategies, addressing these challenges to maximize student outcomes [20].

2.3 AI-Driven Gamification

AI enhances gamification by creating personalized learning experiences based on individual student data, tailoring content and pacing to improve engagement, particularly in challenging fields like management education [21]. Gamification, which uses game design elements like points and badges, has been shown to improve motivation and achievement, especially in language learning [22]. However, more evidence is needed on its impact on students' emotions and learning outcomes, especially when combined with AI [20]. Adaptive gamification strategies, which adjust to individual learner characteristics, have shown promise in enhancing engagement. A systematic review [23] emphasizes the need for understanding how specific gamification elements affect motivation and performance, while [24] highlights AI's potential to provide personalized feedback and real-time adjustments, making learning experiences more supportive and aligned with student interests and abilities.

2.4 Research Questions

Based on the identified gaps in the literature, this study is driven by the following research questions:

RQ1: How does the integration of AI with gamification impact student motivation and engagement in management education?
RQ2: What are the effects of AI-driven gamification on academic performance and learning outcomes in management courses?
RQ3: How does AI personalization within gamified learning environments cater to diverse student learning needs and preferences?

3 Methodology

3.1 Research Design

This research employed a quasi-experimental design involving undergraduate management students. The study divided participants into a control group, which followed a traditional learning path, and an experimental group, which engaged with an AI-driven gamified system. Data collection included surveys, academic performance records, and engagement metrics, with both quantitative and qualitative analyses conducted to assess the impact of the intervention.

3.2 Participants

The demographic characteristics of the sample were analyzed to provide context for the study's findings (see Table 1). The sample, chosen through non-probability sampling, comprised 200 undergraduate students from two Greek academic institutions: the Department of Economics at the University of Piraeus and the Department of Sports Organization and Management at the University of Peloponnese. The gender distribution was 60% male (120 students) and 40% female (80 students). Regarding their academic background in management concepts, 65% of the participants had an intermediate level of knowledge, 30% possessed an advanced level of knowledge, and 5% had a low level of knowledge. In terms of AI background, 65% of the students reported having no background in AI, 25% had basic knowledge, and 10% had advanced knowledge. This distribution highlights a predominantly male sample with a strong majority having intermediate management knowledge and a significant proportion lacking prior AI exposure.

Table 1 Sample demographic characteristics

		Frequency	Percentage
Sample size		200	
Gender			
	Male	120	60%
	Female	80	40%
Academic background			
	Low level of knowledge	10	5%
	Intermediate level of knowledge	130	65%
	Advanced level of knowledge	60	30%
AI background			
	No background	130	65%
	Basic Knowledge	50	25%
	Advanced Knowledge	20	10%

3.3 The AI-Driven Gamification Framework

The AI-driven gamification framework utilized in this study aimed to enhance student engagement and motivation by personalizing the learning experience through adaptive mechanisms. This framework incorporated key elements, including adaptive learning paths, personalized challenges, real-time feedback, and dynamic progression systems, all powered by AI algorithms that analyzed student performance and interactions. Central to the framework was an AI-powered learning engine that monitored student behavior, such as interaction patterns and problem-solving strategies, using machine learning algorithms to identify individual learning preferences and areas for improvement.

The adaptive learning paths tailored content progression based on student proficiency, offering more complex challenges for advanced learners and simpler tasks for those needing support. Personalized challenges, informed by AI analysis, dynamically adjusted tasks to match each student's abilities, thereby sustaining motivation and promoting gradual skill development. Real-time feedback, generated through AI-driven analysis, provided instant and individualized responses to completed tasks, reinforcing correct actions and offering suggestions for improvement. This immediate feedback loop was essential for maintaining active engagement.

Additionally, the dynamic progression system, featuring gamified rewards such as badges and points, was tied to AI-generated assessments, pacing the distribution of rewards to align with each student's progress. This system fostered a sense of achievement and competition, both of which are critical for sustaining long-term engagement in educational contexts. Through these AI-enhanced components, the framework effectively tailored the learning experience to individual needs, promoting both engagement and educational outcomes.

3.4 Data Collection and Analysis Methods

Data collection methods included: (a) Pre- and Post-Intervention Rubrics to measure changes in motivation and engagement, (b) Academic Performance Records to assess learning outcomes, and (c) Engagement Metrics, such as login frequency and time spent on learning activities. Quantitative data from rubrics and student academic records were analyzed using statistical methods such as t-tests and ANOVA to compare the experimental and control groups. Qualitative data from student feedback were analyzed thematically to identify key factors contributing to the effectiveness of the AI-driven gamified environment.

4 Results

4.1 Impact of AI with Gamification on Student Motivation and Engagement

The integration of AI with gamification significantly enhanced student motivation and engagement in management education. The quantitative analysis (see Table 2) demonstrated a 25% increase in active participation among students in the experimental group compared to the control group. This increase in engagement can be attributed to the AI-driven gamified elements that incorporated interactive game mechanics, such as points, badges, and leaderboards, which are known to foster a more stimulating learning environment. The adaptive nature of the AI system, which adjusted the difficulty of challenges in real time based on student performance, further contributed to sustained motivation by ensuring that tasks remained appropriately challenging and relevant to individual learners. This dynamic adjustment helped maintain high levels of interest and commitment throughout the course, as evidenced by the higher engagement metrics observed in the experimental group.

Table 2 Quantitative data analysis—experimental vs. control groups

Measure	Experimental group		Control group		t-value	p-value
	M	SD	M	SD		
Motivation level	4.3	0.8	3.5	0.9	4.50	<0.01
Engagement level	4.2	0.7	3.6	0.8	4.30	<0.01
Active participation	25.0	5.5	20.0	6	3.60	<0.01
Course completion rate	88%	6%	78%	7%	4.20	<0.01
Final grades	85.0	7	75.0	8	4.50	<0.01

4.2 *Effects of AI-Driven Gamification on Academic Performance and Learning Outcomes*

AI-driven gamification also had a notable impact on academic performance and learning outcomes. The statistical analysis (see Table 2) revealed a 22% improvement in course completion rates in the experimental group, alongside enhanced final grades compared to the control group. This improvement in academic performance was statistically significant, with a mean score difference that reached significance ($p < 0.05$). The integration of gamified elements, supported by AI, facilitated a more interactive and engaging learning experience that not only motivated students but also contributed to better comprehension and retention of course material. The immediate feedback and personalized challenges offered by the AI system likely played a crucial role in reinforcing learning and addressing areas of difficulty, thereby leading to improved academic outcomes.

4.3 *AI Personalization and Its Impact on Diverse Learning Needs and Preferences*

The AI system's personalization features within the gamified learning environment were particularly effective in catering to diverse student learning needs and preferences. Qualitative feedback from students (see Table 3) highlighted that the AI's ability to tailor challenges and feedback based on individual performance was highly valued. Many students reported that the personalized nature of the gamified experience helped them stay on track and better understand complex concepts. The adaptive gamification system provided customized support that aligned with each student's unique learning style and pace, thereby addressing a broad spectrum of learning needs. This personalization not only improved student engagement but also facilitated more effective learning by ensuring that educational content was relevant and appropriately challenging for each individual.

Table 3 Thematic analysis of qualitative feedback

Theme	Frequency	Percentage
Personalized challenges	150	75%
Real-time feedback	140	70%
Adaptation to learning needs	130	65%
Engagement with course material	120	60%
Improved understanding of concepts	110	55%
Concerns about competition	40	20%

5 Conclusion

The integration of AI with gamification in management education shows significant promise for enhancing student motivation and engagement by personalizing learning and aligning with self-determination theory. While this approach fosters improved academic performance, concerns regarding scalability, over-reliance on AI, and the necessity for high-quality student data require further investigation. Educators need professional development to implement these technologies effectively, balancing motivational elements with educational rigor. Future research should optimize AI-driven gamification for diverse learners and explore the influence of student demographics and courses on learning outcomes, while also assessing its broader potential across various educational settings.

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Leadership in Education: School Leaders and Teachers' Professional Development



Stamatios Lourmpas, Miltiadis Chalikias, and Nicos Sykianakis

Abstract This paper examines how principals in Greek schools' foster teachers' professional development through strategic incentives and motivational support, highlighting the critical influence of leadership on educators' growth and engagement in professional training programs. The main purpose is to explore the role of principals in encouraging teachers' professional development. The aim is to obtain a valid and reliable case and to draw a clear conclusion on how principals influence teachers in the Greek vocational schools' environment. The literature review has taken place in Greece since there has been a significant shift to professional development, and more educators tend to participate in innovative programs. According to the results of the research, principals are the main type of leader who influence teachers towards their professional development. The main motivation of managers is based on the use of incentives related to the promotion for social participation and work satisfaction, but also of those incentives that are related to finances, especially when these lead to professional development. A key element in engaging teachers in programs that will enhance their professional development is the motivation they receive from the school's management or principal. Nevertheless, the more time and effort that will be acquired for their training, the more effective and intensive the influence they receive must be.

Keywords Professional development · School leaders · Motivation

1 Introduction

Policies need to keep pace with new ideas about what, when, and how teachers learn and need to focus on, so they can develop their abilities for, responsible, student teaching [1]. Leaders and principals in education can influence the level of school improvement and the level of their teachers' professional development [2]. It is overall accepted that school leaders play a key role in teachers' professional development [3].

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Although the literature offers examples of working conditions that school leaders can create in this regard, it often remains unclear what processes, behind these conditions, explain their impact on teachers' professional development. As Lourmpas et al. point out [4], a school leader plays two related roles that recreate an organization's ability and its staff to learn. To move a group of people to a growth mode, the leader must serve as a teacher. In the case of Greece, it seems that the relationship between teachers and their principals can have good prospects for development. The main reason is that the principal comes from the same or similar group of colleagues that are going to lead to development. This aspect drives us to the conclusion that via teachers' development, the whole school unit evolves. The Hellenic (Greek) education policy dictates the cooperation of teachers with school principals and leaders in education. Each school unit has a principal, who is part of a larger administrative unit and is responsible for the management and progress of the whole school [5]. The aim of this work is to highlight the importance of the role that leading principals have in motivating teachers towards their professional development. The research analyzes the role of the principal as a leader in the Greek educational management framework.

2 Methodology

The role of the principal as a leader in the Greek management framework in education is analyzed in detail. In the broader outline of the research, the theoretical management styles in the school environment are studied and the methods of strengthening the fields of teacher education through theories and approximate models of teacher attitude change are analyzed as well. However, a prerequisite was also the study of adult learning methods and motivation theories that apply to teachers. The risen questions concerned the level of influence that teachers received from their principals, for their professional development. In this paper, a comprehensive literature review was conducted using well-established databases, including Google Scholar, EBSCO, Scopus, ScienceDirect, SpringerLink, Taylor and Francis, and others, to ensure a thorough examination of relevant research and scholarly articles. This robust methodological approach provides a solid foundation for the insights and conclusions presented in the study.

3 Literature Review

The purpose of the study on this topic is to highlight the importance of the role that leading principals have in motivating teachers towards their professional development. The research analyzes the role of the principal as a leader in the Greek educational management framework. In the broader outline of the research the theoretical management styles in the school environment are studied [6]. In addition, the research focuses its analysis on the methods of strengthening the fields of teacher education

through theories and approximate models of teacher attitude change. However, a prerequisite was also the study of adult learning methods and motivation theories that apply to teachers.

In this aspect, we could say that a key factor that will support leaders in education to motivate teachers is the involvement that they may have in educational programs [4]. They can not only help and provide teachers with modern aspects of knowledge and professionalism in the marketplace, but also promote a form of interdisciplinary collaboration between teachers and learners. Most invest in teachers' professional development. However, a key element for involvement in programs that will benefit their professional development is the motivation they receive from management and up to a level, commensurate with it. Therefore, it is particularly important to investigate to what extent and how the leader influences the active participation of teachers in their professional development.

Specifically, there are common concepts identified and related to the professional development of teachers and the principals' role for staff development, self-improvement, training, status, skills, knowledge, change of attitude, and educational change in general. According to Fullan [7], principals should encourage and provide a vision of change for teachers to participate in innovative projects so that they can develop and improve their attitude towards their teaching. Therefore, if teachers feel supported by their leaders, the outcome of their professional development will be more impactful and enhance while they may become an example to other colleagues. According to the bibliography research, school principals influence teachers' attitude towards professional development, within their schools that are considered as learning organizations.

In relation to the structure of the research, the first path focuses on the conceptual framing of the terms of Adult and Adulthood, the contemporary theoretical framework of Lifelong Learning and Adult Education as well as the particular characteristics of teachers' learning. Regarding the second path of research, we give significant emphasis on the purpose of training and its forms in relation to teachers. This path also discusses the importance of training in the personal and professional development of teachers but also, the importance of the school leader as a source of motivation for the active and continuous participation of the teaching staff of his or her unit in training activities. Regarding the third research path, we attempt to record the theoretical framework of motivation through the analysis of the main theories related to it for training. This section also provides a literature review examining pre-existing research in relation to the role of the school leader in the professional development of teaching staff.

3.1 Basic Concepts, Theoretical Objectives

Some of the common concepts identified and related to the professional development of teachers and the role of the leader concern staff development, self-improvement, training, status, skills, knowledge, change of attitude, educational change, leadership,

etc. According to Yongjian and Dervin [8], the definition of professional development consists of all activities that develop skills, specialization, and other characteristics in a teacher. With Bredeson and Johansson [9] there are four areas of influence where leaders can influence teachers' professional development. The first concerns their roles as learning managers where they highlight and link teachers' professional development with the ultimate goal of improving them to contribute in their turn to students. The second area concerns continuing learning models for principals themselves to act as role models in their implementation as they promote and motivate teachers. The third refers to the authority of the director as an expert in areas of learning and education. The experience, knowledge, and skills of the principal are what will give teachers confidence to motivate them to improve their academic background and their learning environment [10]. The fourth refers to the encouragement of principals to teachers to get involved in programs by monitoring the opportunities that arise but also by securing the necessary resources for them. Thus, we could assume the leading principal influences that teachers' attitude. In this case, we clarify what are the means that school leaders use in order to encourage or even provide teachers with motivation for their professional development. Looking back, one of the first studies in Greece, concerning the role of the principal in cultivating a positive school climate was the Tsolakidis [11] survey, which aimed investigating teachers' views on school climate and school leadership. Regarding the issue of professional development of secondary school teachers, Sofou and Dieronitou have conducted a quantitative survey on a random sample of 100 secondary school teachers in the Prefecture of Pella. Based on the results of the survey, the teachers that participated in the research underlined the importance of the school unit's human resource cooperation for the school's smooth operation. Therefore, the research concluded that teachers have to work in groups and cooperate in order to become familiar with in issues that may concern the school unit. On the other hand, while they did not consider that they should participate with specific responsibilities in the operation or management of the school unit, they stressed out that this concerns the school leadership [12].

3.2 School Leadership Models and the Concept of Impetus and Motivation

Given the significant impact of school leadership on teachers' participation in training activities and on their professional development, different models of school leadership have been developed in recent years depending on the degree of influence of the school principal on the personal and professional development of the unit's teaching staff [13]. As Brinia mentions, school leadership models are divided into authoritarian, democratic, empowering, leading, supportive, coaching, and coordinating [14].

In addition to the above leadership models, one should add the supportive leadership model, according to which the school leader focuses on utilizing dialogue to strengthen interpersonal relationships with the teachers of his unit [4]. Although the school leadership models mentioned above are common models that have a significant impact on teachers' professional development, Pashiardis [15] argues that the types of transformational, distributed, transactional, and ethical leadership have a more positive effect on shaping a more effective school culture that can benefit teachers on a personal and professional level.

In contemporary research, the concept of motivation is linked to the use of strategies by the educational organization and the state to motivate teachers to seek self-improvement, enrich their knowledge, and link their personal development with the progress and productivity of the unit [16]. One may observe that all leadership models aim in a similar or different way at achieving the motivation of the unit's human resources. Regarding the importance of motivation, Renniger [17] defines it as the motivating power that activates one's interest in achieving specific goals. Moreover, according to Boumi [18], there is a tendency to confuse motivations with impetus, which demonstrates the inextricable relationship between the two concepts: in fact, motivation arises from the moment when the necessary impetus is given to motivate the individual and strive to achieve a goal.

According to other researchers, motivation is an intrinsic element of the individual, which is activated through the appropriate motivational mechanisms for the person to act in relation to a goal [19]. In addition, the absence or existence of impetus through the development of motivation largely characterizes the effectiveness of the school unit itself in ensuring the immediate mobilization of teachers for the implementation of the necessary goals and their satisfaction on an ethical and professional level for the realization of these goals [20, 21]. Given the importance of motivation for the successful operation of the school unit by the school leader, the existing research framework has shaped different theories on how to approach the perception of motivation [22]. As Slabbink [23] argues, the motivations of adults vary at the individual level but undeniably stem from their primary educational needs that are divided into conscious and explicit, conscious and non-explicit and implicit. In particular, the adult individual relates conscious explicit needs to the targeted development of skills in order to acquire knowledge about a specific field. Based on the Educational Participation Scale, developed by Boshier and Collins, learners' motivation in Lifelong Learning is manifested in relation to seven variables: "a) love of learning b) professional development c) socialization d) improvement of family relationships e) improvement of communication ability f) educational preparation and g) pursuit of social stimulations" [24]. Moreover, according to Boyadjieva [25], in addition to the aforementioned factors, the educational background of the adult individual plays an important role in further mobilizing him to engage in training programs, because he adapts more easily to the learning process.

4 Results and Conclusions

The ultimate goal was to identify the teachers' tendencies and motivations to participate in innovative programs in education and relate them to their teaching techniques. Especially, if their principals or other leaders in education motivate them to do so. In addition, to identify the main source of influence that they receive in order to engage in such programs that amplifies their professional development. Thus, the answer to the risen questions referring to the influence of leading principals to motivate their staff and how it relates to teachers has a more thorough and accurate analysis. In examining the multifaceted nature of teacher development, it is essential to consider various concepts related to teachers' motivations, training programs, and their impacts on educational outcomes. From the literature analysis, we have observed a correlation between teachers' desire for professional development and the significant role of the schools' principal. Especially in terms of the motivation, they employ impetus to encourage teachers towards their development. In addition, the type of leader that influences teacher motivation is more relevant to the case of the teacher who is dialectical and supportive in matters of development and integration into pedagogical practice [26]. Even more, when decision-making on issues concerning teacher development, is made with the participation of all teachers and the school principal.

Nevertheless, in order to understand the importance of continuous training and participation of teachers in training programs, one should refer to the field of Adult Education as well as to the particularities that characterize it in relation to the target group to which it is addressed, adults. Moreover, the conceptual approach of Lifelong Learning is inextricably linked to Adult Education, as an appropriate ideological framework for the implementation of lifelong training beyond compulsory education [27]. The literature analysis shows that the adult educator promotes the development of critical reflection and the cooperation of learners for the development of social and emotional skills. The behavior change that is essentially learning, but also the change of attitude of the adult goes hand in hand with transformative learning through the utilization of their personal experiences. This causes not only an influx of knowledge and skills but also, a readjustment of beliefs and positions.

The above theories were the beginning of our engagement with the concept of motivation and the factors that promote it in the school environment. One of the most important learning organizations, the school, should not refrain from motivating its staff. Besides, in a constantly and rapidly evolving world influenced by so many stimulations, it is necessary to make the best use of incentives that will motivate teachers to engage in such programs that will equip them with the needed skills to cope with modern requirements and the motivation of trainees. The literature analysis shows that the adult educator promotes the development of critical reflection and the cooperation of learners for the development of social and emotional skills. The behavior change that is essentially learning, but also the change of attitude of the adult goes hand in hand with transformative learning through the utilization of his or her personal experiences. This causes not only an influx of knowledge

and skills but also, above all, a readjustment of beliefs and positions. Good school administration, via school principals, can play a key role in teachers' professional satisfaction and development [27]. Specifically, through a positive school climate, principals may ensure professional and mental empowerment for school members and enhance the provision of quality education through the utilization of strategies and programs that evolve the school's vision [28]. Taking into account the above theoretical framework, one should point out that in the end impetus is not treated in the same way by the modern research framework. On the other hand, motivation is approached according to the self-perception of the adult person themselves in Lifelong Learning [27]. Lifelong learning becomes an end in itself and an obligation of every adult, especially when it comes to education. There is a need for continuous improvement and upgrading of teachers' knowledge, skills and attitudes becomes necessary, especially when it comes to teachers serving technological disciplines such as electrical engineering. In addition, this helps them in their development as a professional and in their development in the professional field of education, either academically or administratively through their participation in training programs promoted by the leadership of education and even more by the principal. Therefore, the role of the school leader in motivating these teachers to participate in training programs that promote their professional development and in subjects related to the rapid development of their cognitive and educational content is crucial and needs to be strengthened in the direction of professional development.

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Predictors of Consumer Knowledge About Brand Origin on the Food Market

Paweł Bryła

Abstract This paper aims to identify selected characteristics of consumers which predict their knowledge about the origin of food brands. An online survey was conducted in a nationwide, representative sample of 1000 respondents aged 15 and more. Three measures of brand origin were used: (1) the distinction between domestic and foreign brands based on the location of production, (2) the distinction between domestic and foreign brands based on company ownership, and (3) the ability to provide the correct COO of the brand owner. Consumers tend to perceive food brands as domestic more often than it is in reality. If consumers do indicate a foreign origin of the brand, it is often a wrong foreign COO. In at least two regression models, consumer knowledge about brand origin was positively associated with higher education, low processing as a food-related lifestyle (FRL) item, being a man, age, and universalism Schwartz value. It was negatively affected by the importance attached to organic certificate as a food attribute. However, low values of determination coefficients suggest that it is hard to predict consumer knowledge in this area even if we have a wide range of consumer characteristics. Implications for marketing communications are discussed.

Keywords Brand nationality · Country-of-origin effect · Consumer knowledge

1 Introduction

Scholarly research regarding origins of products and brands is deep-rooted within international marketing [1]. The country-of-origin (COO) effect and consumer ethnocentrism play an important role on the food market, as manufacturers and retailers strive to differentiate their products on the highly saturated market. Their effectiveness depends on consumer perceptions of the brand origin. Consumers can more readily identify the cultural origin of brands over their country-of-origin [2].

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Consumers have limited knowledge of where the products are made [3]. Less experienced consumers tend to rely more on origin labels, while the more experienced focus predominantly on brands [4]. The intention to buy the product increases significantly with the presence of the 'made in the domestic country' label. This positive effect is greater when: the product has rather low brand equity, consumer ethnocentrism is high, and/or consumers are strongly attached to their national identity [5]. There is strong evidence that product country image of the consumer's perceived brand origin strongly affects brand attitudes, and this happens regardless of the perceptions' objective accuracy [6]. Melewar and Skinner [7] stress the importance of the meanings that can be conveyed through brand names, including those that indicate authenticity of the brand origin. Stereotypical country judgments may substitute or complement brand globalness and localness perceptions [8]. Revealing the actual country-of-origin of the brands does not impact consumers' purchase intention for foreign brands that use local brand names [9], but, as compared to correct brand identification, brand origin misperception (either adverse or favorable), or non-identification exerts a more negative impact on brand equity [10]. The combination of brand origin and country-of-manufacture determines how institutional quality is communicated and further affects consumers' legitimacy perceptions, preferences, and willingness to pay a price premium [11].

This paper aims to identify selected characteristics of consumers which predict their knowledge about the origin of food brands. Brand origin is conceptualized in three ways: (1) related to domestic or foreign operations (country-of-manufacture), (2) related to domestic or foreign ownership (based on the origin of the majority stakeholder), and (3) related to the exact COO of the brand owner.

2 Method

2.1 Sample Characteristics

An online survey was conducted in a nationwide, representative sample of 1000 respondents aged 15 and more. Representativeness refers to the similarity of the sample and the general population in terms of selected characteristics. The representativeness criteria included: sex, the age structure in 10-year intervals, education level, the place of living (rural and urban areas), and region. A comprehensive description of the sample characteristics is available in [12] (pp. 42–55).

2.2 Variables

Validated scales were applied to measure value orientations [13], regulatory focus [14], food attributes [15] (p. 299), food choice motives [16, 17], food-related lifestyle

(FRL) [18–20], consumer ethnocentrism [21, 22], pride of being Polish, identification with various places, satisfaction with life, self-efficacy, and trust [23].

The perceived location and ownership were measured for 16 food brands (Bakoma, Biedronka, Jacobs, Krakus, Lipton, Lubella, Milka, Mlekovita, Mokate, Pudliszki, Wawel, Wedel, Winiary, Żabka, Żubrówka, Żywiec), and indices were created to reflect the shares of correct identifications of the brand origin in the following three configurations. The selection of brands was based on marketing experts' opinions to include relatively well-known food brands on the Polish market. Three measures of brand origin were used: (1) the distinction between domestic and foreign brands based on the location of production, (2) the distinction between domestic and foreign brands based on company ownership, and (3) the ability to provide the correct COO of the brand owner.

2.3 Statistical Analyses

Multiple regression models were used to test the simultaneous impact of a wide range of variables, and stepwise retrograde regressions were used to obtain more parsimonious models containing only statistically significant predictors. The statistical analyses were conducted in TIBCO Statistica Version 13.3.

3 Results

3.1 The Level of Consumer Knowledge About Brand Origin

In most cases, consumers perceive the examined brands not only as located in their home country (Poland), but also owned by Polish capital [12] (p. 78). In the few cases that respondents indicate a foreign ownership, it is often wrong. They tend to mention that the brand owner is German (it was the most frequently reported foreign COO for half of the brands) [12] (p. 79), even though in reality none of the examined brands were owned by a German company. The respondents were very good at distinguishing the domestic or foreign operations of the brands under study (92% of correct answers) [12] (p. 81), perhaps because brands operating in Poland prevailed in the sample. Only 43% of answers were correct regarding the distinction between domestic and foreign brand ownership, and less than one quarter of indications (on average) were correct concerning the exact COO.

The level of consumer knowledge about brand origin varies according to the measurement method. It is the best for the distinction between domestic and foreign production (on average, 14.7 out of 16 indications were correct), followed by the distinction between domestic and foreign origin of the brand owner (only 6.9 out of

the 16 indications were correct on average), and the ability to provide the exact COO of the brand owner (only 3.8 correct indications for the 16 examined brands).

3.2 Domestic or Foreign Location of Production

The predictors of each investigated type of consumer knowledge also differed. In a retrograde stepwise regression (Table 1), correct identification of Polish or foreign location of production was positively associated with consumer age ($\beta = 0.092$, $p = 0.003$), higher education ($\beta = 0.076$, $p = 0.015$), attaching importance to food brand ($\beta = 0.091$, $p = 0.006$), sensory appeal as a food choice motive ($\beta = 0.091$, $p = 0.012$), price as a food choice motive ($\beta = 0.080$, $p = 0.018$), importance of product information as a FRL item ($\beta = 0.159$, $p = 0.000$), lack of food processing as a FRL item ($\beta = 0.094$, $p = 0.011$), and feeling connected with Poland ($\beta = 0.131$, $p = 0.002$).

It was negatively related to attaching importance to organic certificates ($\beta = -0.116$, $p = 0.001$), mood as a food choice motive ($\beta = -0.076$, $p = 0.024$), self-rated diet healthiness ($\beta = -0.089$, $p = 0.006$), and pride of being Polish ($\beta = -0.099$, $p = 0.017$). This regression model explained 13.4% of the variation in the dependent variable (adjusted $R^2 = 0.134$).

Table 1 Predictors of correct identification of domestic or foreign location (a stepwise retrograde regression)

Predictors	β	SE(β)	b	SE(b)	t(987)	p
Intercept	x	x	12.495	0.372	33.592	0.000
Age	0.092	0.031	0.008	0.003	2.964	0.003
Higher education	0.076	0.031	0.241	0.099	2.438	0.015
Brand	0.091	0.033	0.136	0.049	2.763	0.006
Organic certificate	−0.116	0.034	−0.147	0.043	−3.442	0.001
Mood	−0.076	0.034	−0.071	0.032	−2.254	0.024
Sensory appeal	0.091	0.036	0.100	0.039	2.523	0.012
Price	0.080	0.034	0.087	0.037	2.360	0.018
Product information	0.159	0.036	0.247	0.056	4.379	0.000
Low processing	0.094	0.037	0.144	0.057	2.541	0.011
Healthy diet	−0.089	0.032	−0.177	0.064	−2.763	0.006
Proud of being Polish	−0.099	0.041	−0.146	0.061	−2.397	0.017
Feeling connected with Poland	0.131	0.042	0.193	0.062	3.133	0.002

Note The strongest predictors (|β|>0.1) are underlined

Table 2 Predictors of correct identification of domestic or foreign ownership (a stepwise retrograde regression)

Predictors	β	SE(β)	b	SE(b)	t(990)	p
Intercept	x	x	3.092	0.293	10.565	0.000
Sex (man)	0.075	0.031	0.193	0.080	2.423	0.016
Higher education	0.087	0.031	0.251	0.089	2.804	0.005
Household size	−0.103	0.031	−0.109	0.033	−3.299	0.001
COO information	0.087	0.034	0.108	0.043	2.535	0.011
Organic certificate	−0.074	0.036	−0.085	0.041	−2.063	0.039
Familiarity food choice motive	0.106	0.032	0.101	0.030	3.356	0.001
Low processing	0.085	0.035	0.118	0.048	2.451	0.014
Benevolence	−0.109	0.035	−0.135	0.043	−3.119	0.002
Universalism	0.086	0.037	0.104	0.045	2.345	0.019

Note The strongest predictors (|β|>0.1) are underlined

3.3 Domestic or Foreign Brand Owner

The correct identification of Polish or foreign brand owner (Table 2) was positively affected by being a man ($\beta = 0.122$, $p = 0.000$), age ($\beta = 0.075$, $p = 0.016$), higher education ($\beta = 0.101$, $p = 0.001$), attaching importance to product appearance ($\beta = 0.090$, $p = 0.004$), health as a food choice motive ($\beta = 0.108$, $p = 0.002$), lack of food processing as a FRL item ($\beta = 0.070$, $p = 0.041$), credibility of COO information on the packaging ($\beta = 0.103$, $p = 0.002$), universalism Schwartz value ($\beta = 0.107$, $p = 0.002$), and feeling connected with Europe ($\beta = 0.091$, $p = 0.017$). It was negatively associated with household size ($\beta = -0.078$, $p = 0.010$), attaching importance to organic certificates ($\beta = -0.125$, $p = 0.001$), environmental friendliness as a food choice motive ($\beta = -0.121$, $p = 0.002$), confidence in advertising as a FRL item ($\beta = -0.087$, $p = 0.006$), willingness to pay a price premium for domestic food products ($\beta = -0.068$, $p = 0.033$), credibility of COO information in the point of sale ($\beta = -0.117$, $p = 0.001$), achievement Schwartz value ($\beta = -0.071$, $p = 0.021$), and feeling connected with the world ($\beta = -0.131$, $p = 0.001$).

This regression model explained 15% of the variation in the dependent variable (adjusted $R^2 = 0.150$).

3.4 The Brand Owner Country-of-Origin

The correct identification of the brand owner COO (Table 3) increased with being a man ($\beta = 0.075$, $p = 0.016$), higher education ($\beta = 0.087$, $p = 0.005$), attaching importance to food COO ($\beta = 0.087$, $p = 0.011$), familiarity as a food choice motive

Table 3 Predictors of correct identification of brand owner's country-of-origin (a stepwise retrograde regression)

Predictors	β	SE(β)	b	SE(b)	t(982)	p
Intercept	x	x	6.394	0.609	10.495	0.000
Sex (man)	0.122	0.030	0.528	0.130	4.076	0.000
Age	0.075	0.031	0.009	0.004	2.422	0.016
Higher education	0.101	0.031	0.496	0.150	3.302	0.001
Household size	−0.078	0.030	−0.140	0.054	−2.587	0.010
Product appearance	0.090	0.031	0.216	0.074	2.916	0.004
Organic certificate	−0.125	0.037	−0.243	0.071	−3.420	0.001
Health food choice motive	0.108	0.036	0.169	0.056	3.034	0.002
Environmental friendliness	−0.121	0.038	−0.172	0.054	−3.172	0.002
Trust in advertising	−0.087	0.031	−0.162	0.059	−2.755	0.006
Low processing	0.070	0.034	0.166	0.081	2.050	0.041
WTP domestic food	−0.068	0.032	−0.151	0.071	−2.132	0.033
COO information credibility—packaging	0.103	0.034	0.285	0.094	3.038	0.002
COO information credibility—shop	−0.117	0.035	−0.314	0.094	−3.342	0.001
Achievement	−0.071	0.031	−0.125	0.054	−2.319	0.021
Universalism	0.107	0.035	0.220	0.072	3.061	0.002
Feeling connected with Europe	0.091	0.038	0.201	0.084	2.393	0.017
Feeling connected with the world	−0.131	0.038	−0.259	0.076	−3.426	0.001

Note The strongest predictors (|β|>0.1) are underlined

(β = 0.106, $p = 0.001$), lack of food processing as a FRL item (β = 0.085, $p = 0.014$), and universalism Schwartz value (β = 0.086, $p = 0.019$). It decreased with household size (β = −0.103, $p = 0.001$), attaching importance to organic certificates (β = −0.074, $p = 0.039$), and benevolence Schwartz value (β = −0.109, $p = 0.002$). This regression model explained only 5.7% of the variation in the dependent variable (adjusted $R^2 = 0.057$).

4 Discussion and Conclusion

Consumers are much better at distinguishing the domestic or foreign location of production than at distinguishing the domestic and foreign brand ownership. However, this former ability may be due to the selection of brands that almost in all

cases operate in the consumers' home country. Consumer knowledge is even worse regarding the identification of the precise COO of the brand owner. Consumers tend to perceive food brands as domestic more often than it is in reality. If consumers do indicate a foreign origin of the brand, it is often a wrong foreign COO (Germany was selected by the highest number of respondents for 8 brands under study, whereas none of them had a German owner). This finding is in line with previous research which found that both general and top-of-mind COO importance are affected to the largest extent by the product origin from the consumer's home country [24].

To sum up, each type of consumer knowledge on brand origin is shaped by a different set of predictors, but there are some commonalities:

(A) in all 3 regressions: higher education (+), importance attached to organic certificate as a food attribute (−), low processing as a food-related lifestyle (FRL) item (+);
(B) in 2 regressions: sex (man) (+), age (+), universalism Schwartz value (+).

In previous research, the universalism Schwartz value was found to be positively related to the willingness to pay a price premium for domestic food products [25], but negatively related to consumer ethnocentrism on the food market [26].

Our second conclusion is rather pessimistic: it is hard to predict whether the consumer will identify the brand origin correctly, even if we have access to a wide variety of information on consumer characteristics (as suggested by low values of determination coefficients in the multiple regression models). Brands may consider adjusting their marketing communications to make the country-of-origin more salient, e.g. by using colors, symbols, architectural elements, or celebrities that are strongly identified with the country.

The findings of this study improve our understanding of consumer characteristics affecting their knowledge levels in the area of food brand origin. They are useful for companies aiming to target highly—or lowly—knowledgeable consumers**.**

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How Interactive Applets Contribute to Learning Process in Online Statistics Courses



Dimitrios Kallivokas

Abstract Interactive applications can play an important role in distance education if used in an appropriate way and can significantly improve students' ability to understand the concepts taught, especially when these are mathematical and statistical concepts. On the other hand, students aged 18–25 are digital natives and are motivated by the use of games and digital applications. This paper examines the extent to which the use of interactive applications can contribute to the distance teaching of statistical concepts. Distance learning statistics courses can use interactive applets that simulate statistical concepts and enable calculations and experiments with user-entered data. For this purpose, during the realization of an online introductory statistics course in two University departments of the School of Administrative, Economics and Social sciences, University of West Attica, Greece such applications were used. They were posted on the website of the course and were accessible by the students during the course as well as throughout the semester. The teacher provided instructions on how to use these applications and motivated the students to use them by giving real data. At the end of the semester, a questionnaire was given to a convenient sample of students which examined whether and to what extent these applications helped them understand the statistical concepts taught. After statistical processing, the results indicated that interactive applets if used appropriately can help in the online teaching of statistics. Also it was found that the physical isolation of students and the lack of natural interaction with the teacher and peers seem to be important factors that influence students' attitudes toward online teaching of statistics. A properly planned online course that includes interactive applications as tools for learning and experimenting with real data could help students to motivate, learn and communicate with their peers.

Keywords Statistic education · Information Communications Technology (ICT) in statistic education · Statistical literacy

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1 Introduction and Literature Review

World Wide Web can help in education since the educational material can be hosted on interactive websites and can be accessed at any time, from any location by students and teachers. Students with proper guidance can use this material to gain knowledge and master the concepts taught [1–3]. This is particularly easier when students are digital natives, as is the case with first-year university students [4–6]. There are benefits in distance learning which in terms of educational process is that there is no restriction on access since one can connect to the class from anywhere. There is also no strict limitation on the number of participants, since a large number of students can participate in the online class, which is practically limited only by the network and the platform used. Also, distance learning can support collaboration and specialized individual learning and their needs [7–9]. However, there are also disadvantages in distance learning [10], the main one being the remote access of the teacher and students in the classroom, which means that there is no physical presence and communication.

There is also no physical interaction student with the teacher, and physical interaction with his fellow students [11] and therefore the student is isolated from the rest of the class [11], the feedback is limited, it is difficult to maintain and strengthen motivation [12, 13], there is difficulty in accessing resources, and there may be technical barriers and problems related to student familiarity with technology [14]. The covid-19 pandemic has forced the use of e-learning and this has led to teachers gaining experience in this type of learning [8]. Furthermore, due to the disadvantages, the lesson for the electronic classroom should be carefully designed [15] and the learning process must be approached in a special way. Particular attention should be paid to the nature of the course, the pedagogical approach and the need to access resources [16].

Teaching statistic concepts is idiosyncratic because the students in the class may not have the same mathematical background and may not have understood basic concepts at the same level. Therefore, in an online environment where the personal communication of the student with the teacher and the others students as well as the interaction is difficult, attention is needed in the design of the course. In an online environment it is also difficult for students to collaborate with each other at the same time and there is no feedback, so that the teacher can understand to what extent the students understand what is being said so that the teacher can deepen at appropriate points. A framework is needed for the online teaching of statistics so that the learning outcomes are positive. Also for online statistics courses, it should be taken into account that students who do not have a good mathematical background, students who have not been taught basic statistical concepts have difficulty understanding statistical concepts and especially when they are taught teacher-centered and at a theoretical level [17] without using real-world data. It is referenced that appropriate specialized software applications which visualize statistical concepts can help students to understand them [18].

In an online classroom it is difficult for the teacher to deal with each of the students individually, and when this online class has students with different levels in statistical literacy, the teacher faces a difficult situation. Properly designed interactive applications can help students discover statistical concepts. The lack of interaction of the student with the class is a disadvantage [19] and the online course needs to be properly designed for positive results. In cases where the online classroom is necessary or is a forced solution, such as in the recent covid-19 pandemic, distance education and distance statistical education should be properly organized so that the learning outcomes give the maximum possible benefits. The aim of this study is to examine whether interactive applets can help an online statistic class to understand statistical concepts and develop statistical thinking of students.

2 Research Methodology and Findings

In this work, in order to determine whether the online statistics class is helped by the use of interactive applications, a questionnaire was given to students of a school of administrative and economics in a university, who attended an introductory statistics course online through an electronic platform. Throughout the semester, the lecture material was posted on the course website. Before the lesson suitable interactive application for experimentation, practice and training and directions were given by the teacher.

These applications were built in a spreadsheet or in a mathematical interactive software platform had the ability, to use different data, calculate and recalculate statistical measures and visualize statistical inferences. With the questionnaire, the students were asked to express their preference for live or online education for the statistics course, but also in general. Students were also asked on a five-point scale to rate how much the interactive applications provided as supplementary study aids helped them understand the week's lesson. The questionnaire also recorded with closed-ended scale questions, students' familiarity with technology, students' liking for mathematics, year of study and gender.

The questionnaire was answered electronically by 306 students, 146 were male and 160 were female. The results were processed and student satisfaction with the applications was measured. The findings show that students' preference for online statistics does not depend on gender (Table 1), and on how well the students know technology (Table 2), but it seems to depend on the lack of the natural interaction with teachers (Table 3) and lack of the natural interaction with peers (Table 4), whether they like e-learning in general.

Students' opinion on the use of interactive applications in online statistics seems to be influenced by their opinion on online education (Table 5).

Students who answered that they preferred the live class because they lack communication with their classmates or with the teacher, expressed a greater preference for using interactive applications in online statistics (Tables 6, 7).

Table 1 Statistics_online * gender, chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	,645[a]	2	,724
Likelihood ratio	,645	2	,724
Linear-by-linear association	,241	1	,623
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 21,95

Table 2 Statistics_online * ICT_know chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	,575[a]	4	,966
Likelihood ratio	,570	4	,966
Linear-by-linear association	,234	1	,628
N of valid cases	306		

a. 1 cells (11,1%) have expected count less than 5. The minimum expected count is 3,31

Table 3 Statistics_Online * Lack_Teacher chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	33,145[a]	4	,000
Likelihood ratio	29,006	4	,000
Linear-by-linear association	23,422	1	,000
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 7,37

Table 4 Statistics_Online * Lack_Peers chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	25,373[a]	4	,000
Likelihood ratio	23,642	4	,000
Linear-by-linear association	17,859	1	,000
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 7,82

Table 5 Apps_Agree * eLearning_Agree chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	14,326[a]	4	,006
Likelihood ratio	15,555	4	,004
Linear-by-linear association	6,685	1	,010
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 8,15

Table 6 Apps_Agree * Lack_Teacher chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	9,572[a]	4	,048
Likelihood ratio	10,036	4	,040
Linear-by-linear association	1,107	1	,293
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,89

Table 7 Apps_Agree * Lack_Peers Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	12,839[a]	4	,012
Likelihood ratio	12,355	4	,015
Linear-by-linear association	2,278	1	,131
N of valid cases	306		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 7,31

3 Discussion and Conclusion

Interactive applets can help students to develop statistical thinking by visualization of statistic concepts and provide possibilities for experimentation [20]. Also in the benefits of these applets is that they make it easy for the student to explore and understand statistic concepts by easily data modification and experimentations [21]. Research conducted during the covid-19 pandemic on student satisfaction in online mathematical classes found that student views were both positive and negative and that attention is needed in online math classes [22]. Research on student satisfaction in online mathematical classes has found that students in math classes prefer live instruction [23]. Some researchers point out that online statistics courses may offer opportunities not offered in face-to-face courses [24]. There are also studies that conclude that the results in online statistics classes are controversial [25]. Finally, some surveys conclude that there are positive results if appropriate tools are used and the appropriate approach is taken in online statistics classes [10]. It is necessary for the teacher to properly plan the online course, to use the interactive applications as tools in a way that they motivate the students to learn and to find ways to communicate with the students that will also enhance their competences and skills [26, 27].

Interactive applications seem to be able to help in the online teaching of statistics if and as long as they are used in the appropriate way as learning and experimentation tools, but in an online environment it should be emphasized that the physical isolation of students and the lack of interaction with the teacher and peers seem to be important factors that influence students' attitudes toward online teaching of statistics.

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Strategic Influence of Social Media Marketing on Customer Loyalty and Brand Trust: An Empirical Analysis



Ioannis Mouratidis, Vaggelis Saprikis, and Ioannis Antoniadis

Abstract Social media marketing has emerged as a pivotal tool for businesses, allowing them to engage with customers in innovative ways and build lasting relationships. Previous research has consistently shown that social media marketing has a beneficial impact on consumer brand loyalty, however, there is a lack of clarity regarding the specific factors that drive this influence. To address this gap, the aim of this research is to examine the positive influence of social media marketing on customer loyalty and brand trust. More specifically this study investigates the underlying factors that contribute to this positive influence, exploring the complex interrelations between social media marketing, customer loyalty, and brand trust. A questionnaire was developed, based on assumptions derived from prior studies. The collected data of a convenient sample of 180 respondents were analyzed using the factor analysis method to identify the key variables at play. Implications for social media marketing strategies that will enhance customer loyalty are discussed.

Keywords Social media marketing · Customer loyalty · Brand trust

1 Introduction

The quality and relevance of content and information shared by brands on social media platforms significantly enhance customer engagement and loyalty [1]. Moreover, customer trust, fostered through transparent and consistent communication, plays a crucial role in building strong brand relationships. In addition, aligning

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marketing strategies with current customer needs and emerging trends ensures that brands remain relevant and appealing to their audience. The implications of these factors are intertwined, demonstrating that effective social media campaigns can simultaneously boost customer trust and loyalty. Brands that successfully execute beneficial campaigns tend to see a notable increase in customer trust, which in turn fortifies brand loyalty.

The importance of this study lies in its ability to describe the specific variables that influence consumer trust and brand loyalty. By providing a clearer understanding of these dynamics, businesses can devise more strategic and effective social media marketing campaigns. The insights from our research contribute to the broader field of strategic innovative marketing, offering valuable guidance for practitioners that seek to enhance their brands presence and customer relationships in the digital age.

2 Literature Review

Consumers who have high brand loyalty tend to buy the products offered by a brand frequently, but in addition they often mention the brand on social media [2]. Groups are usually created within them by consumers with common characteristics, where they find the opportunity to interact with each other by exchanging information and their personal experience with the brand [3]. To add to this, they feel that they become part of a large community that has some of the elements found in friendship or even family [4]. Previous research has shown that social media marketing has a positive influence on consumer brand loyalty [5]. However there is a lack of clarity regarding the specific factors that drive this influence [6]. A targeted study of the characteristics that positively influence consumer brand loyalty using social media will further highlight the path that firms should follow to increase their market share.

In addition, based on previous studies we should expect a positive correlation [7] but it will be interesting to study what are these factors that influence and how they correlate with each other. From the following surveys we derive the facts: To have a successful social media activity, businesses should plan and execute e-marketing activities that provide the audience with entertainment, interaction, and increased relationships with each other [8]. Consumers tend to expect a brand to maintain a social media presence as this greatly influences their final decisions when it comes to making a purchase [9]. As this way they feel more secured that they are interacting with a genuine marketer and are less likely to fall victim to fraud. Increased loyalty to a brand encourages consumers to engage in word of mouth [10, 11], i.e. to become a conduit of the company's values and vision to others [12].

Consumer loyalty to a brand also depends on social media and how it can add value by informing, promoting, and creating entertaining and informative content. Customers are more likely to demonstrate brand loyalty when provided with reliable information through social media marketing. [13]. In specific, a study [14] mentions five indicators—characteristics of social media marketing such as entertainment, interaction, trends, customization, word-of-mouth as well as 3 dependent variables

brand trust, brand value, brand loyalty and an independent variable that of social media marketing. For instance, research [15] examines whether brand loyalty is influenced by social media marketing activities. More specifically when conducting beneficial campaigns, providing relevant content, providing popular content but also appearing to have a presence on several different social media platforms.

3 Methodology

To further investigate this issue, a comprehensive questionnaire was developed, based on assumptions derived from previous studies, in order to explore the impact of the strategic use of social media marketing by companies to increase customer loyalty and brand trust. From our online survey using an online questionnaire we received 180 responses. 73 men and 107 women responded with the age range ranging between 18 and 45 years old. The study took place with Google Forms from January 2024 until March 2024. The responses were anonymous. The questionnaire was created by combining questions from previous researchers [16, 17] so that we could test the obtained results on a common basis. All questions, except from the demographic questions, follow the Likert format where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. The analysis of results and statistical research was carried out with the use of IBM SPSS program.

4 Empirical Results

We present the results of the factor analysis, including the KMO and Bartlett's Test, Cronbach's alpha combined with the factor loading table. Additionally, we will provide descriptive statistics for each factor, the estimated Pearson correlation analysis, and finally, a figure showing scatter plots between factors.

With the KMO statistical criterion, it is observed that use of factor analysis can give useful results for the questionnaire (Table 1). The index has Bartlett's Test of Sphericity value equal to 3581.063 and is statistically significant. The research on total variability revealed that the concentration of questions on four factors expressed 70.62% of the total variability, which is quite high. Therefore, inferring through the

Table 1 KMO and Bartlett's test

Kaiser–Meyer–Olkin measure of sampling adequacy		0.838
Bartlett's test of sphericity	Approx. chi-square	3581.063
	df	253
	Sig	0.000

four factors instead of the set of additional questions leads to a "loss" of information of only about 29%. The four factors indentify are as follows (Table 2):

For each factor the Cronbach's a internal consistency index is estimated. For all 4 factors it appears that the reliability value is significantly higher than 0.7 which is the threshold based on the literature [18].

The mean values are close to 4, with the exception of the luck of trust with a mean value of 2.72 (Tables 3 and 4).

Table 2 Cronbach's a and factor loading

	Factor loading
Factor 1: Content and information (Cronbach a = 0.882)	
E-commerce social media allows me to share and update content	0.495
The brands I follow on social media often interact with users	0.562
E-commerce social media facilitates two-way interaction with friends and family	0.646
E-commerce social media provides accurate product information	0.833
E-commerce social media provide useful information	0.709
E-commerce social media provide comprehensive information	0.809
Factor 2: Trust (Cronbach a = 0.923)	
E-commerce social media provides me with recommendations for purchases that match my requirements-needs	0.689
I would share information about my shopping experience on e-commerce social media	0.675
I am willing to interact with brands I trust on social media	0.764
I am willing to make purchases from brands I trust using social media	0.828
I trust more brands that have an active social media presence	0.756
I am more likely to make purchases from brands that I trust and already follow on social media	0.777
I install and use mobile apps from brands I trust	0.767
I make purchases through apps from brands I trust	0.707
Factor 3: Needs and trends (Cronbach a = 0.876)	
I feel that my needs are met through the use of e-commerce social media	0.538
E-commerce social media facilitates personalized information search	0.659
The content displayed on e-commerce social media is the latest trend	0.583
Using e-commerce social media is trendy	0.755
Anything that is trendy can be found on e-commerce social media	0.701
I would recommend my friends to visit e-commerce social media	0.724
Factor 4: Interaction (Cronbach a = 0.946)	
I have the intention to interact with brands on social media	0.942
I have the intention to make purchases using social media	0.967
I install and use mobile apps from brands	0.907

Table 3 Descriptive statistics per factor

	N	Minimum	Maximum	Mean	Std. Deviation
Content and information	180	1.83	5.00	4.15	0.64
Trust	180	2.63	5.00	4.40	0.59
Needs and trends	180	2.50	5.00	4.04	0.62
Interaction	180	1.67	5.00	2.72	0.67
Valid N (listwise)	180				

Table 4 Pearson correlation

		Trust	Needs and trends	Interaction
Content and information	Pearson Correlation	0.632	0.713	0.132
	Sig. (2-tailed)	0.000	0.000	0.078
	N	180	180	180
Trust	Pearson Correlation		0.596	0.254
	Sig. (2-tailed)		0.000	0.001
	N		180	180
Needs and trends	Pearson Correlation			0.277
	Sig. (2-tailed)			0.000
	N			180

From the Pearson index estimated for each pair of factors, all correlations are positive and statistically significant with $p <= 0.001$. This means that higher values in one of the factors are expected to be associated with higher values in another. The exception is the correlation of Interaction with the Content and Information factor ($p = 0.078$). Of all the recorded correlations, the strongest ones are between the Needs and trends factor and the Content and Information factor ($r = 0.713$; $p < 0.001$), and with the Trust factor ($r = 0.596$; $p < 0.001$). Also, there is a strong correlation between the Trust factor and the Content and Information factor ($r = 0.632$; $p < 0.001$). The statistically significant relationships of the Interaction factor are weak with values ($r = 0.254$; $p = 0.001$) for Trust and ($r = 0.277$; $p < 0.001$) for Needs and trends, respectively (Fig. 1).

It is evident that the Interaction factor has the least correlation with the other factors. The results indicate that the Interaction factor does not correlate as strongly with other factors as expected. In contrast, the needs and trends factor shows strong correlations with both the trust factor and the content and information factor. Additionally, trends in social media display a high degree of positive correlation with content and information, but very little correlation with the Interaction factor.

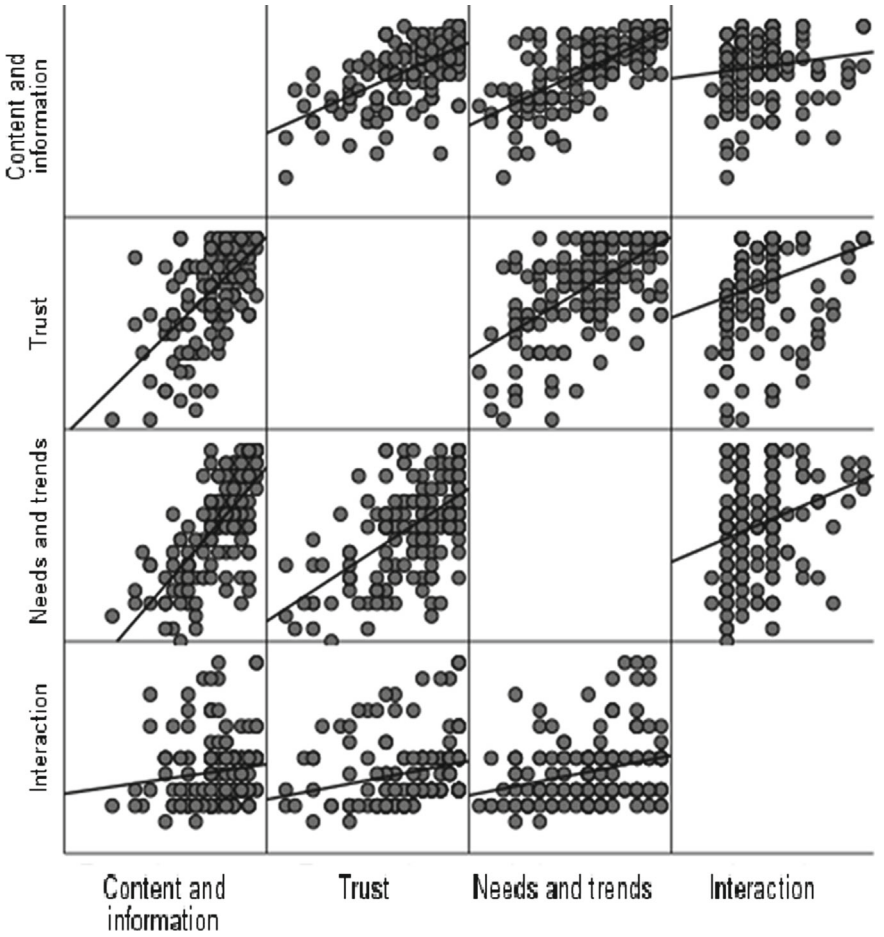


Fig. 1 Scatter plots between factors

5 Discussion and Conclusion

In conclusion, consumer brand loyalty is positively affected when the brand conducts beneficial social media campaigns. Through these campaigns, brands are able to provide their consumers with relevant content, which is one of the most important factors relating social media to consumer brand loyalty. The content offered by brands should also be popular but also have other key features that fit the consumers' wants, for example, it should be educational with a lot of information but also entertaining. These findings create useful insights for the formulation of marketing strategy in social media as according to the literature review but combined with the results of the research we conducted, we conclude that the influence of social media marketing has a positive effect on consumer brand trust, we also conclude that it has a positive effect

on consumer brand loyalty. The existence of social media marketing has a positive correlation with brand equity. The right strategies that can be carried out using social media by brands have been shown to positively influence consumer loyalty to the brand, but in order to achieve this, these strategies must meet some characteristic criteria. The contribution of the research determines which social media marketing variables are those that appear to strategically influence customer trust in the brand.

6 Suggestions for Future Research

Future research should focus more on the content and information factor as its size is very large and there is room for more detailed study, in addition it could also focus on the intensity that each factor influences consumer loyalty to the brand and finally a future research could be carried out on which factors have a negative influence. The boundaries of the research are determined by interpretation as the sample is drawn from social media users who trust e-commerce. The limitations of the survey are that it did not include a sample that does not believe in e-commerce as a way of obtaining goods or services. For this reason a very important suggestion for further research is to conduct a new survey with the inclusion of a sample who do not believe in e-commerce.

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Artificial Intelligence as a Means of Communication for Greek Museums



Pericles Liakakis

Abstract Nowadays, the museum audience is increasingly transformed digitally, forcing museums to interact with every new innovative communication medium that emerges. This study highlights the use and value of AI in museums, and explores how the National Archaeological Museum has responded communicatively to new digital trends in cultural audiences. The data was drawn from the completion of an electronic questionnaire to a convenience sample of 102 people and a structured interview with the manager at the museum. The wishes of the public for the digital upgrading of the museum as reflected in the questionnaire are taken seriously by the museum managers according to the results of the interview. The results of this multi-method study underlined that although the museum has not yet completed its digital transformation, it is willing to make the digital leaps required to move with its audience into the new innovative era. This research helps not only the National Archaeological Museum, but all museums that have not yet fully completed their digital transformation according to the needs of the new digital era, which are directly related to the wishes of the international museum public.

Keywords Artificial intelligence · National archaeological museum · Museum communication policy

1 Introduction and Background of Research

In recent years, museums have shown a great effort to broaden their communication with the public [1]. More specifically, they focus on the public and on meeting their needs and desires, since they are a diverse audience with differences in their ideological and cultural identity. Thus, museum digital communication is developing as an open system, which has a dynamic evolution through time [2]. In the modern era, the process of designing, creating, and implementing a digital application in the museum world takes very seriously whether it will arouse the interest of the audience,

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increase their participation, and enhance the educational goals [3]. However, the pandemic (Covid-19) that affected and impacted all cultural organizations as well as the daily lives of citizens and, by extension, cultural audiences, brought to the fore significant communication weaknesses, temporarily freezing their relations with the public [4, 5].

One form of communication that developed out of necessity during the pandemic was the hybrid, i.e. the existence of face-to-face and remote electronic forms of communication with the public [6], with many of the remote museum experiences that museums offer today having been developed in haste over the last three years [7].

Cultural organizations adapted to a hybrid way of working, which automatically evolved into a hybrid way of communicating with their diverse and heterogeneous audiences [8]. The new spatial interfaces that emerged at the intersection of the virtual and the physical, eliminated the distance between the public and museums that had been created by restrictive measures, and foreshadowed a future for museums inextricably intertwined with these digital applications [9]. Typical examples of hybrid technologies entering museums included augmented reality (AR), virtual reality (VR), mixed reality (MR), extended reality (XR), tactile interactions, targeted devices, and chatbots [10].

For example, at the Art Institute of Chicago, they have implemented robotic assistants to provide visitors with information about collections and tours while also using AI-powered chatbots to provide answers to common questions [2]. So, a statue could come to life in the National Archaeological Museum space and chat with the public. Also, the museum, could use the power of AI to design future exhibitions, as was done with the exhibition "Act as if you were a curator", which was created by AI after a proposal from the team at the Nasher Museum of Art in the United States. Specifically, ChatGPT was asked to curate an exhibition using the museum's collection [11]. Based on the digital communication management of museums abroad, the aim of this research is to show how the National Archaeological Museum, which is the oldest and largest museum in Greece and one of the most important in the world, can unfold its virtues in digital media management with emphasis on the use of artificial intelligence, in order to entertain, educate, and ultimately fulfill the wishes of a wider audience. Artificial Intelligence (AI) is one of the most disruptive technologies of the twenty-first century, leading to complete transformation, businesses, and cultural organizations. It is a technology that allows machines to mimic various complex human skills [12]. More specifically, it leverages machine learning algorithms, especially deep learning and reinforcement learning, to create the disruptive technologies required in every aspect of daily life that will significantly change the way consumers operate [13].

The aim of this study is to stimulate the interest of the National Archaeological Museum in what artificial intelligence can contribute to the expansion of its communication with the museum public and how it can facilitate the work of its employees and the planning of future activities and exhibitions by its administrators.

2 Connecting Collections and Audiences with Cultural Objects

In the digital age, museums are becoming a hybrid space of experience. For example, through research that has been conducted, findings suggest that XR technology, can improve museum curation and exhibition practices, providing new dimensions of interaction for museum objects.

It also contributes to the development of VR systems used by museums, providing immersive experiences for the public, which results in enhanced interaction and museum experience [14]. The same is true in practice for more recent technologies, which are linked to artificial intelligence. Snap's AR Studio and the Musée du Louvre, have launched a series of interactive AR experiences called "Egypt Augmented", where visitors experience the lost treasures of Egypt from three great masterpieces: The Naos of Amasis, The Chamber of Ancestors, and The Dendera Zodiac. Visitors scan a QR code placed on the cartel of works with their smartphones or via Snapchat camera, and activate the AR experience, which reveals shapes, materials, and decorations of works from that era [15]. AI technology supports the creation of immersive VR and AR experiences for museums. Museum audiences can explore virtual ancient ruins, historical sites, or museum exhibitions by interacting with virtual characters or objects created by AI [16]. This creates more personalized, interactive, and immersive experiences for visitors [5]. It is therefore a digital technology that creates content, analyzes data, and facilitates automation in existing processes that were previously carried out by other means, such as human labor or other forms of computation [17].

Museums, in recent years, have begun to adopt AI in order to better understand visitor behaviors and wants and thus improve the museum experience of the public [2]. This is achieved through the analytics provided by AI, which indicate to museum managers the most popular exhibits, programs, and also the places where the audience tends to spend more time. The use of AI also helps museums to interact with museum audiences. The interaction is carried out through chatbots, which are based on artificial intelligence and are tools for continuous and direct interaction with visitors [18]. More specifically, ChatGPT, developed by OpenAI (an artificial intelligence research and development company), "sees, hears and talks" and is intended to generate text responses that sound like human responses to operator data entered in a chat setting [19]. Therefore, in the museum space, the application of AI enables the museum to better manage the display of its collections and improve its educational character.

3 Methodological Considerations

The object of the research was the digital trajectory that the National Archaeological Museum should chart in the new innovative and digital era, where the cultural market is becoming more and more competitive and communication with the museum audience generates more needs. Specifically, the triangulation method [20] (according

to Robson) was followed in order to collect data from different sources ensuring the reliability and validity of the research. The quantitative research was conducted through an online questionnaire (Google Form) with a convenient sample of 102 visitors and the qualitative research through an interview, granted to the museum by an archaeologist in charge of the Department of Exhibitions, Communication and Education of the National Archaeological Museum and thus, was a purposive sample. The questions were related to digital technology, specifically to the new technological means that the museum should integrate in its communication policy and to the digital communication tools it already has.

4 Results

When asked about the adoption of extended reality (XR), mixed reality (MR), or augmented reality (AR) technology by the National Archaeological Museum, 50% of the participants answered that they need all of them. Overwhelmingly positive at 93.1%, was the response of participants that a hybrid communication model (in person & digital) helps to communicate with the public. Also, according to the participants, 60.8% of the participants consider the museum's digital tools to be sufficient, which are digital virtual tours of selected galleries and exhibits in the museum's collections via the museum's official website and the use of digital platforms (TikTok, Vimeo, Facebook, Instagram, YouTube, etc.) for watching short videos (the so-called stories), which promote information to the public about the cultural activities of the National Archaeological Museum, like the digital exhibition *Athenian Democracy* [21].

More specifically, 93.1% of the respondents use their smartphone device in the physical space of the museum, 67.3% use the digital virtual tour (VR) in the physical spaces of the museum from its official website, and finally 67.3% want the National Archaeological Museum to adopt future immersive applications such as XR-extendedreality, MR-Mixedreality, and AR-Augmentedreality. When asked whether the two-way communication of the National Archaeological Museum with its public contributes to the future planning of its strategic plans, the overwhelming majority of 99% of the participants answered positively. Finally, the preference for visiting the museum in person is also very positive, at 97.1%.

Regarding the interview and specifically to the question whether the museum makes use of XR, VR, AR, and MR technologies, the responsible archaeologist of the museum, answered that there are currently no specific technologies. In subsequent responses to questions related to the museum's digital communication, we found that, the museum was using the hybrid model even before the pandemic crisis. However, it has expanded its digital offerings and co-exists alongside its other face-to-face activities. In addition, it entered the social media space dynamically and systematically.

Another important piece of information we were given was that the museum digitally imaged its temporary exhibitions with the ultimate goal of digital virtual

tours for people with mobility and hearing impairments, as part of the National Action Plan for People with Disabilities [22].

Also of interest are the partnerships that the museum has with major companies that promote communication and support culture and are presented on YouTube, such as the partnership with Cosmote, the tele-communications company. The aim of the collaboration was to present the museum's exhibits in a different and more entertaining way to the online audience and to highlight that the museum has the largest collection of ancient artworks in the world. The presentation was called pop Archaeology and emphasized the digital tour of the museum [23]. Finally, upgrades to the museum's infrastructure, such as the future IoT installation, for example, incorporate the latest technological developments and are foreseen in all its studies. The IOT provides networked sensors, intelligent lighting, and digital signage in various languages underneath the exhibits so that foreign visitors can identify the history and key information of each exhibit.

According to the results of the survey, the National Archaeological Museum has taken steady and significant digital steps to expand its communication policy. The willingness of the museum's administrators to meet the needs and wants of today's visitors reveals a steady policy of expanding the museum's communication with the public.

However, because in today's cultural market technological developments are running rapidly and because visitors themselves are incorporating each new digital application into their daily lives but also become members of online communities with members of similar interests [24–28] the museum can and would be in favor of its communication policy to adopt the use of artificial intelligence, which is perfectly combined with the extensive XR technology and which, includes AR, MR, & VR technologies.

AI presented as an algorithmic-technological tool for managing information and digitized cultural objects through automated processes of tagging, classification or organization based on similarities (clustering) [29], will facilitate and provide opportunities for the National Archaeological Museum.

The limitation of the study is that it put emphasis on one museum. Nonetheless, it shed light and adds to the continuous literature on the subject.

Cultural management needs to take into consideration different target groups, ensuring inclusion to all [30, 31] and consideration to all should be provided with digitally imaged temporary exhibitions for people with disabilities as this case study presented but should also work with the permanent ones as well.

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The Impact of Non-quantitative Factors on the Quality of Environmental, Social and Governance (ESG) Information

Evangelos Soras, Apostolos Christopoulos, and Theodoros Kounadeas

Abstract The aim of this paper is to determine, whether non-quantitative factors, such as ISO certifications, audit, company's location, company's age and capital structure–ownership of the company can influence the quality of ESG information, requiring by Greek commercial legislation. We examined 84 companies, operating in Greek agricultural supplies sector for the period 2019–2022. Results show that the overall average compliance rating of companies holding ISO certificates, or subject to audit is higher than the corresponding ratings of companies without any ISO certificate, or not-subject to audits. Both findings are indications of an effective internal audit system and best practices, relating to the existence of an effective governance. Companies in Attica, where the majority of ministries, authorities and organizations are operating, have higher compliance ratings than companies in other regions, as they are operating in a more polluted environment due to the high concentration of population and companies, making them more sensitive to ESG issues. Companies, operating for a longer period, have also succeeded higher compliance rating, as younger companies are trying to gain market share and do not give attention and resources for ESG issues. The company's age proves the company's sustainability. The subsidiary companies show a higher compliance rating compared with the other two types of capital structure (family structure, parent company), because they should adopt ESG guidelines, imposed by their parent company. Finally, this research helps our understanding the importance of non-quantitative data in reporting, just like the importance of quantitative data.

Keyword Compliance · ESG reporting · Non-quantitative factors

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1 Introduction

ESG practices focus on assessing company performance against environmental, social and governance factors. Climate change, water shortages, wars, pandemics, energy crisis and other serious global problems have already imposed ESG practices and reports [1]. Discerning the severity of the problem many researchers have tried to predict financial distress, using survival models, based on dynamic logit, as the financial crisis of 2007–2008, because the same models can be also applied on another types of crisis, like climate change, water shortages, wars, pandemics or energy crisis [2]. The uncertainty arising from these global problems pushes investors, which is a significant group of stakeholders, to fund investments that meet ESG criteria [3].

The sustainability of a company is its ability to endure and sustain itself over time. Sustainable development is the company's strategy for achieving sustainability [4] and is the basis of a creative economy development. ESG reporting, which presents the progress of companies toward sustainability, is always the main accountability mechanism of the company's management to the stakeholders [5]. Despite the growing interest in ESG reporting, related research has shown that ESG reporting is still poor in both developing [6] and developed countries [7]. ESG reporting remains inconsistent [8], because it is voluntary [9]. The lack of reporting standardization, the inconsistency in reporting, the diversity of data and the complexity of the key performance indicators have imposed to follow a holistic procedure for ESG issues [10].

Greek commercial legislation, which mainly consists of laws 4548/2018 [11], 4308/2014 [12], 4336/2015 [13] and the circular 62,784/2017 [14], has imposed that the management report should mandatorily include information about the environmental, labor-social, corporate governance issues, as well as the description of the related business risks and their management, since 1/1/2019. If a management report does not include ESG information, significant penalties will be imposed on the members of Directors' Board, in accordance with the article 179 of law 4548/2018 [11]. The relating European Directives, i.e. European Non-Financial Reporting Directive (NFRD) 2014/95 [15], which has specified the required non-financial information from banking institutions, insurance companies and large companies with more than 500 employees, has been in force since 1 January 2024 and European Sustainability Reporting Directive (CSRD) 2022/2464 [16], which has required ESG reporting, according to the type and size of the companies, will be in force since 1 January 2025, giving a grace period to small and medium-sized companies, which actually consists of the majority of Greek companies, up to 31 December 2028. This means that EU directives about ESG disclosure requirements have not yet been applied, to be used in research for the companies' ESG performance reporting [4].

In the context of this research, we have examined how a category of companies, operating in Greek agricultural supplies sector, complies with the requirements of Greek legislation, i.e. the law 4548/2018 [11] and circular 62,784/2017 [14] for reporting ESG information and whether the quality of these ESG information is affected by the non-quantitative factors, such as ISO certifications, audit, location,

age and capital structure of the company. In doing so, we aim to present the important role of non-quantitative data in reporting, just like the role of quantitative data.

2 Literature Review

In accordance with the agency theory [17] the fact that each stakeholder is trying to fulfill its interests and maximize its benefits, in combination with the existence of a significant information asymmetry problem lead to conflicts among stakeholders. The shareholders of a company have the resources, i.e. the share capital, while the managers of this company, who have much more information than the shareholders and any other stakeholder, manage these resources. The shareholders appoint the board of directors to control and monitor the actions of the company's management. The board of directors will try to minimize the information asymmetry problem by establishing an effective reporting, which is the main accountability mechanism of the company's management not only to shareholders, but also to all stakeholders [4]. At the same time the serious global problems increase the stakeholders' need for ESG reporting. It is important for the company's management to inform stakeholders about ESG practices and issues, because this is the only way for stakeholders to better understand and ultimately approve the installation of an effective accounting system, a cost analysis system, a reliable reporting system, an effective internal control system and finally all necessary changes [1].

In accordance with legitimacy theory [18] the company's activities must be accepted by the society, where the company is operating. The only way to ensure, that the company's activities are acceptable by the stakeholders, is an effective reporting. If the company's activities do not meet the expectations of the stakeholders, there is a legitimacy gap, which could be filled not only by the legislators, who should specify the legal framework, in which the company is operating, but also by the regulatory authorities, who must check and officially report, if the companies are complying with the legal framework, including both Greek corporate laws and United Europe directives.

In the context of this research we investigate how much the non-quantitative factors affect the companies reporting, which has a crucial role in both theories.

3 Data and Methodology

Greek companies are obliged to publish their financial statements (balance sheet, profit and loss statement, notes and management report) within 20 days after their approval from the Annual General Meeting of Shareholders, in the Register of Greek General Chamber (G.E.MI. https://www.businessportal.gr). The basis of this research is the management report, which is prepared by the Directors' Board annually for the General Meeting of Shareholders, as required by the article 150 of law 4548/

2018 [11] and includes an analysis of the company's performance, the financial and non-financial key performance indicators and ESG information. It should be noted that Greek commercial law 4548/2018 [11] imposed ESG reporting on companies since 1 January 2019, i.e. 5 years earlier than the pre-mentioned EU directives [4].

The sample concerns the published financial statements of 84 companies from year 2019, when started the mandatory ESG reporting, as required by the article 150 of law 4548/2018 [11], to year 2022, when we have the last published financial statements, namely there is a population of 336 financial statements for this research. We retrieved the data from the Register of Greek General Chamber in January 2024, to examine to what extent the management reports of these companies, which are operating in agricultural supplies sector and covering 90% of the total market share, are following the requirements of circular 62,784/2017 [14] for ESG reporting.

Having completed the scoring of all companies of the sample for the years from 2019 to 2022, depending on the information provided by their management reports on ESG topics, as required by Greek legislation, we have found the average compliance rating of each company per year. Each company was given a score rating, according to its compliance with regulations about ESG reporting, e.g. if the management report covers all required ESG topics, the company will receive a 100% compliance rating. The given ratings do not have the same weighting for all ESG topics and depend on their classification in categories from the circular 62,784/2017 [14].

The objective of this paper is to determine, whether non-quantitative factors, such as ISO certification, auditor involvement, location, age and capital structure of the company, can influence the quality of information about ESG issues.

We have selected to review this sector, because it is a heavy chemical industry with a strong environmental footprint, is a major part of the food chain [19] and employs a large number of workers and employees.

4 Results

Table 1 presents the relationship of the ISO certificates with the overall average compliance rating. We note that the companies with one or more ISO certificates have a higher overall average compliance rating than the companies without any ISO certificate. We have found that an ISO certificate is significant for the overall average compliance rating at a 5% level (adjusted $R^2 = 0{,}7864$, significance $F = 0{,}000{,}038$ and P-value $< 0{,}005$).

Table 2 presents the overall average compliance rating of the audited companies, which is obviously higher than the corresponding overall average compliance rating of the non-audited companies. We have found that the existence of a statutory audit is significant for the overall average compliance rating at a 5% level (adjusted $R^2 = 0{,}8129$, significance $F = 0{,}000{,}005$ and P-value $< 0{,}005$).

Table 3 presents the relationship of the activity's location with the average compliance rating. We observe that the companies, which are active in the region of Attica,

Table 1 Overall average compliance rating in relation to ISO

Year	ISO Holders	No-ISO Holders	Comparison (ISO Holders versus No-ISO)
2019	77,80%	48,45%	1,61
2020	77,80%	51,05%	1,52
2021	81,44%	54,64%	1,49
2022	81,44%	57,41%	1,42
Average	79,62%	52,89%	1,51

Table 2 Overall average compliance rating in relation to audit

Year	Rating of companies subject to audit (%)	Rating of companies not subject to audit (%)	Comparison per year (audited vs non-audited companies)
2019	75,606	41,327	1,83
2020	74,456	42,160	1,77
2021	75,262	47,334	1,59
2022	78,273	46,489	1,68
Average	75,90	44,33	1,71

have higher compliance rating than the companies, which are active in North Greece, or other part of Greece.

Table 4 presents the relationship of the company's establishment year with the overall average compliance rating. We observe that the companies, which have been operating for more years, have achieved a higher compliance rating.

Finally, Table 5 presents the relationship of the overall average compliance rating with the capital structure–ownership, i.e. typical Greek company with shareholders, who are members of the same family, subsidiary company of a group and parent company of a group.

Table 3 Overall average compliance rating in relation to location

Year	Region of Attica (%)	North Greece (%)	Rest of Greece (%)
2019	67,00	47,14	28,11
2020	69,38	48,50	29,50
2021	69,61	55,32	28,70
2022	70,94	57,92	29,50
Average	69,23	52,22	28,95

Table 4 Overall average compliance rating in relation to establishment year

Year	Established up to1980 (%)	Established in 1981–1990 (%)	Established in 1991–2000 (%)	Established in 2001–2010 (%)	Established 2011 and later (%)
2019	70,16	62,96	63,38	47,75	48,43
2020	70,16	67,97	64,11	49,64	50,60
2021	70,16	68,34	69,68	53,32	52,94
2022	77,67	68,34	69,90	56,63	55,28
Average	72,04	66,90	66,77	51,84	51,81

Table 5 Overall average compliance rating in relation to capital structure

Year	Typical company–family owners (%)	Subsidiary company (%)	Parent company (%)
2019	50,55	60,89	71,79
2020	51,94	65,92	72,96
2021	56,87	69,36	72,96
2022	58,94	74,07	72,96
Average	54,58	67,56	72,67

5 Conclusion

The aim of this research is to determine, whether non-quantitative factors, such as ISO certifications, statutory audit, location of activities, company's age and the type of the company's owners (capital structure), can contribute to the improvement of the quality of ESG information quality.

We have found that the overall average compliance rating of the sample, covering all ESG pillars, shows a continuous improvement in period from 2019 to 2022 (56.834% for 2019, 58.692% for 2020, 62.295% for 2021 and 64.27% for 2022). Despite the continuous improvement, if we consider that Greek legislation requires simple ESG reporting and not complex benchmarks and KPIs [4], we conclude that the sector needs improvement in ESG reporting. The results of this research verify the findings for other sectors in Greek environment [7].

If a non-quantitative factor increases the compliance ratings, it means that this non-quantitative factor improves ESG information quality.

We have found that there is a positive correlation of the overall average compliance rating with the possession of ISO certificates and the involvement of an external auditor. The average compliance ratings of companies holding ISO certificates, or subject to audit are higher than the corresponding ratings of the company without any ISO certificate, or non-audited companies. These findings verify the representation theory [17], because both are elements of an effective internal audit system, and this means the existence of an effective governance [4]. In addition, the above

findings verify the theory of legitimacy [18], because legislators have required from the companies to report on ESG issues, and they believe that they have filled the legitimacy gap in three ESG pillars. However, this is not enough, because regulatory authorities must perform verification checks on ISO certifications, or statutory audits on financial statements to verify, whether the companies are implementing the requirements of the legislation to fill the gaps in ESG issues.

Further we note that the companies in region of Attica have higher compliance rating than the other companies, which are active in North Greece or elsewhere in Greece, because the companies of Attica are operating in an environment, that is much more polluted than elsewhere, due to its high concentration of people and companies; thus, they have become more sensitive to ESG issues [4].

It is obvious that the companies, that have been operating longer, have also achieved a higher overall average compliance rating, because the younger companies are trying to gain market share and are not devoting their time and resources to ESG issues. The company's age proves the company's sustainability.

We note that the subsidiaries companies have the higher overall average compliance rating, in comparison with the other two types of the company's ownership, because they should adopt ESG guidelines, as imposed by the group parent company. As it is expected, the family–company has the lower compliance ratings.

Like any other study, this study has limitations, because we have focused of the companies of a specified sector, thus an extension of the research to other sectors is not only desirable, but also necessary. It would be very useful to find the results in ESG issues reporting of another sector and compare them with the results of the specific sector, which we have examined in this research.

Finally, we conclude that some non-quantitative factors, such as ISO certifications, statutory audits, company location, company age and capital structure–ownership, indicating implementation of best practices, sustainability capability, effective governance and internal audit system, influence the quality of ESG information and more.

This research helps us to understand that non-quantitative data has the same important role in reporting as quantitative data.

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Toward a More Authentic Travel Experience: Exploring the Potential of AI-Powered Recommendations for Unusual Experiences



Idalia Maldonado Castillo and Jorge Ferrer Tenorio

Abstract Travelers conduct online research before going on a trip, using social media, travel apps, and websites, Artificial Intelligence (AI) has the potential to provide tailored experiences and provide the best and more unusual experiences. This study aims to improve the travel experience by using an innovative mobile application that provides cool, hidden, and unusual things to do in Mexico City with personalized recommendations. By employing artificial intelligence techniques and machine learning models, the application will identify and recommend tourist destinations that align with the traveler's individual interests. The primary objective is to provide travelers seeking a more authentic and original travel experience, with recommendations guiding users toward less frequented and unusual attractions in Mexico City. Implications about what authentic experiences are will be discussed. The application will provide a conversational agent capable of responding queries, facilitating user interaction, and providing information about the recommended sites.

Keywords Artificial intelligence · Authentic travel · Conversational agent

1 Introduction

According to a study performed by Google 65% of American travelers use their smartphone for travel planning, searching for sites of interest, dining options, attractions, and transportation [2]. In a study performed by McKinsey called What is the future of travel? Stated that one of the main factors in the future of tourism is the "Surprise and delight" [3]. Artificial Intelligence (AI), particularly generative AI can serve as digital assistants that interact with customers throughout their journeys. These AI systems can offer personalized trip itineraries and customized recommendations based on individual preferences. Additionally, they can assist in managing unexpected disruptions, changes of plans, and weather conditions, among others,

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thus enhancing the overall travel experience. By leveraging this technology, travelers can receive timely support and information, making their trips more enjoyable and efficient. The main challenge now is to rethink the ways of interaction with travelers.

Another important factor in the future of tourism is the "*Segmentation*", service providers, companies, and all tourism-related businesses can use AI to develop highly specific customer segments that inform their interactions and services. It can be refined to the extent of targeting individual customers. By employing this level of segmentation, companies can tailor their marketing strategies and service offers more effectively, ultimately enhancing customer satisfaction and loyalty. This segmentation could provide specific information about the traveler's preferences, interests, and geographic location. The integration of geographic information can further refine the segmentation, allowing companies to analyze regional preferences, cultural behaviors, and local trends. For instance, understanding geographic data can reveal distinct travel patterns and interests among customers from different locations or provide better recommendations related to their current location.

The aim of this study is to explore the potential of AI solutions and techniques for more tailored and personalized experiences for travelers, by using AI-powered recommendations, tourists can gen unique experiences segmented to their needs and personal affinity.

2 The Appeal of Authenticity in Travel

According to the 2023 Booking.com Sustainable Travel Research Report [4], more than 75% of survey travelers express they want to travel more sustainably and a desire for "authentic experiences" that genuinely represent local culture. This growing interest in travelers for authenticity is reflected in the proliferation of travel offerings that provides "authentic" food, "authentic" cultural activities, and "authentic" accommodation.

However, the concept of authenticity is not without its complexities; it has multiple interpretations and has become a commodity. Therefore, labeling places or experiences as "authentic" without sufficient context can lead to misunderstandings and set unrealistic expectations for travelers. Furthermore, this ambiguity may result in the creation of traveler-centered experiences that fail to accurately reflect the realities of the local population.

The definition of "authentic" can consider different definitions such as "genuine", "real", "original", or "unusual". Furthermore, these definitions can lead to ambiguity which may result in the creation of traveler experiences that fail to accurately reflect the realities of the local population. In the article called: The authenticity trap: why do travelers crave 'authentic' experiences? Haugen states that "An expectation of uniqueness can actually lead to a more sinister tourism problem: Responding to travelers' desire for 'authentic' experiences, travel service providers might create and market experiences they believe meet travelers' expectations" [5].

In a series of articles from Forbes [6] considers the travel trends for 2024 to be deep and meaningful travel, travelers are tending to focus on learning about the local cultures and communities, having authentic experiences is key for travelers.

2.1 The Evolving Profile of the Modern Traveler

The composition of the modern traveler is undergoing significant transformation. Recent research highlights a prominent trend: an overwhelming 85% of travelers are prioritizing experiences over material goods. Many are eager to explore the unknown (81%), indulge in local cuisine (64%), and engage with local customs and traditions (48%) during their vacations. This shift in priorities is also reflected in consumer behavior, as over half (52%) of travelers are willing to cut back on expenses in other areas to facilitate their travel plans. According to Hilton's global trends report [7], more than half (56%) of individuals in Britain intend to increase their travel spending in 2024 compared to 2023. Additionally, a quarter of travelers (25%) are actively seeking locally sourced food during their trips, further emphasizing their desire for authentic cultural immersion. These trends indicate a profound evolution in traveler motivations, underscoring the importance of experience-driven tourism in shaping future industry strategies.

Despite the desire of travelers for seeking authentic experiences, more than 40% of travelers don't know how or where to find these tours and activities that also could help to share with the "local" community.

2.2 The Cultural Information System in México (SIC)

The Cultural Information System in Mexico [8] is a platform developed by the Ministry of Culture that concentrates and provides information about Mexico's cultural heritage and resources. Its purpose is to promote awareness and appreciation of the nation's rich cultural diversity, which in turn has a significant impact on tourism. By offering detailed insights into cultural sites, events, traditions, and resources, SIC enhances the travel experience for visitors, encouraging them to explore a wider array of attractions into Mexico's diverse cultural landscape.

2.3 Atlas Obscura: An Explorer's Guide to the World's Hidden Wonders

Atlas Obscura [9] is a book and a webpage that serves as a virtual celebration of 700 of the most unconventional destinations around the world. This comprehensive guide

aims to redefine traditional travel bucket lists by presenting a curated collection of natural wonders, architectural marvels, extraordinary events, and peculiar places. It is organized by continents and country, the book not only showcases unique attractions but also encourages travelers to seek out the lesser-known aspects of various cultures and landscapes. By highlighting these hidden wonders, *Atlas Obscura* promotes a deeper understanding of global diversity and fosters a sense of curiosity that transcends typical tourist experiences. This approach aligns with the growing trend of experience-driven travel, wherein individuals increasingly prioritize exploration of unusual and authentic destinations over conventional tourist sites.

3 Methodology

Our research employs a mixed-methods approach, combining quantitative data analysis with qualitative interpretation to gain insights into tourist sites and experiences in Mexico City. The methodology centers on collecting and analyzing a substantial volume of tourist sites from two different popular platforms Cultural Information System in Mexico [8] and Atlas Obscura [9].

This research aims to combine the information provided by both Cultural Information System and Atlas Obscura focusing on Mexico City, the main objective is to diversify the points of interest to highlight lesser-known attractions that may evoke equal or greater interest compared to popular destinations. To achieve this, the methodology will involve a comprehensive assessment of various categories of cultural and historical sites, ensuring a broad representation of the city's offerings.

The following categories were included in the analysis: museums, monuments, archaeological zones, cultural centers, religious sites, sculptures, architecture, and any other interesting place that could provide an unusual experience.

A dataset of tourist sites was obtained after a cleaning process to avoid duplicity, incomplete, or incorrect information from both Cultural Information System in Mexico and Atlas Obscura. The information related to the complete tourist site dataset includes information such as name, classification, city, address, phone, webpage, email, geographic location, opening hours, description, services, prices, and user reviews or recommendations and stars (see Fig. 1).

As a result, a set of 569 tourist sites from both Cultural Information System and Atlas Obscura from Mexico City was obtained. The dataset was completed with the top 5 more relevant reviews and ratings of each tourist site from Google Places. The dataset had to be cleaned up since there were duplications, errors, some sites had no relevant information, or the name did not correspond to the actual site. The dataset was processed and a total of 469 tourist sites were filtered.

id	name	classificatic	state	municipality	street_nur	longitu	latitu	sic_webs	schedules	description
425	Palacio de Minería	Centro cultural	Ciudad de México	Cuauhtémoc	Tacuba 5	-99.14	19.44	http://sic.gc	Miércoles a domingo de 10:00 a 18:00 hrs. Días y	El Palacio de Minería constituye la obra maestra del
426	Palacio Nacional	Museo	Ciudad de México	Cuauhtémoc	Plaza de la Constitució n s/n	-99.13	19.43	http://sic.gc	Martes a domingo de 10 a 16 h. (requiere registro	No se tiene la fecha exacta en la que Palacio Nacional abrió sus
427	Palacio Postal	Museo	Ciudad de México	Cuauhtémoc	C. de Tacuba 1	-99.14	19.44	n/a	08:00 - 20:00 hrs. y sábado, 09:00 - 15:00 hrs.	Postal deslumbra a los visitantes con su impresionante vestíbulo,
428	Panteón Francés de La Piedad	Experiencia	Ciudad de México	Cuauhtémoc	Av. Cuauhtémo c	-99.15	19.41	n/a	Lunes a Domingo de 9:00 a 18:00 horas.	El panteón Francés de la Piedad es un cementerio privado, ubicado en
429	Papalote Museo del Niño Chapultepec	Museo	Ciudad de México	Miguel Hidalgo	Av. Constituyen tes 268	-99.19	19.41	http://sic.gc	Martes a viernes de 10 a 18 hrs.sábado y domingo de 10 a	El Papalote renovado se divide en 6 áreas que incluyen acercamiento a
430	Parque Masayoshi Ohira	Experiencia	Ciudad de México	Coyoacán	Corredores s/n	-99.14	19.35	n/a	n/a	Este parque de inspiración japonesa muestra las peculiares

Fig. 1 Relevant information associated to the tourist sites in Mexico City

3.1 Review Extraction

To get information related to the travelers' recommendations and reviews of the tourist sites an Application Programming Interface (API) was explored, particularly the Google Places API key was used, which is a powerful tool that provides a wealth of information about places. The information extracted from Google places was a total of 5 reviews and the correspondent rating of each tourist place. This information will provide relevant information about the tourist places by using Natural Language Processing to match it to the tourist preferences.

3.2 Conversational Agent

An important part of this research is to develop a conversational agent designed to provide information about tourist sites in Mexico City. A conversational agent, defined as an artificial intelligence system that simulates human-like dialogue to assist users in retrieving information or performing tasks, will serve as a key tool in enhancing the tourist experience.

The first step will include a data collection, specifically focusing on conversations between tourists and guides. Due to the lack of a public or private database that adequately covers these types of interactions, the generation of simulated conversations using ChatGPT was required. This approach will enable the creation of a dataset consisting of fictional conversations, designed to reflect realistic scenarios of interaction between tourists and travel guides or travel agencies. These simulated dialogues will encompass a wide range of topics, including inquiries about specific sites, cultural insights, logistical information, and personalized recommendations. By analyzing common queries and responses drawn from existing tourism literature and expert interviews, we aimed to enhance the authenticity of the interactions. The conversational agent can understand and respond to natural language input,

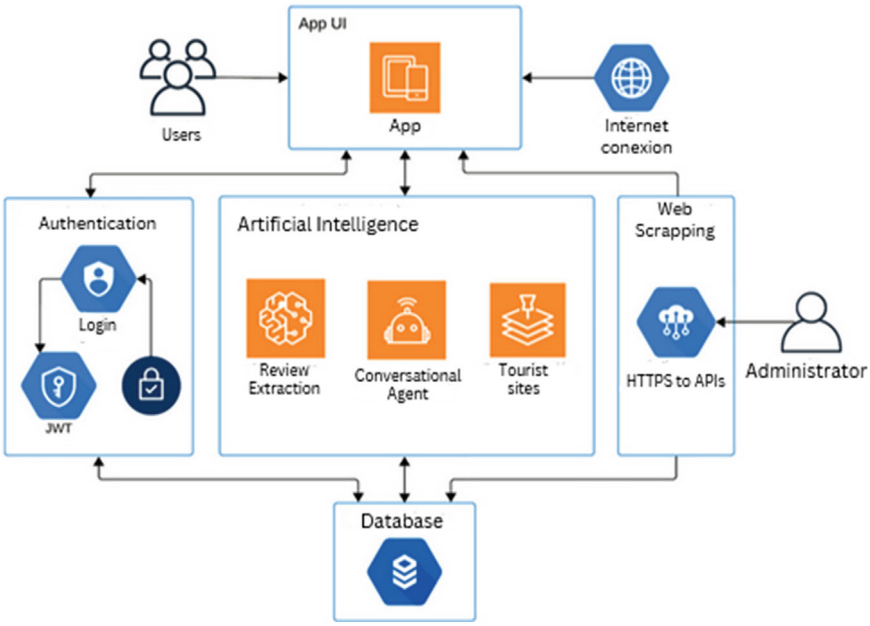


Fig. 2 Architecture of the project

allowing the agent to assist in recommendations about places to visit either popular or unconventional, providing relevant information about tourist sites, such as location, opening hours, reviews, rating, and a general description which may include historical or descriptive information about the place or point of interest.

Figure 2 shows the architecture of this project which includes the development of a mobile application designed to recommend sites of interest to travelers in Mexico City based on the database of Cultural Information System and Atlas Obscura, powered by artificial intelligence to provide recommendations about popular and unusual yet interesting tourist sites. The system will extract and analyze user reviews from Google places through sentiment analysis, using Natural Language Processing (NLP) techniques and machine learning models to get relevant information about the sites of interest, as well as the ranking of each place. Additionally, the application will feature a conversational agent that allows users to interact with the system providing information and support tailored to their travel needs in a natural way.

4 Discussion and Results

This research highlights the use of different information sources to provide valuable recommendations for travelers seeking a more authentic and original travel experience, with recommendations guiding users toward less frequented and unusual

attractions in Mexico City. Working with different sources such as Cultural Information System and Atlas Obscura to provide information about the most relevant tourist sites in Mexico combined with the opinions and reviews extraction of the same tourist sites from Google places, brings the opportunity to improve the traveler experience to the next level. This information provides the necessary knowledge to give recommendations tailored to the travelers' needs, in a natural and friendly way by improving also the user experience with a conversational agent, which provides a natural interaction using natural language, answering questions in a way that feels like talking to a real person.

This work brings the opportunity to combine and improve different approaches that were previously developed and tested for different regions of Mexico such as the case of the state of Queretaro, which integrated Tweeter reviews processed with Natural Language Processing and recommended places based on the "positive" opinions of the point of interest analyzed in that State [1] or the case of the restaurants in Mexico City which centralized the recommendations from social networks and rating platforms to generate automatic and global reviews based on the experiences of other customers, hence helping the customers to make informed and reliable decisions when choosing a restaurant or service [10, 11].

5 Suggestions for Further Study and Conclusion

The dataset that was processed in this work will provide the source of information for the conversational agent system, helping the agent to learn the context related to points of interest in Mexico City.

This project will require a mobile application development for the conversational agent, which will include the selection of the categories or classification of tourist sites which are of interest to the traveler. The system will provide relevant information about tourist sites and a conversational agent will be developed to give insights about tourist attractions and unusual destinations which can be of interest to the traveler. The conversational agent will enhance the experience due to its natural interactions, using human-like language, making the interaction more efficient and personalized.

This paper is the first step toward a more authentic travel experience, using sources of information to provide unusual experiences and exploring the potential of artificial intelligence to provide recommendations through a conversational agent, based on the reviews from tourists, general information about the tourist places, and the geographical location from the traveler so the recommendations are tailored to the closest places that match the traveler's preferences and current location.

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FinTech/Blockchain's Significance and Disruptive Impact in Digital Transformation: A Literature Review



Vasiliki Basdekidou

Abstract Digital transformation and the adoption of blockchain in corporate operations and financial services introduces a new set of significant policy issues and concerns about security, competition, and regulatory rules ensuring healthy competition and level playing fields in the FinTech business and financial ecosystem. From the disrupting adoption of blockchain and the impact of FinTech, one possible outcome concerning market competitiveness, concentration, and competition is a business and financial world consisting of numerous specialized businesses and just a few major providers. Hence, to handle trade-offs between stability, trust, integrity, knowledge, information, data sharing, competitiveness, efficiency, consumer protection, cyberhacking, security, and privacy, authorities must collaborate across financial regulation, competition, and industry regulatory organizations. This paper follows a simple literature review methodology for demonstrating knowledge and understanding of the academic literature on the disruptive power of FinTech and the importance of blockchain and distributed ledger technologies in digital transformation processes.

Keywords FinTech · Blockchain · Digital transformation

1 Introduction

Financial technology services are being transformed by digital innovation (digital transformation). Globally, financial technology (FinTech) innovations have surfaced, including mobile money, peer-to-peer (P2P) or marketplace financing, blockchain technology (BCT) applications, blockchain adoption (BCA), and crypto-assets.

FinTech has already improved retail users' access to and convenience with financial services during the last fifteen years. In the meantime, wholesale markets are changing in a variety of sectors, including financial market trading and regulatory and supervisory technology. These sectors are being affected by blockchain as an

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application of distributed ledger technology (DLT), artificial intelligence (AI), and cloud services.

1.1 Background

Many new businesses have emerged to use new technology to satisfy consumer demand, while the majority of established businesses say that digital transformation is a top strategic goal [1]. To compete with FinTech and the major technology companies that have recently entered the market, top enterprises are moving quickly to "close gaps" in the digitization of their internal operations and client offers [2, 3].

Markets may become more inclusive, competitive, diversified, and efficient as a result of these advances, but concentration may also rise. Particularly, in emerging markets and developing economies, innovation has boosted inclusiveness and brought competitiveness [3, 4]. Particularly in markets where the financial system was less developed, FinTech appears to have flourished [5]. However, new technology coupled with the underlying economics of intermediation could cause both new and established financial services firms to concentrate [6].

Big tech companies' monopolistic or anticompetitive practices are already under investigation. Regulators are struggling with how to best oversee and regulate a financial services industry that is becoming more and more characterized by new players and business models, as well as how to address potential threats to financial stability, financial integrity, fair competition, data privacy, consumer protection, and 11 dynamic blockchain observed variables: transparency, same-data sharing, knowledge sharing, smart contracts utilization, cyber-hacking protection, fraudulence suspension, fidelity-integrity-trust, sustainability fair, green workshops, environmental awareness, and volunteer environmental cleanup [7]. This is because financial services are moving toward similar technology-driven configurations [8, 9].

The digital revolution has accelerated due to the COVID-19 epidemic. In particular, as economies, financial services providers, businesses, and individuals navigate the pandemic and the eventual post-COVID-19 world, the need for digital connectivity to replace in-person interactions between consumers and providers and in the processes that produce financial services will become even more crucial. As per Basdekidou and Papapanagos [7, 8, 10], the epidemic has expedited the transition toward digital payments. Additionally, it has accelerated e-commerce [5, 11], which could be advantageous for large IT companies and their financial endeavors. Following the outbreak, financial app downloads increased more in nations with stricter COVID-19 regulations and lower levels of community mobility [6]. Lastly, according to Xiaofan Li et al. [2] it might expedite work on central bank digital currencies (CBDCs).

The implications of digital innovation for market structure and related policies, such as financial and competition regulation, are examined in this article. Numerous surveys of regulatory responses have been conducted. Taking a step back, this study

examines what economic theory, DLT/blockchain technology, and financial intermediation can teach us about how technology may drive the sector's industrial organization and how that knowledge may guide future policy responses [9].

The paper focuses on how innovation has allowed providers to overcome long-standing issues with financial intermediation, such as asymmetric information, uncertainty, incomplete markets, and fixed and variable production costs. This is how the digital transformation of finance (particularly in blockchain adoption) is being felt [4, 7, 10, 12].

The impact of digital innovation and blockchain adoption on these major financial economic frictions and how it changes the financial services value chain and industrial structure are discussed in this paper. Corporate managers and policymakers can learn from the factors influencing these shifts and possible effects on industry structure how to capitalize on FinTech's advantages while reducing some of its hazards, especially those related to market and entrepreneurship structure, and corporate competition [7, 10, 13]. The emphasis is on technological and economic factors that are common to all financial services [1, 2, 4]. It acknowledges that the industry comprises a diverse array of goods and services and is divided into multiple submarkets that may employ various DLT/cloud technologies or have distinct business models [12, 13]. As a result, these could differ in terms of competitiveness and market structure.

1.2 Key Terms Definition

Digital Transformation (DT). Digital transformation is the process by which a company adopts and uses digital technology to translate business activities into a digital format.

DLT/Blockchain adoption in Collaborative Entreprises. DLT/Blockchain adoption (BCA) in Collaborative Enterprise (CE), both terms of design, programming, and implementation, relies on new business/financial models and innovative technologies. One of such technology is Distributed Ledger Technology (DLT), with Blockchain as its main representative, which deploys a decentralized approach requiring no need for intermediaries, facilitating decentralized and smart operations.

Digital Financial Services (DFS). Digital financial services are financial services that rely on digital technologies for their delivery and use by consumers.

Financial Technology (FinTech). FinTech refers to digital technologies that have the potential to transform the provision of financial services spurring the development of new business models, applications, processes, and products. The term "FinTech" is also broadly used to denote the ongoing wave of new DFS. Examples of these technologies include cloud services, digital ID, and application programming interfaces (API).

2 Methodology

The methods employed for a literature review might vary depending on the goal of the study, as well as the time and resources available. The researchers locate, compile, and assess a body of literature on a certain subject using an organized process based on a predetermined set of standards.

Reviews should be systematic if their goal is to provide defensible evidence for claims. This is because systematic literature reviews (SLRs) employ strict, defined methodologies [13]. A description of the research studies' conclusions and a critical evaluation of the included studies are common components of a systematic review. However, the rigor of procedures used in literature reviews (LR) is typically not as high. This is so because, in contrast to systematic reviews, their goal is not to generate a response to a research (review) topic.

This study uses a straightforward simple literature review methodology that, although not being SLR, gives background knowledge and context for a new study on FinTech, BCA, and digital transformation. It functions well as a broad overview of existing knowledge on these subjects from well-known databases (Scopus, WoS, etc.).

3 Results

3.1 The Impact of Digital Transformation on Business and Finance

Although technology adoption in the financial sector is not new, the working environment has up until recently been governed by several obstacles. Due to the dematerialization of the majority of financial services, the business was already characterized by a relatively high degree of computerization in the late twentieth century [6, 8].

Physical money or a check was typically only required for payments, and onboarding new products and services sometimes required in-person or paper-based processes. However, physical infrastructure like branches and automated teller machines (ATMs) was still necessary for reaching and communicating with clients regularly [12]. Clients who wanted to conduct business with counterparties who used different banks were forced to employ pricey, occasionally unsafe, or slow procedures like wire transfers. To join in a transactional network, an institution usually needed to be licensed and a member of a consortium of banks or brokerage houses. This barrier to entry persisted even after the introduction of digital payment systems and the dematerialization of securities [7, 9, 13].

Moreover, the cost of data processing and storage necessitated the operation of custom data centers and mainframes. This reduced the amount of data that could be collected, saved, examined, and shared in order to increase effectiveness, lower price risk, and customize goods to meet the needs of customers [8, 11].

Considerable progress in technology has been made in three principal domains that have fostered the present trend of technology-driven finance:

(i) Increased connectivity. The ability to communicate and exchange information remotely, both between companies and with customers directly, has greatly expanded thanks to the internet and mobile technologies. Technology has improved access to and the effectiveness of direct delivery channels through the nearly universal use of smartphones. It also offers more affordable, and customized financial services.
(ii) Low-cost computing. The exponential increase in computing performance has coincided with a sharp drop in data storage costs. From 1977 to 1983, the Cray-1, which weighed 5 tons, ran at 82 MHz, and cost $13 million, was the fastest "supercomputer" in the world. The A11 chip, which powers the iPhone X, is a tiny fraction of the size and cost of previous models and operates at a speed of 2.42 GHz, 29 times quicker.
(iii) Data storage. In 1982, a room full of tape or hard drives could hold more data than what would fit on a micro secure digital (SD) card today. The amount of data being generated globally has expanded exponentially, reaching a projected 55 zettabytes (55 trillion gigabytes) in 2023, as the cost of data storage has decreased from USD 0.11 per gigabyte in 2010 to 0.01 in 2023. The development of machine learning and artificial intelligence has also increased our capacity to process large amounts of data quickly. A multitude of new data is produced by digital devices such as cellphones and activities like social media and e-commerce.

Cloud-based computing is one of the new business models for technology provision that are made possible by these advancements. This combines inexpensive processing power and storage with the capacity for an organization or individual to connect to externally managed and maintained data centers [7, 9, 12]. The ability to acquire infrastructure on demand and lower the fixed cost barrier to entry for financial services providers are the outcomes. According to surveys, cloud use has accelerated quickly.

Businesses in Europe that used cloud storage increased dramatically between 2021 and 2023. Cloud storage was utilized by more than half of businesses in the Nordic region in 2023, according to Eurostat, and businesses in the Netherlands, Ireland, the United Kingdom, and Malta have also quickly adopted cloud computing (see Fig. 1).

Digital innovation reduces transaction costs and opens up a wide range of new financial services business models thanks to advancements in computers and networking. Adoption affects both new and established providers. The costs of gathering, storing, processing, and transferring information can be decreased with the use of BCT. These costs can include those associated with search, replication, tracking, and verification [12].

In the financial sector, this can assist savers in locating an investment product that meets their unique requirements or help borrowers get a good offer on a loan more quickly. Technologies can also assist parties in automating event verification,

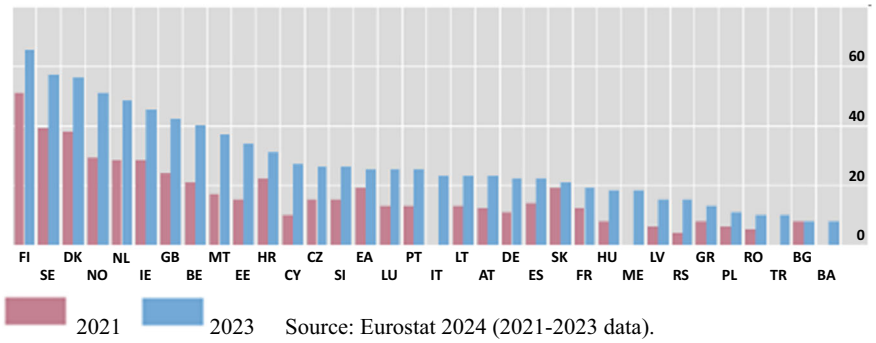


Fig. 1 Cloud storage functionality engaged by European companies in 2021 and 2023 (Picture credit: Eurostat, https://ec.europa.eu/eurostat/data/database)

which opens up new possibilities for state-contingent product development. A drone might confirm that a field has been planted to facilitate the disbursement of an agricultural loan, or an insurance customer could use a phone camera or other remote device to document damage that leads to an insurance claim. These are enhanced by BCT, which offers a set of underlying features that facilitate peer-to-peer interactions between companies and people, even in situations where they have never met before (trustless context). In the long run, these advances could eliminate the need for intermediation by allowing people or businesses to deal directly, as lenders and borrowers do in P2P and private credit markets, rather than through banks [12, 13].

3.2 The Disrupting FinTech and Blockchain Functionalities

Because FinTechs interact directly with consumers, the pressure from competitors has intensified dramatically. Since the links in the value chain closest to the customer generate the largest margins in most businesses, the "*possess the customer*" battle will be fiercely contested [12]. Certain FinTech companies have adeptly targeted incumbents' high-margin products or services and taken them away, leaving the latter with a lower-margin product mix [8]. In industries where FinTechs themselves depend on incumbents to run their businesses; disruption might be limited. As previously said, a lot of FinTech companies still depend on banks to handle payments and store assets, and customers frequently start transactions from an account with a financial institution [12].

The way that different institutions collaborate, compete, or do both will determine which combination of the following three factors—Economies of scale and scope, Preferences for choice or convenience, and Regulations—wins out in a given market.

1. *Economies of scale and scope*: Where switching costs and convenience effects are important, and production costs remain significant about revenues, it is anticipated consolidation into a group of large players who can use scale in capital, connectivity, and data to offer a wide range of products at high volume and low cost [5, 9, 12].
2. *Preferences for choice or convenience*: As we have seen, technology has made it possible for businesses to separate products and services, in addition to the economies of scale that large players may achieve. These could differ in terms of cost, value, and services rendered. Customers can self-aggregate and select a unique combination of distinct products. This is more likely to occur when customers have low search and switching costs and are very price-sensitive or appreciate more specialized services [3, 12]. The target client base may readily locate and switch to the product, allowing niche providers to concentrate on product-market fit [9, 11].
3. *Regulations*: The actions of financial services and competition regulators, who will continue to impact outcomes with a variety of legislation and policy instruments, will not allow the above two factors to play out independently.

3.3 Technological Advancements, Benefits, and Challenges

The FinTech's disruptive impact and the significance of Blockchain technology in digital transformation were demonstrated throughout the following three channels (technological advancements, benefits, and challenges):

(i) Technological advancements. An organization can become more cost-effective, decentralized, transparent, secure, and compliant with regulations by implementing blockchain technology. By using end-to-end encryption, blockchain technology reduces or eliminates theft and other illegal fraudulent activity by producing an irreversible record of transactions. The evolution of blockchain technology has had a significant impact on how traditional banking services are provided. Nevertheless, real-time deployments of BCT are still relatively uncommon despite its promising features [12, 13].

(ii) Benefits. Banks can benefit from blockchain technology from an operational, managerial, strategic, and infrastructure standpoint. Blockchain facilitates identity management, trust, improved recordkeeping accuracy, increased transparency, decreased fraud, improved privacy, and less need on physical infrastructure for the exchange of goods and services. In a similar vein, blockchain technology offers enhanced security by safeguarding data in a database against attacks on the central database [12].

The transparency of blockchain technology is a major predictor of behavioral intent to use it, according to [5, 13]. Transparency by all nodes transactions promotes trust.

(iii) Challenges. Adopters of blockchain technology should understand that the field is still in its infancy and has few established guidelines and norms. Transaction

security, high computer power, costly IT infrastructure, and ongoing regulatory challenges are all necessary for blockchain. The financial industry requires more time to use blockchain technology because of issues with identity verification, scalability, energy consumption, consensus method, adoption cost, and setup [10, 11].

4 Discussion

A survey of the literature on FinTech and DLT/blockchain adoption in the banking and financial industries was done for this article. It was discovered that to stay up with the rapid advancements in digital technology, businesses, banks, and financial institutions are going through enormous changes. The study concluded that FinTech, which provides superior client information supported by blockchain technology, will bring about significant changes in investment standards.

BCT in FinTech can offer a far more efficient financial alternative than what we presently have since it is based on equity and decentralization. Thus, this study helps spread the word about the FinTech community that is built on BCT and offers quick money transactions, excellent security, and transparent financial tracking.

Financial services have witnessed the unbundling of various goods and services on numerous occasions. The dynamics and financial frictions that initially necessitated the need for financial intermediation have also made a comeback. The financial industry may be moving toward a barbell market structure, where larger multiproduct institutions coexist with more specialized specialist institutions.

5 Conclusions

This study, through a literature review, has demonstrated how the production of financial services is changing due to digital innovation in a way that has significant economic effects and affects the financial industry's industrial structure. Efficiency and competition can be increased with the aid of advances in computers and communication. Tools for supervisory and regulatory policies will need to change.

The current regulatory framework could not be sufficient to encompass new entrants offering financial services, and these players could present difficulties for ongoing financial oversight. Maintaining an equilibrium between stability and competitiveness is becoming more difficult for financial services providers as well as the participants in reorganized financial product value chains.

Regulations about data control and the types of data that are acceptable for particular services must be established; these should ideally be established in a way that empowers individuals and strikes a balance between efficiency and competition, privacy and consumer protection, and financial inclusion. We will need to recognize and combat new forms of bias and discrimination. It will be necessary to find a new

equilibrium between consumer protection, privacy, stability, and integrity while also taking into account cultural preferences in many nations and legal systems across the globe.

The digital banking gateway will attract traditional banks due to the need for technological transformation, teamwork, and cost savings for businesses. The financial and banking industries are constantly searching for cutting-edge technology to enhance customer experiences. Needs in the financial sector are being driven by the emergence of new technologies and rising customer expectations; digital transformation is essential to attracting more customers.

FinTech innovations are probably going to drastically alter the financial services and commercial landscape. Although there are still many obstacles to overcome, blockchain technology remains the most promising advancement in the banking and finance industry. Blockchain is not thought of as a tool that competes with cryptocurrencies or central banks. BCT has a bright future ahead of it.

Future research directions point to SLR for rigorous explicit literature review methodology to produce answers to research (review) questions and derive qualitative statistical information for corporate managers, practicians, and researchers [13].

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Service Innovation Snapshot from the Lens of a Top Journal

Carlos Farinha, Sónia Avelar, and Teresa Borges-Tiago

Abstract The service sector, including health, education, and tourism, is the fastest-growing business area globally. Innovation research has mainly focused on goods, leaving service innovation less explored. This paper analyzes service innovation processes and impacts, using the Journal of Innovation & Knowledge (JIK) as a case study. Innovation is crucial for societal progress, economic growth, and solving complex problems, specifically in the context of service innovation. Using a bibliometric approach, we analyze JIK's articles to understand service innovation. Key research areas include differences between product and service innovation, knowledge management's role, and digital transformation's impact. Findings highlight service innovation's unique behaviors and determinants. Geographic analysis shows strong contributions from China. Bibliometric tools provide insights into JIK's influence and interconnectedness. Despite measurement challenges, JIK addresses complexities, emphasizing nuanced indicators and methodologies. This study underscores service innovation's importance in competitive advantage and organizational performance, offering a detailed overview of service innovation research evolution and suggesting future research directions.

Keywords Service innovation · Innovation and knowledge · Bibliometric analysis

1 Introduction

Services are the fastest-growing business area worldwide, encompassing sectors from health and education to the tourism industry. For a long time, innovation research paid mostly attention to goods, leaving service innovation processes less explored. However, service innovation plays a crucial role in creating a competitive advantage for firms, particularly in emerging markets and the digital era. Market innovation has been identified as a significant determinant of competitive advantage in emerging economies, with organizational leadership mediating this relationship [1].

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The connection between innovation and competitive advantage is complex, involving multiple factors and routes to corporate entrepreneurship [2]. In the service sector, new service adoption depends on specific configurations of attributes rather than individual elements, highlighting the importance of holistic approaches to service innovation [3].

This paper presents a comprehensive analysis of the processes and impacts of service innovation, using the Journal of Innovation & Knowledge (JIK) as a case study to illustrate broader trends and insights since it is the highest-ranked journal on innovation.

2 Literature Review

2.1 Services Versus Products

The main differences between products and services lie in their fundamental nature and consumer perception. Services are performances or experiences, while products are tangible goods [4]. This distinction leads to increased perceived risk in service purchases due to their intangibility, heterogeneity, perishability, and inseparability [5]. Consumers tend to use personal sources less for services than for products, but impersonal sources are used even less frequently for services [6]. The information strategy in advertising also differs, with service advertisements employing distinct tactics compared to product advertisements [7]. However, as consumers gain more knowledge about a service, the search patterns for products and services become increasingly similar [6]. These differences impact marketing strategies, with brand loyalty being a crucial risk reliever for services [5].

In recent years, innovations like zero-waste stores, crowdsourced solutions, social media customer support, personalization engines, modular smartphones, subscription models, smart agriculture tools, collaborative economy services, telehealth, precision medicine, on-demand services, peer-to-peer platforms, autonomous delivery robots, digital twins, electric vehicles, AR shopping, online education, biometric authentication, remote work software, blockchain, IoT, gamification, cultured meat, AI chatbots, smart devices, virtual reality, and space tourism have emerged, showcasing a surge in service innovations over product innovations in the market.

The service innovation process differs from manufacturing innovation, with services more likely to have shorter beta testing periods and rely on internally sourced ideas from general managers [8]. Service innovation success factors are contingent on the sector context, with explicit services occupying a middle ground between tacit services and products [9]. Service blueprinting has emerged as a practical technique for service innovation, allowing the visualization of dynamic service processes [10]. The importance of factors affecting innovation performance differs between services and manufacturing. For service firms, the critical factor is the importance of innovation in human resource strategy, while manufacturers prioritize product innovation

advantage and quality [11]. Additionally, technology synergy may negatively impact new service performance due to the ease of imitation by competitors [11].

2.2 Services Innovation

Service innovation is a critical source of competitive advantage for firms [12]. It involves creating new value propositions through developing or integrating practices and resources in novel ways [13]. Research has identified four archetypes of service innovation [12]: (i) Output-based innovation focuses on measurable outputs like new services or enhancements, emphasizing economic benefits; (ii) Process-based innovation redesigns service delivery processes to improve efficiency and customer satisfaction, involving both frontline and backstage activities; (iii) Experiential innovation is centered on how customers perceive and make sense of services, aiming to enhance overall customer experiences and emotional responses; and (iv) Systemic innovation considers the broader service ecosystem, reconfiguring resources, and institutional arrangements to foster value co-creation. This holistic approach emphasizes the interconnectedness of elements within the service ecosystem, highlighting the importance of social context and institutional arrangements in enabling or inhibiting innovation. Additionally, four types of service innovation have been proposed: adaptation, resource-based, practice-based, and combinative [13].

Innovation in services is characterized by significant heterogeneity across industries and firms [14, 15]. Process innovations, innovative investments, and software development are key drivers of service innovation [15]. A "reverse product cycle" has been proposed, starting with process improvements, moving to quality enhancements, and culminating in new service creation [16]. For instance, in hospitality and tourism innovation has evolved significantly, as shown in different studies that examine various aspects of the innovation process, including organizational and customer perspectives, as well as service design, process, and outcome phases [17].

Various taxonomies have been developed to classify service innovations, highlighting the diversity of patterns [14, 15]. The systemic nature of service innovation is emphasized, with networks and cross-sectoral competencies playing crucial roles [18]. While R&D is important for some science-based services, it is less significant for others [15]. The adoption of new technologies from the capital goods sector often initiates innovation cycles in services [16]. Overall, these studies underscore the complexity and variety of innovation processes in the service sector.

Truong, Dang-Pham, McClelland Nkhoma [19] noted that customer satisfaction and behavioral intentions are influenced by innovative mechanic, humanistic, and functional clues, as well as complexity, meaningfulness, novelty, and affordability. Aligning service strategies with innovation determinants is crucial for success, though challenging [20]. Firm-specific factors are generally more important than region-specific characteristics in determining innovation behavior, particularly for small and medium-sized enterprises [21]. However, the impact of regional factors may vary depending on the local industry structure. Technical and social innovations

are relatively recent phenomena in human history, and their determinants of behavior differ from those of other living systems [22]. Understanding these determinants is essential for developing effective innovation strategies and policies that cater to the specific needs of firms and regions. Thus, comprehending the plethora of solutions available and how they differ from products can help to explore their potential and benchmark the best practices.

3 Study Methods

This work relied on a three-phase study, based on the articles published by the highest rank innovation journal at the scientific journal rankings—JIK. After collecting all the articles published by the journal in a ten-year window, a bibliometric analysis was conducted, followed by content processing and performance analysis. The JIK is an open-access journal recognized as a reference in the scientific fields of knowledge and innovation [23], contributing to the development of conceptualizations, processes, and practices.

3.1 Bibliometric Analysis

Bibliometric analysis represents a widely employed and methodologically rigorous approach to the investigation and examination of extensive scientific datasets. This methodology facilitates the elucidation of evolutionary subtleties within a designated field, concurrently illuminating nascent areas of significance within the said field [24]. The search on the Web of Science (WoS) for all databases was performed in 2024, considering the only criteria for the "Publication/Source Titles" being "Journal of Innovation & Knowledge". 435 results were obtained through this search (Table 1).

Table 1 Web of Science results analysis for JIK

Document Types	#	% of 435	Top fields	# by field	# by focus
Article	419	96.322	Business Economics	435	Services - 7
Review Article	9	2.069	Computer Science	183	Knowledge - 7
Correction	3	0.690	Engineering	151	Goods - 162
Editorial Material	3	0.690	Social Issues	69	Manufacturing - 180
Book Review	1	0.230	Mathematics	64	Mix - 100

4 Results

The evolution of article publication in this period shows an initial stability (2016–2018) with an average of 21 articles per year; a period of fluctuation (2019—33 articles; 2020—32 articles; and 2021—27 articles), and then a remarkable increase in the most recent years, particularly in 2022 and 2023, with 122 and 159 articles, respectively. This trend could reflect growing interest and advancements in the field the journal covers. The distribution of articles is global, with contributions from multiple continents, indicating a worldwide interest or research effort in the field related to the articles. United States (9,45%), parts of Europe (31,72%), and India (5,99%) are producing a noticeable number of articles, but not as many as China (43,67%).

Conducting a content analysis of research articles involves systematically examining and analyzing the content of published articles to identify patterns and themes. In this case, the articles were added to the Wordstat software, and a content analysis was performed. The 435 articles' content analysis shows 65 common topics within the articles, with the most prominent being innovation performance and knowledge management. A similar conclusion can be observed in the most used words and expressions presented below (Fig. 1).

The data compiled were transferred and assessed through VOSviewer. This evaluation focused on insights derived from the titles and abstracts of the articles. Co-word analysis represents a methodological approach that scrutinizes the substantive content within publications, allowing a preview of the impending developments within the research field [24]. In network visualization, the nodes represent terms or keywords, and their size indicates the frequency of the term's occurrence in the dataset.

The analysis shows 6 clusters given from 177 items that were retrieved from the abstracts of the papers. Based on common themes within each cluster, they were named after: (1) Innovation and Performance Cluster: with 41 items is centered around "innovation", "firm performance", "innovation performance", and



Fig. 1 JIK most referred words and expressions on article titles

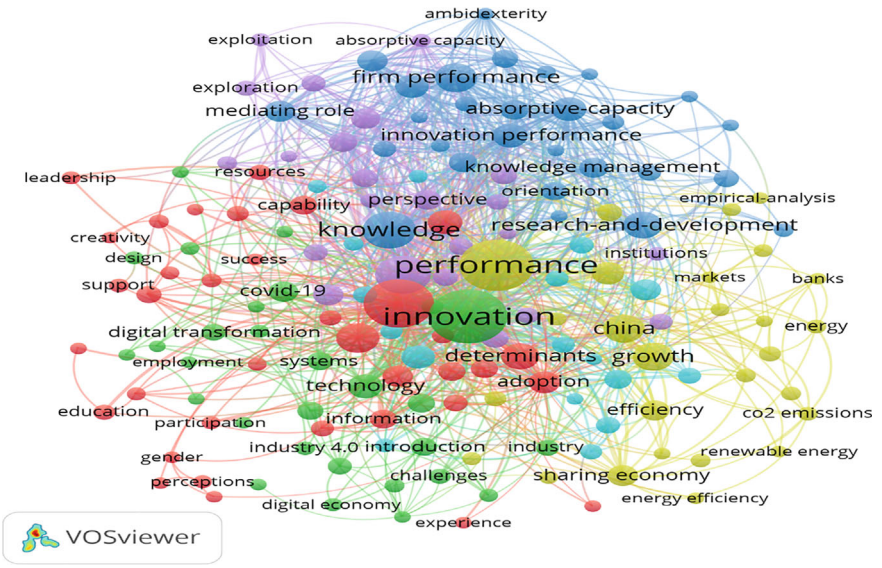


Fig. 2 JIK co-occurrence network visualization

"growth", and reflects the relationship between innovation strategies and organizational outcomes; (2) Knowledge Management Cluster: with 33 items focus on "knowledge", "knowledge management", and "absorptive capacity", dealing with how organizations manage and capitalize on knowledge; (3) Digital Transformation and Technology Cluster: including terms like "digital transformation", "systems", "technology", and "Industry 4.0", related to the impact of digital technologies on knowledge and innovation processes in businesses; (4) Environmental Sustainability Cluster: with keywords such as "energy", "CO2 emissions", "renewable energy", and "energy efficiency", this cluster represents research into innovation in sustainability and green technologies; (5) Economic and Social Impact Cluster: encompassing terms like "economic development", "sharing economy", "social capital", and "COVID-19", which might relate to the broader economic and social effects of innovation due to COVID-19 pandemic; and (6) Research Methodology Cluster: indicated by terms such as "empirical analysis", "structural equation", and "modeling", suggesting a focus on the research methods used to study innovation (Fig. 2).

5 Discussion and Conclusions

Assessing different service innovations is crucial for understanding their impact on efficiency, customer satisfaction, and competitive advantage. It helps identify successful strategies, fosters continuous improvement, and ensures that services meet

evolving market demands and technological advancements, ultimately driving business growth and sustainability. The bibliometric analysis conducted on JIK's papers allows us to understand that even though service innovation was less prominent as a research driver, many works are focusing on service or with models/frameworks or implications that can be considered. For instance, terms related to "technology", "digital transformation", and "adoption" were the major thematic areas focused on the role of digital technologies in service innovation. The presence of terms like "digital transformation", "industry 4.0", and "technology" emphasizes the role of digital and technological advancements in shaping service innovation. In the cluster that combines "knowledge management", "research-and-development", and "absorptive capacity", the focus was on how organizations in the service sector manage and utilize knowledge for innovation. The cluster integrating "firm performance", "innovation performance", and "efficiency" suggests that innovation is assessed based on its impact on the overall performance and efficiency, which can be applied to service organizations. Similarly, the connection between "performance" and terms like "renewable energy" and "CO2 emissions" indicates an interest in sustainable innovation that can be fostered within the service sector, focusing on environmental performance. The link between "customer", "market", and "adoption" highlights the customer-centric and market-driven nature that service innovation needs to have. Successful service innovation often depends on understanding and meeting customer needs and market demands.

The outcome from JIK illustrates that innovation is a multifaceted phenomenon influenced by technological advancements, knowledge management, market and customer orientation, and a focus on performance and sustainability. These interconnections reveal the complex interplay between these factors in driving innovation within the service sector and its potential for future research works, that not only analyze the service innovation processes but interconnect it with the major dimensions found here. The fact this work focuses on JIK is its major limitation, but opens space to a broader analysis, that not only considers journals with an innovation focus, but also service journals.

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The Cohesion Policy of the European Union for Education and Training



Sofia Asonitou, Chara Kottara, Dimitra Kavalieraki-Foka, Fragkiskos Gonidakis, and Marina Syriopoulou

Abstract Over the past few decades, the European Union has faced many challenges impacting member states and their citizens. Issues such as demographic and climate change, successive economic and social crises and ensuring recovery from the pandemic's effects require significant initiatives by the EU to address each threat. The primary objective of this research that is part of a broader study is to examine the European Union's policy on education and training through the lens of cohesion policy and to explore the contribution of cohesion policy to the Greek reality. The methodological design utilised qualitative research. In the pilot phase that this study reports, 8 interviews were conducted with eight primary, secondary, tertiary, and vocational education teachers in the region of Attica, Greece. The research findings underscore the pressing and urgent need for European citizens to have immediate access to modern and innovative educational programs, a need that is not just important but urgent. Education and training contribute to individuals' well-being and are the key to the smooth integration of individuals into employment and the labour market by developing the necessary skills. The European educational systems of member states, vocational education, and lifelong learning, with their potential to enhance and equip citizens with the appropriate skills, offer a hopeful outlook, playing a crucial role in sustainable, economic, and social development oriented towards green and digital transition. There is need for further multicultural research to take place.

Keywords European union · Cohesion policy · Educational policy

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1 Introduction

The European Union, through the Charter of Fundamental Rights [1], promotes education and training, recognising their connection to employment and social equality [2, 3]. The EU's cohesion policy aims to reduce inequalities by directing resources to less developed regions [4, 5] and, with a budget of approximately 350 billion euros for 2014–2020, enhances economic and social cohesion [6]. Bearing all those above and contemporary realities in mind, it is increasingly evident today that activities in sectors such as politics, economy, as well as cultural and social actions of a country, far exceed its borders as they influence other member states, especially when they participate in international organisations [7, 8]. One sector where significant interaction and processes between countries are noted is education [9, 10]. Education, as a crucial area of interaction among nations, is vital in promoting economic progress, and this cannot be overlooked [11]. With its significant influence, the EU plays a pivotal and dominant role in shaping education policies and significantly strengthens global educational cooperation, thereby underlining its importance and influence in education [12].

This study explores the EU's policy on education and training through cohesion policy and its contribution to the Greek reality. The EU aims for economic and social development among member states, eliminating inequalities and linking education with the labour market to create suitable human resources. Given Greece's low ranking in international assessments, such as the PISA program, examining how cohesion policy can improve this position and contribute to the country's economic development is essential. The research aims to draw valuable conclusions and information about the impact of EU funding programs on skill enhancement and personal development in various roles. It explores how these programs contribute to professional and personal growth. The study also examines the effectiveness of "Inquiry-Based Learning", focusing on how this method encourages active learner participation and promotes effective learning and material assimilation. The research also investigates teaching methods used in the educational process to identify strategies that enhance learner engagement and understanding. The study will address the following research questions/fields:

- RQ1: Which skills and competencies are promoted by the EU through cohesion policy for education and training, and what is their contribution to individuals' personal development and employability?
- RQ2: What is the development of research in education and training through the EU's cohesion policy, and how does it support inquiry-based learning in the lower levels of education?

2 Literature Review

Guimaraes [13] analyses the European Union's policy on lifelong learning and adult education in Portugal, highlighting the EU's influence in focusing education on economic development. Pagliarello [14] examines the transformation of the EU's educational policy, emphasising the redefinition of education from the Lisbon Strategy of 2000 as a tool to enhance competitiveness. Martinez-Izquierdo and Torres Sanchez [15] present the German dual vocational education model as a benchmark for reforms in the EU, emphasising the collaboration between member states to promote vocational education. Guerrero Puerta [16] explores the EU's policies on education and early school leaving, proposing fairer policies for the inclusion and integration of social groups. Szüle [17] highlights the importance of childcare for employment in EU regions, noting differences between old and new member states.

The European Tertiary Education Register (ETER), referenced by [18], provides data on European higher education institutions and supports higher education policies. Rodriguez-Fernandez and Themelis [19] examine the minimum guaranteed income to combat poverty in the EU, emphasising the role of education in social cohesion. Cedefop [20] highlights the importance of work-based learning in vocational education, while [21] emphasises the necessary digital transformation of education during the pandemic. Sanchez and Gutierrez-Esteban (2023) [22] explore the barriers and facilitators for educational innovation in Spain, emphasising the need for continuous teacher training. The study by [23] evaluates the performance of European educational systems. In contrast, [24] studies the impact of the European Social Fund (ESF) on education and youth employment, highlighting the need for a combination of education and skills. Overall, these studies highlight the role of the EU in shaping educational policies that enhance employment, social cohesion, and economic development through education and training.

3 Theoretical Framework

3.1 EU Cohesion Policy

The cohesion policy of the European Union is a fundamental tool for promoting economic and social equality among member states. It aims to reduce disparities by directing resources to less developed regions [4]. Established by the Treaty of Rome in 1957, this policy has evolved to include economic, social, and territorial cohesion, incorporating the dimension of territorial cohesion in the Treaty of Lisbon [25]. With funding of 350 billion euros for the period 2014–2020 [6], the cohesion policy is implemented through structural and investment funds such as the European Regional Development Fund (ERDF) and the European Social Fund (ESF). These funds support sustainable development, employment, and education while promoting economic growth and eliminating social inequalities [26]. With the core principles of

additionality and co-financing, the cohesion policy aims for the equitable distribution of resources and the enhancement of prosperity for all EU citizens [27].

3.2 EU Cohesion Policies for Education and Training

Since the founding Treaty of Rome in 1957, the European Economic Community (EEC) and later the European Union (EU) have emphasised the importance of social development through education, labour, and employment. The Treaty of Lisbon further promoted education and training to reduce unemployment and enhance productivity. Investing in lifelong learning and acquiring new skills are crucial for professional specialisation and social advancement, contributing to the economic progress of member states and enabling European citizens to cope with the constant changes in the global market [28, 29].

3.3 The Bologna Declaration

The Bologna Agreement of 1999 brought significant changes to European educational systems, particularly in higher education. Key objectives included the comparability of degrees, the distinction between undergraduate and postgraduate cycles, the implementation of the European Credit Transfer and Accumulation System (ECTS), and the promotion of mobility for students, teachers, and administrative staff. These changes strengthened cooperation on educational policy within the EU. They served as a precursor to the educational reforms of the Lisbon Strategy in 2000, which aimed at a more competitive knowledge economy for sustainable development [30]. The terms "skills" and "competencies" became central in the discussion of European educational policies, aiming to integrate European higher education systems and enhance the employability of graduates. ECTS credits are linked to the achievement of learning outcomes and students' workload, making skills essential for integration into the labour market and professional development [31, 32].

4 Methodology

The data of this pilot study were collected from Greece (Athens, Patras, and the island of Chios), through qualitative research by conducting eight interviews with working educators from all levels of education who have professional experience in the field [33–35]. The researchers were able to record personal experiences from the workplace, thus, drawing valuable conclusions for the formation of appropriate educational policies that promote economic development and the prosperity of the peoples of the European Union, as well as their cooperation. The semi-structured

interviews were used as a tool, containing the same questions for educators of all levels in a predetermined order. The sample selection was based on a purposive sampling strategy, focusing on respondents' involvement in funding programs and their accumulated and ongoing professional experiences. The present research was carried out with the contribution of eight educators from all levels of education: Primary, Secondary, Tertiary Education, and Post-secondary Vocational Education and Training. The research was conducted from April 25, 2024, to May 16, 2024. The design of individual interviews for the educators included two fields of questions concerning the study's two research questions. The duration of every interview was approximately 30 min to 45 min. The interviews were recorded and transcribed in text form and afterwards analysed using a thematic approach, focusing on identifying key themes and organising patterns across the data. For the transcription each educator-responder had a code number to safeguard anonymity such as R1 for the first responder and so on.

5 Findings

Subsequently, the analysis of the interviews was conducted. It should be noted that the presentation of the responses is indicative due to limited space and selective, focusing on the most significant emerging issues. Of the eight (8) educators who participated in the research, three (3) are men and five (5) are women. The demographic data of the participating educators are included in the following Table 1.

Regarding the first question posed to participants, concerning their years of involvement with EU funding programs, it was revealed that their experience ranges from two to twenty years. Specifically, R3 mentions:

> For the last four (4) years. There is cooperation with the same group of educators from Greece and Europe, with some minor changes each year.

About the role of educators in these programs, it was found that those from post-secondary vocational education participated as instructors, while others served as both instructors and trainees. R8 states:

Table 1 Demographics of the participants

Code	Responders	Gender	Level of Education
R1	Responder 1	Female	Primary Kindergarten
R2	Responder 2	Female	Primary Elementary school
R3	Responder 3	Female	Primary Kindergarten
R4	Responder 4	Female	Secondary Middle school
R5	Responder 5	Male	Secondary High school
R6	Responder 6	Female	Post-secondary Vocational
R7	Responder 7	Male	Post-secondary Vocational
R8	Responder 8	Male	Tertiary University

> … as both instructor and trainee, as there is an opportunity for mixed mobility in teaching and training.

The skills enhanced by the funding programs, interviews show that these programs foster digital skills and competencies. R1, who participated as a trainee, notes:

> ICT skills were developed, which greatly assist in the pedagogical process.

About the opportunities for personal development, the results show that participation in these programs contributes to personal growth, enhancing skills such as self-esteem. R7 observes:

> There is now a different approach to classroom issues by the trainees who participated in the programs.

Finally, regarding how the EU programs promote skills necessary for future employment, the study highlighted that exposure to technology and digital skills is a key starting point for entering the labour market. According to R2:

> The EU programs promote skills and competencies related to the labor market, offering opportunities in digital skills and artificial intelligence (…).

The results show that, for the participants in EU funding programs with 2–20 years of experience, collaborations within and outside the EU with educational institutions enrich their professional growth through partnership. It allows the participants to switch roles between trainer and trainee and engage in remote education, seminars, and state-of-the-art teaching methods. The courses enhance critical competencies in digital literacy, ICT competence, teamwork, cooperation, social skills, and critical thinking. The programs also contribute to an individual's personal development by developing moral satisfaction and continuous learning opportunities, as well as preparation against the labour market.

Regarding the teaching methods used by educators, it was revealed that experiential learning is a notable method applied by educators. R7 claims:

> I use a student-centered approach, experiential learning (…).

About the relationship between teaching methodology and effective learning, the results showed that the methods chosen by educators were effective in achieving learning goals. According to R4:

> Students are guided to solve problems on their own (…) and engage in self-correction.

Concerning the advantages of the teaching methodologies used, the study highlighted numerous benefits of student-centred approaches. R3 mentions:

> Critical thinking, questioning, engagement, and active participation (…) help in content retention and effective learning.

If educators wish to adopt different teaching methods, all expressed a desire to use modern approaches based on educational research. R6 describes:

> I want to apply game-based learning. Through play, students gain knowledge and develop skills.

The study emphasised inquiry-based learning as a modern approach focused on learners' needs and abilities. R2 states:

> I use an inquiry-based method. Students actively participate, ask questions, and form conclusions, making learning engaging through motivation.

Finally, on the role of inquiry-based learning in research development, the results showed that inquiry is the foundation for advancing research and science. R8 believes:

> Inquiry-based learning develops students' research skills, enabling them to create knowledge rather than just learn existing knowledge.

The results reflect the significant number of inquiry-based learning methods educators use to cultivate such behaviour among students, to research and inquire independently, and with very discreet guidance from the teacher. This is very effective; it increases student participation and engagement and improves exam performance. In addition, the individualisation of teaching fits students' unique abilities and encourages self-regulation, which is relevant to distance education. The educators would like to put into practice modern approaches, such as the "Flipped Classroom" and role-playing. Inquiry-based learning is known for actively engaging the students in the learning process by helping them to question and form conclusions, develop inquiry skills, and develop new ideas.

6 Discussion and Conclusions

This paper explores the EU's Cohesion Policy in Education and Training, emphasising linking these to employment and economic growth. It highlights the need for a well-educated workforce, especially in countries like Greece with lower economic indicators. The study underscores the critical role of inquiry-based learning and EU funding programs. It stresses the need for fairer educational policies without social exclusion and notes that lacking general education can hinder skill development.

The findings provide answers to the research questions outlined in this study. Regarding the first research question, which examines the skills and competencies promoted by the European Union through the cohesion policy and their contribution to personal development and employability, participants in the research concluded that EU funding programs enhance digital skills, communication and social skills such as cooperation and teamwork. Additionally, respect for human personality and acceptance of diversity are cultivated. Furthermore, applying modern and innovative teaching methods enhances skills in promoting innovation. By implementing "best practices" and acquiring new experiences, new ways of thinking are adopted, and the intellectual horizons of educators and learners are broadened.

In summary, these are skills and competencies aimed at the personal development of those involved through the moral satisfaction and self-confidence they gain, as

well as their successful connection to employment and the labour market, thereby seeking the economic and social development of the country.

Regarding the second research question, which concerns the promotion of research and science in Education and Training through the EU's Cohesion Policy and Inquiry-Based Learning, the educators participating in this research consider inquiry-based learning to be one of the essential teaching approaches, closely linked to the modern school as it represents a student-centred teaching approach oriented to the learning needs and abilities of the learner. The student-trainee, or university student, comes to the forefront of the educational process, and the educator becomes their facilitator, advisor, and companion in the pedagogical act.

Through the Inquiry method, the student applies the necessary criteria that presuppose a logical process of argumentation and proof of the positions they articulate. Consequently, the research findings indicate that inquiry-based learning is the first step towards developing research and science. Furthermore, this work demonstrates that the Inquiry method is closely linked to effective learning and the assimilation of teaching material.

7 Limitations and Recommendations for Further Research

This research has certain limitations. Due to convenience, time constraints, and limited resources, the participating educators were from specific regions of Greece. Additionally, the sample consisted of only eight educators. Although some participants have work experience in public and private education, the research focused on public education.

In the future, it would be beneficial to conduct quantitative research using questionnaires to investigate the extent of the implementation and execution of the Union's programs and educators' opinions on the cohesion policy. However, for such research to be conducted effectively, funding programs must first be made mandatory for all educational institutions.

Moreover, since this study represents an initial effort to document educators' views and perceptions regarding cohesion policy and funding programs, it would be helpful to compare this study with future quantitative research conducted across Greece to identify common points of investigation.

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Promotion of Intangible Heritage on Social Media

Arabela Briciu, Victor-Alexandru Briciu, Adina Nicoleta Candrea, Mihai Lucian Pascu, Androniki Kavoura, and Lavinia Constantinescu

Abstract This paper explores the role of social media platforms in promoting and preserving intangible heritage, a key element of local, regional, and national identity. Platforms such as Facebook, YouTube, Instagram, and TikTok enhance the visibility and appreciation of traditions, customs, and artistic expressions while encouraging their transmission to future generations. Through engaging and interactive content, we can capture the attention of young audiences and stimulate interest in local traditions and practices. The paper distinguishes between "intangible heritage," which includes a wide range of community practices and traditions, and "intangible cultural heritage," which refers explicitly to UNESCO-recognized heritage of universal value. In the digital age, adapting heritage promotion strategies to social media is crucial for engaging younger audiences. Given the cultural significance of intangible heritage and its growing role in promoting tourism, examining how it is conveyed through social networks is essential. This paper presents an exploratory case study of the Museum of Canvases and Stories in Mândra, Romania, focusing on using platforms such as YouTube, Facebook, Instagram, and TikTok to promote intangible heritage, highlighting key strategies such as increasing visibility through multimedia content, stimulating participation with online contests and workshops, and preserving practices in digital formats. The case study aims to (i) identify the intangible heritage elements highlighted on social media and (ii) analyze the methods used by the museum to promote these elements across its social media channels employing a quantitative and thematic content analysis. The conclusion emphasizes that effectively leveraging social media is essential for preserving and transmitting intangible heritage and offers recommendations for maximizing its outreach and impact.

Keywords Intangible heritage · Social media · Promotion

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1 Introduction and Background of Research

The concept of "cultural heritage" has evolved significantly in recent decades, influenced in part by the frameworks developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). Cultural heritage now encompasses not only monuments and collections of objects but also intangible cultural heritage (ICH), which is transmitted across generations and continually recreated by communities in response to their environment, history, and interactions. This transmission fosters a sense of identity and continuity, promoting cultural diversity and human creativity [1].

Intangible Cultural Heritage (ICH) includes practices, knowledge, skills, and expressions that communities recognize as part of their cultural legacy. It comprises oral traditions, performing arts, social practices, nature-related knowledge, and craftsmanship. ICH is characterized by four key features: it is traditional yet dynamic, inclusive, representative through community transmission, and community-based, requiring recognition by those who maintain it [2].

To ensure its survival, ICH must remain relevant to its community, continuously recreated and passed on to future generations. Without intervention, certain aspects of ICH may risk disappearing. Safeguarding measures are thus essential, involving the transfer of knowledge, skills, and meaning. Such measures focus on reinforcing the conditions necessary for the ongoing evolution and interpretation of ICH, ensuring its transmission to future generations [3].

Intangible heritage is generally understood through a descriptive definition of "intangible or immaterial cultural heritage." This concept is mainly confined to more "specialized" circles and has gained normative significance since adopting the UNESCO Convention for the Safeguarding of Intangible Cultural Heritage. While "national and material heritage" is often closely tied to a specific geographical area, the intangible heritage of communities transcends territorial boundaries and reflects a dynamic, ever-evolving culture [4]. Preserving such heritage promotes national identity awareness and long-term economic and social development within local communities.

In the digital age, utilizing technology to safeguard intangible heritage (IH) has become a key research focus. However, in the context of globalization and shifting societal dynamics, IH preservation faces significant challenges due to its reliance on oral transmission and experiential knowledge, making it vulnerable to change and potential loss [5]. In the Internet era, disseminating IH through social media is essential [6], as it allows for both the widespread distribution of cultural heritage and the bridging of gaps between the public and cultural institutions [7]. Social media platforms can enhance public engagement with heritage and serve as effective tools for its preservation and promotion [8, 9].

This study examines how social media platforms, including YouTube, Facebook, Instagram, and TikTok, are used to promote and preserve ICH, with a focus on the Museum of Canvases and Stories in Mândra, Romania. The article aims to (i) identify the ICH elements highlighted by the museum on social media and (ii) analyze the

strategies used to increase visibility, encourage community engagement, and ensure the preservation of these cultural practices in digital formats. Through quantitative and thematic content analysis, the study illustrates how social media can be an effective tool for cultural preservation, contributing to community development, cultural tourism, and economic opportunities.

2 Literature Review

2.1 Social Media and ICH

Preserving intangible heritage (IH) poses a significant challenge for nations committed to safeguarding this crucial aspect of cultural identity. Recent scholarly discourse has increasingly emphasized the need to explore the transformative impact of the Internet on heritage preservation efforts [5]. The proliferation of new information and communication technologies, particularly social media, presents substantial opportunities to bridge the divide between traditional cultural practices and modern society. These digital platforms open new pathways for preserving and promoting ICH, enabling more comprehensive public access and engagement that previously needed to be attainable.

Liang et al. [10] conceptualize social media as any digital tool that allows users to efficiently create and share content with a broad audience, spanning a range of platforms such as (1) photo-sharing applications like Instagram and Flickr, (2) video and audio-sharing services such as YouTube, (3) platforms for short written messages like Facebook and Twitter, and (4) applications offering geo-location sharing and social interaction functionalities. These tools collectively cultivate a dynamic environment where cultural content can reach diverse audiences, further facilitating the dissemination of heritage knowledge.

Social media thus emerges as a critical medium for transmitting and promoting ICH, supporting its continuity, protection, and accessibility across generations [11]. By enabling the cross-generational and cross-border transfer of intangible cultural assets, social media plays a key role in ensuring the sustained relevance and accessibility of cultural heritage in the digital era, helping it adapt and resonate with contemporary audiences while fostering cultural understanding and continuity [12].

2.2 User-Generated-Content (UGC) and IH Promotion and Safeguarding

Social media users contribute to and create online content by liking and sharing content from other users, enabling the exchange and generation of content on the Internet. As social media is designed as a participatory medium, users are expected to

participate through various social activities such as sharing and contributing contextual information, such as photos, connecting with friends and family, and looking for other information as reference material. For that reason, there are opportunities for social media users as the audience to be introduced to and given awareness of the cultural heritage [13].

There is a great deal of opportunity for participation in social media use and in addressing cultural heritage since people are keen to get pertinent real-time information and participate in the planning process [14, 15]. In contemporary digital society, social media function as critical tools for societal dialogue. Analyzing these platforms provides valuable insights into their structure and their historical and prospective implications [16]. As stated by Stuedahl [17], social media and social networking have become integral to digital cultural heritage communication, especially within Web 2.0 phenomena, which include platforms such as blogs, wikis, Facebook, MySpace, and YouTube.

The diversity of online social media platforms has enabled organizations tasked with communicating and promoting intangible cultural heritage to reach broader audiences, thereby significantly narrowing, or in some cases entirely eliminating, the divide between these institutions and their target publics [7].

Intangible cultural heritage can strengthen its connection with audiences on new media platforms like social media and online communities. These platforms make it easier for audiences to access information about intangible cultural heritage and engage with fellow enthusiasts. The interactive and participatory nature of this mode of communication can effectively boost the awareness and appreciation of intangible cultural heritage among young people [18].

3 Methodological Considerations

Yin [19] defines a case study as a research strategy involving empirical investigation of a contemporary phenomenon within its real-life context, particularly when boundaries between the phenomenon and its context are not clearly defined. This approach allows for detailed exploration, integrating multiple sources—such as interviews, observations, documents, and audiovisual material—to achieve a comprehensive understanding.

The case study methodology facilitates the formulation of explanatory generalizations beyond mere description, allowing for interpretation within broader theoretical frameworks. This capacity enables case studies to transcend specific contexts, contributing to theory by drawing insights applicable to similar settings.

This study employs quantitative and thematic content analysis of social media posts from the Museum of Canvases and Stories in Mândra, Țara Făgărașului, covering its outreach across YouTube, Facebook, Instagram, and TikTok. This analysis provides a comprehensive look at the museum's digital engagement strategies.

Recognized as a cultural hub in the Făgăraș region, the Museum of Canvases and Stories goes beyond preserving local traditions by supporting cultural identity and community engagement. With its focus on intangible heritage, the museum holds potential for promoting cultural tourism and regional development. By linking traditional practices with modern digital outreach, it strengthens its role as an influential institution in the area's social and economic growth [20].

4 Results

4.1 Case Study Setting

The Museum of Canvases and Stories [21], located in the village of Mândra in the Țara Făgărașului (Făgăraș Land) region, is a unique cultural center dedicated to preserving and promoting local traditions and narratives. Founded by the Zară family, the museum distinguishes itself through its collections of historical canvases and dowry pieces specific to the area, alongside educational and creative activities under the Mândra Chic brand. Situated in the historic house of Mother Ruța, built with funds from transatlantic migration in the early twentieth century, the museum revitalizes an important part of the region's history. It also hosts innovative projects such as "Mother Ruța's Suveica around the world," symbolically connecting local values with a global audience.

The museum plays a vital role in safeguarding the intangible heritage of the Făgăraș region, acting as a cultural bridge across generations. Its activities include sewing, restoration, and local gastronomy workshops aimed at preserving and promoting crafts and traditions, reinforcing community identity, and ensuring the continuity of the region's cultural heritage [20]. Additionally, through the Mândra Chic brand, the museum integrates traditional warping, sewing, and embroidery techniques into modern clothing designs, making them appealing to younger generations.

The museum also organizes workshops that revitalize traditional crafts, often led by elderly women from the community, reminiscent of rural gatherings. These initiatives target both adults and children, fostering engagement with traditional practices. A dedicated space for local stories' transcripts further strengthens the local cultural identity.

4.2 Social Media Content Analysis

The museum has been present on YouTube since May 2009 with the channel "Museum of Canvases and Stories," and in 2016, it opened a second channel, "Mândra Chic." Although the second channel also has 31 videos and only 61 subscribers, only

the original museum's channel, with 620 subscribers, is presented in the analysis. The next account developed was Facebook in August 2011, followed by Instagram in April 2015, and TikTok on June 13, 2021.

The table below summarizes the data covered in this analysis. We can observe the impact of the posts and the engagement of the audience. Regarding the founding date and the number of posts, we can observe that the impact of the posts on TikTok and Instagram is higher; these are the networks preferred by the young audience (Table 1).

The social media content analyzed across various platforms addresses similar themes with specific nuances based on each platform's infrastructure, characteristics, and target audience. The recurring themes identified in the museum's social media promotion include the following: local crafts (sewing, yarn warping, local gastronomy, and other traditional crafts), village events (celebrations, young men's caroling, weekly dances at the Cultural Camp), local stories, inherited dowries (mainly traditional clothing), educational events for children and adults, embroidery techniques, and clothing pieces adorned with traditional embroidery. Each platform demonstrates distinct characteristics: Instagram (@mandrachic) primarily promotes the Mândra Chic brand, with a strong focus on product promotion. Although community engagement is higher on this platform, many comments are commercial, often inquiries about product pricing, and less focused on intangible heritage. The most popular post, a giveaway, garnered 595 likes. Much of the content centers around traditional-style clothing and accessories developed at the museum. Facebook (@Mândra Chic) promotes center events and stories from the local community to remind the community of regional traditions and customs. The most liked post (442 likes) features a wedding event where men performed a traditional dance, evoking positive comments, including nostalgic reflections on past cultural practices. TikTok

Table 1 Social media engagement metrics

Joined the channel		YouTube	TikTok	Facebook	Instagram
		May 28, 2009	June 13, 2021	August 15, 2011	April 2015
No. subscribers/followers		620 subscribers	1,7 K followers	19 k followers	8,5 K followers
No. of posts		30	116 videos	1,76 K	1,7 K
No. views	Total	282,1 K	612,2 K	–	–
	Average	9,32 K/post	5,3 K	–	–
	Minimum	87	283	–	–
	Maximum	172 K	113,4 K	–	–
Engagement: appreciation	Total	–	17,5 K	14,4 K	123,3 K
	Average	–	148/post	85/post	71/post
Engagement: comments	Total	–	360	7165	5357
	Average	–	3/post	5/post	3/post

(@mandrachic), being a more interactive platform, showcases a high number of views and engagement, particularly on posts demonstrating traditional practices, such as the wool carpet washing technique. Dance videos from the region also attract substantial interaction, with a strong emphasis on community participation in center activities. YouTube (@Muzeul de Pânze și Poveşti Mândra), the oldest but least active channel, serves primarily as a repository for local memories. Comments are disabled on this platform. The videos document village life, the preservation of traditions and crafts, and local histories shared by community elders, considered "living treasures."

5 Discussion and Conclusions

Analyzing social media activity across platforms such as YouTube, TikTok, Facebook, and Instagram reveals significant insights into how these channels contribute to preserving and promoting intangible heritage. These digital platforms serve as dynamic spaces for building cultural awareness and promoting community engagement. With 19,000 followers on Facebook and 8,500 on Instagram, the museum has successfully reached diverse audiences, making local traditions more accessible. With over 612,000 views, TikTok mainly attracts younger users, showcasing traditional practices in engaging formats and inviting deeper interaction. Meanwhile, YouTube serves as a repository for local memories, with 282,100 total views, documenting village life and cultural expressions.

Promoting intangible heritage through social media raises awareness and supports the community's long-term social and economic development. By highlighting local crafts, traditional events, and community stories, the museum fosters a sense of national and regional identity, which can drive cultural tourism and related economic opportunities. Instagram's engagement metrics, particularly the 123,300 total likes on posts showcasing traditional clothing, illustrate the platform's potential to generate interest in heritage-based products and align cultural preservation with economic viability.

Moreover, social media enables new sharing and interaction related to traditional cultural expressions. TikTok, in particular, excels at fostering community participation through its visually engaging content, attracting significant attention to posts that showcase traditional practices. This approach not only makes heritage practices more accessible but also encourages intergenerational dialogue, as younger users engage with the content in meaningful ways.

Ultimately, the museum's social media strategy exemplifies the effectiveness of digital platforms in preserving, promoting, and transmitting intangible heritage. By leveraging each platform's unique capabilities, the museum raises awareness of local traditions, encourages community engagement, and adapts cultural practices for contemporary audiences. This approach underscores the importance of integrating new forms of media into heritage preservation strategies, ensuring that intangible heritage continues to thrive in the digital age.

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The Challenges of Digitalization in the EU

Sónia Avelar, Carlos Farinha, Josélia Fonseca, and Teresa Borges-Tiago

Abstract Digitalization impacts the economy and individuals by enhancing growth, jobs, efficiency, innovation, sustainability, inclusivity, education, safety, and resilience. However, significant challenges in service innovation and digital literacy require policy adjustments and informed managerial decisions. This study analyzes these challenges using data from the European Commission's Special Eurobarometer 551 on the Digital Decade, focusing on the EU27. Key findings indicate substantial disparities in digitalization, anchored in digital literacy and internet access, crucial for effective digital service use. Lower digital literacy rates in Portugal and Romania hinder full-service adoption. Affordability and availability of high-speed internet are critical barriers. The demand for human support and tailored services highlights the necessity for personalized assistance and training. Addressing these challenges requires improving digital literacy, ensuring affordable internet, and providing support systems to bridge the digital divide, fostering inclusive and equitable access to digital services across Europe.

Keywords Digital transformation · Digital literacy · Digital skills

1 Introduction

Digital transformation (DT) and digitalization are two interconnected phenomena reshaping the contemporary business landscape and society at large. DT has become a crucial topic for organizations across industries [1]. While technology knowledge is essential for DT, especially in small and medium-sized enterprises (SMEs), many struggle to keep pace with rapidly changing technologies [2]. As DT continues to impact organizations, industries, and society, further research is needed to consolidate the understanding of this complex phenomenon [1, 3] noting that it involves digitization, digitalization, and digital transformation, requiring specific organizational structures and capabilities [4].

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Digitalization is considered the baseline since it supports digital business models, digital transformation, and digital entrepreneurship to enable sustainable growth [5]. A country or firm to promote a truly digital transformation needs to have citizens empowered and fully able to explore technology. Thus, this research reveals the main drivers and barriers faced by citizens in the European context, using data gathered from the European Commission's Special Eurobarometer 551 on the Digital Decade, focusing on the EU27 (n = 26.530) [26].

2 Literature Review

2.1 Digitalization

DT is widely recognized as a catalyst for change across various contexts, particularly within the business sphere, profoundly impacting all facets of human life through the adoption of technologies [3]. It is crucial to distinguish the concept of DT from digitalization. Digitalization is a societal change process driven by new ICT-based solutions, transforming businesses and addressing global issues like health [6]. It has evolved from specific contexts to a more general concept associated with digital societal transformation [7]. As a powerful economic growth engine, digitalization impacts various business areas, including consumer behavior analysis, green innovation, and blockchain technology in financial services [8]. In the context of digital servitization, provider-customer relationships are transforming from transactional product-centric models to relational service-oriented engagements. This transformation is facilitated by four key components: complementary digitalization capabilities, relation-specific digital assets, digitally enabled knowledge-sharing routines, and partnership governance [9]. Understanding these relational aspects is crucial for businesses to profit from digitalization and maintain competitiveness in an increasingly digital world.

While some research interchangeably uses the term "digitalization" [10, 11], DT specifically refers to the transformative changes induced by digital technologies. In contrast, digitization pertains to converting information from analog to digital form and automating processes through information technologies [12]. The notion of "transformation" encompasses the comprehensive and strategic actions organizations must undertake in response to new technologies, differentiating it from mere change [13]. Thus, DT is a strategic process of leveraging digital technologies to create value and meet changing business requirements [14]. It involves core tensions between products and platforms, firms and ecosystems, and people and tools [15]. Organizations face numerous challenges in adopting digital technologies, such as aligning business and IT strategies, redesigning business models, and enhancing customer value propositions [14, 16]. To overcome these challenges, companies need to adapt to rapid technological advancements, develop organizational capabilities, and implement effective digital transformation strategies [16]. Ultimately, digital

transformation is not an objective state, but a strategic choice made by executives to remain competitive in the global economy [15].

Digitalization is transforming various sectors, including education, health, and business. In international education, it has enabled new learning opportunities and digital campuses, complementing face-to-face interactions [17]. For global health, digitalization offers innovative solutions, but requires localization and user-centered design approaches [6]. In urban environments, digital technologies enhance climate change adaptation through improved early warning systems, food and water security, and citizen engagement [18]. Digitalization also influences business model innovation, particularly in value creation, proposition, and capture. However, its application remains challenging, with organizational capacities and employee competencies identified as future obstacles [19]. Overall, digitalization is a key enabler of sustainable development, offering numerous opportunities across sectors while presenting challenges that need to be addressed for optimal implementation and impact.

2.2 Enhancers and Inhibitors Factors

Digitalization in business processes is facilitated by various enablers, that range from big data analytics, Internet of Things (IoT), blockchain, and artificial intelligence [20] to technological enablers such as connectivity and data handling capacity, strategic enablers like global IoT architecture, and organizational enablers including digital talent are crucial [21]. However, in complex B2B sales processes, digitalization faces obstacles. While it can improve communication and information gathering, organizational, technological, cultural, and security issues present challenges. A mixed structure in sales departments is suggested to leverage the benefits of digitalization while addressing these hurdles [22].

The digitalization of industries faces several inhibitors across technological, organizational, and cultural domains, ranging from the need for standardization, security risks, and connectivity issues [21], to regulatory constraints, cost concerns, and the lack of digital talent and skills [21, 23]. Cultural inhibitors involve the perception of complexity, lack of trust, and possibly attitudes toward failure [21]. To overcome these challenges, organizations need to adopt digitalization as a strategic element, formulate a global architecture, and foster a digital culture [21]. Additionally, innovation diffusion theories can complement existing frameworks to better understand and address factors contributing to or hindering digital transformation [23].

People's capabilities encompass the individual digital, creativity, and innovation skills of employees, as well as their literacy in information and communication technologies, and are critical to technical, information, communication, collaboration, critical thinking, creativity, and problem-solving abilities [24]. Understanding the determinants and evolution of digital skills, such as digital literacy, is also crucial for addressing digital inequalities and preparing individuals for the future workforce. To Fonseca and Tiago [25], digital literacy goes beyond mere possession of technical skills, encompassing the development of cognitive and ethical competencies

to use and communicate in the digital world. Addressing these multi-level factors is essential for overcoming inhibitors and achieving digital maturity in an increasingly technology-driven business landscape.

3 Study Methods

The Eurobarometer 551 survey titled "The Digital Decade" [26], which examines public opinion across the EU on digital engagement, focusing on digital literacy, cybersecurity, infrastructure, and the digital economy, was used as the data source ($n = 26\ 530$). The methodology includes representative sampling, face-to-face interviews, and data weighting to ensure accuracy. The analysis of digitalization across various European countries involved multiple statistical techniques to uncover patterns and insights. First, a Factor Analysis (FA) was conducted to reduce the dimensionality of the data while retaining as much variability as possible. PCA was employed to define the data's underlying structure and identify the number of significant factors, while the Kaiser criterion (eigenvalues > 1) and the scree plot method were used to select the number of factors. Using the outcome of the FA, a Multidimensional Scaling (MDS) was performed to visualize the similarity level between countries in a two-dimensional space, followed by a cluster analysis, the k-means clustering algorithm ($k = 4$). Afterward, a compare means analysis was conducted to establish the cluster differences regarding the key barriers in the EU such as regulatory fragmentation, cybersecurity threats, digital skills gap, financial constraints, and technological disparities.

4 Results

The sample includes 26 530 respondents, divided by the 27 EU countries, where 48.4% were men and 51.6% were women. Generational cohorts include the Silent Generation (9.0%), Baby Boomers (29.7%), Generation X (25.1%), Millennials (22.4%), and Generation Z (13.8%). Employment status categories feature self-employed (7.5%), managers (11.4%), other white collars (14.0%), manual workers (22.1%), house persons (4.8%), unemployed (4.4%), retired (25.7%), and students (10.2%). A survey indicates that most Europeans perceive advanced connectivity (76%), and enhanced cybersecurity (77%) will substantially improve their daily interactions with digital technologies. Additionally, 67% of European citizens emphasize the need for increased education and training to enhance their digital competencies. A similar proportion (66%) acknowledges the critical role of digital technologies in addressing climate change. Furthermore, over 80% of Europeans advocate for greater collaboration among Member States to expand access to digital technologies, foster innovation, and ensure the global competitiveness of enterprises. However,

concerning value-based digital transformation, only 50% of Europeans believe that digital rights and principles are adequately protected within Europe.

The FA resulted in five factors, which were used in the MDS and Clustering analysis, revealing four clusters with the following composition (see, Fig. 1): Cluster 0: Finland (FI), Sweden (SE); Cluster 1: Bulgaria (BG), Czech Republic (CZ), Germany–West (D-W), Germany (DE), Germany-East (D-E), Estonia (EE), Greece (EL), France (FR), Latvia (LV), Lithuania (LT), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI); Cluster 2: Belgium (BE), Denmark (DK), Ireland (IE), Spain (ES), Croatia (HR), Italy (IT), Cyprus (CY), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Slovakia (SK); Cluster 3: Romania (RO).

Cluster 0 (Fig. 1) shows high scores across most digitalization metrics, excelling in digital infrastructure, cybersecurity, and human support, with priorities including high-speed internet availability, support for green digital technologies, improving online access to public services, facilitating access to electronic health records, and improving the usability of secure electronic identification.

Cluster 1 generally has lower scores in various metrics compared to other clusters, needing improvements in remote working, public service access, and online shopping, with priorities such as improving high-speed internet availability, supporting education and training in digital skills, digitalizing businesses, supporting innovative digital start-ups, building strategic digital infrastructures, and protecting users from disinformation and illegal content. Cluster 2 exhibits high scores in healthcare access, human support, and digital infrastructure, with strong overall digital engagement, and focuses on maintaining and enhancing high-speed internet availability,

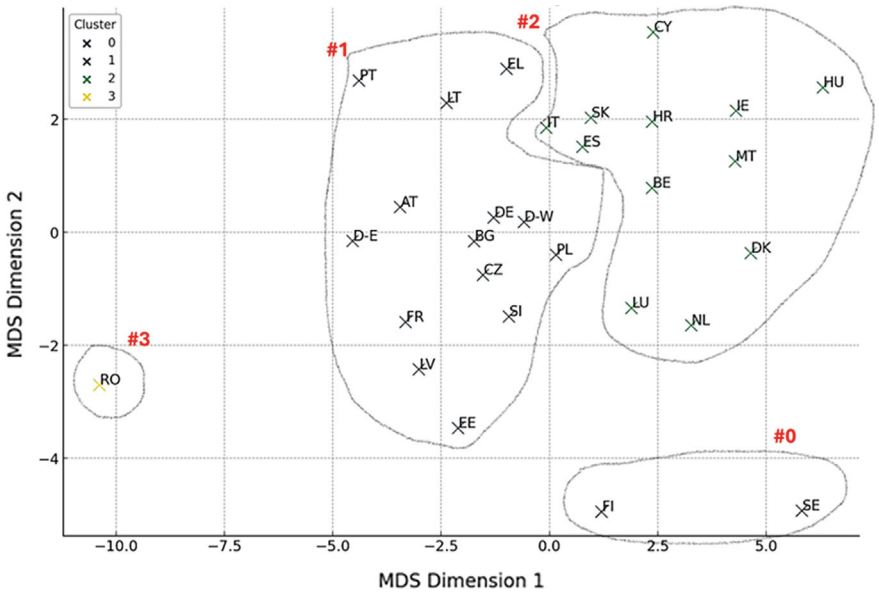


Fig. 1 MDS solution for the 4 clusters solutions

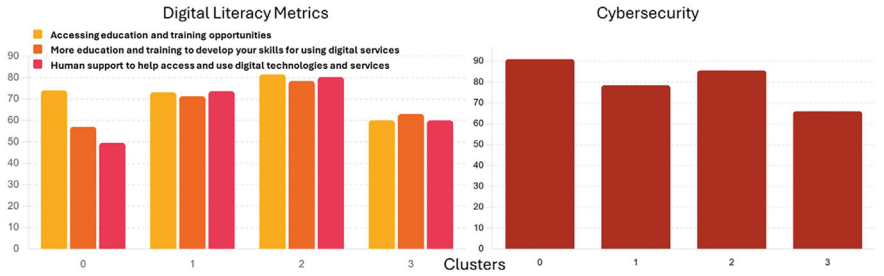


Fig. 2 Differences between clusters regarding digital literacy and cybersecurity

supporting advanced education and training in digital skills, further digitalizing businesses, supporting innovative start-ups, focusing on strategic digital infrastructures, and protecting users from cyber-attacks and disinformation. Cluster 3 has the lowest scores across all metrics, indicating significant gaps in digitalization, and urgently needs investment in digital infrastructure and public services, implementation of targeted education and training programs to boost digital skills, enhanced remote working capabilities, improved online shopping services, and better cybersecurity and usability of electronic identification.

Figure 2 shows varying levels of digital literacy across the clusters. Clusters 1 and 2 have the highest need for additional education and human support, while Cluster 3 shows the lowest engagement in digital literacy activities, indicating substantial room for improvement, especially in countries like Romania and Portugal where the lower levels of digital literacy were found. Cluster 0 exhibits strong digital literacy but still requires enhancements in human support. Cybersecurity concerns also are different between clusters, with Cluster 0 and Cluster 2 showing strong performance in cybersecurity, while Cluster 1 has moderate performance.

5 Discussion and Conclusion

Analyzing digitalization is crucial as it helps identify gaps, optimize resource allocation, and drive strategic initiatives, ensuring businesses and societies can adapt to technological changes. This understanding is key to informed policy-making and effective implementation of digital transformation. This study points to significant disparities and priorities among EU countries. Finland and Sweden excel in digital infrastructure, cybersecurity, and human support, prioritizing high-speed internet, green technologies, public service access, health records, and secure eID usability. Bulgaria, Czech Republic, Germany, and Portugal show moderate scores, highlighting the need for improvements in remote working, public service access, and online shopping, with a focus on internet availability, digital skills education, business digitalization, innovative start-ups, digital infrastructures, and disinformation protection. Belgium, Denmark, Ireland, and Spain exhibit strong digital engagement

with high scores in healthcare access, human support, and infrastructure, focusing on maintaining internet availability, advanced digital skills training, business digitalization, innovative start-ups, digital infrastructures, and cybersecurity. Romania has the lowest scores, indicating the need for additional investment. The lower digital literacy rates found in Portugal and Romania may impede the full adoption of services. The analysis underscores the importance of tailored strategies to address the specific needs and priorities of each cluster to achieve comprehensive digital transformation. A limitation of this work is the nature of the data used which does not allow us to truly infer cultural differences and other behavioral factors impact on digitalization. Future research works can overcome this by collecting primary data in the four clusters found.

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Gender and Entrepreneurship Education Effectiveness. A Comparative Study

Panagiotis A. Tsaknis, Alexandros G. Sahinidis, Stavros Kiriakidis, and Androniki Kavoura

Abstract Studies that have taken gender into account in determining entrepreneurial intention changes, following an intervention of entrepreneurship education are scant. The purpose of this study is to examine entrepreneurship education effectiveness, using the Theory of Planned Behavior (TPB) and gender. A questionnaire-based approach is used with a pre-test-post-test design. A pre-course questionnaire used at the start of a university-level entrepreneurship course, and a post-course questionnaire at the end of the semester. There were 315 university students from a business administration department (126 males and 189 females). Depending on the gender of the individuals, the sample was divided into two groups. Finally, the use of MEMORE macro, in each group, revealed a new approach between the combinations of entrepreneurship education, entrepreneurial intention, and the factors of the TPB. Results indicated that after the entrepreneurship course, females showed a statistically significant positive change in entrepreneurial intention and a positive change in perceived behavioral control (this change affected positively the positive change of entrepreneurial intention). Furthermore, the research findings indicate a statistically significant negative change in subjective norms (this change did not affect the change of entrepreneurial intention levels). On the other hand, after the entrepreneurship course, males indicated a statistically significant positive change only in perceived behavioral control. These findings will benefit entrepreneurs, policy makers, educational institutions, investors, and organizations by offering insights to develop inclusive policies, educational programs, and support systems that promote equal entrepreneurial opportunities.

Keywords Gender · Entrepreneurial intention · TPB · Entrepreneurship education · MEMORE macro

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1 Introduction

Entrepreneurship education is an important tool in fostering entrepreneurial intentions and preparing individuals to navigate the challenges of starting a business [1, 2]. The effectiveness of these educational programs can vary significantly across demographic groups, especially between gender. Both men and women can benefit from entrepreneurship education (in terms of entrepreneurial intention), but the impact is different based on sociocultural, psychological, and structural factors [3].

In developing economies, women are considered valuable resources, but their participation in entrepreneurial activities is still low, compared to their male counterparts. Due to gender-specific roles and different educational opportunities provided to women, researchers believe that different societal and cultural factors influence women's entrepreneurial abilities. In emerging economies in particular, understanding the role that entrepreneurship education plays in generating women-based entrepreneurship becomes crucial [3, 4]. To eliminate gender differences with respect to entrepreneurial endeavors, a holistic approach to career preparation for both genders is required [5]. This research sheds light on how gender differences impact the effectiveness of entrepreneurship education.

2 Theoretical Background

Studies on gender and entrepreneurship have gained significant attention, particularly in relation to how gender influences entrepreneurial intentions and effectiveness of entrepreneurship education. It is unclear how gender impacts the relationship between entrepreneurship education and entrepreneurial intentions based on prior research. It is evident that there are gender disparities in entrepreneurship across a wide range of domains, including access to resources, lack of network or management experience, societal expectations, etc. [6]. Previous research on the impact of entrepreneurship education with respect to gender presents mixed results. Some studies indicate that entrepreneurship education has a more positive effect on female students [7]. However, other studies suggest that female students either gain less from entrepreneurship education [8] or show no significant gender difference in the benefits received from education [9]. Furthermore, women display lower levels of entrepreneurial intention than men [7]. Therefore, it seems to be highly relevant to examine how, for men and for women, entrepreneurship education affects their entrepreneurial intention levels.

According to Ajzen [10], the TPB predicts intentional behavior through three factors (attitude, subjective norms, perceived behavioral control). An individual's attitude toward performing a behavior is reflected in his or her positive or negative evaluation of that behavior. Subjective norms refer to perceived social pressures or expectations to perform or not perform a particular behavior. Perceived behavioral control relates to the perceived ease or difficulty of performing a behavior [10–14].

It seems that men have more positive attitudes toward entrepreneurship than women [15]. It has been shown that entrepreneurship education programs incorporating success stories of female entrepreneurs and addressing gender-specific challenges can improve women's perceptions of entrepreneurship [16].

It is common for women to face more social pressure to conform to traditional roles, which can negatively impact their entrepreneurial goals [17]. Entrepreneurship education programs that include family and community engagement components can create a supportive environment for aspiring female entrepreneurs.

In entrepreneurial activities, women report lower levels of perceived behavioral control or self-efficacy [7]. Women can increase perceived behavioral control by participating in training programs that provide hands-on experience, mentorship, and networking opportunities that are specifically designed for them [18].

Based on the above, this paper examines whether gender influences changes in entrepreneurial intention differently following an entrepreneurship course, considering changes in the factors of the Theory of Planned Behavior (TPB). This type of combination of factors has received limited research. With the use of MEMORE macro, we attempt to find new combinations and results of the factors that we examine [19, 20].

3 Methods

In order to address the scope of this study, a questionnaire-based research with a pre-test-post-test group design was used in order to answer the research questions. In order to measure TPB and entrepreneurial intention, a questionnaire consisting of fifteen questions was used (7-point Likert scale). The questionnaires consisted of 3 questions for measuring attitudes, 3 questions for subjective norms, 5 questions for perceived behavioral control, and 4 questions for entrepreneurial intentions. We conducted a pre-course questionnaire at the start of a university-level entrepreneurship course, and a post-course questionnaire at the end of the semester. In total, 315 university students from a business administration department took part in the survey. Depending on the gender of the individuals, the sample was divided into two groups of students (126 males and 189 females). In each group, Principal Component Analysis (PCA) method was used to identify groups of variables that show high correlation. Finally, MEMORE macro, in each group, made an attempt to determine if the changes in entrepreneurial intention are caused due to the changes of the factors of TPB [20, 21].

4 Results

Figure 1 displays the model (exported from MEMORE macro) that is used to predict changes in the factors of TPB (attitude, subjective norms, perceived control) and entrepreneurial intentions following an entrepreneurship course for each gender.

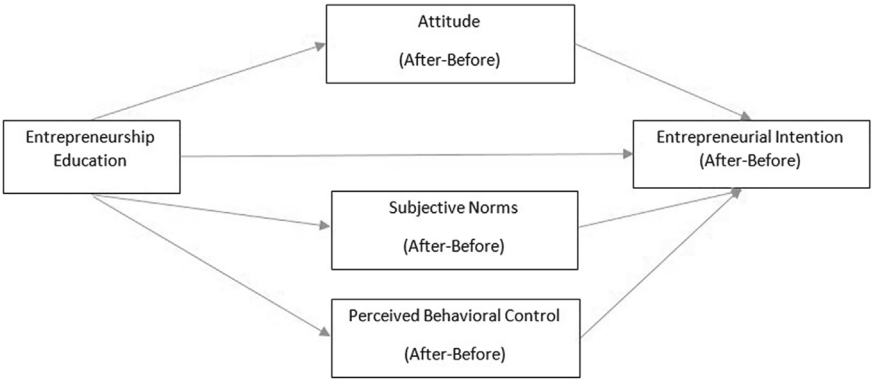


Fig. 1 Model MEMORE macro (tested for each gender)

The weight of each of the four components for both questionnaires (attitude, subjective norms, perceived behavioral control, entrepreneurial intention) before and after education and for each gender were above 0.7. All components that were created had Cronbach's Alpha results above 0.70. The results indicated that for females entrepreneurial intention levels changed positively after entrepreneurship course. Subjective norms had a statistically significant and negative difference after the education, this difference did not caused changes in the entrepreneurial intention levels. Finally, there is a statistically significant and positive difference in perceived behavioral control that had impact on the positive change of entrepreneurial intention. For males, entrepreneurship education had only a statistically significant and positive effect on perceived behavioral control.

5 Conclusion

This paper examined the effect of entrepreneurship education in males and females in terms of entrepreneurial intention, taking into consideration the factors of TPB (attitude, subjective norms, and perceived behavioral control) using MEMORE macro. This study has some restrictions that need to be considered. A comparative study across multiple countries may be a focus. With such an approach, the study could be controlled in terms of the cultural aspect and the curriculum could be designed and delivered with an emphasis on career preparation. As a matter of fact, it would be interesting to conduct more studies on the characteristics of the sample, such as job experience, parents' occupation or age. Furthermore, this study focused only on the modifications of the TPB variables that may affect entrepreneurial intention. It would be useful to investigate and other variables [21–23].

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CSR as a Value Creation Strategy: Empirical Evidence from the Marketing Sector



Panagiota Xanthopoulou, Alexandros Sahinidis, and Maria Panagopoulou

Abstract This study analyzes Corporate Social Responsibility (CSR) as a value-creating marketing strategy for businesses. This study aims to determine the benefits for companies adopting CSR-focused marketing strategies and measure the impact of CSR practice adoption on the creation and recognition of a firm's corporate value. The research followed the quantitative method, through online questionnaire distribution to marketing employees from various organizations in Greece, including small, medium, and large ones. The final sample consisted of 86 marketing employees. The study found that businesses adopting CSR practices saw significant improvements in their brand image and consumer loyalty. CSR activities positively influence public perception and make brands appear more trustworthy and ethical, which enhances customer loyalty and repeat purchases. Additionally, these practices lead to increased employee satisfaction and engagement, contributing to overall corporate value. The research also highlighted that CSR initiatives help differentiate companies from competitors, providing a competitive edge in the market. These findings could be useful for academics and business executives who should consider CSR practices not just as philanthropic efforts but as a strategic component integral to their marketing and business operations.

Keywords Corporate social responsibility · Corporate value · Marketing sector

1 Introduction

Corporate Social Responsibility (CSR) is currently the main pillar for creating value in both private and public organizations [1, 2]. This study investigates the effect of CSR as a strategic marketing tool for value creation and proves the connection between marketing and CSR actions. It is not easy to give a definition that fully includes the concept of CSR, as it is presented as a phenomenon and is influenced by many factors [3]. It is important to mention the voluntary nature of CSR as

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the management of a company chooses whether to carry out actions with social benefits. There is a direct connection between marketing and CSR. According to [4], CSR, alongside marketing, has the potential to increase corporate performance. In summary, CSR is included as a means of increasing the effectiveness of marketing actions [5]. The growing interest in adopting CSR strategies characterizes the modern business environment and directly affects the marketing sector. This study identifies the benefits for companies that adopt CSR-focused marketing strategies. Corporate Social Responsibility (CSR) is increasingly recognized as a strategic tool for value creation in businesses [6]. Despite extensive research on CSR, there remains a gap in understanding its direct impact on corporate value through marketing strategies [6, 7]. This study addresses this gap by investigating how CSR-focused marketing strategies influence the creation and recognition of corporate value in the marketing sector. The main research question is: "How does the adoption of corporate social responsibility affect the creation and recognition of a company's corporate value?". Research delves into how the implementation of strategic marketing is linked to the creation of business value, highlighting the important role CSR plays in the modern business environment [7].

2 Creating Value Through the Use of CSR as Marketing Strategy

Corporate Social Responsibility (CSR) can be used in marketing strategies in various ways, offering companies an integrated approach aimed at creating value for the company and society [8]. Marketing messages are one of the key areas in which CSR values are integrated. This can be achieved through advertising, social media, websites, and other communication channels, thus enhancing the brand image of the company [9]. The findings of Farmak et al. [10] demonstrate that encouraging consumer participation contributes significantly to the delivery of CSR messages and generates an increased response. Socially oriented advertising is another way of using CSR in marketing strategies, as it has been shown to enhance a company's image to the public [11]. Corporate Social Responsibility (CSR) plays an important role in creating corporate value, that is, in forming a positive image and perceptions of the company in the eyes of the public [12]. The contribution of CSR to corporate value has been the focus of academic research, highlighting that CSR actions not only serve social and environmental benefits but also enhance business value. Scholars such as [13] articulate that CSR activities, through acts of giving and volunteering, not only enhance society, but also enhance a company's business reputation. Meanwhile, [14] reviewed contemporary literature to argue that CSR activities are largely seen as enhancing the value of firms, suggesting that social and environmental responsibilities can contribute significantly to the market valuation and stakeholder perception of a firm. Engaging in CSR activities that benefit the local community can help build strong relationships and goodwill [15]. An important factor is the

period in which CSR interventions are carried out, as research reveals that it directly influences consumer reactions. The findings of [16] show that CSR initiatives implemented in times of crisis, such as the COVID-19 pandemic, result in higher consumer purchase intention than offers made after the crisis outbreak. Therefore, early CSR actions have a direct and positive impact on consumer perceptions and behaviors. Consumers may prefer brands that take social responsibility to those that do not. This leads to an increase in sales and market share for companies that invest in CSR [17]. In fact, it is observed that consumers show a high awareness of companies that follow CSR practices, especially actions that are directly related to society and local communities [18]. Organizations that assume social responsibility may foster a sense of community among consumers, thereby encouraging active participation in social and environmental issues [19].

3 Materials and Methods

Quantitative research is implemented through the systematic collection and analysis of numerical data, which is vital for investigating patterns, relationships, and trends in various variables [2, 20]. The research was descriptive and was carried out by collecting quantitative data through online questionnaires. The use of a questionnaire is considered necessary for the implementation of this research, as it is characterized by the accuracy of the data and objectivity [21]. The quantitative approach was chosen because it provides structured, objective data that can be statistically analyzed to validate the hypotheses [21]. In this study, data were obtained from primary sources through the distribution of a questionnaire, which is a primary research tool in quantitative research. The structured format of questionnaires facilitates the quantification and analysis of data, resulting in researchers identifying trends and correlations with greater statistical power [21]. The anonymous nature of the questionnaires contributes to greater transparency and honesty among respondents [20–22]. To ensure the reliability and validity of the questionnaire, the questions were based on published research by [23–25]. An online questionnaire via Google Forms was chosen to ensure time and space and to provide automatic downloading of responses [25]. The questionnaire was posted on the authors' social media and sent via email to access a large number of sample. It contained 23 questions, multiple choice, closed and open-ended, and based on a Likert scale, with a relevant definition of CSR for clarification to participants. The sample consisted of 86 marketing executives from various organizations in Greece, including small, medium, and large companies. This sample included a mix of students who also work as marketing employees especially through internships as well as professionals especially from middle management positions, ensuring a diverse range of perspectives. Organizations were selected based on their active engagement in marketing activities.

4 Results

Starting with the analysis of the results, the sample consisted of 86 participants. As shown in Fig. 1, 47.7% were female and the remaining 48.8% were male, while 3.5% did not want to answer. The survey sample consisted of a mix of ages, with the largest percentage (37.2%) being in the 26–35 age group. The next in line are the 18–25 age group with a percentage of 33.7%, and by a larger margin the 36–45 age group (19.8%). A small percentage is the 46–55 and 56–65 age groups, with the former scoring 5.8 and the latter 3.5%. Regarding educational level, 55.3% had a university degree and 30.6% had a master's degree. 10.6% had a secondary school-leaving certificate, while only 1.9% had a PhD. To compare the participants, based on their employment, in terms of the importance of CSR, cross-tabulation analysis (crosstabs) was carried out for the five employment groups and their perceptions of CSR. Table 1 shows that the highest percentage responded that they consider CSR very important for a company. This percentage is employed in the private sector and this view is also supported to a lesser extent by freelancers and finally university students who have worked/or still working in marketing organizations.

In the following crosstabs analysis (Table 2), it is observed that the maximum number of private employees, freelancers, and students agree that marketing strategies with a focus on Corporate Social Responsibility bring benefits to companies.

Table 5 shows that the majority of participants agree that CSR actions significantly impact brand image and corporate value in the market. The crosstab analysis indicates

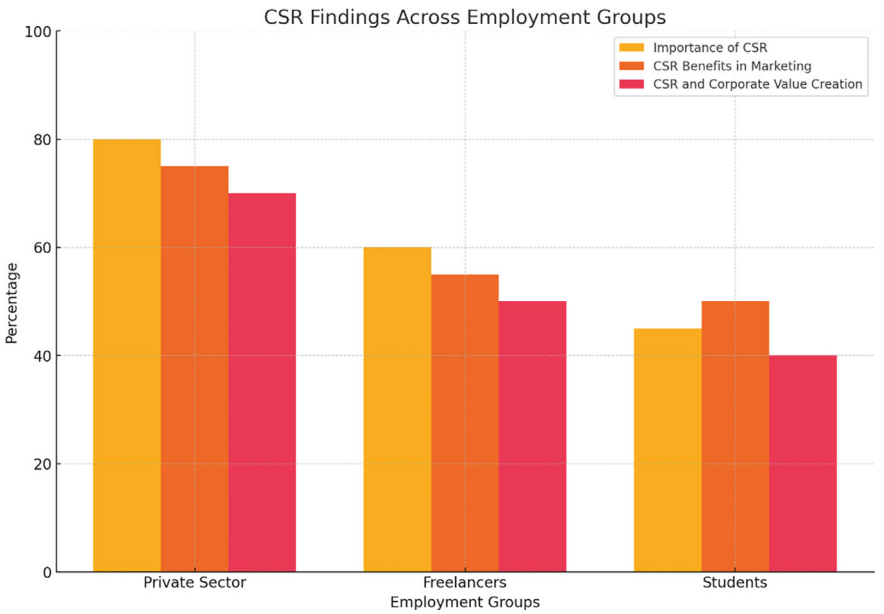


Fig. 1 CSR findings across employment groups

Table 1 Crosstab: the importance of CSR and business ethics

Count		4. Please state your occupation:					Total
		Student	Unemployed	Freelancer	Employee (private sector)	Other	
5. How important do you think Corporate Social Responsibility (CSR) and ethics in business are?	Not at all important	0	0	1	0	0	1
	Slightly important	0	0	1	2	0	3
	Moderately important	3	0	7	9	0	19
	Important	5	1	10	20	1	37
	Very important	8	0	5	12	1	26
Total		16	1	24	43	2	86

Table 2 Chi-Square tests (the importance of CSR and business ethics)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	9.590[a]	16	0.887
Likelihood ratio	10.659	16	0.829
Linear-by-linear Association	0.610	1	0.435
No. of valid cases	86		

[a]18 cells (72.0%) have expected count less than 5. The minimum expected count is 0.01

that most respondents, across various occupations, generally agree with the benefits of CSR. Specifically, private sector employees (43) and students (16) predominantly agree or strongly agree with CSR's positive impact. The Chi-Square test results, with a *p*-value of 0.322, suggest no significant association between occupation and opinion on CSR, indicating that the perception of CSR benefits is consistent across different occupational groups (Tables 3 and 4)

Figure 1 shows the importance of CSR, with the percentage of participants who consider CSR to be very important for a company. It also illustrates the perceived benefits of CSR in marketing, highlighting the percentage of participants who agree that CSR-focused marketing strategies benefit companies. Additionally, the graph depicts the belief that CSR activities contribute to the creation and recognition of a company's corporate value, showing the percentage of participants who support this view (Table 6)

Table 3 Crosstab on CSR benefits

Count		4. Please state your occupation:					Total
		Student	Unemployed	Freelancer	Employee (private sector)	Other	
6. Do you think the benefits of adopting CSR and ethics in business outweigh the costs?	Neither agree or disagree	1	0	2	1	0	4
	Agree	12	0	20	35	1	68
	Strongly agree	3	1	2	7	1	14
Total		16	1	24	43	2	86

Table 4 Chi-Square (CSR benefits)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	9.243[a]	8	0.322
Likelihood ratio	7.527	8	0.481
Linear-by-linear association	0.188	1	0.665
N of valid cases	86		

[a]11 cells (73.3%) have expected count less than 5. The minimum expected count is 0.05

Table 5 Crosstab: the necessity of CSR in business operations

Count		4. Please state your occupation:					Total
		Student	Unemployed	Freelancer	Employee (private sector)	Other	
7. Do you think the adoption of CSR and ethics in business is necessary for the smooth operation of the business?	Neither agree or disagree	2	0	3	1	0	6
	Agree	11	1	18	34	1	65
	Strongly agree	3	0	3	8	1	15
Total		16	1	24	43	2	86

Table 6 Chi-square tests (necessity of CSR)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	5488[a]	8	704
Likelihood ratio	5648	8	0.687
Linear-by-linear association	1378	1	0.240
N of valid cases	86		

[a] 11 cells (73.3%) have expected count less than 5. The minimum expected count is 0.07

5 Discussion and Conclusions

CSR activities positively shape public perception, making brands seem more trustworthy and ethical, thereby increasing customer loyalty and repeat purchases. Furthermore, these practices lead to greater employee satisfaction and engagement, bolstering overall corporate value. According to previous research [20–25], company image and reputation are affected by all dimensions of social responsibility. These findings are consistent with the results of the present study, in which participants considered CSR as a means of influencing the image and reputation of a brand or company. However, results from [23] and [15] state that information and awareness of social issues prove consumers' perceptions of message authenticity, whereas the present study shows that consumers do not trust companies that advertise CSR actions. The studies of [5]–[16] and [22] show that consumer skepticism about the reasons for creating CSR strategies reduces the positive impact of actions. The findings of [23] highlight the criticality of consistency between an organization's core values and CSR actions, and this study confirms that consistency between CSR and corporate identity is critical to the success of CSR marketing actions. The study in [16] suggests that engagement in social responsibility adds positive attributes to branding, consistent with the findings of this study. Finally, studies by [10] and [13] indicate that CSR actions improve corporate value and yield higher profits, with the results of this study supporting that improving corporate value, community influence, environmental sustainability, and workforce empowerment are key objectives of CSR initiatives. Directions for future research are suggested. One suggestion for future research is a comparative analysis. Comparative analysis has the potential to explore how different industries implement CSR practices and the effects of these initiatives on their corporate value. In-depth qualitative research can be conducted to identify the motivations and objectives behind the adoption of Corporate Social Responsibility.

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Generations and Sustainability: Analyzing Preferences and Behaviors for Organic Food Products



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Abstract Consumer behavior theories and sustainability evolution suggest that life experiences and socio-economic contexts influence purchasing decisions and values. As sustainability becomes increasingly important, understanding the role of various age groups in supporting this movement is crucial for companies. This paper aims to explore how different generations consume and purchase organic food products. To investigate this topic, a questionnaire was created and distributed online to a convenient sample of 396 participants from various generations, including Baby Boomers, Generation X, Millennials, and Generation Z in Romania. The questionnaire's purpose was to identify patterns in preferences, consumption behaviors, and the impact of specific factors, such as support for organic farms and budget allocation for organic products and whether there are generational differences. Statistical analysis methods, including Chi-Square Tests, were used to analyze the data and identify significant trends and correlations, with SPSS software. Based on the results, Generation X and millennials are among the most concerned with supporting organic farms and generally allocate more financial resources to purchasing organic food products. The Baby Boomers generation showed a significant inclination toward organic products but ranks above Generation Z, which, contrary to expectations, is the least interested in this subject. This paper can be useful for supermarket managers, organic product stores, but also for people who choose a healthy lifestyle.

Keywords Consumer behavior · Sustainability · Organic food

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1 Introduction

At a time when sustainability and environmental issues are increasingly important, more and more companies are focusing on understanding consumer behavior to accommodate food sustainability issues. A first step in this direction is the use of sustainable materials for packaging and the use of labels for food products that are environmentally friendly. As environmental concerns become increasingly essential and pollution has reached alarming levels, consumers are increasingly careful with their food choices. However, studies have noted that despite good intentions, the price barrier poses problems for consumers, as not everyone can afford the price of sustainable products [1].

Consumer behavior is a complex concept that encompasses a multitude of variables. It is reflected in a person's actions when purchasing and using various products. Product quality is one of the most critical influences on consumer behavior. Also, negative experiences have a more substantial impact on the individual than positive ones of the exact nature [2].

The aim of this study is to understand better whether sustainability issues are viewed differently from generation to generation and how much the choice of organic food influences the budget.

2 Literature Review

Over the past 20 years, consumers have become increasingly concerned about a healthy lifestyle, which has increased demand for organic food products. Organic production consists of agrifood products that comply with environmental standards and animal welfare and, at the same time, use natural resources in an optimal manner [3]. As urbanization expands and incomes steadily increase, consumers in developing countries will gradually understand the importance of food safety concerns. Over time, these consumers will have high expectations about food quality and safety, relying on industry-recognized certifications to achieve that trust in food manufacturers [4]. At the same time, it has been observed that those consumers who are motivated by health-related factors prefer organic, pesticide-free, and low-sugar foods [5].

When making food choices, consumers pay attention to the production method and the certification of the products. It has been found that despite the product's less appealing appearance, its location and origin can improve the perception of its quality. It has also been observed that labeling for information purposes of the origin of a product has a positive impact on consumer preferences. The preferences highlighted among consumers have an increasingly important role in shaping the agrifood system, requiring all those involved to adapt to the requirements of a changing market characterized by an increasing emphasis on the origin of raw materials and the certification of products. These things can lead to specific positive changes related to

the way of production and the variety of products available to consumers. For these reasons, good collaboration is needed from all those involved in the agrifood system [6].

Organic products are considered healthier than conventional ones due to their superior quality and absence of chemicals and synthetic additives. Therefore, they bring benefits to both consumers and the environment. Increasing life expectancy, demographic changes, and improved quality of life have increased consumer interest in eating organic food more than before. However, the growth rate of the organic food market varies from country to country. Most consumers in economically developing countries have little or no experience with organic food because the market is still small and underdeveloped. In the case of organic food and products, consumers face a higher risk of making the wrong purchase, which is why they are looking for more information to reduce the risk. For this reason, personal recommendations have become a valuable source of information and an essential communication tool for environmentally conscious consumers. They often discuss companies' products, services, and marketing activities [7].

On the other hand, studies show that more and more consumers are showing an increased interest in sustainable products and are willing to change brands if a company does not meet their moral standards. According to Forbes, 72% of global consumers are now buying more sustainable products than they did five years ago, and 81% plan to continue this trend in the next five years. They want to contribute to protecting the environment and are aware of their purchases' impact on it. Also, 88% of consumers in the US and UK expect brands to support them in adopting a more sustainable lifestyle. However, consumers often perceive sustainable products negatively, being considered in some cases of lower quality, unsightly and more expensive [8].

Some studies have shown that consumers are motivated to choose sustainable products because of their beliefs and feelings, especially those related to health. It has often been observed that consumers perceive these products as healthy from the beginning, which leads to a positive attitude toward them among people who are concerned about a healthy lifestyle. In addition, numerous studies highlight that many households that adopt healthy eating habits are more inclined to buy sustainable products. Consumer awareness of health-related food characteristics, such as nutrition claims on labels, is an excellent way to encourage the purchase of sustainable products. Some researchers argue that there is a positive impact on consumers' choice of products, as mentioned above, when their labels contain nutritional or health claims. However, using difficult terminology or choosing a font that is too small can prevent the consumer from understanding the product's nutritional values. Therefore, all this information must be provided in an appropriate manner to consumers so that they can take it into account [9].

3 Methodology

This research aims to identify how consumer preferences and behaviors related to organic agrifood products vary between generations (Baby Boomers, Generation X, Generation Y/millennial, Generation Z). Starting from this premise, two hypotheses regarding the relationship between generations and purchasing and consumption decisions regarding organic agrifood products were investigated.

H1: How does the influence of supporting organic farms differ on purchasing and consumption decisions between different generations?

H2: Is the monthly budget allocated for purchasing organic agrifood products linked to generations?

To analyze the hypotheses stated above, a questionnaire was created on Google Forms platform, based on previous research [10, 11]. By using convenient sampling, the questionnaire was distributed among Romanian consumers online through social networks and 396 respondents were registered. The hypotheses were statistically analyzed by using the Chi-Square test with the SPSS software [12].

4 Results and Discussion

The final sample consisted of 73% female and 27% male. Also, 66.4% of respondents came from urban areas and 33.6% from rural areas. The statistical analysis for our two hypotheses follows.

$H_{1.0}$: The influence of supporting organic farms on purchasing and consumption decisions is not linked to generations.

$H_{1.1}$: The influence of supporting organic farms on purchasing and consumption decisions is linked to generations.

By using the Chi-Square test within the SPSS program, it was found that the H1.0 hypothesis is rejected; therefore, H1.1 is accepted, $\text{Sig} = 0.000 \leq 0.05$ (Tables 1 and 2).

The Chi-Square test results (Table 2) showed a p (Sig) value of 0.000, indicating statistically solid significance ($p \leq 0.05$). This suggests a significant association between generations and the influence of supporting organic farms on purchasing and consumption decisions.

Following the Chi-Square test, a significant influence exists between supporting organic farms and generations. More specifically, by looking at Table 1, for the Baby Boomers generation, the observed values compared to those expected show that only a small number of respondents are not influenced at all, respectively, to a minimal extent in terms of the purchase and consumption decision about the support of organic farms. Even if, after analyzing the results, it was observed that there is an inclination to support organic farms to a small extent, the trend is a positive one because, among these people, increased awareness and a developing interest in organic practices in agriculture can be seen.

Table 1 Crosstabs table for H1

Crosstabulation between the variables "Supporting organic farms" and "Generations"								
			To what extent does the following influence your purchase and consumption decision: [Supporting organic farms]					
			Not at all	Very small extent	Small extent	Large extent	Very large extent	Total
[Generations]	Baby Boomers (1946–1964)	Count	1.0	1.0	9.0	8.0	7.0	26.0
		Exp. Count	9.0	2.4	7.4	8.8	6.6	26.0
	Generation X (1965–1980)	Count	4.0	7.0	19.0	38.0	45.0	113.0
		Exp. Count	4.0	10.3	32.0	38.2	28.5	113.0
	Generation Y / Millennials (1981–1996)	Count	0.0	5.0	21.0	26.0	22.0	74.0
		Exp. Count	2.6	6.7	20.9	25.0	18.7	74.0
	Generation Z (1997–2012)	Count	9.0	23.0	63.0	62.0	26.0	183.0
		Exp. Count	6.5	16.6	51.8	61.9	46.2	183.0
	Total	Count	14	36.0	112.0	134.0	100.0	396.0
		Exp. Count	14.0	36.0	112.0	134.0	100.0	396.0

Table 2 Chi-Square test results for H1

Value	df	Asymp. Sig. (2-sided)
35.453	12	0.000
39.026	12	0.000
18.248	1	0.000

Generation Z was uninterested in this aspect, unlike the Baby Boomers generation, who strongly opposed supporting organic farms. The main reason may be the price [13], as it is known that most young people from Generation Z are students or at the beginning of their careers, and their financial resources are limited, which can force them to choose cheaper products.

On the other hand, Generation X and Generation Y showed the highest interest in supporting organic farms. These generations have witnessed the negative impact of conventional agricultural practices on the environment and human health, and are driven to bring about change through rational consumption choices. Also, people who are part of these generations are financially independent and have a higher level of education [10].

Thus, it can be seen that each generation perceives organic products differently and that support for organic farms also depends on factors such as income and education level.

$H_{2.0}$: The monthly budget allocated for the purchase of organic agrifood products (in Romanian Lei) is not linked to generations.

$H_{2.1}$: The monthly budget allocated for the purchase of organic agrifood products (In Romanian Lei) is linked to generations.

Using the Chi-Square test within the SPSS program, it was found that the H2.1 hypothesis is valid, Sig = 0.002 ≤ 0.05 (Tables 3 and 4).

The Chi-Square test results (Table 4) showed a *p*(Sig) value of 0.002, indicating statistically solid significance ($p \leq 0.05$). The p-values for Pearson Chi-Square (0.002), Likelihood Ratio (0.001), and Linear-by-Linear Association (0.000) are all below the threshold of 0.05, suggesting that the relationship between the variables is statistically significant.

This suggests a significant association between the monthly budget for organic agrifood products and generations. Therefore, we reject H2.0 and accept H2.1.

Looking at Table 3, we noticed that the budget allocated for purchasing organic agrifood products varies considerably between generations. Baby Boomers invest over 300 lei in such products, demonstrating a constant interest in healthy eating. Generation X proves to be more generous, allocating over 501 lei to support the consumption of organic agrifood products. However, Generation Y is the one that invests the most in this aspect, exceeding the threshold of 701 lei. In contrast, Generation Z allocates the least, with a budget between 0 and 500 lei, reflecting a lower concern and more limited financial resources.

However, studies show that young people from Generation Z are more familiar with sustainable living than their predecessors and show a strong social responsibility. When making decisions about food, they prioritize health and quality of life and are willing to pay a higher price for healthier foods. On the other hand, in Serbia, as in the case of the research carried out on the sample in Romania, Generation Z consumers do not purchase organic food or buy only in limited quantities, the main reasons being high prices, lack of information and reduced availability [13].

5 Conclusions

In conclusion, analyzing consumer behavior involves understanding the economic and social influences that determine purchasing decisions and their preferences. Economic factors such as income, prices, and market stability are crucial in shaping purchasing behavior. At the same time, the social environment has proven to be extremely important, as many consumers make certain food decisions influenced by family, friends, or people who, from their point of view, are trustworthy.

Regarding the analysis of organic agrifood products according to generations, in Romania, it was observed that the respondents who participated in the study buy organic agrifood products according to the established budget, a budget that, in turn,

Table 3 Crosstabs table for H2

Crosstabulation between the variables "Monthly budget for organic products" and "Generation"										
	[Monthly budget for the purchase of organic agrifood products] (in Rom. Lei)									
			0−100	101−300	301−500	501−700	701−900	901−1100	Above 1100	Total
[Generations]	Baby Boomers (1946–1964)	Count	0.0	2.0	7.0	9.0	3.0	2.0	3.0	26.0
		Exp. Count	2.6	5.6	5.4	5.1	3.1	1.9	2.4	26.0
	Generation X (1965–1980)	Count	6.0	22.0	16.0	27.0	15.0	11.0	16.0	113.0
		Exp. Count	11.4	24.3	23.4	22.0	13.4	8.3	10.3	113.0
	Generation Y / Millennial (1981–1996)	Count	5.0	14.0	15.0	13.0	10.0	7.0	10.0	74.0
		Exp. Count	7.5	15.9	15.3	14.4	8.8	5.4	6.7	74.0
	Generation Z (1997–2012)	Count	29.0	47.0	44.0	28.0	19.0	9.0	7.0	183.0
		Exp. Count	18.5	39.3	37.9	35.6	21.7	13.4	16.6	183.0
	Total	Count	40	85.0	82.0	77.0	47.0	29.0	36.0	396.0
		Exp. Count	40.0	85.0	82.0	77.0	47.0	29.0	36.0	396.0

Table 4 Chi-Square test results for H2

Value	df	Asymp. Sig. (2-sided)
40.084	18	0.002
43.776	18	0.001
25.657	1	0.000

is influenced by the income level of each individual. Also, Generations X and Y have proven to be the most involved in terms of aspects related to the purchase of organic products, the main reason being that they already have a certain level of financial stability and education, which allows them to make purchases thinking about future generations, but also to allocate a higher budget for the purchase of organic agrifood products. At the opposite pole are those from Generation Z, who have been much less involved in such aspects; even if they may seem general preoccupied with aspects related to the environment, they are at the beginning of their careers, and their incomes are low as mentioned in relevant literature [10]. The Baby Boomers generation has shown a significant inclination to purchase organic products, but also to the effects resulting from them. The main reason is that these people fall into the category of senior citizens (born between 1946 and 1964). Under these conditions, their care is for themselves, to try as much as possible to stay healthy.

Thus, organic products are on an upward slope, which represents a positive impact on food sustainability and environmental protection. Therefore, these aspects have improved over time, and many consumers have become more aware of the impact of their decisions, whether they are buying organic products for their family, friends, or just for themselves. Also, they have begun to be much more informed and attentive to both the food they eat and the way it has been produced, especially preferring local organic products. Generally, as consumers become environmentally more sensitive, the organic food sector is increasing. From an economic point of view, the Romanian economy is advantaged when consumers choose to buy local organic products, as opposed to imported products, because local producers are encouraged. At the same time, the behavior of consumers regarding the choices related to local or imported organic products depends not only on the preferences of each person, but also on factors such as the allocated budget or the health benefits.

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Strategic Communication in the Era of Digital Transformation and Artificial Intelligence for Leading Telecommunication Brands and Companies



Maria Sagana

Abstract In an era characterized by an abundance of information, high speed and rapid data consumption, but also by constantly evolving technological development, communication channels and new tools enable leading brands in today's telecommunication business scene to reshape their communication strategy and use constantly new ways to promote them, achieve their purpose, and reach their consumers and stakeholders. All the above, combined with the dynamics and capabilities of Artificial Intelligence (AI), highlight the need to "transform" brands themselves and their "image" in order to properly listen to new trends and approach consumers in creative and effective ways in the digital environment. The strategic choices and the formation of the communication of leading telecommunication brands and companies operating in Greece in such an environment are the subject of this research. A mixed methodological study was followed. The choice of tools and channels, as well as the overall configuration of strategic communication were approached qualitatively by conducting interviews with executives actively involved in the strategic communication of leading brands and telecommunications companies, as well as by studying and analyzing content. Findings illustrate the evolution of strategic communication in the modern digital environment in the light of leading telecom brands and companies and the penetration of digital tools and Artificial Intelligence (AI) in the design and execution of strategic communication and in defining the target audience for achieving objectives. Implications for the use of AI in strategic communication, the data-driven approach, and the evolution of the strategic communication' professionals future role are discussed.

Keywords Strategic communication · Artificial intelligence · Digital transformation · Telecommunications

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1 Introduction and Background of Research

In a fully digital environment with constant evolution of cutting-edge technologies and the reality of AI taking central stage, life, communication, and business are changing from day to day at a rapid pace. But what is the theoretical framework in the lively public discourse and everyday life and what is the reality within organizations? How is strategic communication now taking shape in terms of its design and execution?

The aim of the study is to document the evolution of strategic communication in the modern digital environment in the light of leading brands and businesses in telecommunications and the penetration of digital tools and AI in the design and execution of strategic communication and in the definition of the target audience for achieving objectives.

Research has already shown that CommTech [1] is the digital technologies provided or used by communication units or departments to manage and perform primary activities, stakeholder communications, and advisory or even supporting operational processes such as managing internal monitoring, content planning, or evaluation. Furthermore, the upcoming generation of interfaces, developed by AI, will have advanced communication powers and will therefore become essential for public relations (also known as strategic communication, a term now adopted by the market and science) [2]. Especially, when it comes to telecommunications, a technology that eliminates distances between continents, between countries, between persons, [3] this new condition, combined with cutting-edge technology, has essentially changed the dna of communication and telecommunications in general.

The theoretical study focused on the strategic management approach, which links strategic communication to the overall management of an organization and focuses on aligning communication with strategic objectives, integrated marketing communication [4] which requires the coordination of communication across all channels, creating a 360 approach. Research also focused on Botan and Taylor's Cocreational Model [5] which puts emphasis on the power of the commons and the value of knowledge/data-based planning, resources, and the overall environment. Key elements of the Cocreational Model are (a) the commons are the driving force because they are the decision makers and (b) the essence of strategy is planning based on knowledge/data, environment, conditions, interaction, resources, capabilities, and background [6]. Deutsche Telekom campaign "A Message from Ella" [7] and the 360 Verizon Contact Center Hub is a typical example.

The aim of this study is to illuminate more aspects and bring to the surface useful information about the strategic communication sector, through a 360 research approach.

2 Methodology

The purpose of the research was to address the following questions: How is the strategic communication of leading brands and companies in telecommunications today being shaped? How do strategic communication executives of leading telecom brands and companies perceive and use digital tools and AI applications? Through which communication channels and with which tools are audiences reached? What digital tools and AI applications are used to design and execute a communication campaign? Are digital tools and AI applications used to process and analyze the feedback received by organizations from the public and other stakeholders?

A mixed methodological approach was chosen to examine the above questions. Firstly, content analysis results are followed—documentary and textual approach (in print or other visual form) [8].

In this context, case studies from the international environment were searched for relevant examples (case studies well-known for the use of AI and edge tech tools and social media tools). Then, the digital communication channels and the active official accounts of the above-mentioned leading brands/businesses in the Greek market in social media were examined as they are listed on their official sites. Since content analysis is a highly transparent research method, it is often characterized as objective [8] and therefore contributes useful data for answering the questions.

Useful relevant findings were sought through a qualitative research approach. The main prerequisite here was that the research participant was actively involved in the strategic communication of the aforementioned brands/telecom companies in our country during the period of accelerated digital transformation and the use of AI applications and beyond.

The relevant questionnaire was created, covering all the aforementioned topics. The questionnaire had a structured format in terms of questions, ultimately becoming a personal completion questionnaire [8] by executives involved in strategic communication of the companies in question.

The outreach to the executives was targeted (intentional) thanks to their professional involvement with the strategic communication of brands/telecom companies, either through LinkedIn, personal contact, or in some cases through third party means of personal and professional contacts.

Given the targeting (senior executives in important companies, with responsibility and limited free time involved in the strategic communication of the three leading telecom brands in Greece, some of which are currently undergoing management changes or sale), as well as the number of questions that required open answers, it is considered to be a significant representative sample (9). Besides, it was observed that saturation was beginning to set in, with common answers in several of the cases.

3 Results

Through this study it was found that the use of digital tools and AI applications to create and promote content, target audiences, and achieve specific goals and the use of main digital channels and social media (site, YouTube, Instagram, LinkedIn) to promote the message and reach/communicate with the audience. Furthermore, remaining in an international context and evaluating the assumption that organizations are reinventing their identity and therefore their services to grow in new commercial environments [9], a Contact Center Hub that uses digital tools and AI that is presented on the company's website and employing tools such as: Mobile/work from anywhere, Real-time analytics and reporting, Unique pricing model, Call recording, Calling features (conferencing, monitoring, whispering), Built-in Customer Relations Management (CRM) and helpdesk integrations, Smart call back and queuing, interactive voice response (IVR call) routing, and custom greetings.

As it turns out from the qualitative research, the official sites of the brands under study and the corresponding apps play a key role in their image. With a 360o approach, they create the digital environment in which the consumer can choose the way and the medium through which he/she will be informed and communicate with the brand. Given the more direct approach and faster service and data processing (real-time), the opportunity is offered to reshape the communication strategy where necessary.

Virtual Reality (VR) technology, bots and algorithms are some of those that play a major role in communicating with the public. Also, in addition to sites and apps, the presence on social media seems to be crucial. Based on the examination of the evidence, it is clear that the ones used by all the brands considered are Instagram, Facebook, LinkedIn, TikTok, X, and YouTube.

Among the findings, optimization and speed, personalization, as well as the potential for data-driven and 360o approaches leading to higher efficiency seem to emerge as advantages. Among the findings that seem to be of concern to the respondents are unethical use, threat to privacy, change in the job map, and misleading the public. Importantly, it is also felt that not adapting in time to this new digital environment can also be a risk.

Moreover, respondents as a whole consider digital tools and AI application to be useful for their professional activity, as they enhance visibility and reputation management, offer real-time data and personalized content creation, as well as more effective audience targeting. Indeed, it is perfectly acceptable for management and senior executives to use them and in many cases even encouraged. Here, it is worth noting that in some cases the belief is expressed that the usefulness of these applications acts as a complement to human creativity, thinking, and judgment and particular emphasis is placed on the priority of developing human capabilities with the support of cutting-edge technology. Another encouraging factor is the fact that, as shown by the survey, most companies are investing to a greater or lesser extent in digital tools and AI. In fact, this is an industry that has a leading role in the development of cutting-edge technology and digital transformation in our country and it would be at least inappropriate not to invest in corresponding tools within organizations.

As for the more practical part, data management and evaluation seems to be very important for the design of the communication strategy in the digital environment. AI applications allow brands to process unstructured data faster and more efficiently, identify patterns and better target audiences and displayed content, and engage in real-time redesign. The same goes for defining target audiences thanks to predictive models and hyper-personalization, using tools such as Google Ads, Facebook Ads, and Meta Business Manager.

The majority of brands apply an integrated approach using a combination of different digital channels and social media. The dominant digital tools are the website, but also apps, while Instagram and LinkedIn—used by all brands—dominate social media, but Facebook, X, and YouTube are equally popular. The part of Digital Marketing and Programmatic Advertising was also mentioned as particularly important by a participant.

Looking at the evidence, especially in a digital environment, one element that emerges is the use of digital tools and AI to create content and disseminate a message to the target audience, whether for commercial purposes or not. Also, AI and its applications are chosen by leading telecom companies and brands to communicate and serve customers (individuals and businesses) through their official sites and their respective apps. In addition to the content analysis, the findings are confirmed through qualitative research with executives involved in the strategic communication of the leading brands and companies in Greece, as mentioned above.

4 Discussion, Future Research, and Conclusion

Evaluating all the above data and summarizing, we would say that the digital identity of the communication strategy is fully confirmed. We are already in a new era where the world and people's needs are changing rapidly and communication is gaining more and more momentum in everyday life, through digital tools and AI environments.

The same is happening in strategic communication and in the professional lives of those involved in it on behalf of brands and telecom companies. An industry that in itself is a force for technological evolution and transformation for every country and economy.

Based on the research findings, we would argue that strategic communication operates in ideal conditions that allow flexibility and management of resources and content to meet the needs of the audience [6] while applying an integrated approach by promoting the entity of an organization as a whole [4] and using multifaceted concepts and different communication practices [4] to achieve goals.

Given that for any organization that wants to lead in the digital economy it is essential to use digital systems and tools, we would say that the brands and telecoms companies under consideration are already in a digital transformation and are operating from a position of strength, as they fully integrate the use of cutting-edge technologies, digital tools, and AI applications.

And although in this new era, second thoughts and reservations may be heard in the public debate about AI, the consequences of its use, and the disruption of jobs, it seems from contact with executives that they are more invested in the usefulness of this intelligent tool, giving added value to human skills and creativity and highlighting the position that with AI the goal is for computers to do things that the mind can do [10]. A discussion that takes us back in time and the eternal question of the relationship between humans and machines.

As a next step in the research, taking into consideration that the processing of emotional cues through the analysis of users' facial expressions is exploited to improve the level of interaction in human–machine communication systems [11], it would be of particular scientific interest to explore the ethical use of AI for content creation, communication campaign, and audience targeting as a whole for the communication industry and the responsibility of companies toward society. It is, after all, part of the investment that companies and brands make in sustainability and a positive footprint for society, which is, moreover, through Corporate Social Responsibility, an important driver of change in corporate culture, in an era where corporate reputation, competitiveness, leadership, and risk management are increasingly integrated into environmental, social, and corporate performance (ESG) [12, 13]. As immersive technologies are employed in different fields and sectors [14–20], they may be used for the evolution of strategic communication in the modern digital environment with the penetration of digital tools and AI in the design and execution of strategic communications.

Limitations of future research may be the heavy workload and the endless involvement of executives in a digital reality that stretches far beyond established working hours, as well as the confidentiality of certain information that is not communicated outside the company environment for obvious competitive reasons.

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Reuse of Former Military Facilities Through the Creation of a Historic and Cultural Park in Aegina, Greece

Kyriaki Alyfanti

Abstract In contemporary discourse, there is a systematic endeavor to repurpose decommissioned military installations, aligning them with the principles of sustainable development and the promotion of social cohesion. Simultaneously, efforts are being made to harness these spaces as cultural resources. The cultural advancement of urban environments, through the elevation of local historical narratives, functions as a pivotal strategic planning mechanism contributing to endogenous sustainable development and bolstering sustainable tourism. The core objective of this study is to examine the adaptive reuse of the inactive military structures of the Southern Naval Fortress in Perdika, Aegina, Greece, with the aim of transforming them into a historical and cultural park integrated with a multifaceted cultural route. A methodology based on a comprehensive literature review, combined with a case study design, was employed to inform the strategic planning process, emphasizing the development of specific actions for the Fortress. This involved a detailed mapping of the facilities and surrounding areas as integral elements of Aegina's cultural capital, alongside the formulation of a development vision, strategic planning for the reuse of the Aegina Fortress, and recommendations that could establish the prerequisites for holistic endogenous growth. Furthermore, the study addresses the potential implications for key stakeholders and policymakers.

Keywords Southern naval fortification of Aegina · Adaptive reutilization of inactive military installations · Sustainable development

1 Introduction and Background of Research

Culture is conceptualized as a complex social construct, intricately woven into the fabric of human actions and deeply embedded in the value systems of societies. Within contemporary academic discourse, culture has been elevated to the status of

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the fourth pillar of sustainable development [1]. Cultural heritage, which encompasses both tangible and intangible elements, is increasingly regarded as a critical resource for fostering sustainable practices. The valorization of cultural heritage is predicated on the notion that culture operates not only as a unifying and creative force but also as a multiplicative driver of development. Simultaneously, culture plays an indispensable role in the multidimensional and multi-scalar development of local communities, while also possessing the potential to act as a pivotal agent of social cohesion and the enhancement of social responsibility [2].

The intricate relationship between culture and tourism has been a subject of sustained scholarly inquiry, with cultural landmarks, heritage sites, and cultural routes serving not only as primary drivers of tourism but also as catalysts for economic growth. These cultural assets create an inherent framework for the safeguarding of the unique attributes and specificities of destinations [3]. Recent research has underscored the critical role of tourism in both the conservation and enhancement of the cultural capital of destinations [4, 5]. Through interpersonal interactions, emotional connections are forged between hosts, visitors, and the cultural heritage of particular sites. Kavoura [6] observes that "the symbolic presence of monumental landscapes, encompassing elements of myth, tradition, continuity, religion, and legend, alongside political and nationalist dimensions, is intrinsically linked to individuals' emotional attachment to specific locales." Thus, tourism serves as a significant contributor to cultural sustainability.

According to the United Nations World Tourism Organization (UNWTO), cultural tourism is defined as "a form of tourism activity where the essential motivation of the visitor is to learn, discover, experience, and consume the tangible and intangible cultural attractions/products in a destination" [7]. Cultural tourists, who constitute over 40% of the global tourist demographic, provide substantial economic benefits to destinations by extending their stays and contributing significantly to local economies while also attracting investment opportunities.

A notable component of cultural heritage includes military installations. The adaptive reuse of decommissioned military camps constitutes an integral aspect of urban planning and sustainable development. Its successful implementation requires thorough environmental assessments, comprehensive social studies, and rigorous economic analyses. Environmental assessments focus on evaluating soil, water, and vegetation, while social studies emphasize demographic analysis and participatory research. Economic analyses focus on the cost–benefit analysis of investments and employ economic scenario modeling to facilitate decision-making processes.

Below are exemplary case studies of successful adaptive reuse projects of decommissioned military camps on an international scale: Fort McPherson in Atlanta, USA, which operated as a military base from the nineteenth century until 2011, has been repurposed as a business and cultural hub, resulting in substantial job creation and stimulating the local economy. Fort de Joux in France, a historic military installation, has been transformed into a tourist and educational center that promotes military history and cultural heritage, resulting in increased cultural tourism [8]. Vauban Camp in Freiburg, Germany, has been converted into a sustainable urban complex, incorporating eco-friendly buildings, green roofs, and recycling systems that promote

sustainability and enhance the quality of life for local residents [9]. Similarly, the Parc des Buttes-Chaumont in Paris, once a military site, has been transformed into a public park and green space, promoting social well-being within the local community [10]. The Guido Reni Barracks in Italy have been transformed into a vibrant cultural district, contributing to the multifaceted cultural and tourism development [11].

In Greece, there are also notable examples of adaptive reuse of decommissioned military camps. The Pavlos Melas Camp in Thessaloniki has been redeveloped into a multifunctional space that incorporates cultural centers, sports facilities, and green spaces, thereby fostering social cohesion and advancing sustainable development [12]. Similarly, the Kordas Camp in Thessaloniki has been transformed into a public park, improving the quality of life for residents and promoting cultural activities, environmental awareness, and social engagement [13].

The majority of decommissioned military camps in Greece were established during the interwar period and ceased operations following World War II, including the Southern Naval Fortress of Aegina.

The adaptive reuse of the Southern Naval Fortress of Aegina, a tourist island located near Athens, is anticipated to generate significant socio-economic benefits. As such, it is selected as a case study for this research, contributing to the extant academic literature while illuminating this subject from a Greek perspective.

2 Literature Review

2.1 Social Parameters in the Adaptive Reuse of Military Camps

The local community is an essential component of the cultural identity of a place. The integrated and sustainable management of the cultural resources of the island's fortress necessitates a process of consultation and collaboration among all relevant stakeholders within the local community, with the goal of developing sustainable strategies that yield mutual benefits for all involved parties [14].

The participatory approach is operationalized through social studies, which encompass demographic analyses and participatory research methodologies. Demographic analyses are conducted using census data to evaluate the population density and demographic characteristics of the island's residents. Participatory research is carried out at all stages of the decision-making process, with meetings held either with all stakeholder groups or targeted focus groups. Research instruments such as structured questionnaires, semi-structured interviews, and interactive workshops are employed to gather and analyze the perceptions, assessments, and needs of the local population. It is crucial to prioritize the understanding of local communities' expectations, aspirations, and objectives before proceeding with the planning and implementation of the adaptive reuse of the fortress.

2.2 *Economic Parameters in the Adaptive Reuse of Military Camps*

Economic analyses focus on assessing the cost–benefit dynamics of investments. The evaluation of investments is conducted through the modeling of economic scenarios. This includes a detailed analysis of the restoration costs of the site and the potential economic benefits derived from the adaptive reuse of the camp. These analyses employ econometric models to assess the financial viability of the project. Furthermore, models are developed to estimate the economic impact of investments on the local labor market and the tourism sector. The analysis investigates various investment scenarios and provides forecasts of the economic returns, with an emphasis on regenerative and sustainable land uses [15, 16].

2.3 *Which is the Case in Greece?*

In the Greek context, the utilization of decommissioned military installations is governed by Law 4407/2016, article 13, which allows the Armed Forces Property Utilization Service to enter into agreements with Local Government Authorities (LGAs) for the adaptive reuse of military properties. The LGAs are required to submit a Sustainable Development and Utilization Plan, accompanied by an economic feasibility study and a proposal for annual rent to the Ministry of National Defense. However, under Law 4864/2021 on Strategic Investments, there is a risk that the role of municipalities may be undermined, as the law bypasses urban planning regulations and the guidelines of the Attica Regional Plan (2014), potentially enabling overdevelopment in the fortress area. The majority of local residents and community organizations strongly oppose the proposed overdevelopment of the area [17].

It is noteworthy that this historically significant remnant of World War II in Greece has remained largely intact, despite being subjected to extensive damage, looting, and vandalism in recent years. This presents an opportunity for the sustainable regeneration of the area, with the potential to transform it into an environmental park that includes an open-air World War II historical museum, offering educational, cultural, and recreational benefits for both the local community and tourists. Decommissioned military camps provide unique opportunities for regeneration and adaptive reuse, fostering the creation of spaces that facilitate social, cultural, and economic development. Adaptive reuse strategies may include transforming these areas into green spaces, cultural centers, or business parks, with a strong focus on sustainability and the integration of these assets into the local community.

3 Methodological Considerations

This study adopts a case study methodology, utilizing an extensive literature review from established academic databases, such as Google Scholar and Emerald, with key search terms including culture, sustainable development, adaptive reuse of decommissioned military camps, and Southern Naval Fortifications of Aegina.

The Greek island of Aegina is located in the central Saronic Gulf, approximately 17 nautical miles from the port of Piraeus. The island belongs to the Regional Unit of Islands within the Attica Region. According to the 2022 census, the population of Aegina stands at 12.938 permanent residents [18].

The island boasts significant cultural capital, of which the Southern Naval Fortress is a part. This military camp, spanning approximately 340 acres, was established in the 1930s and remained operational until the conclusion of World War II.

Over the years, the fortress fell into disuse, and it is now decommissioned, under the jurisdiction of the Hellenic Navy [19]. By studying the fortifications of the area, a clear categorization of defensive structures emerges, distinguishing between subterranean and above-ground installations. Noteworthy examples of above-ground infrastructure include the dual observation post oriented towards the southern sea passage, auxiliary buildings for various uses such as ammunition depots, kitchens, dormitories, and a series of circular artillery emplacements that housed long-range weaponry. In 2003, a Camera Obscura was constructed on one of the abandoned artillery positions on the cape as part of the European interdisciplinary forum "Light/Image." This installation involved the creation of a cylindrical, lightproof chamber, designed by Austrian artists Gustav Deutsch and Hanna Schimek, in which a panoramic, inverted image of the surrounding environment was projected onto panels. Unfortunately, this facility is no longer operational due to vandalism. The subterranean fortifications consist primarily of a 15-m-long tunnel leading to an underground chamber of approximately 10 square meters, which primarily served as a storage facility for gunpowder and munitions. There is also a small chapel located on the premises [20].

4 Results

At the former Southern Naval Fortress of Aegina, environmental assessments focus on the analysis of soil, water, and vegetation. Specifically, soil analysis involves the collection of samples to determine chemical composition and pollutant levels, utilizing methods such as atomic absorption spectroscopy and chemical element analysis. Furthermore, groundwater and surface water quality are assessed by examining the concentrations of toxic substances and heavy metals. Finally, an analysis of the current state of the vegetation, and the potential impacts of pollutants on plant growth, is conducted, focusing on the flora within the confines of the fortress [21].

The regeneration of ecosystems within the former naval fortress aims to transform the area into a sustainable ecosystem, with a particular focus on biodiversity restoration and the enhancement of ecosystem services. Various restoration techniques are employed, including phytoremediation, reforestation, and the creation of ecological corridors. The implementation of these environmental strategies is expected to contribute significantly to the sustainable restoration of decommissioned military camps, such as the Southern Naval Fortress of Aegina, by promoting ecological integrity and fostering biodiversity regeneration.

5 Discussion and Conclusion

The strategic design of a historical and cultural park, integrated with a mixed cultural route, can promote sustainable development, reinforce social cohesion, foster community engagement, and empower local populations. It is recommended that multifunctional spaces be created, combining cultural centers, green spaces, recreational areas, and parking facilities. Specifically, the restoration and adaptive reuse of existing structures are proposed, alongside the construction of small-scale new buildings designed to host a naval museum, educational spaces for programs in collaboration with Greek and international universities, exhibition halls for temporary exhibitions by artists, and a dedicated space for the works of artists from Aegina, particularly those of the "Generation of the 1930s," such as Moralis, Kapralos, and Nikolaou.

Moreover, a project to document and preserve oral histories, personal narratives, and historical elements from elderly residents who experienced the operational period of the fortress could be initiated. This material could be digitized and displayed in one of the museum's halls. Furthermore, the creation of a conference center with an attached restaurant or café is proposed, facilitating intellectual and cultural exchanges. The construction of an open-air theater and outdoor cinema, which would be unique to Aegina, is also recommended. Additionally, the construction of a chapel for weddings and baptisms is proposed, with the option for the municipality to lease the surrounding space for social events. The incorporation of green infrastructure is also proposed, including technologies such as green roofs, rainwater harvesting systems, and energy-efficient building designs.

The expansive area of the fortress presents significant opportunities for the development of walking paths along the coastline, unique cycling routes on the island, and resting areas with benches and shelters. Cafés for leisure could also be established, with the municipality having the option to lease them to private operators, thereby generating revenue. Additionally, there is potential for creating facilities for underwater fishing and diving, as well as sports areas for all ages, including playground, outdoor gyms, small basketball, volleyball, and soccer courts, and dedicated paths for walking pets. Solar-powered lighting systems are proposed to conserve energy, while recycling and composting bins would promote waste reduction and the reuse

of materials. Furthermore, a large parking area could be developed to accommodate visitors.

The analysis of the adaptive reuse of the Southern Naval Fortress demonstrates that such a project has the potential to generate significant social, economic, and environmental benefits, contributing to the promotion of sustainable practices in island development. Although the benefits may not be immediately visible, the initial restoration efforts are expected to improve the visual landscape. Over time, the project is anticipated to enhance the quality of life for the island's residents and increase the island's attractiveness. This, in turn, would help retain residents by boosting local economic activities, with a particular focus on promoting local gastronomy and the valorization of local food products, such as Aegina's renowned pistachios. Furthermore, it is expected that the project will attract visitors and members of the "creative class," thereby stimulating the growth of cultural tourism [22–24].

Local governance, which acts as the cultural management authority for the fortress, it is crucial to adopt innovative communication technologies, leveraging ICT (Information and Communication Technology) systems through computers, mobile phones, and telephone networks to facilitate the access to and management of digital data via the internet [25]. Additionally, cultural tourists often engage with one another on social media platforms, where they share their experiences and opinions about the destinations they visit. As such, these tourists can serve as de facto ambassadors for the island, promoting its cultural assets and products [23, 26].

Cultural heritage serves as a critical vector for understanding the socio-historical, cultural, and anthropological evolution of civilizations, shaping strategic frameworks for future-oriented development. The synergistic integration of cultural assets within tourism policies, particularly through spatial planning mechanisms, is essential for fostering sustainable tourism paradigms and ensuring the conservation and management of finite cultural and natural resources. The United Nations' 2030 Agenda for Sustainable Development explicitly foregrounds the transformative potential of the tourism sector, advocating for its realignment with the core principles of Sustainable Development, underpinned by Environmental, Social, and Governance (ESG) benchmarks. The safeguarding and valorization of cultural heritage have become key issues of concern within the discourse on sustainability, engaging stakeholders at the national, regional, and local governance levels. Within this framework, Sustainable Development Goal 11 mandates local authorities to assume a proactive role in the identification, conservation, and stewardship of cultural heritage, ensuring its intergenerational transmission alongside the formulation of integrated land-use planning policies [27]. The municipality of Aegina, through the strategic utilization of the southern naval fortress as a cultural asset, is well-positioned to contribute to the creation of a lasting sustainable imprint on social, economic, and environmental dimensions, enhancing both local resilience and heritage-led development strategies.

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Consumers' Perceptions on Sustainable Fashion Products: The Case of Millennials in Greece



Michalis Skordoulis, Nikoleta Desli, Evangelia Arsenou, Petros Kalantonis, and Aristidis Papagrigoriou

Abstract This study explores Greek millennials' perceptions and behaviors towards sustainable fashion, focusing on the factors influencing their purchasing decisions and the barriers they face in adopting eco-friendly products. A survey of a convenient sample of 236 Greek millennials was conducted to assess their environmental awareness, purchasing habits, and attitudes towards sustainable fashion. Results indicate that while Greek millennials demonstrate moderate environmental awareness, there remains a significant "attitude-behavior gap," with many participants expressing interest in sustainability but rarely incorporating it into their fashion choices. Key barriers include the perceived high cost of eco-friendly products, convenience of fast fashion, and limited cultural acceptance of second-hand shopping. Correlation analysis revealed a positive relationship between environmental awareness and ethical purchasing decisions, though other behaviors, such as thrifting, were less influenced by environmental consciousness. The study concludes that brands need to focus on educating consumers about the long-term value of sustainable fashion and reducing its price premium. Future research should explore ways to make sustainable fashion more accessible and investigate the influence of social norms and digital platforms on promoting sustainable consumption.

Keywords Sustainable fashion · Greek millennials · Environmental awareness

1 Introduction

Fashion worldwide is characterized by rapid changes, driven by trends in consumer preferences, social media influence, and cultural shifts. Fast fashion remains popular but faces increasing criticism due to its environmental and ethical implications. In

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recent years, fashion industry has experienced a growing emphasis on sustainability, driven by increasing consumer awareness of environmental and ethical issues. This shift is particularly evident among millennials, a generation often characterized by its eco-consciousness and social responsibility [1, 2]. In Greece, sustainable fashion is emerging as a significant trend, particularly among millennials, who seek products that align with their values of environmental stewardship and ethical practices. This study investigates Greek millennials' perceptions of sustainable fashion, focusing on the factors that influence their purchasing behavior, the challenges they face in adopting sustainable products, and their overall awareness of sustainability in the fashion industry.

The fashion industry is one of the largest contributors to environmental pollution, producing significant amounts of waste and greenhouse gas emissions [3]. The rise of fast fashion has exacerbated these issues, with consumers frequently purchasing low-cost, low-quality garments that are quickly discarded [4]. As awareness of the environmental impact of fast fashion grows, there has been a corresponding increase in demand for sustainable alternatives. However, despite this growing awareness, there remains a gap between consumers' attitudes towards sustainability and their actual purchasing behaviors, a phenomenon commonly referred to as the "attitude-behavior gap" [5].

Greek millennials, like their counterparts in other parts of the world, are increasingly aware of the importance of sustainability. However, their perceptions of what constitutes sustainable fashion are often limited, with many associating it solely with concepts like recycling or organic materials, while overlooking other critical factors such as supply chain transparency, fair labor practices, and the reduction of post-consumer waste [6]. This limited understanding can hinder the adoption of sustainable fashion products, as consumers may not fully recognize the broader benefits of sustainable practices in the fashion industry. Moreover, Greek millennials face several challenges in integrating sustainable fashion into their purchasing decisions. Price remains a significant barrier, as eco-friendly and ethical products often come with a higher price tag than fast fashion alternatives [7]. Additionally, while many millennials express a desire to support sustainable brands, they often prioritize convenience, style, and affordability when making their final purchasing decisions [8]. This study seeks to explore these challenges in greater detail and to understand how Greek millennials navigate the tension between their environmental values and the practical considerations of fashion consumption.

By examining the perceptions and behaviors of Greek millennials, this research aims to provide insights into how the sustainable fashion industry can better engage with this demographic. Understanding the motivations, barriers, and knowledge gaps that influence millennials' purchasing decisions is crucial for developing strategies that promote sustainable consumption and drive the adoption of eco-friendly fashion in Greece. This study builds on previous research, including works by Bernardes et al. [4] and Khandual and Pradhan [6] to explore the specific case of Greek millennials and their engagement with sustainable fashion. Ultimately, it seeks to contribute to the broader discourse on sustainability in fashion by highlighting the unique characteristics and challenges of the Greek market.

2 Methodology

A survey strategy was employed to collect quantitative data, as this method is effective for gathering information from a large sample size. The data were collected via an online questionnaire distributed to Greek millennials between January 2022 and December 2022. The questionnaire consisted of four sections: environmental awareness, purchasing behavior, conscious thinking and concern, and socio-demographic characteristics. Respondents were asked to rate their attitudes and behaviors on a 5-point Likert scale. The sample consisted of a convenient sample of 236 participants.

The data collected were analyzed using both descriptive and inferential statistical methods. SPSS software was used to generate descriptive statistics that summarized the participants' demographic information and general attitudes towards sustainability. In addition, Spearman's correlation coefficient was employed to examine the relationship between environmental awareness, as measured by the New Ecological Paradigm (NEP) scale, and purchasing behaviors related to sustainable fashion. The cross-sectional nature of this study captures the current state of millennial attitudes at a specific point in time, providing insights into how environmental awareness influences sustainable consumption patterns. Ethical considerations were maintained throughout the research process, ensuring confidentiality and informed consent for all participants.

3 Results

3.1 Environmental Awareness

The environmental awareness of Greek millennials was assessed using the New Ecological Paradigm (NEP) scale, which measures the respondents' pro-environmental attitudes. As shown in Table 1, the mean NEP score for the sample was 3.75 on a 5-point scale, indicating that the participants generally exhibit moderate levels of environmental awareness. The highest mean score (4.01) was observed for the dimension "Fragility of Nature's Balance," suggesting that most respondents agree that human activities are disrupting ecological balance. In contrast, the lowest mean score (3.40) was found for the dimension "Reality to Limits of Growth," indicating a slightly lower acknowledgment of the finite nature of Earth's resources.

These results suggest that Greek millennials are aware of the environmental challenges posed by human activities, though their recognition of the broader consequences of economic growth may be less developed.

Table 1 NEP scale dimensions

NEP scale dimension	Mean score
Reality to limits of growth	3.40
Anti-anthropocentrism	3.91
Fragility of Nature's balance	4.01
Anti-exceptionalism	3.63
Possibility of an eco-crisis	3.78
Overall NEP Score	3.75

Table 2 Frequency of purchasing eco-friendly goods

Frequency	Percentage (%)
Always	6.1
Often	24.2
Sometimes	51.5
Rarely	12.1
Never	6.1

3.2 Purchasing Behavior

The analysis of purchasing behavior revealed that while Greek millennials express awareness of environmental issues, this does not always translate into sustainable buying decisions. As shown in Table 2, only 24.2% of participants reported frequently buying eco-friendly goods, and 51.5% indicated that they sometimes buy such products. This suggests that while there is interest in sustainable fashion, a significant portion of the sample has not fully integrated eco-friendly products into their regular shopping habits.

Further exploration of shopping habits showed that 45.5% of respondents primarily purchase from fast fashion retailers, while only 18.2% indicated a preference for buying second-hand or thrift shop clothing. Despite the growing popularity of thrift shopping in other regions, it has yet to become a dominant trend in Greece.

3.3 Perceived Barriers to Sustainable Fashion Adoption

The study also explored the barriers preventing Greek millennials from fully adopting sustainable fashion. One of the primary obstacles identified was the perceived high cost of eco-friendly products. Table 3 presents the responses to the statement "Buying consciously is expensive." Nearly 45.5% of participants were neutral on this issue, indicating some uncertainty or ambivalence, while 30.3% agreed that sustainable products tend to be more expensive, limiting their ability to purchase them. Another significant finding related to the "attitude-behavior gap". While 75.8% of participants

Table 3 Perception of the cost of sustainable fashion

Perception	Percentage (%)
Strongly agree	6.1
Agree	30.3
Neutral	45.5
Disagree	12.1
Strongly disagree	6.1

indicated that they would prefer to buy from a company that promotes environmental protection if the price and quality of products were the same, 78.8% admitted they do not actively contribute financially to environmental protection organizations. This highlights a dissonance between the values expressed by Greek millennials and their actual purchasing behaviors.

3.4 Correlation Between Environmental Awareness and Purchasing Behavior

Spearman's correlation was used to assess the relationship between environmental awareness (measured by the NEP scale) and sustainable purchasing behavior. As shown in Table 4, there was a statistically significant positive correlation between environmental awareness and the tendency to consider ethical standards when making a purchase decision ($r = 0.322$, $p < 0.001$). Similarly, there was a moderate positive correlation between environmental awareness and the likelihood of recommending sustainable purchases to friends and family ($r = 0.371$, $p < 0.001$). However, there was no significant correlation between environmental awareness and the frequency of visiting thrift shops ($r = 0.005$, $p = 0.650$), suggesting that other factors may influence this behavior.

The results suggest that while environmental awareness does influence some sustainable behaviors, such as considering ethical standards or recommending eco-friendly products, there are other barriers that prevent these attitudes from translating into consistent sustainable purchasing habits.

Overall, the results indicate that Greek millennials are moderately aware of environmental issues, and many express a desire to support sustainable fashion.

Table 4 Correlation between environmental awareness and purchasing behavior

Behavior	Correlation coefficient (r)	Sig
Ethical standards in purchasing decisions	0.322	0.000***
Buying eco-friendly goods	0.159	0.004***
Visiting thrift shops	0.005	0.650
Recommending sustainable purchases	0.371	0.007***

However, the perceived cost of eco-friendly products and the convenience of fast fashion continue to act as significant barriers. Additionally, the "attitude-behavior gap" remains evident, with many millennials failing to consistently act on their environmental values. Addressing these barriers may require more targeted education and marketing strategies to better align millennial consumers' values with their purchasing behaviors.

4 Discussion

The findings of this research offer valuable insights into the perceptions and behaviors of Greek millennials towards sustainable fashion, highlighting both their environmental awareness and the challenges they face in adopting eco-friendly purchasing habits. The results reflect the growing awareness among this demographic about the environmental and ethical impacts of the fashion industry, a trend consistent with global studies on millennials [9]. However, despite this awareness, the study reveals a significant "attitude-behavior gap," where Greek millennials' stated values around sustainability do not always translate into their actual buying decisions, a phenomenon widely observed in consumer behavior research [4].

The New Ecological Paradigm (NEP) scale results show that Greek millennials have a moderate level of environmental awareness, particularly in recognizing the fragility of nature's balance and the potential for an ecological crisis. This aligns with prior research that suggests millennials, as a generation, are more attuned to environmental concerns than older generations [5]. However, the lower scores in areas such as the recognition of the limits to growth suggest that while millennials may understand the environmental damage caused by fashion, they may not fully grasp the long-term consequences of unchecked economic and consumer growth. This incomplete understanding could partially explain why their pro-environmental attitudes are not consistently reflected in their purchasing habits. When examining purchasing behavior, the study found that while a significant number of Greek millennials express interest in eco-friendly products, their actual engagement with sustainable fashion is limited. Most of the respondents indicated that they purchase sustainable products only sometimes, and many still rely on fast fashion retailers, reflecting the influence of convenience and affordability on their choices. These findings align with other studies that suggest price and accessibility are significant barriers to the adoption of sustainable products [8]. The high cost associated with eco-friendly fashion is a recurring theme in this research, as nearly half of the participants expressed neutral or negative views on the affordability of sustainable options. This supports the argument that sustainable fashion brands need to address the perception of higher costs if they are to engage more effectively with price-sensitive consumers [6]. The correlation analysis further supports the existence of an attitude-behavior gap. Although environmental awareness is positively correlated with ethical purchasing decisions and the recommendation of sustainable products to others, there is no significant relationship between awareness and behaviors such as frequent visits to thrift shops

or financial contributions to environmental organizations. This suggests that while Greek millennials may be motivated to engage in pro-environmental behaviors at an ideological level, practical concerns—such as price, convenience, and availability—hinder their ability to consistently act on these beliefs. Previous studies have similarly identified that millennial consumers often face conflicting priorities when it comes to sustainability, with many prioritizing style, price, and convenience over ethical considerations [7].

Furthermore, the findings highlight the influence of social and cultural factors on sustainable consumption. While Greek millennials are aware of global environmental issues, the relatively low uptake of second-hand shopping and thrift stores suggests that such practices have not yet gained mainstream acceptance in Greece. In contrast, in other countries, second-hand shopping is increasingly popular, particularly among younger consumers [10–13]. This indicates that social norms and cultural acceptance may play a crucial role in shaping sustainable purchasing behaviors, and more efforts are needed to promote alternative consumption models, such as thrifting. The perception of price as a barrier to sustainable fashion also highlights a need for better communication from brands about the long-term value of eco-friendly products. While some respondents acknowledged that sustainable products are more durable and higher quality, this understanding was not universal, and many still viewed sustainability as an expensive option. This suggests that fashion brands should focus on educating consumers about the long-term cost benefits of purchasing durable, high-quality products over fast fashion, which often needs to be replaced more frequently [8]. Furthermore, the lack of financial contributions to environmental causes suggests that Greek millennials may need more tangible incentives or clearer communication about the impact of their purchasing decisions on the environment.

Overall, the results of this study align with broader research on the challenges of promoting sustainable consumption, particularly among younger consumers. Greek millennials, like their counterparts in other regions, are aware of the environmental and ethical issues associated with fashion, but they face several barriers in fully integrating sustainability into their buying behaviors. Addressing these barriers will require a multi-faceted approach, including reducing the price premium of sustainable products, promoting the long-term value of eco-friendly fashion, and fostering a cultural shift towards more sustainable consumption practices [6]. Additionally, policymakers and brands need to create more accessible and affordable options for consumers who wish to make ethical choices [5].

5 Conclusion and Future Research

In conclusion, this study highlights the growing environmental awareness among Greek millennials and their interest in sustainable fashion, while also underscoring the significant barriers that prevent them from fully integrating sustainable practices into their purchasing behaviors. Despite their awareness of the environmental impacts of fashion, the perceived high cost of eco-friendly products, the convenience of fast

fashion, and the lack of cultural acceptance of second-hand shopping limit their engagement with sustainable fashion. To bridge this attitude-behavior gap, future research should explore strategies to make sustainable fashion more accessible and affordable for consumers, as well as investigate the role of social norms and digital platforms in promoting eco-friendly purchasing behaviors. Additionally, longitudinal studies could offer insights into how millennial attitudes and behaviors evolve over time, particularly as the market for sustainable products continues to grow.

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Personalizing the Tourist Experience: An Artificial Intelligence Application for Mexico City



Idalia Maldonado Castillo and David Ortega Pacheco

Abstract Recently the use of Artificial Intelligence (AI) in the tourism sector has increased rapidly, innovating the way travelers organize their trips. The generation of personalized itineraries is an area with great advances, offering personalized and optimized travel plans to fulfill individual preferences. This research presents a prototype of a mobile application designed to provide personalized travel itineraries for tourists in Mexico. The study employs a mixed-methods approach, combining quantitative data analysis with qualitative interpretation to gain insights into tourist sites in Mexico City and the personal preferences of the traveler. The study aims to provide the architecture of the app. The app aims to create an itinerary based on the user preferences and interests, geographical information and tourist attractions by employing machine learning techniques and a vast dataset of points of interest or attractions in Mexico City. Still in its early stages, the goal is to enhance the tourist experience by offering tailored recommendations and improve the planning process experience since currently travelers often encounter an overwhelming amount of information, limited time to explore or plan and little local knowledge to have a complete and good experience The prototype focuses on the development of a user-friendly interface and the integration of various data sources to create dynamic and engaging itineraries.

Keywords Itinerary · Personalized Tourism · Mexico City

1 Introduction and Background of Research

According to a study performed by McKinsey called "The promise of travel in the age of AI" stated that the travel industry is evolving rapidly enhancing the travel experience by using AI and digital technology. Particularly the advances in generative

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AI and machine learning are transforming the way travelers plan, book, organize and experience their trips. These innovations offer travel companies and service providers the chance to create new ways to interact with customers, design products and services aligned to the customers' needs [1].

As these innovations and technology progress, it has not only improved efficiency but also raised the expectations of travelers. Nowadays consumers expect and demand more personalized, seamless, and convenient travel experiences.

1.1 Hyper—segmentation

In the travel industry, the variety and volume of customer data that companies can collect has increased dramatically, thanks to the widespread use of online platforms, mobile apps, and social media. This data includes information such as travel habits, spending patterns, preferred activities, favorite destinations, personality and even social media interactions. New tools and technologies, such as AI models, are further accelerating this trend by enabling travel companies to analyze large amounts of data quickly and accurately.

Hyper-segmentation refers to the process of dividing customers into very specific and detailed groups based on a wide range of characteristics, behaviors, and preferences. With hyper-segmentation, it is possible to create highly personalized offers and experiences for each customer, tailoring travel recommendations, according to the customer preferences, points of interest, time of travel, level of expenses to meet individual needs and more precisely improving customer satisfaction. According to McKinsey & Company it is possible that according to the customer information and the analytics available, a detailed segmentation can be performed resulting in a hyper-personalization that can be a key for a tailored itinerary which can consider the traveler´s specific needs and preferences [1].

This model highlights four key levels of segmentation that can be progressively refined using hyper-segmentation to deliver highly personalized travel experiences:

1. **Basic Macro-Segmentation**: At the broadest level, the market is divided into two main groups: Business travelers and leisure travelers. Business travelers are tourists whose trips are driven by work or professional activities. Leisure travelers are people who travel for recreation, relaxation or pleasure, non-work related activities.
2. **Advanced Macro-Segmentation**: At the second (down) level the leisure category is further segmented based on the travelers' preferences into two categories: Leisure-Luxury and Leisure-Economy. Leisure-Luxury are travelers seeking high-end, premium, and exclusive experiences. Leisure-Economy are travelers focusing on affordable or value-driven leisure activities.
3. **Micro-Segmentatio**n: at the third (down) level the leisure-luxury segment is divided into more specific behavioral groups with two distinct preferences:

Leisure-Luxury-Relaxation and Leisure-Luxury-Adventure. Leisure-Luxury-Relaxation and Leisure-Luxury-Adventure are travelers focused on rest and relaxation, such as spa retreats, beach getaways, or wellness experiences. Leisure-Luxury-Adventure tourists are seeking excitement and thrill, including activities like surfing, water sports, or outdoor expeditions.

4. **Hyper-Segmentation:** at the most refined and narrowest level (fourth down level), an example of a highly specific and niche group emerges: Experienced Scuba Diver. This example focuses on travelers who not only seek leisure-adventure activities but are specifically engaged in aquatic activities particularly advanced scuba diving experiences. These individuals have unique needs, such as specialized diving locations, advanced equipment, and personalized itineraries for exploring underwater ecosystems.

This funnel highlights the power of hyper-segmentation in tourism, where Artificial Intelligence plays a critical role in identifying ultra-specific traveler preferences. By analyzing an important volume of data sources such as: customer preferences, points of interest, time of travel, level of expenses, travel history, behavior patterns, and social media activity, AI algorithms can generate tailored tourist itineraries. For example: instead of offering generic adventure packages, AI tools can provide personalized experiences for *"Experienced Scuba Divers"*, such as exploring unique dive sites, underwater photography tours, and specialized gear rental services.

Considering this level of personalization, AI provides a powerful tool to address these challenges. By using AI to automatically generate personalized itineraries, travel experience can be customized to suit individual preferences, adjust to real-time conditions, and draw from past data, allowing for more flexible, enjoyable, and efficient travel experiences while improving service delivery for travel providers. Information such as weather conditions can help to adapt the itinerary to avoid travel disruptions and change the activities accordingly.

The aim of this study is to develop and evaluate a system that explores the concept of hyper-segmentation and the use of artificial intelligence to generate personalized travel itineraries. Particularly, the main objective is to test the effectiveness of using genetic algorithms to process user preferences, points of interest (POIs), reviews, ratings, and transit times between POIs. By applying genetic algorithms, the system is designed to automatically generate multiple itinerary options, ranking them according to how well they meet the tourist's needs and preferences, optimizing transit times, ranking and preferences.

The system integrates data from various sources, including user input and external platforms like Google Places and TripAdvisor, to provide accurate recommendations. The goal is to not only create travel itineraries that are optimized for efficiency and enjoyment but also to provide a set of different itineraries, ensuring that tourists are presented with the best possible choices based on their unique preferences; focusing on aspects such as personalization, convenience, and overall travel experience.

2 Methodology

Our research employs a mixed-methods approach, combining quantitative data analysis with qualitative interpretation to gain insights into tourist sites in Mexico City and the personal preferences of the traveler. The methodology centers on collecting and analyzing a substantial volume of tourist sites with their opinions and ranking from two different popular platforms: Trip advisor and Google Maps.

An approach of using genetic algorithms to generate personalized travel itineraries by simulating the process of natural evolution.

2.1 Data Sources

To get information related to the tourist sites in Mexico and the user reviews, two Application Programming Interfaces (API) were explored. The most valuable resources for this purpose were the **TripAdvisor API** and the **Google Places API**. These platforms provide an important source of information that can be used by AI models to create highly personalized and efficient travel plans. By integrating user reviews, rankings, location data, and real-time information, these APIs can help AI models to generate tailored itineraries that meet the specific preferences and needs of travelers.

The TripAdvisor API is ideal for obtaining detailed information and reviews about the most popular points of interest in a tourist destination. This data will be used to generate recommendations for points of interest based on tourist ratings and comments, which enhances the personalization of the itinerary. By integrating user-generated content such as reviews, ratings, and photos, the API allows the system to assess which attractions are highly recommended by visitors. This helps ensure that the recommendations provided are both relevant and aligned with the preferences of individual travelers, improving the overall travel experience [2].

The Google Places API provides an extensive data source which can help to provide relevant information and recommendations for any tourist destination. The API is a service that accepts HTTP requests for location data through a variety of methods. It returns formatted location data and imagery about establishments, geographic locations, or prominent points of interest [3].

Google Places search allows to find points of interest near a specific location using geographic coordinates, ensuring recommendations are relevant to the user's current or desired location. Place details provide comprehensive information, including the name, address, phone number, operating hours, user reviews, and photos of the location.

Additionally, the API categorizes places by type, such as restaurants, attractions, museums, and parks, which helps tailor itineraries based on user preferences. Finally, ratings and reviews from Google users offer insight into the quality and popularity of

various spots, enriching the personalized travel experience by including high-quality recommendations backed by real user feedback.

2.2 Genetic Algorithms

To generate personalized itineraries, we propose the use of genetic algorithms, which simulate the process of natural evolution and are particularly suited for optimization problems. The algorithm begins by creating an initial population of potential itineraries, each representing a different combination of attractions or points of interest, ratings and travel routes (transit times) based on the tourist's preferences. These itineraries are evaluated using a fitness function that considers criteria such as the traveler's preferences, time, and proximity or time between destinations. The best-performing itineraries are selected to form the next generation, where they undergo processes like crossover (combining elements from two itineraries) and mutation (small changes to an itinerary) to produce new itineraries. This process repeats over multiple generations, gradually refining the options until the algorithm converges on the most optimal itinerary. The result is a selection of several highly personalized itineraries that best fits the tourist's preferences and constraints for an efficient travel [4].

Figure 1 shows the architecture of this project which illustrates the development of a mobile application designed to generate itineraries which best suit the travelers´ preferences to explore Mexico, by using the information provided by Google Places and Trip Advisor and the preferences of the traveler. The core of this project is based on genetic algorithms which serve as the AI model for itinerary optimization.

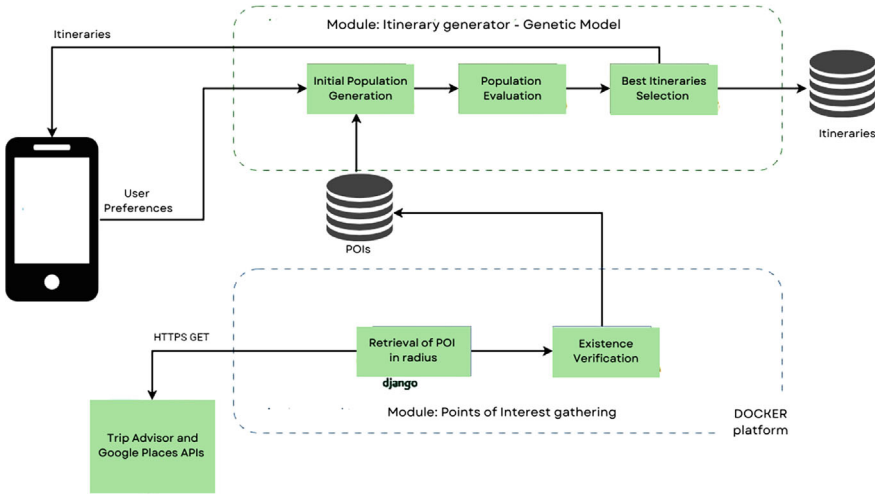


Fig. 1 Architecture of the project

The Points of Interest Module is focused on retrieving the relevant information about the tourist sites from external sources such as Trip Advisor and Google Places. Rates, location, category and reviews are an important part of this information to be stored in PostgreSQL as a central repository called POI database.

The Itinerary Generator Module is based on genetic algorithms which creates an Initial Population of possible itineraries using the user's preferences and the POIs database. Each itinerary consists of a different set of locations, considering proximity, opinions and user preferences. The system then evaluates each itinerary using a fitness function. The fitness function takes into account factors like the traveler's preferences, distance between attractions, ratings among others. The best itineraries from the population are selected, and processes like crossover and mutation are applied to refine them, producing new generations of itineraries that are progressively optimized to better suit the user's preferences. Finally, a ranked set of proposed itineraries are shown to the user through the mobile app that suits the traveler´s preferences, emphasizing on the best itinerary option.

3 Discussion and Results

This research highlights the use of different information sources to provide valuable information for travelers seeking a tailored itinerary that suits the traveler´s preferences to visit Mexico. Working with different sources such as Trip Advisor and Google places to provide information such as: place id, name, category, geographic location, pictures, rating, reviews, among others provide the necessary knowledge to create a genetic algorithm to generate the best itinerary tailored to the traveler´s needs.

This work brings the opportunity to combine and improve different approaches that were previously developed and tested for different regions of Mexico, such as the case of the state of Querétaro, which integrated reviews processed with Natural Language Processing to recommend tourist sites, the recommendation was based on the "positive", "neutral" or "negative" opinions of different points of interest analyzed in the state. In relation to the points of interest that were analyzed the application suggested a route to get to the tourist site with more positive reviews [5]. As for the case of restaurant recommendations two previous are connected to this proposal, such as the case of centralized recommendations from social networks and rating platforms to evaluate the restaurants in Mexico City, hence helping the customers to make informed and reliable decisions when choosing a restaurant or service [6, 7].

4 Suggestions for Further Study and Conclusion

This project will require a mobile application development for the genetic algorithm, which will require the traveler preferences, and the tourist places the traveler is interested in visiting. The system will provide a flexible and scalable solution for generating highly personalized travel itineraries, the information will be integrated in a Points of Interest Database which will integrate relevant data from Google Places and TripAdvisor APIs and by using genetic algorithms to optimize routes; the system will deliver customized itineraries that meet tourists' individual preferences, enhancing their overall travel experience in Mexico.

This paper is a work in progress which is the first step towards the optimization of travel planning; by integrating information from different sources the travelers can handle a large amount of information without feeling overwhelmed. AI models, such as genetic algorithms, can process a large amount of information from reviews, ratings and locations, selecting the most relevant and highly rated points of interest for the travelers, saving time and effort in the planning process.

In conclusion, hyper-segmentation, AI and genetic algorithms can significantly improve the travelers experience by providing personalized, efficient and adaptable itineraries, reducing time and effort while planning thus leading a more enjoyable travel experience.

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The Impact of Mount Athos Cuisine on Religious Tourists Through Experiential Marketing: The Contribution of Monk Epiphanios



C. Kyprianou, Chris Vassiliadis, and Sofia Gkarane

Abstract The Mount Athos Cuisine is closely connected to the monastic tradition of Mount Athos and has its roots in the ascetic life and religious discipline of the monks. Within the framework of religious tourism, Mount Athos Cuisine attracts many visitors who seek not only spiritual but also physical rejuvenation through healthy eating. Literature indicates that this type of cuisine is characterized by simplicity, a balanced use of local and natural ingredients, as well as the avoidance of animal products due to Christian fasting. This paper explores the connection between experiential marketing and Mount Athos Cuisine, highlighting how the gastronomy of Mount Athos can enhance the tourist experience. Through experiential marketing, visitors are encouraged to actively participate in gastronomic experiences that combine food and spirituality, creating unforgettable memories. The paper reviews the contribution of Mount Athos cuisine to creating meaningful experiences for visitors. It examines specific experiential marketing practices that can be applied in the field of religious tourism, such as participation in food preparation and gastronomic tours. The analysis concludes that Mount Athos Cuisine, through experiential marketing, can attract new visitors and enhance the authenticity of the experience at Mount Athos. To understand the contribution of this cuisine to the tourist's experience, the role of Monk Epiphanios in Mount Athos cuisine is analyzed as a case study, highlighting the characteristics that create lasting impressions and experiences for visitors.

Keywords Religious tourism · Mount Athos cuisine · Monks · Experiential marketing

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1 Introduction

The purpose of this article is to present the impact of Mount Athos cuisine on religious tourism through experiential marketing. Methodologically, it attempts to review existing literature regarding the connection between religious tourism and Mount Athos cuisine. Experiential marketing enhances this connection, as the experience of taste creates an unforgettable memory for visitors [1]. Mount Athos cuisine, as an integral part of monastic life, provides a rich field of research in relation to religious tourism. Through experiential marketing, religious tourists engage with monastic gastronomy and tradition [1]. The late monk Epiphanios of Mylopotamos stands as a significant figure in promoting and highlighting Mount Athos cuisine, transforming it from simple cooking into an experiential connection for the visitor, not only with the taste but also with the spiritual world [2]. This study aims to deepen the understanding of the contribution of experiential marketing to religious tourism through a literature review, while also developing a conceptual framework and critique.

2 Monastic Tradition and Mount Athos Cuisine

One of the characteristics of religious and monastic life on Mount Athos is Mount Athos cuisine. It represents an aspect of the cultural heritage of Mount Athos and offers a unique experiential experience that combines the material with the spiritual dimension of the visit [3]. Through simplicity in cooking, the use of quality and pure ingredients, and a sense of austerity, the monks express their deep connection to tradition and spirituality [2]. These characteristics of Mount Athos cuisine provide visitors with experiences that relate to respect for material goods, unique flavors, and, most importantly, spiritual nourishment. According to Yannaras (2016) [4] nutrition in monasticism is an extension of ascetic life and aims to enhance the spiritual struggle. The deeper spiritual experience for visitors arises from the spiritual dedication of the monks during meal preparation and the cultivation of the ingredients. During their various tasks (diakonimata), the monks pray and thank God for what they are given. Diakonima is one of the fundamental elements of monastic life, particularly in Orthodox monasticism [5]. The term derives from the verb "diakoneo," which means "to serve" or "to offer," and refers to the duties assumed by monks within the community to support the monastery's operations [6]. Visitors can also participate in various tasks of the monks, allowing them to experience the work alongside the monks. These duties are diverse and include cooking, maintaining gardens, caring for visitors, as well as prayer and spiritual guidance.

2.1 Monk Epiphanios and Mount Athos Gastronomy

Monk Epiphanios of Mylopotamos, through his pure love for cooking, played a significant role in promoting and showcasing Mount Athos cuisine. Through his traditional cooking, he attracted the public, teaching them the values of simplicity and the use of pure ingredients, linking them with the deep religious traditions of Mount Athos [6]. His literary work was also rich, with his recipes traveling around the world. What made his work unique was the connection between his culinary recipes and tradition and religion. Noteworthy is the way he highlighted the importance of prayer during the preparation of food and the significance of reverence, inspiring visitors to participate both materially and spiritually with him [7]. The impact of Mount Athos cuisine on visitors becomes even more pronounced due to the authenticity it exudes. The Mount Athos experience offers something different, as visitors' participation is not only material but also spiritual, giving them the opportunity to learn how to cook, taste traditional monastic dishes in an authentic spiritual environment [2]. The experiential element of the cuisine strengthens the connection with monasticism and spirituality, as tourists feel they are participating in something deeper than just a culinary experience.

3 Research Methodology

The methodology employed in this study is that of a literature review aimed at identifying and evaluating the impact of experiential marketing on religious tourism. The review emphasizes academic literature published from 1992 to 2023, exploring references to experiential marketing in the context of religious tourism. Selected articles were gathered by searching for keywords such as "Experiential Marketing" and "Religious Tourism" in various databases. The study primarily investigates works, articles, and studies related to religious tourism and the experiential experiences of visitors. The questions explored in this study through the literature review are: 1. Can experiential marketing assist in the development of religious tourism? This question examines whether strategies related to experiential marketing can effectively promote and enhance religious tourism experiences. 2. How much does the experience that the pilgrim undergoes affect their emotions? This inquiry focuses on the emotional impact of the pilgrimage experience, aiming to understand the relationship between experiential elements and the emotional responses of religious tourists. 3. To what extent can the gastronomic element influence the visitor's experience? This question investigates the role of culinary experiences in shaping visitors' perceptions and overall experiences during their religious tourism journeys, specifically in the context of Mount Athos cuisine.

4 Findings and Discussion

The present paper aims to present the use of experiential marketing in the developing field of religious tourism. The studies were categorized based on their publication year and their references to the use of experiential marketing. Table 1 presents information derived from scientific literature.

Observing the literature, a key factor in repeat visits to a religious destination is the experiential experience that visitors receive [25]. Experiential marketing plays a central role in creating value for pilgrims through spiritual connection. The creation of experiences, where tourists actively participate in both spiritual and material activities, leads to positive experiences and increases loyalty to the destination [21]. Experiential marketing, through personal and emotional experiences, strengthens the connection with the destination [13]. The findings show that the use of experiential marketing in religious tourism can promote economic benefits for local communities, while offering visitors profound spiritual experiences that enhance cultural exchange and social bonding [19]. Consumers develop emotional connections with the destination when they experience activities that reinforce their spiritual ties. This approach highlights the importance of integrating both spiritual and sensory experiences, such as Mount Athos cuisine, into the marketing strategies of religious tourism, fostering deeper and more meaningful connections between visitors and their destinations.

5 Conclusion

In conclusion, Mount Athos cuisine, as promoted through the efforts of Monk Epiphanios, exemplifies the powerful intersection between tradition, spirituality, and experiential marketing. The distinct monastic culinary traditions offer more than just a taste experience; they provide a gateway for religious tourists to engage with the spiritual and cultural heritage of Mount Athos. Experiential marketing plays a pivotal role in enhancing this connection, transforming simple activities such as cooking and eating into profound, immersive experiences that deepen the pilgrim's bond with the destination. Monk Epiphanios' contributions helped elevate Mount Athos cuisine to a meaningful spiritual experience, linking the physical act of nourishment with spiritual enrichment. His work highlighted how the combination of simplicity, quality, and faith in food preparation can create lasting impressions on visitors. As religious tourism continues to grow, leveraging the principles of experiential marketing can further strengthen these types of pilgrim experiences, promoting deeper cultural exchange and economic benefits for the monastic communities involved.

Table 1 Use of experiential marketing on religious tourism (1992—2020)

Year (author)	Policies proposed
Rinschede G (1992) [8]	Examines the various forms of Religious Tourism, including pilgrimages and travel for religious purposes. Although not specifically focused on experiential marketing, it provides a good basis for understanding religious tourism
Vukonić B (1996) [9]	It examines the relationship between tourism and religion and can help to understand the role of experiential marketing in this area
Pine BJ, Gilmore, JH (1999) [10]	Examines the use of experience creation and how experiential marketing can be applied to tourism
Poria Y, Butler R, Airey D (2003) [11]	It examines how visitors interact with cultural and religious monuments, an element that can be related to the experiences of religious tourists on Mount Athos
Cohen E, Avieli N (2004) [1]	It studies food as a tourist experience and attraction for visitors which can be applied to the case of monastic cuisine on Mount Athos
Timothy DJ, Olsen DH (eds) (2006) [12]	This book examines tourism, religion and spiritual travel, with an emphasis on travelers' experiences and how these affect their relationship with place
Reader I (2007) [13]	The article examines the development of modern pilgrimages and offers an analysis of the motivations behind religious tourism, emphasizing the experiential aspects of travel
Raj R, Morpeth, ND (2007) [14]	Examines the management and marketing of religious tourism, including experiential elements
Smith M (2009) [15]	It provides an analysis of the importance of culinary tourism and how it can be used in destination marketing related to monastic cuisine
Collins-Kreiner N. (2010) [3]	This paper analyzes the transformative experiences offered by pilgrimages and examines the ongoing development of religious tourism. It offers useful insights into how pilgrims perceive their experiences and how these can be improved through experiential marketing
Norman A (2011) [16]	This book examines spiritual tourism and the religious practices associated with travel. It provides a good basis for understanding the motivations behind religious tourism and can help analyze the importance of experiential experiences for travelers of this type
Sharpley R, Jepson D (2011) [17]	It examines the connection between agritourism and religious experiences, emphasizing the spiritual dimensions of experiential marketing in tourism
Olsen DH (2013) [18]	It focuses on the expectations and motivations of religious tourists, with an emphasis on the experiential experiences offered in religious destinations
Frochot I, Batat W (2013) [19]	It offers an analysis of tourist experiences and how they can be designed and used to enhance marketing, directly related to experiential marketing
Batat W, Addis M (2014) [20]	It studies experiential marketing in religious tourism and how religious experiences can contribute to value creation

(continued)

Table 1 (continued)

Year (author)	Policies proposed
Kaplan M, Kaplan AM (2018) [21]	It examines how marketing based on spiritual and religious experiences affects local communities
Kim S, Chen H (2019) [22]	Analyzes the experience economy and religious tourism, examining how value is created through spiritual leadership and experiential experiences
Husein S, Karim S A (2020) [23]	It focuses on religious tourism and the effect of experiential marketing on tourist loyalty
Rao U, Sinha P (2020) [24]	It examines the relationship between experiential marketing and consumer perception in religious tourism

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Metaverse-Based Marketing Education: Perspectives of Higher Education Students

Murat Gülmez, Duygu Gür, and Gülay Güler

Abstract The purpose of this study is to examine the incorporation of metaverse technologies into education, with a particular emphasis on the "Meta Entrepreneurship" course at Cag University. Within the study, the Metaverse platforms' perceived benefits, drawbacks, and overall influence on learning experiences particularly in comparison to conventional online platforms like Zoom are investigated. The study utilized a qualitative research methodology, using semi-structured interviews as the main method for collecting data. The interviews involved sixteen students who successfully finished the metaverse entrepreneurship course. These interviews aimed to gather valuable information regarding the students' experiences at Metaverse. The results reveal that the metaverse offers significant benefits, including increased engagement, enhanced interaction, and a more personalized learning experience. Students reported that the immersive nature of the platform facilitated better focus and active participation, while the ability to customize avatars allowed for greater self-expression and creativity. The students stated that the metaverse environment had advantages for bringing product ideas to life, doing market research, formulating marketing strategies, and executing and assessing their success. However, some technical challenges were identified, particularly regarding hardware requirements and system performance. The study suggests that while metaverse has potential for education transformation, improvements in technological infrastructure and user experience are needed, and that educators should invest in training and resources.

Keywords Metaverse entrepreneurship · Marketing · Education

1 Introduction

Technological advancements have significantly transformed society and consumer-business interactions. From basic connectivity like email and e-commerce to Web 2.0 and the Decentralized Internet, we are entering the third era of the internet, ensuring

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global connectivity and virtual world immersion. These advancements have revolutionized consumer and business interactions [1, 2]. Virtual reality (VR) experiences change societal interaction by enabling individuals to immerse themselves in virtual settings and engage with content in the metaverse.

Metaverse is a concept that is a combination of the words "meta" and "verse." It first appeared in literature in 1992 in Stephenson's [3] dystopian novel Snow Crash. Metaverse came back to the forefront when Meta, formerly Facebook, changed its name and introduced its new vision all over the world. In this process, companies in various sectors have made efforts to adapt to the metaverse. While technology giants such as Nvidia Corporation and Microsoft are working on their own virtual universes, companies such as Gucci, Disney, Gap, and Nike have organized events on Metaverse platforms to reach their target audiences [4]. Although it has attracted considerable industrial interest, the metaverse has received considerable attention in the literature with its promises in the field of education [5–7]. According to the data published by Statista [8] in 2024, the metaverse education market is expected to reach 104.6 million users worldwide by 2030. The user penetration rate of metaverse is expected to be 0.4% in 2024; it is expected to increase to 1.6% in 2030.

There are quite a number of studies in the literature that address the metaverse-based education model from the perspective of the student and the teacher [9–14]. In addition, studies on education in various fields such as nursing, medicine, science education, language learning, and production education have been conducted in the literature [15–19]. This research provides examples of how the Metaverse may be effectively utilized in the field of education. This study aims to demonstrate the benefits of an entrepreneurship-focused course, to highlight the impact it has on students, and to emphasize the importance of aligning it with the business world.

2 Literature Review

2.1 Marketing Education in Metaverse

The metaverse, which can be defined as a three-dimensional virtual world, sheds light on solving current problems and obstacles in online learning. Active learning is one of the most significant benefits of utilizing Metaverse in education. Unlike conventional methods, an approach to learning that prioritizes active participation and interaction with the material will increase the likelihood of students retaining the information [20]. The use of Metaverse possibilities in education primarily eliminates Web 2.0's limitations. In particular, offering a realistic experience and facilitating both observation and practice enhances the effectiveness of education [21]. Visualization is one of the most important factors. In cases where observation on Earth is difficult, ideal conditions can be simulated and visualized. Moreover, all this reduces the cost and risk of learning. Because of its nature, there is no time limitation in the metaverse. Historical events can be simulated, and geographical restrictions can be

eliminated. This allows for the experience of historical events and the exploration of diverse geographical locations. Blockchain will be utilized in the metaverse to address issues such as economic participation, copyright protection, and more [22, 23]. Additionally, in the Metaverse, students will have the ability to design their own unique avatars using digital twin creators or simulators, eliminating the barriers to interaction and communication that exist in the real world.

Virtual reality is emerging as a significant player in technology-mediated production and consumption experiences worldwide. This demonstrates the significance of equipping students with the necessary skills and knowledge to navigate and thrive in virtual reality. Corresponding to this, the most recent model of entrepreneurship is virtual entrepreneurship. Virtual entrepreneurship involves developing innovative digital technologies, identifying new domains, initiating new business initiatives, and digitally transforming established enterprises [24].

This study aims to highlight the benefits of using the metaverse in learning. The Faculty of Economics and Administrative Sciences at Cag University employed metaverse-based learning as an applied approach. The course focused in this study is titled "Meta Entrepreneurship," which encourages real-life entrepreneurship in the metaverse. The aim of this course is to get a thorough understanding of business practices in the metaverse and to explore the resources available on various metaverse platforms for virtual entrepreneurs. The students are expected to achieve this objective by developing their own virtual products and engaging in simulated real-world business on the Second Life virtual reality platform. Metaverse platforms can offer valuable solutions for real-life entrepreneurship by providing real-world experiences, skill improvement, and risk-free decision-making. This course prepares new entrepreneurs for the constantly evolving business sector, fostering innovation and adaptation to the continually changing landscape of the business sector.

3 Methodology

This research is part of a broader study and consists of the pilot study. The objective of this research is to examine and assess the perceived advantages, differences, and impact of Metaverse platforms in comparison to conventional online learning platforms such as Zoom. It aims to comprehend the impact of these immersive environments on learning experiences, with a particular emphasis on user interaction, customization options, and user-friendliness, as viewed through the lens of Second Life. Additionally, the study aims to determine the aspects of Metaverse platforms that facilitate learning and to assess the opportunities and challenges they present in educational settings.

This study is conducted through qualitative research. The data collection instrument employed is the semi-structured interviews. Interviews were conducted with students who finished the whole semester of the metaverse entrepreneurship course to obtain comprehensive insights into their experiences as aspiring entrepreneurs

within the metaverse. A total of 16 students took part in the interviews. The interview questions are as follows:

- *What is its difference or advantage over online learning platforms (Metaverse, Zoom,* etc.*)?*
- *What impact do you think the Metaverse platform has on learning?*
- *How do you evaluate Second Life in terms of interaction?*
- *Do you find Second Life user-friendly?*
- *What do you think of the ability to choose and customize your avatar's appearance?*
- *What features of Metaverse platforms make learning easier?*
- *How do you evaluate the opportunities and challenges presented by Metaverse-based learning platforms?*

For content analysis, the interviews were audio recorded and transcribed into a script for content analysis. The content analysis was made by two academicians. For Weber [25] content analysis is a research methodology that utilizes a set of procedures to make valid inferences from text. The content analysis process involves identifying key themes, summarizing responses, segmenting content, generating codes for each theme, and suggesting potential subcodes for detailed analysis [26]. Content analysis of this study was conducted by two researchers; their interpretations and codes were compared. Any discrepancies were addressed and resolved to guarantee the data reliability and comprehensive comprehension. Once the main themes were identified, subcodes were identified for a more thorough examination. The final stage entails a comprehensive summary of these themes that accurately represents the students' overall experiences with the Metaverse platform.

4 Findings

Each of the themes surfaces from the student interviews' content analysis, offering a thorough understanding of the Metaverse's involvement in the students' entrepreneurship course learning experiences. The themes that align with research questions are stated below:

1. **Engagement and Focus**: In comparison to conventional online platforms such as Zoom, students generally found the Metaverse platform to be more engaging and conducive to concentration. Students were able to maintain their attention and appreciate the learning experience more due to the immersive nature of the Metaverse, which created the illusion of physical presence. According to a participant (P2), "The platform's capacity to notify users when they were not actively engaged with the screen is a beneficial feature for maintaining focus during lessons." The result showed that the Metaverse offers advantages over online learning platforms like Zoom, including increased interactivity, a realistic

classroom setting, customizable avatars, and an immersive experience that makes learning feel more like an activity than a traditional lesson.

2. **Interaction and Communication**: The platform enhanced the interaction and communication among students, particularly when they were working in groups, as emphasized in the student reviews. The Metaverse environment's ability to facilitate interactions with both local and international peers was perceived as a considerable advantage, as it enhanced a sense of community and collaboration that was less prevalent in traditional online platforms. Another participant (P7) highlighted that "in Zoom, once the camera is turned off, it's difficult to confirm the presence of the participant, which weakens communication." Conversely, the Metaverse requires active movement, ensuring that the participant is engaged and present, which strengthens communication. The students are of consensus that the Metaverse presently offers significantly superior interaction opportunities in comparison to Zoom, particularly in terms of facilitating more direct and clear one-on-one communication, despite the fact that substantial development is still required.
3. **Technical Challenges**: Metaverse Enhances Learning Experiences Through Interactive Platforms, Allowing Real-Time Application of Concepts [27, 28].

However, adaptation challenges and compatibility issues persist. Second Life's user-friendliness is a topic of mixed reviews, with some users finding it user-friendly while others face navigation and system performance issues [29, 30].

According to student reviews, some faced technical difficulties, particularly related to the hardware requirements of the Metaverse platform. Issues such as freezing and lagging were experienced by those with less capable or slower computers, which impacted their ability to completely engage in the course. Nevertheless, individuals who possessed the requisite technology found the platform to be user-friendly and valued the interactive features.

4. **Customization and Personalization**: The Metaverse's interactive elements and real-time feedback are key features that facilitate learning through its immersive nature. Avatar customization is viewed as a form of self-expression, reflecting personal identity and creativity, and it enhances engagement and enjoyment of the platform.

According to the participants, Metaverse-based learning platforms offer enhanced engagement, interactive learning, and personalized experiences while also presenting challenges such as adaptability and compatibility issues and technical difficulties related to graphics and system requirements. These platforms cater to individual preferences and require real-time application and feedback for optimal learning outcomes.

Students perceived the capacity to personalize avatars to resemble themselves favorably, as it enhanced their engagement and sense of presence in the virtual environment. This feature enabled them to establish a stronger connection with the course content and the virtual environment, thereby improving their overall learning experience. It was mentioned by a participant (P11) that "in the Metaverse, custom skins and

costumes are available. For example, something created by oneself can be uploaded, which shows the platform's openness to customization." It was highlighted that the predefined options do not limit users, allowing for other choices that enable more self-expression and the adoption of different roles, such as being a vampire or a werewolf. Additionally, five participants reported that selecting their appearances was associated with an increase in creativity.

5. **Learning Opportunities and Challenges**: Virtual tours and real-time presentations in shared spaces were among the distinctive experiential learning opportunities offered by the Metaverse platform. Nevertheless, some students encountered difficulties with specific aspects of the platform, such as building or constructing. In spite of these obstacles, the general consensus was that the platform provided substantial learning benefits and that the advantages outweigh the challenges.

5 Conclusion

The Metaverse is a revolutionary technology that enables businesses to enhance their digital operations, enabling them to offer their products to customers and access a wider market [31, 32]. This digital transformation, driven by Industry 4.0, is expected to boost the flexibility of entrepreneurial activities, thereby enhancing the overall economic conditions of a state [33]. The utilization of new technologies in education is an imperative option in order to advance the current situation.

In terms of marketing education, metaverse-based courses offer various advantages which can be described as creating product demos, launching businesses and gaining insights into the marketplace. The metaverse provides the students with the chance to improve their fundamental building skills and bring their product ideas to life. The marketplace is where they encounter their customers after the design and building of their products. Buyers and sellers meet in the marketplace. There is an opportunity to conduct a market analysis and identify competing products. In the metaverse, there are no geographical boundaries. In the metaverse, there are no geographical limits. This enables students to reach all consumers from all around the world. Joint collaborations can be achieved through market research, customer opinions, marketing campaigns, and showrooms. Students can access lessons using personalized avatars in a virtual university, which acts as a digital twin of the actual one, such as Cag University in this case specifically. This allows for better customer access and product launch.

Based on the interviews conducted, it is demonstrated that the Metaverse platform contains numerous benefits in terms of engagement, focus, interaction, and personalized learning. However, there are also technical obstacles that must be resolved in order to completely actualize its potential in educational environments. Improvements to technological infrastructure and user experience should be focused in order to ensure effortless incorporation into educational contexts. Furthermore, significant training and resources should be offered to educators and institutions to guarantee

that the benefits of Metaverse platforms are leveraged, resulting in better learning outcomes.

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Measuring and Analyzing Customer Satisfaction in the Supermarket Industry: The Case of Greece



Stamatios Ntanos, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Eleni Gkika

Abstract The supermarket industry is characterized by intense competition, which has become more intense during recent times since new players are entering the market, private labeling products have increased their market share, and the range of choices available to buyers is rapidly expanding. This motivates supermarket owners to focus on customer-oriented strategies so that they are able to differentiate from the competition. Within the marketing strategy of firms, the element of customer satisfaction maintains a superior position since it can reinforce store loyalty and lead to the creation of significant market power. This paper examines supermarkets' customer satisfaction based on various factors, such as Products, Pricing Policy, Private Labeling, Stores, Staff, Customer Information and Service. Data were collected by applying a structured questionnaire to a convenient sample of 300 supermarket customers in the area of Athens, Greece. The research outcomes were analyzed with the Multicriteria Satisfaction Analysis (MUSA) method. MUSA is an analysis methodology developed on the principles of regression analysis. Results highlighted the crucial role of the human element and the availability and quality of the product in the overall satisfaction of supermarket customers. Those aspects should be further improved for reinforcing customer loyalty and commitment, as well as for increasing the perceived satisfaction of supermarket customers in the process.

Keywords Customer satisfaction · Multicriteria analysis · MUSA method

1 Introduction

Customer satisfaction is crucial to business success in the retail sector, particularly in supermarkets. The supermarket industry is characterized as an oligopoly therefore the rigidity of prices highlights the need to focus on customer satisfaction as a factor to create and maintain a competitive advantage [1]. Customer satisfaction on retail stores encompasses various factors, including product quality, service quality,

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store environment, pricing, and overall shopping experience. Understanding these elements and their impact on customer satisfaction can help supermarkets enhance their strategies to attract and retain customers [2, 3]. Under these circumstances, our paper aims to evaluate the perception of satisfaction of supermarket customers and determine the critical aspect by using a multicriteria method known as MUSA [4]. Our study is essential in identifying critical factors in formulating the supermarket industry's customer-oriented marketing strategy.

2 Theoretical Background

The main factors that influence customer satisfaction, according to literature, are the following:

(1) Product Quality and Availability, including (a) Freshness and Variety: Customers prioritize the freshness of perishable goods and the availability of a wide range of products. Studies show a direct correlation between product quality and customer satisfaction [5] and (b) Stock Levels: Consistent availability of products prevents customer dissatisfaction due to stockouts [6].
(2) Service Quality, including (a) Staff Behavior: The behavior and competence of staff significantly affect customer perceptions [7] since friendly, knowledgeable, and helpful employees contribute to a positive shopping experience and (b) Checkout Efficiency: Speed and accuracy at checkout are critical, as long waiting times can lead to customer frustration [8].
(3) Store Environment, including (a) Cleanliness and Ambiance: A clean, well-organized, and pleasant store environment enhances the shopping experience [9] and (b) Layout and Navigation: Easy navigation and logical layout improve customer convenience and satisfaction [10].
(4) Pricing and Value for Money, including (a) Competitive Pricing: Fair and competitive pricing strategies are vital. Customers seek value for money, influencing their satisfaction and loyalty [3] and (b) Promotions and Discounts: Effective promotional strategies and discounts can attract customers and enhance their satisfaction [11].
(5) Overall Shopping Experience, including (a) Customer Expectations: Meeting or exceeding customer expectations plays a significant role in satisfaction [12]. Supermarkets need to understand and anticipate customer needs. (b) Technology Integration: Using technology, such as self-checkout systems and mobile apps for shopping lists and discounts, can improve the customer experience [13, 14].

3 Materials and Methods

This research work conducted a survey to assess customer satisfaction in supermarkets. The survey was conducted from March to May 2023 in Egaleo, Greece, using clustered sampling, considering each S/M as a cluster. Out of the 20 supermarkets, we randomly selected 10, and by employing an electronic questionnaire (through tablet devices) to the customers exiting the supermarkets, we collected a total sample of 300 completed questionnaires. The satisfaction criteria and subcriteria were chosen according to literature [15–20] as follows:

Pricing Policy: This criterion included questions on payment options, price level, discounts, offers and price stability.
Products: It included items about product availability, product quality, prices and suitability to customer needs.
Private Label Products: It included information about the availability, quality, prices, and suitability of private label products for customer needs.
Customer Service: This criterion included items regarding complaint management, speed of service, availability of employees, queue management, and availability of shopping carts and baskets.
Customer Information: This criterion included questions on the availability and adequacy of commercial leaflets and internet sites, as well as information through TV, radio, press, and internet commercials.
Staff: It included options about staff professionalism, behavior, and willingness to help, staff appearance and reliability.
Stores: Store network adequacy, ambience, cleanliness, functionality and decoration.

The Multicriteria Satisfaction Analysis (MUSA) method was used to measure customer satisfaction. The method is an ordinal-regression-based approach used to assess a set of collective satisfaction functions so that the global satisfaction criterion becomes as consistent as possible with customers' judgments [4]. This method inferred an additive collective value function Y^* and a set of partial satisfaction (value) functions Xi^*, given customers' global satisfaction Y and partial satisfaction Xi according to the i-th criterion (ordinal scaling). The main research objective was to achieve the maximum consistency between the value function Y^* and the customers' judgments Y. The MUSA method employs an interface based on MS Excel to produce the results.

4 Results

Concerning the sample demographics, the percentage of women who participated in the survey amounted to 72.6%, with the corresponding percentage of men reaching 27.4%. Around 80.3% of the sample had a monthly income of up to 1000 Euros,

17.7% had an income between 1000 and 2000 Euros, and only 2% had an income of more than 2000 Euros.

According to the results, overall satisfaction of the customers is very high. In Fig. 1, we observe that the total customer satisfaction scored 91.8%.

Concerning the impact of the separate satisfaction criteria on the variable of total satisfaction, according to Fig. 2, the criterion of "Staff" sustained the most significant weight (29.3%), followed by the criteria of "Products" with a percentage of 28.32%, and the "Customer Service" (10.0%).

Figure 3 depicts that all criteria had high scoring. The criterion of "Products" is the highest with a percentage of 96.26%, followed by the criterion of "Staff" with a 94.94% scoring. Customers were also very satisfied with the criterion of "Pricing Policy" (87.2%). Finally, the criteria with the lowest satisfaction rates were those of "Private Label Products" and "Customer Information", which amounted to 80.52% and 76.42%, respectively. Concerning the lowest value of satisfaction criteria, which is found on "Customer Information", this is explained by the fact that customers consider that the information provided on supermarket products through commercials and the digital and print media is not of critical importance to determine their overall satisfaction. As seen in Fig. 2, the calculated weight that was assigned to this criterion by the MUSA method is the lowest, thus it has low impact on overall satisfaction. We believe that the customers are familiar with the supermarket consumer goods from their everyday experience. Hence, providing product information is critical only in case a supermarket offers goods that are differentiating from the competition. Thus, the criteria of Products and Staff (explained previously) remain the most critical concerning the satisfaction from traditional supermarket stores.

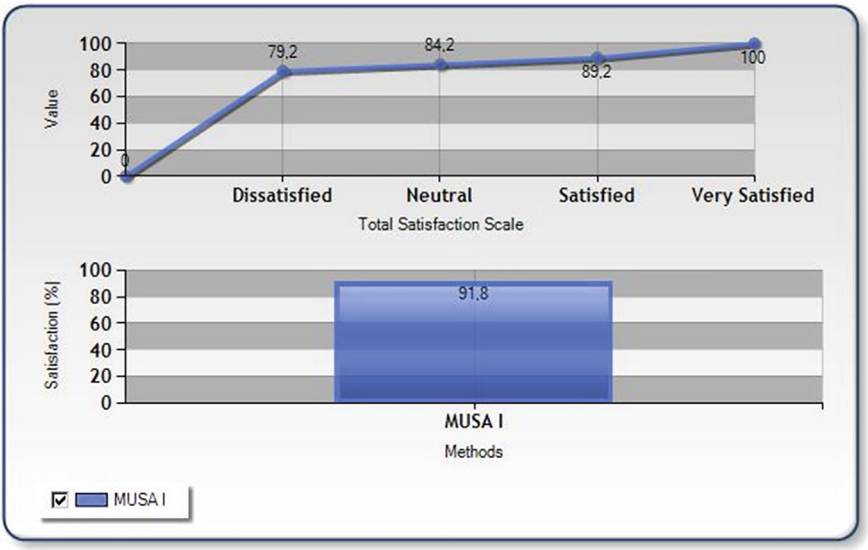


Fig. 1 Satisfaction function

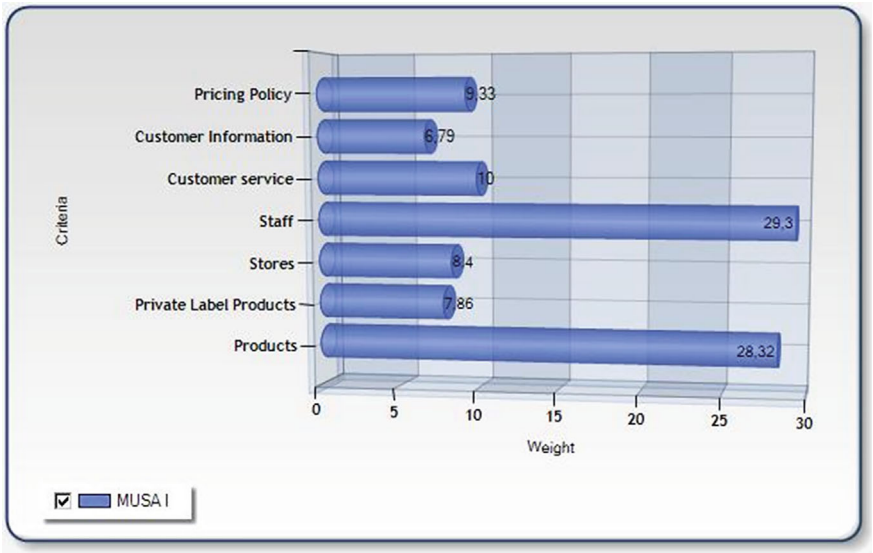


Fig. 2 Satisfaction criteria weights

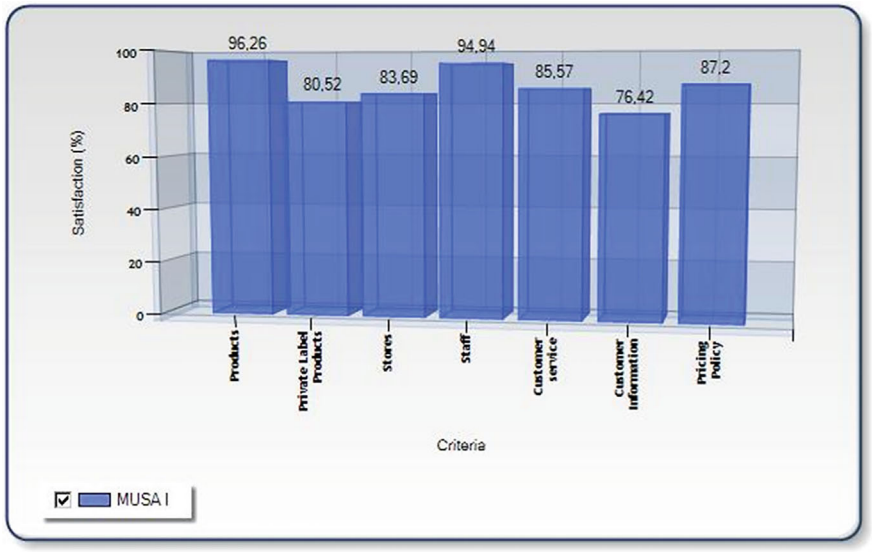


Fig. 3 Customer satisfaction with the main criteria

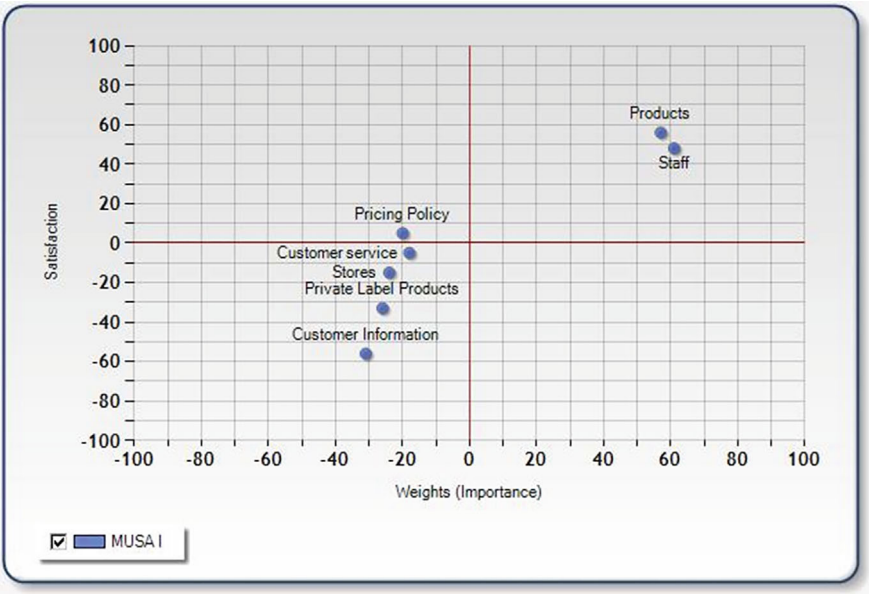


Fig. 4 Action diagram

Moreover, the action diagram of Fig. 4 denoted that none of the criteria fell in the action area (high importance-low satisfaction). Furthermore, the criteria of Products and Staff are in the leverage opportunity area (top right area), so these criteria may be considered as the competitive advantage of the supermarket service, which should be a top priority for the supermarkets. Within Products the quality aspect was put as the top priority item. Moreover, the placement of the criterion of Pricing Policy (top left area) suggests that the supermarkets should put more effort into this variable to move it to the leverage opportunity area. The other items fall into the status quo area (bottom left), so they can be left as is.

5 Discussion and Conclusions

This paper focuses on customer satisfaction from supermarkets, an oligopoly sector which is characterized by intense competition, rapid changes and a continuous effort to maintain customer loyalty [1, 21]. The satisfaction survey results highlighted the competitive advantages of supermarkets' customer satisfaction. Customers reported a high level of satisfaction under the seven criteria. Moreover, the most important satisfaction criteria (according to MUSA method) were found to be those of Products and Staff. Those are considered the competitive advantages that supermarkets should work on. Furthermore, the criterion of Pricing Policy is an important aspect that

the supermarkets should further work on in order to upgrade the overall customer satisfaction.

The importance of our study lies in the fact that assessing the potential effect of customer satisfaction, its implications, and its benefits can help supermarkets organize their strategic management and focus on the most important aspects: reinforcing customer loyalty, maintaining a strong customer base, and, therefore, ensuring their long-term viability.

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Knowledge Management in the Greek Public Sector: A Case Study



Faidon Komisopoulos, Akrivi Gkouma, Stamatios Ntanos, Antonios Kargas, Eleni C. Gkika, and Dimitrios Drosos

Abstract In recent years, the interest of both academics and practitioners has turned to knowledge management. However, the majority of studies had focused on the private sector versus the public sector. This research aimed to investigate the mediating role of organizational commitment in the relationship between knowledge management practices and public servants' performance. The questionnaire consisted of four variables: knowledge management, the organization's willingness to innovate, employee commitment and emotions at work. The research was conducted at the Managing Authority of the "Human Resources and Social Cohesion" Program in Athens. The empirical results on a sample of 100 public servants showed a moderate, positive and statistically significant relationship between Knowledge Management in the public sector and Employee Emotions. Furthermore, they confirmed a moderate and positive relationship between Knowledge Management in the public sector and employee engagement. However, employee engagement was not found to be a mediator between knowledge management and employee emotions in the public sector, it is rejected. A future survey should include a larger sample and more public organizations. Implications for further research are also discussed.

Keywords Knowledge management · Organizational commitment · Employee performance

1 Introduction

Recently, the interest of both academics and practitioners has turned to knowledge management [1]. This formed the basis for research considering that knowledge is a critical resource for the public sector, as well as in the private sector, and also the fact

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that for the public sector, it is no longer an option but an imperative since the public sector of Greece wishes to survive in the evolving era of privatization, liberalization and globalization [2].

Massaro et al. [2] highlighted that public sector entities face more significant pressures for accountability and responsiveness than private sector companies [3].

A thorough assessment of the impact of knowledge processes on performance in the public sector was attempted by research by Razzaq et al. [4] who investigated the mediating role of organizational commitment in the relationship between knowledge management practices and knowledge worker performance. Their sample consisted of 341 public sector knowledge workers of the health department of Punjab province, Pakistan. Using structural equations, they concluded that there is partial mediation of employee commitment (organizational commitment), thus indicating that knowledge management practices could drive higher organizational commitment and knowledge worker performance. Taking this research as a basis, this paper investigates knowledge management in the Greek Public Sector.

2 Theoretical Background

Knowledge management refers to the methodical, explicit, and purposeful creation, sharing, and application of knowledge. At the business level, the ultimate goal is the expansion of efficiency regarding the processes followed to achieve knowledge and the performance of knowledge outcomes [5].

In general, knowledge management is a set of organizational processes aimed at creating, storing, transferring, and applying Knowledge [6].

The basic categorization of knowledge consists of (a) explicit Knowledge and (b) tacit Knowledge.

(a) Explicit knowledge is expressed linguistically and attributed to specifications, manuals, grammatical terms and mathematical formulas [7].
(b) In tacit knowledge, we can distinguish two dimensions: the technical and the cognitive. The technical dimension reflects the skills and abilities of the individual called know-how. The cognitive dimension involves mental models, perceptions and beliefs, which are taken for granted as they are deeply rooted in people's minds [8].

Also, knowledge has been categorized based on its particular characteristics. Researches [5] categorized knowledge as follows:

Evidenced knowledge refers to information items, terminology and details. Conceptual knowledge is attributed to principles, models, generalizations, theories, categorizations, and relationships between concepts. Meta Knowledge refers to metacognition or Knowledge about Knowledge and specifically involves general learning strategies, self-awareness, reasoning, and problem-solving.

The most well-known model that synthesizes the life cycle of knowledge management is that of Nonaka and Takeuchi [8]. Wang and Ahmed's [9] model is based on

Michael Porter's value chain model, which is applied to clarify and evaluate the processes that add value to the business and, at the same time, identify with the acquisition of competitive advantage. The model of Wang and Ahmed [9] aims to capture the essence of the knowledge economy by identifying the following categories: Knowledge processes, knowledge catalysts, Organizational skills and performance.

Knowledge management has a dual purpose: on the one hand, it aims to create knowledge and information bases to enhance the organization's innovative activities and achieve competitive advantage; on the other hand, it aims to share and diffuse knowledge [10].

3 Materials and Methods

The research sample consists of 100 civil servants working in the former Operational Program "Human Resources Development, Education & Lifelong Learning 2014–2020," which was recently transformed into the Human Resources and Social Cohesion Program. A catalogue including the email addresses of all the personnel involved in the Human Resources and Social Cohesion Program was created, and 100 cases were randomly selected. This authority, among other duties, is responsible for managing co-funded programs that require careful planning, coordination and effective resource management [11].

The questionnaire was used to collect the data, and the methodology was derived from previous empirical researches [4, 12, 13]. Employees in the Public Administration completed the presented survey, which consists of two main sections. The demographic information collected in the first section and all questions are closed-ended, and the scale is categorical.

The second part of the questionnaire constitutes the main questionnaire and explores the respondents' opinions regarding the following four variables of the research: knowledge management in the organization/service where they worked, organizational disposition for innovation, employee commitment, and description of feelings at work.

The pilot period for the completion of the questionnaire was from 10/12/2023 to 22/12/2023. The time period in which the questionnaire was completed was from 5/01/2024 to 29/01/2024.

The present research has two dependent variables: organizational disposition to innovate and emotions at work (knowledge workers). The independent variable is knowledge management in the public organization/service. Employee engagement is a mediating variable.

The research questions are the following:

The first research hypothesis investigates whether knowledge management in the public sector positively and significantly affects emotions at work.

The second research hypothesis investigates whether knowledge management in the public sector positively and significantly affects employee engagement.
The third research hypothesis investigates whether employee engagement significantly promotes employee emotions in the public sector.
The fourth research hypothesis investigates whether employee engagement significantly mediates knowledge management and employee emotions in the public sector.

The SPSS statistical software was used for data analysis.

4 Results

Considering the Cronbach's alpha index results, the "Knowledge Management" scale (0.958) had high reliability. The scales of "Organizational Disposition to Innovation" (0.884) and "Description of Feelings" (0.843) had satisfactory reliability. Regarding the "Employee Commitment" scale (0.657) it had marginal reliability. The entire questionnaire (0.952) had high reliability.

The majority of the sample, 64%, were over 50 years old. 76% of the sample was female. The majority of the sample, 51%, had a Master's degree. Most of the sample (76%) were Management Executives. Most of the sample (95%) had more than ten years of work experience. The scale with the highest numerical mean (3.53) is "Description of Feelings at Work," and "Knowledge Management in the Organization" (2.91) was the lowest. Therefore, public sector workers place more importance on emotional description in the working space.

Based on the data in the table, the null hypothesis of the normal distribution is rejected (sign $p = 0.001 < 0.05$) for all variables as rejected by both the asymmetry and kurtosis statistics except for "Description of Feelings at Work" (sign $p = 0.080 > 0.05$). Therefore, non-parametric tests were used for hypothesis testing.

The "Knowledge Management" scale is structured in five sub-scales. "Knowledge Exchange" is considered the most important as it has the highest numerical mean (3.13), and finally the lowest, "Knowledge Management Methods" (2.66).

51% claimed that their organization has modern file-sharing systems to share knowledge. Also, 50% of respondents agree that the organization where they work sends timely reports and newsletters to employees and other relevant organizations, 17% disagree, and 29% are neutral.

The "Organization Willingness for Innovation" scale has three sub-scales. Respondents ranked "Quality of Innovation Disposition" (3.57) highest, and finally "Innovation Performance" (2.57) was the lowest.

Similarly, the "Employee Engagement" scale is structured into three sub-scales. Based on the respondents' responses, the most important sub-scale is "Employee Continuance Commitment" (3.09) was the highest and "Emotional Commitment" (2.74) the lowest.

The "Description of Feelings at Work" scale is structured into two sub-scales. The sub-scales obviously did not differ in respondents' opinions, as they had almost the same mean.

The first research hypothesis investigates whether knowledge management in the public sector positively and significantly affects emotions at work. The wording of the research case is as follows:

HO1: There is no significant correlation between Knowledge Management and emotions at work in the public sector.
HA1: There is significant correlation between Knowledge Management and emotions at work in the public sector.

According to Spearman's rho correlation index results, the relationship between Knowledge Management in the public sector and employees' emotions was found to be positive and statistically significant. As indicated by Spearman's rho test statistics, the correlation between these two variables was found to be moderate (rho = 0.449, df = 100, $p < 0.001$). Therefore, the null hypothesis was rejected.

The second research hypothesis investigates whether knowledge management in the public sector positively and significantly affects employee engagement. The wording of the research case is as follows:

HO2: There is no significant correlation between Knowledge Management and the commitment of public sector employees.
HA2: There is significant correlation between Knowledge Management and the commitment of public sector employees.

According to Spearman's rho correlation index results, the relationship between Knowledge Management in the public sector and employee engagement was positive and statistically significant. As indicated by Spearman's rho test statistics, the correlation between these two variables was found to be moderate (rho = 0.389, df = 100, $p < 0.001$). Therefore, the null hypothesis was rejected.

The third research hypothesis investigates whether employee engagement significantly promotes employee emotions in the public sector. The wording of the research case is as follows:

HO3: There is no significant correlation between employee engagement and emotions at work in the public sector.
HA3: There is significant correlation between employee engagement and emotions in public sector work.

According to Spearman's rho correlation index results, the relationship between employee engagement in the public sector and emotions at work was positive and statistically significant. As indicated by Spearman's rho test statistics, the correlation between these two variables was found to be low (weak) (rho = 0.209, df = 100, $p = 0.037 < 0.05$). Therefore, the null hypothesis was rejected.

The fourth research hypothesis investigates whether employee engagement significantly mediates knowledge management and employee emotions in the public sector.

Judd and Kenny's methodology, the Difference of Coefficients Approach, was applied. Two regression models were performed, and then the difference in the coefficients was calculated.

The knowledge management variable is positive and statistically significant ($\beta = 0.360$, $t = 5.144$, $p < 0.001$). In contrast, the employee engagement variable is positive but not statistically significant ($\beta = 0.016$, $t = 0.144$, $p = 0.886 > 0.05$). The positive relationship between the variables was also confirmed, but the relationship between emotions and employee commitment was found to be positive and statistically significant.

R^2's coefficient of determination is 0.273, so it can be argued that 27% of the variability of employees' feelings at work in the public sector is due to the relationship between this variable and employee engagement in the public sector. In conclusion, the remaining 73% of the change in emotions at work is due to other causes different from knowledge management.

5 Discussion and Conclusions

The first research hypothesis investigated whether Knowledge Management in the public sector positively and significantly affects emotions at work in the public sector. The findings showed a moderate, positive and statistically significant relationship between Knowledge Management in the public sector and Employee Emotions. As Knowledge Management increases in the public sector, the Employees' Feelings about their work will also increase [12, 14].

However, this relationship was only partially linear. Further investigation showed that 27% of the variability in work emotions was due to the relationship between this variable and knowledge management.

According to empirical studies, knowledge management practices enhance employee emotions (knowledge worker performance or performance of employees).

Mustapa and Mahmood [15] empirically investigated the effect of practices management knowledge in the performance of their work in the public domain and concluded that knowledge management practices significantly affect employee performance (emotions) [15]. From a theoretical point of view, work design theory, which is based on psychological expectancy and is a variant of the theory of job characteristics, reinforces the conclusion of the effect of knowledge management practices on knowledge performance at work [16]. In addition, applying knowledge management ensures the provision of elements and work content work environment elements [17]. The implementation of knowledge management includes elements of the knowledge-related work environment, such as a collaborative and learning culture, knowledge-oriented leadership, and knowledge-based HRM practices [4].

The second research hypothesis investigated whether knowledge management in the public sector positively and significantly affects employee engagement. The research findings confirmed a moderate and positive relationship between Knowledge Management in the public sector and employee engagement. That is, as Knowledge

Management increases in the public sector, so will the commitment of employees to their work [18]. Likewise, the relationship was not found to be perfectly linear. Furthermore, it was revealed that only 25% of the variability of employee engagement in the public sector is due to the relationship between this variable and knowledge management. According to the literature, Chiu and Chen [19] found that organizational commitment mediates the relationship between the capabilities of knowledge management practices and organizational effectiveness. Within these contexts, knowledge management practices foster a culture and environment in which the provision of work environment and work content elements is facilitated [20].

The third research question investigates whether employee engagement significantly promotes employee emotions in the public sector. The findings showed that the relationship between employees' commitment to the public sector and their emotions at work is positive and statistically significant but weak. According to the rich literature, including empirical research, meta-analyses, and systematic literature, employee commitment (organizational commitment) has a positive effect on employee performance [17, 21, 22]. Furthermore, it has been accepted that the higher the attachment or bond an employee feels toward the organization—i.e., organizational commitment—the more likely he or she is to be motivated to perform better [15].

The fourth research question investigated whether employee engagement significantly mediates knowledge management and employee emotions in the public sector. Two regressions, one multiple and one simple, were calculated, and then the difference of the coefficients was calculated. Because employee engagement (mediating variable) was not statistically significant, the research hypothesis that employee engagement is a significant mediator between knowledge management and employees' emotions in the public sector is rejected.

Based on the literature, two propositions can be made to public organizations:

First, knowledge management practices should be implemented in public organizations, as these practices can enhance organizational commitment and knowledge-employee performance.

Second, knowledge management initiatives could favor strategy formulation and strategic evaluation of public organizations and departments.

The limitations of the research are as follows: Firstly, the research sample is limited to 100 public sector workers. Secondly, the research was conducted in one public service only.

A future study may consider the interactions between knowledge management aspects. That is, it may explore the relevant factors that determine appropriate knowledge management strategies and the relevant, necessary knowledge management infrastructure elements for implementing knowledge management in the public sector. A future study could also have a bigger sample with public servants from several Greek public services.

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Employees' Adaptation to Digital Transformation: A Greek Perspective from the Banking Sector



Antonios Kargas, Eleni C. Gkika, Faidon Komisopoulos, Stamatios Ntanos, and Dimitrios Drosos

Abstract The banking sector has been a leader in digital transformation processes. Internet banking services, cloud computing, chatbots, and artificial intelligence services are some of the technologies used to provide better customer service and experience, cost reduction, and consequently, growth and profitability to banks. Due to the acceleration of digital transformation, there is a growing need to assess banks' digital maturity levels in various national frameworks. The proposed research examines the digital maturity level of Greek banks and the degree of employee adaptation to digital transformation. This study is a pilot study and part of a broader research. Data were collected by applying a structured questionnaire on a convenient sample of 60 employees coming from all four Greek systematic banks, from March to June 2024. Results are based on the ANOVA analysis, which determines employees' adaptation to digital transformation based on several characteristics. Results indicate higher degrees of adaptation between senior executives, while middle and lower levels of executives seem less ready to adapt. Moreover, executives coming from non-banking sectors are ready to adapt, while longstanding bank employees seem less flexible. Finally, the degree/level of digital maturity in the banking sector can predict the degree of employee adaptation. The study aims to help the banking sectors provide useful information to senior management and decision-makers regarding digital transformation and their employee's adaptation, revealing that it is mainly a top–down process that relies primarily on corporate executives, who, however, come from diverse professional backgrounds.

Keywords Employees' adaptation · Digital transformation · Banking sector

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1 Introduction

Banking sector is a vital sector for the economies worldwide and the global commerce as well. Currently, it faces several challenges regarding its digital transformation in order to keep pace with needs and prerequisites of economies worldwide. The Greek banking sector has historically played a significant role in the development and stability of the country's economy [1], especially in periods of economic crises [2]. The sector has undergone significant modernization and transformation in recent years [3], as a consequence of the financial crisis of the late 2000s and early 2010s that led to significant restructuring of the whole sector, including digitization that provided customers with greater convenience, helped banks save costs, and reinforced their positions as market leaders in a shifting financial landscape [4].

This digital transformation has emerged as a prevalent response to several internal and external challenges [5], including: (a) the necessity for soft skills development [6], (b) the adoption and effective implementation of emerging technologies in managing products and services [7, 8], (c) the personalization of products and services to align with customer needs [9], and (d) the creation of new products and services based on insights from big data analytics [10, 11].

Furthermore, digital transformation has become integral to enhancing innovation and business value [12], extending global customer reach and competitiveness [7], fostering the development of agile management methodologies [13, 14], cultivating a suitable organizational culture [15], and attracting talented employees from around the globe [16]. Moreover, at the current moment, digital transformation has moved from purely technological dimensions [17] to encompass intangible business elements [18] and human-centered approaches [19].

As far as the banking sector is concerned, digital transformation can be directly associated with numerous advantages, for the bank institutions (e.g., internal and operational factors) and their clients as well [20]. Digital technologies in the banking sector are related with reduced operational expenses, improved monitoring, better operational/procedure control, effective risk management, improved quality in services/products offered, and worldwide uniformity of internal processes [3].

Even though the digital transformation process is studied, more knowledge is needed about the Greek banks' digital maturity level and the degree of their employees' adaptation to digital transformation. Current research enlightens these aspects by evaluating Greek banks' digital maturity, along with employees' adaptation to new, digital requirements in relation to their personal characteristics such as seniority, demographic characteristics and years of working in the banking sector. Findings can provide valuable insights for bank companies to enhance their strategies and improve their performance when it comes to digital transformation.

2 Methodology

Study's objective was to evaluate the level of digital maturity of Greek banks and the degree of adaptation of their employees, specifically their attitudes and emotions toward the new digital work environment. The research questions posed are:

- H1: Age is negatively correlated to perceptions of digital transformation strategy and leadership
- H2: Working experience is negatively correlated to technology fear
- H3: Position in the banking management is negatively related to perceptions of digital transformation culture
- H4: Males and females have similar perceptions about digital transformation in the banking sector.

The pilot research comprised a convenient sample of 60 employees from the four systemic banks in Greece. The questionnaire was disseminated through social media groups, while it consisted of 45 structured, closed-ended questions, offering multiple-choice answers or a five-point Likert scale rating. The first section of the questionnaire included questions addressing basic demographic characteristics and employments' information. The second section comprised 28 questions forming the Digital Maturity Scale developed by Rossmann [21] and is associated with dimensions such as Digital Strategy Maturity, Digital Leadership Maturity, Digital Market Maturity, Digital Operational Maturity, Digital Personnel and Expertise Maturity, Digital Culture Maturity, and Digital Governance Maturity. The third section included three scales with 11 questions used by Winasis et al. [22] to evaluate employee adaptation and emotions in the new digital work environment, such as Self-efficacy Scale, Job Anxiety Scale and Turnover Intention Scale.

3 Findings

The significance of the study is to reveal factors influencing digital transformation in banking sector in Greece. Most significant demographics of the sample include that 47% of the participants were males and 53% were females. Women view the banking sector as attractive since this job allows women to connect, communicate and share their feelings [23]. 65% of participants were aged between 31 and 40 years old. The majority 73.3% had working experience of less than 6 years, and the working experience at their present job was for 80% of them less than 3 years.

Data used in the research were gathered through questionnaires, and analysis of the data was done using the SPSS (25) for univariate and multivariate analysis to ensure that they were suitable for subsequent factor assessment. Data were tested through a normality test revealing the normality of data. The suitability of the factor analysis was evaluated by assessing the Kaiser-Meyer Olkin measure of sampling adequacy, which is considered very good at 0.806. According to Bartlett's test statistic

the significance level was marked as 0.000 < 0.001. The exploratory factor analysis of the research proceeded by integrating the Varimax rotation which created 4 factors (Table 1). Every item was loading on its factor with a higher value of 0.4. The total variance explained by the four factors was 72.325%.

For all the constructs in the CFA model, Composite reliability and Cronbach's alpha proved to be higher than the threshold of 0.7 [24]. Cronbach' alpha for 40 items was 0.966 (Table 2). The model has excellent convergent validity with Composite Reliability greater than the Average variance extracted.

The impact of personal characteristics on the four factors influencing the digital transformation in the banking sector is examined by using inferential statistics—*t*-tests and ANOVA tests. Post-hoc analysis reveals differences among employees with different background. According to these tests: the participants that belong to the age group 25–30 years old consider that the organization has a digital transformation strategy and leadership (mean 0.547) while the age group of 31–40 years old considers that the bank has no such strategy (mean –0.2703).

The years of total working experience are negatively correlated to technology fear, since participants who are employed for more than six years have technology fear (mean 0.2704) relative to their colleagues employed less than 6 years (mean –0.747). Moreover, post-hoc analysis reveals differences in perceptions between employees with different positions. Employees in higher management positions consider that the banking organization lacks a digital transformation culture (mean –2.65) while employees at lower levels of management consider that a digital transformation culture exists (mean 0.244). Finally, according to *t*-tests there are no gender differences among females and males. The overall regression model was significant, the value of adjusted R square is greater than 0.7 (Table 3).

According to ANOVA results, $F\ (45) = 39.974$, sig < 0.00 the dependent variable: "The company I work for has implemented a digital strategy" is explained and predicted by the independent variables of the sample (Table 4):

$$\begin{aligned} &3.694*\text{Constant} + 0.593*\text{Digital transformation culture} \\ &+0.209*\text{Business strategy and leadership} \\ &+0.186*\text{Digital adoption Self - efficacy} \end{aligned} \tag{1}$$

4 Conclusion

The Greek banking sector's unique characteristics play a significant role in shaping and reshaping employees' adaptation to digital transformation. Some researchers highlighted the role of cultural environment [25], while others provided evidence about resistance to change when a "clan culture" exists among employees [26].

Results proposed in the current study are supplementary to existing research in the Greek banking sector, indicating difficulties in employees' adaptation to digital

Table 1 Factor analysis

Measures	Factor loadings
Digital transformation culture (Eigenvalue = 17.072, % of variance explained = 50.211%)	
Continuous change is part of our corporate culture	0.866
Within the company, new job profiles have been created for employees with expertise in key digital technology issues	0.863
In the day-to-day business, employees and executives share information about the company's digital transformation	0.858
Within the company, comprehensive measures are in place to enhance the development of digital literacy	0.834
Key metrics for the digital strategy are fully integrated into the audit	0.825
Decisions within the company are transparent to our own employees	0.823
Our company applies a holistic management model for digital strategy and corresponding key metrics	0.820
Corporate strategy and digital strategy are linked and complementary	0.819
The leadership culture in the company is based on transparency, collaboration and decentralized decision-making processes	0.793
Sufficient resources (time, people, and budget) are available to implement the digital strategy within the company I work for	0.776
Digitalization has an impact on company's decision-making flexibility	0.772
The company I work for has implemented a digital strategy	0.771
Within the company where I work, further training opportunities are available for digital core issues	0.764
Digital products/services are embedded in our business interfaces and business processes and create a tangible impact on the customer experience	0.764
The digital strategy of the company is documented and communicated	0.760
Digital adoption Self-efficacy (Eigenvalue = 3.592, % of variance explained = 10.565%)	
We have established strong cross-functional collaboration and co-creation with stakeholders across our value chain	0.748
In our company, there are experts in key digital technology issues	0.722
Digital products and services have a large impact on the company's overall performance	0.717
Our digital strategy drives innovation in operations	0.708
The company's digital strategy influences the tasks and role profiles of executives	0.637
The digital strategy is only applied to individual functional areas	0.630
Technology fear (Eigenvalue = 2.555, % of variance explained = 7.516%) 0.838	
I feel that I have a promising future if I continue to work for this company	0.775
I can definitely monitor changes under any circumstances	
I have the ability to monitor changes	0.708
Digital transformation will definitely make my company more superior	0.703

(continued)

Table 1 (continued)

Measures	Factor loadings
I want to learn to master changes in the way things work	0.592
I am uncomfortable with a lot of changes Reversed question	0.917
I am thinking of quitting my company Reversed question	0.875
I am afraid that I will be replaced by a machine Reversed question	0.811
I feel that the demands of the job are now stressing me out	0.795
The digital strategy is continually evaluated and adjusted	0.651
Business strategy and leadership (Eigenvalue = 1.371, % of variance explained = 4.032%)	
The company's digital strategy has a significant influence on existing business and operating models	0.640
The executives of the company I work for support the implementation of the digital strategy	0.592
The digital strategy is continually evaluated and adjusted	0.651

Kaiser–Meyer–Olkin measure of sampling adequacy = 0.806, Bartlett's Test of Sphericity = 1702, 112, Determinant = 2.348E-21

Table 2 Crombach's alpha and convergent validity

Factor	Crombach's alpha	Items	AVE	CR
Digital transformation culture	*0.970*	15	9.7736	146.6
Digital adoption Self-efficacy	0.829	6	2.887	17.32
Technology fear	0.876	9	5.1787	46.61
Business strategy and leadership	0.*773*	3	0.395	0.661

Table 3 Model summary

Model	*R*	R^2	Adj. R^2	Std. error of estimates	*F* change	df1	df2	Sig. *F* Change
1	0.853	0.727	0.709	0.4150	0.059	1	45	0.003

Predictors: (Constant) Digital transformation culture, Digital adoption Self-efficacy, Business strategy and leadership

transformation mainly as a result of the risk of being replaced or fired [27]. It is revealing that older employees (those with more than six years of working experience in the banking sector) years have technology fear compared with their colleagues employed for less than 6 years. Moreover, such a result is supported by age analysis, which indicates that the age group 25–30 years old considers that the organization has a digital transformation strategy and leadership while the age group of 31–40 years old considers that the bank has no such strategy. Younger employees are more eager to adopt a digital transformation strategy, while older ones resist to change

Table 4 ANOVA results

Model	Unstandardized *B*	Coefficients std. error	Standardized coefficients beta	*t*	Sig
(Constant)	3.694	0.059		62.301	0.00
Digital transformation culture	0.593	0.060	0.771	9.901	0.00
Digital adoption Self-efficacy	0.209	0.060	0.242	3.111	0.01
Business strategy and leadership	0.186	0.059	0.272	3.496	0.03

procedures. Age as a determinant factor for an effective digital transformation in the Greek banking sector has been noted and by other research in the proposed national business framework [28]. Moreover, the level of seniority and its positive effect on digital transformation can be associated with both familiarity and digital training.

Such findings are not just a tension that only arises in Greek banking sector. Similar considerations about the evolution and prospects of their work [29] grew in banking employees since new conditions arise in terms of working conditions, policies, management of job insecurity, skills needed, and education appreciated [30]. Proposed results can offer the bank's sector decision-makers with valuable insight regarding their employees, in order to set appropriate Key Performance Indices (KPIs) and to enhance training tools and opportunities so as to limit resistance to change and to promote digital training. As far as the study's limitations are concerned, it should be noted that questionnaires were electronically collected, which indicates a minimum degree of familiarity of respondents with digital technologies.

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The Impact of Work Models and Years of Work Experience on Job Satisfaction, Productivity, and Employees' Sense of Job Security



Vasileios Paraskevopoulos, Dimitrios Kallivokas, and Faidon Komisopoulos

Abstract This study investigates the impact of different work models (on-site, remote, and hybrid) and the length of work experience on employee job satisfaction, productivity, and sense of job security. The findings demonstrate significant variations across these factors depending on the work model and years of experience. Employees in remote and hybrid work models report higher levels of satisfaction and productivity compared to those working on-site. Moreover, hybrid and on-site employees experience a greater sense of job security than their remote counterparts. Regarding work experience, employees with more than 10 years of experience tend to show higher satisfaction and productivity levels than those with fewer years of experience. However, both groups exhibit similar perceptions of job security, indicating that factors beyond tenure, such as organizational policies or external market conditions, might influence job security. The study underscores the value of flexible work arrangements like remote and hybrid models in enhancing employee well-being and performance, while also suggesting that addressing the job security concerns of remote workers is essential for maximizing the benefits of these models.

Keywords Work model · Productivity · Job security · Job satisfaction

1 Introduction

The modern workplace has undergone significant transformations in recent years, with the rise of flexible work models such as remote and hybrid work arrangements. These changes, accelerated by technological advancements and global disruptions like the COVID-19 pandemic, have reshaped the way employees engage with their jobs. This study aims to explore the impact of work models (on-site, remote, and hybrid) and years of work experience on three critical employee outcomes: job satisfaction, productivity, and job security. Understanding these relationships is vital for

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organizations seeking to optimize employee performance and well-being in a rapidly changing work environment.

Previous research has highlighted the importance of the work environment and job design in influencing employee satisfaction and productivity [1]. However, there is still limited understanding of how different work models impact these variables, particularly in the context of employees' years of work experience. This study aims to fill this gap by investigating whether more experienced employees derive different levels of satisfaction, productivity, and job security from various work models compared to their less experienced counterparts. By addressing this, the research seeks to offer practical insights for organizations looking to tailor their work models to different employee needs.

The primary goal of this research is to determine whether hybrid and remote work models lead to higher levels of satisfaction and productivity and whether these models affect employees' sense of job security. Additionally, the study examines how work experience interacts with these work models to shape employee perceptions. The findings aim to provide actionable recommendations for organizations on how to implement flexible work arrangements that foster employee well-being and organizational effectiveness.

2 Theoretical Framework

The impact of different work models on job satisfaction, productivity, and job security is grounded in well-established organizational behavior theories. The work environment plays a crucial role in employee well-being and performance. Previous research highlights that the physical and psychological aspects of the work environment can significantly affect employee satisfaction and productivity [2].

2.1 Work Models

There are three primary work models in modern organizations: on-site, remote, and hybrid. On-site work enables direct communication and interaction between employees and management, fostering collaboration and quick decision-making [3], but it also brings stress factors like commuting and limited flexibility [4]. Remote work, which gained popularity during the COVID-19 pandemic, offers flexibility and improved work-life balance [5], though it can lead to isolation and reduced team cohesion [6]. Hybrid models combine both approaches, providing flexibility while retaining in-person interaction [7], but they also introduce coordination challenges, requiring strong communication strategies to manage teams across locations [8].

2.2 Job Satisfaction

Employee job satisfaction is central to organizational performance. Job satisfaction is defined as a pleasurable or positive emotional state resulting from the appraisal of one's job experiences [9]. Factors influencing job satisfaction can be divided into two categories: hygiene factors (e.g., company policies, salary, and work conditions) and motivators (e.g., recognition, responsibility, and advancement) [10]. Research suggests that hybrid and remote models can enhance satisfaction by providing greater flexibility, which is crucial for maintaining a work-life balance [11].

2.3 Productivity

Productivity in the workplace is a key performance indicator for both employees and organizations. Productivity refers to the effectiveness with which employees convert resources into valuable products or services [12]. The work environment significantly influences productivity. Additionally, employees are more productive when their jobs offer autonomy, skill variety, task significance, and feedback [1]. Work models that allow autonomy, like remote or hybrid work, often lead to higher productivity, as workers can choose their optimal work environment [6]. However, coordination challenges in hybrid models can sometimes reduce productivity [8].

2.4 Job Security

Job security is defined as the perceived stability and continuity of employment [11]. A secure job fosters higher job satisfaction and psychological well-being, reducing stress and turnover intentions. Work models can influence employees' perceptions of job security. For example, remote and hybrid work may lead some employees to feel less secure due to reduced visibility within the organization and concerns about future changes in work policies [12]. However, transparent communication from management can alleviate these concerns and enhance job security [13].

3 Methodology

This study employed a quantitative research approach, using a structured survey to investigate the impact of work models and years of work experience on job satisfaction, productivity, and job security. The survey consisted of closed-ended questions, with a convenient sample of 261 participants responding using a Likert scale to evaluate their levels of satisfaction, productivity, and security in their respective work

models (on-site, remote, hybrid). The survey was distributed to employees across various industries, ensuring diversity in responses and increasing the generalizability of the findings. Data analysis was conducted using statistical software, where descriptive statistics, independent samples *t*-tests, ANOVA, and post-hoc tests were applied to assess differences across groups based on years of experience and work models for each research question.

For the first research question, which examined the influence of work experience on satisfaction, productivity, and job security, *t*-tests were used to compare means between employees with more than 10 years of experience and those with less. For the second research question, focused on the effect of different work models, ANOVA was utilized to identify significant differences across on-site, remote, and hybrid workers. Post-hoc tests were then conducted to specify which work models differed significantly in terms of satisfaction, productivity, and job security.

4 Results

4.1 Impact of Work Experience on Current Work Model Satisfaction, Feeling of Productivity and Job Security

Employees with more years of experience generally report higher levels of satisfaction with their current work model compared to those with less experience. This could be attributed to their familiarity with the organizational environment and their ability to adapt more effectively to changes over time. Similarly, more experienced employees tend to feel slightly more productive, likely due to greater comfort and efficiency in managing tasks. However, when it comes to job security, there appears to be little difference between employees with varying levels of experience. This suggests that factors beyond work tenure, such as organizational stability or broader market conditions, may play a more significant role in shaping perceptions of job security.

Independent Samples Test. The independent samples *t*-test assesses whether there are statistically significant differences in satisfaction with the current work model, feeling of productivity, and feeling secure in the job between employees with 10 or more years of experience and those with less than 10 years. Below is an analysis of the test results: Levene's Test for Equality of Variances indicated significant results for both satisfaction with the current work model ($F = 8.388$, $p = 0.004$) and feeling of productivity ($F = 4.387$, $p = 0.037$), meaning that the variances between employees with more than 10 years of experience and those with less than 10 years were not equal for these two variables. In both cases, the *t*-tests revealed statistically significant differences, with employees having 10 or more years of experience showing higher satisfaction with their current work model ($p = 0.009$, mean difference = 0.332, 95% CI) and feeling more productive ($p = 0.006$, mean difference = 0.346, 95% CI). In contrast, the Levene's test for job security was not

significant ($F = 0.022$, $p = 0.882$), indicating equal variances between the groups. The *t*-test for job security showed no significant difference between the two groups ($p = 0.834$, mean difference = 0.029, 95% CI), suggesting that job security perceptions are consistent regardless of experience level. Similarly, same results were found when Mann–Whitney U tests were applied. The tests indicated significant differences in both satisfaction with the current work model and the feeling of productivity between employees with more than 10 years of experience and those with up to 10 years. Employees with more experience reported higher mean ranks for satisfaction and productivity, suggesting that more experienced employees tend to be more satisfied and feel more productive in their roles. In contrast, no significant difference was found in feelings of job security between the two groups, with mean ranks being very similar. This indicates that job security perceptions are consistent across experience levels, despite differences in satisfaction and productivity.

4.2 Comparison of Work Models: Effects on Job Satisfaction, Productivity, and Job Security

Analysis of Variance. The Analysis of Variance test is used to examine the differences in satisfaction with the current work model, feeling of productivity, and feeling secure in the job across different work models (e.g., on-site, remote, hybrid). The analysis revealed significant differences in satisfaction, productivity, and job security across the various work models. The *F*-value of 63.664 and a *p*-value of 0.000 indicate a statistically significant variation in satisfaction depending on the work model, with employees reporting different levels of satisfaction based on whether they work on-site, remotely, or in a hybrid model. Similarly, the *F*-value of 37.805 and a *p*-value of 0.000 show a significant difference in how productive employees feel, suggesting that work models have a notable impact on productivity. In terms of job security, the *F*-value of 34.429 and a *p*-value of 0.000 demonstrate that employees' perceptions of security also vary significantly based on their work model. Overall, the Analysis of Variance results confirm that the type of work model—whether on-site, remote, or hybrid—significantly influences employees' satisfaction, productivity, and job security perceptions.

Multiple Comparisons' Analysis. The results from the Least Significant Difference test, which compares the means of different work models (on-site, hybrid, and remote) for three dependent variables: satisfaction with the current work model, feeling of productivity, and feeling secure in the job. Below is a breakdown of the findings:

The comparison between on-site and hybrid workers shows a significant mean difference of –1.20253 ($p = 0.000$), indicating that employees in hybrid work models report significantly higher satisfaction than those on-site. Similarly, the on-site vs. remote comparison reveals a significant mean difference of –1.18519 ($p = 0.000$), with remote workers being significantly more satisfied than on-site employees.

However, the hybrid vs. remote comparison shows a mean difference of 0.01735 ($p = 0.909$), which is not significant, indicating no notable difference in satisfaction between hybrid and remote workers. For productivity, the comparison between on-site and hybrid workers shows a significant mean difference of –0.97814 ($p = 0.000$), suggesting that employees in hybrid models feel more productive than those on-site. The on-site vs. remote comparison similarly reveals a significant mean difference of –0.96267 ($p = 0.000$), with remote workers reporting higher productivity than on-site employees. However, the hybrid vs. remote comparison shows a mean difference of 0.01547 ($p = 0.923$), indicating no notable difference in perceived productivity between hybrid and remote workers. In terms of job security, the comparison between on-site and hybrid workers shows a mean difference of 0.13410 ($p = 0.343$), indicating no significant difference in job security between these groups. However, the on-site vs. remote comparison reveals a significant mean difference of –1.29514 ($p = 0.000$), with remote workers feeling less secure than on-site employees. Similarly, the hybrid vs. remote comparison shows a significant mean difference of –1.16104 ($p = 0.000$), indicating that hybrid workers feel more secure than remote workers. Overall, hybrid and remote workers report significantly higher satisfaction and productivity compared to on-site employees, while remote workers feel significantly less secure in their jobs compared to both on-site and hybrid workers, with hybrid employees feeling more secure than remote workers but similar to on-site employees.

5 Discussion

5.1 Overview of Key Findings

The present study aimed to explore the impact of different work models and years of work experience on job satisfaction, productivity, and the sense of job security. The findings reveal that both work models and years of experience significantly affect employees' satisfaction and productivity. However, the results regarding job security are more nuanced, with experience having less influence than expected, while work models played a more pronounced role.

5.2 Impact of Work Experience on Satisfaction, Productivity, and Job Security

The analysis reveals that employees with more than 10 years of experience report significantly higher satisfaction and productivity levels than those with less experience, supporting previous research indicating that experienced workers develop stronger coping mechanisms, better task management, and a deeper understanding of their roles [1]. The stability associated with experience may contribute to increased

job satisfaction and productivity. However, the findings show no significant difference in job security based on experience, suggesting that security may depend more on external factors like organizational stability or economic conditions [11], contrasting with literature linking longer tenure to greater security.

5.3 Effects of Work Models on Job Satisfaction, Productivity, and Job Security

The ANOVA and post-hoc analyses revealed that hybrid and remote work models are linked to significantly higher job satisfaction and productivity compared to on-site work, aligning with studies that emphasize the benefits of flexibility and autonomy in hybrid and remote settings, which enhance work-life balance and productivity [5, 6]. However, remote workers reported feeling less secure in their positions than those in hybrid or on-site models, possibly due to reduced organizational visibility and concerns about future policy changes [12]. Hybrid workers, in contrast, enjoyed both flexibility and enough physical presence to feel more secure, highlighting the advantages of the hybrid model in balancing productivity and job security.

5.4 Limitations and Future Research

While the study offers valuable insights, certain limitations must be acknowledged. First, the data were self-reported, potentially introducing bias as participants may overestimate or underestimate their satisfaction, productivity, or job security. Second, the study was conducted within a specific cultural and organizational context, limiting the generalizability of the findings to other industries or regions. Future research could examine how these results vary across different sectors or countries, particularly given the global shift toward remote and hybrid work. Additionally, longitudinal studies could provide deeper insights into how work model preferences and job security perceptions evolve over time, especially in response to economic or technological changes.

6 Conclusion

In conclusion, the study highlights the critical role that work models play in shaping employees' experiences in the workplace. While work experience positively influences satisfaction and productivity, work models appear to have a more profound impact on how employees perceive their roles, particularly in relation to job security. Organizations that embrace flexible work arrangements, while addressing potential

concerns about job security, stand to benefit from more satisfied and productive employees.

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Employee Job Satisfaction in Greek Ports Using a Multi-Criteria Method



Eleni C. Gkika, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Stamatios Ntanos

Abstract During the last few decades, ports have been important network nodes for cargo transportation, and they play a pivotal role in enhancing a country's economic activity through the import and export handling. Port industry is one of the most dynamic and competitive industries around the world. Within this framework, satisfied employees tend to be more productive, provide better services to customers, and hence, can significantly enhance business profitability. Limited research answers the topic of job satisfaction of employees working at the Greek port industry. The aim of this research is to measure and analyze employee job satisfaction in ports in Greece using the MUSA method, which is a preference disaggregation model following the principles of ordinal regression analysis. This integrated methodology evaluates the satisfaction level of a set of 368 employees in the Greek port industry based on their values and expressed preferences. Results showed that employees are satisfied (80.38%). The research aims at providing practical insights and theoretical contributions to port enterprises in enhancing employee satisfaction and maintaining relevant advantages to their productivity.

Keywords Employee job satisfaction · Greek port industry · Port digitalization

1 Introduction

Ports and shipping industries are crucial and vital in the growth and the development of a country's trade. Levels of productivity are directly related to employees' satisfaction and thus comes the need for the study. Seaborne passengers traveled internationally in 2023 were 18.2 million, and according to Hellenic Statistical Authority [1], a total of 4.5 million passengers traveled in the main ports of Greece in 2023. Piraeus port, the biggest port of the country, offers extensive facilities such as container handling, cargo storage and passenger services including international cruise ship

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Fig. 1 Traffic of passengers and goods, 1st quarter 2021—1st quarter 2024 [1]

arrivals and ferry connections to Greek islands. The passengers handled in 2023 were 1.5 million compared to 880,416 passengers in 2022, an increase of 68.6% [2].

Given the challenges that the work force in ports deals due to work intensity, project pressures and evolving job requirements, it is vital to understand the factors influencing employees' job satisfaction along with the demands for increased performance [3] (Fig. 1).

Employees' satisfaction refers to the way an employee perceives the working environment [4], the policies, the career developments, and the position of employment. Employees are more productive and loyal when they are satisfied and that further enhances organizational productivity. Energetic employees offer highly quality products and services [5]. Job satisfaction is capitalized as a relevant competitive asset [6]. The satisfaction is beheld in areas such as promotions, cooperation with supervisors and co-workers, salary and benefits, and the working environment. Job satisfaction enhances with employee motivation, job involvement, organizational citizenship behavior, organizational commitment, mental health, life satisfaction and job performance [7]. The labor adjustments costs from dealing with satisfied employees, such as training costs, exceeds the costs from the dissatisfied ones [6].

The relevance of the study refers to the implications on employee job satisfaction due to increased port traffic along with the increase in the maritime trade in Greece.

2 Theoretical Background

Ports in Greece contribute significantly to national economy and serve as a gateway to Mediterranean Sea and beyond. Sea trade and new infrastructure create wealth and social development in a country [4]. The satisfaction of employees and the operational performance and development of the port are integral [3].

Employee satisfaction in the port industry, according to the two-factor theory of Herzberg's stems from intrinsic motivational factors such as challenging work, professional growth potential, relationship development, and recognition in the workplace which contribute to increasing employee satisfaction while extrinsic motivators such as the tangible but still basic needs, including job security, salary, fringe benefits, and status working conditions and other economic rewards, which can prevent employee dissatisfaction [8]. Jin et al. (2023) in a quantitative survey examined the motivational factors and the hygiene factors (extrinsic motivators) on employee satisfaction. They resulted that employees had high satisfaction with the port projects and with motivational factors such as job content, job responsibilities, salary and with their working environment [3].

Job satisfaction refers to an employee's contentment and fulfillment with their job and relevant associated elements. It reflects how individuals perceive their work experience and the resulting satisfaction or dissatisfaction. Job satisfaction is crucial for creating a positive work environment that fosters employee engagement and productivity [3]. Positive peer relationships are based on high-level interpersonal skills. The open and honest communication with co-workers, combined with empathy, results in increased coordination, diminishing disagreements and sharing of knowledge among entities [4].

Positive and substantial correlations exist between employees' satisfaction and their supervisors support for creating a positive working climate that further fosters employee satisfaction [9]. Establishing daily, clear, concise and consistent communication between employees and their immediate supervisor can provide employees with professional input, constructive criticism and general understanding of employees' morale, their attitudes and their opinions [5]. The vision of the company, the mission and the objects become familiar to all employees thus building a corporate culture where all employees are an integral parts of the organization and relationships are based on mutual respect.

Promotion may represent a significant achievement in a career bringing higher salary, more responsibilities, greater authority independence, and higher status. The opportunity for a promotion determines the degree of job satisfaction [5] and the opportunity to use skills and abilities [3].

Compensation is the amount of rewards that an employee expects to gain from his/her work. A feeling of satisfaction results from attaining fair and equitable rewards. Rewards have the form of wage and salary, or rewards and penalties [5]. Rewards motivate people to act appropriately by reaching new performance levels. The establishment of fair and proper evaluation encourages employees to perform work.

Employees get more satisfaction while working at an environment feeling safety, comfort and motivation [5]. Such an environment provides autonomy, participation and mutual trust [3].

The job content impacts the sentiments of employees. Jobs having rich and positive behavioral elements such as autonomy, task identity, and task significance, and when employees get feedback for their work, then these elements contribute to employee job satisfaction [5]. The working projects should have an interesting job design, and the employee should have recognition for his contribution and being responsible for accomplishing it. Doing the projects, employees should be empowered and challenged with tasks that have certain difficulty and work load [3].

3 Materials and Methods

In this research, a survey was conducted to access employees' job satisfaction from working at ports in Greece. The survey was conducted during September–October 2023 on a convenience sample of 368 employees in the Greek port industry. In this research, employees' satisfaction criteria and sub criteria are selected based on an extensive review of the relevant literature [10, 11]. The satisfaction criteria were based on the relevant literature concerning employees' satisfaction, as follows: "work object" includes questions on the content of employees' job, "work environment" includes questions on the working environment of the employee, "cooperation with colleagues" includes questions on the relationships and communication with colleagues, "cooperation with supervisor" includes questions on communication and relationship with supervisors, and "promotion evaluation" includes questions on opportunities on promotions.

These are results concerning the sample demographics; the percentage of women who participated in the survey amounted to 65% with the corresponding percentage of men reaching 35%. According to the research data, the average age of the employees was 23.6 years.

The satisfaction survey results were based on the Multicriteria Satisfaction Analysis (MUSA) used in order to measure customer satisfaction. The method is an ordinal-regression-based approach used for the assessment of a set of collective satisfaction functions in such a way that the global satisfaction criterion becomes as consistent as possible with customers' judgments [12]. This method inferred an additive collective value function Y* and a set of partial satisfaction (value) functions Xi*, given customers' global satisfaction Y and partial satisfaction Xi according to the i-th criterion (ordinal scaling). The main research objective was to achieve the maximum consistency between the value function Y*and the customers' judgments Y. Based on the modeling of preference disaggregation approach [13, 14] the ordinal regression equation was termed as follows:

$$\begin{cases} Y^* = \sum_{i=1}^{n} b_i X_i^* \\ \sum_{i=1}^{n} b_i = 1 \end{cases} \quad (1)$$

where $\tilde{Y}^*$ represents the estimation of the global value function, n represents the number of criteria, bi is a positive weight of the i-th criterion, σ+ and σ− are the overestimation and the underestimation errors, respectively, and the value functions Y* and Xi are normalized in the interval [0,100]. The global and partial satisfaction Y* and Xi* are monotonic functions normalized in the interval [0,100]. Thus, in order to reduce the size of the mathematical program, removing the monotonicity constraints for Y* and Xi*, the following transformation equations were utilized:

$$\begin{cases} z_m = y^{*m+1} - y^{*m} \quad \text{for } m = 1, 2, \ldots, a-1 \\ w_{ik} = b_i(x_i^{*k+1} - x_i^{*k}) \quad \text{for } k = 1, 2, \ldots, a_i - 1 \; k\alpha \; i = 1, 2, \ldots, n \end{cases} \quad (2)$$

where y*m is the value of the ym satisfaction level, xi*k is the value of the xik satisfaction level, and α and αi are the number of global and partial satisfaction levels. According to the aforementioned definitions and the assumptions, the basic estimation model can be written in alignment with the following linear program formulation:

Where M is the number of customers, n is the number of criteria, and xi*j, y*j are the j-th level on which variables Xi and Y were estimated.

[min]

$$F = \sum_{j=1}^{M} \sigma_j^+ + \sigma_j^-$$

under the constraints:

$$\sum_{i=1}^{n} \sum_{k=1}^{t_{ji}-1} w_{ik} - \sum_{m=1}^{t_j-1} z_m - \sigma_j^+ + \sigma_j^- = 0 \;\; \forall\, j = 1, 2, \ldots, M$$

$$\sum_{m=1}^{a-1} z_m = 100$$

$$\sum_{i=1}^{n} \sum_{k=1}^{a_j-1} w_{ik} = 100$$

$$z_m,\; w_{ik}, \sigma_j^+, \sigma_j^- \geq 0 \;\forall\, m, i, k, j \quad (3)$$

4 Results

Employees seem to be totally satisfied working at the port. Based on Fig. 2, the total employee satisfaction amounted to the high 85.44% score.

Concerning the impact of the separate satisfaction criteria on the variable of total satisfaction, according to Fig. 3, the criterion of "work object" sustained the greatest weight (44.25%) followed by the criteria "Salary-Benefits" and "Work environment" (14.41%).

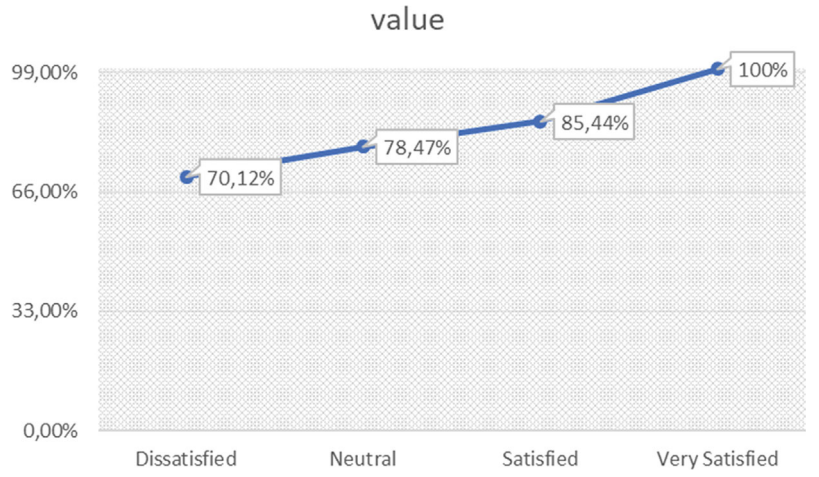


Fig. 2 Satisfaction function

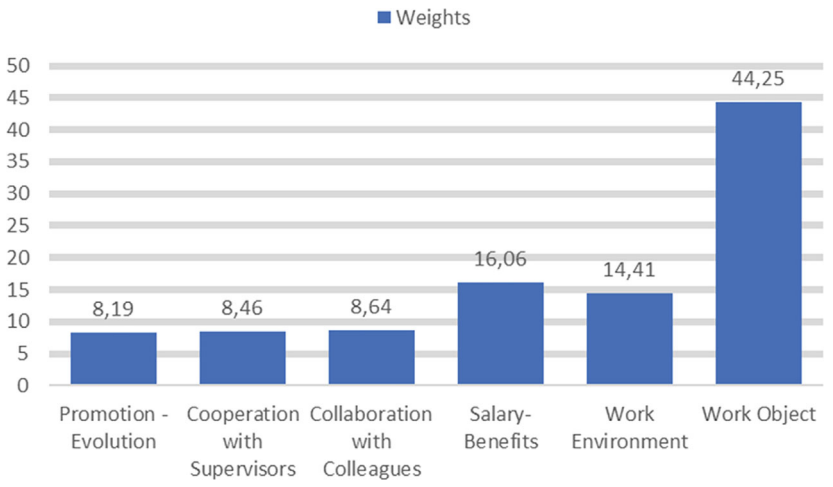


Fig. 3 Satisfaction criteria weights



Fig. 4 Customer satisfaction with the main criteria

Figure 4 pointed out that all of the survey criteria showed a fairly high satisfaction rate. The criterion of "work object" sustained the highest satisfaction with a percentage of 88.48% followed by the criterion "work environment" with 80.5% and "salary and benefits" with 79.91%. The criteria "cooperation with colleagues" (74.33% satisfaction rate) and "cooperation with supervisor" (67.28% satisfaction rate) are following. Lack of effective communication about progress and goals affects the employees' satisfaction and organization's turnover. Lastly, the criterion with the least satisfaction rate is "promotion evaluation" with satisfaction rate of 55.57%. Promotion evaluation serves as precursor to high performance in organizations and by increasing the employee satisfaction will affect the port efficiency.

Moreover, the action diagram of Fig. 5 pointed out that none of the survey criteria fell in the action area of high importance-low performance. Employees do not consider that there are important criteria in which they are dissatisfied. Further, the criteria of "work object" stands in the leverage opportunity area meaning that this criterion provides the competitive advantage to the satisfaction of employees working at the ports in Greece. This is the criterion that should further be promoted.

5 Discussion and Conclusions

In this study we conducted a comprehensive evaluation of job satisfaction of employees working at ports in Greece. We analyzed their satisfaction level about organizational characteristics, job task factors and personal characteristics. The results of this satisfaction survey highlighted the competitive advantages that employees consider important. They reported high level of satisfaction under five criteria. The most important satisfaction criterion (according to MUSA method) was

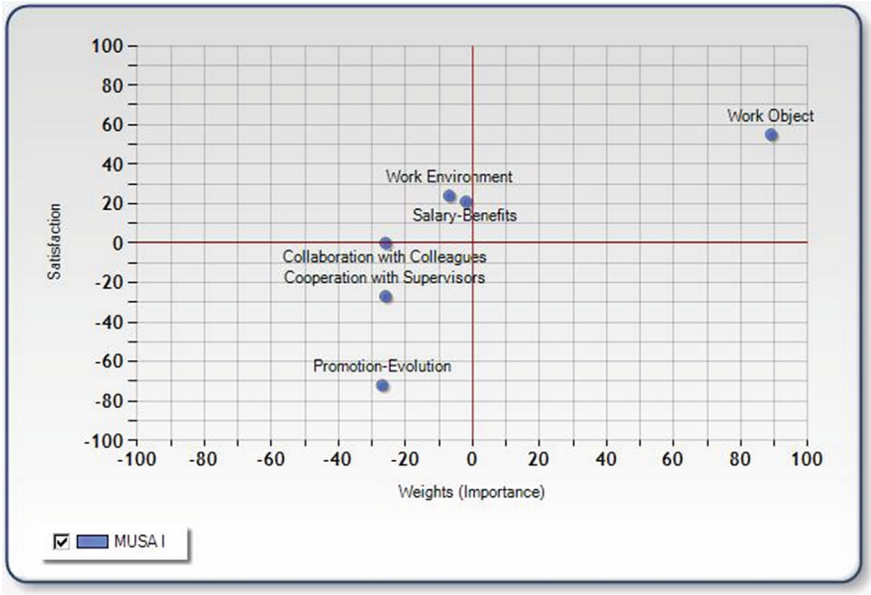


Fig. 5 Action diagram

found to be the "work object." That provides the company with a competitive advantage that should further be employed. The second more important criterion is the "working environment." In their study, Jin et al. (2023) [3] also found that working environment and project policies are among the factors contributing to employees' satisfaction. The importance of the study lies in shedding light on the factors that contribute to employees' satisfaction while they are working at the demanding environment of a port. Future research should focus on motivators as health factors and improvements in policies and procedures to enhance employee performance and further offer excel services.

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The International Ship and Port Facility Security (ISPS) Code and Port-Industry Stakeholders Satisfaction



Eleni C. Gkika, Dimitrios Drosos, Antonios Kargas, Faidon Komisopoulos, and Stamatios Ntanos

Abstract During the last few years, ports have been essential in the entire transport chain as they connect sea and land trade and passenger flows. The economic and technological developments of recent years contributed to the sharpening of competition between ports and the emergence of new elements as competitive edges, with the main element being the quality of the services provided. The ISPS Code (International Ship and Port Facility Security Code), is one of the critical regulations regarding the security of ships, ports, cargo and seafarers from external threats. This research aims to measure and analyze critical success factors for stakeholder satisfaction from the application of the ISPS Code in the ports in Greece. This research used a convenient sample questionnaire distributed to 109 port operators, shipping companies, government employees and stakeholders. The questionnaires were collected during a seven-month period in 2023. The results were analyzed with the multicriteria satisfaction analysis (MUSA) method, resulting in the port's stakeholders being very satisfied with the implementation of ISPS Code. More specifically, the average global user satisfaction index was approximately 88.08%. The study's results can help port operators, shipping agencies and shipping companies identify critical success factors of satisfaction and adopt port digital development strategies for operational efficiency improvements.

Keywords Satisfaction · ISPS code · Greek port industry · Port digitalization

1 Introduction

Ports serve as crucial nodes for transporting goods and people between sea and land. The International Maritime Organization (IMO) was established in Geneva under the United Nations' organizational administration in 1948. Its main mission is to ensure the safety and protection of international shipping and prevent pollution of seas. Additionally, IMO deals with facilitating international maritime traffic and handling

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legal issues that may arise from the operation of international shipping. On July 1st, 2004, IMO implemented the ISPS Code (International Ship and Port Facility Security Code), which introduced a set of precautionary measures and regulations that the maritime transport sector must adhere to. The ISPS Code applies to international passenger ships, international cargo ships, mobile offshore drilling units, and port facilities serving ships engaged in international voyages [1, 2]. Global water body covers 70% of the earth's surface, and after the 9/11 terrorist attack, security issues arose on seas worldwide. The need for the unification of navigation and security rules to prevent maritime accidents and marine pollution was imperative.

According to the International Maritime Organization (IMO), the Code focuses on addressing security threats in three levels of security management. Accomplishing minimal compliance with both statutory and non-statutory security requirements and detection of possible threats [3]. The ISPS Code provides a cooperative framework that detects any suspicion against port facilities and ships and ensures that the existing legal framework is sufficient to respond to any threat [4]. The main objective of ISPS Code is the cooperation between contracting States, State agencies, local administrations and the shipping and port industries so as to provide security assessment systems, to create an international framework where security threats may be detected, to take preventive measures against security incidents on port facilities and vessels, to determine the respective roles and responsibilities of all parties, and to confirm that security-related information is being collected and exchanged effectively [3]. This research highlights the factors contributing to stakeholders' satisfaction using the ISPS code in Greece. The results will assist port operators, shipping companies, government organizations, and other stakeholders/participants in the maritime industry in enhancing their participants' satisfaction and improving port efficiency.

2 Theoretical Background

Increased competition and uncertainty in the maritime industry make it essential for port operators and stakeholders to identify the success factors that will improve the quality and competitiveness of the port services [5]. Satisfaction indicators for a port include operations, environment, energy, safety and security. The maritime security threats may be actions of terrorism, piracy or armed robbery. Safety measures are designed to protect people from naval accidents caused by unsafe operations or criminal intentions [6]. In this direction the application of ISPS Code is based on the skills, abilities and adequate training of the personnel with security tasks. These skills include professionalism, competence, knowledge and attitude. Human resources practices applied to employees may enhance their skills, knowledge, synergies, commitment and subsequent outcomes for the organization. A study by [7] examined the smart port service quality using an analytic hierarchy process model in conjunction with a service quality scale (SERVQUAL) [8]. Port service quality may be enhanced by big data analysis, applications of artificial intelligence, and even usage of unmanned vehicles. These will increase the speed of smart transportation

and cargo in ports and the international trade processes, simplifying transnational logistics [7]. Also, blockchain procedures can simplify maritime operations and reduce costs and correspondence time associated with traditional operating models. Yeo et al. (2015) mentioned information availability as one critical factor in port service quality [5]. They also proposed social responsibility as a factor influencing service quality, which may enhance or damage the image or the reputation of a port organization. Smart technology applications may benefit port operations and stakeholders, resulting in improved efficiency, reduced delays, transparency, and increased levels of security [9]. The port digitalization is summarized in innovative digital technology, in digital solutions and in digital management [10]. Real-time information and digitalization provide efficient allocation of resources, as fleet management and asset optimization and can reduce management costs [9].

Investing in practices that increase the satisfaction of employees leads to building relationships and increasing motivation and organizational citizenship behavior [11]. Such practices include training and development, reward system, job analysis, recruitment and selection of personnel, employees' relationships, and employee empowerment and support [12–15]. Mira et al. (2019) found that a positive relationship exists between the human resources management of a port and employee performance and job satisfaction [11]. In a study at Dalian Port, employee satisfaction was determined by motivational and health factors [14]. Among these, the physical environment and working conditions, including port infrastructures, equipment, accessibility, technology, bureaucracy, and health and safety conditions, play a crucial role in influencing employee satisfaction [5]. Human resources practices applied on employees may enhance their skills, their knowledge, their synergies, their commitment and the subsequent outcomes for the organization.

3 Methodology

In this research, the selection of port stakeholder satisfaction criteria and subcriteria was guided by an extensive review of the relevant literature [16–18]. The satisfaction criteria were carefully chosen based on the robust findings of the literature concerning port stakeholder satisfaction. The criterion "Customer service" includes questions on service provided and interaction with port stakeholders. The "Main Procedures" criterion includes the main points of the Regulation that each port facility must apply for its protection. The "Equipment/Systems" criterion includes questions relative to the completeness of the systems used, their functionality and adequacy for handling a large volume of passengers or cargo. The "Security staff" criterion includes questions on training, skills and competencies of security personnel. The criterion of "Environmental working conditions" includes questions on working conditions that influence improving port operations and port management. Our survey sample was diverse, with 22% of the participants being women and 78% men. The range of working experience was also varied, with 22% having 6 to 10 years of experience, another 22% with 21 to 25 years, and 18.3% with 11 to 15 years. The satisfaction

survey results were based on the multicriteria model MUSA (Multicriteria Satisfaction Analysis). The Multicriteria Satisfaction Analysis (MUSA) method was used to measure port stakeholders' satisfaction. The method is an ordinal–regression-based approach used to assess a set of collective satisfaction functions so that the global satisfaction criterion becomes as consistent as possible with port stakeholder's judgments [19]]. This method inferred an additive collective value function Y* and a set of partial satisfaction (value) functions Xi*, given the port stakeholder's global satisfaction Y and partial satisfaction Xi according to the i-th criterion (ordinal scaling). The main research objective was to achieve the maximum consistency between the value function Y* and the port stakeholders' judgments Y. Based on the modeling of preference disaggregation approach [20, 21] the ordinal regression equation was termed as follows:

$$\begin{cases} Y^* = \sum_{i=1}^{n} b_i X_i^* \\ \sum_{i=1}^{n} b_i = 1 \end{cases} \quad (1)$$

where $\tilde{Y}^*$ represents the estimation of the global value function, n represents the number of criteria, bi is a positive weight of the i-th criterion, σ+ and σ− are the overestimation and the underestimation errors, respectively, and the value functions Y* and Xi are normalized in the interval [0,100]. The global and partial satisfaction Y* and Xi* are monotonic functions normalized in the interval [0,100]. Thus, in order to reduce the size of the mathematical program, removing the monotonicity constraints for Y* and Xi*, the following transformation equations were utilized:

$$\begin{cases} z_m = y^{*m+1} - y^{*m} \text{ for } m = 1, 2, \ldots, a-1 \\ w_{ik} = b_i(x_i^{*k+1} - x_i^{*k}) \text{for } k = 1, 2, \ldots, a_i - 1 \; k\alpha \; i = 1, 2, \ldots, n \end{cases} \quad (2)$$

where y*m is the value of the ym satisfaction level, xi*k is the value of the xik satisfaction level, and α and αi are the number of global and partial satisfaction levels. According to the aforementioned definitions and the assumptions, the basic estimation model can be written in alignment with the following linear program formulation:

Where M is the number of customers, n is the number of criteria, and xi*j, y*j are the j-th level on which variables Xi and Y were estimated.

$$
\begin{cases}
[\min]F = \sum_{j=1}^{M} \sigma_j^+ + \sigma_j^- \\
\text{under the constraints:} \\
\sum_{i=1}^{n} \sum_{k=1}^{t_{ji}-1} w_{ik} - \sum_{m=1}^{t_j-1} z_m - \sigma_j^+ + \sigma_j^- = 0 \quad \forall\, j = 1, 2, \ldots, M \\
\sum_{m=1}^{a-1} z_m = 100 \\
\sum_{i=1}^{n} \sum_{k=1}^{a_j-1} w_{ik} = 100 \\
z_m,\ w_{ik}, \sigma_j^+, \sigma_j^- \geq 0 \ \forall\, m, i, k, j
\end{cases}
\tag{3}
$$

4 Results

The results given by MUSA method showed that port stakeholders seem to be totally satisfied from the application of security code. Based on Fig. 1, the total stakeholders' satisfaction amounted to the high 89.12% scoring.

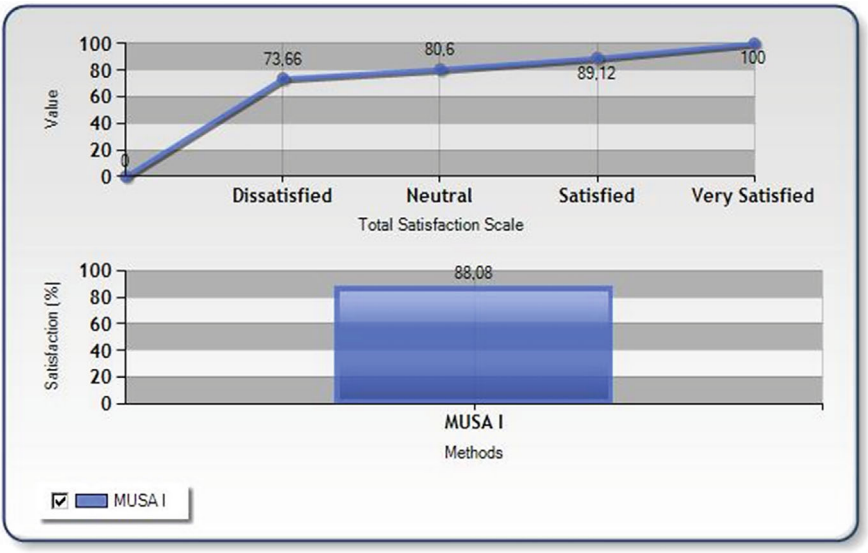


Fig. 1 Satisfaction function

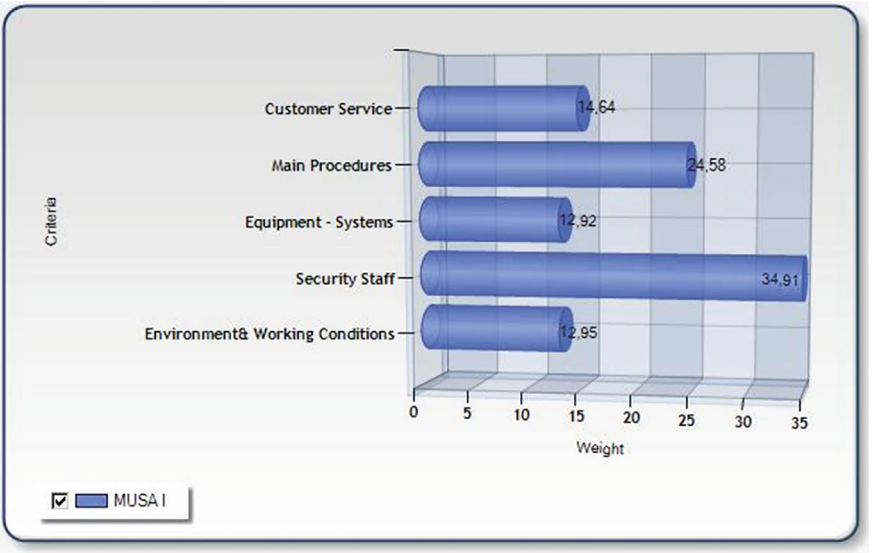


Fig. 2 Satisfaction criteria weights

Concerning the impact of the separate satisfaction criteria on the variable of total satisfaction, according to Fig. 2, the criterion of "Security Staff" sustained the greatest weight (34.91%), followed by the criteria of "Main Procedures" with a percentage of 24.58%, the "Customer Service" (14.64%), the "Environmental and working conditions" (12.95%) and finally the "Equipment-Systems" with a percentage of 12.92%.

Figure 3 pointed out that all of the survey criteria showed a fairly high satisfaction rate. The criterion of "Security Staff" sustained the greatest weight (93.3%), followed by the criteria of "Main Procedures" with a percentage of 90.99%, the "Customer Service" (82.91%), the "Environmental and working conditions" (77.92%) and finally the "Equipment-Systems" with a percentage of 77.78%.

Moreover, the action diagram of Fig. 4 denoted that none of the criteria fell in the action area (high importance-low performance). This means that there were no important criteria in which port stakeholders were dissatisfied. Furthermore, the criteria of Security Staff and Main Procedures in the leverage opportunity area, so these criteria may be considered as the factors offering the competitive advantage of the application of the ISPS Code, which should be further improved and promoted.

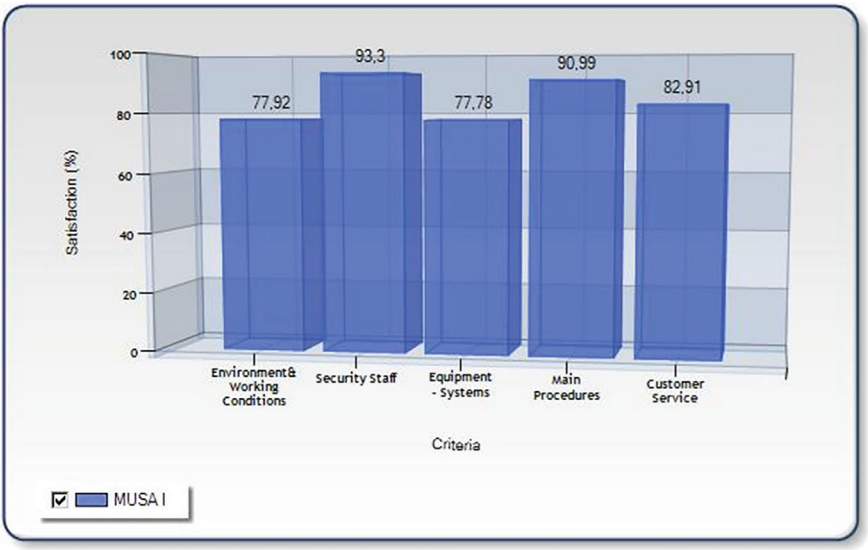


Fig. 3 Customer satisfaction with the main criteria

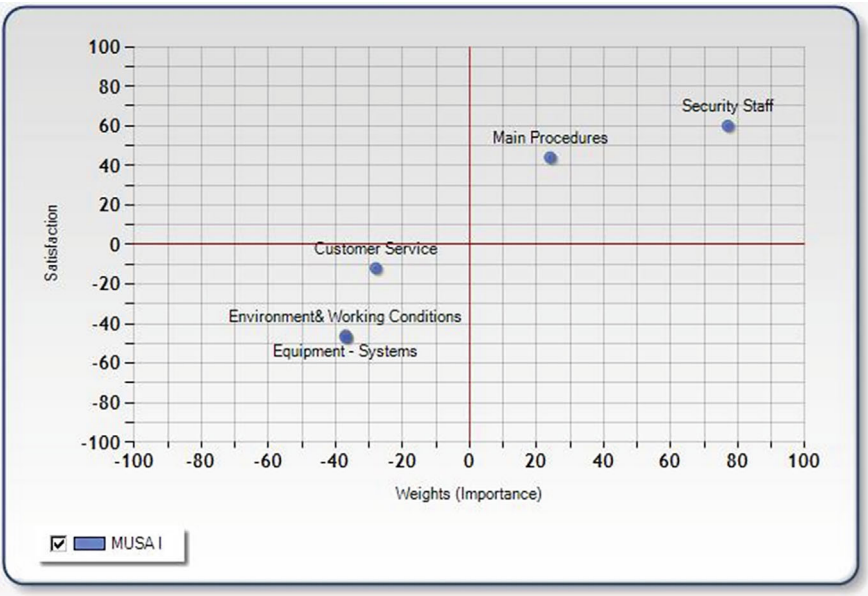


Fig. 4 Action diagram

5 Discussion and Conclusions

The services provided by a port depend on both international reality and European policies. The prospects of a country's port also depend on the national port policy and its method of implementation to develop or reorganize a port. The environment and the working conditions in a port are among the characteristics influencing the port operations and the resulting satisfaction for participating members. The implementation of training methods and skills upgrading strengthens technological structures and provides port operators, shipping agencies and shipping companies operational efficiency improvements, leading to improvements in their competitiveness [22]. The security staff is a competitive advantage for the port organization and his efficient management. A rare, inimitable and non-substitutable combination of security assets, skills and competencies of human resources offers to organization enhanced value [23]. ISPS is a framework to enhance the security of ships/vessels and the port facilities for better evaluation of risk. This research shed light on maritime business strategy and the satisfaction perceptions of port operators, shipping agencies and shipping companies about their compliance to regulations. Further research is needed to discover the cost-effectiveness of complying with safety regulations and the resulting benefits on business value.

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Emerging Trends and Future Directions in the Mediterranean Coastal Tourism: A Selective Literature Review

Sofia Gkarane, Chris Vassiliadis, Iordanis Kotzaivazoglou, Garyfallos Fragidis, and Vasiliki Vrana

Abstract The Mediterranean Sea region is characterized by its extensive coastline and diverse population. In the recent years, several human activities like coastal tourism are significantly transforming its landscape; apart from the rapid tourism growth, the region is under increased pressure from factors such as the climate change which lead to unsustainable development. Literature offers a variety of potential responses and measures to address these challenges. This study provides an overview of these trends and recommendations to contribute to the understanding of the complicated issues that Mediterranean coastal tourism faces. Specifically, through a selective literature review from 2015 to 2024, this study identifies and analyzes the most recent trends to shed light on the advancements of managing Mediterranean coastal tourism. The selected papers, totaling 35 in number, are reviewed, categorized and analyzed based on year of publication, emerging trends and future directions. The findings and the conceptual framework will serve as a valuable resource for future analysis and will also provide a decision-making guide for the industry in its efforts to promote sustainable tourism development in Mediterranean coastal destinations.

Keywords Mediterranean coastal tourism · Resilience · Sustainability

1 Introduction and Literature Review

The Mediterranean Sea region, extending 46,000 km of coastline and bordered by twenty-two countries across Europe, Asia and Africa, is home to about 505 million people; a significant portion lives in coastal cities [1]. However, only a small portion of this region is protected, primarily in the northern part, and even fewer areas are effectively managed [1]. Coastal environments are highly pressed both by several

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human activities, such as the developing tourism industry, fishing and energy development [1, 2] and by the climate change [3, 4]. In particular, coastal tourism in the Mediterranean is expanding recently and emerging trends and innovative solutions are reshaping its landscape [2]. Some trends lead to conflicts over resource overuse where sustainable management and policy measures appear as essential to preserve these resources [5]. Other trends highlight the importance of natural-based solutions (NBS) to address environmental pressures, like the climate change [6]. The aim of the current study is to gain a deeper understanding of these dynamics. Through a systematic review of recent literature, the emerging trends and proposed future directions to address the new challenges within the Mediterranean coastal region will be identified. Finally, a conceptual framework will be developed as a result of this review.

2 Methodology and Research Questions

This paper applies a literature review methodology to examine the current trends and future directions for the coastal tourism in the Mediterranean region. The review focuses on academic literature published between 2015 and 2024 to include the most recent updates based on well-known databases such as EBSCO, Emerald and Google Scholar. This selectivity was based on factors such as the relevance of the studies to Mediterranean coastal tourism and the credibility and impact of the publications; also, the variety of methodologies was considered so as to ensure the comprehensive review of the literature. The following research questions were explored: (a) What are the emerging trends in coastal tourism in the Mediterranean? (b) What future directions or recommendations are suggested for managing and enhancing Mediterranean coastal tourism? To answer these questions, several articles on coastal tourism in this region were gathered from academic databases; a content analysis approach was then used by searching the keywords “coastal tourism”, “Mediterranean tourism”, “trends in Mediterranean coastal tourism” and “challenges of coastal tourism”. Therefore, and due to the scope of the study, the current paper includes representative examples rather than an exhaustive list of all available literature. The selected papers have been categorized based on emerging trends and future directions/recommendations.

3 Findings and Discussion

Table 1 serves as a repository of insights drawn from scholarly contributions during the specified period. It presents a chronological overview of key research findings on Mediterranean coastal tourism and covers several aspects with the view to providing valuable insights into the general progress in the field.

Turning the focus towards addressing the questions that guide this study, we begin by examining the emerging trends in coastal tourism in the Mediterranean,

Table 1 Summary of Mediterranean coastal tourism research

Year (author)	Emerging trends	Future directions/Recommendations
2024 (Fernández-Macho et al.) [7]	High tourism specialization	Tailored policies based on the specialization index
2024 (Manfra et al.) [8]	Use of seagrass banquettes for beach-dune ecosystem benefits	Improved legislation & governance—Monitoring & evaluation of management options; education; network involving local communities and stakeholders
2024 (Parete et al.) [9]	Vulnerability of coastal tourism to climate impacts; Influence of climate change on aquaculture ecosystem	Develop protective and coastal management measures; Develop comprehensive adaptive approaches for coastal tourism
2024 (Sánchez-Arcill & Gracia) [10]	Increasing climatic and human pressures on coastal zones, NBS	Stakeholder cooperation on coastal sustainability; integrated coastal zone management
2024 (Zanin et al.) [11]	NBS are globally recognized but under-researched in the Mediterranean context	Further research on NBS, interdisciplinary collaboration
2023 (Chamizo-Nieto et al.) [12]	Correlation between tourism intensification and initiatives in coastal cities	Local administrations should use the indicator system to monitor and address overtourism
2023 (Foronda-Robles et. al) [13]	Importance of technological advances for sustainability; weaknesses in accessibility and governance	Wider application of SD-Coast, integration with other destination management tools, adaptation to different contexts
2023 (Lagarias & Stratigea) [14]	Rapid coastalization and urban sprawl driven by mass tourism; Unsustainable development, pressure on ecosystems	Develop data-driven, place-specific strategies to manage coastal urban sprawl and protect coastal ecosystems
2023 (León et al.) [3]	Tourists value adaptation measures like beach protection, heat wave amelioration, water supply, disease prevention	Implement adaptation measures based on tourist preferences to enhance destination resilience and competitiveness
2023 (Monioudi et al.) [15]	Increased beach erosion due to rising sea levels	Effective adaptation strategies, monitoring and evaluation, regulatory measures
2023 (Pintó et. al.) [16]	Urbanization and tourism negatively impact dune plant diversity	Long-term monitoring of dune systems

(continued)

Table 1 (continued)

Year (author)	Emerging trends	Future directions/Recommendations
2022 (El-Masry et al.) [17]	Climate change and sea-level rise significantly impact coastal tourism; Vulnerability to inundation; Shift in tourism peak seasons	Adaptation measures, coastal protection; stakeholder cooperation for coastal sustainability
2022 (Mejjad et al.) [1]	Environmental degradation and overexploitation of natural resources due to uncontrolled tourism development; Vulnerability to climate change	A comprehensive approach is needed including spatial management planning, sustainable tourism practices, collaboration among stakeholders, adapting to climate change impacts
2022 (Pinna et al.) [18]	Dune restoration as a tool for mitigating coastal erosion	Develop standardized methods to assess dune restoration potential
2022 (Sauer et al.) [6]	Importance of public perception in NBS implementation	Enhanced communication and education on climate change impacts and NBS benefits
2021 (Arabadzhyan et al.) [19]	Use of Impact Chains (IC) framework to analyze climate change (CC) impacts on coastal tourism	Apply IC framework to other tourism types (e.g., mountain, cultural, business); Investigate overlooked areas: infectious diseases, wildfires, cultural heritage degradation
2021 (Lukoseviciute & Panagopoulos) [20]	Increase in coastal tourism leading to environmental, social and cultural sustainability issues; Need for integrated beach management tools to address challenges	Improve beach facilities, use renewable energy sources, address issues of coastal erosion, overcrowding and ecosystem degradation, encourage recycling, increase educational activities about coastal ecosystems
2020 (Grelaud & Ziveri) [21]	Seasonal increase in marine litter due to tourism	Implement effective waste management strategies; raise public awareness
2020 (Coccossis & Koutsopoulou) [2]	Importance of adapting sustainability frameworks to specific destinations	Stakeholder engagement; governance systems for sustainable destination management
2020 (Samora-Arvela et al.) [4]	Potential for tourism diversification to enhance regional resilience	Promotion of alternative tourism activities; environmental and socioeconomic monitoring

(continued)

Table 1 (continued)

Year (author)	Emerging trends	Future directions/Recommendations
2019 (Niavis & Tsiotas) [22]	Identification of performance imbalances between eastern and western Mediterranean	Policymakers and destination managers to consider trade-offs between efficiency and effectiveness; Focus on qualitative aspects of destinations alongside quantitative measures; longitudinal studies for performance changes
2019 (Drius et al.) [5]	Overexploitation of resources leading to habitat degradation	Use of ecosystem service perspective for integrated coastal management, support for decision-makers, sustainable tourism practices
2019 (Ren et al.) [23]	Income level of tourist arrivals affects economic growth and environmental pollution differently across quantiles	Focus on attracting high-income tourists to boost economic development and reduce environmental pollution
2019 (Tovar-Sánchez et al.) [24]	Increased detection of sunscreen contaminants due to high tourism influx	Conduct scientific assessments of sunscreen impacts, develop eco-friendly products, and enhance wastewater treatment technologies
2018 (Candia et al.) [25]	Negative impacts of mass tourism on Mediterranean coastal destinations	Sustainable tourism action plans to manage tourist numbers and protect the environment
2018 (Pavón et al.) [26]	Privatization of water supply in tourist destinations	Explore alternative governance models (e.g., public–private partnerships)
2018 (Samora-Arvela et al.) [27]	Vulnerability of Mediterranean coastal tourism to climate change	Collaborative approach; green infrastructure; diversify tourism offerings
2017 (Cirer-Costa) [28]	Diverted tourism demand due to security risks in Southern/Eastern Mediterranean/effect of Brexit on tourism market	Address indirect effects of conflicts on tourism demand; consider market shifts due to geopolitical events; monitor long-term effects of Brexit on tourism market
2017 (Clavé & Wilson) [29]	Tourism destinations evolve through incremental changes rather than large shifts; Urbanization and tourism development are interlinked	Further exploration of path plasticity, integration of cultural and social factors; stakeholder involvement
2017 (Soto & Clavé) [30]	Temporary residences shape coastal tourism destinations	Spatial metrics and planning documents to analyze other tourism destination; Insights for planners and developers about the evolving expectations of residents and the impact on tourism-related urban development

(continued)

Table 1 (continued)

Year (author)	Emerging trends	Future directions/Recommendations
2016 (Garcia-Ayllon) [31]	Overcrowding and seasonality issues in coastal resorts; Impact of urban development on tourism product life cycle	Manage the life cycle of coastal resorts; avoid short-term planning strategies; ensure long-term sustainability
2016 (Papageorgiou) [32]	Growing importance of coastal and marine tourism, increasing conflicts among marine activities	Implement Marine Spatial Planning (MSP) to address tourism related impacts
2015 (García-Ayllón) [33]	Short-term focus on profitability over long-term sustainability, negative impacts of mass tourism	Long-term urban planning, diversification of tourism, promote deseasonalization and sustainable development
2015 (Klein et al.) [34]	Vulnerability of water resources to climate change and land-use changes	Continue monitoring water resources, develop adaptive strategies
2015 (Pinna et al.) [35]	Increasing human impacts on Mediterranean coastal dunes	Diversity indices for coastal dune assessment, monitor dune systems for changes, implement effective management strategies

which reveal a number of economic, social and environmental challenges. The most critical challenge is the climate change with rising sea levels, vulnerability, coastal erosion and inundation. Urbanization and tourism development impact the coastal dune systems leading to environmental degradation. The sustainability of Mediterranean coastal regions is threatened by the negative impacts of mass tourism, such as overcrowding and seasonality issues which may cause local community concerns, unsustainable development, marine litter and pressure on ecosystems. The implementation of natural-based solutions (NBS) has been emerging as a tool for addressing these challenges. Also, tourism diversification is identified as a potential strategy to enhance resilience in the areas. Several adaptation strategies should be introduced in order to mitigate the critical challenge of climate change. Sustainable tourism practices should be promoted; diversification of tourism offerings, resource efficiency enhancement and waste reduction are necessary to ensure long-term environmental and social sustainability. The successful implementation of these initiatives requires effective management and collaboration among stakeholders, including policymakers, tourism businesses, local communities and organizations. This collaboration should be supported by improved legislation and governance with continuous monitoring and evaluation to address the challenges. Finally, more education and information on the impacts of climate change along with the benefits of NBS solutions should be fostered for a more sustainable tourism industry. In Fig. 1, we

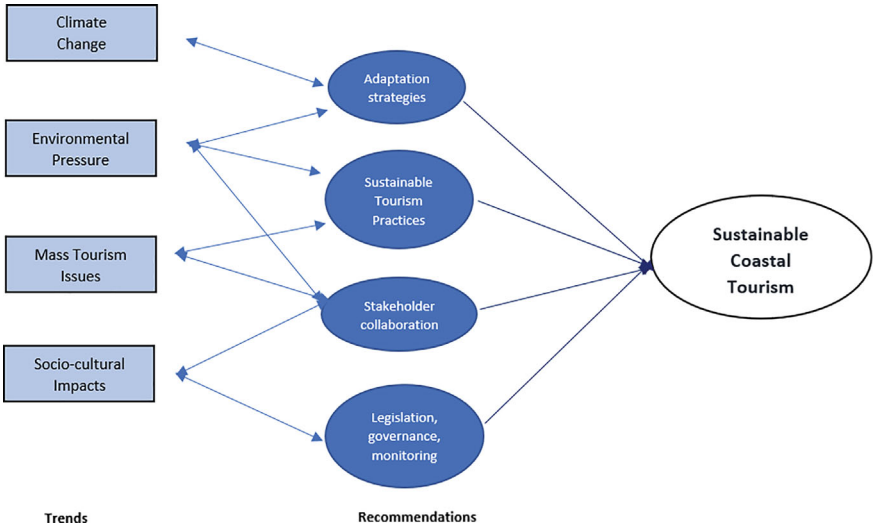


Fig. 1 A framework for sustainable Mediterranean coastal tourism

conceptualize a framework for synthesizing the key findings from recent research in Mediterranean coastal tourism.

4 Conclusion and Implications

This paper extends the current knowledge by providing a comprehensive overview of the most recent dynamics that shape sustainable Mediterranean coastal tourism. The region faces significant challenges including vulnerability, rapid tourism growth, climate change and environmental and social sustainability issues. These emerging trends necessitate the importance of adaptive measures [1, 3, 9, 15, 17, 34] and of stakeholder collaboration for sustainable tourism development [1, 2, 8, 10, 17, 27] through improved legislation and protective measures for coastal management [8, 9, 15, 34, 35]. The findings of this study have academic as well as practical implications. Firstly, they provide a comprehensive overview of the complicated issues and challenges that Mediterranean coastal tourism faces. Through the identification of the emerging trends and patterns, this paper highlights the need for a holistic approach that will consider economic, environmental and socio-cultural factors. Furthermore, this research provides the stakeholders of the Mediterranean coastal tourism industry with important insights that will help them make informed decisions and implement effective strategies so as to address the challenges and exploit emerging opportunities.

5 Limitations and Future Research Directions

The geographical focus of this study concentrates on the Mediterranean region and the findings may not be applicable to other coastal areas with different environmental and socio-cultural contexts. Therefore, it would be valuable to investigate the transferability of findings to different coastal areas. Another limitation is that this literature review was selective, focusing on a limited number of studies from 2015 to 2024; therefore, it may have excluded relevant research that could provide additional insights into Mediterranean coastal tourism. Furthermore, in-depth case studies and empirical investigations are needed to confirm the outcomes of the suggested framework in various Mediterranean coastal tourism destinations. Finally, more research is needed on the implementation and effectiveness of NBS in the Mediterranean context.

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Social Media Marketing Usage Effects on Micro- and Small-Sized Enterprises' Performance: The Mediating-Moderating Role of Innovation Capabilities



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Abstract As the internet and the social media (SM) have radically changed the way firms carry out their marketing activities, micro- and small-sized enterprises (MSEs) are trying to adopt these platforms in order to generate market intelligence, promote their products/services to larger audiences, and better manage the relationships with their customers. As such, the effective way of SM usage by MSEs presents great interest to both scholars and practitioners. The purpose of this study is to propose and empirically validate a model investigating the role of SM adoption (SMA) and innovation capabilities (IC) in supporting the improvement of MSE's performance (PRF). More particularly, the model assumes the mediating/moderating roles of IC in the relationship between SMA and PRF. This study used a structured questionnaire for data collection and the PLS-PM for the path analysis of 276 MSE' responses. The results indicated that IC mediates the impact of SMA on PRF and at the same time enhance the impact of SMA on PRF for MSE's with high IC. These findings have several implications for MSEs which are presented at the end of the study.

Keywords Social media marketing · Innovation capabilities · MSE's performance

1 Introduction

Micro- and small-sized enterprises (MSEs) are very important for the economic development of any country [11]. In Greece this type of companies account for about 99.4% of SMEs, and they are a crucial component of the economy as they play a significant role in job creation, innovation, and economic growth. Despite their importance, MSEs often face certain difficulties in digitally transform their marketing strategy, particularly in adopting and exploiting new technologies, like

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SM, in order to enhance their competitiveness and growth [18, 20, 21]. Almost 61% of Greek enterprises are using at least one type of social media, which is equal to the EU average adoption figures [8].

SM platforms can close the digital divide and provide MSEs with the tools they need to reach greater audience, manage the relationships with their customers, improve their IC, by extracting innovation related information, and improve their business performance [1, 23–25].

Although there are studies concerning the impact of SM usage on large- and midsized- enterprises' performance, research on the same subject concerning MSEs is comparatively limited. The purpose of this study is to explore the interplay between SM usage and IC in improving MSEs' PRF. More specifically, the study propose and empirically test a model in which IC mediates and moderates the impact of SMA on PRF.

The paper is structured in six sections. After the introduction, the second section provides the theoretical framework of the research and develops the model and the relevant research hypotheses. The third section describes the research methodology. The fourth section presents the results, and, finally, the fifth section deals with the discussion of findings, presents their theoretical and managerial implications and outlines the research limitations and directions for further research.

2 Conceptual Framework and Research Hypotheses

There are many efforts to define SM. According to Henderson and Bowley [13], SM is defined as "a *collaborative online applications and technologies that enable participation, connectivity, user-generated content, sharing of information and collaboration among a community of users*" (p. 239). Kaplan and Haenlein [15] define SM as "*a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content*" (p. 61). The most known types of SM are social networking sites (i.e., Facebook, LinkedIn, Twitter),image-based sites (i.e., Pinterest, Instagram, Snapchat) blogs, video and photo sharing platforms (YouTube),and product/services rating platforms (i.e., Booking; TripAdvisor) [18].

Based on the RBV theory, the competitiveness of a company depends on how efficiently use its resources to develop its capabilities that ensure the achievement of their objectives [4]. SM is considered as a resource capability that combines with other company's resources to increase its competitive advantage [25]. SM usage is very important in several business activities such as: R&D,operations and supply management, information accessibility, marketing planning and control, communication management, and customer acquisition/relationship management [2, 6, 21]. Previous studies suggest the SMA significantly affect companies' PRF [5, 9, 10, 21]. These studies suggest that as companies extend their SM usage, they increase the effectiveness of their marketing and CRM activities [10, 22, 24, 26].

IC is defined as the firm's "*ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders*" [17, p. 11]. Companies with extended IC are able to "*to integrate key capabilities and resources of their firm to successfully stimulate innovation*" [16, p. 380]. Companies investing in the differentiation strategy (i.e., developing unique/highly desirable products), they should have already developed the appropriate IC in order to achieve this objective [5]. Many previous research efforts empirically validated the effect of IC on PRF, as the development/delivery of superior value propositions is expected to attract/retain customers and increase business performance. On the other hand, SMA is considered as a driver for innovative performance by involving customers in the new product/service development process, product piloting and marketing communication [5, 7]. Ali et al. [3] validated the impact of SM usage on innovation performance through the development of potential and realized absorptive capacity, and Tajvidi and Karami [25] found an indirect effect of SM use on firm PRF through innovation and branding capabilities. Finally, as a technological capability, IC interacts with SMA to increase companies' PRF. SMA is a resource for MSEs that enhance business PRF. Based on the RBV theory, it is expected that, except from the direct effect of SMS on MSEs PRF, there exist interactions of MSA with other capabilities (i.e., marketing, innovation and supply chain management capabilities) toward creating competitive advantage [9, 10]. In this study, IC are deployed as an important capability that interacts with SMA to enhance MSEs' PRF [19]. Based on the above the following hypotheses are proposed:

H1: SMA positively affect MSEs' PRF
H2: SMA positively affect MSE's IC
H3: IC positively affect MSEs' PRF
H4: IC moderated the relationship between SMA and MSEs' PRF.

3 Research Methodology

The current research is an empirical study of Greek companies. Quantitative research, with a multi-industry sample, was preferred in order to enhance the generalization of the findings. An online survey was generated for data collection from a wide range of MSEs across the country. The scales used to measure the constructs included in the proposed model were retrieved from previous studies. In this study SMA were measured as a second-order construct reflecting three sub-dimensions. More specifically, the scales for the three dimensions for SMA: social media for marketing (SMM); customer relationship (CR) and information accessibility (IA) and MSEs' Performance (PRF) were retrieved from the study of Qalati et al. [21], while the scale of IC from the study of Borah et al. [5]. Moreover, several demographics (i.e., respondents' gender, age, educational background, position in the company) and firmographics (i.e., company size, SM level of utilization, SM marketing usage and budget allocated to SM usage) were also collected to determine the sample's profile.

One thousand (1.000), randomly selected MSEs from the GRECA database, were contacted via email, from September 2023 till December 2023, and 276 valid responses were received (response rate 27.6%). The method proposed by Armstrong and Overton (1977) was used to test whether there is nonresponse bias regarding early and late responses. The procedure shows no significant differences between early and late response and thus nonresponse bias is not a problem.

Partial least square path methodology with ADANCO 2.4 software [14] and SPSS 29 were used to assess measurement model and test the validity of the hypothesized relationships.

4 Results

The test of the measurement model involves the estimation of validity and reliability of first-order constructs. The results are shown in Table 1.

Following the guidelines for measurement model assessment provided by Hair et al. [12], the results support convergent validity as all factor loadings exceed 0.787. The reliability of all latent variables was assessed using the measures of Cronbach's alpha (CA) and composite reliability (CR). CA and CR values of all reflective measures, presented in Table 1, exceed 0.896 and 0.923 respectively, which are higher than the recommended cut-off point of 0.7, indicating scales' strong internal consistency. The average variance extracted (AVE), was used to assess convergent validity. AVE values for all constructs, presented in Table 1, exceed 0.705, which is much higher than the recommended cutoff value of 0.50, suggesting satisfactory convergent validity. Discriminant validity was assessed using the Fornell-Larker criterion. As shown in Table 2, the AVE value of all constructs is greater than the squared correlation between the construct and any other construct, indicating that the measurement model possesses adequate discriminant validity.

The repeated indicator approach was used to measure second-order constructs, where they are directly measured by using items of all its lower order factors [12]. In this study, SMA is modelled as second-order reflective constructs. CR and AVE measures and first-order constructs loadings of the SMA are used to assess SMA's reliability and convergent validity respectively. The results, presented in Table 3, indicate that CR and AVE for SMA equal 0.979 and 0.782 respectively which are well above the recommended thresholds of 0.70 and 0.50, respectively, and all loadings of the SMA on its three first-order constructs exceed 0.925. The above results provide evidence that SMA is a reliable second-order construct and reflect respondents' perception of their pre-specified three sub-dimensions (i.e., SMM, CR, IA).

The value of the coefficient of determination (R^2) measures the goodness of the structural model, and the level of significance of the path coefficients is used to test the validity of the hypothesized relationship among the constructs included into the proposed model [12]. The findings, depicted in Fig. 1, reveal a direct positive effect of SMA on PRF ($\beta = 0.726$,$p < 0.000$) and IC ($\beta = 0.656$; $p < 0.000$), which support the validity of H1 and H2. Moreover, the findings support the validity of H3,

Table 1 Items descriptives and first-order constructs' reliability and validity assessment

Construct	Indicator	MV	SD	Loadings
Social media for Marketing CA = 0.943; CR = 0.959; AVE = 0.854	SMM_1	4.395	1.718	0.886
	SMM_2	4.518	1.771	0.966
	SMM_3	5.022	1.849	0.922
	SMM_4	4.293	1.662	0.921
Customer Relationship CA = 0.958; CR = 0.966; AVE = 0.825	CR_1	4.322	1.896	0.911
	CR_2	4.457	1.797	0.910
	CR_3	4.072	1.941	0.922
	CR_4	4.333	1.908	0.902
	CR_5	4.134	2.034	0.917
	CR_6	4.721	2.016	0.890
Information Accessibility CA = 0.942; CR = 0.963; AVE = 0.896	IA_1	4.793	1.846	0.925
	IA_2	4.830	2.006	0.975
	IA_3	4.402	2.035	0.939
Innovation Capabilities CA = 0.896; CR = 0.923; AVE = 0.705	IC_1	4.678	1.582	0.842
	IC_2	3.460	1.376	0.787
	IC_3	4.377	1.605	0.880
	IC_4	3.638	1.620	0.833
	IC_5	3.645	1.657	0.854
Performance CA = 0.971; CR = 0.976; AVE = 0.851	PRF_1	3.946	1.729	0.932
	PRF_2	3.851	1.912	0.918
	PRF_3	3.975	1.900	0.930
	PRF_4	4.594	2.002	0.892
	PRF_5	3.920	1.980	0.947
	PRF_6	4.109	1.949	0.933
	PRF_7	4.333	1.891	0.904

Table 2 Discriminant validity assessment of first-order constructs

Construct	SMM	CR	IA	IC	PRF
SMM	*0.854*				
CR	0.721	*0.825*			
IA	0.731	0.721	*0.896*		
IC	0.473	0.355	0.382	*0.705*	
PRF	0.642	0.762	0.551	0.494	*0.851*

Note Squared correlations; AVE in the diagonal; social media for marketing (SMM); customer relationships (CR); information accessibility (IA); innovation capabilities (IC); MSEs' Performance (PRF)

Table 3 Second-order constructs' reliability and validity assessment

Second-order construct	First-order construct	Loadings	R^2
Social Media Adoption (CR = 0.979; AVE = 782)	Social Media Marketing	0.962^{***}	0.925
	Customer Relationship	0.975^{***}	0.950
	Information Accessibility	0.925^{***}	0.855

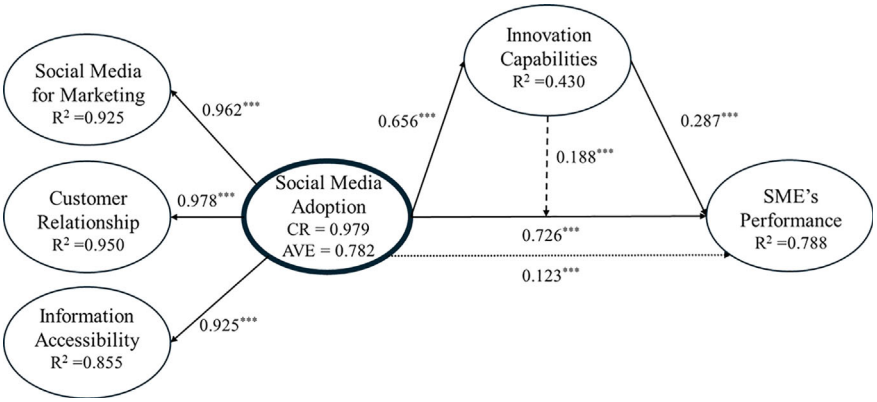


Fig. 1 Structural model results (*Note* $^{***}p < 0.000$)

as IC positively affects PRF ($\beta = 0.287$; $p < 0.000$). Combining the above results, the findings support the partial mediation of IC in the relationship between SMA and PRF, as the relevant indirect effect is statistically significant ($\beta = 0.123$; $p < 0.05$). Finally, IC also moderates the impact of SMA on PRF ($\beta = 0.188$; $p < 0.000$) supporting the validity of H4. The proposed model explains 43% and 78.8% of the variance of IC and PRF, respectively.

5 Discussion and Conclusions

The aim of this study was to propose and empirically validate a model in order to investigate the impact of SMA and IC on MSEs PRF in Greece. All proposed hypotheses were confirmed, and the model presented good explanatory power. This study extends the current literature regarding the role of IC in enhancing the impact of SMA on MSEs PRF, by considering its mediating and interaction effects with MSEs' SM usage. While previous studies have confirmed the partial mediation [5, 7] or the moderation [9, 10] effects of IC in the SMA-PRF link, this is the first study that extends the current literature by confirming the existence of both effects

simultaneously. These results indicate that the use of SM, although it is very important for MSEs, aiming to improve their business performance, is not sufficient. They pinpoint the significance of MSEs' IC as a major factor that contributes to MSEs' PRF. More specifically, IC enhances the potential of MSEs to achieve a sustainable PRF, as their investment in producing and transforming new ideas to value propositions which are superior from those of their competitors along with adoption of SM, will sustain their competitive advantage in the market.

Despite the important and novel contributions of this study, it also has some limitations that can be considered as directions for further research. First, the study concerns only Greek MSEs and thus can be culture specific. Future research can replicate this study using companies from other countries that are characterized by a different culture. Secondly, the findings of this study are based on a cross-sectional study which does not consider the constructs' temporal changes. A longitudinal study will resolve this limitation. Finally, this study investigates only the effects of IC. The inclusion of other capabilities such as marketing and supply-chain management capabilities, and the consideration of other contingency factors (i.e., environmental factors, business strategy, etc.) in future studies might provide more interesting results.

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Digital Arts Marketing for Cultural Consumption and the Strengthening of e-Cultural Tourism. Examples from Greece and Germany



Despoina Tsavdaridou, Eirini Papadaki, and Nikolaos Trihas

Abstract Digital marketing is a dynamic process with multiple benefits for organizations, highlighting a new consumer-centered economy. The objective of this cross-national study is to analyze the digital communication strategy of four cultural organizations in Greece and Germany and examine the impact of digital marketing on cultural consumption. The authors studied two visual arts museums and two performing arts organizations in each country: the National Opera and the National Gallery-Museum of Alexandros Soutsos in Greece, and the Old Opera Frankfurt and the Pinakotheken in Germany. Both qualitative and quantitative research tools were used for the analysis of the data. Through content analysis of websites and social media posts and interviews with the organizations' communications officers, effective digital communication strategies and areas for enhancement are identified. A comparative quantitative audience survey was also carried out using two digital questionnaires, one assigned to each country. Based on the findings of the research, it is evident that digital marketing via websites and social media is crucial for cultural management professionals in order to achieve effective two-way communication with the audience. Although the four cultural organizations studied have managed to significantly integrate the digital marketing into their communication strategy, there are still areas for improvement. The key to fully harnessing the potential of digital marketing as an interactive and community-building mechanism, targeting local residents and international audiences (e-cultural tourism) lies in attentively listening to the needs and desires of the audience.

Keywords Digital marketing · Cultural consumption · e-Cultural tourism

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1 Introduction

Cultural organizations, as agents for the creation, preservation, and promotion of cultural goods and services, have begun providing their audiences with digital content through various channels and forms as they seek to remain visible in an evolving and fiercely competitive cultural landscape. To this end, digital visibility provides an avenue for them to improve and diversify their cultural offerings, establish stronger connections with their target audiences, and fortify their reputation. Digital communication tactics have spawned a new digital culture that has democratized cultural capital, making it more accessible. This study aims to initiate a scientific debate on the impact of digital media on cultural consumption, examining how audiences perceive cultural digital content and their consumption patterns both in physical spaces and online.

2 Literature Review

Cultural units are being reborn in the new digital age, as the digital shift of museums is becoming a necessity [1], or rather a natural evolution serving the need for active participation and co-creation of cultural assets [2]. According to Hein [3], audiences should be at the core of cultural communication. Two-way communication processes have transformed cultural consumers into active participants, and even co-creators of cultural experiences, as audiences not only interact with, but also co-create cultural content [4]. It is essential to have a consistent digital connection with the regular audience every day [5, 6]. Engaging actions lead to higher website visits, a more attentive audience, and a decrease in negative online feedback.

The "openness" of museums to social media transcends cultural boundaries, contributes to the formation of online communities [7, 8], redefines cultural production processes [9], stimulates audience interest, and motivates audience participation [10, 11]. Social media serve both as tools for communication and cultural promotion and as a source of fresh perspectives from younger generations—the future cultural audiences. Facebook and Instagram appear to be the top picks for managers due to their incorporation of images, audio, and frequent updates (posts and stories). Websites are seen as another channel of communication between organizations and audiences. They should directly reflect the identity of the organization, clearly state its goals and target audiences, attract potential visitors, encouraging them to explore information, interact with digital exhibitions, and participate in online activities [12].

Understanding consumer behavior is a challenging task because of the many variables at play and how they interact with each other [13]. Deciding whether to document preferences and/or real engagement in cultural activities is one of the decisions we need to consider [14–16]. In the digital world, we can explore both the cultural items that are favored and those that are disliked by users. Additionally, it is important to differentiate between regular users and loyal followers, as well

as potential customers on social media [17]. This research investigates the digital communication approach of four cultural institutions, selected as case studies due to their distinctiveness within their sector, their well-known reputation, and their online visibility.

3 Research Methodology

Both qualitative and quantitative methodological tools were used for data collection. Interviews with executives from chosen organizations, analysis of digital presence, and audience survey in two countries provided insight into cultural communication process elements: organizations as senders, cultural messages, and public as receivers, co-producers, and redistributors. The research also utilized a quantitative approach, with an online questionnaire sent via e-mail to groups of people, either directly or indirectly connected to the cultural events in Greece and Germany. It was also uploaded on selected groups on social media related to culture and remained online for two months, from 19/11/2023 until 19/1/2024. 522 Greek and 135 German questionnaires were completed (convenient sample).

4 Data Analysis

4.1 The Digital Communication Strategy of the Greek National Opera and the Old Opera of Frankfurt

The communication strategy of the National Opera of Greece focuses on the visiting audience. It holds a significant competitive edge as the only one in the country, and its main asset is the unwavering commitment to its mission. Its focus is on maintaining ongoing communication with its audiences and drawing in a younger crowd. The Greek National Opera utilizes various digital platforms that work together effectively. The website and social media platforms offer a variety of videos, photos, and behind-the-scenes content that engage viewers and foster loyal audience groups. The website is easy to use, showing the organization's future productions. The logo of the Greek National Opera, at the top left side of the website, combines wavy white and blue lines, referring both to the Greek flag and the color of the Greek sea. The organization's name is seen next to the logo in Greek and English, in an attempt to embrace a wider, global audience [18]. The focus is on educating digital visitors and developing the audience, with links to the educational museum and virtual tours [19]. Visitors can easily search for tickets online by selecting a date at the bottom of the website. Information on SNFCC premises, dining areas, and building access can be found in the section entitled "Your visit". The online store, featuring a diverse range of memorabilia from the Greek National Opera's performances,

exhibitions and events, is user-friendly with content in two languages and creative visuals that engage visitors. Highlighting the effectiveness of the communication approach, Papadaki [20] notes that in 2021 the organization had 69,159 followers and 70,221 "likes", while in 2024 the Greek National Opera has exceeded 170,000 dedicated social media followers, with fully booked shows and an increase in both regular and occasional audience members, in addition to drawing in new attendees at its venues or via GNO-TV.

The Old Opera Frankfurt's communication strategy focuses on enhancing its identity, attracting new audiences with programs for youth, and showcasing exceptional performances by renowned musicians in opera, jazz, and pop genres [21]. All the communication channels utilized for this purpose are cutting-edge digital tools. The organization consistently uses the same profile and cover photos across all digital platforms, ensuring a cohesive visual representation that aids in brand recognition. Unlike the Greek National Opera, social media posts lack extensive and descriptive verbal content and are only provided in German. Nevertheless, it includes videos, photos, and behind-the-scenes content. The organization posts photos from musical rehearsals prior to the grand premiere, drawing in potential viewers and providing a preview of the show. Social media accounts (Facebook, Instagram, and YouTube) are prominently displayed on the website for easy access. Unfortunately, there is no physical or online store connected to the Frankfurt Opera website, hindering visitors from purchasing souvenirs. As of 20/9/2024, the Old Opera has 18,000 followers and 16,000 likes on their Facebook account, with posts being published almost daily since its creation on March 6, 2009. The organization's logo is used as the profile image to enhance the brand identity and align the website with social media accounts, while the cover image is the same as the one in the website's menu. Additionally, the organization posts brief videos (reels), pictures and details about the organization. Despite offering a range of programs for different audiences and being the sole opera house in Hessen, it has not effectively communicated its actions. Its content lacks appeal to non-native speakers and has minimal interaction with followers. Old Opera has only 25,000 followers across its three active social media accounts. Furthermore, the absence of a shop and dining place fails to entice guests to prolong their stay or revisit.

4.2 The Digital Communication Strategy of the National Gallery of Athens and the Pinakothek in Germany

The National Gallery of Athens' digital presence seeks to establish a consistent and identifiable online brand, convert non-audience members into audience members, fortify ties with current audience members (both regular and irregular), and build a network with the museum's "target groups". The museum enhances its brand, socio-cultural role and scientific status, while creating unique experiences for its audiences

through a variety of online services, including virtual tours, audio guides, e-mail, e-newsletters, various messages on social media, and e-ticketing. The National Gallery of Athens aims to reach various audience groups, as Ms. Sideridou, the organization's communication officer, noted during the interview we conducted on 12/12/2023. Families, especially children, are considered key audiences for the organization as they are seen as future audiences, worthy to invest on. To enhance visitors' experience, the National Gallery of Greece has established two contemporary dining spaces that can enrich and prolong time in the museum. The site provides information about the cafe and restaurant while including attractive images to appeal to a larger audience, as access to these areas is separate from the art gallery's permanent collection. The organization's social media have over 140,000 followers. Ms. Sideridou described the Gallery's social media content as informative, interactive and educational, often prompting the audience to share content. Posts are made 4 to 7 times a week. More interaction is noticed on emotional posts, such as a tribute to a popular artist, or posts with Call-To-Action prompts. Women make up the larger portion of the audience who engage through comments, reactions, or direct messages. The National Gallery's Facebook page is in complete alignment with the brand: the profile picture features the Gallery's logo, the cover photo showcases a panoramic view of the buildings (matching the website), and content is provided in both Greek and English.

The German Gallery is working on enhancing its online presence to better connect with its current audience, establish a strong digital identity, promote the P. logo on digital platforms, engage with new audiences and draw in visitors, given that Munich is a popular destination for tourists throughout the year. The website showcases the organization's identity by prominently featuring its name and logo, a capital letter P, on the top left, along with various images of current exhibitions, events, paintings, etc. The initial image the user encounters conveys a cozy, calm, and enjoyable atmosphere, making them feel as though they could be the next guest. Under the "Visit" section, users can organize their visit by accessing information on the six galleries, including their operating hours and pricing. When the user selects the checkbox for buying an e-ticket, he/she is redirected to a different page that handles the distribution of tickets for cultural events in Munich, taking a significant amount of time. Likewise, the user struggles to locate the physical and online store categories, as he/she needs to scroll to the end of the page in order to find the "shop" option, with limited details on the physical store and a link for the online store. It would be more appealing if there were multiple images showing various areas of the store, or customers buying items, to encourage the user to seek further details. Regrettably, the user cannot easily see the organization's social media icons either. The Pinakotheken has profiles on four different social media sites: Facebook, Instagram, LinkedIn and YouTube. Usually, they communicate informative content such as exhibition openings, branch programs, holiday anniversary messages, greetings, images of displayed paintings, and educational videos on creating and preserving artworks. There are typically 5 to 7 posts per week with a significant amount of "likes" but a smaller number of comments. In an effort to promote souvenir purchases, a post was uploaded right before Christmas, urging customers to consider gifts like an umbrella, a catalog, or a bag from the

museum. The text was in German, with brief explanations for each picture and the online store's website. The specific communication effectively connected the organization's cultural displays with the products available for purchase in the store. The text could also have been written in English and additional images could have been included.

5 Results and Discussion

According to the results of the research, digital marketing seems to have a limited impact on consumers' purchasing behavior at both physical and online stores of organizations, with 35.2% of Greek participants and 32.1% of Germans stating they seldom make purchases, and 33.5% and 23.6% respectively reporting never buying anything from these stores (see Tables 1 and 2). This phenomenon could be linked to the challenges users face in locating both the physical and online stores of the organizations. Also, it appears that audiences do not often visit the dining areas of cultural institutions. The majority of Greek participants (49.6%) have not yet visited a cultural organization's restaurant, with 23.2% saying they rarely go there. Regarding the audiences' interaction with the organizations' digital content, 27.2% of Greek viewers have experienced a "moderate" shift in their interaction with digital cultural content, while 21.5% have experienced a "significant" change. The results from the German sample indicate a slight clustering, with 41.8% choosing "moderately" and 26.1% choosing "much". Interestingly, only 18.8% of Greeks and 9.1% of Germans answered "not at all", suggesting that the health crisis led many participants to increase their use of social media and Web2 to access cultural content. A significant result of this study shows that a majority of participants (77.8% of Greeks and 73.3% of Germans), stated that the digital content provided by organizations has a moderate to strong influence on their future visits. Additionally, there is a rise in digital activity and usage during certain times such as holidays and days off.

6 Conclusion

Digital marketing motivates audiences to engage with cultural capital, as innovative digital content impacts the consumer's choice to interact with cultural products and/or services. Whenever individuals engage in cultural activities or buy cultural products, whether in person at cultural venues or online, they are looking for social, functional, and emotional rewards. Research shows that brand identity plays a key role in connecting and strengthening the connection between experiencing digital platforms of cultural organizations online and the desire to physically visit them. The National Opera of Greece successfully strengthened its online presence and improved its brand image, consistently utilizing digital marketing tools, communicating with the audience, sharing educational digital content, and inspiring future visits through creative

Table 1 Attendance and consumption habits of the Greek audience

Parameters	Never (%)	Rare (%)	Occasionally (%)	Often (%)	Very often (%)
Attendance frequency: NOofG	50.2	28.4	13.2	6.5	1.7
Attendance frequency: NGofG	34.3	27.6	20.5	11.7	5.9
Use of digital media: NOofG	50.4	19.5	14.2	10.7	5.2
Use of digital media: NGofG	37.5	18	18.8	17.4	8.2
Consumption (stores)	33.5	35.2	15.7	10.5	5
Dining at the premises	49.6	23.2	16.5	7.9	2.9

Table 2 Attendance and consumption habits of the German audience

Parameters	Never (%)	Rare (%)	Occasionally (%)	Often (%)	Very often (%)
Attendance frequency: OOinF	30.9	24.2	31.5	10.3	3
Attendance frequency: PinG	32.1	21.8	34.5	9.1	2.4
Use of digital media: OOinF	28.5	22.4	23	23	3
Use of digital media: PinG	32.1	19.4	20.6	24.2	3.6
Consumption of products (stores)	23.6	32.1	25.5	13.9	4.8
Dining at the premises	21.2	37	26.7	12.1	3

multimedia messages. Data suggests a need for the opera to increase extroversion, adjust pricing policies, promote catering and retail spaces, and involve users in the digital environment. The Old Opera in Frankfurt has ramped up its digital strategy, particularly in response to the health crisis, resulting in boosted follower and audience numbers as well as the development of new programs. Nevertheless, the website and social media content is primarily informative and only available in German, lacking creativity and educational value according to the audience. Additionally, the Opera's different digital media platforms do not work together effectively, indicating a need for improvements in the organization's digital strategy. The National Gallery of Greece has seen significant advantages from the digital communication strategy implemented in recent years, including a substantial growth in online followers, a reinforced brand identity, and the development of a connected community with loyal supporters. The research confirms the increased visibility of the Gallery due to the

enhanced website and the engaging cultural content shared. Despite having a strong physical presence and valuable artworks, the Pinakotheken's digital communication strategy, including user-friendly website and interaction with followers, has room for improvement according to research findings. A significant portion of the public rarely goes to venues or utilizes e-tickets and dining spaces. The digital marketing strategy of all four cultural institutions shows a clear aspiration for innovative and interactive audience engagement. Research data reveals a heavy reliance on platforms like Instagram and YouTube, which support video content, while the galleries in the study are just beginning to explore the potential of these media. Ultimately, German audiences are more inclined to dine at cultural organizations' venues, while Greek cultural organizations must make more effort to attract audiences to spend their free time at their premises. In conclusion, it is clear that institutions in Greece seem more outgoing, willing to embrace a global audience and provide a rich sensory experience. They are producing English content, aiming to establish a presence on the national tourism scene and ensuring all locations are ready to host their visitors. German institutions tend to be more introverted due to their content being solely in German and not very detailed, despite the fact that Frankfurt and Munich are popular tourist destinations welcoming hundreds of thousands of visitors annually. Finally, we must point out that in this study, the different culture of the countries in which the organizations under study are based, justifies to a certain extent the uneven sample gathered during the research. For this reason, we are not allowed to generalize our findings and we recommend repeating the research over a longer period of time in order to shed more light on the connection between digital marketing and cultural consumption.

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Strengthening Primary Healthcare: The Key to Achieving a Sustainable Healthcare System



Anastasios Sepetis and George Pierrakos

Abstract Primary healthcare (PHC) is essential for improving health outcomes and achieving the United Nations Sustainable Development Goals (SDGs), particularly Goal 3, which emphasizes universal health coverage and the importance of preventive care. PHC provides a broad range of services, including preventive, diagnostic, and therapeutic care at the local level. This approach helps manage health issues early, reducing the need for costly and complex interventions and improving overall population health. Moreover, strengthening primary healthcare is vital in the sustainable development era for improving health outcomes and achieving sustainable health care system, which focuses on universal coverage and preventive care. Emphasizing prevention and community engagement will lead to a more equitable and efficient sustainable healthcare system. The new challenges like funding gaps, workforce shortages, and better sector coordination can enhance PHC effectiveness. Key steps include investing in infrastructure, modernizing training, management of the energy and waste policies, and fostering partnerships with various stakeholders. The main scientific question that this paper investigates is the current situation for the implementation of sustainable development policies in primary health care and proposes the best solutions for a holistic sustainable health system.

Keywords Primary healthcare · Sustainable development goals · Sustainable primary healthcare · Sustainable healthcare system

1 Introduction

Healthcare is one of the fundamental components of social well-being, significantly impacting quality of life and economic development. In the context of contemporary challenges, such as the rise of chronic diseases, disparities in access to healthcare services, and environmental degradation, the need for strong and effective primary

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health care (PHC) is more urgent than ever. PHC, which includes preventive, diagnostic, and therapeutic services at the community level, forms the foundation of an efficient healthcare system that can absorb and manage the demands of modern societies [1].

Improving PHC is directly linked to achieving the Sustainable Development Goals (SDGs) established in 2015 by the United Nations General Assembly. The SDGs, with the aim of eradicating poverty, protecting the planet, and promoting prosperity for all by 2030, provide a strategic framework for the integrated approach to healthcare, environmental sustainability, and social justice. Their incorporation into health policies can enhance the overall quality of services, reduce inequalities, and promote sustainable development.

The need for restructuring and upgrading PHC arises from the observation that healthcare services, particularly in resource-limited countries, often focus excessively on secondary and tertiary services. This frequently leads to deficiencies in primary care, resulting in increased burden on secondary and tertiary services, higher costs, and diminished health outcomes. Improving PHC not only has the potential to deliver better healthcare for communities but also contributes to achieving the SDGs through strategies that promote sustainable development and social justice [2].

Countries that invest in improving PHC observe positive effects on multiple levels. Specifically, the provision of high-quality primary care services has been associated with reduced mortality rates, increased accessibility to care, and improved overall health indicators. PHC offers the opportunity to address health issues at an early stage, thereby reducing the need for expensive and extensive treatments later on. Additionally, strengthening PHC can contribute to resource savings, increased efficiency of environmental and social policies of the healthcare system, and an overall improvement in quality of life.

The Sustainable Development Goals, particularly SDG 3 related to health, are designed to enhance global healthcare through specific indicators and targets. They focus on issues such as reducing child mortality, combating epidemics, improving access to healthcare services, and supporting research for new treatments. Achieving these goals requires a combined approach and multi-dimensional strategies [3, 4].

For instance, addressing non-communicable diseases such as cardiovascular diseases and diabetes requires strategies for heathy environment and social protection system that include public education, promoting healthy lifestyles, and increasing accessibility to healthcare services. Combating epidemics like AIDS and malaria demands the development and implementation of effective vaccines and treatments, along with strategies for awareness and prevention [5].

Implementing SDG strategies that focus on sustainability, such as reducing environmental pollution and promoting sustainability, contributes to creating a healthy environment that supports overall health. Applying practices that reduce energy consumption and waste in healthcare facilities is a step towards sustainability, as environmental degradation directly affects population health [6]. Social justice and equality in healthcare are critical for achieving the SDGs. Inequities in access to healthcare services and the management of socio-economic determinants of health are key challenges. Implementing policies that ensure equitable access to healthcare

services and involving communities [7] in decision-making processes are crucial for ensuring social justice [8].

Effective governance is essential for implementing these policies. Enhancing transparency and accountability in healthcare resource management, the environmental pollution, involving stakeholders, and creating a strong regulatory framework can improve service quality and ensure fair resource distribution for sustainable development era [9].

The aim of this paper is to bring out the dimensions of the primary healthcare and sustainable development goals through the literature review and the search for existing implementation strategies and best proposals as well as through the research approach and analysis of existing situations, at national and international level for a holistic sustainable health care system.

2 Methodological Considerations

This article analyzes the global approach in terms of primary healthcare system in the sustainable development era for a holistic sustainable healthcare system. To address these issues, a strategic and comprehensive approach is required focusing on prevention helps to manage health issues before they become more severe, while sustainable use of resources ensures that current healthcare needs are met without compromising future generations. To achieve the above objectives, systematic peer review of the primary healthcare and sustainable development era papers on subjects was conducted related to the areas of Social and Legal Sciences and Health Sciences published in Web of Science, Scopus, MEDILE PubMed, Google scholar, and ProQuest (APA PsycInfo).

3 Sustainable Primary Healthcare Strategies

To enhance primary health care (PHC) and achieve the Sustainable Development Goals (SDGs), the World Health Organization (WHO) recommends strategies focused on universal health coverage, promoting healthy populations, gender responsiveness, and investing in data systems [10]. These strategies aim to improve access to health services, reduce risk factors, develop policies that address gender needs, and strengthen data collection and analysis. Implementing these strategies is crucial for addressing issues that limit the effectiveness of PHC and promoting more equitable and effective global healthcare [11].

Moreover, the SDGs include specific primary healthcare—related targets, such as eliminating all forms of malnutrition, reducing preventable neonatal and child deaths, and improving mental health [12]. Achieving these goals requires coordinated action across multiple areas, including prevention, early diagnosis, treatment, and strengthening health infrastructure. The WHO suggests four main strategies to enhance health

indicators. The first strategy is universal health coverage, which includes increasing access to health services by expanding human resources and removing financial and cultural barriers. The second strategy is promoting healthy populations, aiming to reduce exposure to risk factors such as pollution, alcohol consumption, and unsafe water through multi-sectoral policies. The third strategy is gender responsiveness, developing health policies that address the different needs of men and women, and ensuring equal opportunities and compensation. Finally, the fourth strategy focuses on investing in data systems to improve health data collection and analysis for better resource allocation and timely intervention.

However, the implementation of primary health care (PHC) and the achievement of Sustainable Development Goals (SDGs) in the health sector face four significant barriers. The first barrier is inadequate funding, as limited expenditure on primary health care reduces disease prevention capabilities and infrastructure [13]. Government spending on health is often low and insufficient, particularly in low- and middle-income countries. The second barrier is insufficient workforce capacity, with a lack of and poor distribution of health personnel limiting service effectiveness [14]. The third barrier is limited multi-sectoral action, as the lack of collaboration between sectors and inadequate training of health personnel in multi-sectoral skills hinder effective management of environmental, social and economic determinants of health. The fourth barrier is related to environmental degradation as well as the social and economic inequalities climate change caused to health care and lack of environmental public health and literacy restricts citizens' ability to prevent and manage their health, exacerbating health problems.

To overcome these challenges and achieve the goals of Primary Health Care (PHC) and the Sustainable Development Goals (SDGs) in the health sector, specific actions are recommended. The first action is to increase funding, by enhancing government expenditure on environmental public health for the reallocating resources towards PHC [15]. The second action focuses on rural areas, where supporting health care is crucial due to the remote location from hospitals. The third action involves updating staff training by upgrading education programs for environmental public health and sustainable health care system to enhance understanding of the importance of public interventions and collaboration the sustainable development goals with communities. The fourth action suggests strengthening multi-sectoral collaboration, by enhancing cooperation between various stakeholders to effectively manage environmental, social and economic factors affecting health. Finally, the fifth action focuses on improving environmental public health by enhancing PHC personnel's skills to manage platforms that promote community participation and health education for the sustainable health care system.

4 Holistic Strategy for Sustainable Health Care

Integrating sustainable development principles into primary health care aims to balance health care needs, environmental considerations, and societal benefits, offering solutions that are both economically viable and environmentally responsible [16]. The World Health Organization (WHO) advocates for the inclusion of environmental and social policies in national health care strategies [17, 18], emphasizing the need for a holistic approach that combines health with environmental protection and social well-being [19].

5 Enhancing Prevention and Sustainable Primary Health Care

Strengthening prevention and primary health care focuses on meeting the needs of citizens through public awareness and education for the environmental public health and sustainable health care system. Education on disease prevention and healthy living is crucial, as programs centered on nutrition, exercise, hygiene, and vaccinations can significantly reduce health risks. Promoting healthy environment, healthy lifestyles encourage balanced diets, regular exercise, and the avoidance of smoking and excessive alcohol consumption, which are essential for overall health. Promoting routine preventive check-ups and screenings contributes to early diagnosis and disease prevention, while investing in primary health services includes local environmental data (ex. environmental pollution data) and digital healthcare data. The development of primary health portfolios, through the creation of electronic or physical health records for patient monitoring and environmental health data, is also a critical step. Collaboration with local communities and their inclusion in the design and implementation of environmental healthcare programs addresses their specific needs, while supporting research and innovation for sustainable health care system fosters the development of new and improved prevention and primary care methods [20].

6 Developing Infrastructure in Rural and Remote Areas

Developing infrastructure in rural and remote areas aims to improve access to health care. Investing in health centers and medical facilities involves creating or upgrading health centers in these areas, while using mobile health units to provide care in hard-to-reach locations helps meet the needs of residents. Telemedicine is utilized for providing medical consultation and local environmental data and preventive care to remote areas. Training local health personnel to provide environmental public health in their communities is also important, as is supporting community health

workers to provide information and prevention services locally, thus strengthening local health structures. Enhancing transportation infrastructure improves access to health services, while networking and collaborating with local authorities and environmental and social NGOs to develop support networks for primary health care in remote areas contributes to the sustainable health care system [21].

7 Utilizing Sustainable Resources

The use of sustainable resources includes adopting energy-efficient measures, such as using energy-saving devices and lighting. Integrating green infrastructure into health care buildings improves energy efficiency and indoor environmental quality. Sustainable recycling and waste management, through the implementation of recycling systems and waste reduction practices, contributes to reducing the environmental footprint. Additionally, using environmentally friendly materials for the construction and maintenance of health care facilities ensures that the infrastructure remains sustainable and environmentally responsible [22].

8 Enhancing Local Participation and Collaboration

Enhancing local participation and collaboration involves combining knowledge among health professionals, environmental professionals, social professionals, patients, and local communities to develop more effective approaches for the sustainable development goals. Encouraging community involvement through meetings and public discussions allows citizens to actively participate in the design and evaluation of sustainable health system. Collaboration with local organizations and environmental and social NGOs, which have insight into local environmental and social needs and challenges, is crucial for understanding and addressing these needs. Establishing local health committees, comprising representatives from the community, public administration, and the local health sector, enhances service effectiveness. Strengthening health and social care education and environmental public health through local community health education programs and supporting the development of local health services that respond to community needs and incorporate residents' views contributes to effective sustainable health care management [23].

9 Discussion and Conclusion

Strengthening Primary Health Care (PHC) is crucial for creating a more effective, equitable, and sustainable health system. PHC goes beyond providing health services; it incorporates strategies related to prevention, diagnosis, and the effective management of chronic diseases. When combined with the Sustainable Development Goals (SDGs), PHC promotes a holistic approach that can lead to significantly improved health outcomes globally.

PHC addresses the basic health needs of the population and contributes to disease prevention and the promotion of healthy lifestyles. However, this approach must be integrated into broader SDG strategies, particularly SDG 3, which focuses on health and well-being. Achieving these goals involves reducing child mortality, combating diseases, and improving access to health services.

To meet these goals, investment in PHC is necessary to make it more accessible and effective. Developing and upgrading health infrastructure, especially in rural and remote areas, is critical. Additionally, implementing strategies that promote sustainability and environmental responsibility can enhance service quality and reduce environmental impacts. Strengthening PHC requires infrastructure development and the enhancement of human resources, which will contribute to better disease management and the provision of quality health services. However, challenges such as inadequate funding, environmental degradation the social inequalities, and limited multi-sectoral collaboration may restrict the effectiveness of PHC.

Funding is a critical issue. There is a need to increase resources allocated to PHC to improve infrastructure and strengthen services. This includes funding for the development of health centers in remote areas, training and supporting health professionals, and promoting innovative practices for a holistic sustainable health care system.

Effective implementation of PHC strategies also requires multi-sectoral collaboration. Health policy must integrate sustainability principles and community involvement, ensuring that local needs and priorities are addressed. Developing sustainable practices that combine prevention with service delivery is essential for achieving the sustainable development goals.

Furthermore, community involvement is pivotal for the success of PHC strategies in the sustainable health care system. Raising community awareness about healthcare, social care, environmental decaudation the climate change enhancing their participation in the development and implementation of health, social and environmental programs, and supporting local leadership are strategies that can contribute to the effective realization of these sustainable development goals.

In summary, strengthening PHC and implementing strategies that support the SDGs can lead to significant improvements in sustainable health care. Through increased funding, infrastructure development, enhancement of human resources, and community participation, PHC can contribute to creating a fairer, more effective, and sustainable health system.

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Tourists' Behavior Toward Hotel Service Robots: Application of the Big Five Personality Traits Framework



Georgios A. Deirmentzoglou

Abstract The accelerated pace of technological advancement has had a significant impact on the tourism and hospitality sectors, particularly with regard to the integration of service robots into hotel operations. These robots have the potential to enhance customer experiences, streamline operations, reduce costs, and provide novel services. Despite the growing interest in service robots, there is limited research examining the impact of personality on the intention to use such robots in the hospitality context. This study employs a survey on a convenient sample of 216 Generation Z hotel guests in Cyprus to investigate the influence of personality traits on their intention to utilize service robots. The results indicate that openness and conscientiousness have a significant positive effect on the intention to use service robots, while extraversion has a significant negative effect. The study offers significant managerial implications by illustrating the significance of considering individual differences in personality when formulating strategies for integrating service robots into hotel operations.

Keywords Service robots · Personality traits · Tourists' behavior

1 Introduction

The accelerated pace of technological advancement has had a profound impact on numerous sectors [1], including tourism and hospitality. One significant innovation is the incorporation of service robots into hotel operations [2], which has the potential to transform the manner in which services are provided to guests [3]. Service robots, equipped with sophisticated artificial intelligence (AI) and automation capabilities, can be utilized to enhance customer experiences, streamline operations, cost reductions, and offer novel services that traditional human staff may not provide [4, 5]. These robots can perform a diverse range of functions, including concierge services,

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room service, delivery, housekeeping, and information provision, thereby enhancing efficiency and guest satisfaction [6, 7].

In recent years, the deployment of service robots in hotels has attracted considerable interest from both practitioners and researchers. The adoption of such technology is affected by a number of factors, among which personality traits play a significant role. Personality is a significant determinant of an individual's behavior and their willingness to adopt new technologies [8, 9]. A growing body of research has investigated the influence of personality on the willingness to adopt and utilize novel technologies, including the metaverse for social interaction [10], autonomous vehicles [11], and artificial intelligence-powered voice-based assistants [12]. However, there is a significant gap in the literature with regard to the effect of personality on the intention to use service robots in hotels.

Building on the aforementioned studies on other disruptive technologies, the current research aims to make a contribution to the existing literature by providing empirical evidence on the role of personality in service robot adoption within the hospitality industry.

2 Literature Review

According to Wirtz et al. [5], service robots are "system-based autonomous and adaptable interfaces that interact, communicate and deliver service to an organization's customers". With regard to the service context, robots may be distinguished on the basis of three principal design attributes: representation, anthropomorphism, and task orientation. Service robots may manifest in a physical form or exist solely as virtual entities. Service robots can be created to resemble humans, a process known as anthropomorphism. Alternatively, they can be designed as non-humanoid robots, which are used for tasks such as cleaning. Additionally, they can perform cognitive-analytical tasks due to their computational capabilities or emotional-social tasks [5].

The exponential growth of AI and its associated technological advancement, including the emergence of service robots, are rapidly becoming a standard practice within the tourism and hospitality industries [13]. However, despite the advent of novel technologies in hospitality settings, such as the implementation of smart mirrors and facial recognition, the integration of physical robots remains in its infancy [14].

Robots in the hotel industry can offer a wide range of services such as front desk, housekeeping, room service [15], and cook [6] concierge services [16] with the skill to learn from past experience and adapt to new situations [17]. It is therefore very likely that service robots will replace human employees, even in the performance of sophisticated tasks that require high levels of analytical, cognitive, and empathetic abilities [18].

Although the development of technology in the tourism is certain, the factors responsible for the adoption of these technologies are being examined. The dominant frameworks of technology acceptance [19, 20] focus mainly on perceived usefulness, perceived ease of use and some demographics. However, these models do not consider individual differences that derive from personality, can be also a critical factor affecting behavior toward technology [8].

According to Robbins and Judge [21], personality is "the sum of ways in which an individual reacts to and interacts with others". Given that the elements of personality assist researchers in anticipating behavioral outcomes, there is a necessity for the development of theoretical frameworks and assessment instruments that can be utilized to classify and examine the various dimensions of personality [21]. The Big Five Personality Traits framework measures personality based on five dimensions: conscientiousness (a personality trait that encompasses responsibility, reliability and persistence), emotional stability (a personality trait that is characterized by calm, confidence, and security), extraversion (a personality trait that is linked to outgoingness and sociability), openness to experience (a personality trait that is linked to imagination and curiosity) and agreeableness (a personality trait that is characterized by kindness, cooperation, and trustworthiness) [22].

Previous research has used the Big Five personality trait framework to predict technology adoption behavior. McElroy et al. [23] examine the influence of personality on Internet use. The results suggest that extraversion and openness to experience are notable predictors of Internet use, with the latter personality trait also influencing online shopping behavior. In addition, Qu et al. [11] show that two personality traits, openness and extraversion, have a significant impact on the acceptance of self-driving cars. Finally, a recent study by Sowmya et al. [10] investigates factors that influence metaverse adoption and concludes that personality plays a significant role, with openness, conscientiousness, agreeableness, and emotional stability having a significant effect on the intention to use metaverse platforms for socializing. Based on the above, the following hypotheses are proposed (see Fig. 1):

H1: Conscientiousness (CON) has a significant effect on the intention to use service robots in hotels (IUR).
H2: Emotional stability (EMS) has a significant effect on the intention to use service robots in hotels (IUR).
H3: Extraversion (EXT) has a significant effect on the intention to use service robots in hotels (IUR).
H4: Openness to experience (OPN) has a significant effect on the intention to use service robots in hotels (IUR).
H5: Agreeableness (AGR) has a significant effect on the intention to use service robots in hotels (IUR).

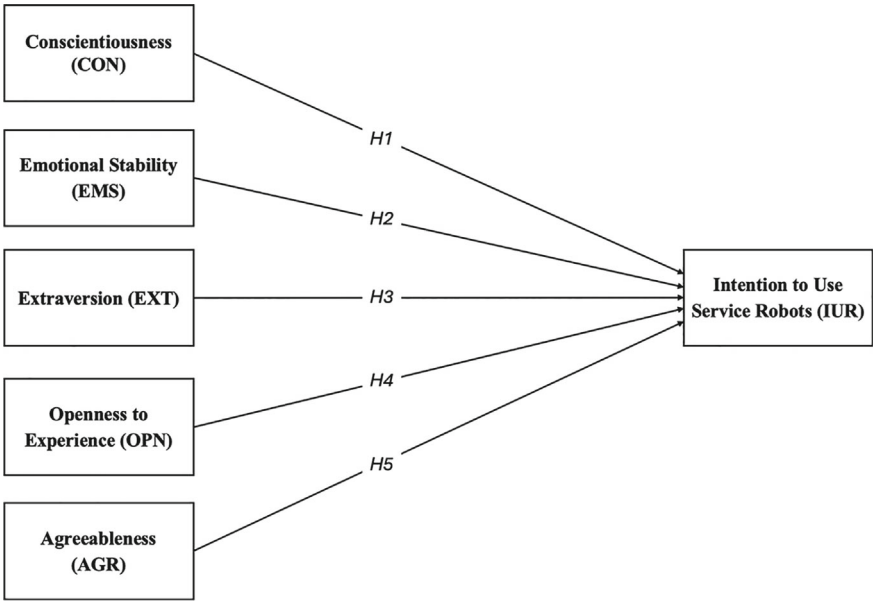


Fig. 1 Conceptual framework

3 Methodology

The objective of this study is to investigate the influence of personality traits on the intention to use service robots in the context of hotel accommodations. A survey was developed and distributed to Generation Z hotel guests in Cyprus. Generation Z was selected for investigation as they are more familiar with new technologies and concepts. A convenience sampling method was employed, and individuals who had stayed in a hotel in the past 12 months were eligible to participate in this research. An online self-administered questionnaire was provided to the participants for data collection. Prior to completing the questionnaire, a brief description of the services that robots may offer at hotels was provided to the participants.

The questionnaire comprised 16 additional items pertaining to the respondents' age and whether they had stayed at a hotel in the previous year. Three demographic questions were posed regarding gender (GND), education (EDU), and travel frequency (FRQ). Ten items were presented to assess personality traits, while three items were included to ascertain intention to use a service robot at a hotel. The items regarding personality were drawn from Gosling et al. [22] and comprised two items for each trait. Finally, intention to use a service robot was evaluated with three items from Ozturk et al. [24].

4 Findings

Among the total number of 216 participants, 95 (44%) were male and 121 (56%) were female. Regarding their education level, 59 (27%) have earned a high school diploma, 98 (45%) had a bachelor's degree, while 59 (27%) have a master's degree. In terms of frequency travel 60 (28%) participants travel once per year, 110 (51%) travel 2–3 times per year, 26 (12%) travel 4–5 times per year, while 20 (9%) participants travel more than 5 times per year.

A number of reliability and validity tests (see Table 1) were conducted to ascertain the suitability of the latent variables for further analysis, which was determined to be appropriate.

The correlation analysis (see Table 2) revealed that the independent variable IUR has a significant correlation with OPN ($r = 0.25$, $p < 0.001$), EXT ($r = –0.15$, $p < 0.05$) and CON ($r = 0.32$, $p < 0.001$).

To test the hypotheses, a multiple regression analysis was conducted using the independent variables (CON, OPN, and EXT) that have a significant correlation with IUR (see Table 3). The regression analysis demonstrated that the three independent variables exert a significant influence on IUR. In particular, there is a significant positive impact of CON ($\beta = 0.28$, $p < 0.001$) and OPN ($\beta = 0.21$, $p < 0.01$) on IUR. Conversely, EXT ($\beta = –0.13$, $p < 0.05$) has a significant negative impact. The aforementioned results demonstrate that H1, H3, and H4 are supported, whereas H2 and H5 are rejected.

Table 1 Factor loadings, CR, AVE, Cronbach's alpha, and square root of AVE

Variables	Items	Factor loadings	Composite reliability (CR)	Average variance extracted (AVE)	Cronbach's alpha	Square root of AVE
OPN	OPN1	0.82	0.80	0.67	0.80	0.82
	OPN2	0.82				
EXT	EXT1	0.85	0.84	0.72	0.84	0.85
	EXT2	0.85				
AGR	AGR1	0.78	0.76	0.61	0.75	0.78
	AGR2	0.78				
CON	CON1	0.84	0.83	0.71	0.83	0.84
	CON2	0.84				
EMS	EMS1	0.87	0.86	0.76	0.86	0.87
	EMS2	0.87				
IUR	IUR1	0.92	0.91	0.78	0.86	0.88
	IUR2	0.86				
	IUR3	0.86				

Table 2 Correlation matrix

Variables	IUR	OPN	EXT	AGR	CON	EMS	GND	FRQ	EDU
IUR	–								
OPN	0.25***	–							
EXT	–0.15*	–0.00	–						
AGR	0.09	0.15*	–0.09	–					
CON	0.32***	0.17*	–0.18**	0.14*	–				
EMS	–0.09	0.02	–0.04	0.08	0.11	–			
GND	0.01	0.00	0.12	0.05	0.04	–0.13	–		
FRQ	0.08	–0.03	0.15*	–0.15*	0.15*	0.12	–0.03	–	
EDU	0.11	–0.02	0.04	0.05	0.18**	–0.06	–0.05	0.25***	–

Note *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 3 Multiple regression analysis for IUR

Predictor	B	SE B	β	t	p
Intercept	1.58	0.50		3.13	0.002
CON	0.34	0.08	0.28	4.28	< 0.001
OPN	0.28	0.08	0.21	3.33	0.001
EXT	–0.15	0.07	–0.13	–2.03	0.044

$F = 14.37$, $p < 0.001$, $R^2 = 0.17$ and $VIF = 1.04$

5 Discussion and Conclusion

The purpose of this study was to investigate the role of personality on tourists' intention to use service robots in hotels. The results show that personality plays a significant role, with three of the five dimensions of the Big Five personality traits framework having a significant impact on tourists' intentions. In particular, conscientiousness and openness to experience have a significant positive impact on the intention to use service robots. Tourists who are highly imaginative and curious, as well as more organized, persistent, and responsible than others, are more likely to adopt new technologies and specifically to use service robots in hotels. This finding is consistent with the results of Sowmya et al. [10], who show that openness to experience and conscientiousness positively influence an individual's intention to use the metaverse in socializing. Moreover, the results of our analysis also indicate that extraversion has a significant negative impact on the intention to use service robots in hotels. Tourists who are less sociable than others are more likely to prefer using service robots in hotels because they may want to avoid human interaction.

The current study has significant theoretical implications as it extends personality and technology acceptance theories. Our findings contribute to the existing literature by extending the application of the Big Five personality traits framework to the

domain of technology adoption in the hospitality industry. In addition, the results highlight the importance of personality traits to user intention theories of new technology adoption. In addition to the theoretical implications, the study also offers practical implications. Hotels and service providers can take advantage of these findings by targeting specific personality types in their marketing strategies for service robots. In addition, hotels can use this research to inform staff training and help employees understand the different preferences of guests.

In addition to examining personality traits, future research can include cultural values [25, 26] in the conceptual framework, as culture may play an important role in technology adoption. Moreover, future research can examine how other variables affect the intention to use robots in hotels, such as tourists [27]. Finally, future research should examine the role of organizational culture [28] on the adoption of new technologies in the tourism industry and how energy issues [29] may influence hotel managers' decisions regarding automated services and guest perceptions.

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(Big) Data Driven Strategic Decision-Making in Overtourism Management



Maria Vrasida and Vasileios Vlaseros

Abstract Overtourism occurs when a destination exceeds its capacity to sustainably manage visitors: Overtourism has emerged as a significant challenge for numerous destinations worldwide, leading to detrimental effects on local communities, environments, cultures, and economies. How can one quantify the tipping point where tourism becomes unsustainable? Local, regional, and national authorities have implemented studies and policies aimed at mitigating overtourism, yet the challenge persists. The purpose of this paper is two-fold. First, we explore the transformative role of Big Data Analytics in the tourism and hospitality sectors as a powerful strategic tool for addressing overtourism. Big Data Analytics encompasses advanced techniques that streamline and interpret vast amounts of raw data, providing actionable insights that inform evidence-based decision-making. While predominantly applied in the fintech and information technology (IT), Big Data's potential in tourism is just beginning to be realized. Second, we examine the application of descriptive, diagnostic, predictive, and prescriptive analytics to quantify and manage the pressures of overtourism, offering a data-driven approach to mitigate its negative impacts. Potentials, implications and challenges of using big data analytics as a strategic decision-making tool are discussed with the use of relevant case studies. The research positions Big Data Analytics as a critical instrument in bridging the gap between overtourism and sustainable tourism management strategies. Destinations and DMOs could greatly benefit from the implementation of big data analytics not only as a tool to mitigate overtourism proactively, but also as a useful developmental tool that will allow them to prevent the negative impacts of overtourism proactively.

Keywords Overtourism · Big data analysis · Sustainable tourism

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1 Introduction

Overtourism has become a pressing issue globally, affecting both popular and emerging destinations. Overtourism refers to a situation where an excessive number of tourists overcrowd a destination, leading to negative consequences for the local community, environment, and visitor experience [1]. This issue threatens the sustainability of the destination as it puts pressure on resources, damages natural and cultural heritage, and greatly downgrades the overall experience of the tourists [2]. Even the economic sector, which is initially thought to be benefiting from the increased visitors' numbers, eventually suffers from overpricing of basic goods, real estate inflation, and loss of local economic power [3]. As tourism becomes increasingly data-rich with the advancement of digital technologies and extended use of cellphones and tablets, there is a growing opportunity to harness the power of big data analytics to manage overtourism more strategically and sustainably.

Strategic decision-making in tourism involves making informed choices to balance economic gains with social and environmental sustainability. In this context, big data analysis offers significant potential. By collecting and analyzing vast amounts of information from various sources such as social media, geolocation data, tourism platforms and more, stakeholders can gain valuable insights into tourist behavior, preferences, and movements. These insights enable decision-makers to implement proactive strategies to manage visitor flow, improve the quality of the tourist experience, and preserve the image of a destination [4].

The aim of this paper is to argue that big data analytics provide crucial insights that allow strategic decision-making to mitigate the negative impacts of overtourism. Using examples from European cities Barcelona and Venice, this paper demonstrates how big data has been successfully employed to enhance visitor management and maintain sustainability. Ultimately, the paper emphasizes the need for tourism managers to embrace data-driven approaches to future-proof their strategies and ensure the long-term resilience of tourism destinations.

2 Methodological Considerations

This paper employs a systematic literature review to examine the role of big data analytics in managing overtourism in popular destinations. A comprehensive search of peer-reviewed journals, conference papers, and industry reports was conducted using databases such as Scopus, Web of Science, and Google Scholar. Key search terms included "overtourism," "big data analytics," "tourism management," and "sustainable tourism." The selection criteria focused on studies published within the last 10 years that address overtourism, big data applications, and strategic decision-making. Selected sources were critically analyzed for insights on how big data can improve destination management and mitigate overtourism's negative impacts.

3 Understanding Overtourism and Its Impact

Overtourism is broadly defined as the excessive influx of tourists to a particular destination, surpassing the region's capacity to handle such numbers sustainably. The term became very popular as destinations worldwide started struggling with the negative consequences of increasing tourist arrivals [5]. It refers to the overcrowding of tourists in a way that leads to conflicts with local communities, price inflation, infrastructure degradation, and diminished visitor experiences [6]. A key driver of overtourism is the combination of cheaper air travel, the popularity of digital platforms like Airbnb, and the amplification of destinations through social media, leading to higher visitation rates at certain locations [1]. According to a report requested by the European Parliament's Committee on Transport and Tourism (TRAN), many cities such as Barcelona, Venice, and Dubrovnik are at the forefront of facing these challenges as the number of visitors has largely exceeded the carrying capacity of each destination [2].

3.1 Impacts on Sustainability

Overtourism poses significant threats to the sustainability of popular destinations, especially when popularity and visitation rates do not reflect the corresponding level of development. It exerts pressure on natural and cultural resources, resulting in environmental degradation and loss of authenticity [7]. For instance, coastal areas like Thailand's Maya Bay faced severe coral damage due to an influx of tourists, forcing the government to close the beach indefinitely to restore the marine ecosystem [8]. Additionally, overtourism often leads to increased waste generation, higher carbon emissions, and water scarcity in areas with limited resources [2].

Local communities in popular cities like Barcelona and Amsterdam have been protesting against the constant influx of visitors, citing issues like rising housing costs, noise pollution, and loss of cultural heritage [7]. These tensions have led to negative perceptions of tourists among locals, threatening the social fabric and causing friction between visitors and residents. Overuse of infrastructure, such as roads and public transport systems, further contributes to deteriorating living conditions, reducing the destination's ability to provide a sustainable and enjoyable experience for both locals and tourists [6].

3.2 Impact on Tourist Experience

Overtourism not only affects local communities but also degrades the quality of the tourist experience. When destinations become overcrowded, tourists often face long waiting times, lack of privacy, and restricted access to popular sites. This

overcrowding diminishes the overall quality of visits, causing dissatisfaction and potentially deterring repeated visitation [1]. Venice, which receives over 20 million tourists annually, has struggled to maintain the quality of its tourist experience due to severe overcrowding, resulting in negative reviews and increasing complaints about degraded service quality and diminished cultural value [9].

The negative feedback loop resulting from these experiences can significantly harm a destination's image. Dissatisfied visitors often share their experiences on social media platforms or travel review sites like TripAdvisor, leading to the spread of negative perceptions about the destination. Furthermore, studies indicate that overcrowding leads to decreased tourist spending and reduced satisfaction levels, directly affecting the economic sustainability of tourism-dependent destinations [2].

Overall, the unsustainable growth of tourism without proper management strategies can lead destinations to desertification. Therefore, strategic interventions leveraging tools like big data analytics are essential to mitigate the adverse impacts of overtourism on sustainability and visitor experiences.

4 Strategic Decision-Making in Overtourism Management

Strategic decision-making in tourism management is essential for maintaining the balance between tourism growth, economic benefits, and the sustainability of destinations. Tourism stakeholders, such as policymakers, destination managers, and local authorities, are tasked with making informed choices that optimize visitor experiences while preserving the integrity of local resources and communities [10].

Traditionally, strategic decision-making in tourism relied on historical data, stakeholder consultations, and qualitative feedback to create management plans. These approaches focused heavily on maximizing tourist arrivals and revenue, often without accounting for long-term impacts on the destination's sustainability or community well-being [11]. Destination managers would typically use visitor surveys, statistical reports, and expert opinions to understand tourist behaviors and preferences. However, these methods often provided limited insights and were unable to capture real-time changes in visitor trends and preferences, which is critical in addressing issues like overtourism [12].

In contrast, modern data-driven strategies harness the power of big data analytics to offer more precise and actionable insights into tourist behavior and trends. By utilizing data collected from social media platforms, geolocation services, online travel agencies, and other digital sources, stakeholders can gain a more holistic understanding of visitor patterns, demands, and sentiments [13]. This allows for more proactive and targeted interventions, such as visitor flow control, dynamic pricing, and demand forecasting, which can alleviate the negative impacts of overtourism while enhancing visitor experiences.

4.1 Potential of Big Data Analytics for the Tourism Industry

Big data analytics emerged as a vital tool in identifying and addressing overtourism trends. Through predictive analytics, sentiment analysis, and real-time monitoring, big data can offer strategic insights into tourist flows and preferences, enabling more informed decision-making [14]. For instance, real-time monitoring of geolocation data can help managers anticipate overcrowding in popular tourist sites and implement dynamic visitor management strategies, such as redirecting tourists to less-crowded areas or adjusting entry prices to control the flow [12].

Moreover, sentiment analysis of social media and online reviews can reveal the underlying perception of tourists, providing valuable insights into areas of improvement or potential dissatisfaction [15]. By continuously assessing these sentiments, destination managers can refine their marketing efforts, manage visitor expectations, and address complaints before they escalate into larger issues.

The adoption of big data-driven strategies marks a significant shift in tourism management, moving away from reactive approaches to proactive, data-informed decision-making. This transition enables destination managers to not only respond to overtourism but also forecast and prevent its occurrence by identifying early warning signs and taking timely corrective actions ([14]. As tourism dynamics continue to evolve, embracing big data analytics is critical to creating more resilient and sustainable tourism strategies.

5 Big Data Analytics as a Solution for Overtourism

Big data analytics refers to the process of gathering, processing, and analyzing large volumes of data to derive meaningful insights and inform strategic decision-making. This data, often characterized as "big" due to its protruded volume, velocity and variety, includes structured information like visitor demographics and unstructured data such as social media posts, reviews, and geolocation records [15]. In tourism, the scope of big data analytics is vast, encompassing aspects like visitor flow management, demand forecasting, sentiment analysis, and dynamic pricing [14]. By analyzing these data sources, tourism stakeholders can develop a deeper understanding of tourist behaviors and preferences, allowing for more effective and sustainable tourism management.

5.1 Case Studies of Different Types of Data Analytics

Big data analytics found multiple applications in addressing the challenges of overtourism. Cities in Europe such as Barcelona and Venice have been pioneers in leveraging big data to monitor and manage tourism. In Barcelona, big data from social

media and mobile apps is utilized to track tourist flows and predict peak visitation times [16]. This information enables city officials to implement crowd control measures, redirect tourists to less popular areas, and allocate resources more efficiently. For instance, using mobile data, the city identified areas of high tourist density and launched campaigns to promote less-crowded neighborhoods [17].

Similarly, Venice uses geolocation and IoT (Internet of Things) data to monitor the movements of tourists throughout the city. With sensors tracking visitor numbers in key areas, authorities can analyze and forecast tourist demand patterns, helping to prevent overcrowding at sensitive sites such as the Piazza San Marco [9]. These efforts highlight the transformative potential of big data in creating dynamic and responsive strategies for overtourism management.

Predictive Analytics for Proactive Management. Predictive analytics, a key component of big data analysis, allows tourism stakeholders to anticipate future trends and plan proactively. By analyzing historical data and real-time inputs, predictive models can forecast peak tourist seasons, emerging trends, and potential overcrowding issues [14]. For example, in Dubrovnik, a UNESCO World Heritage city, predictive analytics are employed to foresee visitor surges and adjust cruise ship schedules to prevent overcrowding in the old town [7].

Through predictive analytics, destination managers can develop contingency plans for high-demand periods, optimize staff allocations, and introduce restrictions to limit visitor numbers when necessary. These proactive measures help maintain a positive tourist experience and reduce the strain on local resources [16]. Moreover, predicting seasonal variations enables better marketing efforts to spread visitor arrivals more evenly throughout the year.

Sentiment Analysis for Perception Management. One of the most valuable applications of big data in tourism management is sentiment analysis. Sentiment analysis involves extracting opinions, emotions, and attitudes from online reviews, social media posts, and other digital sources to gauge tourists' perceptions and satisfaction levels [15]. For example, by analyzing TripAdvisor reviews and social media comments, destination managers can identify key issues that tourists face, such as overcrowded attractions, poor service quality, or environmental degradation [12].

Venice, has used sentiment analysis to understand visitors' opinions on issues like overcrowding and high costs. This feedback has been crucial in shaping policies and campaigns to improve visitor experiences and address common complaints [18].

Dynamic Pricing and Crowdsourcing for Visitor Diversion. Dynamic pricing is another innovative strategy facilitated by big data analytics. By analyzing visitor data and demand patterns, destinations can adjust entry prices to reflect real-time conditions and reduce overcrowding during peak seasons [14]. For example, amusement parks and cultural sites in several cities have experimented with variable pricing schemes that incentivize tourists to visit during off-peak times, thus easing congestion and enhancing the visitor experience [16].

Crowdsourcing, combined with big data, can also play a significant role in visitor diversion. By encouraging tourists to share real-time information about crowded sites or alternative destinations, crowdsourcing helps distribute visitors more evenly [15]. In Amsterdam, for example, a digital platform that aggregates visitor data and

real-time feedback allows tourists to discover less-crowded attractions and hidden gems, relieving pressure on the city's most popular sites [17].

6 Benefits and Challenges of Big Data in Tourism

The integration of big data analytics into tourism management offers numerous benefits that improve operational efficiency and visitor experiences. One of the key advantages is *real-time decision-making*, which enables tourism managers to make informed choices based on up-to-date information about tourist movements, preferences, and behaviors [14]. This capability is crucial in managing overtourism, as it allows for the dynamic allocation of resources, monitoring of crowd densities, and the adjustment of marketing efforts in response to changing conditions.

By analyzing data from online reviews, social media posts, and geolocation records, stakeholders can gain insights into tourist sentiments and pain points [15]. This feedback loop enables the implementation of targeted strategies that enhance service quality and overall satisfaction. With comprehensive data, destination managers can better distribute tourist flows across different sites and plan infrastructure investments to meet demand more effectively [16].

Despite its advantages, the use of big data analytics in tourism also presents several challenges. One of the primary concerns is *data privacy*. The collection and analysis of personal information from social media, mobile apps, and geolocation services raise ethical and legal issues, particularly with stringent data protection regulations like the General Data Protection Regulation (GDPR) [14]. Additionally, *data accuracy* poses another challenge, as the quality of insights derived from big data relies heavily on the accuracy and reliability of the data sources. Inaccurate data or biased algorithms can lead to misguided decision-making, undermining the effectiveness of management strategies [15].

7 Conclusion

In conclusion, overtourism poses significant challenges to the sustainability and integrity of popular tourist destinations. However, the integration of big data analytics into tourism management provides an essential tool for identifying and mitigating these issues. By enabling real-time monitoring, proactive management strategies, and improved visitor experience, big data empowers stakeholders to make informed decisions that balance economic growth with environmental and social sustainability. Case studies from cities like Barcelona and Venice, as well as Iceland's proactive approach, demonstrate the transformative potential of big data in addressing overtourism.

As tourism continues to grow globally, adopting data-driven approaches have become a necessity for targeted strategies that will ensure sustainable development

and resilience of destinations. It is crucial for policymakers, destination managers, and tourism stakeholders to invest in big data capabilities and embrace innovative solutions for addressing overtourism as a continuously growing challenge.

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Perception of Artificial Intelligence by Generation Z—Results of a Pilot Study in Poland

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Abstract Artificial intelligence (AI) is playing an increasingly important role in shaping the modern world, affecting a wide range of fields from industry to education and healthcare. Generation Z, defined as those born after 1995, grew up in an environment heavily saturated with technology, making their perceptions of artificial intelligence a particularly interesting subject of study. Unlike earlier generations, who viewed the introduction of new technologies as a process, members of Generation Z grew up in a world where digital technologies, including AI, are an integral part of everyday life. This means that their approach to AI is more pragmatic, but also often critical, especially in terms of its impact on society and the labor market. Young people in this group show greater sensitivity to ethical issues such as data protection and the dangers of algorithmic biases. This study is part of a broader study that aims to understand Generation Z's perception of artificial intelligence. It is a pilot study with a convenient sample of 125 young Poles that aims to add to the existing literature for the future development of the technology. Younger generations will increasingly determine the direction of AI development, as well as the legal and ethical regulations associated with it. Therefore, studying their opinions and attitudes toward AI can provide valuable information for researchers, policymakers, and technology companies that develop and implement AI systems.

Keywords Artificial intelligence · Generation Z · Poland

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1 Introduction and Theoretical Considerations

John McCarthy, regarded as the father of AI, defined AI in 1955 as the process of making a machine behave in a way that would be considered intelligent if performed by a human [1]. However, defining intelligence is far more complex. Howard Gardner's theory of multiple intelligences, including areas such as musicality and naturalism, highlights how human intelligence encompasses domains that are challenging to replicate in machines [2].

AI can be divided into four approaches: thinking like a human, behaving like a human, thinking rationally, and behaving rationally. Understanding human thought processes, a requirement for AI that "thinks like a human," remains elusive. In contrast, AI that mimics human behavior is more advanced, with some systems capable of passing the Turing Test in limited contexts [2]. However, AI systems that can engage in open-ended conversations or make rational decisions in ethical dilemmas, like those faced by autonomous vehicles, are still under development [3].

The development of AI spans several subfields, including robotics, speech recognition, natural language processing, and computer vision [2] [4]. As AI and automation advance, concerns about job displacement grow. While the image of robots replacing workers overnight is dramatic, automation is more likely to change the nature of work over time. The likelihood of job displacement depends on the uniqueness of the competencies required—tasks that rely on easily replicable skills are more susceptible to automation.

"Competency downgrading," where certain human skills become obsolete, has occurred throughout history and is accelerating with AI development. This shift raises concerns about income distribution. While productivity has increased, wages have not kept pace, particularly as business owners benefit from new technologies that enhance production capabilities [5] (Mosbah, 2020). The challenge now lies in ensuring equitable wealth distribution and addressing potential unemployment caused by AI-driven automation. The full consequences of these changes are yet to unfold. In conclusion, AI's impact on labor, productivity, and economic systems is profound. As technology continues to evolve, society must consider how to adapt to the shifts in work and wealth distribution it creates.

The subject of the study is the perception of artificial intelligence by representatives of Generation Z. Generation Z came into the world with widespread access to the Internet. Cutting-edge technologies such as high-speed, portable computers, game consoles and smartphones have accompanied this generation from an early age. For this reason, these devices are an integral part of their daily functioning. "Representatives of Generation Y have no difficulty using the Internet and new techniques, while Generation Z, on the other hand, is connected to the web 24 h a day" [6]. Family values and health in the broadest sense are less important to them compared to Generation Y, and far less important than Generation X. Despite their desire to earn, Generation Z values the value of a private life outside of work. Representatives of this generation, despite their fascination with new technology, do not underestimate the impact it has on the environment. They value natural and ecological products,

and often base their consumer decisions on informal communication channels, such as opinions or reviews posted on the Internet. Generation Z people often actively express their opinions or criticism. "The expression of this activity is not only the submission of opinions and comments on the offers and forms of activity of companies and other organizations, but such submission of proposals for changes in the offer, and even presentation of their own product concepts." In summary, they are curious people who, thanks to the efficient use of new technologies, have a great awareness of the processes and things of the world around them. They value their private time, which they like to devote to wide-ranging entertainment and pursuing their own dreams.

The study was concerned with examining how the surveyed Poles of Generation Z currently perceive, what concerns they have and how they perceive the development of AI and what they think about the future possible paths of development of this technology, its application in various industries both in everyday life and professional life.

2 Materials and Methods

The development of AI is inevitable, and its impact and the consequences of its operation may significantly affect how young Poles will function in the near future. Therefore, an analysis of this topic has been undertaken, and the main question for this pilot study is: How do representatives of Generation Z view artificial intelligence? What concerns do Generation Z representatives have about the current and future application of artificial intelligence? How do representatives of Generation Z view the future development of artificial intelligence? In what areas do representatives of Generation Z see the future development of artificial intelligence? The pilot study was conducted using a diagnostic survey method. The research tool in the study is a questionnaire, which was developed on the Google Forms platform. This questionnaire was prepared based on the analysis of the literature on the subject. The questionnaire consisted of 25 questions, while the first 4 questions were related to the age, gender, current work situation of the respondents as well as the size of their residence. A total of a convenient sample of 125 respondents took part in the survey. The results obtained were analyzed using Microsoft Excel.

3 Research Results

The gender distribution of respondents is fairly even, where 53.3% are men, 43.3% are women and the remaining 3.3% are those who preferred not to answer. The vast majority of respondents come from large cities with a population of more than 500,000, while the second largest group are those living in rural areas.

3.1 Generation Z's Perception of Artificial Intelligence

About a third of respondents say they rather understand the concept of artificial intelligence, while 21.7% of respondents understand the term well. Only 6.7% of respondents definitely do not understand the term.

The vast majority, 99%, of respondents have had contact with artificial intelligence in services in the form of voice assistants on call centers or chatbots, and it is noteworthy that more than 30% of respondents have rather negative feelings after such contact, and 43.3% declare rather neutral feelings. Only 1/5/ have positive and very positive feelings. Respondents also believe that about half (48.3%) of their current household duties could be performed by robots, 6.7% declare that all their duties could be automated, while 45% of respondents believe that only some of their duties could be taken care of by technology. Also, 1/3 of the respondents declare that the activities they performed at work could be performed by technological solutions. According to 40% of respondents, only some of their professional duties could be automated, while only 13.3% believe that their work could not be performed by a machine. The majority of respondents have a positive view of the use of artificial intelligence in the service of health. According to 43.3% of those surveyed, the use of intelligent solutions in this field can add a lot of value. 33.3% of those surveyed believe that the use of this technology at this point does not meet expectations, but will in the future. It is worth noting that only 8.3% of those surveyed believe that such solutions should not be used in health care.

3.2 Generation Z's Concerns About Current and Future Application of Artificial Intelligence

As can be seen, respondents' opinions were divided on the impact of smart home devices on their privacy. 16.7% of respondents believe that such devices definitely do not compromise their privacy, while only 10% believe that such technology poses a major threat to their privacy. Respondents, when asked about concerns about a hypothetical medical procedure performed by a smart robot that could save their lives in as many as 70% have some concerns, while they would take the necessary risks. 20% of respondents do not trust the technology enough to undergo such a procedure. In contrast, only 8.3% of respondents would have no concerns at all. According to 45% of those surveyed, replacing humans in hazardous work is definitely a good idea, while 31.7% think it is a rather good idea. On the other hand, 36.7% of respondents think that replacing a human being in repetitive work is definitely a good idea and 35% think it is a rather good idea. It is noteworthy that 1/3 of respondents believe that the aforementioned replacement of humans with machines will lead to high unemployment. However, 45% of the surveyed representatives of Generation Z consider such a change to be rather good. A large proportion of respondents, 41.7%, have mixed feelings about the safety of autonomous cars. 28.3% of respondents consider

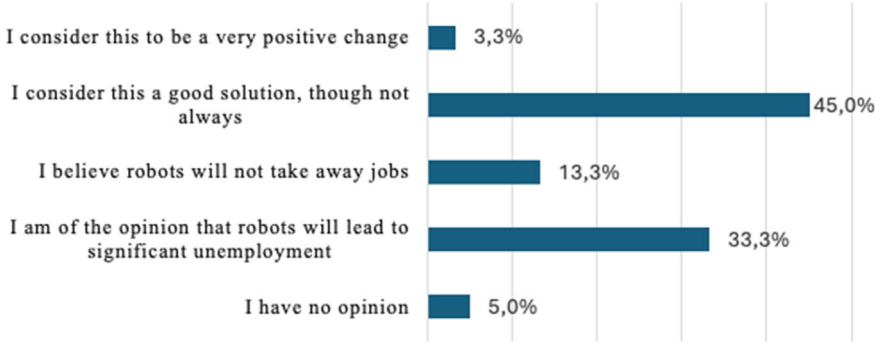


Fig. 1 Do you think that replacing humans with robots in dangerous or repetitive jobs is taking jobs away from people?

such cars rather safe, while only 8.3% consider them definitely dangerous. Touching again on the topic of privacy, 21.7% of respondents believe that the use of artificial intelligence-based solutions to personalize marketing content definitely violates their privacy, and according to 35% of respondents such solutions rather violate their privacy (Fig. 1).

It is noteworthy that altogether more than half of the surveyed representatives of Generation Z have privacy concerns in this zone. Continuing the consideration of privacy, as many as 36.7% of respondents believe that the use of artificial intelligence technology by state bodies, definitely results in increased surveillance of the citizen. 30% of respondents believe that such technology rather causes increased surveillance, while according to only 3.3% of respondents, it will not cause increased surveillance of citizens. It is worth noting what feelings respondents have about an intelligent, human-like humanoid robot. As can be seen, as many as 36.7% of respondents have neutral feelings about such a robot. For ¼ of respondents, the sight of such a robot rather causes fear, while only 13.3% are definitely not terrified by such a sight. According to 26.7% of respondents, people's information security is unlikely to decrease, while 13.3% consider the decrease in such security certain. A large part, as many as 40% of the surveyed representatives of Generation Z, consider it rather certain that digitization and artificial intelligence will make us dependent. It is noteworthy that the second largest group, as many as 35%, were respondents who think such dependence is certain (Fig. 2).

3.3 Generation Z's Perception of the Future Development of Artificial Intelligence

According to the respondents, the future development of artificial intelligence in as much as 45% will bring rather positive results. Respondents, 21.7% consider the

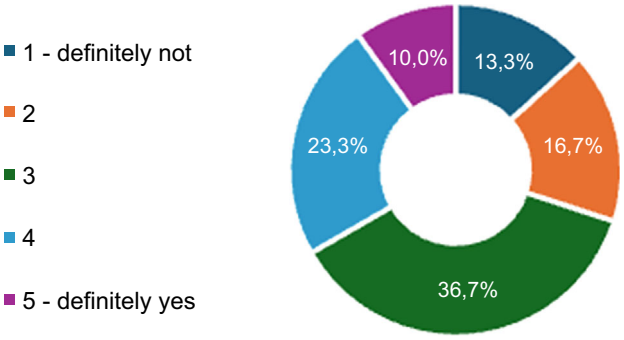


Fig. 2 Do humanoid robots endowed with artificial intelligence inspire fear in you?

future development of this technology to be definitely positive, while only 1.7% of respondents consider the development to be definitely negative. Nearly half (43.3%) of respondents would consider the possibility of having a truly intelligent robot in the future to help with daily household chores. As many as 28.3% of respondents were very interested in such a robot. Only 6.7% of respondents would definitely not want such a helper. According to more than half of the respondents (55%), smart machines will be a safe technology in the future, while they are not sure. It is worth noting that according to 31.7% of respondents such technology may be dangerous to humans, while 5% of respondents are sure that such technology poses a great danger to humans. Opinions were divided when respondents were asked whether they would be able to rest easy having a smart robot in their home in the future. 36.7% of respondents would rather not have concerns in such a situation. According to 38.3% of respondents, such a robot should be turned off while the human owner is sleeping.

An overwhelming majority—68.3%—of Generation Z representatives surveyed believe that there should definitely be legal classification and security rules for the use of artificial intelligence in the future. According to only 1.7% of respondents, there should be no such rules.

Respondents' opinions on the future use of intelligent robots for single people were divided. According to 36.7% of respondents, everyone should decide for themselves whether such robots should be used. According to 16.7% of respondents, such a robot is a very good idea for single people.

3.4 Generation Z's Perception of the Future Development of Artificial Intelligence in Various Fields

According to 30% of respondents, the development of artificial intelligence in military technologies is a rather good idea, while according to 21.7% it is a very good idea. Only 16.7% of respondents consider the development of this technology in the

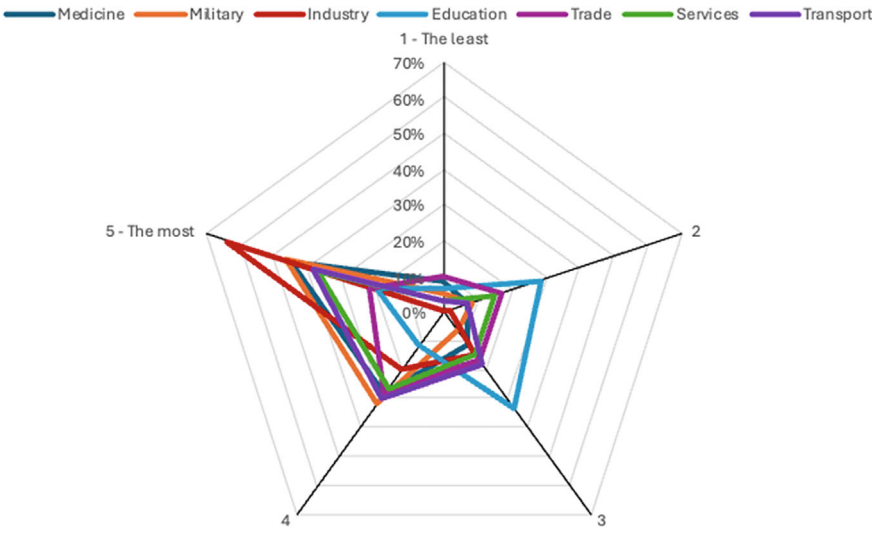


Fig. 3 In what areas do you think artificial intelligence will develop?

military a definitely bad idea. According to 63.3% of respondents, artificial intelligence technology will develop the most in the industrial field. According to 46.6% of respondents, the technology will also develop the most in the military field. In addition, according to 45% of respondents, the technology will develop the most in medicine. 28.3% of those surveyed were in favor of developing the technology to a small extent in education (Fig. 3).

4 Discussion and Conclusion

The results of a study conducted on Generation Z's perceptions of artificial intelligence (AI) indicate considerable complexity in the relationship between young people and digital technologies. Generation Z, raised in an environment saturated with technology, shows a pragmatic approach to AI, appreciating its convenience and potential in automating tasks, while expressing concerns about ethical and privacy issues. As research has shown [7], young users value tools such as virtual assistants, but awareness of the risks associated with algorithms and data collection remains high. This attitude can be interpreted as a result of Generation Z's greater understanding of technology, which recognizes both its benefits and potential negative consequences [8].

Respondents also highlighted issues related to the automation of work, which is reflected in their concerns about the future of the labor market and the possibility of machines replacing humans. The results are in line with predictions of increasing automation, with Generation Z showing an awareness of the risks of unemployment

that may result from the further expansion of AI [9]. Interestingly, while privacy concerns were significant, many respondents expressed positive attitudes toward AI, especially in terms of its potential applications in medicine and industry, indicating their hope for the benefits of the technology. The survey results show that Generation Z sees AI as a valuable tool that can bring significant benefits, both in the context of automating everyday tasks and in more advanced applications such as medicine and industry. On the other hand, their concerns about privacy and ethics, as well as the possible side effects associated with automation, underscore the need for further research into how the technology may affect future generations.

Generation Z's perception of artificial intelligence reveals a dualism between acceptance of the convenience that AI brings and concerns about its potential negative consequences. Young people appreciate the personalization of services and automation that AI can offer, but at the same time express concern about issues such as privacy, ethics and the technology's impact on the future of the job market [10, 11]. This indicates their advanced understanding of both the benefits and risks of AI development.

Despite these concerns, the majority of respondents express a positive attitude toward AI and would be willing to use its capabilities for their own convenience. Respondents also recognize the potential risks posed by a lack of trust in the technology, which could hinder its development and widespread use in the future. Generation Z sees AI as a valuable tool that can significantly improve daily life and many sectors of the economy. However, there is a need for further research and education to understand the full spectrum of their concerns and expectations of the technology. Future research should focus on how to bolster confidence in AI and develop an appropriate regulatory framework to reduce concerns about its further development.

This survey, while providing valuable information, is limited by its geographic and demographic coverage, and the representativeness of the results. It also does not include deeper methods of analysis, such as in-depth interviews, which could provide more detailed data. In addition, the results may be influenced by current trends and technological innovations, which may change in the future. It is advisable to conduct studies with broader coverage, including a variety of demographic groups. Longitudinal studies are also worth considering to better understand changing attitudes toward AI over time. A key direction should be to study the impact of regulations on confidence in AI and to analyze how technology education affects Generation Z's readiness to use modern technology.

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Dark Patterns on the Internet Under the EU Consumer Law



Odise Xhelita and Apostolos Manthos

Abstract This study is a literature review approach about dark patterns as unfair practices that manipulate consumer behavior as well as about the consumer's legal protection against them. The study engages with the question how we define dark patterns on digital interfaces, covering the whole range of relationships between consumers, service providers and/or traders. Special mention is also made to consumer data protection through the General Data Protection Regulation (GDPR), since many dark patterns include tricking consumers into giving their consent to the use of personal data in ways they might not want. Furthermore, this study engages with the enforceability of the actual EU acquis on dark patterns, considering how effective it is to ensure a balance between business and consumer interests. For a pattern to be prohibited as dark, there must be some kind of harm to consumers. Of particular importance is the infliction of financial loss, while other forms of harm may be privacy harm and time loss. The study notes that a dark pattern should be criticized regardless of the designer's intent. Finally, the study concludes that policy interests should be seen as a tool to empower legal enforcement on dark patterns. In this attempt basic principles should be reflected on codes of conduct such as the principle of transparency and the principle of good faith. The goal of this study is to connect regulators, policymakers and business world by discussing the legal implications of the use of dark patterns in the user interface design industry.

Keyword Dark patterns · EU consumer law · Data protection

1 Introduction: What Is a Dark Pattern

Dark Patterns, otherwise known as "deceptive designs", are used from user interface designers in order to drive sales and trap consumers into choices and purchases they did not intend to make. They appeal to the user's emotions through language or visual means to influence their actions or decisions. Research shows that "*consumers*

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interact with digital interfaces in a task-focused way, leading them to routinely ignore certain kinds of content" [1]. At the outset we must note that a balance between business and consumer interests is required. The key phrase is "digital market manipulation" [2]. Because of the latter a user of an interface is hindered from making an autonomous and informed choice. *"Cognitive behavioural manipulation"* is also a key phrase for establishing unacceptable risk in Artificial Intelligence (AI) systems [3]. According to Article 25(1) of the Regulation (EU) 2022/2065 (Digital Services Act, DSA) [4], which by the way only applies to online platforms, *"Providers of online platforms shall not design, organise or operate their online interfaces in a way that deceives or manipulates the recipients of their service or in a way that otherwise materially distorts or impairs the ability of the recipients of their service to make free and informed decisions"*. Respectively, California Consumer Privacy Act (CCPA) [5] defines a dark pattern in a similar way. Furthermore, the Organisation for Economic Co-operation and Development (OECD) Report on Dark Commercial Patterns (2022) notes that these patterns "*often deceive, coerce or manipulate consumers and are likely to cause direct or indirect consumer detriment in various ways, though it may be difficult or impossible to measure such detriment in many instances*" [6]. So, while the definitions may vary there are clearly some common elements: (a) design or architecture of the interface, (b) undermining of consumer's autonomy through material distort, impairment or subversion of choices or decision making, and (c) some kind of detriment or harm to users, i.e. users acting contrary to their true preferences, being inflicted financial damage, such as subscription traps, or losing some privacy.

Some examples of dark patterns include but are not limited to [6]: pre-checked options that are difficult for the consumer to deselect (e.g. in relation to additional insurance or charity charges at checkout); the unexpected automatic charging of a consumer for a service they had originally signed up for free or just for a trial; making you feel guilty about not wanting a subscription (confirm shaming); making it far more difficult and longer than necessary to exit the service (unsubscribe only by phone/mail); creating a sense of urgency by falsely claiming there's a limited supply of the product or the availability of the service; nagging, i.e. making repeated requests to make a choice usually unrelated to the intended purchase. Dark patterns also include tricking consumers into giving their consent to the use of personal data in ways they might not want. The aim of this study is to analyze legal response to dark patterns in the European Union, thereby trying to connect regulators, policymakers, and the business world.

2 Methodological Considerations

This is a literature review approach where well-known databases such as EBSO, emerald, google scholar, and HeinOnline were searched under keywords such as "Dark patterns", "EU consumer law", "Data protection", "Digital Services Act", "Unfair commercial practices", and "Artificial intelligence".

3 The Legal Framework in the EU

It should be noted from the beginning that dark patterns are at the intersection of Consumer Law, Digital Law, and Data Protection Law. To this respect, in the EU law, a pluralistic approach mixing strengths of different regimes may best address dark patterns [7].

Initially, consumer protection falls within the scope of the DSA, which prohibits dark patterns and applies to online platforms. The prohibition does not apply to practices already covered by the Unfair Commercial Practices Directive 2005/29/EC (UCPD) [8] and the General Data Protection Regulation 2016/679 (GDPR) [9]. Moreover, the Regulation (EU) 2022/1925 (Digital Markets Act, DMA) [10] poses obligations on very large online platforms ("gatekeepers") taking into account the need to combat fraudulent and deceptive commercial practices (Consideration 35, Articles 5, 6, and 13). However, the UCPD is fully applicable to any dark pattern deployed by traders who would be designated as "gatekeepers" under the DMA [11]. Dark patterns are also referred to in the Regulation (EU) 2024/1689 (Artificial Intelligence Act, AIA) [12]. The latter emphasizes the need for a human-centric approach to AI, considering that in executing tasks AI can be used to exert a significant influence on human behavior, including triggering cognitive manipulation through "dark patterns" which are likely to cause significant harm (Consideration 29 and 132, Article 5(1)) [13].

The UCPD [8] is also relevant since a dark pattern may be seen as an unfair commercial practice, misleading or even aggressive. Besides, dark patterns can intervene at different stages of a transaction, such as the advertising, pre-purchase, payment, or post-purchase stages [6]. The UCPD has adopted an econometric approach regarding the consumer rights, since its purpose is to protect the *economic* interests of consumer against the exposal to any harming practice, such as distorting the economic behavior with regard to a product (unfair practice), and/or misleading action and/or omissions (Articles 5(2)(b), 6 and 7). Furthermore, the Consumer Rights Directive 2011/83/EU (CRD) [14] also needs to be mentioned. Although there is no formal definition of dark patterns provided by the CRD, it appears that the CRD has provided the establishment of this notion. Relying on the principle of solidarity, considering also that the consumer law is a horizontal legislation (consumers-traders), CRD has legitimated public bodies, consumer and/or professional organizations (having a legitimate interest), to take action (under national law) before the courts or before the competent administrative bodies for the purposes of enforcements of consumer rights (Article 23).

Dark patterns are also likely to fall foul of the Unfair Contract Terms Directive 93/13/EEC (UCTD) [15] which imposes the contractual terms to be drafted in plain, intelligible language, favorable, by avoiding unfair contractual terms to the detriment of the consumer (Article 3(1), 5). The Commission indicated in its guidance document on the Directive that when assessing compliance with this requirement account should be taken of the "way in which contract terms are presented", including aspects such as "the clarity of the visual presentation, the size of the font, whether a contract

is structured in a reasonable way and whether important stipulations are given the prominence they deserve and are not hidden amongst other provisions" [11]. On the protection of personal data, the European Union's (EU) General Data Protection Regulation 2016/679 (GDPR) [9] has adopted principles, such as the transparency toward the data subject, whose consent should be clear, distinguishable from the other matters, in an intelligible and easily accessible form, using clear and plain language (Articles 5, 7, 12, 13, 34). Deceptive design patterns that might fall within GDPR could be categorized to overloading, skipping, stirring, obstructing, fickling, and/or being left in the dark. Concretely, overloading occurs when users are confronted with an avalanche/large quantity of requests, information, options, or possibilities in order to prompt them to share more data or unintentionally allow personal data processing against the expectations of data subject. Skipping occurs by designing the interface or "user journey" in such a way that users forget or do not think about all or some of the data protection aspects. Stirring affects the choice users would make by appealing to their emotions or using visual nudges. Obstructing occurs when users are prevented or blocked from updating or managing their data, making the action hard or impossible to achieve. Fickling occurs when the design of the interface is inconsistent and not clear, making it hard for users to navigate the different data protection control tools and to understand the purpose of the processing. Being left in the dark occurs when an interface is designed in a way to hide information or data protection control tools or to leave users unsure of how their data is processed and what kind of control they might have over it regarding the exercise of their right [16]. Finally, dark patterns may contravene the EU competition law (Article 102 of the Treaty on the Functioning of the European Union [17]) against the abuse of dominance, due to directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions, locking-in users and artificially strengthening its market position. Deceptive designs can weaken or distort the competitive process by shifting the incentive to compete on product attributes that benefit the consumer, such as quality and price, toward less relevant or beneficial attributes, such as salience [18, 19]. Furthermore, businesses may find it easier and cheaper to focus on harmful deceptive practices as a means of raising profits than improving their product by investing in research and development [20]. This weakens competition on the merits of products and may result in poorer quality, more expensive products, less efficient markets, and reduced trust [21].

4 Data Protection

As clearly pointed out above, among other goals dark patterns may also share the goal of getting consumers to give up more personal data than desired in favor of increasing business profit. On the other hand, the GDPR requires transactions to be conducted with appropriate levels of transparency or consent that may not be compatible with certain dark patterns [6]. As Ala Krinickytė aptly puts it, "*GDPR actually requires a fair yes/no choice, not crazy click marathons to reject cookies*" [22]. Compared to

DSA, for the GDPR it is immaterial whether the dark pattern takes place at the stage of making the choice or after the choice has been made.

5 Identifying an Illegitimate Dark Pattern

For a pattern to be prohibited as dark, there must be some kind of harm to consumers. The actual European consumer acquis has not adopted a theory of harm, capable of clarifying when individuals are harmed by unfair or otherwise unlawful commercial practices, and when harm can be expected, following the infringement of a legal provision [23]. Of particular importance is the infliction of financial loss, while other forms of harm may be privacy harm and time loss [6, 24]. However, privacy harm or time loss are more difficult to recognize as they are often not associated with tangible financial or physical harm [25]. But even where there is evidence of consumer detriment, some dark patterns may fall outside of the scope of existing regulatory frameworks [6]. The UCPD does not prohibit the *"common and legitimate advertising practice of making exaggerated statements or statements which are not meant to be taken literally"* (Art. 5 par. 3). So, a fine line must be drawn between "legitimate influence" and "illegal distortion" of the average consumer's behavior [26]. As aptly argued, *"Designs that typically operate with more subtle emotional manipulation, such as confirm-shaming patterns, are essentially legal"* [27]. Luguri and Strahilevitz have also noted that scarcity or popularity claims, if truthful, may provide useful information about the level of demand for offerings and hence should not be considered dark patterns [28].

For the assessment whether a pattern is "dark" or not, the perception of the average consumer is to be taken into account. The "average consumer" benchmark applies in the UCPD and it can also be proved useful in dark pattern cases, although it is disputed that, in some circumstances, some consumers really vulnerable to such practices may not meet the "average" standard [6, 29]. For example, older consumers, users with a lower educational level, and children are more prone to contradictory decisions—choices in relation to their real desires. Radesky notes that "*children have immature executive function, form imaginative relationships with characters, are susceptible to rewards, are indifferent or unfamiliar with data privacy, and lack of understanding of virtual currencies*" [30]. A new benchmark maybe should be laid down concerning the "digital consumer" (digital market oriented) where digital asymmetry plays a significant role. In digital markets there is a big range of services such as content-creation, social media, on line gaming, e-banking, insurance, etc. As Jabłonowska and Tagiuri aptly put it, *"for consumers, services are generally more complex to understand than products, because of their longer term nature, the reliance on performance by other persons, and the pervasive use of technologically advanced solutions in their provision"* [24]. They also emphasize that algorithmic decision making contributes to a *"more radical form of opacity than previously experienced in mass consumer markets"* [24]. Thus, a new benchmark for the "digital consumer" may be established.

6 Intention or Effect?

Dark patterns aren't always intentional, sometimes they can arise by accident as a result of poor design choices [1, 6]. Moreover, where interface design is automated through algorithmic optimization, there may not be a human designer actively implementing a dark pattern [1]. According to the UCPD there is no need to prove intention. Besides, the trader's intention is usually more difficult to determine than the architecture and the typical reaction of the average user (effect)—the latter being a normative standard that focuses on the effect of the practice [26]. As Raposo also admits, commenting on the AI Act, "*proving intentions not expressly stated (but only presumed from behaviours) is extremely difficult*" [3]. In conclusion, a dark pattern has to be criticized regardless of the designer's intent [6]. However, Jarovsky considers a practice's manipulative character, without a malicious element, would not alone suffice to classify it as a dark pattern [31]. In any case, one can more easily accept that we have a malicious conduct, when the service does not use just one "dark pattern" on a web page, but combines several in order to make them increasingly difficult for consumers to avoid [2].

7 Legal Enforcement, Ethics, and Conclusion

In the EU, relevant legal sources give guidance on how legal protection can be provided. Indicatively, according to the UCPD [8], persons, including competitors, or organizations may take legal action in order to be compensated or to have access to a price reduction or to terminate the contract; they may address to administrative authorities to decide on complaints; they may ask for the cessation of dark patterns as unfair commercial practices either with interim or with definitive effect; while Member States shall lay down penalties for infringements of national provisions adopted in application of this Directive taking into account various criteria such as the nature, gravity, scale and duration of the infringement etc. (Art. 11–13). In the USA, the Federal Trade Commission (FTC) ordered a video game company to pay 245 million dollars to consumers as refunds for using dark patterns to trick users (mainly children) into making in-game purchases [32]. Class actions may also empower enforcement of EU consumer law concerning dark patterns.

Furthermore, it is argued that *"contractual consent secured* via *pernicious forms of dark patterns or other deceptive designs should be deemed invalid as a matter of law"* [28, 33]. The ECJ in a case concerning non-transparent clauses in insurance contracts (ECJ C-208/21) found that the UCPD *"does not preclude an interpretation of national law which confers on a consumer who has concluded a contract as a result of an unfair commercial practice on the part of a trader the right to seek the annulment of that contract"* [34]. However, each country has its own contract law rules on the validity of contracts. In Greece, for example, a victim of a misleading

or aggressive practice may have the right to cancel the contract due to fraud or threat (Civil Code 140 et seq.) [34].

On the other hand, although technology usually precedes law, preventive measures should be preferred. For example, special provisions may regulate subscription traps through easy cancelation mechanisms (such as the Fair Consumer Contract Act in Germany [6, 35]). In this context, self-regulation may also be a solution, since many times the consumer suffers minimal loss and may not be eager to report a dark pattern or take legal action. But businesses have shown that their priority is profit so they may be reluctant to adopt codes of conduct. However it should be noted that *"dark patterns can undermine users' trust in digital markets and affect the credibility of companies who engage in fair practices"* [27]. The DSA encourages the drawing up of voluntary codes of conduct at Union level (Art. 46 par. 1).

A design of interface must take into account the interests of the user and how it supports their ability both to access information but also to exercise their own choices and control around decision making. In this context ethical design standards should be adopted. Stemler, Perry, and Haugh have proposed an ethical code to address dark patterns [36]. Policy interests should be seen as a tool to empower legal enforcement [6]. In this attempt basic principles should be reflected on codes of conduct such as the principle of transparency and the principle of good faith.

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The Function of Small and Medium-Sized Enterprises (SME) During Turbulent Periods

Teresa Piecuch and Katarzyna Chudy-Laskowska

Abstract The global health crisis and the war in Ukraine were unprecedented phenomena. They affected everyone around the world, brutally hit the economy, enterprises, and industries. The main objective of the study was to identify the impact of the pandemic and the war in Ukraine on SME sector companies in Poland, to present the ways in which these companies cope in the pandemic crisis, but also to highlight how companies behave in turbulent periods. In order to achieve this, a systematic review of the literature was carried out using the diagnostic survey method. 349 small and medium-sized enterprises were surveyed in the Podkarpackie Voivodeship, Poland which is a border region where the effects of the conflict in Ukraine were felt particularly strongly. The analyses showed that the pandemic radically changed the economic conditions, became a source of many threats, especially for SME sector, and forced the development (often on an ongoing basis, ad hoc) of completely new business models. For the vast majority of companies, it was a huge challenge that they were unable to cope with. The pandemic was a source of new opportunities for development. The study also indicated the problems in the functioning of SME sector companies during the war in Ukraine. Entrepreneurs slowly began to cope with the post-pandemic situation, their companies were starting to get back on track when further problems appeared with the war. Results point to the need to carry out further, detailed research on the impact of the war in Ukraine on SME in the Podkarpackie Voivodeship.

Keyword Crisis · Pandemic · SMEs

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1 Literature Review

A crisis is an economic phenomenon, which is manifested by, for instance, an economic recession or economic slowdown. It brings with it a number of economic and social consequences. It not only destroys economic potential and eliminates weak entities from the market, but also destroys many values that create the socio-economic reality [1]. Crises have become an integral part of the modern economy. Predicting their occurrence is becoming increasingly difficult (and often impossible) considering the fact that the factors causing them are not only economic in nature—contemporary crises are hybrid [2]. Over the years, a number of crises have taken place in the world economy. The crises of the nineteenth century were mainly commodity-related. They were evidence of the overheating of the economy and its saturation with the money supply. In the twentieth century, financial factors played a significant role in the emergence of crises. Crises in the twenty-first century are proof that their sources do not lie solely in the economy, that they can be a combination of both economic and non-economic factors of different origins, and can even be random [2]. When analyzing only a few decades of the twenty-first century, several significant crises with very serious consequences took place during this time [3]. In the first decade, the financial crisis began and although it was triggered in the United States, in the conditions of globalization it very quickly spread to other markets [1, 4]. It caused a drastic drop in demand for goods and services, tightened the credit conditions for companies [4]. In 2011–2012, there was an economic slowdown resulting from the economic problems of EU countries struggling with the consequences of the debt crisis in the eurozone. Declines in production and a decrease in company revenues were recorded [5]. Since the beginning of 2020, the world has been gripped by the crisis caused by the COVID-19 pandemic. These were extreme conditions for everyone, including businesses, especially SMEs [6]. Many of them were forced to cease operations [7]. When the economy slows down or even literally stops [8] (which happened during the lockdown), many business connections temporarily cease or are even severed [9]. The International Monetary Fund has assessed the global economic crisis caused by the pandemic as the worst since the crisis of the 1930s [10, 11]. It has led to millions of people losing their jobs and many families falling into poverty. It has increased global inequalities and exposed the weaknesses of many governments [12].

The pandemic crisis was different from others [13]. Many experts call it a metaphorical *black swan*, a phenomenon that is unexpected, surprising, unpredictable, improbable, of great significance and very severe consequences, radically changing the entire environment—the economic, military, political, social environment [6, 14, 15]. The pandemic was a time when all the components of the VUCA world –(volatility, uncertainty, complexity, ambiguity) occurred [16]. These were extremely difficult conditions of global scope, which shook the entire world economy [17], increasing the risk of functioning. Enterprises struggled with many overlapping challenges of a diverse nature, trying to balance on the line of survival and success [16, 18]. Many companies lost their source of income, many went bankrupt [19], millions of jobs around the world were threatened [9], and entrepreneurs were much

less likely to decide to establish new companies [20]. The subject of the study's analysis are companies from the small and medium-sized enterprise sector (which clearly dominate the structure of enterprises, which are "key players" in the economies of individual countries and the entire global economy [13, 21, 22] since they are particularly susceptible to various types of crises [9, 23, 24]. Due to the limited amount of financial resources, they have a much smaller chance of survival [25], and their owners do not have sufficient knowledge about the possibilities of using the assistance offered, for example, by the government.

The pandemic had a very negative impact on almost all aspects of the functioning of the SME sector [26], on the attitudes and behaviors of employees, their approach to work and the way it is performed [27]. These companies experienced declines on both the demand and supply side [28]. They mainly represent industries such as tourism, gastronomy, sports, trade, which were particularly affected by COVID [29]. The pandemic radically changed the way of doing business. As a result of the pandemic, the world economy slowed down rapidly [30], the income of companies, especially those in the SME sector, fell dramatically, many had problems with normal functioning, suspended their operations or balanced on the edge of survival, financing only the most urgent expenses, suspending or significantly limiting their activities, laying off employees, and suspending necessary investments [10]. A very small percentage of companies expanded their operations during the pandemic—mainly e-commerce, construction, and food trade [31]. Crisis management is the process of planning and taking action to reduce the risk associated with the emergence of a crisis situation, then taking control of the crisis and returning to normality [8]. A major problem of the pandemic crisis was that it was impossible to predict its duration, course, etc. This made it impossible to formulate effective strategies for dealing with it. Crises are usually regional and short-lived. In the case of most of them, it is possible to predict their course in time, and therefore to plan remedial actions. In the case of the pandemic, this was associated with much greater uncertainty [32].

The pandemic officially finished in 2023. Entrepreneurs were slowly starting to emerge from the recession when another crisis related to the war in Ukraine appeared [33]. It turned out that the pandemic and the problems associated with it were not the only crisis that entrepreneurs had to deal with in such a short time. The war-related crisis has a global reach, has led to the disruption of supply chains of enterprises in many countries and contributed to the rise in inflation [34, 35]. Polish companies operating in the provinces bordering Ukraine were especially affected by the war, which influenced not only on their economic situation, but also the sense of security of citizens. According to research by the Polish Economic Institute, 40% of companies felt a strong impact of the war on their activities, 36% moderate, and 24% very strong [34, 36]. The war had a strong impact on an increase in the prices of goods, products, or services offered by enterprises, operating costs, business risk, and continuity of supply chains. The weak impact of the war concerned changes in employment as a result of the outflow or inflow of workers from Ukraine, the withdrawal of companies from some previous sales markets, the deterioration of cooperation with foreign contractors, and the increase in payment backlogs [36].

2 Methodology

The subject matter of the research were small and medium-sized enterprises, and especially the issues related to their owners' coping with the new economic conditions caused by the pandemic and in general turbulent times. The research also tried to find out about possible positive aspects, which were not discussed in other publications. Comparative research with companies located in Ukraine was also planned, unfortunately the war thwarted these plans. However, a new, related research thread appeared, which is currently being implemented. For the purposes of the research, the following research questions were formulated: What are the negative effects of the functioning of enterprises in the conditions of the pandemic crisis? What adaptive changes were introduced in the small and medium-sized enterprises studied, facilitating coping with the situation, ensuring business continuity? Do the entrepreneurs see positive aspects resulting from functioning in the conditions of the pandemic? A diagnostic survey was the method applied in the research. The research procedure included a review of available literature, survey research, an analysis and synthesis method, as well as inductive and deductive reasoning methods. The study involved 349 small and medium-sized companies conducting various activities—most often: other services. Among them, the largest number were micro-enterprises (58%), followed by small (23%) and medium-sized (19%) companies, which mainly conducted business activities in cities (63%). The scope of their activities was most often assessed as regional (32%). Most of them have been operating for 5 to 10 years (33%).

3 Results and Discussion

Crises have a negative impact on the economy and businesses. They can also be an impulse for development and implementation of innovations. The study uses the example of the crisis caused by the COVID-19 pandemic. Research was carried out on the negative and positive aspects of the crisis from the point of view of the owners of the SME sector. Taking into account the negative aspects, about 20 factors were analyzed (Fig. 1), which were the result of studying the subject literature [7, 15, 24, 26, 29]. They were assessed using a 5-point scale (0—the problem did not occur, 1—occurred to a very small extent, 2—to a small extent, 3—to a medium extent, 4—to a large extent, 5—to a very large extent).

The analysis of negative aspects using average indications showed that the most significant were a decrease in income (average 2.28), suspension or delays in the implementation of investments (average 2.10), extension of the time of process implementation due to legal regulations resulting from the pandemic (average 1.96). The least frequently indicated factors included the need to sell some assets (average 0.63).

The pandemic period had a decidedly negative impact on the functioning of all companies. However, the entrepreneurs also indicated certain positive aspects that



Fig. 1 Negative impact of the pandemic on the company—average values (*Source* Own study based on the research)

the pandemic initiated, made them aware of or forced them to take certain actions, which consequently had a positive impact on the companies' operations (Fig. 2).

The most frequently indicated positive aspect of the pandemic, which occurred to a very large extent (score 5), was saving time as a result of organizing meetings online, without the need to travel. This aspect gained a clear advantage. The following were also indicated: the company's presence on the Internet due to the need to transfer part of its activities there, e.g. sales processes, advertising, etc., increased customer

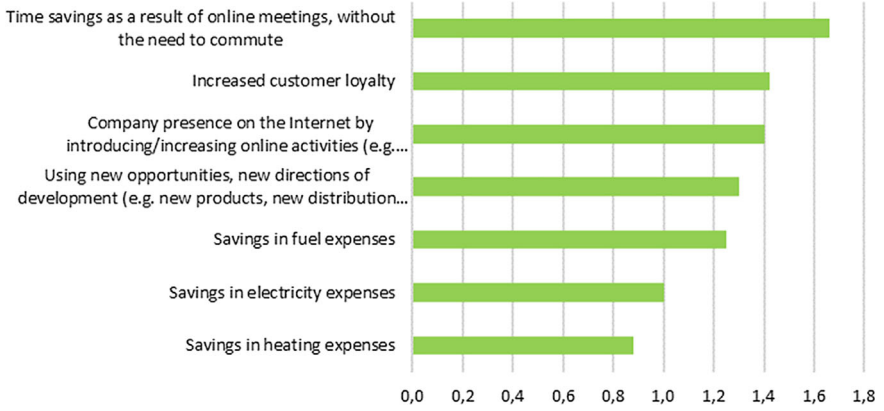


Fig. 2 Positive impact of the pandemic on the company—average values (*Source* Own study based on the research)

loyalty, the use of new directions of development. Some companies implemented innovations forced by the situation (e.g. new solutions related to the digitization).

4 Conclusions

Every crisis is a very difficult time for all companies, but also a motivating one. A weak economy forces reflection, redefinition of the business models used. It is also a time for change, innovation, and diversification of operations. Companies that take advantage of the opportunities that a crisis brings have a possibility to develop their operations, even during a recession. Crises have always occurred, although their nature is currently changing—they are very difficult to predict, their causes are not only economic, so they are very difficult to manage. The study uses examples of two contemporary crises—one caused by the pandemic and one caused by the war in Ukraine.

The pandemic was a huge challenge that companies had never had to deal with before. Its effects were visible even in those companies that had emergency and crisis management plans. It turned out that they were not adapted to the completely new situation, had no practical value, and became useless, which was probably caused by the scale of the crisis, as well as the impossibility of predicting the end of the crisis and its effects [20, 37]. The pandemic introduced a number of restrictions, but also created new opportunities. In the *new normal*, new business models and innovations began to appear. The situation worsened as a result of the war in Ukraine. The current economic situation is probably the only such a difficult situation in the history of mankind. It is a coincidence of two very serious global events that shook the world economy. These are non-standard shocks, with non-economic sources, but with huge economic consequences. However, these are not the only crises that affect the contemporary global economy. It is worth mentioning the energy, food, economic, and climate crises which will probably also modify the processes of globalization [31]. These are trends in economy that pose huge challenges for the functioning of small and medium-sized companies.

The effects of the pandemic, and especially the war in Ukraine, will be long-term and can only be estimated in the long run, therefore there is a need for new research on the impact of COVID-19 and the war in Ukraine on the SME sector, but of a global nature. This would help answer the question about possible cultural differences in the approach to these crises and in the ways of dealing with them in individual countries. The situation of SMEs has always been difficult, the pandemic has additionally weakened this sector. To support it, in many countries the government has tried to support small entrepreneurs through various activities. Future research could show the effectiveness of these solutions.

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The Role of Fear of Missing Out (FoMO) on Consumer's Decision-Making in Email Marketing Campaigns

Chrysopigi Vardikou, Magdalini Duca Montessantou, Eftichia Kallinikou, Erato Koustoumpardi, Agisilaos Konidaris, and Androniki Kavoura

Abstract This study contributes to the understanding of how behavioral nudges in email marketing campaigns' subject lines influence the email open rates and also add to research about fear of missing out in email marketing. We performed field experiments randomly assigned to subscribers by the email marketing software with different versions of the subject line to explore which one resulted in a higher open rate. Email campaigns for hair products were sent using Mailchimp's A/B testing from December 2023 to February 2024. We chose the hair cosmetics industry because of the steady increase in demand during the past years. Results show that the presence of FoMO nudges in the subject line of email campaigns has a positive effect on open rates when the FoMO appeal is based on scarcity and is subtle. The mere presence of a FoMO "don't miss out" text is not effective in increasing email open rates.

Keywords Email Marketing · Field Experiment · Behavioral Economics · Fear of Missing out (FoMO) · Online Consumer Behavior

1 Introduction

Examining the efficacy of email marketing campaigns constitutes a burgeoning field of inquiry, owing to the significance of email as a pivotal conduit for customer acquisition and retention, in an era where marketers can rely less on cookies to retarget users and more on the first-party data they collect from them. Open rate stands also as

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a fundamental gauge of campaign efficacy, with scholarly discourse delineating three primary determinants influencing these rates: subscribers' characteristics, headlines, and the delivery time [1]. The aim of this study is to explore whether the presence of FoMO has an effect on open rates of emails targeting ecommerce subscribers of a beauty and cosmetics brand. The hair products industry presents an ideal market for experimentation due to its growth and the emotional attachment consumers have with beauty products [2]. With both the European and global hair cosmetics markets experiencing substantial growth, testing behavioral nudges like FoMO could provide insights into effective marketing strategies in a dynamic and expanding sector. This intersection of behavioral economics and a flourishing industry highlights the potential for innovative marketing approaches. Globally and in the European market, hair cosmetics is a market on a constant rise in the past years and with a huge potential for further growth. The European market of hair products is estimated to grow from 2.45 billion to 3.40 billion until 2030 and the global market is also expected to grow with a CAGR of 3.2% from 2023 to 2028 [3,4].

2 Literature Review

The understanding of the consumer's decision-making process assists the aim to influence the purchase decision by improving product or advertising design [5]. Behavioral Economics combines elements from a variety of fields to explain the reasons that influence human behavior, and to create techniques that will positively influence human choices [6].

An important subcategory of Behavioral Economics is nudges. Nudges aim to enhance understanding of the mental shortcuts or biases that shape human behavior and influence human behavior as well as the mental shortcuts to promote the well-being of the user. The theory mainly seeks to influence people's behavior by changing the choices available to them. Additionally, it advocates designing choices that align with human thought processes and decision-making, which are often intuitive and prone to irrationality, as opposed to the assumption that people always make logical and rational choices [7]. Fear of missing out (FoMO) is someone's sense that they will lose the opportunity to experience something, and it has been widely researched in a social media context and less in consumer behavior.

FoMO appeals also fall under emotional appeals which could be positive, negative, and neutral. Prior research in advertising shows that emotional appeals affect consumers more negatively than positively and negative emotional appeals mostly don't work, although there is also some contradictory evidence [8–10].

Hodkinson has studied FoMO appeals extensively and he found that "both cognitive and affective elements should be included in any model of FoMO appeal response mechanisms" [11]. It is noteworthy that in Hodkinson's work it is stated that external FoMO appeals create only negative feelings.

Where an advertisement has FoMO messages, these may be primarily associated with either scarcity or urgency. Jang et al. use the concept of scarcity and divide it

into two categories: limited quantity scarcity, which is associated with the scarcity of the advertised products, and limited time scarcity when an advertisement advises individuals that an offer will cease to exist on a certain day or time [12]. Therefore, a time-limited offer aims to stimulate the consumer's desire to purchase and immediate decision-making. This time constraint may also create anxiety for the individual to click immediately, otherwise the price might increase, or the opportunity may be lost. In the case where the credibility of the advertisement is low or if these individuals find that the message is not credible, then the FoMO appeal will be futile and will not be taken seriously. Scarcity messages (unique offers that don't last long) can indeed serve as successful call-to-actions, as stated in the work of Hodkinson.

While the role of FoMO in impulsive online behavior has been studied [13], there is no evidence whether it is effective in increasing open rates of commercial email marketing campaigns. Additionally, to our knowledge there are no prior studies about the role of FoMO in the Greek marketing, nor in the hair cosmetics industry.

This study aims to explore if the use of FoMO appeals urges users to open commercial emails when placed in the subject line, and more particularly if the presence of a FoMO text with a scarcity nudge will bring increased open rates.

Additionally, to our knowledge there are no prior studies about the role of FoMO in the Greek marketing, nor in the hair cosmetics industry. In doing so, we add to the existing literature by applying the findings of Hodkinson in the Greek market of hair products.

Based on the above-mentioned literature, we have formulated the following research questions:

RQ1: Do FoMO appeals have an effect on the open rate when compared to a neutral (no nudge) email subject line?

RQ2: How does a FoMO appeal with a scarcity nudge in the email subject line affect the open rate, when it is framed in a positive versus negative way?

3 Methodology

To explore behavioral nudges within an email marketing context, we applied a between-subjects design of a randomized field experiment, where subscribers of a real ecommerce company were randomly assigned by the email marketing software to one of the two groups and each participant only saw one version of the email subject line. Subject line variations, also referred to as subject lines or combinations from now on, were created, each employing a distinct nudge strategy. Our team of researchers collaborated with an email marketing expert working at a digital marketing agency and used field data from two real commercial email campaigns that were sent to 5034 subscribers of a beauty and cosmetics ecommerce business on December 2023 and February 2024. The emails were being scheduled in Mailchimp software with the use of the multivariate testing tool. This tool randomly assigns recipients to one of the email versions. Each subscriber was allocated to a group of

recipients in a random way and each group of email recipients received a different version of the email campaign with distinct nudges.

4 Results and Discussion

For the analysis of the results, we used IBM SPSS and MS Excel to calculate z-scores, z-value and the p-value. For experiment A, the subject line with the FoMO nudge based on scarcity and framed in a positive way (Version B "Discounts extended for a little longer") performed better than the more intrusive and negative FoMO text (Version A "These discounts won't last forever"). Version B was the winning combination with 15,9% open rate, following Version A with an open rate of 12,3%. A chi-square test of independence was performed to examine the relation between the subject line and open rate. The relation between these variables was significant, $X2\ (df = 2, N = 5034) = 59.98, p < 0.01$. The subject line with the subtle and positive scarcity message "Discounts extended for a little longer" drives higher open rates.

In the second experiment, the winning subject line was Version B ("Price drops on hundreds of products) with a 39,7% open rate, following Version A ("Price drops you shouldn't miss") with 29,9%. The z-value was calculated and our test was statistically significant at a 95% level ($z = 5.8236$). The neutral subject line performed better than the one with the FoMO nudge, when we did not provide any evidence about the scarcity.

Considering our initial research questions, we observe that FoMO appeals, such as "Don't miss out" are less effective when being used in email subject lines without any other evidence about the scarcity. Taken together, it seems that this finding is in line with Hodkinson, who suggested to always use affective and cognitive elements in any model of FoMO appeals. In order for the FoMO appeal to work, users need to see facts that make the appeal more credible. In other words, the text next to the FoMO appeal has to approach an answer to the question "why am I going to miss out".

Furthermore, the results of the first experiment indicate that the positive FoMO nudge is more effective. When FoMO nudges are based on scarcity, they are more effective in driving higher email open rates in the case where they are positive. The winning combination "Discounts extended for a little longer" outperformed the other more "intrusive" and negative scarcity based subject line "These discounts won't last forever" indicating that users tend to open the email more when the text has a scarcity message framed in a positive way and not intrusively.

All these could have various explanations, one of them being that we tend to ignore marketing texts that are trying to force FoMO, or even that telling someone not to do something (Don't miss out) has an opposite effect. Essentially, this could be also linked to Hodkinson's finding that external FoMO appeals create negative feelings. In other words, the explanation could be that FoMO appeals don't bring better open rates because they create negative feelings but this has to be explored in

future studies by directly measuring emotion of users after they have received this email.

While emotion can trigger consumers' responses, in an email marketing context, the mere presence of a FoMO appeal does not increase open rate. This result also builds upon the concept of autonomous motivation of Deci and Ryan [14] which is connected to wellbeing. As Hodkinson found, external FoMO appeals create only negative feelings. Because in our experiments FoMO is externally produced users could ignore the clear FoMO nudge. This could be the explanation why the positive messages worked better. At the same time, our findings and the previous discussion are also linked to what Cass R. Sunstein stated [15] that in order for nudges to work, they need to guide people to directions close to their interests or values. The mere presence of a FoMO text like "Don't miss out" contradicts the purpose and meaning of nudges, which is to "promote wellbeing" [16]. Moreover, scarcity messages (unique offers that don't last long) can indeed serve as successful call-to-actions, as stated in the work of Hodkinson, but they have to be framed in a positive way.

5 Limitations and Further Research

The series of field experiments in this paper was created for a company in the cosmetics industry. Therefore, we have several limitations. First, experiments and results must be replicated to ensure validity for other industries. An aspect to consider when choosing the industry should be product involvement, because research has shown it could play an important role on how emotional versus rational appeals work [17]. More specifically, Akbari had found that emotional appeals work better for low involvement products where rational appeals work better for high involvement products. However, that research was not about email subject lines nor FoMO appeals. In our case, the categorization of hair products is blurry. On the one hand, it could be considered a low involvement product as they are convenience goods most of the time. Despite that, emotion alone could not bring better open rates, contrary to what Akbari suggested. On the other hand, premium or specialty hair products, such as luxury brands or treatments targeting specific hair conditions, may shift toward higher involvement due to higher cost and the perceived personal benefit or risk involved in selecting the right product for one's needs.

Furthermore, the subject line's length was not totally controlled and as a result we had a dissimilar number of characters in each version. However previous research has shown that "there is no direct relation between the length of the subject line and the attention paid to promotional e-mails" so this may be an unimportant issue [18].

Temporal and contextual aspects of email campaigns are also important to determine the open rate, but our experiments only tested the subject line. Also, opening effectiveness is only one stage of email marketing and it does not guarantee the overall campaign's effectiveness, as people may open the email and instantly close it [19]. Last, as in most between-subjects' experiments, the power is low [20].

6 Conclusions

The study investigated the impact of behavioral nudges, specifically fear of missing out (FoMO) and scarcity, on email open rates within the context of email marketing campaigns. Firstly, the results suggest that subtler FoMO nudges tend to be more effective in driving higher open rates compared to more intense appeals. This nuanced approach aligns with the notion that external FoMO appeals, when overly emphasized, may evoke negative responses and lead to decreased engagement. Secondly, scarcity messages, particularly those framing limited-time offers positively, demonstrate their effectiveness as successful call-to-actions, corroborating previous findings in the literature.

The managerial implications of our study are important since email marketing is becoming more significant than ever in a "cookieless" world. In the uprising research interest about open rates in email marketing, our results may be used by marketers in promotional campaigns. All FoMO appeals are not equal in terms of their effectiveness and marketers need to appeal at users' emotion and cognition at the same time. Last, this study could serve the need to create open rate predictors for machine learning algorithms.

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A Scientometric Analysis on Employee Well-Being in Management Sciences

Iwona Oleniuch

Abstract The paper applies scientometric techniques to study the current state of interest in employee well-being issues. The study covered the period from 1989 till the end of 2023. The VOSviewer program was used to carry out keyword mapping, as well as the co-authorship analysis. An analysis of journals published in two WoS Categories: Management and Business was also conducted to determine which of them are the best source of knowledge on employee well-being, and at the same time offer the greatest potential for publishing and disseminating knowledge in the future. Results illustrate that employee well-being is most often considered in the context of human resource management, job satisfaction, job performance, and work engagement. The interest in this field among scientists from Management and Business areas is still in the relatively early stage of development, and the cooperation between authors is local in nature. The published paper has a multidisciplinary character and appears primarily in journals classified simultaneously in the Business/Management and Psychology categories. The top 3 are "Personnel Review", "International Journal of Human Resource Management", and "European Journal of Work and Organizational Psychology". It can be hypothesized that in the coming years this trend will continue.

Keywords Bibliometric Analysis · Scientometric Analysis · Employee Well-being

1 Introduction

The concept of well-being [1] is enjoying increasing interest among management and business researchers [2]. This was particularly noticeable during the COVID-19 pandemic when its effects were analyzed in various contexts [3, 4]. One of them was the impact of the pandemic on employee well-being. However, in spite of the growing interest, employee well-being has not yet received systematic bibliographic

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research. The purpose of this article is to fill the existing research gap and answer the questions (what, who, why):

1. What are the main contexts in which employee well-being is considered?
2. Who publishes in the analyzed area?
3. Where do articles on the analyzed topic appear?

2 Materials and Methods

We obtained bibliographic data from the Web of Science Core Collection (WoS), which is the most often used [5, 6] platform containing the most precise and reliable research information, and a large number of analysis tools to process it [7, 8]. It consists of several literature search databases designed to support scientific and scholarly research. It covers more than 2.2 billion cited references from 34,000 peer-reviewed journals, across 254 subject categories, from 1864 to the present [9].

In order to obtain a picture of the research conducted in relation to employee well-being, we entered a search in the WoS databases, in which we compared the concept of well-being with the context of employment. The search path was: ((well-being OR well-being OR "wellbeing") NEAR/3 (employ* OR work* OR manag* OR leader*)). As a result, we received 18,430 publications. We reduced this set, limiting it to the articles and review articles, English language, and additionally narrowing it to the SSCI index and scientific disciplines according to WoS: Management and Business. We collected the data for the period from 1989 (first article regarding well-being in the context of employment [10]) up to the end of 2023. We subjected the received records (1,720) to scientometric analysis in the VOSviewer program [11, 12].

3 Results

3.1 Keywords Occurrence Analysis

The first visualization made in VOSviewer was a co-occurrence keyword analysis to determine the main contexts of the analysis adopted by authors who consider the issue of employee well-being. Therefore, within the module we selected "author keywords" and introduced a restriction of the minimum number of occurrences of a keyword: 10. As a result, the prepared map consists of 100 words out of the 3,910 occurring in all articles. The words were arranged into 9 clusters (see Fig. 1).

The keyword with the largest number of links to other keywords is well-being, which is obvious given the criteria used to search for articles in the Web of Science database. This word appeared as a keyword in 353 publications, linking with 93 other keywords 540 times. It is natural that it is a bridge to all other clusters. It is

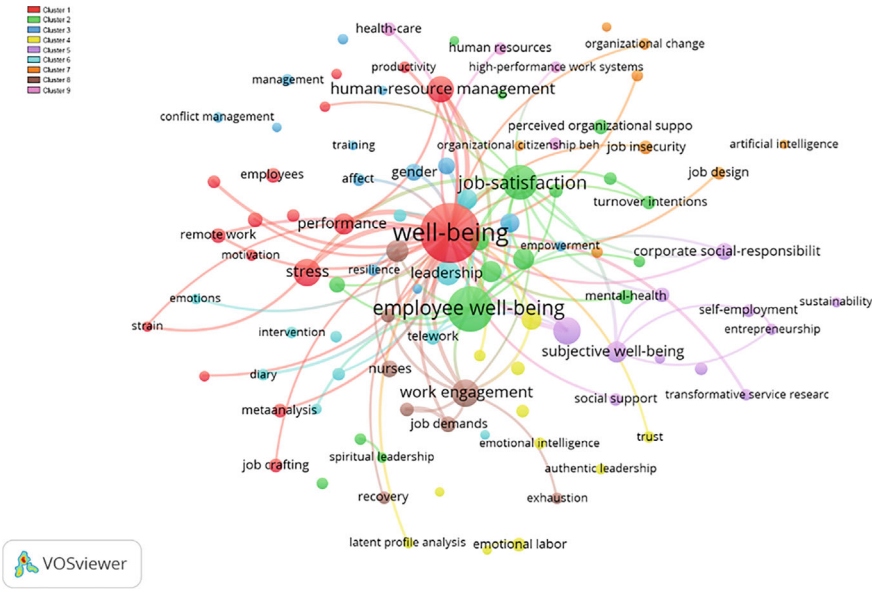


Fig. 1 Authors' keyword map

most frequent combinations occurred with the keywords: job satisfaction (total link strength 26), COVID-19 (20), stress (20), human-resource management (18) and work engagement (13).

The term employee well-being was defined by the authors as keyword in 196 publications, combining with 82 other keywords 236 times. The authors combined this concept primarily with keywords such as human resource management (11), job satisfaction (10), job performance (10), work engagement (8) and Covid-19 (8). It can, therefore, be assumed that the term is considered in many contexts and only creates a strong relationship with a few. With many of the 82 which it occurs with, it appears only once, which indicates a great diversity of research contexts and the lack of still clearly defined concepts of research searches (see Fig. 2).

4 Co-authorship Analysis

In the second step, we identified the main authors dealing with the subject of employee well-being, whose publications were listed in the database in the categories: Management or Business. It is important that these were the authors publishing in co-authorship, i.e. creating networks of scientific connections and having a significant potential to disseminate knowledge from the analyzed research area.

We prepared visualization for the authors who published at least 4 articles. By limiting the map conditions in this way, we obtained 90 authors who met the criterion,

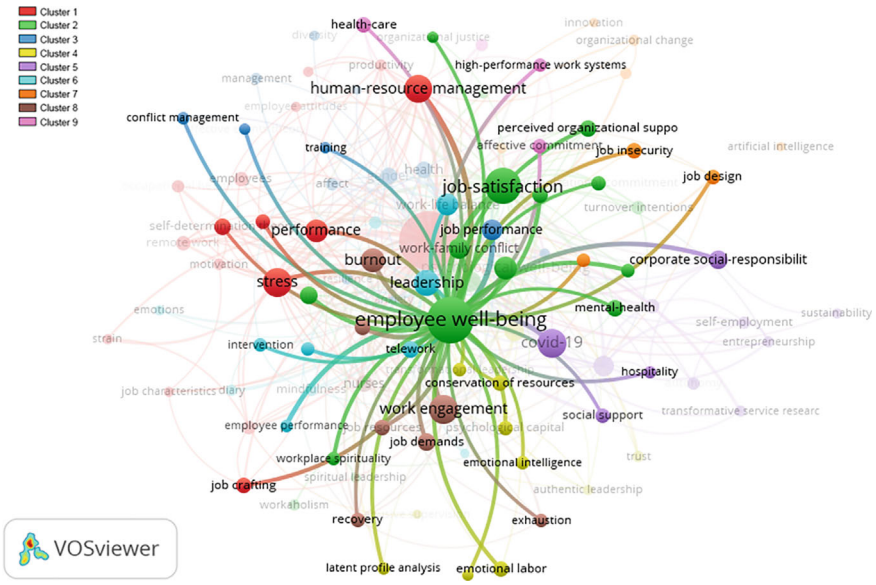


Fig. 2 Authors' keyword map—links for "employee well-being" keyword

and, for the sake of network transparency, we excluded single-person clusters and left only authors who published works in co-authorship (35 people). The authors were included in 6 clusters (see Fig. 3).

Based on the map, it can be concluded that cooperation between scientists is still in the process of formation, and that it takes time to select leaders who will give it direction and unite the scientific world by collaborating with different scientists from various clusters. At present, clusters are usually connected with one author. The

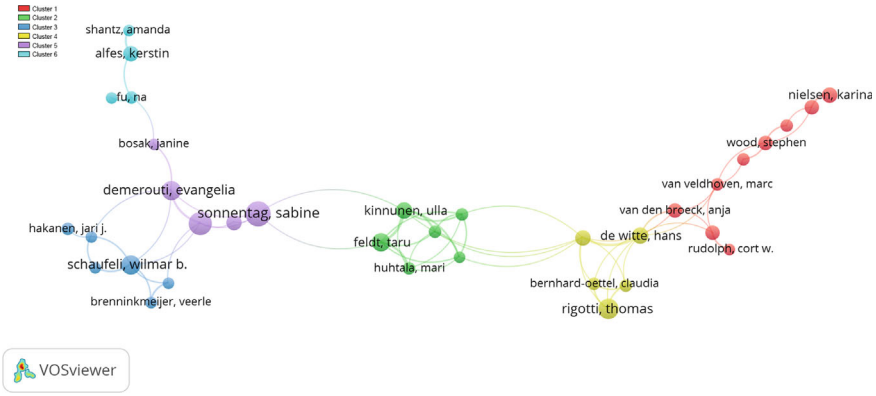


Fig. 3 Co-authorship map for authors

author with the largest number of publications is Sabine Sonnentag. She wrote 18 articles in cooperation with 5 authors from the purple and green clusters. Arnold B. Bakker is the link between the authors from the purple and blue clusters, and Thomas Rigotti between the yellow and red clusters. Two authors cooperate with scientists from 3 clusters, i.e. Ulla Kinnunen and Nele de Cuyper. It seems that at the moment the cooperation is local and takes place primarily between authors employed in the same scientific organizations.

5 Journal Analysis

In the period under consideration, the articles on employee well-being (1,720) were published in 193 journals. Table 1 includes a list of 10 titles where one-third of the articles were published in total, along with the number and share of articles and the WoS Categories assigned to them (see Table 1).

It can be stated that publications in the area of employee well-being authored by scientists from the field of management sciences are published primarily in journals classified in the Management category (9), which are also listed in the discipline of Applied Psychology (6).

Table 1 Top 10 Journals regarding the number of articles on employee well-being (1989–2023)

Journal Title	Number of Papers	% of 1720	WoS Categories
Personnel Review	84	4.88	Industrial Relations & Labor; Psychology, Applied; Management
International Journal of Human Resource Management	80	4.65	Management
European Journal of Work and Organizational Psychology	78	4.53	Psychology, Applied; Management
Journal of Occupational and Organizational Psychology	72	4.19	Psychology, Applied; Management
Journal of Applied Psychology	66	3.84	Psychology, Applied; Management
Journal of Organizational Behavior	56	3.26	Business; Psychology, Applied; Management
Journal of Managerial Psychology	55	3.20	Psychology, Applied; Management
Journal of Business Ethics	54	3.14	Business; Ethics
Employee Relations	53	3.08	Industrial Relations & Labor; Management
Journal of Nursing Management	51	2.97	Management; Nursing
Sum	**649**	**37.73**	

6 Conclusions

The term well-being in the context of work appeared in the Management/Business category in the WoS Core Collection for the first time in 1989 and the current number of publications in this area is 1,720.

The analysis conducted based on data available in the WoS Core Collection allowed achieving the purpose of the paper, i.e. to answer the three research questions (what—who—where):

1. What are the main contexts in which employee well-being is considered?
2. Who publishes in the analyzed area?
3. Where do articles on the analyzed topic appear?

As the co-occurrence keyword analysis showed, the phenomena defined as employee well-being and work well-being were most often compared by authors with the context of human resource management and with the issue of job satisfaction. In the context of job satisfaction, subcategories of the phenomenon of well-being are also considered, i.e. subjective well-being and psychological well-being.

Authors' co-authorship analysis showed that the author with the most publications were Sabine Sonnentag (18), followed by Arnold B. Bakker (16), Thomas Rigotti (12), Wilmar B. Schaufeli (11), and Evangelia Demerouti (11). The most co-authors have Nele de Cuyper (9), Ulla Kinnunen (7), and Hans de Witte (7). At present, however, collaboration between scientists takes place between collaborators from the same organizations (the results of the Organizations' co-authorship analysis were omitted from the paper due to the limitations of the text volume). Therefore, there are no clear leaders who would be a strong keystone of the flow of knowledge between the remaining authors dealing with this subject.

The analysis of journals showed that articles from the entire period of interest in employee well-being (1720) were published in a total of 193 journals, with one-third of them in 10 journals classified primarily in the WoS category: Applied Psychology and Management. They can be a basis for searching for knowledge in the field of employee well-being and a place to publish subsequent studies created by scientists in the field of management sciences.

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Financial Stress and Resilience: The Case of Youth in Attica, Greece



Vasiliki A. Tzora

Abstract Financial literacy is the knowledge and understanding of financial concepts and skills. Financial literacy is an essential tool to make informed decisions regarding personal finances. This study measures the levels of financial literacy among university students in the region of Attica, Greece. Additionally, the paper examines the relationship between financial literacy levels and university students' financial resilience. Financial resilience is measured by a student's ability to cover or not an emergency shock of €300. Financial resilience is related to handling financial stress because it reflects the student's ability to manage financial challenges. In this study a convenient sample of 865 university students were called to answer multiple-choice questions relating to financial knowledge and skills. Findings confirmed the link between financial literacy and financial resilience. Ordered probit regression analysis shows that there are 6% more chances for a university student who is financially literate to cover an unexpected cost of €300. Low financial literacy levels among university students leads to less financial resilience among students. Well-structured financial educational initiatives could close the financial knowledge gap. Educators, policymakers and regulators could use these findings to develop financial literacy policies.

Keywords Financial resilience · Financial literacy · Financial stress

1 Introduction and Background of Research

For a national financial literacy strategy to be fulfilled, it is essential first to identify the needs and gaps to target the groups that might need support, especially the young ones [1]. This will lead to more targeting financial educational programs to enrich the financial knowledge for the people.

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Financial literacy can prevent people from undertaking bad/catastrophic economic decisions and achieve financial well-being throughout their life. Financial literate people can make wise decision on saving, on investments, on retirement plan and insurance policy [2, 3].

In many countries various surveys have measured the level of financial literacy, especially in young population, to make the public aware of the importance of financial literacy and use the findings to propose financial literacy policies. In Greece, very few surveys have been made and this study is trying to contribute with more available data. To this end, this study measures the levels of financial literacy among university students in the Attica region of Greece. Furthermore, the students' literacy will be linked to financial resilience in order to examine the impact that has. The study will reveal whether university students are in financial distress through a financial shock.

Financial resilience refers to as the 'ability of individuals or households to resist, cope and recover from negative financial shocks' [4]. Lusardi, Hasler, and Yakoboski [5] stated that financial resilience is strongly linked to financial literacy and found that a sizeable proportion Americans (27 percent of respondents) had low confidence in their ability to access $2,000. The Federal Reserve Board [6] stated in their report that 63% American adults could cover a $400 emergency expense using cash or its equivalent. This amount was close to the emergency amount asked in this work. Therefore, as the study's respondents are university students the asked financial shock amount was set at €300.

Previous studies show that higher levels of financial literacy can increase financial resilience and reduce risks, such as taking on excessive debt [7]. In fact, the study by Lusardi & Tufano [8] showed that adults who demonstrated higher levels of financial literacy about debt are more likely to pay off their credit cards in full than to be over-indebted.

The study of financial literacy and financial resilience among university students in Greece is timely for several reasons. This study extends upon the recent literature on financial literacy in Greece where discrepancies were found of 15-year-old students between the core, the islands, and the periphery of the country. Also, female students score lower in terms of all knowledge [9]. Greece is at the stage of designing its national-financial-education strategy and this study aims to inform this strategy. Tzora et al. [9] found that the most densely populated administrative region of Attica reached the highest percentage (35.7%) reaching the 70% threshold of financial capability of 15-year-old students. This is urging to further examine the youth's financial literacy and financial resilience of the top scored administrative region of Attica, Greece.

This is one of the few microdata sets rich in information with which can answer main research questions such as what are the levels of financial literacy (across all the financial concepts examined of interest, compound interest, inflation and risk diversification) among university students? How does financial literacy affect students' financial resilience and financial stress?

2 Methodological Considerations

Data were collected using an electronic and a paper version self-administered survey instrument. University students from almost all the semesters participated in the survey, while students were from three (3) schools out of four (4) in total that the University of Piraeus has. Specifically, students were from the schools of (1) Economics, Business and International Studies, (2) Maritime and Industrial Studies, and (3) Finance and Statistics and from the departments of Department of Business Administration (24.9%), Department of Statistics & Insurance Science (45.6%) and Department of Maritime Studies (28%), and from other departments (1.5%).

The sample were university students who live within the extended area of the University, but also living in other areas of the region of Attica. Since, previous studies in Greece [9] have found that the region of Attica is the region with the highest financial literacy levels, this work want to test whether this finding is in line for another youth sub population group than that of the 15-year-old students.

Questionnaires were distributed during the examination period in 2020, with the approval of the professors and the students' consent. At this point it is important to point out that participation in the survey was optional and security measures for personal data were taken. The students' profile, who major in Statistics and Business were rationally selected as the participants were expected to score higher. Along with the students from the Maritime studies that their subject was quantitative methods, they were also expected to score higher. Firstly, due to their relevant major in financial matters, and secondly because they were living in the region of Attica, Greece.

3 Data and Empirical Strategy

The empirical strategy benefits from the rich in information data from university students' levels of financial literacy by answering the "Big Three" questions by also adding a financial fragility question from established research on witnesses' students' financial resilience.

The "Big Three" questions that over the years has proven to be an extremely good measure of peoples' understanding of basic financial concepts [10, 11]. The "Big Three" question have been included in many US surveys and in numerous surveys fielded in Europe, Latin America, and Asia [10, 11].

The undeniable importance of the "Big Three" questions lies in the fact that the three questions consist of multiple-choice items that assess respondents' understanding of interest rates, inflation, and risk diversification. It is widely used due to its ease of use and worldwide applicability. Also, the questions are included in the S&P Global Financial Literacy Survey covering more than 140 countries [12]. However, in the later survey the researchers use four (4) concepts for financial decision-making covering also the concept of numeracy (interest). However, for

the concept of compound interest two (2) questions are used to better capture the respondents' understanding. Something that was also adopted in the current survey.

The exact wording of the questions is reported below (with the correct answer underlined), in line with the work of Klapper et al. [12]:

Q1. Numeracy (Interest)

Suppose you need to borrow €100. Which is the lower amount to pay back: €105 or €100 plus three percent?

[€105; €100 plus three percent; don't know; refused to answer]

Q2. Compound Interest (A)

Suppose you put money in the bank for two years and the bank agrees to add 15 percent per year to your account. Will the bank add more money to your account in the second year than it did the first year, or will it add the same amount of money both years?

[more; the same; don't know; refused to answer]

Q3. Compound Interest (B)

Suppose you had €100 in a savings account and the bank adds 10 percent per year to the account. How much money would you have in the account after five years if you did not remove any money from the account?

[more than €150; exactly €150; less than €150; don't know; refused to answer]

Q4. Inflation

Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today, or more than you can buy today? [less; the same; more; don't know; refused to answer]

Q5. Risk Diversification

Suppose you have some money. Is it safer to put your money into one business or investment, or to put your money into multiple businesses or investments? [one business or investment; multiple businesses or investments; don't know; refused to answer]

Question on Financial Resilience (in line with the work of Lusardi & Tufano [8])

Are you able to cover an unexpected cost of €300?

I can cover unexpected cost 43.70%

Maybe I can cover 35.49%

I can't cover 20.8%

This work measures financial literacy levels by measuring the financial knowledge of students. Correct responses to the five (5) financial literacy questions give rise to a score of five (5), following the Klapper et al. [12] work. The financial literacy questions examined the concepts of "interest" (58.15%), "compound interest

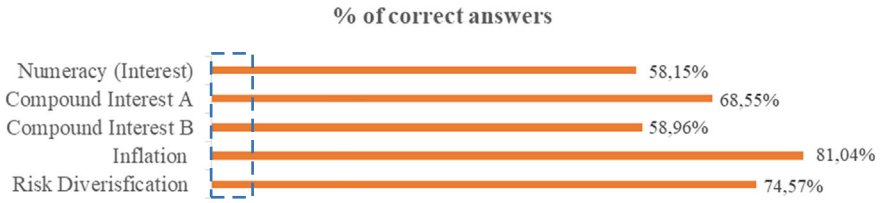


Fig. 1 Percentage of correct answers to the 5 financial literacy questions. 22% answered correct all above questions

a" (68.55%), "compound interest b" (58.96%), "inflation" (81.04%), and "risk diversification" (74.57%). The percentage above reports the correct answers on each question. However, only 22% (see Fig. 1) of the university students scored the highest score (five (5)) by answering all the questions correct.

Since, two (2) of the five (5) questions examined the same concept of "compound interest", the score will rise to four (4) taking one of the two (2) "compound interest" questions as correct. Therefore, now the correct score for the "compound interest" concept reached the percentage of 76.53%. This leads to an increase in the number of students who answered all four (4) concepts correctly, at 31% (See Fig. 2.) The financial literacy score out of four (4) is numerical, meaning it is a continuous variable. The score retrieved from the correct number of answers the university students replied in each examined financial concept. In this work, if a student answers all financial concepts correct. Yet, this score is not high, taken into consideration that the above certain criteria are acceptable for students at economics schools, and especially to students who live in the region of Attica.

Table 1 presents the averages of key variables related to financial literacy and financial resilience. The sample includes 52% male students. 85% students are aged between 18 and 24 years. Around 46% are in their 3rd or 4th year of study, and 35% come from households with an income between €1,000 and €1,999 per month. 55% of students claim household income reduction between 20%–50%.

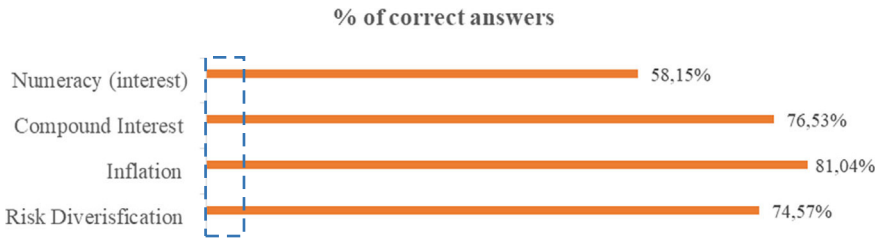


Fig. 2 Percentage of correct answers to the financial literacy questions. 31% answered correct all above questions

Table 1 Averages of the main

Averages of the main variables			
Financial Literacy (5 Questions)—Total	22%	Reduction of Family Income 20%–50%	55%
Financial Literacy (4 Questions)—Total	31%	Reduction of Family Income 50% +	26%
Numeracy (interest)	58.15%	Working Experience	66.6%
Compound Interest A	68.55%	Father with University Degree	32.7%
Compound Interest B	58.96%	Mother with University Degree	35.4%
Compound Interest A&B	76.53%	Father Freelancer	42.9%
Inflation	81.04%	Father Private Sector	22%
Risk Diversification	74.57%	Father Civil Servant	16%
Male	52%	Father Retired	16.3%
18–24 years old	85%	Mother Freelancer	21.6%
1st or 2nd year of studies2	34%	Mother Private Sector	20.8%
3rd or 4th year of studies	46%	Mother Civil Servant	20%
Year of studies 4^{th} plus	20%	Mother Retired	27.2%
Family Income €1.000–€1.999	35%	Father Unemployed	9.6%
Family Income €2.000–€2.999	20%	Mother Unemployed	22.8%

4 Ordered Probit Regression

An ordered probit regression analysis is conducted to explore the determinants of financial literacy levels and financial resilience ratings. The ordered probit regression model is executed for financial resilience orbit variable (dependent latent variable) Y^* is modeled as a linear function of the independent variables' financial literacy along with the sample's characteristics.

The equation has the form:

$$\mathrm{Y}^* = \mathrm{X}^*\beta + \varepsilon \tag{1}$$

where X is a vector of independent variables, β = beta is a vector of coefficients to be estimated, and ε = epsilon is an error term that follows a normal distribution with mean 0 and variance 1.

The estimates show the link between financial literacy and financial resilience is proven through the ordered probit analysis (Table 2.).

However, the marginal effect of the financial resilience needs examination. The model is a single probit model with three (3) marginal effects, category 1 (a3_1) = I can't cover an unexpected cost of €300, category 2 (a3_2) = Maybe I can cover an unexpected cost of €300, and category 3 (a3_3) = I can cover an unexpected

Table 2 Estimates of the ordered probit model

Estimates of the ordered probit model				
	a3	a3_1	a3_2	a3_3
	Financial Resilience	b/se	b/se	b/se
main				
Financial Literacy	0.072**	−0.019**	−0.007**	0.027**
	[0.033]	[0.009]	[0.003]	[0.012]
Male	0.098	−0.026	−0.01	0.036
	[0.082]	[0.022]	[0.008]	[0.030]
Year of Studies 4 +	0.394**	−0.106**	−0.040**	0.145**
	[0.158]	[0.042]	[0.016]	[0.058]
Age 18–24	0.354**	−0.095**	−0.036**	0.131**
	[0.165]	[0.044]	[0.017]	[0.060]
Work Experience	0.132***	−0.035***	−0.013***	0.049***
	[0.026]	[0.007]	[0.003]	[0.009]
Father's Education	0.013	−0.003	−0.001	0.005
	[0.012]	[0.003]	[0.001]	[0.005]
Mother's Education	0.033**	−0.009**	−0.003**	0.012**
	[0.016]	[0.004]	[0.002]	[0.006]
+	+	+	+	+
_cons	0.86	1.269**		
cut1	0.592			
	[0.997]			
cut2	1.629			
	[0.998]			
Predicted probability		0.2076	0.3549	0.4379
No. of Observations	865	865	865	865
* p < 0.10, ** p < 0.05, *** p < 0.01				

cost of €300, of the three (3) possible answers that the university students could give. Therefore, the marginal effect is calculated over the predicted probability. The marginal effect expressed as a percentage.

The examination of the marginal effect revealed that is unlikely (by-10% (−0.02/0.20 = −1/10 or 10%)) for a university student who is financial literate to reach category 1. Meaning not to be in a position to cover an unexpected cost of €300. Also, there are less chances by −2% (−0.007/0.3549 or −1.97%) for a student who is financial literate to might cover an unexpected cost of €300 (category 2). Last, the analysis revealed that there are 6% (0.027/0.4379 or 6%) more chances for a student to who is financial literate to cover an unexpected cost of €300 (to reach category 3).

5 Concluding Remarks

To successfully implement a national strategy for financial education, it is crucial to assess needs and identify gaps through measurement, in order to focus on groups that may be falling behind, particularly the youth [1]. The evidence proves the link between financial literacy and financial resilience through the analysis. There are 6% more chances for a student to who is financial literate to cover an unexpected cost of €300. Low financial literacy levels (across all the financial concepts examined) among university students leads to less financial resilience among students. Having little to no saving, high debt, or unstable income, increases a person's vulnerability to financial stress. Even minor unexpected financial expenses can cause significant anxiety and difficulty. Consider financial educational initiatives to build this financial knowledge gap. Hence, educators, government, and regulators could use these findings to develop financial literacy policies. Only through financial education today's youth can generate financial literate citizens. Therefore, the financial education of young generation could start as early as possible from school throughout university. Improving financial literacy and access to resources can strengthen financial resilience, which in turn reduces financial stress. Individuals who understand budgeting, saving, and investing are generally more prepared to handle financial challenges, which mitigates the effects of financial stress.

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Effectiveness of Social Media Influencers in Tourism Marketing: The Case of Eco-Friendly Hotels in Greece



Michalis Skordoulis, Aikaterini Dimitra Vrentzou, Evangelia Arsenou, Petros Kalantonis, and Aristidis Papagrigoriou

Abstract This study investigates the effectiveness of social media influencers in promoting eco-friendly hotels within the Greek tourism sector, focusing on the impact of influencers on consumer perceptions and behaviors. Using a mixed-method approach, the research involved a survey of a convenient sample of 157 participants from various age groups, examining the role of influencers in shaping decisions related to eco-friendly accommodations. Results indicate that younger consumers (ages 18–24) engage more frequently with social media influencers but place less importance on sustainability compared to older participants (aged 45 and above), who prioritize environmental responsibility in their travel choices. The study highlights the need for targeted marketing strategies, with younger audiences being more influenced by engaging visual content, while older consumers respond to genuine sustainability practices. Additionally, the research identifies challenges such as greenwashing, which can undermine trust between influencers and their audiences. Authenticity and transparency are found to be crucial for the success of influencer marketing in promoting eco-friendly hotels. This paper contributes to the growing body of literature on sustainable tourism marketing and suggests directions for future research, particularly regarding the ethical implications of greenwashing and the long-term impact of influencer-driven sustainability efforts.

Keyword Influencer marketing · Eco-friendly hotels · Sustainable tourism

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1 Introduction

In recent years, social media has revolutionized how businesses engage with consumers, particularly in the tourism sector. Platforms such as Instagram, YouTube, and TikTok have elevated a new generation of opinion leaders known as social media influencers (SMIs), who significantly shape consumer preferences and behaviors. These influencers have garnered large followings by creating content that resonates with specific audiences, becoming critical marketing tools across industries, including tourism [1]. The ability of SMIs to present destinations, accommodations, and experiences in an authentic and visually appealing way has transformed tourism marketing [2]. Eco-friendly hotels have emerged as a niche in the tourism industry, reflecting increasing global concerns about environmental sustainability. Issues such as climate change, resource depletion, and environmental degradation are driving more travelers to seek sustainable accommodations that minimize environmental impact [3]. A recent report highlighted that 81% of global travelers expressed a preference for staying in eco-friendly accommodations, underscoring the growing trend toward sustainable tourism. Eco-friendly hotels that focus on reducing energy consumption, managing water resources, and minimizing waste are gaining popularity among environmentally conscious consumers [4].

Social media influencers have proven to be valuable partners in promoting eco-friendly hotels by reaching broad audiences with content that highlights the environmental benefits of these accommodations [5]. By crafting personalized, engaging narratives around sustainability practices, influencers have the power to impact consumers' decisions to choose eco-friendly options [6]. Moreover, influencers build consumer trust by presenting first-hand, authentic experiences, which further enhances their ability to raise awareness about sustainable travel practices and encourage bookings at eco-friendly hotels [7].

Despite the potential of influencer marketing to promote eco-friendly hotels, challenges remain. A significant issue is the credibility of influencers, as consumers often express skepticism toward promotional content that lacks transparency or authenticity [8]. Additionally, the problem of greenwashing—where hotels falsely claim to be environmentally friendly without implementing substantial sustainability practices—undermines trust between influencers and their audiences, reducing the effectiveness of campaigns [9]. Furthermore, smaller eco-friendly hotels struggle to compete with larger, better-funded establishments in securing partnerships with high-profile influencers [5]. Greenwashing, where hotels falsely claim to adopt sustainable practices without real environmental impact, can undermine the credibility of both the hotel and the influencer, leading to consumer distrust [9].

In Greece, where tourism is a cornerstone of the economy, contributing significantly to GDP and employment, there is an increasing focus on sustainable tourism to preserve natural landscapes and cultural heritage [10]. Promoting eco-friendly hotels has become a priority, but there is limited research on the role of social media influencers in this context, particularly regarding their effectiveness in marketing eco-friendly hotels to a global audience [11]. Understanding the role of SMIs in

promoting sustainability within Greece's tourism industry is crucial to capitalizing on this growing trend [12].

This research aims to evaluate the effectiveness of social media influencers in promoting eco-friendly hotels in Greece. It examines how influencers impact consumer perceptions, trust, and behavior toward sustainable accommodations. Additionally, it seeks to identify the challenges that eco-friendly hotels face in leveraging influencer partnerships and explores strategies to overcome these obstacles to ensure authentic and effective marketing approaches [13].

2 Methodology

A survey was conducted targeting both social media influencers and consumers who engage with travel-related content. The sample consisted of 157 participants, selected based on their engagement with travel influencers and interest in sustainable tourism. Influencers included in the study had a minimum of 10,000 followers to ensure significant reach and impact. Consumers were chosen from diverse demographic backgrounds to capture a wide range of perspectives on eco-friendly hotels and influencer marketing. The survey used a structured questionnaire with both closed and open-ended questions, focusing on consumer behaviors, influencer credibility, and attitudes toward sustainable accommodations.

Data were collected through online platforms, including social media channels and influencer networks, allowing for a wide geographic reach and ensuring diversity in the sample. The survey was designed to measure key variables such as the frequency of consumer engagement with influencer content, trust in influencers, and the likelihood of booking eco-friendly hotels based on influencer recommendations. Statistical methods, including Analysis of Variance (ANOVA), were employed to examine correlations between variables such as age and the importance of sustainability when choosing hotels, as well as the influence of social media recommendations on consumer behavior. Qualitative data from open-ended questions were thematically coded to identify patterns in consumer perceptions and influencer strategies.

Content analysis of social media posts by influencers was also conducted to evaluate how eco-friendly hotels are promoted online. Posts were analyzed for themes related to sustainability, authenticity, and consumer engagement. Additionally, ethical considerations were strictly adhered to throughout the research process. Informed consent was obtained from all participants, and confidentiality was maintained by anonymizing responses. The data were securely stored and accessed only by the research team, ensuring participant privacy and compliance with ethical standards.

3 Results

The survey included 157 participants across various age groups, with the majority being between 25 and 34 years old (49%), followed by 35–44 years (16.6%) and 45–54 years (15.9%). Participants aged 18–24 made up 15.3% of the sample, while those over 55 years old accounted for a smaller portion, with 1.9% for ages 55–64 and 1.3% for those over 64 years old. This age distribution reflects the strong presence of younger and middle-aged individuals who are more likely to engage with social media content, particularly influencer-generated content.

In terms of frequency, 32.5% of participants followed social media influencers occasionally, while 24.8% often followed influencers. About 11.5% of the sample reported following influencers very often, whereas 22.3% rarely followed influencers, and 8.9% reported never following them. These findings indicate that a significant portion of the respondents frequently engage with influencers, suggesting that influencer marketing plays a role in shaping their tourism and accommodation decisions.

Regarding the importance of sustainability and environmental responsibility in choosing a hotel, 41.4% of participants rated sustainability as "very important," and 27.4% considered it "moderately important." Another 10.8% indicated it was "extremely important," while 15.3% found it "slightly important," and only 5.1% reported that sustainability was "not at all important" in their hotel selection process (Table 1). This data highlights that sustainability plays a significant role in influencing hotel choices for most participants, although the degree of importance varies across the sample.

An analysis of variance (ANOVA) explored the relationship between age groups and the importance of sustainability. The analysis showed that younger participants, aged 18–24, had a mean score of 1.83, indicating lower emphasis on sustainability compared to participants aged 45 and older, who had a mean score of 2.60. This trend was consistent across the sample, with older participants placing more importance on sustainability than their younger counterparts (Table 2).

In addition to the survey data, content analysis of influencer posts promoting eco-friendly hotels revealed that visual content, such as photos and videos showcasing hotel facilities and sustainable practices, was the most effective in influencing consumer perceptions. Approximately 28% of respondents indicated that such content had the most significant impact on their decision to choose an eco-friendly

Table 1 Importance of sustainability

Importance Level	Percentage (%)
Not at all	5.1
Slightly Important	15.3
Moderately Important	27.4
Very Important	41.4
Extremely Important	10.8

Table 2 Importance of sustainability and environmental responsibility in hotel choice

					95% Confidence Interval for Mean	
Age	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
18–24	24	1.83	1.007	0.206	1.41	2.26
25–34	77	2.45	1.083	0.123	2.21	2.70
35–44	26	2.38	0.941	0.185	2.00	2.76
45 +	30	2.60	0.894	0.163	2.27	2.93
Total	157	2.38	1.034	0.083	2.21	2.54

hotel, followed by 22.3% who preferred personal experiences and comments from influencers about their stay. This finding is consistent with the growing importance of visual storytelling in social media marketing, where consumers respond more positively to authentic, immersive content that showcases first-hand experiences.

The research also explored the trustworthiness of influencer recommendations in the context of eco-friendly hotels. About 41.4% of participants reported moderate trust in the recommendations made by travel influencers, while 27.4% trusted them "a little." A smaller segment, 17.2%, indicated high trust in influencer recommendations, and 12.7% reported not trusting them at all. These results reflect the need for influencers to maintain authenticity and credibility, as consumer trust plays a pivotal role in the effectiveness of influencer marketing, particularly for eco-conscious products like eco-friendly hotels.

Finally, the study investigated the likelihood of participants booking eco-friendly hotels based on influencer recommendations. More than half (53.5%) of the participants had never booked an eco-friendly hotel after seeing it featured by an influencer. However, 18.5% had done so occasionally, and 21% reported rarely making such bookings. These results suggest that while influencers may raise awareness about eco-friendly hotels, their recommendations do not always translate into direct bookings. This could be due to factors such as skepticism about influencer authenticity or the perceived higher costs of eco-friendly accommodations.

The inclination to choose an eco-friendly hotel based on a trusted influencer's recommendation also varied by age group. Younger participants aged 18–24 had a higher mean score of 2.58, indicating they were more likely to follow an influencer's recommendation to choose an eco-friendly hotel. In contrast, participants aged 35–44 and 45 + showed lower mean scores of 1.73 and 1.93, respectively, suggesting that older consumers were less influenced by social media recommendations (Table 3).

Overall, these findings suggest that influencer marketing plays an important role in raising awareness and shaping perceptions, particularly among younger audiences. However, the actual impact on booking behavior may be limited by factors such as credibility, authenticity, and cost. Additionally, the differing values placed on sustainability across age groups highlight the need for targeted marketing strategies that cater to the specific priorities of each demographic segment.

Table 3 Inclination to choose an eco-friendly hotel if suggested by a trusted social media influencer

				95% Confidence Interval for Mean	
Age	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
18–24	2.58	0.830	0.169	2.23	2.93
25–34	2.27	0.955	0.109	2.06	2.49
35–44	1.73	1.079	0.212	1.29	2.17
45 +	1.93	0.828	0.151	1.62	2.24
Total	2.17	0.966	0.077	2.01	2.32

4 Discussion

The findings of this study provide important insights into the effectiveness of social media influencers in promoting eco-friendly hotels, particularly in the Greek tourism sector. Previous research has demonstrated the significant role of social media influencers in shaping consumer behavior in tourism by leveraging their reach and credibility to influence decision-making [1, 6]. This study confirms that influencers can substantially impact younger consumers' choices, especially regarding their engagement with eco-friendly hotels. However, it also highlights the nuanced relationship between influencer marketing and sustainability, underscoring the need to consider the values of different age groups carefully.

The results indicate that while younger participants (ages 18–24) are highly engaged with travel influencers on platforms like Instagram and YouTube, they place less importance on sustainability when selecting accommodations compared to older participants. This supports earlier findings that younger generations, though digitally engaged, may prioritize experiences and convenience over environmental responsibility [2, 3]. Older participants (aged 45 and above) demonstrated a stronger inclination toward sustainability, reflecting a more values-driven approach to decision-making in tourism. This aligns with global trends, where older travelers are more likely to prioritize eco-consciousness in their travel choices [5].

One of the critical insights from the study is the necessity for eco-friendly hotels to tailor their marketing strategies to different target demographics. Younger consumers are more likely to be influenced by engaging, visual content from influencers, but their commitment to sustainability is weaker than that of older consumers. Therefore, influencer marketing campaigns aimed at younger audiences may need to emphasize not only the eco-friendly features of the hotel but also the experience, comfort, and unique offerings of the property [7]. On the other hand, campaigns targeting older consumers should focus on highlighting the genuine sustainability practices of the hotel, such as waste reduction, renewable energy usage, and community involvement, to better resonate with their values [4, 10].

While influencers play a positive role in raising awareness of eco-friendly hotels, the study also identified potential challenges, such as the risk of greenwashing and the need for authenticity. It is crucial that influencers promote genuine eco-friendly hotels

and transparently communicate their sustainability efforts to maintain trust with their audience [13]. Authenticity, therefore, plays a significant role in the success of influencer marketing in this context, as consumers are more likely to trust influencers who genuinely support sustainable tourism [2, 3].

Furthermore, the study found that the effectiveness of influencer marketing in promoting eco-friendly hotels is closely linked to the content format. Visual content, such as photos, videos, and stories showcasing the environmental features of a hotel, was reported as the most impactful in influencing consumer perceptions. This finding supports previous research indicating that visually rich platforms like Instagram are powerful tools for influencers to engage audiences and promote sustainability through authentic and immersive storytelling [5].

These findings contribute to the growing body of literature on the role of social media influencers in sustainable tourism marketing, particularly concerning eco-friendly hotels in Greece. While previous studies have broadly examined the role of influencers in shaping consumer behavior [1, 6], this research specifically explores the intersection of influencer marketing and sustainability. It offers valuable insights for hoteliers, marketers, and policymakers. By understanding how different age groups interact with influencer content, eco-friendly hotels can develop more targeted marketing strategies that align with consumer values, ultimately promoting sustainable tourism in a more effective and ethical manner [14–18]. The role of culture is also significant [19].

5 Conclusion and Future Research

In conclusion, this study highlights the significant role social media influencers play in promoting eco-friendly hotels, particularly among younger consumers, though it also reveals a gap in the prioritization of sustainability between age groups. While younger audiences engage more with influencer content, older consumers place greater importance on sustainability, indicating the need for tailored marketing strategies that address both demographics. Future research should explore the long-term impact of influencer marketing on actual sustainable behaviors, examining whether such marketing leads to lasting eco-conscious decision-making. Additionally, further investigation into the ethical implications of greenwashing in influencer campaigns would be valuable in ensuring authenticity and transparency in promoting eco-friendly accommodations [20].

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The Impact of Ecotourism on Tourist Behavior in Greece: A Quantitative Analysis of Sustainability and Market Dynamics



Michalis Skordoulis, Maria Giaka, Andriana Psimopolou, Dionysia Panagopoulou, and Aristidis Papagrigoriou

Abstract This study examines the influence of ecotourism on tourist behavior in Greece, focusing on sustainability awareness as a key factor in decision-making and the impact of marketing strategies on tourists' willingness to choose Greece as an ecotourism destination. A quantitative approach was used, collecting data from a convenient sample of 380 respondents through structured, face-to-face questionnaires administered to international tourists who self-identified as ecotourists traveling to Athens International Airport as their destination. Multiple regression analysis revealed that sustainability awareness significantly predicts tourists' choice of Greece for ecotourism, while personalization of experiences also plays a positive role. Additionally, correlation analysis indicated that marketing strategies, such as eco-labels and social media campaigns, have a strong influence on tourists' destination decisions. The study highlights the importance of sustainability and targeted marketing in shaping ecotourism behavior, offering insights for enhancing Greece's position as a leading ecotourism destination.

Keywords Ecotourism · Sustainability Awareness · Tourist Behavior

1 Introduction and Background of Research

Ecotourism, a form of sustainable tourism that emphasizes the conservation of natural environments and local communities, has gained significant momentum worldwide. As global awareness of environmental issues increases, travelers are becoming more selective in choosing destinations that align with their sustainability values. Ecotourism not only promises an immersive experience in nature but also

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advocates for minimal environmental impact, making it a key driver of the tourism industry's future [1]. In Greece, with its diverse landscapes and rich cultural heritage, the rise of ecotourism presents an opportunity to rejuvenate the tourism sector. The country's ecotourism offerings have positioned it as a destination for environmentally conscious travelers. However, the effectiveness of these offerings in shaping tourist behavior remains underexplored. Studies show that while tourists are motivated by sustainability, they also expect high-quality services and accommodations that adhere to environmental standards [2].

Previous literature on ecotourism highlights several key factors influencing tourist behavior, including sustainability certifications, personalized experiences, and the promotion of green activities [3]. Falk and Hagsten [4] argue that tourist decision-making is heavily influenced by the availability of eco-friendly services, while Nordin [5] emphasizes the role of long-term ecological planning in shaping consumer behavior.

The rise of ecotourism as a sub-sector of sustainable tourism has garnered attention globally, emphasizing the importance of maintaining environmental integrity while promoting travel experiences. Ecotourism not only focuses on preserving natural resources but also fosters cultural and social interactions that benefit local communities [6]. This approach promotes a balance between tourism growth and environmental preservation, encouraging tourists to engage in eco-friendly activities while supporting biodiversity. In Greece, this has translated into opportunities for marketing destinations that emphasize ecological heritage, diverse landscapes, and authentic cultural experiences, thus appealing to environmentally conscious travelers who prioritize sustainable practices in their decision-making processes.

The increasing demand for sustainable travel practices has positioned ecotourism as a central pillar of modern tourism strategies. According to several studies, the shift toward sustainability has been driven by tourists' growing environmental awareness and their desire to engage in responsible travel. Ecotourism not only involves minimal environmental impact but also emphasizes the preservation of local cultures and natural resources, making it a key contributor to sustainable tourism goals [1]. The implementation of eco-friendly accommodations, activities, and certifications has become a significant factor in attracting environmentally conscious travelers, and as a result, destinations that effectively market these green credentials are seeing an increase in tourism traffic [7]. The global rise in ecotourism indicates that sustainability is becoming a decisive factor for tourists when selecting a destination.

Moreover, marketing strategies play a pivotal role in promoting ecotourism destinations, as they influence tourists' perceptions of environmental commitment [8–12]. Research suggests that eco-labels, social media campaigns, and digital platforms that promote green practices have a direct impact on tourists' willingness to select ecotourism destinations [13]. For instance, social media campaigns often showcase the eco-friendly practices of destinations, which can significantly enhance their appeal to the growing segment of environmentally conscious travelers. The application of sustainability certifications further adds credibility, helping travelers to trust that their destination choices align with their environmental values [14]. As the tourism industry in Greece continues to evolve, the successful integration of these

marketing strategies will be essential in attracting more ecotourists and sustaining the sector's growth [15].

This study contributes to the identification of major ecotourism market segments in Greece and provides valuable insights into the sector's potential for growth. Sustainability has become a key factor in tourists' decision-making processes, with many travelers opting for destinations that emphasize environmental conservation and eco-friendly practices. Greek ecotourism destinations can leverage this trend by offering green activities, eco-certifications, and marketing campaigns that highlight their commitment to sustainability. The rising popularity of ecotourism presents both opportunities and challenges for Greece, as the country strives to improve its green offerings and meet the expectations of the growing number of eco-conscious travelers.

The aim of the present study is to examine the influence of ecotourism on tourist behavior in Greece, with a focus on sustainability as a key factor in decision-making. The first of its objectives it to analyze the relationship between sustainability awareness and tourists' choice of ecotourism destinations in Greece, while the second one is to investigate the impact of marketing strategies on tourists' willingness to choose Greece for ecotourism.

2 Methodology

This study employed a quantitative approach, gathering data at a single point in time from a diverse group of international ecotourists. The primary data collection tool was a structured questionnaire, administered face-to-face to tourists who self-identified as ecotourists and were traveling to Athens International Airport as their destination. Convenience sampling was used, leveraging the accessibility of tourists at the airport. Finally, 380 valid questionnaires were collected. To ensure that the respondents were ecotourists, a series of screening questions at the beginning of the survey to verify their participation in ecotourism activities were included. Respondents who did not meet these criteria were excluded from the survey, ensuring that only those with relevant ecotourism experience were included in the analysis.

The survey contained 49 questions divided into five categories: demographic details, tourism behavior, sustainability awareness, ecotourism in Greece, and marketing influences. Regression and correlation models were applied to analyze the data. For the regression analysis, the dependent variable was "tourists' choice of ecotourism destination in Greece", while the independent variables included "sustainability awareness" and "personalization of experiences".

Linear regression and correlation analysis were applied to analyze the data. Even though some variables were ordinal in nature since they derive from Likert scale responses, they were treated as continuous after confirming that the data distribution was sufficiently normal and linear, which is a common practice when there are five or more categories and the distances between categories are considered roughly equal [16]. The research employed a 5% level of significance.

3 Results

3.1 Ecotourists' Profile and Preferences

The sample was well-balanced in terms of gender, with 48% male and 52% female respondents. Most participants were aged between 35 and 50 years (45%), followed by those aged 18 to 34 years (40%). Education levels were relatively high, with 65% of respondents holding a university degree.

Based on the research results, tourists participating in ecotourism activities in Greece demonstrated a preference for destinations that combine environmental conservation with a rich array of activities. Popular destinations include Crete (16%), Attica (13%), and the Cyclades (11%). The primary motivations for travel were environmental awareness (41%) and leisure (38%). Tourists showed strong interest in outdoor activities, with bicycling (17%), sea activities (16%), and eco-friendly initiatives like tree planting and recycling (both 13%) being the most popular choices. These preferences highlight the ecotourists' desire for a well-rounded experience, blending environmental engagement with recreational opportunities.

3.2 Factors Influencing Tourists' Decisions in Ecotourism

The following table summarizes the factors that most strongly influence tourists' decisions when selecting an ecotourism destination. Environmental concerns, such as climate change, play the largest role, with 35% of respondents citing them as a significant factor. Social media presence and eco-branding were also highly influential, with many tourists indicating that these factors had a moderate to significant impact on their choice of destination. Promises of environmentally friendly resources were less influential, indicating that tourists may prioritize immediate experiences and visible eco-labels over generalized promises of sustainability (Table 1).

3.3 Marketing Strategies Impacting Ecotourism Destination Choice

The following table summarizes the influence of various marketing strategies on tourists' decisions to visit ecotourism destinations in Greece. Social media presence and eco-labels had the strongest influence, with more than 50% of respondents indicating that these factors were either moderately or strongly influential in their decision-making. Traditional marketing tools like brochures had a much lower influence on tourists' choices (Table 2).

Moreover, a correlation analysis was used to assess the strength of the relationship between marketing strategies and tourists' decisions to choose Greece for their

Table 1 Factors influencing tourists' decisions in ecotourism

Factor	Significant influence (%)	Moderate influence (%)	Low influence (%)
Environmental reasons	35	40	25
Social media presence	28	50	22
Eco-brand/ Eco-label	27	48	25
Trends in ecotourism	25	45	30
Promises of environmentally friendly resources	17	40	43

Table 2 Marketing strategies impacting ecotourism destination choice

Factor	Significant influence (%)	Moderate influence (%)	Low influence (%)
Social media presence	28	50	22
Eco-label / Eco-brand	27	48	25
Advertisement	19	51	30
Vacation packages	18	40	42

ecotourism vacations. To do, Spearman's correlation coefficient was used. Statistically significant correlations (p-values < 0.05) were found between tourists' decisions to choose Greece for their ecotourism vacations and eco-labels/ eco-brand (Rho $= 0.623$), social media presence (Rho $= 0.551$) and vacation packages (Rho $= 0.584$). These results indicate that eco-labels/eco-brands, had the strongest positive correlations with tourists' decision-making, followed closely by social media campaigns.

3.4 Sustainability and Destination Choice

For the relationship between sustainability awareness and destination choice, a linear regression was carried out give the evidence on the existing literature on how variables with five or more categories and equal distances between their categories can be treated [16]. Except for sustainability awareness, personalization of experiences was considered as another independent variable. The model's results are presented in the following table. The regression analysis showed that sustainability awareness significantly predicts the likelihood of tourists choosing Greece as an ecotourism

Table 3 Sustainability and destination choice

	B	Std. error	p-value
Constant			0.000
Sustainability awareness	0.470	0.050	0.002
Personalization of experiences	0.450	0.020	0.003

destination. The personalization of experiences also positively influenced destination choice (Table 3).

The adjusted R-squared of 0.420 indicates that 42% of the variance in tourists' choice of Greece as an ecotourism destination is explained by sustainability awareness and personalization of experiences, suggesting a strong model fit. Additionally, the Durbin-Watson statistic of 1.95 shows no significant autocorrelation in the residuals, confirming the model's reliability and appropriateness for this analysis.

4 Discussion

The regression analysis confirmed that sustainability awareness plays a pivotal role in influencing tourist behavior. Tourists with higher levels of environmental consciousness are more likely to choose Greece as their ecotourism destination. This finding is consistent with prior studies that emphasize the growing importance of sustainability in shaping tourist preferences [4]. The personalization of experiences also emerged as a significant factor, highlighting the need for tailored, eco-friendly travel options. Moreover, the correlation analysis demonstrated that eco-labels and social media campaigns are effective marketing tools for attracting ecotourists, indicating that tourists trust verified certifications and are more inclined to select destinations that display them. Online reviews also played a key role, as tourists rely on peer feedback when making destination choices. These findings suggest that effective marketing strategies can significantly enhance Greece as a top ecotourism destination [17, 18].

The findings align with previous studies that have emphasized the importance of sustainability in influencing tourist behavior. Tourists who are environmentally conscious tend to prioritize destinations that promote sustainability and ecological conservation, with Greece's diverse ecotourism offerings aligning with these expectations. Marketing efforts that emphasize green destinations, eco-labeling, and the availability of eco-friendly activities are crucial in attracting this segment of travelers. This study confirms the positive impact of eco-labels and social media campaigns [19, 20] on tourist decisions, suggesting that promoting sustainability through these channels can significantly enhance the attractiveness of Greece's ecotourism sector. Moreover, the results underscore the need for the ecotourism sector in Greece to improve its accommodations and sustainability practices. As previous literature suggests, travelers are increasingly aware of the environmental impact of their choices, and

destinations that fail to provide green-certified accommodations may fall short of tourist expectations [21].

The results indicate several practical recommendations for Greece's ecotourism sector. First, investments in green-certified hotels and lodges are essential to meet the increasing demand for sustainable accommodations. Moreover, since tourists expect well-trained staff who can provide eco-friendly experiences, making employee training on sustainability practices a priority is essential. Last, eco-labels are a key marketing tool, and their use should be expanded to build trust among tourists.

5 Conclusion and Future Research

Ecotourism has become a driving force in tourism industry. This study has shown that sustainability awareness significantly influences tourists' choice of ecotourism destinations, and that effective marketing plays a critical role in attracting eco-conscious travelers. By improving service quality and continuing to emphasize sustainable practices, Greece can strengthen its position as a leading ecotourism destination.

Future research could track changes in tourist behavior over time, particularly as sustainability becomes more ingrained in travel decision-making. Exploring how different demographic groups respond to specific ecotourism marketing tactics could provide more targeted strategies for attracting diverse tourist segments. Last, investigating whether sustainability awareness influences repeat visits would offer valuable insights for destination management.

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Integrating Intangible Cultural Heritage in Higher Education—Challenges and Obstacles

Goran-Pavel Šantek, Androniki Kavoura, and Arabela Briciu

Abstract The paper analyzes the integration of Intangible Cultural Heritage (ICH) into higher education, focusing on challenges, opportunities, and effective strategies for overcoming barriers. It is part of a broad multicultural project that aims to integrate and better manage the national intangible heritage in order to raise awareness of European common values. Using qualitative and quantitative data from research that included interviews and focus groups from 61 experts, it highlights institutional obstacles, limited resources, and doubts about ICH's relevance as significant obstacles. Despite these challenges, incorporating ICH can foster civic engagement, cultural awareness, heritage preservation, and social cohesion. The study emphasizes the need for consistently including ICH in university curricula and suggests innovative methods, such as experiential learning and digital tools, to engage students effectively. Culturally responsive frameworks and dynamic interdisciplinary approaches are recommended to overcome barriers. Furthermore, integrating ICH into education is directly linked to cultural tourism, promoting sustainable tourism practices that honor and protect cultural diversity. It shows that universities can play a critical role in preserving ICH, contributing to developing culturally enriched and socially responsible graduates.

Keywords Intangible Cultural Heritage · Higher Education · Cultural Heritage Preservation

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1 Introduction and Framework of Research

Conceptually, intangible cultural heritage is understood according to the UNESCO description: "Cultural heritage […] includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts" [1]. UNESCO also stresses the importance of intangible cultural heritage. "[It] is an important factor in maintaining cultural diversity in the face of growing globalization. An understanding of the intangible cultural heritage of different communities helps with intercultural dialogue and encourages mutual respect for other ways of life" [1]. Intangible cultural heritage is also intrinsically linked to cultural identity and social integration.

Safeguarding intangible heritage may bring civic engagement and can be managed for raising awareness of European common values and the promotion of areas that may be underdeveloped and may benefit from sustainable tourism. There is still a lack of consensus on the assessment of sustainable tourism development [2], cultural tourism [3, 4] but also in regard to nations and their cultural heritage, intangible heritage is deemed to be one of the essential elements of national identity [5, 6].

This paper strives to offer a framework for enhancing the role of ICH in education and provide insights into effective strategies for overcoming existing challenges. Theoretically, the paper is established on redefining and reinterpretation of the importance of ICH in maintaining cultural identity, social cohesion, and diversity.

2 Research on Intangible Cultural Heritage, Cultural Tourism, and Higher Education Curriculum

Accordingly, intangible cultural heritage became a significant topic for many nations, among other areas, in education and industry.

The significance for the industry is well exemplified through cultural tourism, regarding which Greg Richards states: "More recently the growth of the creative economy has been marked by the increasing intangibilisation of culture and heritage (… In the field of tourism, this change has been marked by the continued growth of cultural tourism, and the recent fragmentation of cultural tourism into a number of sub-fields" [7].

The significance for education is well exemplified through university research and education because there is limited adoption on university curricula [8]. According to the goals of this paper, the state, challenges, and obstacles of ICH implementation in university education are themes that will be further developed in this article.

3 Methodological Considerations

This paper analyzes the integration of ICH into higher education curricula and the challenges and obstacles faced in this process. It explores how incorporating ICH can promote student civic engagement and strengthen cultural heritage preservation. Some discussed barriers to more substantial ICH academic inclusion are institutional obstacles, resource limitations, and the perceived relevance of ICH in contemporary academic settings. It is based on research that collected quantitative and qualitative data through individual interviews and focus group discussions that took place in 2024. In total, 61 experts participated in the research from 6 countries (Portugal, Croatia, Bulgaria, Greece, Romania, and Poland) in order to shed light with their expertise on the need of curricula that incorporate ICH in academic studies. The data collection aimed to understand the challenges and opportunities related to ICH integration, using quantitative measurements (e.g., rating the importance of various factors) and qualitative insights to elaborate on the underlying obstacles and proposed solutions. This paper's research focus was narrowed to the main paper topics that have been more deeply analyzed, synthesized, and interpreted.

4 Research Results

Research conducted with representative experts from academia of six countries showed that the availability of courses related to intangible heritage varies significantly. Two-thirds of expert universities have ICH courses, but their focus differs significantly. The research replies summarize the following courses since some universities offer specialized courses such as Intangible Cultural Heritage, Cultural Heritage Management, Anthropology of the Modern World, and Marketing of Cultural Heritage. These courses focus on preserving, managing, and understanding intangible cultural elements. Additionally, courses like Cultural Management, Tourism Planning, and Anthropology of Material Culture indirectly address intangible heritage issues by covering related topics. The fact that several universities reported having no dedicated courses on intangible heritage indicates a gap in the availability of education on this vital subject. This disparity underscores the need for a more comprehensive inclusion of intangible heritage topics in university programs to foster a broader understanding and preservation of cultural heritage.

The research confirmed that academia values the importance of integrating intangible heritage into university education to promote and encourage civic engagement among students very highly. Namely, the average expert mark regarding that question was 4.61, from a maximum of 5 points. The grading was confirmed by experts' discursive elaboration, which can be summarized in the following sentences:

Students of academic organizations may benefit from teaching of courses associated with ICH since they will be able to learn and appreciate cultural and identity

issues, they will learn how civic engagement can take place with the adoption of technological and other tools and will practice their social skills in relation to management, sustainability and endangered heritage from their young years for preserving and enriching societal values.

Nonetheless, research illustrated that it is not only that ICH is not incorporated into the university curriculum, other limitations are associated with difficulties in course content inclusion and institutional support such as politically biased issues, issues related to ethnological approaches but also the lack to show ICH's broader significance.

Contemporary societies can benefit from ICH further integration into curricula and good examples such as hands-on projects attached to university courses (documenting local festivals or oral histories) can provide students with practical experience in ICH.

The results of this research showed that educational tools such as online platforms, gamification, and self-directed and project-based projects can be innovative ways of teaching ICH and raise students' engagement to better appreciate and to respect cultural heritage. More specifically, the experts of the interviews and the focus groups from the 6 countries mentioned that various platforms, including social media, podcasts, and online exhibitions can be employed. Furthermore, crowdsourcing and community engagement effectively involve local communities in documenting and sharing ICH, ensuring broader participation and appreciation. Another tool that emerged from the research is associated with social media campaigns on platforms like Facebook, Instagram, and TikTok that can effectively engage global audiences by sharing stories, videos, and images related to ICH. Experts commented on the importance of integrated marketing campaigns, including collaborations with cultural institutions and tech companies, help ensure ICH promotion efforts' effectiveness and reach.

The contribution of immersive technologies was also acknowledged and suggested that may make learning more engaging: virtual reality (VR) and augmented reality (AR) was suggested that may provide immersive and interactive experiences, allowing users to explore cultural practices and historical sites more engagingly. In addition, digital archives and databases were brought forth from the research analysis since they create comprehensive repositories that document ICH elements, making them accessible to a broader audience.

The project research has also discussed with experts tourism heritage value and its impact on culture, economy, and society; contemporary challenges and solutions for the management of ICH (multiculturalism, crises, etc.); and funding and resource mobilization for ICH: guide on securing funding, grants, and resources for research, documentation, conservation, and promotion of intangible cultural heritage projects, including strategies for collaboration with government agencies, NGOs, and private donors. Academic experts value tourism heritage value and its impact on culture, economy, and society substantially (mark 4.22 from 5) and experts referred to the fact that cultural tourism brings economic benefits, generate revenue and create jobs for citizens of local communities, but it must be managed carefully to prevent the commodification of cultural heritage and ensure its preservation for future generations in a sustainable way.

It is interesting to note that interview results brought forth the concept of the interpretive equation. The interpretive equation, which combines knowledge of the resource with knowledge of the audience, creates opportunities to communicate and promote cultural heritage effectively that takes into consideration the interplay of cultural, economic, and social factors, presenting opportunities and challenges. Emphasizing cultural authenticity, community participation, and sustainable practices is critical to harnessing tourism's potential to protect and celebrate heritage while minimizing negative impacts.

The experts also significantly value contemporary challenges and solutions for managing ICH (multiculturalism, crises, etc.) (mark 4.27 from 5). For this paper the most important insights are the following: climate change, globalization, and multiculturalism, all of which impact the preservation and transmission of cultural traditions; promoting ethnic and religious tolerance by understanding cultural heritage from a multicultural perspective, avoiding the temptation to view one's culture as superior. Local communities and stakeholders play a critical role in safeguarding ICH by contributing to the preservation efforts and ensuring its transmission to future generations and the urgency of proactive preservation efforts from younger generations.

This research presentation and synthesis ended with the experts' views on funding and resource mobilization for ICH: guide on securing funding, grants, and resources for research, documentation, conservation, and promotion of intangible cultural heritage projects, including strategies for collaboration with government agencies, NGOs, and private donors. The experts also regard it as very valued (mark 4.27 from 5). Results on the abovementioned theme illustrate that funding and resource mobilization are critical for the survival and preservation of ICH but also strategic planning and networking are necessary. The sustainability of ICH projects depends heavily on obtaining adequate financial support, as traditional tourism methods alone are insufficient for preservation efforts. Students should be familiar with various funding sources for cultural heritage projects and develop the skills to navigate the application processes successfully. Collaborative efforts across different fields, including economics, can enhance the effectiveness of resource mobilization for ICH projects.

5 Discussion and Conclusion

The research results reveal challenges in integrating ICH into higher education, including institutional obstacles, limited resources, and a perceived lack of relevance of ICH in modern academic curricula. Despite these obstacles, the study highlights that ICH can be crucial in fostering civic engagement and cultural preservation when effectively integrated. The data shows that academic experts value ICH's potential to enhance students' cultural awareness and promote social cohesion. However, the findings stress the need for more dynamic, interdisciplinary approaches to overcome these barriers, encouraging innovation and adaptability in higher education.

The study also indicates that overcoming barriers will require institutional adjustment, supported by innovative teaching methods, experiential learning, and digital tools. The research and paper suggest that higher education institutions must adopt a more flexible, culturally responsive framework to incorporate ICH better and engage students in preserving cultural diversity and heritage.

The research shows that integrating Intangible Cultural Heritage (ICH) into higher education offers significant opportunities and challenges. Although there are obstacles like limited resources and doubts about the relevance of ICH, the potential benefits are substantial [9]. This research demonstrates that incorporating ICH effectively can foster civic engagement, enhance cultural awareness, and preserve cultural diversity, which are all crucial for creating a more cohesive society [10].

Some universities have already started offering ICH-related courses, but the focus and implementation vary greatly. The primary suggestion is that there needs to be a more consistent inclusion of ICH topics across university programs to expand students' understanding and promote cultural preservation.

To overcome the existing challenges, institutions should adopt innovative teaching methods, experiential learning approaches, and digital tools [11–13] as this research also highlighted. Approaches like gamification, digital platforms, and hands-on projects can significantly improve student engagement and make ICH an essential component of academic programs. By making learning more interactive, students are more likely to develop a lasting appreciation for cultural heritage.

Tourism heritage involves a complex interplay of cultural, economic, and social factors, presenting opportunities and challenges that involve the participation of all related stakeholders via sustainable practices in order to protect and celebrate heritage while minimizing negative impacts [14].

We can conclude that universities should take a proactive role in preserving cultural heritage and preparing students to contribute to its preservation actively. While challenges remain, the potential impact of ICH integration is immense, providing a pathway to develop culturally enriched and socially responsible graduates who are equipped to contribute meaningfully to society. Furthermore, integrating ICH into higher education is directly associated with cultural tourism, as it helps students understand the value of heritage preservation, thereby promoting sustainable tourism initiatives that celebrate and protect cultural diversity.

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Planning and Programming of Diversity Management Visions and Goals in Organizations—An Empirical Measurement Tool

Elwira Gross-Gołacka

Abstract This article explores the strategic importance of diversity management in organizations, particularly in the context of globalization and demographic changes. It highlights the need to integrate diversity management into organizational strategies, emphasizing its role in fostering an inclusive workplace culture and driving innovation. The study focuses on developing and using effective tools to measure and evaluate diversity initiatives, ensuring they lead to real improvements. The article presents an original proposal for a partial synthetic indicator (WP1) on Planning and Programming of Diversity Management, which is part of an overall synthetic indicator (5P architecture). Exploratory factor analysis was used to test the homogeneity of the index. The reliability of the new indicator was also assessed, both overall and in selected sub-areas. By tailoring these tools to organizational needs, diversity management becomes more than a declarative effort, contributing to better business performance and a positive organizational image. The article also addresses the challenges in implementing these tools and the importance of continuous adaptation to meet evolving organizational needs.

Keywords Diversity Management · Planning · Measurement Tool

1 Introduction and Theoretical Considerations

In the face of globalization, increasing demographic diversity, and rapid social change, managing diversity has become critical for organizational success and sustainability. Workplace diversity extends beyond ethnicity and gender to include factors such as age, experience, sexual orientation, ability, and education. A strategic approach to diversity management—grounded in clear goals and visions—is essential for fostering an inclusive organizational culture. This approach also positions

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diversity as a strategic asset that can enhance innovation, market understanding, and organizational reputation [1–9].

Diversity management is not merely a response to legal mandates but a driver of business benefits. To fully capitalize on the potential of diverse workforces, organizations must implement effective tools for planning, measuring, and evaluating diversity initiatives. These tools—ranging from Planning and Programming an Organization's Diversity Management Vision and Goals to surveys—enable organizations to monitor progress, assess effectiveness, and continuously improve their strategies.

This article emphasizes the importance of aligning diversity management strategies with organizational goals and discusses various measurement tools used to evaluate progress. We also address the challenges organizations face when implementing these tools and propose solutions. By tailoring these tools to the specific needs of an organization and continuously refining them, companies can ensure their diversity initiatives are impactful. Ultimately, the article underscores that strategic planning, supported by effective evaluation, is key to realizing the full benefits of diversity, driving innovation, and fostering a positive organizational culture.

Diversity management is a broad, interdisciplinary field, incorporating economic, social, and biological perspectives. Özbilgin and Tatli [10] define it as an organizational philosophy that values diversity to enhance performance. Measuring the effectiveness of diversity and inclusion initiatives is challenging due to their intangible nature [11], with much research focusing on manager-employee interactions and the impact of diversity management on performance [12, 13]. Other studies examine how factors like organizational climate and culture promote diversity [14, 15] and inclusion [16, 17].

Measurement of diversity is essential for establishing a baseline and evaluating the success of diversity initiatives [7, 18, 19]. However, there is a gap in the systematic review of methods for quantifying workplace inclusion, particularly in ensuring the methodological rigor and psychometric reliability of measurement tools. Evaluating these aspects is critical for ensuring credible results [20–22]. Poorly validated instruments can compromise research integrity and lead to resource misallocation. The purpose of this article is to present a measurement tool to assess the degree of development of an organization's diversity management work environment in the area of Planning and Programming of Diversity Management. In addition, our goal is to present an empirical study covering 800 companies for which the tool has been validated.

2 Materials and Methods

To achieve the study's aim, methodological triangulation was applied, incorporating various data sources and research methods. The study involved an empirical validation of the 5P architecture model, based on the findings of survey titled "Quantitative research on the awareness, needs, and activities of companies in the field of diversity

management," conducted by Lewiatan [23]. The survey used individual computer-assisted telephone interviews (CATI) with a representative sample of 800 medium and large enterprises across Poland [23, 24]. The average estimation error was 3.42%, reflecting a reliable dataset.

The study excluded small businesses due to their underdeveloped management processes, which could complicate the evaluation of diversity management models. Participants were mainly from management with a diverse demographic breakdown: 85% were women, 53% HR specialists or managers, and 21% HR directors. The data collection focused on understanding companies' awareness, needs, and activities related to diversity management.

This paper assesses the planning and programming of diversity management goals in organizations by examining employee needs, strategic mission, and demographic trends relevant to workforce planning.

3 Research Results

The sample size was sufficient (the sample consisted of 800 items, so it met even the strictest Tabachnick criterion and the STV reached 50:1. The stock of common variability was estimated using the principal components method, which with Equamax rotation (since the correlation assessment of the highlighted components indicated a low degree of their correlation—the correlation coefficient reached 0.114).

An approach called the 5P Architecture was proposed to illustrate the process of implementing diversity management and its links to organizational performance. The approach includes the development of a global indicator (Global Diversity Management Indicator—W5P), which was created by aggregating sub-indicators (WP1-WP5). Accordingly, each of the areas in question (WP1-WP5) was analyzed separately and a synthetic indicator (WP1. Planning and programming the vision and goals of diversity management in the organization; WP2. Recruit and retain a diverse workforce in the organization; WP3. Expanding the market for goods and services; WP4. Promoting and communicating diversity; WP5. Review and evaluate the diversity actions taken in the organization) was created for each of them. The procedure for creating each of the indicators of WP1-WP5 included the development of indicators of diversity management in a given area (a list of diagnostic variables was prepared, selecting the appropriate questions from the questionnaire of the CATI survey referred to, with an indication of the method of measurement in a given area (i.e., assigning a numerical value to each variant of the original variable in such a way as to indicate an increasing/decreasing level of the phenomenon—the state of diversity management [23].

Taking into account the synthetic indicators discussed above, it is recommended to measure diversity management in one area called Planning and Programming the Organization's Diversity Management Vision and Goals, as expressed through the synthetic indicator (WP1—one of five developed). The indicator encompasses

the systematic monitoring and analysis of various diversity factors within an organization, including the gender wage gap, reconciliation of work-life balance, age distribution, disability status, and cultural diversity of employees. It also includes tracking employee needs related to sex, age, disabilities, and family duties, alongside the development of a diversity management strategy, with a forward-looking perspective on demographic trends affecting future employment of older individuals, women, disabled persons, and foreigners [23, 24].

The first area can be assessed based on information about the organization's monitoring of the needs reported by employees—related to their background from another culture, their religion, age, disability, and gender. It should be noted that the variables that make up sub-indicator constitute the main factor of Planning and programming the vision and goals of diversity management in the organization. Among them, those for which the factor loadings are the highest are the most important for assessing the degree of implementation of diversity management—conducting monitoring of the needs reported by employees related to their background from another culture and religion, and thus monitoring not only the needs that are basic from the perspective of equal opportunities (related to gender, disability, age), but precisely those that are more advanced (less frequently considered).

In addition to the aforementioned, monitoring the needs of employees by age and disability plays a large role, as well as monitoring the employment of employees aged 50 + and disabled. There is less monitoring in the area of work-life balance. Analysis of diversity management strategy and monitoring the salaries of women and men play a smaller role.

4 Discussion and Conclusion

Among medium and large companies in Poland, diversity management is generally at a relatively high level. This is indicated by average scores of around 9 points, with the maximum possible score being 11. Furthermore, both the median and other quartiles also reach a value of 9, suggesting that half of the most typical organizations achieve a (WP1) score of exactly 9.The distribution is highly concentrated around this score, with 65% of all surveyed companies obtaining a value of 9. The variation in diversity management performance among these companies is relatively small (with a standard deviation of 0.83 points). However, within the surveyed group, there are companies with an atypically low level of development in this area of diversity management [23].

The Assessment Index for Planning and Programming an Organization's Diversity Management Vision and Goals (WP1) is a critical tool for managing diversity effectively in the workplace. Its use allows organizations to accurately evaluate their current diversity management approach, which is vital for identifying areas that need improvement as well as successes that can be further enhanced. By helping to define a clear vision and set specific goals related to diversity, (WP1) enables organizations to better plan and implement strategies to foster a more diverse and inclusive work

environment. Managing diversity-related change can often be challenging, and WP1 serves as a mechanism to track progress and make necessary adjustments to strategies over time.

Moreover, effectively communicating the vision and goals is essential for the success of any diversity initiative. This index can assist in crafting clear and persuasive messages tailored to different stakeholder groups and provide data that supports detailed reporting and analysis, promoting transparency and accountability.

In addition, taking a strategic approach to diversity management is vital for unlocking the full potential of a diverse workforce, which can drive greater innovation and creativity. Through strategic diversity management, organizations are better positioned to adapt to global markets and diverse customer groups, resulting in a deeper understanding of consumer needs and more effective communication [14, 25]. Furthermore, managing diversity effectively through strategic planning and execution fosters inclusion and tolerance within the workplace, which leads to higher employee engagement and reduced turnover rates. Based on the answers to the research questions and discussions grounded in the literature and survey data, several future research areas emerge that could become key tasks for management science.

Investigating the relationship between diversity management and organizational effectiveness. More research is needed not only because current results are incomplete but also because there is an opportunity to explore diversity and effectiveness by integrating findings from related fields, such as organizational culture and organizational change. This integrative approach will help to better understand the impact of subjective perceptions and value functions [23, 26].

Identifying the determinants of diversity management implementation and different approaches to the concept.

Enhancing the applicability of existing solutions and tailoring them to the needs and capabilities of smaller organizations, while demonstrating the tangible business benefits they can bring.

Measuring the impact and effectiveness of diversity initiatives to identify strengths and weaknesses and make improvements, supported by a robust measurement infrastructure [27].

These areas represent important avenues for advancing both the theory and practice of diversity management in organizations.

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Strategies for the Convergence of Green Management and Digital Transformation in the Forest Service of Greece



Aikaterini Liaskopoulou and Ioannis Papadopoulos

Abstract The convergence of Green Management and Digital Transformation is a critical factor for improving efficiency and sustainability in Public Forest Services. This paper examines the factors that enable this convergence in the Greek Forest Service, through a survey of 232 senior officials. The research questions focus on understanding the degree of knowledge and acceptance of Green Management and Digital Transformation, as well as identifying the factors that influence their effective convergence. The results show that the majority of officials consider Digital Transformation essential for a successful green transition, while the level of knowledge about Green Management remains limited. The correlation between the two strategies is positive, and their implementation contributes to more efficient forest management, reducing environmental impacts, and improving accountability, transparency, and services provided to citizens. Despite recognized challenges, such as resistance to change and the lack of digital skills, the research confirms the potential of converging these two strategies, offering a new framework for sustainable and technologically innovative forest management.

Keywords Green Management · Digital Transformation · Strategic Convergence

1 Introduction

Sustainable development requires the preservation of natural resources and respect of human rights. Climate change significantly impacts sustainable development, with the need for limiting and mitigating its effects becoming increasingly urgent [1].

Today's technologies enable us to stay connected with people, systems, and objects on the go. The use of data exchange and monitoring platforms provides both visibility and accountability—often in real-time—thus reducing environmental impacts before they escalate [2]. Modern technologies and green management strategies

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contribute to protecting forest ecosystems, reducing carbon emissions, and improving the accountability and transparency of public organizations [3, 4].

The convergence of Green Management (G.M.) and Digital Transformation (D.T.) creates a new framework for strategic management, combining environmental sustainability with technological innovation [4]. This approach offers Forest Services the opportunity to meet the demands for transparency, efficiency, and sustainability while enabling the use of automated processes and data analysis to optimize green practices [3]. The aim of this research is to highlight whether the convergence of Green Management with digital transformation can enhance sustainability and efficiency in the operations of the Greek Forest Service, and to explore Forest Service executives' understanding and acceptance of these strategies [7, 19].

2 Literature Review

Green Management is a strategy that aims to reduce environmental impacts through sustainable management practices. In forestry operations, this involves implementing practices that minimize biodiversity loss, promote reforestation, and ensure the long-term health of ecosystems [5]. Afedzie et al. [6] define green management as an activity aimed at the continuous promotion of environmental management, such as managing personnel responsible for environmental activities and biodiversity conservation. This emphasizes the concept of Green Human Resource Management (GHRM).

According to Gong and Ribiere [7], digital transformation is "*a fundamental process of change triggered by digital technologies, aiming to bring about radical improvement and innovation within an entity to create value for stakeholders by strategically leveraging key resources and capabilities.*" Digital transformation offers new opportunities for forest management, improving the accuracy and efficiency of processes [8]. According to Kangas et al. [9], open forest data can be used for management planning, implementation of various functions, business transactions, quality management, and business activities. Consequently, this new digital transformation provides opportunities for profitable businesses and competitiveness in the forestry sector.

The convergence of Green Management strategies with the potential of digital transformation can offer significant benefits in forest management [10]. The combined use of Green Management practices and digital technologies enables a more comprehensive approach to forest management, enhancing both efficiency and sustainability [3]. The synergy between these two strategies creates a new management model supported by data, incorporating automated processes, transparent operations, and environmental practices [11].

Implementing digital transformation and Green Management in Forest Services does not come without challenges. One of the primary issues is the lack of adequate technical infrastructure and the low digital maturity of many public organizations

[7]. Additionally, organizational resistance to change and the lack of digital skills can hinder the full utilization of digital technologies [12].

Moreover, bureaucracy and complex organizational structures often slow down the adoption of innovations in the public sector, making it difficult to manage change. Simultaneously, limited financial resources and the lack of public funding for digitization projects can restrict the ability of Forest Services to effectively implement innovative practices [13].

Despite the challenges, the global shift toward the digital age and green development presents a significant opportunity for Forest Services to adopt strategies that will allow them to operate with greater efficiency and sustainability [4].

Green Management and Digital Transformation influence multiple dimensions, including citizen engagement, strategic planning, technological adoption, operational effectiveness, and organizational culture. Their integration enhances citizen engagement in green initiatives [3], and the convergence of these strategies is crucial for sustainable outcomes [8]. Technology supports data collection, real-time monitoring, and optimization of green forest practices [9]. Automation and digitization improve Forest Service operations by reducing waste and increasing efficiency [2]. Lastly, organizational cultural change is essential for supporting these green and digital strategies [12].

Based on the above, the central research question is: What factors can enable the convergence of Green Management (G.M.) and Digital Transformation (D.G.) in Forest Service, improving the sustainability and efficiency of its operations? The secondary research question posed examines to what extent the executives of the Forest Service are aware of, understand, and accept the importance of G.M. and D.T. for the sustainable management of forests.

3 Methodology

A pilot qualitative and quantitative survey was conducted among 10 senior officials of the Central Forest Services of Greece with the aim of capturing the current situation and finalizing the questionnaire. The focus group consisted of individuals with relevant expertise on the topic, ensuring that the concept of Digital Transformation was understood. During the survey, questions were designed based on the Maturity Model [14] to collect the necessary data. Data collection was conducted respecting anonymity and voluntary participation [15]. In some cases, the questionnaire was resent, or telephone communications took place to encourage participation. The sample consisted of 232 employees, approximately 20% of the total population of Forest Service in Greece (1,160 employees) who received the questionnaire. Data collection took place from May 2023 to February 2024. The data analysis was performed using SPSS, version 26, and non-parametric Kruskal–Wallis tests were applied. To calculate the reliability of the tool, Cronbach's Alpha coefficient was used, which was found to be 0.974, indicating high reliability of the tool [16].

4 Results

A significant percentage (40.9%) of the executives of the Greek Forest Services were not familiar with the concept and objectives of digital transformation (Fig. 1). This lack of awareness is particularly noteworthy, given that Greece has, for years, implemented a National Strategy for Digital Transformation. This strategy includes initiatives aimed at developing digital infrastructures, enhancing citizens' digital skills, and improving governance. Of the remaining percentage (59.1%), who had some knowledge about digital transformation, 62.9% stated that it primarily involved the use of Information and Communication Technologies (ICT) to provide more efficient services and to develop organizational culture [17]. Additionally, most of forest employees, as illustrated in Fig. 1, were unfamiliar with Green Management (54.6%), Awareness of green management was not related to gender or education level, but it was associated with age, as employees aged 26–45 were more knowledgeable about green management ($X^2 = 11.093$, $p < 0.05$) [18].

Based on the analysis, 88.2% of those familiar with Green Management also understand digital transformation, while 63.8% of those unfamiliar with Green Management are similarly unaware of digital transformation (Table 1). The Chi-Square Test (Pearson Chi-Square = 64.114, $p = 0.000$) further confirms the correlation between knowledge of Green Management and digital transformation. Additionally, the vast majority (96.6%) of respondents view digital transformation as essential for a successful green transition, with ratings from "very much" to "moderately" (Mean = 2.04, St dev. = 0.802). These results address the secondary research question: "To what extent do Forest Service executives understand and accept the significance of Green Management and digital transformation for sustainable forest management?".

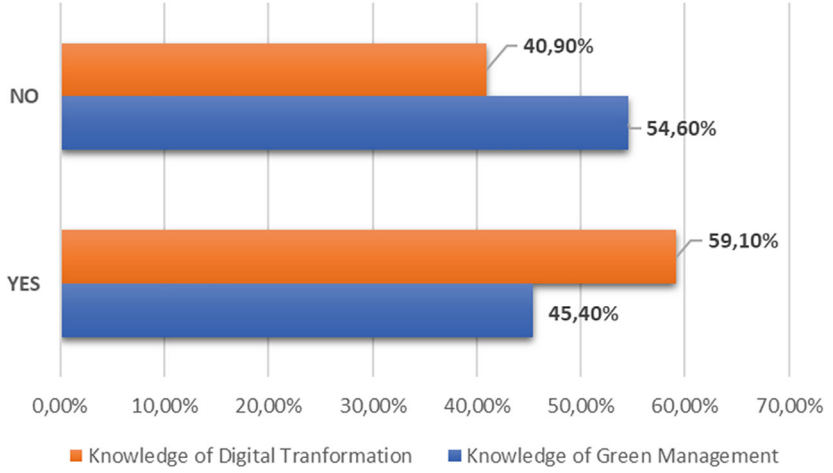


Fig. 1 Awareness levels of Green Management and Digital Transformation among respondents

Table 1 Knowledge of Green Management and Digital Transformation

		Knowledge about digital transformation		Total (%)
		Yes (%)	No (%)	
Knowledge of Green Management	Yes	88,2	11,8	100,0
	No	36,2	63,8	100,0
Total		59,1	40,9	100,0

The participants were asked to evaluate how Green Management and Digital Transformation influenced various factors related to the Forest Service, including citizens, strategy, technology, operations, and culture [2, 3, 8, 9, 12]. These factors were assessed using a five-point Likert scale (1 = Very Positive to 5 = Very Negative), and the results are shown in Table 2. The most positive impacts were seen in: (a) citizens' experience with the Forest Service (Mean = 2.30 from Green Management (G.M.) and 2.19 from Digital Transformation (D.T.)), (b) ecosystem management within strategy (Mean = 2.11 from G.M. and 2.19 from D.T.), (c) databases in technology (Mean = 2.12 from G.M. and 1.90 from D.T.), (d) upgrading of infrastructure in operations (Mean = 2.10 from G.M. and 2.02 from D.T.), and (e) personnel skill enhancement in culture (Mean = 2.23 from G.M. and 2.13 from D.T.).

To answer the main research question, ten new (super) variables were created for the five factors (citizens, F.S. strategy, technology, F.S. operations, and culture) to assess how they are impacted by Green Management and digital transformation [2, 3, 8, 9, 12]. Each super variable was computed as the average of the dimensions from Table 2, and descriptive statistics were calculated. A one-sample t-test was applied to see if the means differed significantly from 3 ("neutral") using the p-value (sig.) criterion (Table 3). Since p-value = sig < 0.05 for all variables, the means are significantly lower than 3, indicating that employees believe the five factors are positively impacted by Green Management and digital transformation. A lower mean suggests a stronger positive effect. Technology, F.S. operations, and citizens are more positively affected by digital transformation due to digital tools, enhanced staff skills, and digitized citizen services. Culture is more positively influenced by Green Management, while strategy is equally impacted by both. All super variables are positively correlated, based on Pearson's coefficient (all coefficients > 0.5). This answers the main research question.

5 Discussion and Conclusion

The research highlighted the importance of the convergence of Green Management and digital transformation in the Forest Service. Sustainable development and environmental management, as mentioned by [5], require the adoption of green strategies that improve efficiency and reduce environmental impacts. The convergence of these

Table 2 Factors that may be influenced by the implementation of Green Management and Digital Transformation in the Forest Service

	Green management			Digital transformation		
	N	Mean	Std. Dev	N	Mean	Std.Dev
A. CITIZENS						
Trust of citizens in the Forest Service (F.S.)	232	2,37	1,053	232	2,29	,852
Better citizen experience in collaboration with the F.S	232	2,30	0,932	232	2,19	,803
The image and behavior of citizens toward the F.S	232	2,44	0,991	232	2,33	,867
Perceptual ability of citizens regarding the work of the F.S	230	2,35	1,020	230	2,35	,870
B. STRATEGY						
Management of the F.S.'s name	232	2,32	0,963	232	2,32	,941
Ecosystem management	231	2,11	0,983	231	2,20	,951
The finances of the F.S	232	2,55	1,064	232	2,52	1,006
Market and customers of forest products	232	2,53	0,993	232	2,55	,975
Innovation	230	2,14	0,961	230	2,16	1,010
Stakeholder management related to the work of the F.S	231	2,47	0,964	231	2,38	,969
Strategic management	232	2,31	0,984	232	2,28	,931
C. TECHNOLOGY						
Forest applications	231	2,16	1,012	231	2,03	,887
Department and Service collaboration	232	2,13	0,978	232	2,07	,923
Databases	232	2,12	1,015	232	1,90	,899
Security	231	2,36	1,029	231	2,27	,944
Networking	231	2,26	0,969	231	2,06	,944
E-Government	231	2,25	0,976	231	2,03	,925
D. OPERATIONS						
Flexible change management	232	2,42	1,029	232	2,17	,849
Automated resource management	232	2,34	0,999	232	2,20	,799
Upgraded service management	231	2,19	0,941	231	2,16	,839
Direct service provision	232	2,33	0,984	232	2,10	,918

(continued)

Table 2 (continued)

	Green management			Digital transformation		
	N	Mean	Std. Dev	N	Mean	Std.Dev
Smart and adaptive management processes	232	2,26	0,959	232	2,19	,874
Automated standards	232	2,31	0,958	232	2,19	,872
Upgrading technological infrastructures and equipment	232	2,10	0,975	232	2,02	,895
Design of new services for citizens and businesses	232	2,21	0,998	232	2,17	,908
E. CULTURE						
Culture of the F.S	230	2,33	1,063	230	2,37	,935
Leadership and governance of the F.S	230	2,37	1,081	230	2,38	,959
Organizational design and utilization of personnel	232	2,28	0,987	232	2,21	,884
Activation and enhancement of F.S. staff skills	231	2,23	1,002	231	2,13	,907
Improvement of employees' mental health	232	2,44	1,043	232	2,63	1,036
Improvement of employees' career development	232	2,42	1,082	232	2,41	1,105

strategies with digital transformation is critical for achieving greater transparency and accountability in public organizations [3].The research findings demonstrate the correlation between knowledge of environmental and digital strategies. Employees who are familiar with the principles of Green Management are more likely to understand digital transformation. This is supported by studies showing that organizations investing in Green Human Resource Management (GHRM) also develop digital capabilities for greater efficiency and sustainability [6, 19].

The study revealed that digital transformation has a significant positive impact on the technology and operations of the Forest Service, leading to greater efficiency. According to Porter and Heppelmann [2], modern technologies enable real-time data monitoring, reducing environmental impacts. Similarly, Fitzgerald et al. [11] emphasize that digital transformation enhances transparency and accelerates innovation in the management of public services. Green Management has a greater impact on organizational culture by promoting environmental awareness and organizational commitment to sustainable practices [3]. The integration of environmental practices

Table 3 One Sample T-test of factors that may be affected by the implementation of Green Management and Digital Transformation in the Forest Service

	One-Sample Test (Test Value = 3)						
	Factors	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Green management	Citizens	−10,804	231	,000	−,63,793	−,7543	−,5216
	Strategy	−12,402	231	,000	−,65,208	−,7557	−,5485
	Technology	−13,927	231	,000	−,78,737	−,8988	−,6760
	Operations	−13,099	231	,000	−,72,761	−,8370	−,6182
	Culture	−10,983	231	,000	−,65,632	−,7741	−,5386
Digital transformation	Citizens	−14,171	231	,000	−,71,013	−,8089	−,6114
	Strategy	−12,734	231	,000	−,65,579	−,7573	−,5543
	Technology	−18,094	231	,000	−,94,037	−1,0428	−,8380
	Operations	−17,686	231	,000	−,85,022	−,9449	−,7555
	Culture	−12,011	231	,000	−,64,440	−,7501	−,5387

into public policy contributes to long-term sustainability and the protection of natural resources [5].

In conclusion, the convergence of the two main areas, as emerged from this research, is undeniable. These findings support the development of a new framework with four main pillars: a. Education and Familiarization, b. Adaptation and Cultural Change, c. Digital Support and Integration, d. Addressing Strategic Challenges.

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